

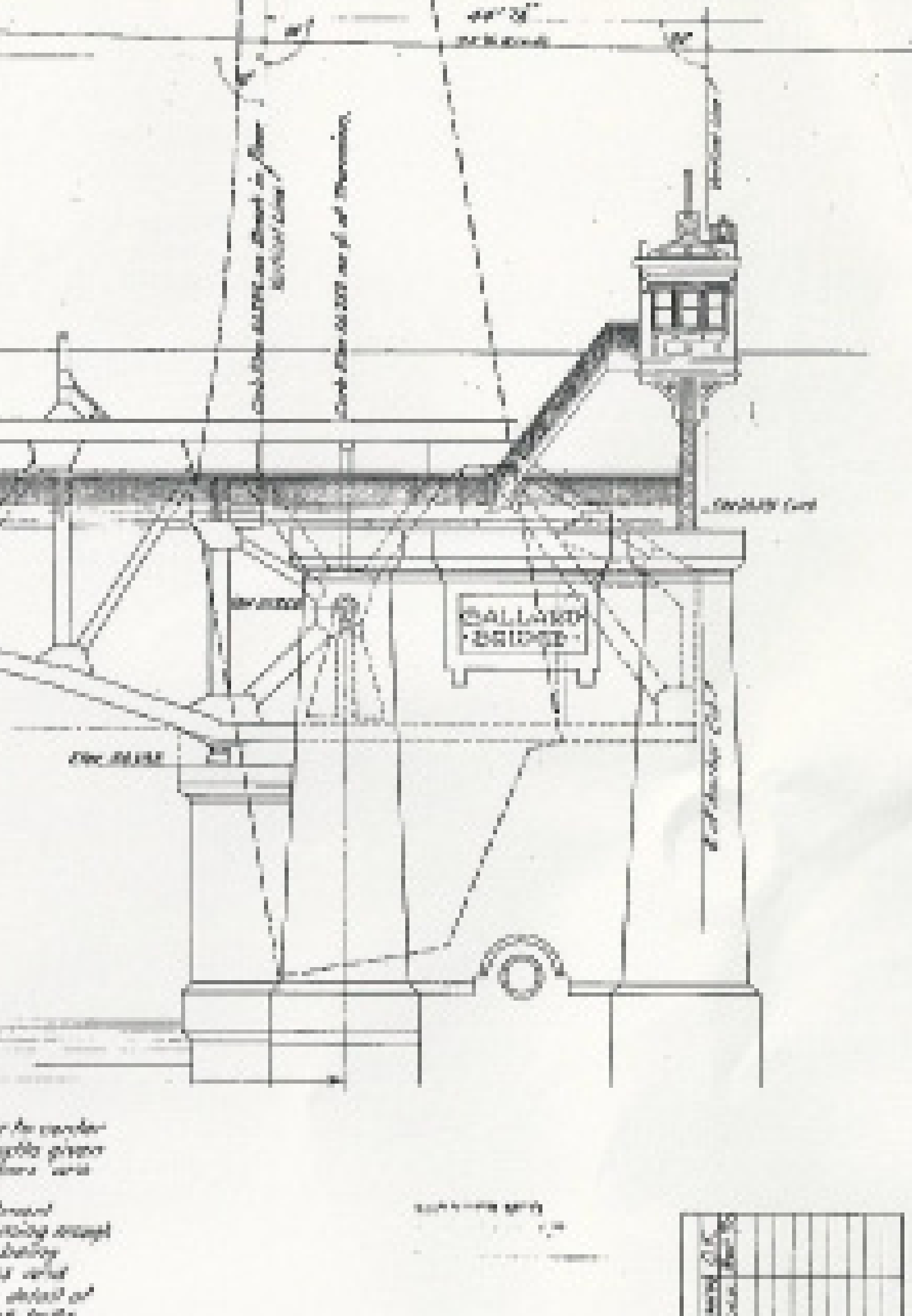


Missed Connection: Ballard Bridge Safety Recommendations

VICINITY MAP

Connect Ballard,
a neighborhood affiliate of the
Cascade Bicycle Club

May 25, 2015



Summary

The Ballard Bridge was defined in SDOT's Seattle Bike Master Plan, Public Engagement Summary Report in 2012, along with Rainier Avenue, as one of the main barriers to riding a bicycle due to safety concerns. The top crossing location barrier identified in the same report was the Ballard Bridge.

