Public Meeting
for
Project to Replace Temporary Wainiha Bridges

March 9, 2015

Meeting Agenda

- **6:00 p.m. – Welcome and Refreshments**
- **6:15 p.m. – Presentation with Public Feedback**

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Purpose of Meeting

- Update the public on where we are in the process
- Present the purpose and need developed based on past public engagement. Get feedback.
- Present alternatives and design elements being considered. Get feedback.
- Discussed will be: bridge type, rail types and sizes, deck considerations, bridge width

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Why Are We Here

- Entered into a formal partnership with Hawaii DOT
- Five year Memorandum of Agreement for delivery of a Program of Projects
  - Includes projects across Oahu, Kauai, Big Island, and Maui
- Peer-to-Peer Exchange Agreement

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Project Background

- Wainiha Bridges 1 and 3 (wood through-truss) were originally constructed in 1904.
- In 1931, Bridge 2 was completed to span newly carved stream channel.
- Tidal storms damaged bridges (except east span of Bridge 3) in 1946 and 1957, which were replaced or repaired at that time. In 1966, east span of Bridge 3 was replaced.
- In 2004, Bridge 2 suffered permanent damage and a temporary ACROW was installed. In 2007, damaged Bridges 1 and 3 were replaced with temporary ACROW bridges.

Project Background

- 2004 – Road was nominated by Hanalei Roads Committee, Route 560 and placed on State and National Register of Historic Places
- 2005 – HRC and HDOT and consultant hold first meeting on Wainiha Bridges project
- 2005 – Historic Roadway Corridor Plan completed
- 2012 – HDOT completed Engineering Design Report for Kuhio Highway Wainiha Bridges
- 2014 – FHWA-CFLHD and HDOT initiated environmental compliance process for a Project to Replace Temporary Wainiha Bridges.

Historic Bridge 3

Temporary ACROW Bridge 3

SR 560 Historic Significance

- Significant in the areas of engineering, transportation, and social history
- Almost unchanged alignment of the road since its completion in the early 1900s
- Original or historic width and frequent absence of shoulders, as were the conditions in the late 1920s
- Presence of numerous one-lane bridges representing the construction methods and material type of their original period of construction
- Guardrail and barrier walls that were constructed of timber-beam/concrete-pot or masonry rock construction

Historic Roadway Corridor Plan

HDOT shall exercise context-sensitive design (CSD) and harmonize improvements with natural features, scenic amenities, and historic elements of the highway corridor.

Route 560 shall be designated a “shared use” facility for vehicles and bicycles, as provided in the Bike Plan Hawaii.

Design guidelines established for the corridor.

- Existing right-of-way width, historic road pavement width, and road alignment should be retained. Modifications should be consulted with plan provisions and community.
- Replacement of any of the route’s one-lane bridges should:
  - Be reconstructed as practical with a bridge similar in design
  - Have a single 12’-wide travel lane and 2’ wide shoulders
  - Accommodate ped/bicycle access within or outside bridge

Engineering Design Report

Key Recommendations

- New bridges should be of one-lane configuration
- Bridges shall be aligned within historic right-of-way to extent practicable while complying with AASHTO geometric standards
- Bridge superstructure should be pre-cast, pre-stressed long span concrete construction with bridge rails and approach guardrails
- Bridge rails should be of structural steel tube (similar to Hanalei Bridge)
- Bridge spans should use up to 78-foot planks to eliminate additional piers
- Deck planks shall be constructed of timber or timber facsimile
- Bridge pedestrian rails shall be constructed of timber or timber facsimile
- Bridge 1 should have a maximum of 11-feet width / Bridge 2 and 3 should have a maximum of 16-feet width**

****Width was acknowledged as an issue to be resolved in the environmental process**

Issues we've heard

Historic and community character

- Historic character of the road and the community should be maintained.
- Narrow one-lane bridges is what was there historically and are part of the pace, lifestyle and culture of the area. They are part of what makes the area so special and unique.
- Visual and aesthetics of the new bridges are extremely important. The ACROW bridges are not aesthetically pleasing.
- There is interest in re-creating the historic feel and sound of the previous timber bridges.

