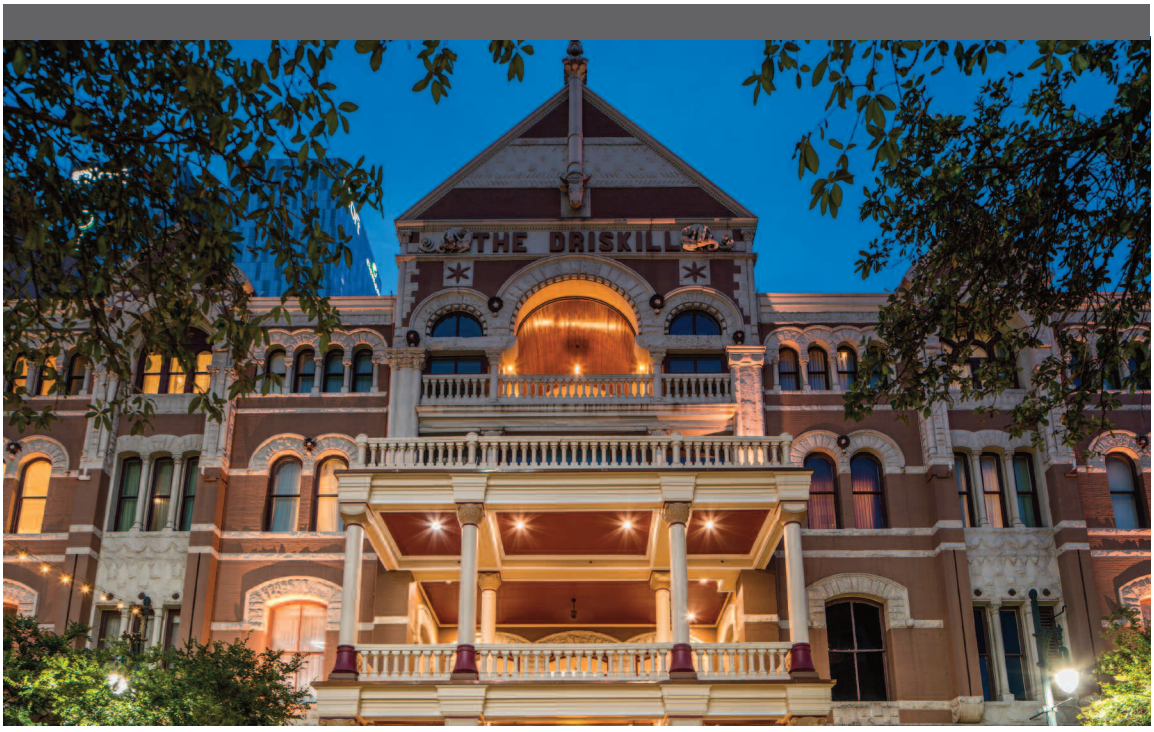
SUMMER 2017 CHAMBERLIN Roofing & Waterproofing NEWSLETTER

Preserving an Austin Historical Landmark



The Driskill Hotel repaired and restored balconies on Sixth Street.

The Driskill Hotel in Austin, Texas, is rich in history dating back to the 1800s. Colonel Jesse Lincoln Driskill, a Tennessee native and cattleman, purchased the land for $7,500 with his earnings from cattle auctions.

The plot was transformed two years later in 1886 to a prominent hotel at a total cost of $400,000. It was slated as "the finest hotel south of St. Louis." It was also President Johnson's preferred hotel when he was in Austin. In fact, he took his future wife, Lady Bird Johnson to the hotel restaurant, The Driskill Grill, on their first date.

The hotel sits at the corner of the infamous Sixth Street and Brazos Street, in the heart of the city. Beautifully decorated with custom furniture, it boasts 189 guestrooms, 14 suites, 13 historic meeting rooms, a restaurant and The Driskill Bar, known as the power meeting spot for politicians.

