

Kiener East Parking Garage

St. Louis, Missouri

Owner

InterPark Incorporated

Completion Date

2009

Services

Façade Evaluations
Exterior Recladding Design

Construction Cost

\$3.5 million



Exterior-After photo © MissouriPhotographer (Flickr)



Exterior-Before



Interior-After

Thornton Tomasetti served as the engineer-of-record for the restoration of the 40-year-old Kiener East Garage in St. Louis, Missouri.

Significant deterioration observed within the precast concrete ribbed façade panels, and their exposed steel connections to the parking decks, resulted in the temporary stabilization of the panels using post shores and cable restraints, along with the installation of a temporary sidewalk protective canopy around all four elevations of the garage that occupies a full city block.

Material testing of the precast concrete material indicated that there was no air entrainment within the ribbed areas, which were cracked and spalling at many locations throughout the garage. In addition, the four-inch-thick panels and eight-inch-deep ribs contained surface carbonation up to one and one-eighth of an inch. Compounding the precast concrete material deficiencies was corrosion of the connecting steel angles and anchor bolts, which caused localized cracking and spalling of the panels and lightweight concrete curb system.

After arriving at schematic solutions to either replace or redesign and restore parts of the precast panel façade, it was found that the most cost-effective solution was to remove the panel ribs and install a new anchoring system, together with a new cable and chain link fence barrier system. The new cable and fence system will also provide both vehicular and pedestrian restraint to meet current building codes. Concurrent with the façade renovation, panel concrete restoration will also be performed to restore the lightweight concrete curb system.

Now that the façade restoration is complete, the exterior skin of the building will perform the same as new, with a useful life of more than 40 years.