Issues we've heard

Operations

- The ACROW bridges don't function as well as the older bridges. It is more difficult to see across the bridges with the ACROW bridges. The rails are too high, with tighter spacing, the roadway and bridges are higher, and vegetation becomes overgrown and is not well-maintained.
- It is not uncommon for two vehicles to enter the bridge from opposite sides at the same time and one have to back up. Road rage sometimes occurs.
- Ensuring safe ingress and egress is important. Emergency vehicle access is necessary, with consideration of width, load capacity, and ability to withstand storms. Safe access in an emergency is important.
- Speeds are a concern. Narrow bridges help to keep speeds low. Wider bridges make people go faster and it becomes more unsafe.
- Many tourists don't seem to know how to navigate the one-lane bridges.

Issues we've heard

Maintenance Considerations

- Vehicles repeatedly hit the timber rails on the older bridges. This required repairs and replacements.
- The ACROW bridges require bolt tightening and corrosion protection.
- Vegetation often becomes overgrown and is not well-maintained. This affects visibility.

Construction Impacts

- Impacts to the stream and estuary need to be adequately addressed and minimized.
- Traffic impacts during construction are a concern.

Purpose and Need

- A ***project purpose*** identifies what the project should accomplish to a large degree to be considered a success.

- ***Project needs*** identify the problems a project is specifically designed to address.

A project can sometimes have primary and secondary purposes.

Draft Purpose and Need

Primary Purpose

The primary purpose of the project is to replace the three Wainiha temporary bridges (referred to as Wainiha Bridges 1, 2, and 3) to maintain continued access along Kuhio Highway.

Secondary Purposes

- Improve operations
- Manage maintenance requirements
- Balance project improvements with the character of the historic roadway corridor

Draft Purpose and Need

Primary Need

Structures to replace the temporary Wainiha bridges are needed to maintain access. The ACROW bridges were installed as a temporary measure to keep the roadway open until design and environmental compliance for the new structures could be completed.

Secondary Needs

Bridges 2 and 3 do not currently operate efficiently.

- Bridges 2 and 3 can pose problems if two vehicles traveling opposing directions enter the bridge at the same time.
- Visibility at Bridges 2 and 3 is less than adequate. Contributing factors include: rail height and spacing, roadway and bridge elevation, and overgrowth of vegetation.

Draft Purpose and Need

Ongoing maintenance requirements need to be manageable.

- Timber decks and railings on original bridges needed frequent repairs or replacement due to weathering and collision damage from errant vehicles.
- Temporary ACROW bridges require maintenance in the form of corrosion protection and bolt tightening.

Future proposed improvements need to consider the context of the historic roadway in project design.

- The road is significant for its state and local significance in the areas of engineering, transportation, and social history. Proposed improvements should take into consideration the historic character of the roadway.

Purpose and Need Feedback

- Have we adequately captured the goals and needs of the project?
- Did we miss anything?

