Texas Landmark Church Roof Replacement

CHAMBERLIN

Roofing & Waterproofing



Chamberlin Roofing & Waterproofing re-roofed St. Andrew's Episcopal Church in Fort Worth, Texas, to remedy water intrusion and hail damage.

St. Andrew's Episcopal Church, built in 1910, is widely regarded as one of the most beautiful Gothic Revival churches in the Southwest. Over the years, the church has been expanded several times including the addition of the Parish House, which was built in 1949. In 1983, another addition took the building to a full block's length. In 2018, the building had been experiencing leaks for nearly a year, primarily over the kitchen and choir area, due to unknown causes. The first step Chamberlin took was to perform water testing to identify the leak sources. Once this was determined, a full roof replacement was recommended to rectify the extensive water

(Continued pg. 2...see ROOF REPLACEMENT)

CONSULTANT'S CORNER

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FALL 2019



Ben T. Hixson, CCCA, CCS, QCxP, CIT President Hixson Consultants, Inc.

Sealant Performance and Compatibility: The Great Disconnect

Sealants are materials used to block the penetration of liquids, gases, dust, or other contaminants from one area to another by creating an adhesive barrier. Many sealants function as both a barrier and an adhesive, giving strength to sealed substrates. Sealant applications can vary greatly and the sealant products available exhibit a wide range of properties, including their base

(Continued pg. 2...see SEALANT PERFORMANCE)



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Sealant Performance and Compatibility...2-4

Advo	ating AEC	
Work	force	
Devel	opment	

Employee Profile......5

Projects in Progress....6

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(ROOF REPLACEMENT continued from pg. 1)

intrusion and hail damage from a storm the previous year. A TPO roofing system would be installed for the flat roof areas. Additionally, custom-made copper flashing would be replaced on the roof edges, walls, ridges and gutters. The top two rows of slate roofing would be replaced due to asphalt seepage from the original roof system.

To begin, the existing modified bitumen roofing system was removed. Then two layers of 2.6inch Polyiso insulation was installed, followed by a one-half inch cover board. Finally, a 60-mil fleeceback TPO membrane was adhered to the substrate. Copper flashing pieces were fabricated by Chamberlin sheet metal experts and installed with fasteners. The asphalt-stained slate roofing was removed and re-installed. Where the six-layer felt system underneath the slate roofing was damaged in some areas, Chamberlin installed an Ice and Water Shield vapor barrier providing moisture protection for the plywood decking underneath to help mitigate water infiltration into the building.

OVERCOMING OBSTACLES

This church is located in the center of bustling downtown Fort Worth.

It's a busy city with crowded, narrow downtown streets, an abundance of businesses and limited parking. These logistical challenges proved difficult for material delivery, staging and roof access.

The large semi-trucks delivering materials had to carefully navigate the tight downtown streets to reach the construction site. Once there, one lane of Texas Street had to be shut down so they could park and unload. The project's material distributer helped speed up the receiving process by lending a hand; two forklifts were unloading simultaneously to clear the road as soon as possible. There was extremely limited area to store materials on site as well. Chamberlin worked with St. Andrew's to utilize the metered parking area behind their building to stage materials and equipment.

The chapel roof has a steep peak about 30 feet high that called for an 85-foot boom lift to access. Operating the boom lift necessitated multiple street closures, which required a road closure safety plan approved by the City of Fort Worth. Dallas Light and Barricade formulated the safety plan and provided equipment such



Chamberlin installed a 60-mil fleeceback TPO membrane with a water-based adhesive.



The top two rows of asphalt-stained slate roofing on the roof peaks were removed and new shingles were installed.

(Continued pg. 3...see ROOF REPLACEMENT)

(SEALANT PERFORMANCE continued from pg. 1)



Adhesion sealant failure adjacent to brick.



EIFS sealant joints should be applied to the base coat.

chemistry and cure mechanisms, adhesive strength, elongation, resistance to liquids and environmental stresses, and preferred installation/application method.

Urethane and silicone sealants are two widely used products in the commercial building market. While urethane sealants have their place in the construction industry, an argument could be made that the majority of Building Owners and Property Managers, when fully informed, will choose the superior performance offered by neutral cured silicone sealants in lieu of the relatively short-lived performance offered by urethane sealants for exterior joint openings.

Water-based urethane sealant cures fully in a week and can be painted after it cures. In fact, painting over urethane is recommended because exposure to the sun's UV rays causes chalking if not painted. Urethane sealants do not bond to silicone or polycarbonate plastics, but they do bond to most everything else. Urethane sealants resist abrasion well making them suitable for use on floors.

