

Innovation reigns

New techniques drive success of Woodrow Wilson Bridge

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Precast concrete segmental bridge spans, soil mixing and aggregate pier embankment support, wick drains and permanent tieback walls are all modern construction techniques that have contributed to the award-winning Woodrow Wilson Bridge project in Virginia. Innovations such as these have helped contractors and ultimately the government funders to save time and money in their effort to improve this bottleneck on the I-95 corridor, and they are extending beyond the bridge itself to the roadways leading up to the crossing.

A case in point is the interchange at Telegraph Road, where general contractor CK Constructors is widening the interstate highway. CK Constructors, a joint venture of Corman Construction and Kiewit Corp., chose EarthTec Inc. of Purcellville, Va., to design and supply 29 mechanically stabilized earth (MSE) structures as part of the plan for 11 ramps and bridges, five box-culvert extensions, drainage improvements, retaining walls, noise walls, pedestrian paths, landscaping and environmental mitigation. Now in the final stage of the eight-year, \$2.5 billion bridge replacement, the \$236 million project is supported by the Federal Highway Administration, the Maryland State Highway Administration (SHA) and the Virginia Department of Trans-



portation (VDOT).

CK selected EarthTec primarily on the basis of its ability to respond quickly to difficult scheduling demands, and due to the flexibility of its MSE system, known as EarthTrac HA. Performing in accordance with the project's innovative theme, the EarthTec design incorporates features such as wire-faced MSE pressure-relief walls behind the integral abutment back walls. The pressure-relief walls allow the abutments to accommodate the large thermal movements of integral decks. With the large amount of material needed for this effort, EarthTec's pre-caster, Faddis Concrete, has crews working double shifts on facing-panel production.

VDOT has classified the EarthTrac system in Category A, thus pre-approving its use in all typical bridge abutment and retaining wall applications. Simi-

larly, SHA has approved EarthTrac for MSE walls up to 50 ft in height. EarthTrac incorporates galvanized, ribbed-steel strip soil reinforcements that can be skewed around bridge support piles and deflected around other obstructions in the reinforced soil zone. EarthTrac's strips are wider than others in the industry and maximize strip capacity by minimizing the percentage reduction in tensile capacity lost for the bolt hole.

In addition to constructing the 130,000 sq ft of MSE abutments and walls, CK Constructors also will excavate 390,000 cu yd of dirt and 82,000 cu yd of embankment and lay 750,000 tons of pavement. When it is completed, the interchange, its support system and its parent project, the Wilson Bridge, will alleviate one of the worst areas known for gridlock now and well into the future.