



Photos courtesy of Balfour Beatty Construction, Dallas, and KPostCompany, Dallas

## KPOSTCOMPANY RISES TO ENDLESS CHALLENGES ON THE OMNI DALLAS HOTEL

BY CHRYSTINE ELLE HANUS

Located in the center of revitalized downtown Dallas, the Omni Dallas Hotel is connected via sky bridge to the Dallas Convention Center. Following a ribbon-cutting ceremony attended by Larry Hagman and Linda Gray (J.R. and Sue Ellen Ewing from the “Dallas” TV show), the new hotel formally opened Nov. 11, 2011.

Owned by the City of Dallas, the \$500 million hotel features 1,001 guest rooms, including 67 luxury suites and three presidential suites. The Omni Dallas Hotel is built to meet U.S. Green Building Council LEED® Silver certification standards, placing it on the forefront of environmental awareness and conservation in the city. Its 110,000 square feet of meeting space reflects Dallas’ history and style. Each of the 39 meeting rooms, including two ballrooms, is named after a Dallas point of interest and features the work of local artists.

The Dallas City Council; general contractor Balfour Beatty Construction, Dallas; and real estate developer Matthews Southwest, Lewiston, Texas, broke ground on the Omni Dallas Hotel Sept. 15, 2009. KPostCompany, Dallas, was contracted as a design build partner to complete 10 roof and building envelope systems over three primary project areas that included the convention center and ballroom, patio and pool areas, and the main building’s tower. Because of the structural and energy-efficiency requirements, the 10 areas equated to 23 unique roof assemblies.

### CONVENTION AND BALLROOM

Two roof systems cover the convention center and ballroom. The grand ballroom is 36,477 square feet, and the junior ballroom is 19,169 square feet. Both roof systems have a slight curved barrel design. KPostCompany applied two layers of 2½-inch-thick polyisocyanurate insulation over the concrete decks followed by a ½-inch-thick gypsum cover board. Firestone Building Products’ UltraPly™ fully adhered 60-mil-thick white TPO membrane completed the roof systems. Additionally, KPostCompany, a National ES Testing Service Inc.-authorized fabricator,

# CHECKING INTO DALLAS

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custom fabricated and installed Uniclاد Systems Ltd. aluminum at all perimeter edges.

## PATIO AND POOL AREAS

The pool level roof system is intricate, and when hotel guests walk the multiple pavers and wood deck areas, many probably don't realize they are standing on the hotel's primary roof. This 7,850-square-foot roof area was covered with Firestone Building Products' UltraPly fully adhered 80-mil-thick white TPO membrane over a sloped structural concrete slab.

In addition to the pool level roof, the pool area is segmented into five areas: planters; a fire pit; benches and a deck area made of ipe wood; upper pool area; and lower pool area.

### PLANTERS

The planters' interior bottoms and walls measure 600 square feet and contain a Firestone Building Products intensive vegetative roof system. The system is a combination of 80-mil-thick TPO membrane, filter and drainage layers with overburden above it, including large trees and numerous plantings.

Throughout the design and installation of the planter area, KPostCompany worked simultaneously with numerous trades to devise a design that would create a watertight envelope encapsulating the numerous penetrations, including an irrigation system, electrical conduits for tree lighting, low-voltage wiring for speakers, and planter drains to allow for adequate drainage.

One of the toughest obstacles was designing a structural stainless-steel watertight tree tie-back system to anchor the new and growing trees. Each planter's exterior was waterproofed with Tremco Inc.'s ExoAir® Self-Adhered Air & Vapor Barrier Membrane that included self-sealing gaskets so the exterior stone veneer could be anchored without compromising the waterproofing envelope. The TPO membrane and self-adhering materials were not compatible and could not be overlaid, so KPostCompany manufactured site-specific custom sheet-metal fabrications to ensure a proper transition between the materials.

### FIRE PIT

The fire pit is similar in design to the planters; however, in this area KPostCompany had to devise a solution to ensure the TPO membrane would be protected from the fire's heat, as well as make all the required electrical,

mechanical and plumbing accessories watertight. The fire pit's interior was lined with a stainless-steel ember barrier. Numerous design hours were required between the fire pit design team and other design build partners to ensure the TPO membrane was not exposed to extreme temperatures.

### IPE BENCHES AND DECK AREA

Part of KPostCompany's contracted scope of work was to provide Forest Stewardship Council- (FSC-) certified ipe deck and free-standing, radius and straight attached bench systems. As the design evolved through the construction process, the ipe deck became known as the "stage"; it required a substantial structural load capacity to accommodate its intended use. Additionally, the ipe stage elevation includes stairs to reach the area.

