

## Multiple Texas county courthouses

look to steel to bring them into the future while preserving their past.

# Holding Court

BY STEPHEN H. LUCY, P.E., AND MARK D. LEMAY, AIA

**IN THE LATE 1800s** and early 1900s, Texas counties waged fierce and significant battles against one another.

The battles did not involve any form of armament and there was no bloodshed. They were for bragging rights as to which county could build the most magnificent courthouse.

Texas, by far, boasts the largest contingent of county courthouses in the U.S.: 254. According to the Texas Historical Commission (THC), 220 of these were constructed prior to 1948 and 80 were placed into service in the 1800s. Today, 136 of them are listed on the National Register of Historic Places.

Early versions constructed in wood rarely stood the test of time. Fires razed many of these structures, and valuable records of county life were forever lost. County officials soon realized that more permanent structures consisting of stone, masonry, concrete and steel were needed to safeguard official county documents.

Unfortunately, even these bastions of county government proved susceptible to devastating fires. On New Year's Day in 1993, fire ravaged the 1890 Hill County Courthouse, collapsing the bell and clock tower and leaving only the charred exterior stone walls. In 1999, a fire damaged the 1891 Tyler County Courthouse in Woodville; that same year, a fire destroyed the 1911 Reagan County Courthouse in Stiles.

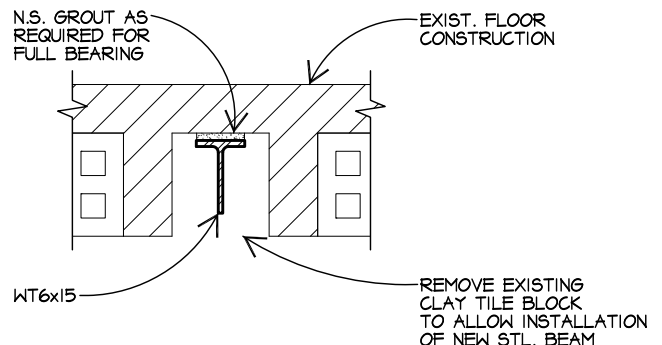
A study conducted by the THC in the late 1990s found that many counties lacked the financial resources to preserve the buildings for future generations, and in 1998 the National Trust for Historic Preservation placed Texas' County Courthouses on its list of "America's 11 Most Endangered Historic Places." Clearly, something had to be done to protect these significant structures.

In 1999, then-Governor George W. Bush and the 76th Texas Legislature formed the Texas Historic Courthouse Preservation Program, and appropriated \$50 million for Round I of the program covering 2000-2001. The purpose of the program is

to "provide matching grants to counties to assist in the design and construction of courthouse restoration projects." The THC reports that, over the first six rounds of the Preservation Grant Program, 138 master plans have been submitted and 126 have been approved, and 81 counties have received financial assistance.

"Texas has the most impressive collection of courthouses of any state in the nation," says Jim Lindberg, who serves as the National Trust's project manager for Texas courthouses. "The impact of the Courthouse Preservation Program to date is truly impressive. But there are at least 70 more courthouses that need assistance, including many in rural areas."

For those counties that have participated in the program, the restoration of the courthouses has been transformational for the communities as well as the structures. Structural engineer JQ has participated in the planning and restoration of 41 of the courthouses and, in each case, structural steel has played a significant role in restoring the historic fabric of the structures and allowing the integration of new building systems in these majestic buildings.





- ▲ Supplemental steel framing at an opening in the existing concrete structure for a new egress stair.
- ▼ WT framing nested within the depth of the existing concrete structure to strengthen the floor for new mechanical equipment.



▼ Completed restoration of the Potter County Courthouse.



Photos this page: JQ

### Potter County Courthouse, Amarillo

Completed in 1932, the fifth courthouse for Potter County was designed by Amarillo architect W.C. Townes of Townes, Lightfoot and Funk. Constructed in the Art Deco style, the exterior of the eight-story structure consists of terra-cotta cladding highlighted by bas-relief ornamentation depicting early settlers, Indians, baying wolves and blooming cacti. The existing structure is a reinforced concrete frame, but structural steel was the best system for the restoration due to speed, cost and ease of erection in the existing spaces.

As with most restoration of historic structures, integration of new systems and current life safety requirements into the building necessitated the creation of multiple openings and strengthening of selected areas on each floor level. Where clearances allowed, the new steel framing was placed below or adjacent to the existing concrete framing and connected to columns to directly transfer the loading. However, given the limited floor-to-floor heights, much of the framing was nested within the depth of the existing concrete framing to allow adequate clearance for ducts and conduit or to allow the replacement of the original plaster ceilings, which were applied directly to the concrete structure.

In areas of concrete joists with clay tile infill, the structure was strengthened by removing the clay tile and installing WT beams between each existing joist rib, providing for retention of all of the existing structure. Using WTs instead of wide-flange sections greatly enhanced construction access and

allowed for the placement of grout above the WT flange to assure full bearing on the new beams and for access for all end connections; 15 tons of new steel was used in all.

