



1983 – Linn Cove Viaduct

Description

Meta Fields

Other Related Url 0 Other Related Link : <http://www.fhwa.dot.gov/bridge/prefab/videos.cfm>

Abc Construction Equipment : High-capacity crane(s)

Miscellaneous Prefabricated : PT ducts/bonded

Prefabricated Bridge Elements : Precast segmental beam elements; Precast column(s)

Project Delivery : Design-Bid-Build

Decision Making Tools : FHWA Process

Longitude : -81.8125305

Latitude : 36.094944

Nbi # : 5140-182P

State Id # : 0000005140182P

Construction Equipment : Other ABC Method

Total Bridge Length Ft : 1243

Max Span Length Ft : 180

Beam Material : Concrete

Spans : > Three-span

Location : Rural

Owner : National Park Service

State : NC

Year Abc Built : 1983

Foundations & Walls : Micropiles

Other Related Url : 1

Contract Plans : 1

Funding Source : Federal Only

Costs : The low bid was \$7.9 million.

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Construction Method : To avoid placement of heavy equipment in a sensitive environment, the bridge was built in one direction from the south abutment to the north almost entirely from the top down. The only exceptions to the top down method were construction of the initial span on falsework and construction of a temporary timber bridge that enabled the micropile foundation drilling machine to prepare several of the foundation sites ahead of the superstructure erection. The construction

proceeded in cantilever directly from one pier to the next. Each span was cantilevered half-way, and then supported by a mast and two stays for each segment. Post-tensioning tendons were threaded through and stressed from the inside of the box. Segments were placed by a movable swivel crane located at the end of the cantilever. Precast was chosen over cast-in-place segments because the region has a reduced construction season. By choosing precast, production of the segments could continue during winter. Additionally, the precast segments were made under plant controlled conditions, leading to high quality concrete.

Replacement Or New Bridge : The bridge has two 17-ft-wide traffic lanes and no shoulders. The cross-section consists of a 9-ft-deep single-cell segmental box with 18-ft-wide bottom flange. The precast post-tensioned segmental columns were based in cast-in-place pile footings founded on micropiles. The cast-in-place abutments were founded on micropiles. The bridge contains 153 superstructure segments, each weighing 50 tons, along with 40 substructure segments weighing up to 45 tons. The road is at an elevation of 4,100 feet and was designed as an S-shape to wind around the scenic mountains.

Traffic Management : Traffic management alternative, if constructed conventionally: not applicable – new alignment

Average Daily Traffic At Time Of Construction : 2000

Dimensions : 1,243-ft-long and 37.5-ft-wide 8-span precast concrete segmental bridge (98.5 ft – 163.0 ft – 4 @ 180 ft – 163 ft – 98.5 ft); curved alignment

Primary Drivers : • minimized environmental impacts – Precasting each segment of the bridge allowed construction workers to assemble the bridge with little impact to the most environmentally sensitive section of Grandfather Mountain. This bridge also proved that a design could be environmentally sensitive in addition to being utilitarian and economical. • reduced onsite construction time • improved work-zone safety • improved site constructability • improved material quality and product durability • reduced life-cycle cost

Impact Category : Tier 6 (longer but reduced by months/years)

Mobility Impact Time : ABC: Not applicable; on new alignment

Project Location :

Blue Ridge Parkway, Milepost 304.6, crossing Grandfather Mountain in Avery County