



1983 - Linn Cove Viaduct

Description

Meta Fields

Project Summary : The bridge includes full-width precast segmental beam elements and precast segmental column elements.

Project Location : Blue Ridge Parkway, Milepost 304.6, crossing Grandfather Mountain

Mobility Impact Time :

- ABC: Not applicable; on new alignment

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

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

Average Daily Traffic At Time Of Construction : 2000

Traffic Management : not applicable @ new alignment

Existing Bridge Description : none

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.

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.

Contacts : Owner: Hratch Pakhchanian, P.E. Bridge Engineer, Branch Leader FHWA Eastern Federal Lands Highway Division (EFLHD) Email: hratch.pakhchanian@dot.gov Email: 703-404-6246

Costs : The low bid was \$7.9 million.

Funding Source : Federal Only

Contract Plans : 1

Foundations & Walls : micropile

Year Abc Built : 1983

State : NC

Owner : National Park Service

Location : Rural

Spans : > Three-span

Beam Material : Concrete

Max Span Length Ft : 180

Total Bridge Length Ft : 1243

Construction Equipment : Other ABC Method

State Id # : 0000005140182P

Nbi # : 5140-182P

Latitude : 36.094944

Longitude : -81.812528

Decision Making Tools : FHWA process

Project Delivery : design-bid-build