There are a lot of plans being studied by the City currently, including an additional Ship Canal Crossing of indeterminate location, design, facility, funding and schedule. There are discussions of the life span of the Ballard Bridge itself, and timing for some future replacement. None of these plans address the immediate need for improvements to a condition that has been well described as being deficient for decades. Many of them don't address the issue of connectivity for people walking and biking over the bridge and the connection from the Ballard Urban Village, down the western commute corridor along 15th Avenue, or over to the excellent trail system along the waterfront that will extend to and become part of the improved facilities under construction in conjunction with the waterfront seawall replacement and tunnel.

This is a series of recommendations for creating a viable Ballard Bridge crossing for all users, one that will be a permanent part of the current bridge and of any future bridge plans. We cannot wait for some possible unknown future project to solve the problems that we live with today.

As part of Vision Zero, a solution for the Ballard Bridge also provides an opportunity to address issues that impact destinations along the corridor extending beyond safety.

The two biggest impact elements of these recommendations are the expansion of sidewalk width along the east and west sides of the bridge, through a combination of modifications to the traffic lanes and extension of the deck of the bridge approaches, and the addition of a controlled intersection at the south end of the bridge at Emerson. These are two of a total of 6 actions proposed for the bridge.

These recommendations should be considered a package of improvements that will provide a reasonable improvement to the conditions at the bridge, when implemented in their entirety.

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Statement of Need

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Burrard Street Bridge
Vancouver, British Columbia
Photo: Laurel Rech

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In November 2008, the McMackens lost a son, a husband, a father. Terry McMacken had been severely injured in a bicycle accident on the Ballard bridge in July 2007, after bumping the low concrete curb, falling into traffic and being struck by a car. In constant pain, Terry had an arm amputated immediately after the crash, but ultimately couldn't survive his injuries.

What is remarkable is that this hasn't been a more frequent occurrence on the bridge. There have been many near misses, though thankfully most not resulting in serious injury. There have been more missed rides, because of valid safety concerns about the conditions for people walking and biking over the bridge.

The Ballard Bridge represents a prime example of prudent self-exclusion within the City. The key difference between the bridge and other dangerous streets is that of uniqueness – most streets offer simple alternatives only one block out of the way. A detour for the Ballard Bridge requires a visit to the Ballard Locks, during the hours that they are open to foot traffic, or to the Fremont Bridge. Either of these are a significant impediment to riders, adding 1 1/2 to 2 miles to the trip, something that someone traveling without a car will seldom accept as a reasonable alternative.

Instead, a large number of these trips are made by car or, less frequently, by bus. As Ballard continues its exponential residential growth, the bridge bottleneck gets tighter and more frustrating, generating traffic impacts on the evening commute that sometimes extend back to the downtown waterfront as cars funnel into the 15th Avenue to Elliott corridor.

Options for increasing the car capacity of the bridge don't exist. What do exist are possibilities to increase the **people** capacity of the bridge. Improvement of the conditions and experience for people walking and biking will increase the percentage of people who select these transportation modes, alleviating some of the current traffic congestion and providing healthy alternatives. Improving the conditions along the bridge will allow universal access for a ship canal crossing that only fully serves cars, truck and buses today.

The issues with the bridge, while complex, are not insurmountable. It has long been a concern of the Seattle Bicycle Advisory Board and SDOT. SBAB's bikeability tour of 2008 led to further group examinations with pedestrian, freight, industrial and bicycle interests meeting at the bridge in 2009, and a series of feasibility studies starting at the end of 2009 and extending to the end of 2014, identifying the feasibility of certain possibilities for improvements. These reports have been hindered by their scope, and by an incomplete understanding or definition of the costs related to the use of adjacent rights of way at the north and south bridge approaches.