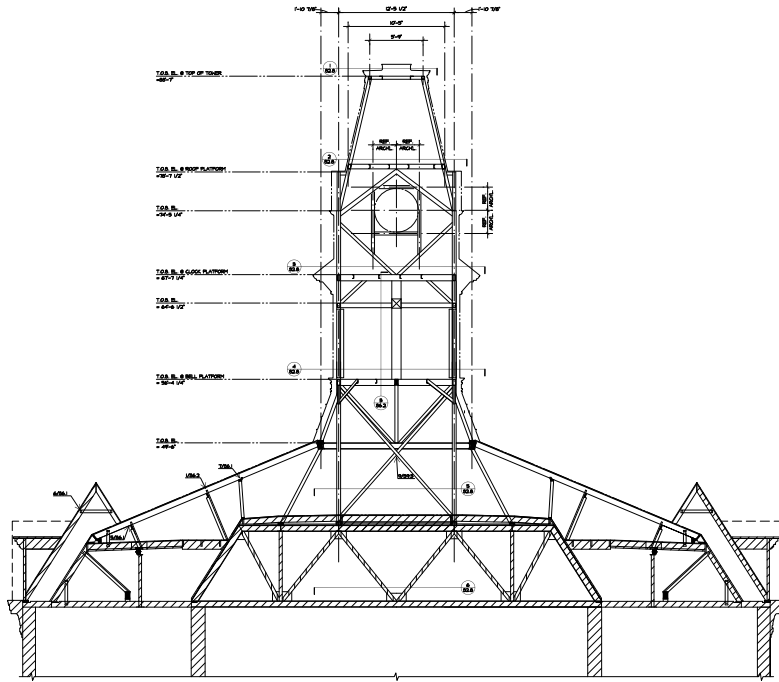
The exterior terra-cotta façade had sustained damage due to prolonged water penetration, freeze-thaw cycles and shortening of the concrete frame, which, because of the absence of adequate relief joints in the veneer, transferred gravity loads to the terra-cotta. Deteriorated steel lintels were replaced and much of the façade was re-supported from the masonry backup walls with steel pins, which allowed for the creation of relief joints at alternating floors.

The courthouse was rededicated in August 2012, marking the end of the \$15.5 million restoration and the relocation of most county government functions back into the historic structure.

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## Newton County Courthouse, Newton

The third courthouse for Newton County was designed by Martin & Moodie in the Second Empire style and completed in 1902. Located deep in the pine forests of east Texas, the structure was constructed primarily with timber framing and locally produced brick. A master plan for the restoration of the three-story courthouse was prepared, but on August 4, 2000, before design of the restoration was completed, the structure was destroyed by fire except for the exterior and portions of the interior brick masonry walls and some floor areas that had been originally framed in steel.

Through emergency intervention funds provided by the National Trust for Historic Preservation, JQ performed an assessment of the remaining structure and prepared construction documents for temporary steel bracing of the remaining walls. The design team working on the restoration prepared Phase 1 construction documents, which consisted of reconstruction of the masonry walls and new roof framing so that the building could be enclosed.

After completion of the Phase 1 work in 2007 (which included 15 tons of structural steel), a new design team was retained to complete the restoration of the courthouse to its original 1902 appearance (this was Phase II, which used 19 tons of new steel). The \$6 million project included reconstruction of all interior floors, the balcony in the two-story courtroom and completion of the roof including the clock tower.

Given the prior history of fires, major framing in the replacement structure was built using structural steel, including reuse of original structural steel framing, which had survived the fire undamaged. Steel framing also minimized the weight of the new structure, which was essential given that the original load-bearing walls and foundations were being reused for the restoration. Structural weights were kept to a minimum since the majority of the erection occurred in an enclosed structure; thus hoisting was limited. In addition, the steel-framed clock tower was erected as one section with all exterior finishes in place.

The building was rededicated in December 2012, with all county functions relocating back into the building.



Photos this page by JQ

- ▲ Reuse of the structural steel floor framing for the Newton County Courthouse.
- ▼ Structural steel framing at the third-floor balcony in the courtroom.



- ▲ The structural steel framing survived a major fire.

### Bosque County Courthouse, Meridian

The 1886 Bosque County Courthouse, designed by Fort Worth architect J.J. Kane in high Victorian Gothic Revival style, is one of the oldest Texas courthouses in continuous use. The structure was built of cast iron and steel framing with concrete fill on arched corrugated metal forms and load-bearing walls composed of native cut and rubble limestone. In 1934, as part of a Work Progress Administration project, the building was significantly altered by the removal of the entire roof structure including the clock tower and construction of a new flat roof.

A recent restoration of the courthouse included reconstruction of the original 1886 roof profile. The new clock tower, which added 50 ft to the structure, and all four corner turrets were built with structural steel framing and sheet metal roofing. Each turret, which measured 20 ft by 20 ft in plan and 14 ft in height, was shipped in one piece and all were erected in one day. The town set up bleachers around the town square, and all schools were dismissed so that the entire community could watch the structural steel erection (58 tons of new steel in all) process and see the courthouse transformed in a matter of hours.

MSC



▲ Completed restoration of the courthouse.



▲ The Bosque County Courthouse, prior to restoration.

▼ Erection of one of the four corner turrets.



Harrison Walker & Harper

### Potter County Courthouse

#### Owner

Potter County, Texas

#### Architect

ArchiTexas, Austin

#### Structural Engineer

JQ, Dallas

#### General Contractor

Journeyman Construction, Inc., Austin

### Newton County Courthouse

#### Owner

Newton County, Texas

#### Architect

Phase I: Wharry Engineering, Garland, Texas

Phase II: Quimby-McCoy Preservation Architecture, Dallas

#### Structural Engineer

Phase I: Wharry Engineering, Garland

Phase II: JQ, Dallas

#### General Contractor

Joe R. Jones Construction, Weatherford, Texas

### Bosque County Courthouse

#### Owner

Bosque County, Texas

#### Architect

ArchiTexas, Dallas

#### Structural Engineer

JQ, Dallas

#### General Contractor

Harrison Walker & Harper, Paris, Texas