Central Artery Interface Project - D019A

GPI

Bridge Design and Drainage/Stormwater Management

Client/Owner: MassHighway
Project Location: Boston, MA

Work on this complex project, winner of the ACEC New England Engineering Excellence Award, involved the design of two temporary loop connections from Route 1 to the existing I-93. The two viaducts have a total length of 4,700 feet and an approximate deck area of 120,000 square feet. The decks are supported by structural steel bents on deep foundations.

For this project, GPI pioneered the use of a precast, precompressed concrete steel composite superstructure (PPCSCS) deck system in the Commonwealth of Massachusetts. This system was utilized to accelerate the construction schedule by simplifying erection and allowing for winter construction. Construction costs were also minimized as the PPCSCS system allows for a reduction in steel section for the superstructure and structural bents over conventional construction methods. The deck units, which are temporary, are designed to allow reuse as needed in the future. Other structural elements on the project included a double-decked three span and single span plate girder crossing over Amtrak/MBTA rail facilities, two panel bridges (a 100' span and a 150' span) over the railroad, and a cast-in-place concrete deck section at the tie-in to the I-93 upper and lower decks. Work also included roadway surface area drainage, utility relocation of existing I-93 and parkland/wetland mitigating measures. In order to expedite construction schedules, GPI prepared advance documents as two separate contracts for the early bid of the structural steel and PPCSCS components, plus the basic bridge construction contract. GPI performed design services for all three construction contracts under an *accelerated six month schedule* from conceptual to final plans. GPI also provided construction support services.