Recently, the Driskill exhibited signs of water damage to the soffits and balustrades of the four major balconies – two on the Sixth Street side and two on the Brazos Street side. With Chamberlin's extensive experience in building repair and restoration, they were brought on as the prime contractor to remediate

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CONSULTANT'S CORNER:

By Jeffrey Kobes and Jacob Bice, Walter P Moore and Associates

Jeffrey Kobes, P.E., Senior Associate and Project Manager

Jacob Bice, Ph.D., P.E., Principal and Managing Director

Salvage: A Sustainable Alternative When Restoration is Not an Option

Taking a building that is distressed and not functioning well and returning it to a functioning part of the building stock is both challenging, rewarding and sustainable. However, there are situations where existing buildings cannot be restored for a variety of reasons, including advanced deterioration, cost for renovation and the existing building's incompatibility with the required program. In those cases, salvage may be a viable

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the water intrusion and restore the balconies. The project scope included balcony deck replacement and waterproofing, balustrade restoration and façade repair.

Chamberlin Project Manager Josh Adrian said, “This is a very unique project for us because not only are we repairing the water damage, we are also trying to maintain the historical integrity of the hotel while following the Texas Historical Commission guidelines.”

SAFETY TAKES PRIORITY

As with any project where the building remains occupied during construction, there are multiple challenges, especially with a notable hotel in a prime location.

The safety of the hotel employees and guests, pedestrians, Chamberlin’s employees and subcontractors was top priority. Chamberlin installed an intricate scaffolding system with a protected entrance for pedestrians and guests to access the hotel.

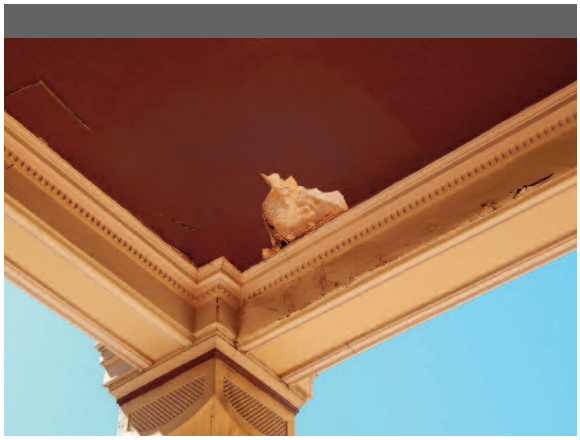
Chamberlin strictly adhered with city compliance for right-of-way for pedestrians, vehicles and partial street closures. Also, water barricades and fencing were installed around the work site to protect hotel guests, employees, and pedestrians from passing underneath the balconies where construction was taking place.

INVESTIGATING THE DAMAGE

Building Consultants, Ltd. conducted a thorough building envelope investigation to uncover the extent of water damage. It was apparent the soffits were compromised, however the investigation identified other areas that needed repair as well. The consultant cut holes into the soffit to observe the structural integrity and concluded the joists were heavily damaged and needed to be replaced. The same conclusion was reached for the extensively deteriorated decks on all four balconies.

WATERTIGHT- IT’S WHAT WE DO

Chamberlin chose to begin the balcony deck replacements on the Sixth Street side to avoid interfering with the hotel’s valet service on Brazos Street. It started with the demolition of tile, concrete slabs, existing waterproofing, soffits and structural framing. Chamberlin’s crew then installed new three-quarter-inch plywood decking, joists, beams and framing. Then, a loose-laid reinforced PVC single-ply waterproofing system was installed. This included an 80-mil sheet waterproofing membrane, a membrane underlayment, drainage composite and protection layer, termination bars and PVC flashing and



An original soffit depicting water intrusion.

Water damage to an original balustrade.