Alternatively, silicone sealants contain solvents and adhere tightly to glass, metal and tiles but not to wood. Although one should not paint over them with typical paints, they don't degrade in sunlight. Instead, they remain flexible allowing some building movement without failing. Clean up of silicone sealants requires solvents.

(Continued pg. 3...see SEALANT PERFORMANCE)

BOMA CEPP

Building Enclosure Council

(ROOF REPLACEMENT continued from pg. 2)

as signage, barricades, cones and more. Chamberlin sought approval from the City and executed the plan. Proper signage was erected prior to the street closures to alert drivers. Barricades were also used to close the sidewalk the boom lift extended over. A team effort made this execution possible with minimal disruptions for the downtown patrons, while keeping the safety of those on the job and in the surrounding area a primary focus.

On the roof peaks, the original slate shingles were installed with an asphalt underlayment. A combination of the weight of the slate and high Texas temperatures over the years had caused the asphalt underlayment to melt. This liquid seeped out of the top of the peak where the slate meets the copper ridge and dripped down onto the top two rows of shingles. The original slate roofing was custom made, and Chamberlin was challenged with finding the manufacturer. Research uncovered a company overseas from whom the slate could be purchased, factoring a delivery time of three to four weeks into the schedule as it would be shipped by boat.

UNUSUAL CONSTRUCTION TECHNIQUES

🚺 IFMA

IREM

The one portion of the roof that could be utilized for material storage

was a 1,700-square-foot area inset into the center of the roof over the administrative office, which is about 15 feet below the rest of the roof's elevation. This required the crane operator on the ground to essentially deposit materials into a hole he could not see. To combat this challenge, Chamberlin put an extra set of eyes on the task. In addition to having someone on the roof to unload the crane, another crew member was a spotter on the higher roof directing the crane operator as his eyes and ears to accurately and safely deliver the materials to the correct place.

Chamberlin sheet metal experts fabricated 1,250 lineal feet of custommade copper flashing pieces to be installed throughout the project. This process was completed in Chamberlin's sheet metal shop, and the materials were transported to the jobsite. The copper material is very aesthetically appealing but is also costly. Chamberlin sheet metal mechanics were fastidious when breaking the pieces for optimal accuracy to cut down on material waste. Care was also taken to keep the material in pristine condition while in transit to the jobsite.

SPEEDY SCHEDULE

This 27,500-square-foot roof replacement was completed in less



Completed TPO roofing system installed on St. Andrew's Episcopal church.

than four months during which time Fort Worth received nearly 30 inches of rain. Chamberlin increased manpower and kept up productivity as much as possible by installing what they could during the rainy season, such as the copper flashings. The TPO roofing was completed in time for St. Andrew's populous Christmas services, which means the majority of the equipment, materials, dumpsters and crew members were removed from the property. This not only freed up space and parking for the parishioners, but cleared out the construction clutter so the festive decorations and elegant church could be admired.

(SEALANT PERFORMANCE continued from pg. 2)

Because silicone is inorganic, it is unaffected by UV radiation and resists mold and mildew. Silicone can be applied at virtually any commercial construction project temperature and can stand up to adverse weather conditions shortly after application. There are silicones formulated for most substrates, but most important, silicone adheres to nonporous substrates better than almost any other sealant, making it the best choice for surfaces such as glass, metal, ceramic tile and porcelain.

Under direct UV exposure, heat oxidation can cause deterioration of urethane sealants in less than three years. The reported satisfactory performance of exposed urethane sealants is in the range of five to eight years. Few if any Owners or Property Managers budget for and implement replacing failed joint sealants every three to eight years. The great disconnect is the short-term mindset of creating building envelope barrier systems and sealing exposed exterior joint openings with urethane sealants versus long-term performance expectations and project needs.

Compared with urethane sealants, neutral cure silicone sealants have satisfactory performance service lives exceeding 20 years. After adequate initial testing for compatibility and documentation of successful field peel adhesion performance, sealant manufacturers offer 20-year weatherseal, adhesion, and occasionally bleed warranty coverage. The coverage is to remedy defective materials and includes replacing failed sealant. The great disconnect is not including adequate specifications for sealant installers to obtain 20-year warranty coverage for exterior joint sealants. Too many times we see specifications only requiring five-year warranties.

R.



Urethane sealant failure resulting from application during cold weather.



Sealant joint materials at intersections should be compatible.

