INNOVATIVE ADAPTATION OF EXISTING BUILDINGS

BY MARK LEMAY

Back in the 1950s and 1960s, "urban renewal" seemed to be the buzzwords of the times and older buildings were being torn down and replaced with new structures because they were viewed as eyesores. Preserving or reusing older buildings was not common and there was a throwaway mentality that newer was better.

Adaptive reuse encompasses the process of reusing an existing building or site for a purpose other than for which it was originally built or designed. Rehabilitating or reusing an existing structure can have these environmental benefits:

- Reduction in urban sprawl;
- Assistance with land conservation;
- Reduction in environmental impact of the building process;
- Reclamation of "brownfields"; and
- Reduction in urban blight of vacant, unmaintained, or damaged sites or buildings.

For the past 25 years, members of the International Concrete Repair Institute (ICRI) have provided building owners and managers with valuable guidance on repairing or upgrading the structural framework of their buildings for continued or new uses. Significant cost- and resource-saving alternatives to the teardown and throwaway practices of the past can be realized as repair methods and technologies have been developed and continue to be refined.

Fast forward to 2013, and the design community in the United States is finally coming to the realization that the earth's resources are not inexhaustible. The sustainability movement started in the early 1990s has taken hold and been embraced by the design and construction industries and "conservation" and "efficiency" are now the new buzzwords. New means of identifying and implementing practical and measurable green building design, construction, operations, and maintenance solutions can be found in the Leadership in Energy and Environmental Design (LEED) rating system established in 2000 by the United States Green Building Council (USGBC).

The potential viability for reuse that exists with older buildings can be found in successful developments such as Ghirardelli Square in San Francisco, CA, or Quincy Marketplace in Boston, MA. Now more than ever, building owners and developers are keenly aware of the potential benefits from the rehabilitation and reuse of existing structures. Many unused or underused buildings need only the right set of circumstances to once again become useful components of the built environment.

While many of these structures may not be eligible for historic designation, they may contribute to the historic fabric of an area or neighborhood. The lack of a historic designation should not preclude these structures from being repaired or upgraded to put them back into service. A slowing of the exodus to the suburbs is now coupled with a backward migration to the central core of cities. This shift is fostering a new and invigorating need for housing, entertainment, retail, and service facilities in downtown areas that is increasingly being met by reusing existing structures.

KEY FACTORS

The factors that make (or break) an adaptive reuse project center around the "who, what, when, where, and how" aspects of the project. Each of these factors plays a key role in the viability and ultimate success of a project.

WHO: Rarely will an adaptive reuse project be successful without a passionate, driven, dedicated individual or group that is committed to the goal of reusing an existing structure. A fervent **desire** on the part of the individual or group serves as the fuel that powers the project forward.

WHAT: The person or group en**vision**ing the project must determine what would be an appropriate use for the existing building. Weight should be given to the possible aesthetic appeal to potential patrons that can be found in older structures.

WHEN: The old saying "**timing** is everything" holds quite true for adaptive reuse projects. Favorable economic conditions, the availability of a particular building at a certain location, or the need to relocate or expand a business to provide products or services in another area could be important factors in the decision-making process.

WHERE: The location of an **existing building** must be considered. The building should be in a desirable location that would make the project physically and economically feasible.

HOW: How the project will be designed, constructed, and paid for depends largely on the **knowledge and experience** of the project team. Owners, developers, designers, contractors, financial consultants, and bankers are some of the key participants who will determine how the project will move forward.

CASE STUDIES

MCKINNEY PERFORMING ARTS CENTER

The Collin County Courthouse is located in McKinney, TX, which is approximately 30 miles (48 km) north of Dallas. The building was completed in 1876; then, in 1927, the building was remodeled extensively and a basement and a third-floor level were added. The exterior appearance was changed from a French Second Empire style clad in stone to a more restrained, brick-clad neoclassical style and the interior wood construction was replaced with concrete and steel. The historic building was eventually vacated and given to the city of McKinney in 1979 after explosive growth forced the county to move to a larger facility.

