



ARORA and ASSOCIATES, PC
Consulting Engineers

*NJDOT Accelerated
Project Management
Group selected
Arora and
Associates, P.C. to
fast track
replacement of an 82
year old "orphan"
bridge over
AMTRAK's
Northeast Corridor.*

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WHITEHEAD ROAD BRIDGE OVER AMTRAK'S NORTHEAST CORRIDOR



When NJDOT's newly formed Accelerated Project Management Group (APMG) was formed, one of the ninety-five projects selected to "fast track" was the replacement of the Whitehead Road bridge over AMTRAK. Arora and Associates, P.C. was selected to provide complete engineering services including contract plans and specifications with an aggressive delivery schedule closely monitored by the APMG.

Site constraints played an important part during preliminary engineering to determine the most cost effective solution. The 82-year old bridge crosses over AMTRAK's Northeast Corridor which is the heaviest traveled electrified rail corridor in the nation. In addition to working over an active electrified rail line, numerous high value utilities had to be protected or relocated during construction. Along AMTRAK's right of way, AT&T and MCI trunklines were located immediately adjacent to the existing abutment. A new water main needed to be jacked under the railroad tracks. A Conrail freight line had to be relocated.

Dealing with contaminated material was also an issue. An abandoned "recycling facility" had to be avoided and on-site contaminated soil needed to be addressed. A cleanup plan was developed and approved by the New Jersey Department of Environmental Protection and was subsequently modified during construction by the contractor.

The site placed many other constraints on the project solution. Raising the bridge to obtain minimum clearances over the railroad dictated raising the roadway. The proximity of the intersection with East State Street and adjacent buildings further constrained the horizontal and vertical geometry. After studying several alignments, engineers at Arora and Associates, P.C. recommended a 116 meter long, three-span continuous multiple girder bridge as the optimal solution with span lengths of approximately 61 meters, 53 meters and 31 meters. Two multi-column piers with crashwalls and full-height cantilever abutments were located to minimize site impacts.

As a result of the soil program and foundation analysis, Arora's geotechnical engineers specified spread footings reducing project costs and construction time.

Arora and Associates, P.C. delivered all contract deliverables, including final bid documents, permits and utility agreements, on or before the accelerated schedule.

The challenge didn't end there. Bids were received and the construction contract was awarded to the George Harms Construction Company. Coordination of fabrication and working drawing, contamination cleanup plans, demolition procedures, utility relocations and track outages proved just as successful as the design effort. The concept of partnering was embraced by the sponsor, NJDOT, the contractor, George Harms, Arora and Associates, P.C., as well as AMTRAK and the utility companies. Project issues were immediately put on "time is of the essence" basis and negotiated to a fair resolution without the need to resort to formal contract resolution procedures. As a result of these partnering principles established early in the project and the commitment to maintaining open lines of communication, the bridge was opened 10 months ahead of schedule.

This \$18 million construction project was funded by NJDOT through the Orphan Bridge Act and jurisdiction has been transferred to the County of Mercer. The project was nominated for the American Society of Highway Engineers "Project of the Year" award and New Jersey Department of Transportation has submitted the project to the FHWA for an "Excellence in Highway Design" as an outstanding example of an urban highway reconstruction project.



Nighttime erection over the NEC required close coordination and partnering with AMTRAK, the contractor and NJDOT

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