This document represents the best attempts of our group to quantify the issues of the existing bridge, and recommend a suite of actions that can improve safety for all users. Our group represents citizens and neighborhood representatives from a wide variety of backgrounds and interests. What we share is an interest in improving the experience and accessibility of the Ballard Bridge, making it a viable and safe crossing for all.



Width at Low Curb

Photo: SDOT Sidewalk Widening Alternative Study



Southbound Merge

Photo: Brock Howell

Issues

There are six basic issues with the current Bridge configuration. These were well presented in the Ballard Bridge Sidewalk video by Haley Woods, posted to YouTube on February 12, 2015.



Width at Railing

Photo: SDOT Sidewalk Widening Alternative Study



Width at Maintenance Area

Photo: SDOT Sidewalk Widening Alternative Study



Northbound End of Sidewalk at North

Photo: Brock Howell

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1. Low Curb

The current curb height was established in construction documents from 1937 when the bridge was wood, cars were narrow and the speed of travel was much slower. In the 1950's, construction documents show concrete elements consistent with the original configuration, and it is what we still have today.

2. Narrow Sidewalk

The outer dimension of the bridge hasn't changed since it was built, but the materials have. The narrowest dimension at the largest outside rail posts is 3'-5". Standard bike handlebars with a basic side mirror can be almost 3' wide. This doesn't allow a margin of safety for pedestrians, bikes and strollers when people meet or have to pass, or when bikes need to negotiate a crumbling and poorly draining sidewalk crossed by metal expansion joints.



3. Dangerous Access

A. The southbound access from the bridge approach onto 15th Avenue is widely referred to as the Merge of Death. This consists of a narrow curb cut forcing bikes to enter the roadway nearly perpendicular to the flow of traffic, a variety of right turn exits and entrances, a bus stop and a right hand merge from a full stop in an area where traffic typically moves much faster than the posted speed limit. There is no viable option here for people walking, other than crossing under the bridge on a series of staircases.

B. The approach northbound from the south isn't much better, requiring the crossing of traffic exiting 15th Avenue to Nickerson and Emerson, a bus stop, and traffic entering the bridge through a complex merge from the east. People walking are forced through a circuitous series of crossings to access the bus stop and the bridge.



Southbound Merge
Photos: Sean Cryan



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South Path from East to West under
15th from Emerson to Nickerson

Photos: Sean Cryan

4. No Connectivity

The entire system lacks connections, running tantalizingly close to the South Ship Canal Trail without actually offering a viable way to close the gap. The north end comes close to the Burke Gilman Trail, but between the Missing Link and the absence of any intended route, there are no clear options to enter or leave the bridge. There is no safe connection to the bicycle facilities along the waterfront, from the Terminal 91 Bike Path through Myrtle Edwards Park.

5. Fast Traffic

For many years 15th Avenue to the south of the bridge was marked as a 40 mph roadway from a point between Dravus and the Magnolia Bridge. Because of the design of the roadway, traffic along that stretch routinely ran between 40 and 50 mph. It has been revised to a 30 mph speed limit with signage only, and cars now run between 35 and 45 mph. Speeding along the bridge is a significant safety factor, as is the speed of traffic on the south for people entering or exiting the bridge approaches.