The building was adapted for use as a performing arts center following an extensive programming effort that included several community forums and planning sessions. Working with the Texas Historical Commission, the city agreed to restore the exterior of the building to the 1927 configuration. In addition, the second-floor two-story courtroom was refurbished, including the judge's platform, bench, and backdrop.

A unique, removable, 40 ft (12 m) wide x 16 ft (5 m) deep aluminum-framed stage platform was designed to fit over the judge's platform and bench to use the courtroom space for performances. The total seating capacity was increased to 427 by restoring the courtroom's three-sided suspended balcony. New suspended lighting was added by reinforcing existing steel roof trusses spanning over the courtroom with supplemental steel members. In addition, the basement level was converted into meeting and gallery space for the local Historical Society by creating large openings framed with steel through load-bearing masonry walls.

WHITE ROCK LAKE FILTER BUILDING AND BASIN REHAB AND REUSE

Constructed on an inner city lake in 1921, the White Rock Lake Filter Building and dual sedimentation basins served the growing city of Dallas until 1964. The White Rock Boathouse, Inc., a nonprofit organization promoting youth and community rowing activities, was formed. They were in need of storage facilities for their boats and equipment; however, city restrictions would not allow any new construction on the historic lake. In 2004, White

Key factors for reuse projects


Exterior, McKinney Performing Arts Center


Aluminum-framed stage platform designed to fit over restored judge's bench and platform at the McKinney Performing Arts Center


Auditorium/courtroom with restored balcony at the McKinney Performing Arts Center

Rock Boathouse, Inc., entered into an agreement with the city of Dallas to reclaim the abandoned facility. Plans were formulated to convert one of the sedimentation basins into a new boathouse. The filled-in basin was excavated, new utilities were installed, and a new concrete floor slab was placed. On the west wall, overhead doors were installed, and a new free-span metal roof was constructed over the basin. The filled-in second basin was paved and now serves as the parking lot for the renovated facility.

White Rock Lake Filter Building exterior, before reclaimation

Filter Building exterior, after rehabilitation

Boat storage facility for White Rock Boathouse, Inc.

Filter Building interior—a popular venue for weddings

Additionally, the organization agreed to partner with the city in the restoration of the Filter Building to create a venue for public and private gatherings—an amenity lacking at the lake. This required structural rehabilitation of the historic concrete structure, including the below-grade sand filters; full exterior restoration of the masonry façade; and conversion of the storage and equipment areas to a catering kitchen, restrooms, and offices.

SOCO URBAN LOFTS

In the 1920s, downtown Dallas, TX, had become a bustling center of wholesale and merchandising commerce. However, expansive growth of surface rail lines in the south central portion of the central business district resulted in extensive traffic congestion as the movement of cars competed with trains. To help ease some of the logjam, the Gulf, Colorado and Santa Fe Railway Company constructed a series of four warehouses in a north-to-south line running from Commerce Street to Young Street—complete with 750 ft (229 m) of underground rail lines.

Constructed in 1924 to 1925, the Santa Fe Terminal Building No. 1 was the northernmost of the four structures and consisted of a 20-story office building and a 10-story warehouse wing on the south side. The warehouse portion was connected to the 10-story Warehouse No. 2 building, also known as the Garment Center, by a bridge across Jackson Street. The eight-story Warehouse Buildings No. 3 and 4 extended the complex two additional blocks to the south. It is reported that special steamless locomotives were developed to move railcars in the underground tunnels beneath the four buildings.

Santa Fe Building No. 1 was extensively renovated in 1979 and remains in use by the General Services Administration in conjunction with the adjacent Earle Cabell Federal Building. Warehouse Buildings No. 1 and 2 were designated Dallas Landmarks in 1987 and added to the National Register of Historic Places in 1997. Despite the efforts of the Dallas Landmark Commission, Warehouse Building No. 3 was demolished in 1988, with the debris used to infill the tunnels under the building.

Taking advantage of incentives offered by the city of Dallas to provide housing in Dallas's central business district, Warehouse Building No. 2 was purchased in 1991 and converted into 203 apartment units in 1998. The stout, concrete-framed structure consists of round, reinforced concrete columns with flared capitals and flat-plate reinforced concrete slabs that easily accommodated the conversion to residential use. A community room, exercise room, underground parking, and rooftop pool were some of the amenities added as part of the renovation.