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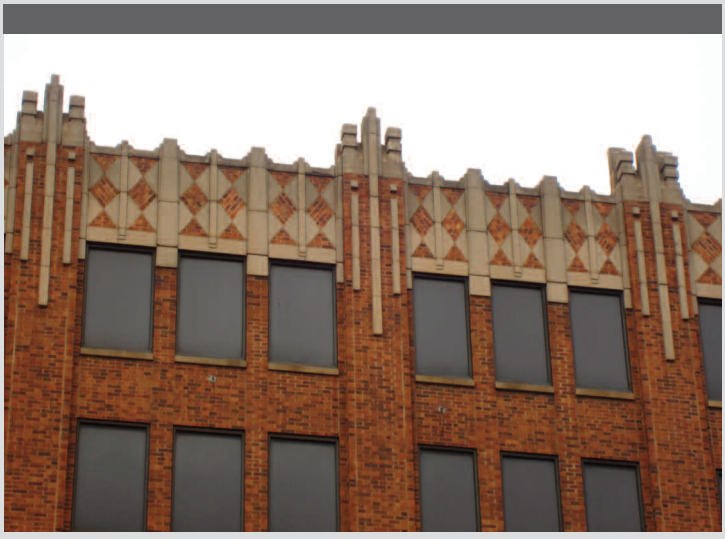

Figure 1: *Brick and cast stone capitals and spandrels that were salvaged and reinstalled as an interior architectural feature in the new construction.*

option. While salvaging selected items clearly does not retain the embodied energy of the whole building, it prevents important items from going to the landfill and can create a link between the old building and the new construction. One such project where salvage became part of the program was the redevelopment of approximately three-quarters of a city block in downtown Oklahoma City, Oklahoma. This development was the first multi-tenant office development in this downtown area in 30 years. To accommodate space for the development, nine buildings that represented the last remnants of downtown Oklahoma City’s old retail Main Street were set to be demolished to accommodate a new 27-story tower and two mixed-use parking structures.

After evaluation of the existing buildings, it was found that the state of deterioration and the program demands of the proposed development prevented the existing structures from being a viable part of the new development. However, it also became apparent that some in the community were interested in saving the buildings, and various grass roots organizations proposed to

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fasteners. Electronic Leak Detection (ELD) testing was then performed to check for membrane water tightness.

Once the waterproofing was complete, a three-inch concrete slab with an eighth-inch slope per foot was poured and leveled. The crew then installed plaster and sheathing at the soffits, an intricate crown molding and trim on the balustrades, and copper flashing around the perimeter of the balconies.

PRESERVATION OF THE BALUSTRADES

The Chamberlin project management team corresponded with an architect to discuss preserving the existing cast iron balustrades. To maintain the historical value of the hotel, the architect recommended the balustrades be removed, repaired and reinstalled instead of replaced.

Chamberlin followed the Texas Historic Commission's guidelines for *The Maintenance and Repair of Architectural Cast Iron* to preserve the original balustrades.

Blue Diamond Steel was enlisted to restore the existing balustrades. During the initial evaluation, abnormally large cracks in the cast iron were observed and some sections were discovered to be unlevel by as much as half an inch. The cause of this damage became clear when the floor under the concrete was discovered to be rotten, compromising the substrate on which the balustrades rely.

The balustrades were sandblasted to remove the paint and expose cracks before welding.

The balustrades were removed by crane and transported to the Blue Diamond Steel facility in New Braunfels, Texas, for repairs. They were sandblasted to remove multiple layers of paint and expose the cracks. Then, the paint chips were tested for lead. The paint that contained lead was placed in barrels and properly disposed.

George Wells, owner of Blue Diamond Steel, explained, "Since the balustrades were made in 1886, they were most likely made with different types of iron, like brass and steel. When the time comes to weld them, you never know what you are going to run in to. It is not like welding a new piece of steel."

Knowing that cast iron is extremely brittle, the balustrades were placed in a charcoal oven for three hours until the temperature reached approximately 500 degrees. This process helps to prevent any further breakage during the welding phase. After the balustrades were welded, they continued to rest in the oven until the coals cooled to a safe temperature before the balustrades could be removed. For those sections of the balustrades that were too badly cracked or missing pieces, new balustrades were fabricated.