6. Infrastructure Maintenance

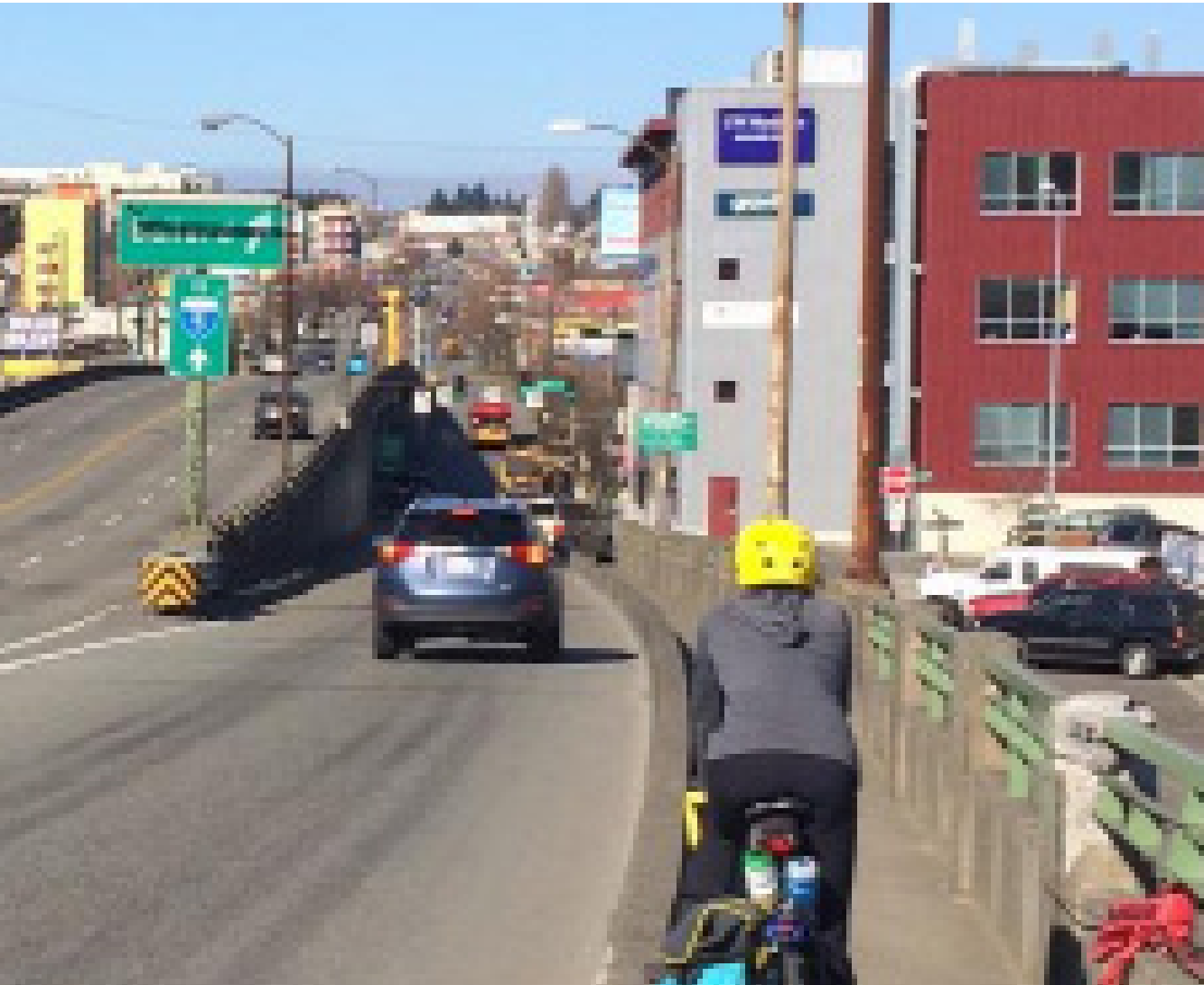
The bridge has several issues related to maintenance. The tightest points along the route for people walking and biking are the metal cages around the service stairs to the underside of the bridge. On one side there is a protective barrier for the bascule mechanism, but on the other side the permanent cage is around a stair that is used occasionally.

The other issue has to do with the maintenance of the actual sidewalk area. In addition to the broken surface of the walkway, it is crossed by metal expansion joints which are often not visible, either due to puddles or darkness.

Recommendations

The improvements can roughly be categorized into 3 types.

