



ARORA and ASSOCIATES, P.C.
Consulting Engineers

Project Data

Owner:

New Jersey

Department of

Transportation

Designer:

ARORA and

ASSOCIATES, P.C.

(as subconsultant)

Construction Cost:

\$90 million

Completion Date:

2004

Arora's curved girder design and innovative lighting complemented the characteristics of this unique site.

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ROUTE 18 EXTENSION (SECTION 2A) PROJECT



Multi-use Path No. 1 over River Road Bridge

The Route 18 Extension (Section 2A) project is located in the Township of Piscataway, Middlesex County, New Jersey. The overall project involved construction of a four lane, 2.7 kilometer (1.7 mile) limited access roadway from the John A. Lynch Sr. Memorial Bridge south of River Road, along Metlars Lane (CR 609) and connecting to existing Hoes Lane (Route 18 Extension, Section 3A); construction of three major grade separated interchanges at River Road, Campus Road, and Metlars Lane/Davidson Road/Avenue E; construction of new roadways and widening of existing roadways within the Rutgers University campus; and construction of a multi-use pathway network. The project improved the Route 18 corridor, eliminated the existing two lane "bottleneck" along Metlars Lane and provided improved access to Interstate 287, Rutgers University and local businesses. Since the project is a gateway to Rutgers University, special attention was paid to context sensitive design issues and architectural treatments. The project also included an archaeological investigation of the historic Raritan Landing site, which entailed the largest historical data recovery effort in US history. As part of the Gannett Fleming, Inc. design team, Arora and Associates, P.C. was responsible for: performing the subsurface investigation and making geotechnical foundation recommendations; preparing the highway lighting design; providing structural engineering for the design of a pedestrian bridge, a cast-in-place concrete box culvert, five precast concrete arch-type culverts, a retaining wall and eleven sign structures.

The pedestrian bridge carries a new multi-use path over wetlands in the 100-year flood plain of the Raritan River and a widened section of River Road. The bridge provides a connection between the Rutgers University campuses situated in New Brunswick and Piscataway. The seven span, Grade 50, plate girder bridge is 211 meters long with four span and three span continuous superstructure units. The three span unit utilizes curved girders. The bridge is designed to carry pedestrian, bicycle and maintenance vehicle traffic. The superstructure is 5.4 M wide with 1.4 M architectural parapets and 1.9 M chain link fences mounted on each fascia. The bridge is supported on architecturally treated hammerhead piers and abutments on spread footings.

Five new precast arch-type culverts, which carry Ramp B, Ramp G, Ramp H, Multi-use Path No. 1, Connector Road, Campus Road and Bevier Road over Metlars Brook and its tributaries, were constructed. The culverts utilized precast headwalls and proprietary MSE walls for wing walls. In accordance with the environmental permits, the streambeds were left undisturbed. Arora also replaced an existing box culvert which carries River Road over Metlars Brook in conjunction with the five stage widening of River Road.

The design of the highway lighting had to take into account the historical and archeological significance of the project area and meet the architectural requirements of Rutgers University. To accomplish this, Arora worked with Rutgers University and the NJDOT Bureau of L&UD to select appropriate lighting fixtures. The lighting design provided for complete, continuous lighting along Route 18, the three grade separated interchanges and the multi-use pathways and roadways within the Rutgers campus. Pole top mounted mongoose fixtures, as manufactured by Holophane, were proposed along Route 18 and the interchanges. Spectra series luminaires, as manufactured by Architectural Area Lighting, mounted on top of aluminum poles along with banner brackets were used to illuminate the roads and multi-use pathways within the Rutgers campus.

In addition, Arora provided post design services consisting of: attending field meetings, providing temporary lighting and VMS design solutions, reviewing shop drawings and catalog cuts and responding to RFIs during the construction phase of the project.



Spectra series luminaires on the Rutgers Campus

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