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help protect the buildings. After discussions between the developer, the interested people in the community and the historic commission, it was determined that the developer would demolish the buildings but salvage several iconic features and re-integrate those features into the new development.

Therefore, it was important that the salvage and re-installation of the historic elements be performed successfully to accomplish the overall project objectives. To achieve this goal, three key principles were incorporated into the project work flow: thorough investigation, good communication and execution planning.

Thorough Investigation

The starting point for any salvage project is investigation. Without a thorough and focused investigation, any resulting problems can potentially derail a salvage project. Taking time to answer four questions helps keep the

Figure 2: *Measurements of the polychromatic terra cotta units and total quantities were made to determine the available quantity for the reinstallation.*

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project on track:

What should be salvaged?

How much can be salvaged?

What is the condition of the salvaged material?

How can it be removed?

To answer the first question, cataloging was performed at the site. This meant performing close-up observations of the historic features and making an initial determination of what could feasibly be retained. The documentation was then distilled into a list with photographs and discussed with the stakeholders. In this case, the stakeholders were a combination of the owner, developer, architect and the local Historic Preservation Commission. The Historic Preservation Commission was able to provide insight into what features were important to the original Main Street area. Using this information, the architect and owner were able to determine how the integration of the salvaged items would impact the proposed design and the intended budget. The final list of salvage items was then added to the project scope and included:

- The polychromatic terra cotta frieze on a mid-century department store
- The cast stone frieze from a 1940s era Art Deco hotel
- The brick and cast stone capitals from a 1940s era Art Deco parking garage (Fig. 1)
- The vitrolite glass panels from a mid-century bus station that gave that building its iconic color and finish
- A neon-lighted, mid-century “Lunch Box Sandwich” restaurant sign

Once it was determined what should be retained, it was critical for the architect to understand how much of each of the selected elements could be salvaged. As part of the investigation, the sizes of the elements to be retained and the quantity of each unique item were recorded (Fig. 2). Quantities and dimensions were provided to the architect for development of a realistic integration strategy.

In addition to the quantity and sizes of the units, the design team also needed to understand the condition of the elements being retained. For example, the cast stone frieze elements only required cleaning to maintain their historic appearance. However, the terra cotta had varying degrees of distress and damage that needed to be repaired. Discussions with the architect about the final appearance of repairs and the acceptable size of unrepaired areas were important to establish a baseline level of repair.

Once the scope of the intended salvage and the conditions of the elements being preserved had been determined by the team, it was necessary to ascertain how to properly remove each of the items to be salvaged (Fig. 3). The contractor needed to know what means and methods would be appropriate so that accurate bids could be submitted and change orders could be minimized. The design team also needed to understand if there would be significant reductions in the quantities of salvaged materials due to damage that could occur during removal. For this project, isolated removal and exploratory openings were made with the assistance of an experienced restoration contractor to help the team confirm the best practices for removal and to estimate the possible loss of materials during removal.

As a result of the investigation, it was determined that the brick and cast stone capitals were simply stacked with little to no connection between the units, and the cast stone frieze elements were laid in the masonry with no significant ties that needed to be cut. Removal of these items was anticipated to be straight forward with no projected loss of materials.