First are items that make a change to the physical nature of the bridge, second are items that modify the bridge approaches and third are items that modify behavior of all bridge users.



**Northbound Bridge Exit
with Extra Space for Sidewalk Widening**

Photo: Haley Woods

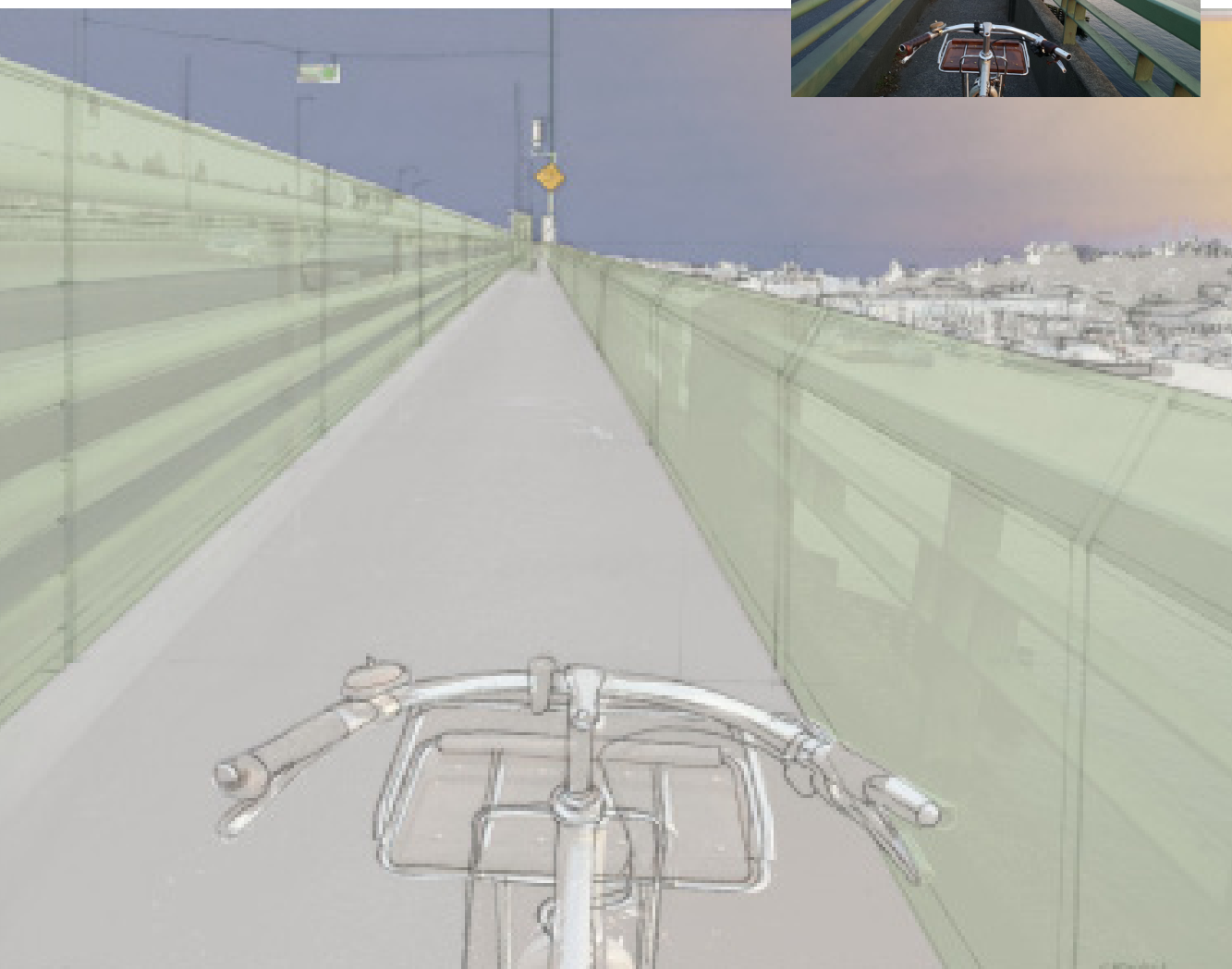
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1. Improved safety rail

Changing the rail to a steel system will save weight and depth within the bridge section. It should have a traffic barrier sufficient to stop a vehicle without throwing chunks of concrete and railing into the sidewalk.

