

Featured Lighting

One of the most distinctive features of the existing bridge is that the roadway lighting fixtures are built into the bridge railing, making the view of the bridge at night unique. The bridge is formally named the Dorland J. Henderson Memorial Bridge, after the NJDOT engineer who designed the in-rail lighting system more than 50 years ago. As a tribute to Henderson's contribution to the original design, NJDOT has replicated the railing lighting in the new bridge by attaching linear lighting to the outside of the south parapet of the new bridge and the north parapet of the existing bridge; this lighting is strictly aesthetic.



permits prohibited in-water work from January 1 to June 30 each year, with the caveat that work occurring inside a steel cofferdam would not be considered in-water work. Once the steel cofferdams were installed for the piers, work could proceed unrestricted on the pier foundations.

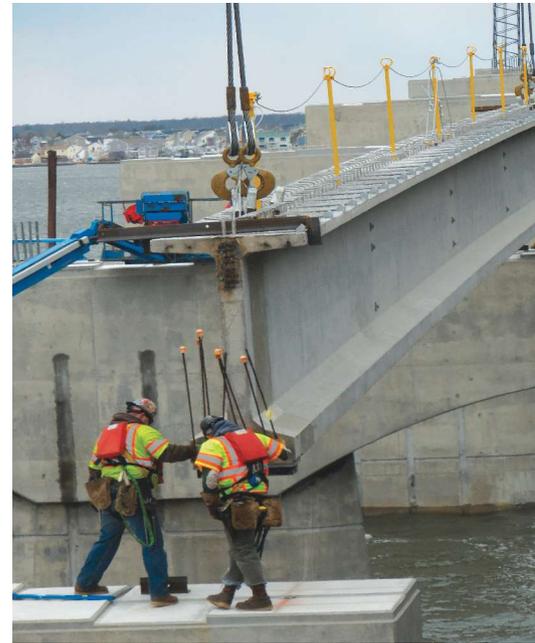
Construction for this project began in May 2013, and the new bridge over the Intracoastal Waterway opened to traffic on April 22, 2016.

Close coordination between the design team, owner, and precast concrete industry ensured that the bridge details were resilient, efficient, and economical. This partnership with the precast concrete industry facilitated the successful construction of the project, which was completed with minimal

modifications proposed by the fabricator, and maintained the desired schedule for opening the bridge to traffic. 

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One of the 79-in.-deep prestressed concrete beams being erected. Strands extend out of the beam end and are incorporated into the cast-in-place concrete diaphragm for continuity at the pier.



AESTHETICS COMMENTARY

by Frederick Gottemoeller

Since it was built more than 50 years ago, the Dorland J. Henderson Memorial Bridge has been a distinctive bridge, recognized in architectural circles as well as among engineers. It has been noted for its graceful, tapered piers as well as its innovative "string of pearls" lighting. The New Jersey Department of Transportation (NJDOT) is justifiably proud of it. The agency's decision to keep it and build a new similar bridge parallel to it is thus a double win. The original bridge is both preserved and amplified.

The aesthetic value of these bridges begins with their tapered piers. It is amazing how much the basic decision to batter the piers in both directions can improve the appear-

ance of a structure. The reason traces back to people's intuitive impressions of vertical structures. A structure that is wider at the bottom than at the top looks (and is) more stable, and thus seems more satisfying. Nature provides a model: tree trunks are always thicker near their bases than at their tops. (The appearance of retaining walls can be improved the same way, and for the same reason, by simply battering their faces.) A taper can get out of hand if the structure is very tall, but that can be avoided by decreasing the degree of taper. Nature again offers a model: the degree of taper of a redwood trunk is much less than on a live oak, but they are both attractive trees. The piers borrow another feature from nature:

the hammerheads join the pier shafts by means of a curve. Tree branches similarly curve as they join their trunks. It is nature's way of minimizing the higher stresses of a re-entrant corner, a problem engineers also must resolve. The team's development of a precast concrete construction option proves that these features can be applied even with precasting, though the contractor chose not to employ that technique.

Finally, NJDOT's decision to reinstate the string of pearls lighting using modern LED technology must be very heartening to the long-time residents of this recreational area. People come to Long Beach Island to relax and enjoy the attractive natural environment. When we insert something into such environments, there is a heightened responsibility to make sure that the new object adds to, and does not detract from, that environment. The new Manahawkin Bay Bridge meets that standard.