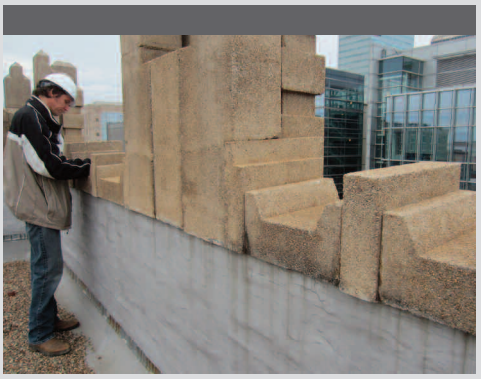

Figure 4: *Measurements were made of the brick and cast stone capitals.*

Figure 5: *Frequent visits to the site allowed for opportunities to observe and provide alternate strategy for removal of the terra cotta.*

In contrast, for the terra cotta frieze, it was critical to locate the quantity of anchors, determine the strength of the bedding and fill mortar and identify which units could be sacrificed to achieve access. During the investigation, it was found that the mortar behind the terra cotta was concrete and that two heavy ties per unit were embedded into this mortar and the back-up wall. It was also discovered that the frieze was seated into the web of a beam header which would complicate removal. In this case, since the frieze units were the only ones to be salvaged, the ashlar units above the frieze were sacrificed to provide adequate access for removal.

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Figure 3: *Selective removal and exploratory openings during the investigation were used to determine the type of connection of the terra cotta to the back-up wall.*

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The Chamberlin crew preparing for Electronic Leak Detection (ELD) testing on the waterproofing membrane.

Once the balustrades were fully restored and epoxy primed, they were transported to The Driskill and hoisted to their original location.

THAT'S A WRAP

To conclude the balcony restoration, all the exterior columns, window trim, balustrades and crown molding were painted. The Driskill Hotel was left with watertight balconies that preserved the historical integrity of the esteemed Austin hotel. ■

Leveling concrete on the new balcony as it is being poured.

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Good Communication

The second key to a successful salvage project is good, clear communication and begins with communicating the findings of the investigation to the rest of the design team. For example, the architect needed to know the size and layout of the brick and cast stone capitals. These capitals were large and not easily accessible so only approximate measurements were made. During the investigation, these important measurements were communicated to the architect for inclusion into the final design (Fig. 4). During the investigation, it was also observed that the side panels were not constructed symmetric to the capital. This was communicated to the architect, who made a decision as to whether the panels would be reinstalled symmetrically for aesthetics or asymmetrically to reference the historic construction. Identifying and communicating this observation was critical because it would not only impact the final design, but would also be important in determining what would be removed to achieve the desired final outcome. ■

Figure 6: *Full scale mock-up of the terra cotta frieze installed into the GFRC panel (note that the end pieces were recreated units being reviewed for acceptance in the final installation).*

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Jacob Bice, Ph.D., P.E., is a Principal and Managing Director of the Diagnostics Group at Walter P Moore and Associates in Dallas, Texas. He received his Bachelors and Masters in Civil Engineering from Texas Tech University in Lubbock, Texas, and his Ph.D. from Purdue University in 2006. Dr. Bice leads a diverse team of structural engineers and building scientists to solve complex problems in existing buildings and structures. He also developed Walter P Moore's nondestructive testing services for the Diagnostics Group and has performed evaluations and testing, analyses, and developed designs for repairs of existing structures throughout the United States and Canada. He is Chair of ACI Committee 224 Cracking and a member of ACI Committee 228 Nondestructive Testing of Concrete, ACI Committee C601-F Nondestructive Testing Technician Certification and ACI Sub-Committee 228-B Visual Inspection. Mr. Bice can be reached at JBice@walterpmoore.com 214.740.6200 www.walterpmoore.com

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Remedial Waterproofing
Contract Amount: $200,000 (approx.)
Owner: Texas State University System
Architect: PBK Architects
General Contractor: SpawGlass
Scope of Work: Brick replacement, tuckpointing, masonry and concrete cleaning, joint sealants, air barrier, flashing
Project Description: Repurpose and renovations to Agricultural Sciences building

Hanover Boulevard Place – Houston, TX
New Construction Waterproofing
Contract Amount: $1,600,000 (approx.)
Owner: The Hanover Company
Architect: SCB Architects
General Contractor: Hanover RS Construction
Scope of Work: Waterproofing, expansion joints, firestopping, joint sealants
Project Description: 32-story luxury apartment tower