The rail should include an upper portion that does not represent a hazard to bicycle handlebars. The rail shouldn't impede into the sidewalk, and should cut back at a height to avoid handlebar conflicts while still meeting code requirements for safety from falls.

The available space along the bridge approaches and the entry ramps should be studied for possible adjustment to achieve additional width for the sidewalk.



**Southbound Bridge Sidewalk
after Widening and Safety Rail Improvements-**

Photo: Brock Howell

Rendering: Sean Cryan

2. Widened sidewalk

Previous studies have considered sidewalk widening that can accommodate 6' or 10' clear pathways. These studies need to be completed to verify the ideal dimension somewhere between these points that provides adequate clearance for a multi-use trail condition and balances right of way acquisition costs. The selected solution should include an actual cost for ROW acquisition. Consideration should also be given to the space along the bridge approaches and entry ramps. Especially in the north, there is excess width because of a configuration that is somewhere between one and two lanes wide.

For immediate needs, move the inner rail one foot closer in, making the traffic lanes approximately 10' wide, while gaining space for a steel rail guard that is narrower than the existing concrete.

Removing the outer concrete rail will provide another 18" inches to the sidewalk if a new steel railing is mounted to the face of the bridge structure. Combined, these modifications will provide a sidewalk width of more than 5'-6".



**Northbound Bridge Sidewalk
after Widening and Safety Rail Improvements-**

Photo: Brock Howell

Rendering: Sean Cryan

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3. South End Intersection

Revise the intersection where Emerson, Nickerson and 15th Avenue converge and restore it to a street grid condition, similar to the traffic light at the south end of the Fremont Bridge. Address the northbound and southbound bridge approaches, from the Dravus Street overpass all the way to the bridge sidewalk.

Extend the South Ship Canal Trail to connect to 15th Avenue, and to a future reconfigured connection that also accesses the future 16th Avenue Greenway called out in the Bicycle Master Plan.



Existing

South Bridge Interchange

Image: Google Earth

Modification: Brock Howell



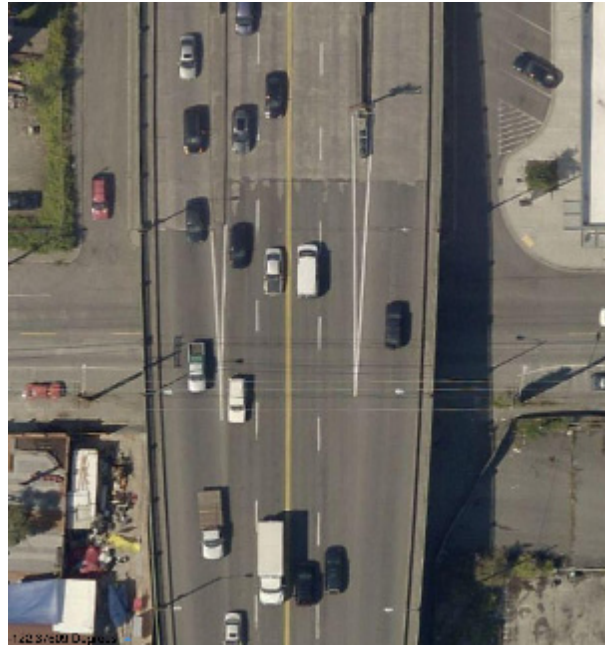
Improved

1. Square up exchange and add traffic light
2. Add protected bike lane along 15th from the bridge to Dravus St
3. Connect to Ship Canal Trail
4. Remove Emerson Street overpass
5. Sell or repurpose land parcel

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4. North End Approaches and Exits

Excess lane width at entry and exit ramps can be used to create adequate sidewalk widths along the east and west sidewalks. This will also create a traffic calming effect on the on and off ramps.



