Historic Texas Landmark Restored for Adaptive Reuse: Everything Old Is New Again

by Stephen Lucy, Dale Sellers, and Mark LeMay

Fig. 1: Nearly finished façade, northeast corner (photo courtesy of Tracy Allyn Photography)

From a lack of regular maintenance to underground leaks and decades of accumulated pigeon excrement, restoration of the historic Dallas Municipal Building posed a decade-long challenge. Designed in the Beaux-Arts style, the building was completed in 1914 and until 1978 operated as the city's fourth city hall. In 1956, an annex was built to house the Dallas police department and expand the jail. In 1963, the building acquired a somber place in history. After the assassination of President John F. Kennedy, the accused assassin, Lee Harvey Oswald, was questioned, processed and jailed in the Municipal Building and later shot as he was led out of the garage entrance to the annex.

The building continued in full use until 2003 when it was partially abandoned. In 2008, the city of Dallas undertook a three-phased approach to the building's restoration. The first phase, completed in 2010, relocated the remaining functions to the annex and other city-owned buildings. Phase two focused on the Municipal Building's exterior restoration, the most extensive historic restoration project the city had undertaken at the time (Fig. 1).

The phase two design team was asked to assess the condition of the building and develop a budget and plan for restoration. The design team reviewed available historical documents, visually assessed the façade and employed non-destructive and destructive testing methods to further assess deterioration and determine how to best approach the restoration. In 2013, the city undertook the US $16 million, phase two restoration of the exterior façade under a competitive sealed proposal contract which allowed consideration of contractor and subcontractor qualifications along with price.

SITE PROTECTION

Downtown construction sites are inherently challenging but maintaining ADA access and walking routes along the sidewalks around the Municipal Building's busy location proved even more so. Despite numerous barricades and signs, at least half a dozen vehicles drove through the barricades and onto the construction site (Fig. 2). Fortunately, there were no injuries.

SECURING EXISTING ARCHITECTURAL FEATURES

The terra-cotta cornices required thorough investigation, because cracks in the ornamental terra-cotta (Fig. 3), which projected out from the building, created a falling debris hazard. To understand the condition of the framing, the team used a metal scanner to locate anchorage points and opened the top portions of the cornices to investigate the anchorage system. Several anchor elements were rusted completely through (Fig. 4), which posed a danger, so a pinning system was devised for the terra-cotta units. Using long, threaded stainless steel rods, the plan called for holes to be drilled into the terra-cotta and the rods screwed into the background material to secure the terra-cotta. This proved to be an economical, long-term, and permanent re-securement solution for other stone pieces around the building. Access created planning challenges as lifts had to be used instead of scaffolding to determine what materials were needed. Broken sections of the terra-cotta had to be disassembled and removed so the units could be refurbished or measured for fabrication of replacement materials, which took up to eight months. In addition, deterioration of the structural steel associated with the cornices on the outside corners of the building required welding new structural steel members to secure the cornices.

Originally, it appeared that most of the balustrades (Fig. 5) would need to be removed and the corroded steel replaced. However, further investigation revealed the steel deterioration was not as bad as expected and only 10-15 percent required replacement. By reconditioning the steel, reattaching it and eliminating water infiltration, it was possible to reuse the existing steel.

Fig. 2: Despite barricades and signage, a vehicle wrongfully enters the construction site

Stone lintels above window openings were suspended from structural steel members, several of which had deteriorated (Fig. 6). The contractor had to carefully remove the stone lintels, install new steel members, and resuspend the stone.

MODERNIZING THE ROOFING

The building's multi-system roof is comprised of historical copper guttering and copper dormers, a mansard roof made from green clay tile (Fig. 7), and a conventional flat roof that was originally made from coal tar. All roofing materials were completely removed and replaced or restored, concrete and masonry substates were repaired, and structural repairs were made to the mansard area.