MD Anderson – Austin, TX
New Construction Roofing & Waterproofing
Contract Amount: $1,700,000 (approx.)
Owner: The University of Texas MD Anderson Cancer Center
Architect: HDR Architecture, Inc.
General Contractor: Linbeck Group, LLC
Scope of Work: Modified bitumen roof system, sheet metal fabrication and installation, insulation, fluid-applied air barrier, joint sealants
Project Description: 135,000-square-foot outpatient cancer center

Park District – Dallas, TX
New Construction Roofing & Waterproofing
Contract Amount: $4,000,000 (approx.)
Owner: Trammel Crow
Architect: HKS
General Contractor: Balfour Beatty
Scope of Work: TPO roofing system, flashing, sheet metal, hot fluid-applied rubberized asphalt waterproofing, sheet waterproofing, pre-applied waterproofing, cementitious and reactive waterproofing, traffic coating, air barrier, pavers, firestopping, site and paving sealants, joint sealants and expansion joints
Project Description: Two-tower, mixed-use development with office space, restaurants and residences

Tobin Center Parking Garage – San Antonio, TX
New Construction Waterproofing
Contract Amount: $550,000 (approx.)
Owner: Tobin Center for the Performing Arts
Architect: MarmonMok
General Contractor: Joeris General Contractors
Scope of Work: Masonry flashing, hot-applied waterproofing, cap sheet waterproofing, crystalline waterproofing, water repellents, air barrier, firestopping, joint sealants, expansion joints
Project Description: Mixed-use parking garage

Austin-Bergstrom International Airport – Austin, TX
Roof Replacement & Remedial Waterproofing
Contract Amount: $6,200,000 (approx.)
Owner: City of Austin
Architect: Gensler
Consultant: Engineered Exteriors, PLLC
General Contractor: Hensel Phelps
Scope of Work: Removal of existing roof and installation of SBS roof system, exterior façade restoration, expansion joints, wet glazing, sheet metal flashing, fluid-applied waterproofing, fluid-applied air barrier, metal panel caulking
Project Description: Airport exterior renovation

Texas State University Health Professions Building – Round Rock, TX
New Construction Roofing & Waterproofing
Contract Amount: $1,300,000 (approx.)
Owner: Texas State University System
Architect: Barnes, Gromatzky, Kosarek
General Contractor: The Beck Group
Scope of Work: Modified bitumen roofing system, below-grade waterproofing, fluid-applied waterproofing, elevator pit waterproofing, fluid-applied air barrier, expansion joints, insulation, sheet metal fabrication and installation, counterflashing, curb flashing,
Project Description: College health professions building

Park Hollow – Dallas, TX
Remedial Roofing
Contract Amount: $100,000 (approx.)
Owner: Park Hollow Apartments
General Contractor: Chamberlin Roofing & Waterproofing
Scope of Work: Installation of new blocking, vapor barrier and coping
Project Description: Roof repairs for luxury multi-family residence

New Braunfels Recreation Center – New Braunfels, TX
New Construction Waterproofing
Contract Amount: $650,000 (approx.)
Owner: City of New Braunfels
Architect: Brinkley Sargent Wiginton Architects
General Contractor: Byrne Construction Services
Scope of Work: Below-grade waterproofing, water repellents, insulation, air barrier, sealants, expansion joints
Project Description: Multi-generational center offering an array of services for the community

Oklahoma State Capital Building – Oklahoma City, OK
Remedial Waterproofing
Contract Amount: $800,000 (approx.)
Owner: State of Oklahoma
Architect: ADG, Inc. and Treanor
General Contractor: JE Dunn Construction
Scope of Work: Injection grouting, sheet waterproofing, concrete patching, joint sealants, fluid-applied waterproofing, elastomeric coating and expansion joints
Project Description: Renovation of capital building that houses the Oklahoma Legislature and executive branch offices

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