

# Chambers Creek Bridge to the Beach

by Myles Parrish, BergerABAM



Underside view of the 106-ft-long span over the railroad tracks. The 30-ft-wide viewing platform is at the left edge of the photo and the stairs to the beach are to the right. All photos: BergerABAM.

Chambers Creek Properties in University Place, Wash., was once a 930-acre sand and gravel mine that was redeveloped for public recreation by Pierce County's Department of Public Works and Utilities. The property includes 2½ miles of beach that was inaccessible to the public until construction of this pedestrian bridge linked it to the trail system and provided a safe crossing over a BNSF Railway mainline.

The vision was to create a pedestrian-friendly bridge that projects an elegant, flowing ribbon with an ever-changing panoramic view of Puget Sound islands, the park, the golf course (host to


2015 U.S. Open), and the Olympic Mountains. The bridge's alignment, plan, and profile were carefully conceived to fit the natural lay of the land and yet allow for the repetition of elements, making precast concrete the right solution.

The 844-ft-long bridge features 12-ft-wide, 29-in.-deep, precast concrete, single-cell box girders with post-tensioning for continuity. The precast concrete girders include one 106-ft-long span and nine 60-ft-long spans, seven of which were cast with a 325-ft horizontal radius. All cast-in-place concrete components of the superstructure, including the stair units (two, 60-ft-long spans), viewing platform (two, 39-ft-long spans), and crossbeams were detailed with the same profile and 29-in. depth as the precast concrete girders.

The 106-ft-long span over the BNSF tracks achieves a minimal span-to-depth ratio of 44. This girder was designed to carry self-weight and construction loads with pretensioning only until it could be integrated through post-

tensioning with adjacent spans. This facilitated compliance with the railroad restriction to accomplish erection within a 40-minute window. Another notable feature of this long span is that the apex of the bridge profile coincides with the midspan, and pretensioning was designed to induce camber to fit the vertical curve.

Another design consideration was the marine environment, which warranted provisions for enhanced durability, including marine-specific mixture proportions, polyethylene post-tensioning ducts, and epoxy-coated reinforcement. The bridge was finished with a light cable railing system that fits well with the structural aesthetics and was adapted to serve as a throw screen over the tracks.

The final product is a simple, handsome structure that fits well in its surrounding aesthetic environment. It is recognized in the community as a treasured recreational asset and was awarded the 2011 Smart Communities Award by the Governor. 



This elegant, ribbon-like bridge makes 2½ miles of beach accessible to the public by providing for safe crossing over a BNSF Railway mainline.

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