

## NATIONAL WINNER

LESS THAN \$10M



## Mon-Fayette Toll Plaza and Pedestrian Bridge ALLEGHENY COUNTY, PA



**T**he Pennsylvania Turnpike Commission (PTC) retained Wilbur Smith Associates to provide a mainline toll plaza facility to service the Mon-Fayette Expressway. The new mainline toll plaza was designed to be physically pleasing, customer friendly, safe for employees, cost effective, and different from any of the PTC's existing facilities. The PTC requested that the facility should present itself as "The Gateway into Pittsburgh," because of its proposed location on an expressway entering the greater Pittsburgh metropolitan area. Alternates studied included variations of tunnels and pedestrian bridges. Based on total cost and past maintenance problems with tunnels, the PTC decided to develop the pedestrian bridge as the preferred alternate.

WSA advanced the conceptual design with several enhancements. These included modifying the center pier de-

sign, the addition of fully functional, stainless-steel tie members, the selection of HSS members, and protecting the steel with a fire-retardant paint system. The final design executed by WSA provided a facility that is fully integrated with the highway system through many unique features.

A lively and innovative design utilizes a curved stainless steel roof and integral canopy; fully functional diagonal tie rods; and a centrally located V-shaped pier supporting the "lookout" from which the plaza is operated. The stairwells are glass enclosed for safety and aesthetic purposes.

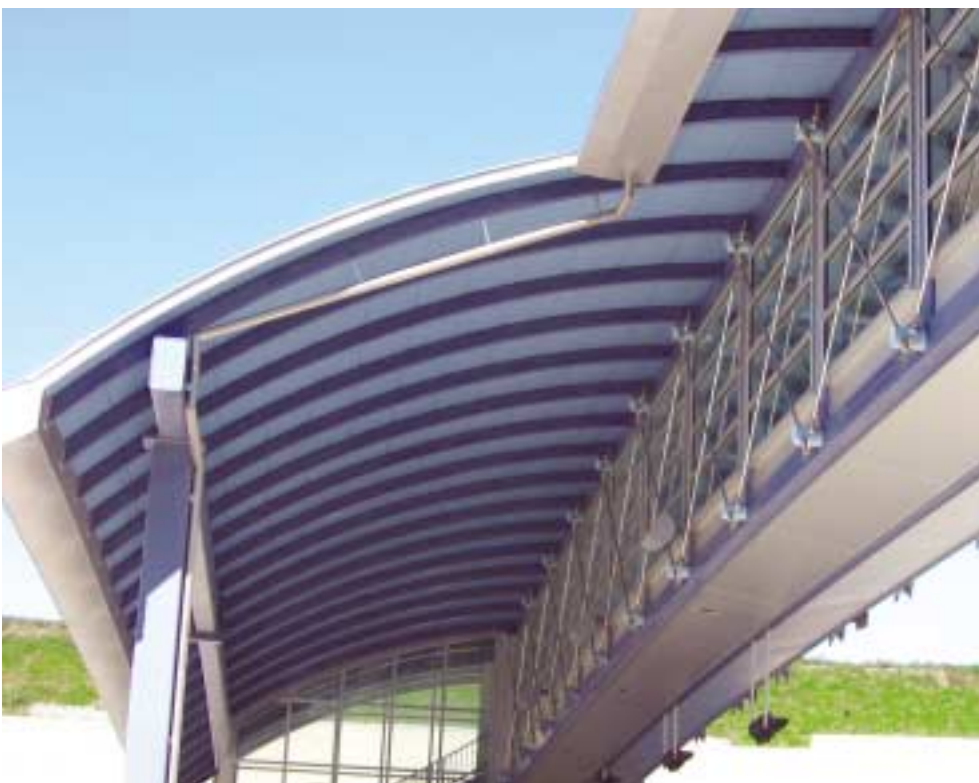
Some exciting architectural features include visual security techniques, gull-winged canopies curved in two directions, an arched truss, and a stainless steel roof selected for aesthetics and long-term maintenance.

Above the bridge pier is the main operation center for the plaza. Its location allows operations personnel full



**JUROR COMMENTS:**

*The use of the pre-tensioned rods for bracing is a simple elegant application of post-tensioning creating a light and airy bridge. The attention to detail produced simple and elegant connections.*



**OWNER**

Pennsylvania Turnpike Commission,  
Harrisburg, PA

**STRUCTURAL ENGINEER**

Wilbur Smith Associates,  
Pittsburgh

**ARCHITECT**

Celli, Flynn and Brennan, Inc.,  
Pittsburgh

**GENERAL CONTRACTOR**

A&L Inc., Belle Vernon, PA

**ENGINEERING SOFTWARE**

STAAD





views of the expressway and the individual toll lanes. It also permits full operation of the facility from the center of the bridge.

The plaza can accommodate both electronic and coin toll collection. The plaza has been designed to adapt to the state-of-the-art Electronic Tolls and Traffic Management (ETTM) System which will be mounted to the bridge so expressway customers can bypass toll collection machines and pay tolls while maintaining a high rate of speed through the facility. The overhead bridge allows safe passage (lane crossing) of PTC employees.

The use of pre-tensioned stainless steel rods as the truss tension and compression diagonals provided light,

non-intrusive views as well as a decorative focal point for travelers viewing the structure. Pre-tensioning allowed the use of the rods, and avoided larger-size members that would have been required based on slenderness ratios. The rod connections to the truss were performed utilizing steel pipe extended through the main truss tube members, and the rods were then bolted to the pipe. The use of pipes at the truss joints reflected the pin-type connections of traditional roadway trusses, while providing an architectural enhancement. ★

