## ARCHITECTURE | NEW CONSTRUCTION CATEGORY WINNER LAS OLAS CORRIDOR IMPROVEMENTS

Douglas Wood Associates, Inc & COST of Wisconsin, Inc. - Shotcrete Contractor

## LAS OLAS CORRIDOR IMPROVEMENTS -FORT LAUDERDALE, FL

The Las Olas Corridor Improvements pavilion is a new landmark and focal point for a famous, urban beach. The pavilion functions as a location-orientating feature, shade shelter, outdoor performance venue, and passenger drop-off and pick-up point.

The visually striking canopy is supported on two corners of the conventionally constructed flanking buildings and on three large, gracefully flared columns. The pavilion canopy is 24 ft high and has a footprint of 77 ft by 64 ft. The roof, with its wave-like undulations, cantilevers up to 29 feet from the columns. The sumptuously curved, three-dimensional, canopy roof was constructed using the wet-mix shotcrete process and ACI-certified shotcrete nozzlemen. The architect designed the shade canopy with three-dimensional, wave-like curvatures. This was a distinct challenge for both engineering and construction. The structural engineer explored many options to achieve the desired shapes and meet all performance requirements while also meeting the construction cost budget. Of all the concrete, steel and composite options considered in the design process, shotcrete placement was the clear winner to meet all the design, performance, and budgetary criteria.

The final design was a 5 in. concrete shell with 12 in deep, upturned concrete spines or upturned beams at spacings of approximately 6 ft. The bottom surface of the canopy was formed with carved expanded polystyrene, coated to provide a smooth, clean surface to receive the shotcrete. The forms were sculpted by robotic routers, guided by the 3D computer model. The structural engineer used the same computer model to develop the structural design using sophisticated finite-element software. Another factor for the exposed structure right on the beach was designing for high hurricane force winds.

Due to environmental exposure to chloride ions in the pavilion's beachfront location, all reinforcement was galvanized. The low water-cement ratio of the shotcrete helped to reduce concrete shrinkage cracking, thus providing additional resistance to chloride ion intrusion.

Overall, shotcrete's flexibility, reduced formwork and ability to create most any shape with high strength, durable concrete made it a natural choice for the project.





