

by Ruth W. Stidger, Editor-in-Chief

Pentagon Bypass Wins Design-Build Award

Security, as well as good design, stand behind this award-winning project.

Virginia's Route 110, owned by PENREN, was too close for security comfort to the Pentagon. The public highway needed to be relocated and additional security features added.



Overview shows why the bypass was needed to provide distance from the Pentagon.

The project design, according to Dewberry, the architect and engineer to the general contractor, involved relocating 3,500 feet of a six-lane highway, three new bridges, several parking lots, retaining walls, utilities, and multiple security and aesthetic enhancements in an elevated security, traffic, and visibility environment.

Facchina Construction, La Plata, Maryland, was the general contractor of the design-build project. Work on the project, which included \$10-million worth of change orders, was finished within the two-year timetable and under budget, as well.

Both Facchina and Dewberry tied



The bridge and pedestrian-access ramps designs complement Pentagon architecture.

their profits to a performance-based award fee contract. According to information from Dewberry, the team received a perfect score on all eight quarterly performance evaluations, securing the maximum possible award fee.

Design details

Dewberry carried out most of the design work from its Fairfax, Virginia headquarters. A key feature was the stormwater management system. Here, Dewberry picked a new propriety bio-retention based system, which at first glance is indistinguishable from normal stormwater collection inlets. The unique system, however, cut

construction time and costs.

Traditionally, on large-site projects, stormwater management ponds or other space-consuming systems are used just because they are familiar.

In this project, space was not available for stormwater management basins. A new system was developed to take their place.

Working with the owner and the design-build contractor, Dewberry chose an in-ground plant and bio-media-based stormwater management system, which uses appropriate, specific plants to absorb unwanted pollutants from stormwater runoff. The system also eliminates unsightly stormwater management ponds.

The company completed both architectural and engineering design elements for the general contractor, including:

- Architecture.
- Highway engineering.
- Utilities design.
- Surveying.
- Lighting and electrical design.
- Site design.
- Security design.
- Hydraulics design.
- Landscape architecture.
- Traffic engineering.

Dewberry subcontracted several project parts of their contract to local firms:

- So-Deep of Manassas, Virginia;

subsurface utility designations.

- MACTEC of Herndon, Virginia; geotechnical engineering, materials testing, and inspection.

- Air Survey of Dulles, Virginia; aerial mapping.

The schedule

Completing the project on time and under budget showed the Pentagon agency, PENREN, as well as state and local governments and agencies, the effectiveness of design-build delivery, Dewberry says.

Kenneth A. Catlow, P.E., director of PENREN says, "Projects with similar scope that are executed as design-bid-build projects typically require in excess of six years....The greatest benefit of [using] the design-build process on this project

is that the Route 110 Bypass was [identified and construction completed in] a period of just under three years."

Effects on traffic

Virginia Route 110 is a highly visible highway, which cuts through one of the most densely populated areas in Northern

Washington, DC, metropolitan-area residents, federal workers, and tourists use the road.

Many witnessed the construction. The design-build delivery method minimized construction time. Even when directed to complete nearly \$10 million in change orders, the design-build team kept traffic moving and helped the owner maintain

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Virginia. Originally, it ran adjacent to the world's largest office building, the Pentagon.

Hundreds of thousands of

favorable public reactions.

The design-build team maintained existing temporary security checkpoints during construction for

The Award

The National Design-Build Awards Competition just completed its 11th year of competition. To be considered for a design-build award, projects must demonstrate successful application of design-build principles including, but not limited to, interdisciplinary collaboration in the early stages of the project and the acceptance of single-entity risk. The goal of completing projects on-time and on-budget (and with no litigation) is not a criterion for winning an award — it is a minimum standard for all projects submitted. Winning projects are honored for the advanced and innovative application of total integrated project delivery and finding unique solutions for project challenges.

Projects deserving a national award should exemplify the principles of interdisciplinary teamwork, innovation, and problem solving that characterize design-build delivery. These projects frequently break new ground in their approach and accomplishments.

To qualify for nomination:

- Projects must be completed.
- All design-build projects completed within the three years prior to March 31, of the year of the competition, are eligible.
- Projects in the legacy award category, described below, must have been completed at least five years ago.

- Projects may be submitted for the National Design-Build Awards no more than twice.

- Projects must be performed under a single-source contract between the owner/user and the design-builder.

The following are considered eligible design-build entities:

- Design-build firm with at least in-house general construction and A&E.

- Design-build joint venture between at least the general contractor and the A&E.

- An A&E firm which holds at least a direct subcontract with the project's general contractor.

- A general contractor who holds at least a direct subcontract with the project's principal design professional.

- The design-build team must have been at risk for both the project's cost and the project's schedule.

Award categories include:

- Best Project — Transportation over \$50 million.

- Best Project — Transportation under \$50 million.

- Best Project — Under \$5 million.

- Best Project — Design-Build

Rehabilitation/Renovation/Restoration.

- Best Project — Developer/Design-Build.

- Best Project — Legacy.

road manager

On pedestrian ramps, designers used decorative bronze hand railings and striking outdoor architectural lighting.

both through traffic on Route 110 and for those entering the facility.

The design-build team's maintenance of a traffic-phasing plan prevented traffic disruption, while maintaining required security.

The team discussed traffic impacts with the owner and with the Virginia Department of Transportation before finalizing traffic plans.

Results

The relocation of Route 110 enhances the physical security of the Pentagon and provides an appealing roadway for Pentagon employees and visitors.

The bridge and pedestrian-access ramps designs complement

Pentagon architecture. These featured cast-in-place and precast concrete elements with striking reveals.

Ornamental fencing was installed throughout the project.

Security gates include decorative features, and pedestrian plazas were designed and built with colored concrete and decorative patterns.

On pedestrian ramps, designers used decorative bronze hand railings and striking outdoor architectural lighting. Dewberry incorporated specialized landscaping; existing plantings were noted, and complementing species, both ground cover and trees, were part of the project. Unique existing



Security gates include decorative features

plantings were salvaged for re-use within the project.

With all of these elements in place, the bypass provides a much-needed facelift to this portion of Route 110. **BR**