CLEANING EXTERIOR FACADE

Cleaning the exterior stone presented a significant challenge. Numerous cleaning samples were performed, but because the building had not been maintained (Fig. 8 and 9), dirt was ingrained in the stone to a point that no cleaning agent sufficed. However, honing the stone could return it to its original luster. While typically frowned upon in


Fig. 3: Cracking in overhead terra-cotta units


Fig. 4: Two original anchor rods in cornice anchorage system completely rusted through


Fig. 5: Cracked baluster


Fig. 6: Corroded steel beam flange and anchor strap slotted into back side of stone lintel

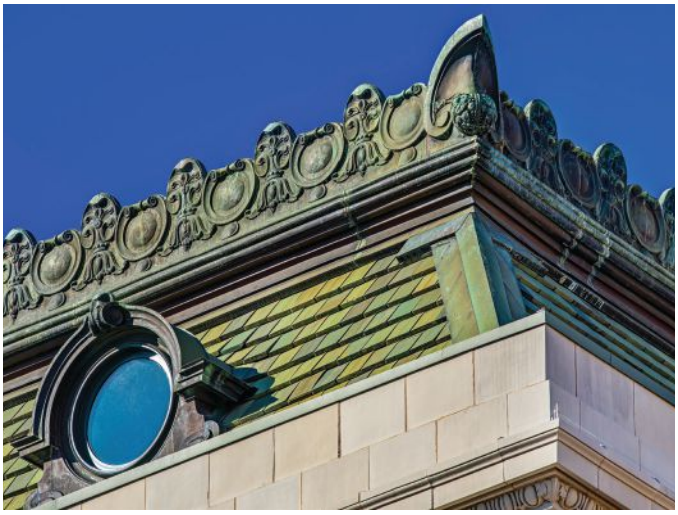

Fig. 7: Restored green clay tile mansard roof (photo courtesy of Tracy Allyn Photography)

Fig. 8: Pre-restoration appearance of the stained building exterior

an historical renovation, the technique was presented to and accepted by the Texas Historical Commission. While unusual, the commission also accepted the project teams' recommendation to replace the windows with custom-made metal-clad, insulated windows that matched the original windows and significantly reduced energy consumption.

Dirt was not the only challenge faced in cleaning the building. Decades of pigeon excrement (Fig. 10) build-up created a biologically hazardous situation that required a crew outfitted in HAZMAT suits and respirators to clean, scrape, vacuum, and wash the building. The hazardous droppings had to be contained, double-bagged, and properly disposed of. To help alleviate future bird issues, bird netting was installed around the capitals where birds tend to nest and several operable windows were installed allowing maintenance crews access to regularly clean the exterior walls and gutters.

ADDRESSING WATER ISSUES

Water seepage in the three below-ground levels had plagued the building for years. The original scope of work anticipated digging 40 ft (12 m) deep trenches around the building to install a new waterproofing system. However, there were numerous underground pipes and large storm mains that would need to be rerouted at a cost of millions of dollars and the shutdown of additional lanes of traffic on three of the busiest streets in Dallas. In the event of heavy rains, disrupting the storm mains would potentially cause all the buildings between the Municipal Building and the Trinity River to flood. Instead, the liability associated with excavating was eliminated by drilling a series of ports from the interior of the building through the exterior walls and injecting a urethane grout to create a curtain wall on the outside. This stopped the water leakage and removed more than 90 percent of the excavation from the scope of work.

The underside of the three open stairways leading to the building were severely deteriorated due to corroded rebar and spalling from water damage. All granite treads were removed down to the basic concrete structure. Deteriorated portions of the concrete were removed to replace or repair the reinforcing steel. The concrete was repaired, waterproofing applied, and the original granite treads reinstalled. In addition, a new ADA-compliant ramp was installed on the west side of the building.

PREPARING FOR ADAPTIVE REUSE

The final aspect of phase two was to clear the interior of all non-historic elements in preparation for the interior restoration. However, funding the interior restoration was another matter. The city wanted the building for adaptive reuse and intended to hand it over to the University of North Texas (UNT) to develop the first public law school in the region. However, the city could not spend money on a building it intended to give away, and UNT could not raise funds through bonds for a building it didn't own. So, in a unique win-win partnership, the city sold the interior of the building to UNT for US $1 but retained ownership of the building envelope it had just restored. UNT completed the interior renovation and opened its law school in 2019, becoming a valuable tenant in the city's efforts to redevelop a portion of downtown.

