I-895 OVER PATAPSCO RIVER FLATS IN MARYLAND GETS ULTRA-LIGHT BRIDGE DECK

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Panels were put in place to prepare for cast-in-place pour

A partially filled concrete grid bridge deck was selected as a major component of the solution for the lightweight superstructure replacement on I-895 over Patapsco River Flats for the Maryland Transportation Authority (MDTA).

Rummel, Klepper & Kahl LLP (RK&K) of Baltimore secured the design for the superstructure replacement which follows an earlier project performing maintenance and repair to preserve the existing bridge substructure in the environmentally sensitive marshland. Due to the limited load capacity of the substructure and the desire to maintain an HS-20 design live load, RK&K specified a deck weight not to exceed 50 lb per sq ft utilizing 4500 psi, 100 pcf all lightweight concrete while still providing a 2-in. integral concrete overfill.

McLean Contracting Company of Glen Burnie is replacing the superstructure in leap-frog fashion with roughly 177,000 sq ft of galvanized grid deck panels supplied by

BGFMA-certified fabricator L.B. Foster of Pittsburgh. All work is being conducted from the bridge deck. The first stage of bridge work entailed replacement of the northbound spans by diverting traffic to the southbound spans where single-lane bidirectional traffic was maintained. The superstructure is primarily made up of two-span continuous units approximately 110 ft in length separated by a strip seal expansion joint. McLean is capitalizing on the design consistency to replace one unit at a time before advancing to the next unit. Cranes are positioned ahead of construction to remove and install the superstructure while the crew and equipment advance from behind.

As a toll authority, the MDTA is sensitive to the impact of construction projects on their customers. Although accelerated bridge construction (ABC) was not a requirement for this project, grid reinforced concrete decks have long been utilized by toll agencies to accelerate the speed of construction for this reason. McLean project superintendent Jay Musser indicates that there was a small learning curve, but much to his liking, the use of prefabricated grid panels have definitely sped up the cast-in-place concrete installation pace beyond what he could expect from conventional construction.

McLean has finished superstructure replacement of the northbound spans, which now carry the bidirectional traffic while the southbound spans are being replaced. Construction is expected to wrap up in 2019.