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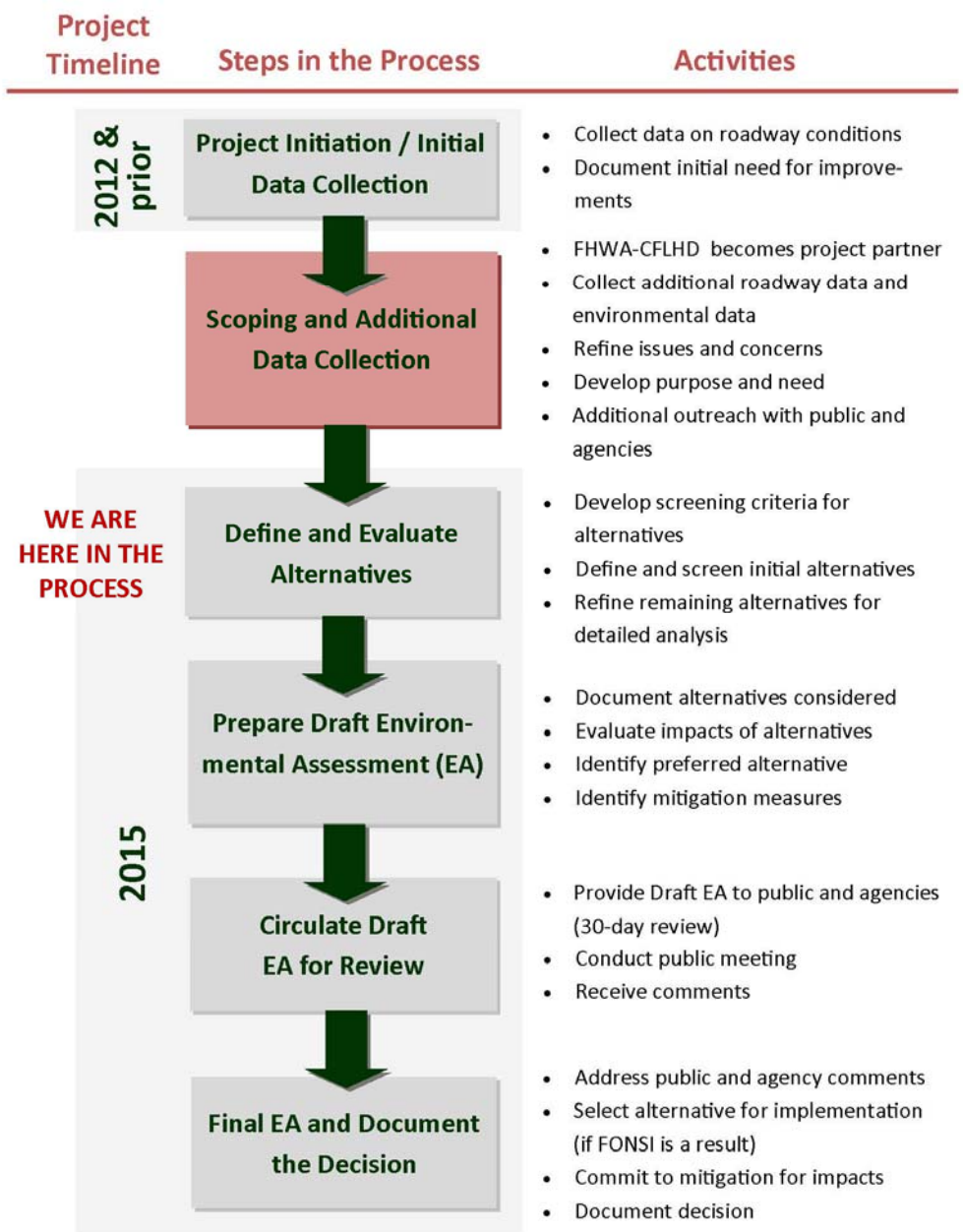
Environmental Process



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Alternative Considerations

- Opportunities in the following areas were identified to help achieve the purpose and need and help to compare alternatives:
  - Sight distance, including horizontal and vertical alignment, rail spacing and height, line of sight
  - Traffic calming considerations
  - Accommodation of vehicles loads and navigation of emergency/utility vehicles across and between bridges
  - Maintenance requirements
  - Aesthetics compared to historic roadway
  - Historic alignment of roadway

Alternative Considerations

Alternative Considerations being developed to meet project goals (based on past public engagement and the Engineering Design Report):