The new law school would naturally contain a law library, designated to be housed in a specific area of the building that was originally designed for office space. The project team determined the change in use increased the life safety risk according to current building code. This required additional testing to document existing conditions and determine the necessary structural modifications. Using steel beams and carbon fiber, the area within the existing structural envelope was modified and strengthened to accommodate the additional weight of the library. To ensure the city and UNT had detailed documentation and

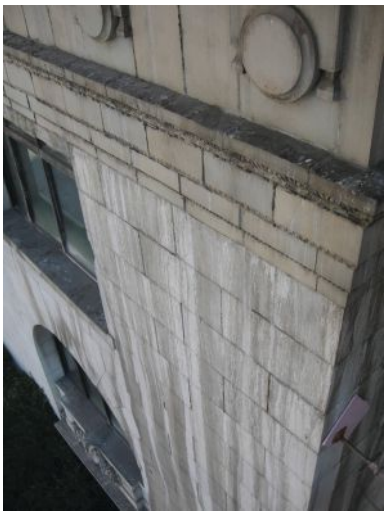

Fig. 9: Extensive staining on exterior stone prior to cleaning

Fig. 10: Pigeon excrement on balustrade

renderings for any future renovations or repairs, state-of-the-art LiDAR technology was used to scan the building.

SUMMARY

Over more than a decade, Dallas and its design and construction team partners painstakingly completed a complete renovation and repurposing of the Dallas Municipal Building, a historic structure located in downtown Dallas, Texas. Each phase was completed on time and within budget, which required intense levels of collaboration among the City and the design and construction teams. The end result maintains the building's historical integrity while adapting it for modern use.

Dallas Municipal Building: Historic Texas Landmark Restored for Adaptive Reuse
Dallas, TX

OWNER
City of Dallas
Dallas, TX

ENGINEER
JQ Engineering
Dallas, TX

GENERAL CONTRACTOR
Phoenix 1 Restoration and Construction, Ltd.
Farmers Branch, TX

REPAIR SUBCONTRACTORS
Dee Brown Masonry
Richardson, TX

Mid-Continental Restoration
Fort Worth, TX

Texas Roof Management
Richardson, TX

Eubank Roofing
Fort Worth, TX

BADCO
Liberty, TX

Stephen H. Lucy, PE, is the CEO for JQ Engineering where he primarily consults on historic preservation and restoration projects. Over nearly three decades, Steve has built a significant portfolio of structural projects with varying project delivery methods, guiding clients through all stages of a project, from inception to completion. Steve currently serves on the advisory councils for Texas A&M University's College of Engineering and the Department of Architectural Engineering and is a distinguished graduate of A&M's Zachry Department of Civil and Environmental Engineering. Steve is an honorary member of the Texas Society of Architects and the Dallas Chapter of the American Institute of Architects.

Dale Sellers is President and CEO of Phoenix 1 Restoration and Construction, Ltd. Dale plans and directs all aspects of the company's operations. As an engineering and architectural cost and construction consultant, Dale used his extensive mechanical engineering, roofing, waterproofing, and historical restoration experience to provide vital input to the project team's efforts. The Municipal Building project was especially interesting to Dale, because he led the pro bono restoration of the JFK Memorial in downtown Dallas 20 years ago and was subsequently hired to renovate the famous Dealey Plaza where President Kennedy was shot. Dale holds engineering and business degrees from prominent universities and brings 40 years of on-the-job experience.

Mark LeMay, AIA, leads JQ Engineering's Facilities Performance Group in evaluating existing structures and developing cost-effective strategies for repair and/or restoration. With more than 40 years in the industry, his expertise includes structural concrete repairs, diagnosing moisture-related problems, and restoration of historic buildings. Mark is a member of the national, state, and local chapters of the American Institute of Architects and an affiliate member of the Structural Engineers Association of Texas. He is current president of the International Concrete Repair Institute (ICRI) and past president of the ICRI North Texas Chapter. Mark holds a BA in Architecture from the University of Notre Dame.