

I-495 HOT LANES

FAIRFAX, VA



DESIGN, BUILD, DONE

Touted by the Virginia Department of Transportation as the biggest enhancement to the Washington, D.C. beltway in more than 30 years, the 14-mile **High Occupancy Toll (HOT)** lanes project will replace more than \$260 million in aging infrastructure, including more than 50 bridges and overpasses from the Springfield Interchange on I-495 to north of the Dulles Toll Road. With a total construction cost in excess of 1 billion dollars, this project will create two new lanes in each direction. Cars with fewer than three occupants can pay a toll, which will change according to traffic conditions in order to regulate demand and keep traffic moving. Buses, carpools (HOV-3), motorcycles and emergency vehicles will have free access.

CHALLENGE:

There were multiple challenges on this project which included right of way, existing utilities, and close proximity to existing neighborhoods and businesses. One particular challenge was high ground water and sandy soil conditions for installation of drilled shafts for soundwall construction. These conditions resulted in caving soils which were unanticipated when compared to the project borings. Overhead power lines were also encountered which required an alternate post and panel design since full depth posts and panels could not be installed. These issues had to be resolved quickly in order to keep the project on budget and on schedule.

INNOVATION:

Aggressive localized dewatering was used to lower the water table in areas enough to enable more open holes to be drilled. Also, a unique drill head adaptor facilitated lifting, placing, and driving corrugated metal pipe casings which was used to stabilize the sandy soil conditions which were susceptible to caving.

To address the overhead power line issue, the sound walls were redesigned using a post with a base plate bolted down to a drilled shaft foundation with anchor bolts. This eliminated the need for long posts that could not be placed under the power line. Panel stacks were also shortened to 2' high panels and a spreader beam was used for panel placement to further minimize headroom requirements.



CURRENT HOT LANES SCOPE OF WORK INCLUDES:

- Sound Walls
- MSE Walls
- Post & Panel Walls
- Geopier Foundation Support
- Permanent Tie Back Walls
- Temporary Tie Back Walls

April 2009-2011

Owner: Virginia Department of Transportation, Richmond, VA

General Contractor: Fluor-Lane, LLC, Alexandria, VA


Engineer of Record: HNTB Corporation, Arlington, VA

Geotechnical Engineer: Mactec Engineering & Consulting, Inc., Ashburn, VA

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