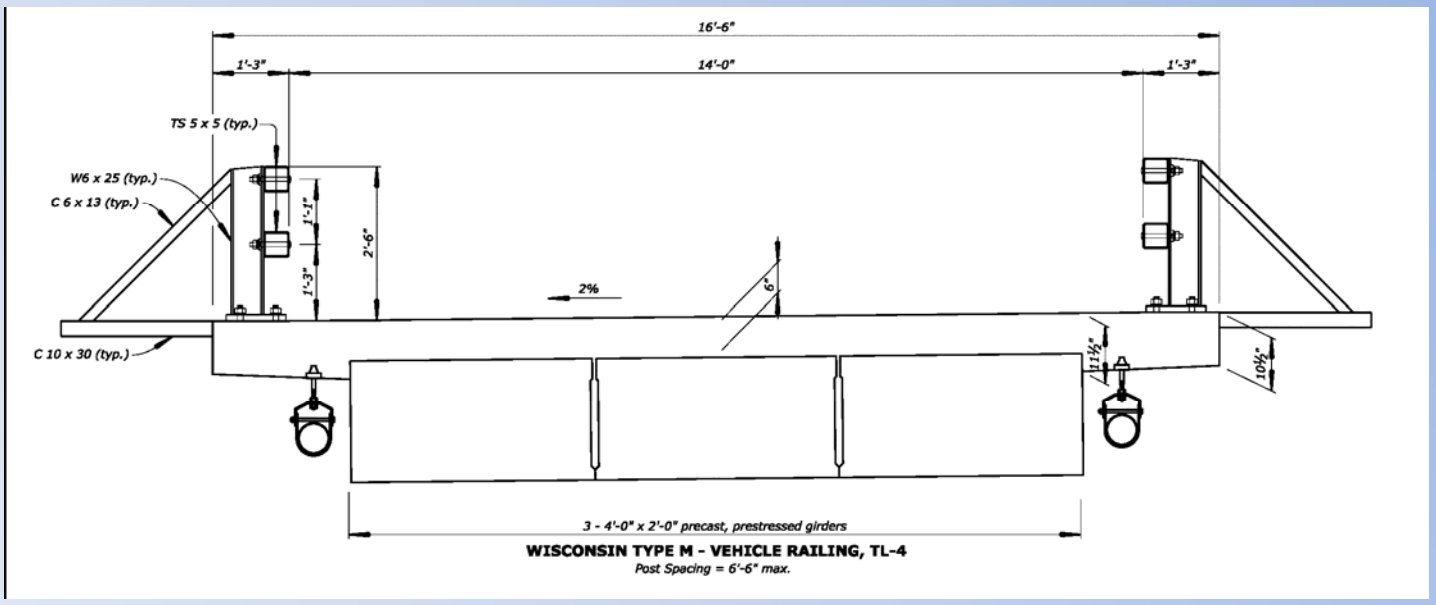
- Replacement of the ACROW bridges
- Lowering of the roadway and bridge profile to improve sight distance while maintaining hydraulic opening of historic bridges
- Incorporate bridge rails that are shorter and more open than those on the temporary ACROW bridges
- Minor alignment improvement between Bridges 2 and 3

The No Action or No Build Alternative must also be evaluated and carried forward for analysis.

Existing Bridges 2 and 3

Rendering of Potential Bridges 2 and 3

Bridge Type



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Bridge Rail

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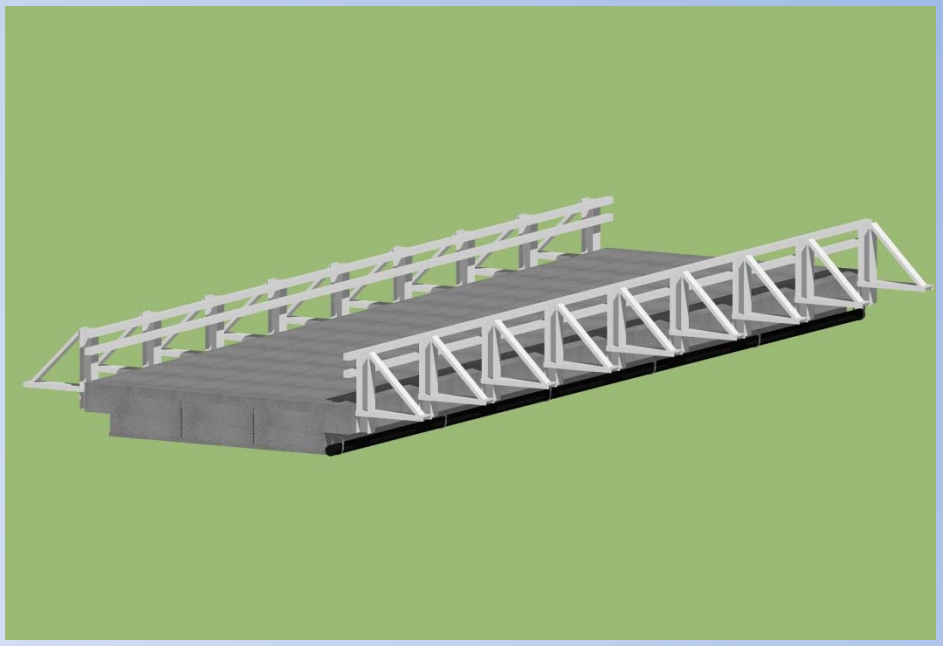
Bridge Rails – CA Type 115

- Vehicle rail = 2’-6” tall
- Side-mounted (edge of deck = 18” thick)
- Narrowest out-to-out bridge width
- Post spacing = 8’ max.