Existing



Improved

North Bridge Approaches and Exits

Image: Google Earth

Modification: Brock Howell

Clarify the path for people walking and riding bikes as they cross to connections to the pedestrian and bicycle network, including clarification of connections back to the Burke Gilman Trail. Crosswalk markings in this location will increase the safety for people walking and biking as they enter or leave the bridge.



Existing



Improved

North Bridge Interchange

Image: Google Earth

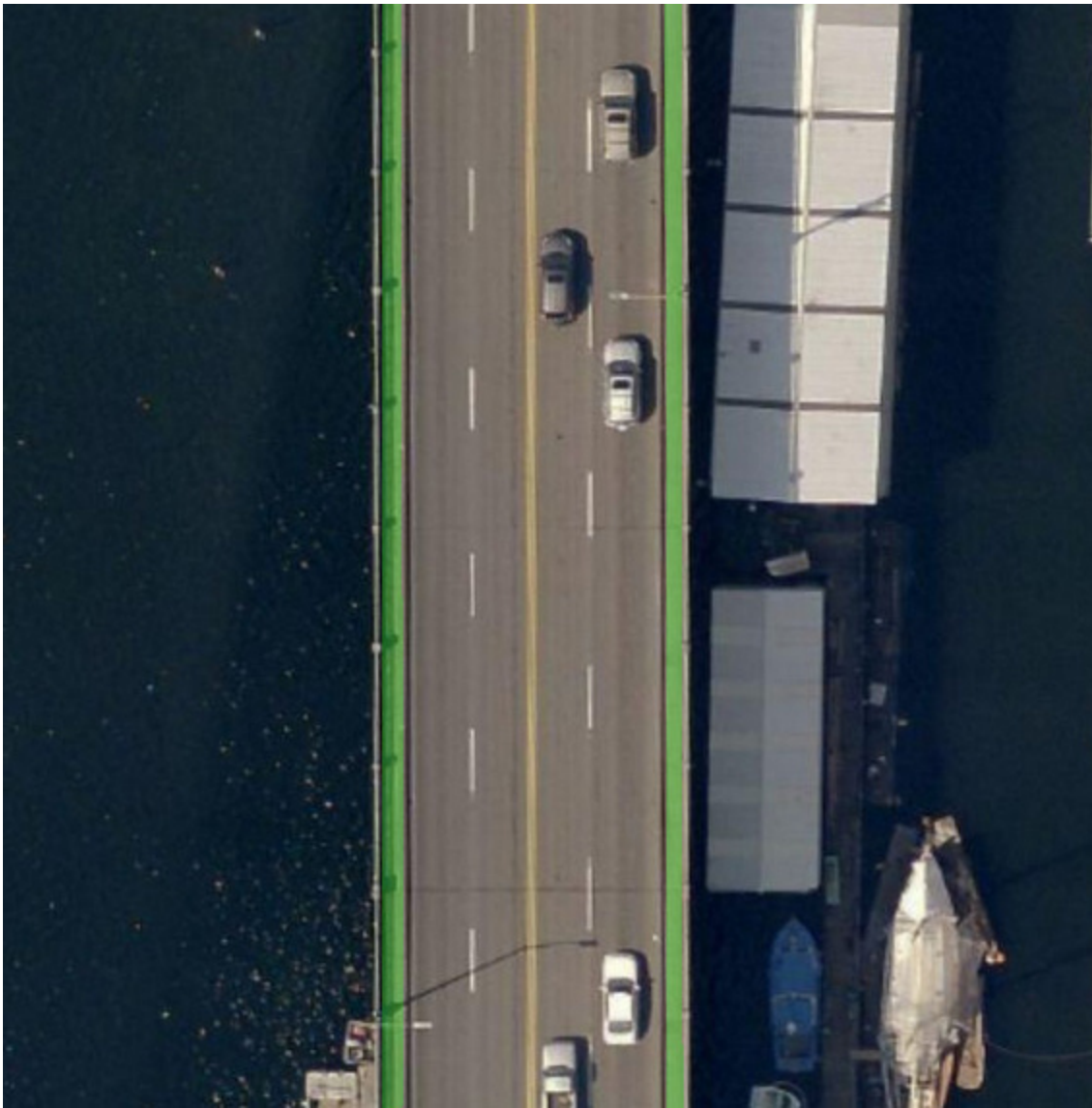
Modification: Brock Howell

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5. Speed Limit and Signage

The revised speed limit of 30 mph has lowered the speed of some of the vehicles crossing the bridge. Due to the design of the bridge and an absence of speed enforcement, the majority of vehicles crossing the bridge still operate at or close to the previously posted 40 mph speed limit. The narrowing of the outside traffic lane will help to slow traffic across the bridge.

In addition to the redesign of the road deck to encourage use of the posted speed limit, or reduce it further to 25 mph on the bridge and approaches. Add signage for all the bridge entry and exit points that clearly establish that people walking and biking will be coming onto and off the bridge. Add signage encouraging bicycles to follow traffic directions on sidewalks across the bridge. This will only be feasible once the conditions for bridge access have been corrected. The current configuration forces wrong way traffic because of the lack of options for safely accessing all entry points for the bridge.



Existing

Typical Bridge Deck Sidewalk Widening
Image: Google Earth
Modification: Brock Howell



Improved

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6. Maintenance Improvements

To alleviate the current constriction at maintenance access points to the lower portions of the bridge, provide hatches and temporary safety rails for use when those areas require access.



Bascule Bridge Maintenance Access
Photo: SDOT
Rendering: Sean Cryan

Provide small drains to eliminate puddles, especially on the eastern sidewalk. These should be in the form of drainage holes, not grated drainage, to avoid creating hazards for sidewalk users.