The design required this area's structure to be watertight, level, free-standing, FSC-certified wood, corrosion-resistant and noncombustible. After numerous hours of structural design, building envelope review, field coordination and architectural input, KPostCompany created the following solutions to meet the project's challenges:

- *Watertight:* A watertight structure was provided by designing a round tube support that can be wrapped with a typical TPO pipe flashing detail.
- *Level:* The existing structural concrete deck was sloped to a minimum ¼ of an inch per foot (and greater in some places) for drainage. The more than 100 radius tube supports were made adjustable by designing two tubes with different dimensions that can be adjusted to the correct elevation and set in place with a screw. After the entire system was leveled, the open joint between the tubes was welded to meet structural and watertight needs.
- *Free-standing structure:* Multiple-angled beam-to-beam cross-braces, turnbuckle rods and clevis tube-to-tube bracing were designed. Because the ipe bench structure was designed after the building structure was constructed, it had to be fully self-supportive.
- *FSC-certified ipe wood:* A U.S. supplier who could provide the required 1- by 6-inch wood size was searched for and located. KPostCompany was the

**Project name:** Omni Dallas Hotel

**Project location:** Dallas

**Project duration:** July 2010–November 2011

**Roof system type:** TPO

**Roofing contractor:** KPostCompany, Dallas

**Product manufacturers:** Firestone Building Products Co., Indianapolis; The Dow Chemical Co., Midland, Mich.; Tremco Inc., Beachwood, Ohio; Uniclاد Systems Ltd., Wolverhampton, England; Wausau Tile Inc., Wausau, Wis.

**Gold Circle Awards category:** Outstanding Workmanship—Low-slope





Top to bottom: The completed ipe deck, benches and fire pit; a galvanized steel frame was designed and constructed below the ipe deck

only contractor working on the project able to secure such a supplier. However, through extensive research, KPostCompany realized FSC-certified ipe wood only can be found in limited lengths. This left KPostCompany with no other alternative than to design and construct a galvanized steel frame to provide a corrosion-resistant and noncombustible structure.

- *Corrosion-resistant system:* A corrosion-resistant system was achieved by shop-fabricating all steel parts and pieces. The structural system was assembled before sending the material to AZZ Inc.'s Galvanizing Services Segment to be hot-dip galvanized. Then, the structure was reassembled on-site with bolt connections.
- *Noncombustible:* A noncombustible structure was accepted by the fire marshal by designing the system only with steel and ipe wood.

After solving the major project design challenges, KPostCompany proceeded with the installation process. Some of the unique installation obstacles encountered were flashing more than 100 structural supports; laying out structural support anchor bolts so they didn't interfere with existing post-tension cables; remilling inconsistent board widths to create uniform plank joints; and installing more than 5,000 screws, subsequently countersinking, plugging, gluing and sanding each screw in place.

## UPPER AND LOWER POOL AREAS

The pool deck is divided between the upper pool deck and lower pool deck. Each area has a unique roof system with a different surface.

The upper pool sunning area is covered with Firestone Building Products' UltraPly fully adhered 80-mil-thick white TPO membrane over a sloped concrete deck with landscape pavers set in pea gravel. This roof area terminates

at a glass rail system on the west and north sides, stairs on the east side, a cabana area on the south side and the pool. A Firestone Building Products vegetative system was installed below the pavers, which included filter fabric, drainage panels and The Dow Chemical Co.'s STYRO-FOAM™ Brand PLAZAMATE™ Insulation to provide a stable substrate that sheds water through the paver system.

KPostCompany once again had to devise multiple solutions to material compatibility concerns tying the pool's waterproofing system and the building's exterior waterproofing system at the glass rail. Additionally, KPostCompany found unique flashing conditions at the surrounding planters, electrical conduits, lighting protection and cabana steel supports.

The lower pool deck is covered with Firestone Building Products' UltraPly fully adhered 80-mil-thick white TPO membrane over tapered insulation on top of a sloped concrete deck with a Wausau Tile pedestal and paver system. The lower pool area, which is the primary entertainment area that includes a bar, fire pit and ipe benches, presented more challenges.

KPostCompany was responsible for the engineering and wind analysis of the paver and pedestal system. Similar to the upper deck area, the lower pool deck area terminates at a glass railing system on the east side.

"The lack of paver termination required extensive analysis," says Ryan Little, KPostCompany's project manager. "We worked with local engineering firms and reviewed Wall of Wind studies provided by Florida International University's International Hurricane Research Center in Miami. The major concern was the pavers would blow off the building and into public access areas below."

After days of calculations, it was determined the paver design met the design criteria and was ready for installation.