CA Type 115 Rail 3D



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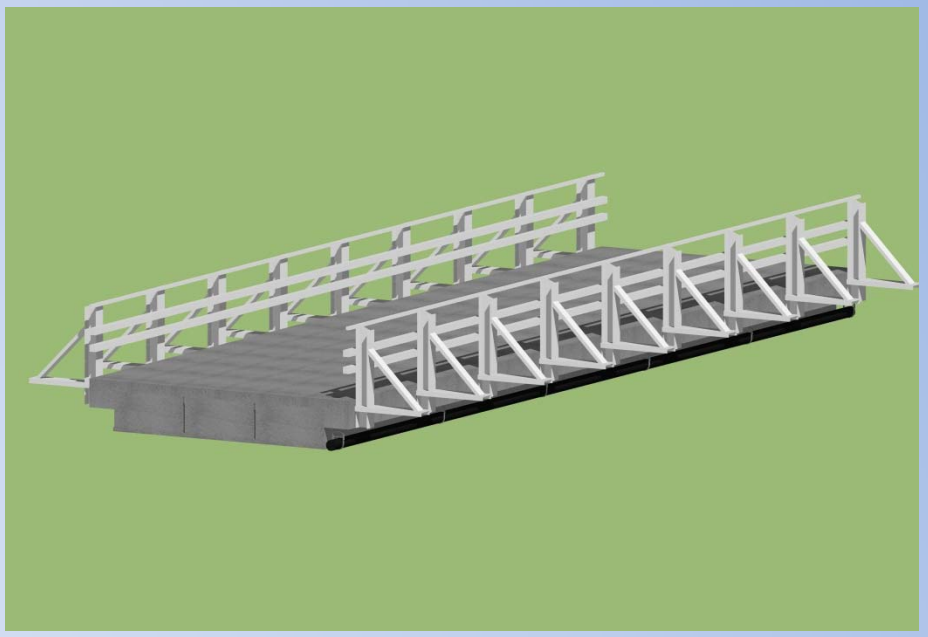
Bridge Rails – CA Type 116

- Vehicle/bicycle rail = 3’-8” tall
- Side-mounted (edge of deck = 18” thick)
- Narrowest out-to-out bridge width
- Post spacing = 8’ max.

CA Type 116 Rail 3D



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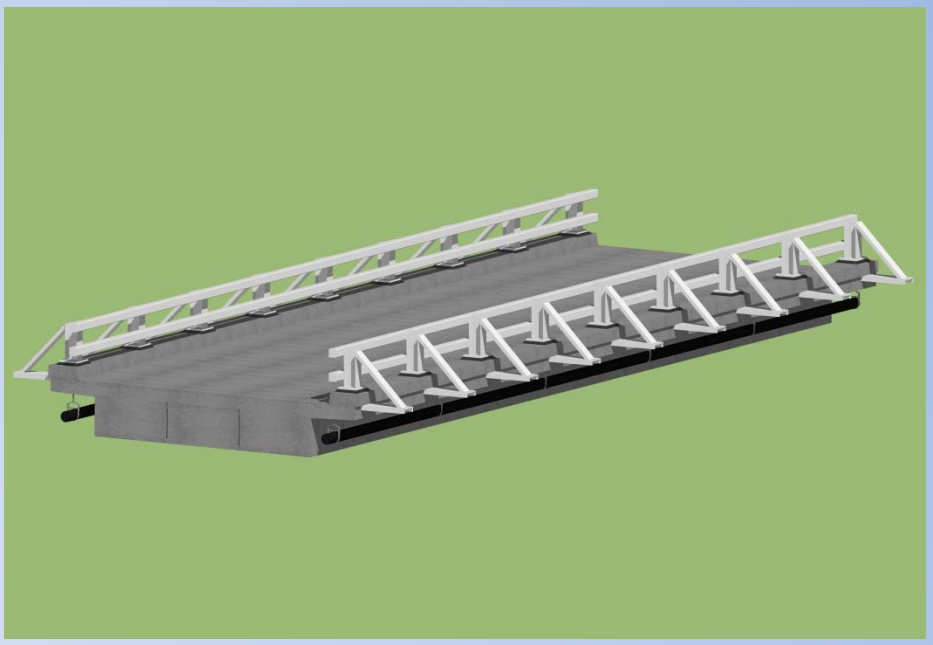
Bridge Rails – OR BR206

- Vehicle rail = 2’-8 1/2” tall
- Curb-mounted (edge of deck = 15” thick)
- Widest out-to-out bridge width
- Post spacing = 10’ max.

