

Contact author: Schaun Valdovinos, FB2020@vm-structural.com

CONNECTING A REGION: FOOTHILLS TRAIL WHITE RIVER BRIDGE

Authors: Schaun VALDOVINOS¹, Chelene WONG², Don HELLING³, Ken WILSON⁴

Affiliation: ¹ V+M Structural Design, Inc., Seattle, WA, USA

² V+M Structural Design, Inc., Vancouver, BC, Canada

³ Huitt-Zollars, Seattle, WA, USA

⁴ Integrity Structural Engineering, Seattle, WA, USA

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The White River Bridge will become a key link extending the regional Foothills Trail, which when complete will run more than 48-km through communities and scenic landscape in the shadow of Mount Rainier. The footbridge will become a destination where users can linger over the beautiful White River and it will provide a much-needed secondary route for emergency vehicles.

Century old roadway bridge piers will be reused to minimize costs and simplify environmental permitting. With three existing piers, the total river crossing length of 105-m is divided into two equal spans using back-to-back network arches.

Network arches create a very transparent structure, while at the same time being very stiff. The crisscrossing hanger pattern allows the structure to carry heavy point loads from a fire truck without distressing members. A gap between the 4.8-m wide deck and tie-chords addresses differential thermal movements between steel and concrete; becomes skylights to minimize shading on the river; and provides direct visual inspection of connections. Generous lookouts at the central pier will provide an area for lingering to take in views of the river.

This paper will discuss the design details of this landmark footbridge, including the geometry of the arch spans, optimization of the hanger pattern, fabrication and construction considerations, and seismic design approach using base isolation of the superstructure atop the existing piers. The erection sequence of the large spans has been an up-front consideration with every effort to minimize disturbance to the wooded site. User experience and aesthetics are a focus of design, but with an emphasis on economy and efficiency. This footbridge showcases how these aspirations can be achieved with the right design approach.



Fig. 1. Aerial rendering of the White River Bridge

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