The pool area pavers are 24 by 24 by 2 inches and weigh about 100 pounds each. The paver layout was on a staggered  $\frac{3}{16}$ -inch-thick joint with a completing angle to the building. Each row of pavers needed to be installed parallel to the pool but not square to the radius-shaped building on the east and not square to the angles provided by the ipe deck, benches, fire pit and planters. The fire marshal required each pedestal to be filled with concrete to prevent the plastic pedestals from melting in the event of a fire. This required 3,800 pedestals to be set, cut to size and shimmed to level as the deck was sloped. Then, they had to be dismantled, filled with concrete, reassembled and finally set in place. The pavers also were cut to numerous unique shapes at termination edges.

## THE TOWER ROOF

The 28,000-square-foot tower roof area is covered with Firestone Building Products' UltraPly fully adhered 60-mil-thick white TPO membrane applied over fully tapered insulation installed over concrete. The extensive amount of mechanical, electrical, plumbing and window-washing equipment in addition to the 1,000 linear feet of screen wall along the building's perimeter made this roof area uniquely challenging. All this equipment penetrated the roof about 500 times with numerous custom sheet-metal flashings designed, fabricated and installed by KPostCompany.

In addition, work in this area was performed during one of the worst Dallas winters, making this roof area the most challenging to complete. KPostCompany coordinated daily with trades who worked just hours ahead of KPostCompany with installations required before applying the TPO roof system. Because of the thousands of liner feet of ducts, conduits and piping, a majority of the tower roof system was installed by KPostCompany crews working on their hands and knees, and often on their stomachs, during inclement weather.

## THE FIRE

At 6 a.m. Saturday, Oct. 8, 2011, two days before KPostCompany was to turn the entire project over to Balfour Beatty Construction, KPostCompany was alerted to a fire from an undisclosed source on the patio pool deck that had destroyed 1,000 square feet of the roofing area and pavers. Within an hour, KPostCompany executed its crisis management plan and mobilized a 20-person crew to demolish the recently completed pristine pool deck and fill the trash bins with charred materials.

The swift-moving crew was able to temporarily waterproof the area and protect the finished floors below the roof deck before a torrential rainstorm blew through the area at 2 p.m.

During the next three weeks, KPostCompany successfully secured a new fully adhered 80-mil-thick TPO membrane and custom-manufactured Wausau Tile patio pavers.

"The three-week time frame was accomplished with expedited services from Wausau Tile cutting production time from 10 weeks to 10 days," says Aileen Struble, KPostCompany's senior estimator. "Our team worked around the clock to complete the restoration Nov. 1, 2011—10 days before the hotel's grand opening."

## SAFETY FIRST

KPostCompany's safety manager, an Occupational Safety and Health Administration Certified Safety & Health Official, conducted site-wide safety inspections as part of the Omni Dallas Hotel team to identify and correct hazards and ensure KPostCompany workers complied with safety procedures. A job hazard analysis was completed before beginning a new task, and weekly safety meetings were conducted on-site for all KPostCompany employees with an emphasis on fall protection and personal protective equipment use.

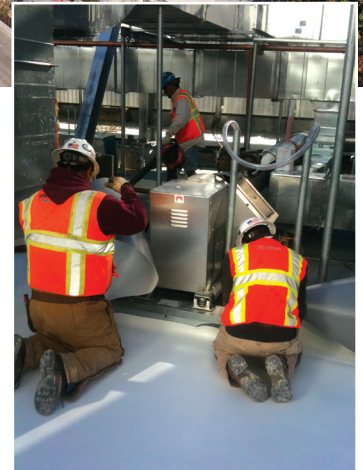


## REWARDS AND AWARDS

KPostCompany began work in July 2010 and completed the project Nov. 1, 2011, using 38,178 man-hours and achieving 100 percent safety. At peak periods, as many as 50 employees worked at once, and more than 100 employees helped make the project a success. KPostCompany is proud to have safely completed its portion of the project on time and within budget despite extraordinary challenges and to have been involved with expanding the Dallas skyline.

"Being a part of the rebirthing of the Dallas downtown market was a great experience," says Steve Little, president of KPostCompany. "The most rewarding part of the job was completing the project with zero accidents."

For its exceptional efforts on the Omni Dallas Hotel, KPostCompany received an NRCA Gold Circle Award in the Outstanding Workmanship: Low-slope category; an Excellence in Construction Eagle Award from Associated Builders and Contractors Inc.; and a Golden Hammer Award from North Texas Roofing Contractors Association. 🏆🌟



Top to bottom: An aerial view of the new Omni Dallas Hotel; crews worked on their hands and knees to install thousands of linear feet of ducts, conduits and piping on the tower roof system

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