OR BR206 Rail 3D



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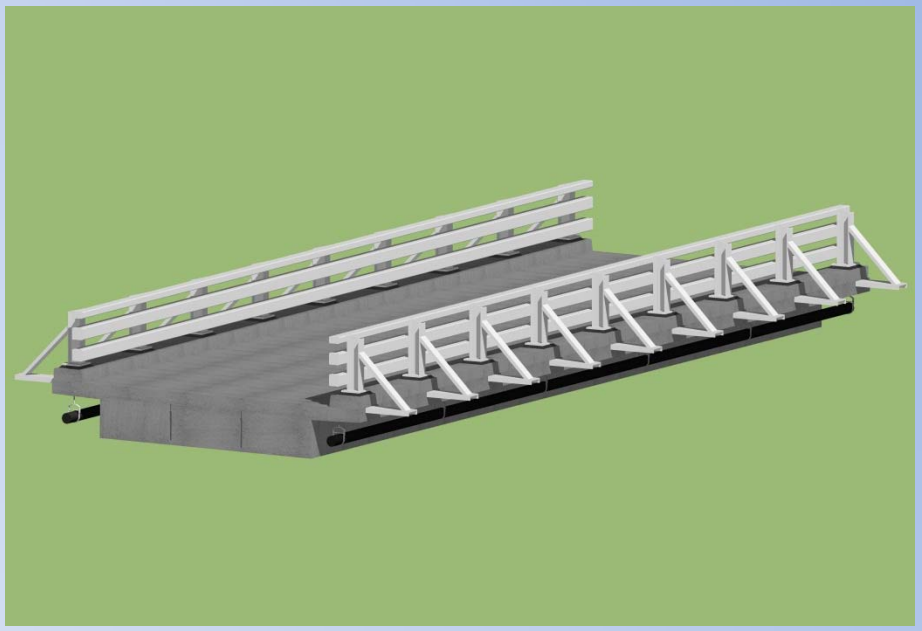
Bridge Rails– OR BR208

- Vehicle/bicycle rail = 3’- 6” tall
- Curb-mounted (edge of deck = 15” thick)
- Widest out-to-out bridge width
- Post spacing = 10’ max.

OR BR208 Rail 3D



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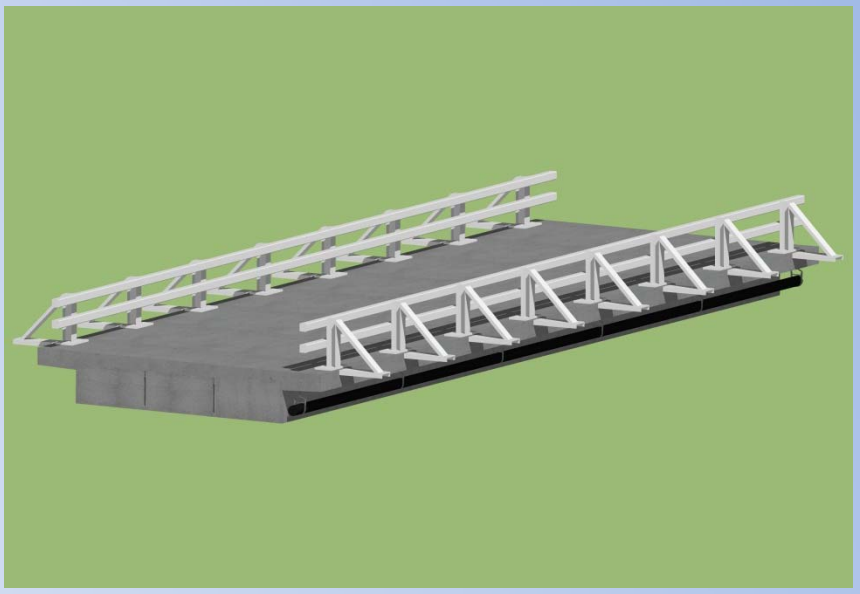
Bridge Rails – WI Type M

- Vehicle rail = 2’-6” tall
- Top-mounted (edge of deck = 10 .5” thick)
- Post spacing = 6’-6” max.

