

30TH ANNUAL

RECONSTRUCTION AWARDS

Fifteen Stellar Projects Forge
A Bold Path for Preservation,
Adaptive Reuse, and Renewal

More than 50 years after Skidmore, Owings & Merrill completed the landmark Manufacturers Hanover Trust at 510 Fifth Avenue in New York, the firm was commissioned to restore the primary elements of the modernist building, including its distinctive luminous ceilings.

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Potter County Courthouse

AMARILLO, TEXAS

Completed in 1932, the Potter County Courthouse is recognized as one of the most significant high-rise Art Deco courthouses in Texas, and among the most prominent in the country. Local architect W.C. Townes, of Townes, Lightfoot and Funk, designed the eight-story structure with a terra cotta façade adorned in decorative figural and botanical bas-relief depicting the region's cultural and natural history.

After more than 80 years of use, the courthouse was long overdue for an interior modernization and exterior restoration. The \$15.5 million effort was undertaken as part of the Texas Historic Courthouse Preservation Program, a state-funded program that covered about one-third of the project's cost. It included a complete façade restoration—including repairing and re-anchoring damaged units and replacing

mortar joints—and an overhaul of the interior spaces to meet current building and accessibility codes and the operational and functional needs of the county's administrative offices and courts.

The original mechanical systems were replaced with a four-pipe scheme utilizing a 200-ton chiller and 250-ton cooling tower. An additional 60-ton, air-cooled chiller was placed on the roof, and 12 air-handling units were located on the various roofs at the fifth, sixth, and eighth floors. The new system, combined with automatic controls and enhanced thermal roof insulation, is expected to reduce energy costs by 20% annually.

The Reconstruction Awards judges hailed the Building Team for its painstaking efforts in preserving the historical elements of the building while modernizing the structure. To accommodate the new mechanical systems and other modern amenities, such as fire/

life safety systems, information technology infrastructure, and high-density shelving units, the team devised several creative structural solutions:

- **Tunnel expansion.** To preserve the courthouse's original, first-floor terrazzo floors, the team utilized the facility's underfloor utility tunnels to run new insulated piping. Deemed inadequate to handle the new systems, the existing tunnels had to be carefully reinforced and expanded. In total, more than 200 feet of concrete- and masonry-lined tunnel was added on to the existing layout, allowing for the terrazzo flooring to remain intact.

- **Clay tile floor removal.** The added weight of the rooftop mechanical units and high-density shelving meant that certain areas of the existing structure on floors two through six would need to be reinforced. However, because the plaster ceiling finish

PROJECT SUMMARY

POTTER COUNTY COURTHOUSE
Amarillo, Texas

Building Team

Submitting firm: JQ (structural engineer)
Owner: Potter County
Architect: ArchiTexas
MEP engineer: Johnson Consulting Engineers
Construction manager: Southwest General Contractors
General contractor: Journeyman Construction

General Information

Size: 62,390 sf
Construction cost: \$15.5 million
Construction time: November 2009 to August 2012
Delivery method: Design-bid-build



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The project restored the building's courtrooms and public corridors to their original, warm terra cotta hues. It also involved repairing the courthouse's terra cotta façade. All mortar joints were repointed and stainless steel helical anchors were installed through the individual terra cotta units at each relief angle to provide secure anchorage to the back-up concrete beam.

was applied directly to the original clay tile and reinforced concrete joist floor system, structural members could not be inserted below the original ceiling level.

The solution involved removing portions of the original clay tile forms to allow the installation of new steel beams constructed from steel T-sections between the existing concrete joists, thereby increasing the floor load capacity. The use of T-sections in lieu of standard wide-flange sections facilitated access for completion of field connections to the existing structure and the placement of non-shrink grout between the top of the steel members and the underside of the original floor slab to provide full load transfer.

• **Use of CFRP strips.** In order to accommodate new stairs, vertical chases, and mechanical infrastructure, numerous openings of various sizes had to be cut into the slab on floors seven and eight. The original floor structure on these levels is eight-inch reinforced concrete slabs spanning the concrete beams.

To maintain the structural integrity and continuity of the floor slabs, strips of laminated, ¼-inch-thick carbon fiber reinforcement polymer (CFRP) were used to redistribute the loads adjacent to and around the openings. Larger openings for the stairs

and chases called for additional reinforcement, and CFRP strips were placed on top or below the slab, corresponding to the tension zone of the slab system.

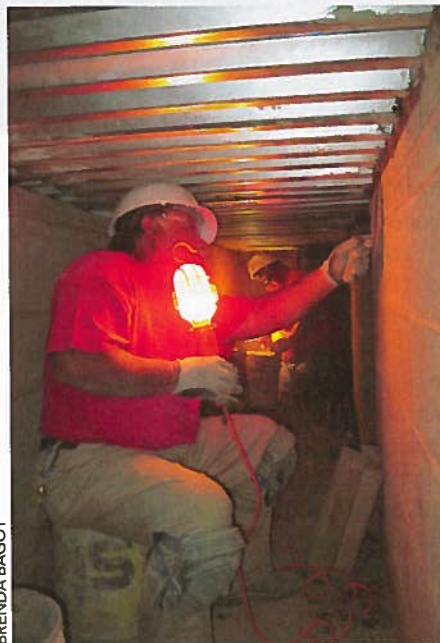
In several locations, strips were placed in both directions around the openings to properly distribute the load.

"We liked how the team carefully preserved the clay-tile floor and the reinforced

concrete slab with the strengthening schemes hidden out of sight," said judge K. Nam Shiu, Senior VP, Director of Restoration Services, Walker Restoration Consultants (www.walkerrestoration.com). "They successfully provided up-to-date floor functionality while keeping the layout and look of the original building."

—David Barista, Editor-in-Chief

The Building Team took careful measures to avoid disturbing the historical elements in the building. This included expanding an existing utility tunnel (left) and applying special structural reinforcement polymer to select concrete frame members (below).



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