In 2004, the apartment units were converted into condominiums. Needed exterior and underground garage repairs were postponed until one half of the condo units were sold. This milestone occurred in 2007, and repairs were completed in March 2009.

Exterior, former Santa Fe Warehouse Building No. 2

Warehouse Building deteriorated brick at parapet wall

Extensive repairs in underground parking garage

Condominium interior

Warehouse Building No. 4 has recently been renovated and reopened in 2009 as a hotel.

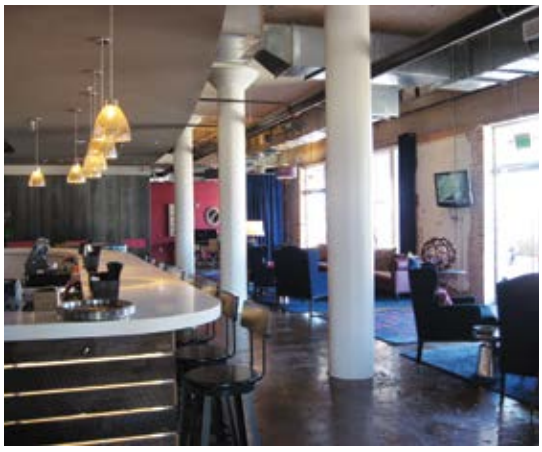
NYLO HOTEL

In 1911, the Dallas Coffin Company constructed a five-story, 45,000 ft^2 (4180 m^2) office and manufacturing building adjacent to the Cotton Belt rail line on the south side of downtown Dallas, TX. According to *Greater Dallas Illustrated*, for almost 40 years, the company's offices never closed. They handled the "most complete range of coffins" and they were able to ship anywhere at any time—day or night. From 1960 to 1987, the building was used by the adjacent Sears & Roebuck catalog operation. The building was vacant until 2005, when a local group purchased the property and made the decision to develop it into a 76-room hotel.

Interior, Dallas Coffin Company Building

Rainwater harvesting at Nylo Hotel entry canopy

Galvanized steel truss supporting rooftop infinity pool and patio deck



Nylo Hotel lobby—bar area

Nylo Hotel rooftop infinity pool and patio deck

Nylo Hotel lobby—areas for reading and playing

The structure consists of exterior load-bearing masonry walls; interior reinforced concrete columns with flared capitals; and reinforced, flat-plate floor slabs. Because only a few original drawings could be found and the scans of the floor were inconclusive, load testing was performed on the building's floor system to confirm the load capacity of the structure.

New floor openings framed with steel were required to install elevators and fire stairs. Load-bearing concrete masonry units were used to enclose the new elevators and stairs and supplemental reinforcement in the form of carbon-fiber strips were applied to various sections of the floor slab.

The redesign of the building is highlighted by a rooftop pool deck, patio lounge, and bar. The infinity-edged pool and patio deck overlook the Dallas skyline and are supported by galvanized steel trusses that are anchored to the tops of the interior columns. The project received LEED Gold certification by including sustainable features such as rainwater collection for site irrigation, low E film added to windows, extensive use of local materials, and diverting 75% of the construction and demolition debris from the landfill via an extensive recycling program.

POSSIBILITIES ABOUND

These projects illustrate only a small fraction of the possibilities that abound for existing, unused, or underused structures in our urban centers. Adaptive reuse projects come in many different shapes and sizes with successful projects requiring desire, vision, timing, the right building in the right location, and experienced and knowledgeable key participants.

***Mark LeMay**, AIA, LEED AP, is an Associate and Senior Project Manager with JQ and leads the firm's Facility Assessment Group. He has been a licensed architect in Texas since 1982 and is a graduate of the University of Notre Dame. LeMay is a Past President of the North Texas Chapter of ICRI and currently serves as the Region 7 Representative on the ICRI Board of Directors. He is a voting member and Co-Chairman of the ICRI Chapters Committee; and also serves on the Finance Committee; the Publications Committee; and Subcommittee 710-A, Horizontal Waterproofing of Traffic Surfaces.*