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(Continued pg. 4...see SEALANT PERFORMANCE)



Installing silicone sealant on brick facade.

With the extensive reliance on sealants for building envelope waterproofing and with the vastly superior service life from silicone sealants, why would the designconstruction team focus on urethane? There are several performance and aesthetic reasons for past use of urethane sealants: early silicone sealants were not available in more than five colors: Architects could not obtain desired colors to match cladding or to match door and window framing. Likewise, different colors weren't available for accents. Urethane sealants bond more readily to common building materials without use of primers. Early silicone sealants had objectionable staining of adjoining porous cladding and accents, took longer to cure and collected airborne dirt. "Caulkers" charged more to install silicone sealants, and, finally, the initial cost of urethane sealant material was one-third the cost of early neutral cure silicone sealant.

The great disconnect today is that with silicone sealant color options greatly expanded, improved adhesion, no staining of most cladding, fast cure times, competitive installation costs and price of materials comparable to the cost of quality urethane sealants, the green building design community hasn't rapidly gravitated to requiring neutral cure silicone sealants. When sustainability is a critical design factor, exposed exterior joint sealants should be neutral cure silicone sealants or one of the other high performance, long-term, warranty coverage polymeric joint sealants. Analyzing costs associated with replacing failed exposed exterior joint sealants, the life-cycle cost advantage clearly goes to neutral cure silicone sealants even without consequential damages.

Sealant compatibility with air barriers, moisture-resistive barriers and selfadhered modified bitumen wraps and flashings is most important to longterm adhesion. Adequate adhesion can only be obtained with sealant, building wrap and flashing compatibility. Sealant selection needs to be driven by the recommendation of the substrate component manufacturer.

Too many times we find either no sealant or incompatible sealant installed. Consequences with no sealant and an incompatible sealant are similar when it comes to water intrusion. Also, the silicone sealant solvents may be denaturing the plastic and petroleum based barriers, wraps and flashings. That deterioration may make the likelihood for objectionable moisture entry an even greater possibility. The design-build team should consider obtaining written approval for sealant use when a specific sealant is not on the barrier, wrap and flashing manufacturers' recommended sealant list. And, monitoring the sealant installation for the intended quality is absolutely necessary regardless of the sealant selection.

Mr. Hixson formed the applied technical resource consulting company, Hixson Consultants, Inc., (http://bedocs.com/) to provide expert roofing, architectural sheet metal, glazing, wall system and waterproofing consulting services for the total building envelope. He has over 43 years of experience in roof, wall and waterproofing condition analysis, life-cycle cost analysis, budgeting, design specifications and CAD detailing management, *component selection and systems* designed to remedy the many causes for problems including mold. Investigative surveys and new and existing facility projects have included below-grade waterproofing, plazas, masonry, precast, tilt wall, splitface brick and block, metal wall panels, terra cotta, stucco, DEFS, EIFS, balconies, terraces, parking decks, pools, fountains, and both flat and sloped roofing installations. He has considerable experience in architectural sheet metal, metal panel and single-ply roofing, roof coating systems, and both cold process and peel-and-stick fully adhered modified bitumen roofing. Mr. *Hixson received a B.A. in Chemistry* from Vanderbilt University in 1973 and is uniquely able to correlate product chemistry to predictable field performance. An active member of the International Institute of Building Envelope Consultants (IIBEC), he has earned all four of the Construction Specification Institute (CSI) professional designations recognizing *many years of construction experience* and successful passage of technical *proficiency exams. He can be reached* at 205-663-2220 or emailed at bhixson@bedocs.com.

Advocating AEC Workforce Development



Chamberlin recently graduated 34 craftsmen from their Chamberlin University program.

Craft training has always been a vital element of the architecture, engineering and construction (AEC) industry and never more so than with the current employment trends. With our workforce aging out, we need young workers to be skilled with hands-on experience to deliver highquality installations and solutions.

Chamberlin has long been an advocate of craft training and established Chamberlin University in 2006 as part of their strategy to prepare for the future by earnestly training and educating their workforce. Chamberlin has graduated hundreds of craft workers and superintendents from the course and invested thousands of hours in Chamberlin 'U' training and education. The courses teach team members safety, technical skills and soft skills. They examine the multiple roofing and waterproofing scopes Chamberlin installs with topics such as substrate conditions, details, water testing, calculations and application techniques. Chamberlin is very proud of their recent graduating classes which included 34 team members.

