

ROUTE 52 BRIDGE VISITOR'S CENTER BRIDGE

The Route 52 Visitor's Center Bridge on Garrets Island had to provide a welcoming look to all stopping by the newly constructed Ocean City's Visitor's Center. This bridge was part of a larger \$400 million project replacing the Route 52 Causeway Bridges and the roadway section between Somers Point and Ocean City, NJ.

SUPERSTRUCTURE DETAILS

This bridge, measuring just under 400 ft (122 m) in length, consisted of four spans. The superstructure was 70 ft (21.3 m) wide with a sidewalk on each side leaving an opening of 50 ft (15.2 m) for vehicular traffic. Considering the minimal depth and solid nature of this structure, post-tensioning (PT) was selected as the main structural support system of the superstructure

DESIGN

With the large overhanging wings, special design methods were used in the transverse analysis. A three-dimensional finite element model using plate elements to account for the plate bending and plane stresses (that is, membrane actions and in-plane actions) was developed.

Earthquakes are no longer just a major consideration in California. This bridge was also subject to an intense seismic evaluation and was classified as essential and classified in Seismic Design Category B. The loads generated in this analysis were used in the connection design at the piers as well as in the design of the substructure and foundation. Seismic restraint blocks with armoring were provided at the end abutments.

POST-TENSIONING OPERATIONS CAN NOW BEGIN

After the superstructure concrete reached strength, the PT supplier began installing, tensioning, and grouting their PT system. Considering the 75-year required design life, a PT system designed for extended service life structures was provided. This system uses corrugated, high-density polypropylene PT duct; permanent fiber-reinforced polymer grout caps with o-rings; and hot-dipped galvanized anchor bodies. After the tendons were tensioned, they were pressure-grouted with a prepackaged, non-shrink PT-specific grout.



Fig. 1—Concrete placement on Route 52 Bridge.

Location: Ocean City, NJ
Submitted by: Dywidag-Systems International USA, Inc.
Owner: New Jersey Department of Transportation
Engineer(s): Janssen & Spaans
Contractor: RT 52 Constructors; A Joint Venture of G.A. & F.C. Wagman, Inc. and R.E. Pierson Construction Co., Inc.
PT Supplier: Dywidag-Systems International USA, Inc.