View of completed precast concrete ribbed-slab structure from the top of the pontoon. Photo: International Bridge Technologies Inc.

top of the deck with temporary steel brackets. The north and south segments were epoxy-joined independently. There were five locations across the 56-ft-wide segment where the temporary post-tensioning was applied. On a typical setting day, eight precast concrete segments were erected. A maximum of 18 segments were erected in 1 day. All 776 segments were erected within 11½ months.

After the segments were epoxy-joined, reinforcement and post-tensioning was placed within the longitudinal closure strip and concrete for the closure was cast. Transverse post-tensioning bars were stressed across the longitudinal closure strip after the concrete reached sufficient strength. Then, the longitudinal post-tensioning tendons were stressed, and the elastomeric bearings were grouted. After the grout reached sufficient strength, the falsework was removed and the superstructure was self-supporting.

The SR 520 Evergreen Point Floating Bridge is scheduled to open to traffic in April 2016.

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AESTHETICS COMMENTARY

by Frederick Gottemoeller

It may seem odd to focus a discussion of bridge aesthetics on a structure that will only be seen by the occasional Washington State Department of Transportation maintenance worker. What makes it worthwhile in this case is that the structural innovations pioneered here create a unique and attractive bridge that would not be out of place in any park or urban area. The innovations were obviously inspired by the specialized requirements of the SR 520 Evergreen Point Floating Bridge, but the result is a lightweight and economical structure that would apply to any viaduct situation allowing modest spans and modest vertical clearances, especially where accelerated construction is a goal.

Its economy is based on a repeating precast concrete module that combines the longitudinal spanning element, the transversely spanning element, the deck, and the transverse column brace, all in one precast concrete piece. This module can be manufactured off site and quickly erected. This contrasts with the usual precast concrete bridge where only the longitudinal spanning element (I-girder, bulb tee, and others) is manufactured and the transverse spanning element/column brace (pier cap) and the deck are cast in place in separate, time-consuming field operations.

This manufactured module also supplies the aesthetic benefits. First of all, over most of its width it is thinner than the typical girder/deck combination. This allows more clearance and light below, a lower overall structure, or some combination of the two. The deepening of the transverse ribs at the longitudinal beams creates an element of visual interest and demonstrates the flow of forces in the structure. The elimination of a visible pier cap/column brace eliminates the transverse visual element that restricts longitudinal views underneath a typical viaduct and makes the space below seem much more constricted than it need be. Finally, and perhaps most importantly, the ribs themselves create a pattern on the "ceiling" of the space underneath the viaduct that recalls the coffered ceilings of traditional monumental buildings. One can imagine lighting elements along the longitudinal beams washing the underside of the deck between the ribs. Rather than being feared as an ominous source of bats and pigeon droppings, as it is in so many urban viaducts, the ceiling would be welcomed as the source of light for the whole area under the bridge.

The space under viaducts has often been considered "left-over" space. In recent years, with the growing public interest in urban living and making cities more livable, there has been new interest in taking advantage of the space under viaducts, and not just for organized parking. Parks and playgrounds and farmers' markets are all uses that are now occurring under viaducts. It is time to consider what contributions the structure itself can make to the attractiveness of those spaces.