Repave or improve the current patching and paving conditions along the full length of the bridge. The previous attempts have not properly prepared the sidewalk and haven't held up to the light sidewalk traffic.



Southerly View of East Sidewalk
Photo: SDOT Sidewalk Widening Alternative Study

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Near Term Solutions

- 1. The combined Recommendations 1-6 included in this document represent the best solution to address safety concerns for the Ballard Bridge in the immediate future. More improvements could be made beyond these recommendations, and those are described in brief below.
- 2. Use the Move Seattle levy to include funding to implement this set of Near Term Solutions. This may be accomplished by prioritizing the funding already included, by adding more or reassessing needs to assure that funding is available.

Immediate Actions

- 1. Until the reconfiguration of the south end of the bridge, provide a lighted, flashing warning sign similar to those used for crosswalks, activated by the presence of a bicycle at the curb cut onto 15th Avenue, that warns cars to yield to bicycles at the cut.
- 2. Add signage at all bridge entrances and exits reminding car drivers that people on bicycles and on foot will be accessing the bridge as well.
- 3. Add an enforcement priority for the speed limit along 15th Avenue until habits change, especially southbound in the morning commute.

Long Term Solutions

- 1. Provide minimum 6’ clear sidewalk widths for one way traffic or minimum 10’ clear sidewalk widths for two way traffic. Provide a complete financial analysis of this option, including right of way impacts.
- 2. Study a revised bridge option that provides dedicated space for transit, pedestrians and bicycles.
- 3. Study a revised bridge option that considers a reversible center lane with one traffic lane in each direction, and protected bicycle lanes on the bridge deck.
- 4. Include a dedicated transit, pedestrian and bicycle only bridge parallel to the current bridge and connected to the existing commute corridor, as part of the ST3 system plan and 2016 ballot measure.



Southerly View of East Sidewalk
Photo: SDOT Sidewalk Widening Alternative Study

