

East End Crossing

By Marcus H. von der Hofen

The East End Crossing project, currently under construction by WVB East End Partners, will connect the east end of Louisville, KY, near Prospect, KY, to southern Indiana, near Utica, IN. The Kentucky approach to the new

bridge will extend I-265 (the Gene Snyder Freeway, also known as KY 841) from its current termination at U.S. 42 to the bridge, adding a new four-lane (two northbound, two southbound), 1.4 mile section. The Indiana approach will also

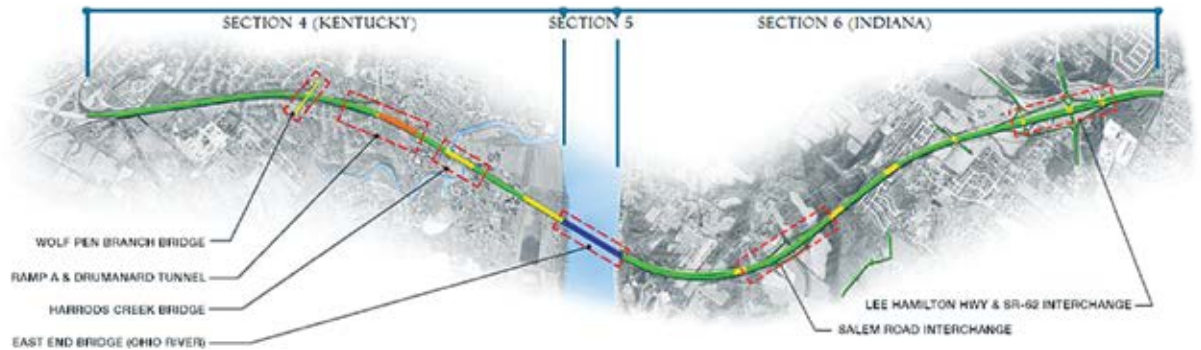


Fig. 1: Overview of project



Fig. 2: Satellite image showing proposed tunnel under Drumanard Estate



Fig. 3: Close-up satellite image of Gene Snyder Freeway entrance to the Kentucky Tunnel



Fig. 4: Gene Snyder Freeway entrance construction site



Fig. 5: 196,000 yd³ (150,000 m³) of rock and dirt excavated for the tunnel



Fig. 6: Construction access from the north portal also needed to be created



Fig. 7: Ventilation tubes exiting the south portal during construction

be a four-lane section, and will extend SR 265 (the Lee Hamilton Highway) 4 miles (6.4 km) from its current termination at SR 62 to the bridge.

On July 26, 2002, the two governors of Kentucky and Indiana announced that the East End Bridge would be constructed, along with a new I-65 downtown span and a reconstructed Kennedy Interchange, where three interstates connect. The cost of the three projects will total approximately \$2.5 billion and will be the largest transportation project ever constructed between the two states. Construction began in 2014, with the entire project being completed by 2024.

One of the challenges was dealing with a particular property of historic value—the Drumanard Estate—that was in the direct path of the project. The answer: two 1940 ft (591 m) tunnels under an undeveloped part of the estate for the bridge approach. These tunnels will be the second longest in Kentucky and the longest that will allow hazardous materials.

The Drumanard Estate and the decision to tunnel under it is not without controversy and with proponents and detractors. In fact, this is a long-standing issue that has blocked Louisville’s East End Interstate bridge for 50 years.

So, what makes the Drumanard Estate so historic? The Olmsted Brothers, world-renowned landscape architects behind New York’s Central Park and many parks in Louisville, designed the layout of the grounds, gardens, landscaping, and plantings per the request of the original owner, William Strater.

Strater purchased the property around the turn of the twentieth century. Tragically, Strater drowned in Harrods Creek before he could reap the fruits of his landscaping dream. It wasn’t until 1929 that Strater’s wife brought her deceased husband’s dream to reality and had the estate built for her son, Edward Strater, complete with the Olmsted’s plans.

The 47 acre property stretches from Wolf Pen Branch Road all the way down to Harrods Creek.



Fig. 8: Formwork for tunnel entrance

Most of the original plantings around the mansion have been taken out to prevent standing water from eroding the foundation. But inside the home, a full transformation is underway to restore and upgrade the palatial estate as required to hold the preservation easement. It will also keep a historic part of the Country Estates of River Road intact.

The tunnel was excavated using drill and blast methods. Alternative methods, including roadheaders or impact hammers coupled with line drilling of the profile, would also be considered, subject to approval by the engineer. These measures were augmented with shotcrete and invert concrete protection where the tunnel encountered poorer rock mass conditions. Portions of the entrance of the tunnel also received shotcrete and anchor solutions.

WVB East End Partners, for the most part, used robotic equipment to place wet-mix shotcrete to stabilize loose rock during the initial support. As with many of these projects, as different conditions are encountered, combinations of the various



Fig. 9: Southbound view of tunnel after initial robotic placement of shotcrete for support



Fig. 10: Smoothed finish after hand nozzling



Fig. 11: Steel beam and lagging support in conjunction with lower shotcrete support



Fig. 12: Northbound view of the entire tunnel as seen from the south portal

solutions were employed. One of the issues was smoothing various areas of the extensive tunnel for waterproofing. This was accomplished by hand nozzling the shotcrete in lieu of the robotic unit, as it provided better control of the surface.

The purpose of the Louisville-Southern Indiana Ohio River Bridges Project is to increase cross-river mobility by improving safety, alleviating traffic congestion, and connecting highways. The project will stimulate the economy of the entire Louisville-Southern Indiana region. According to the Federal Highway Administration's Record of Decision, to meet these needs, two crossings are necessary—one in the downtown area and one 8 miles upstream in the metro area's growing East End.

The East End Crossing will provide several very specific benefits to the Louisville and Southern Indiana area, including convenient access for area residents commuting between eastern Jefferson County and southern Indiana. And for travelers passing through the Louisville

area from the north or south, the East End Crossing is an alternate (and very accessible) route that bypasses the urban traffic of downtown Louisville. The project also keeps the Drumanard Estate intact and preserves a major piece of history for the region.



Marcus H. von der Hofen, Vice President of Coastal Gunitex Construction, has nearly two decades of experience in the shotcrete industry as both a Project and Area Manager. He is an active member of American Concrete Institute (ACI)

Committees 506, Shotcreting, and C660, Shotcrete Nozzleman Certification. He is a charter member of ASA, joining in 1998, and currently serves as Past President to the ASA Executive Committee.