WI Type M Rail 3D



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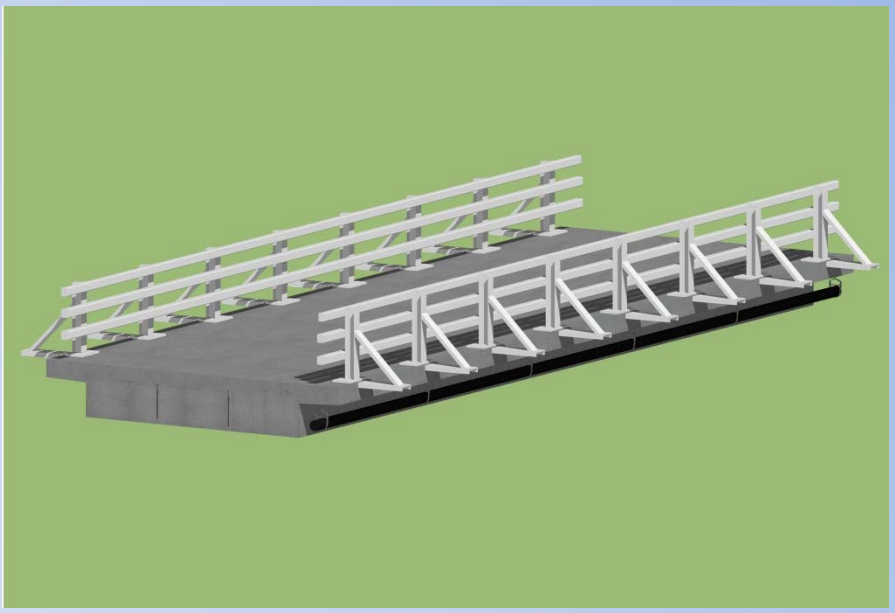
Bridge Rail - WI Type M(comb)

- Vehicle/bicycle rail = 3’-6” tall
- Top-mounted (edge of deck = 10 .5” thick)
- Post spacing = 6’-6” max.

WI Type M Rail 3D



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Bridge Deck

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Bridge Widths

Wainiha Bridge	Historic Width**	ACROW Width
#1	11 ft.	14 ft.
#2	10 ft.	12 ft.
#3	11 ft.	14 ft.

**Per 2012 Engineering Design Report

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Bridge Widths Feedback

What are some of the advantages or disadvantages of each width consideration? What about in relation to the below factors, or any other factors?

- Sight distance, including horizontal and vertical alignment, rail spacing and height, line of sight
- Traffic calming considerations
- Accommodation of design vehicle and navigation of emergency/utility vehicles across and between bridges
- Maintenance requirements
- Aesthetics compared to historic roadway
- Historic alignment of roadway
- **Are there other bridge widths that should be considered? If so, what do you feel the advantages would be?**

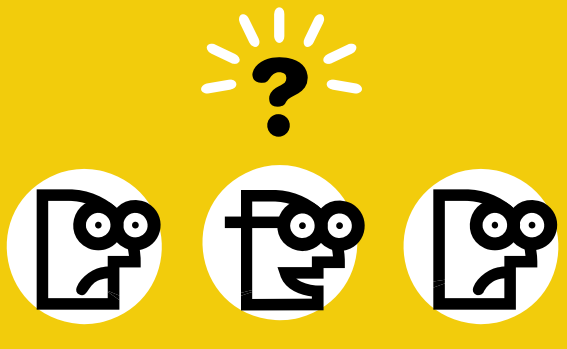
Other Alternative Considerations

- Two-lane bridge option brought forward in public comments. Feedback on advancing this alternative?
- Construction approach and alignment considerations
- Waioli, Waikoko, and Waipa Bridges – temporary access considerations

Next Steps

- Feedback from the public on advantages and disadvantages and other considerations will be evaluated.
- CFLHD and HDOT will coordinate on refinement of alternatives to identify what should be carried forward for analysis.
- CFLHD and HDOT will review feedback to identify what other alternatives or elements should also be considered.

Please Share Your Thoughts



PLEASE SHARE YOUR IDEAS!!!

Please email comments by March 31, 2015 to Michael.Will@dot.gov

Visit www.cflhd.gov/wainiha for meeting materials

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