Chamberlin employees participate in training and mentoring outside of the company as well. Along with industry partners, Chamberlin joined **UpSkill Houston** to deliver career preparedness expertise to students attending the Boys & Girls Club's summer program in Santa Fe, Texas. Waterproofing General Superintendent Alex Benzor shared his career journey and accomplishments. He also demonstrated proper caulking joint installation with an interactive mockup. Alex and Chamberlin team members Bradley Rowan and Carlos DeLeon gave the attendees a real idea of what a career in construction can look like and what advantages it can hold.



Chamberlin General Superintendent Alex Benzor performed a caulking demonstration for Boys and Girls Club.

Chamberlin also supports Build Texas Proud, whose mission is to promote and reinforce the advancement of the construction industry and its people in order to build pride amongst construction personnel and showcase the industry in a positive light. Their vision of celebrating construction in Texas can boost growth and retention among the workforce and present Texas as a premier location for developers. You can get involved on social media by using #buildtexasproud or sending your construction photos to info@ buildtexasproud.com. You can find more information on their LinkedIn and Instagram pages. Let's celebrate construction in Texas together!

Employee Profile

T.R. Mayfield

Vice President of Estimating Roofing & Sheet Metal Houston, Texas



T.R. grew up in a family roofing business with his father. Shortly after his family sold the company in the mid-90s, T.R.'s path brought him to Chamberlin Roofing & Waterproofing, and we are grateful for that.

A Day in the Life:

Every morning you can find T.R. starting his day with a fresh cup of coffee responding to emails and making a "to do" list for the day. He typically travels to a different Chamberlin office location each week. In addition to reviewing estimates and negotiating contracts, he oversees all bids and manages the project estimating team for Chamberlin's Roofing & Sheet Metal departments.

Outlook:

T.R. believes if you commit to installing quality work in a safe and productive manner, a lifelong customer will be gained. It is a simple concept but one that T.R. takes to heart because he is a man of his word. He feels that Chamberlin gives their employees the freedom and empowerment to excel, which makes T.R. eager to come to work each day. To this day, T.R. still listens to his mom's lesson, "Think before you speak and treat others as you would want to be treated."

Outside the Office:

Outside the office, you can find T.R. spending time with his wife, Betsy, and two kids (well, they are more like adults than kids now). They recently purchased a small ranch, which keeps them busy learning how to manage timber, fixing fences and tending to the animals. They spare time for a little hunting, too.

Greatest Accomplishments:

If T.R. wasn't using his skills at Chamberlin, he would be a race car driver. He loves speed (which is why he doesn't drive a company vehicle, at least that is our assumption). Retired racing driver A.J. Foyt once told him that he missed his calling.

We asked T.R. to choose his favorites from this random list of things as a way to get to know him a little better:





PROJECTS IN PROGRESS

CHAMBERLIN Roofing & Waterproofing

LOCATIONS:

HOUSTON

4545 Langfield Houston, TX 77040 Ph. (713) 880-1432 Fax (713) 880-8255

DALLAS/FT. WORTH

2170 Diplomat Drive Farmers Branch, TX 75234 Ph. (214) 273-9110 Fax (214) 273-9120

AUSTIN

2755 Business Park Drive Buda, TX 78610 Ph. (512) 275-1600 Fax (512) 523-9350

SAN ANTONIO

13111 Lookout Run San Antonio, TX 78233 Ph. (210) 822-6536 Fax (210) 822-8211

OKLAHOMA CITY

912 Messenger Lane Moore, OK 73160 Ph. (405) 680-0506 Fax (405) 680-0508

TULSA

10828 E. Newton Street, Ste. 117 Tulsa, OK 74116 Ph. (918) 439-0055 Fax (918) 439-0067

Also licensed in Arkansas and Louisiana

MICROSOFT SAT BUILDINGS 13 & 14 - SAN ANTONIO, TX **New Construction Waterproofing**

Contract Amount: \$250,000 (approx.) **Owner: Microsoft Corporation** Architect: Corgan Associates, Inc. General Contractor: Rogers O'Brien Scope of Work: Installation of cold-applied waterproofing, sheet metal flashing, flexible flashing, building sealants and epoxy sealants **Project Description: Data center**

HUMANA BALCONY REPAIR - SAN ANTONIO, TX **Remedial Waterproofing**

Contract Amount: \$250,000 (approx.) Owner: Humana, Inc. **Consultant: The Conley Group** General Contractor: Chamberlin Roofing & Waterproofing Scope of Work: Installation of joint sealants, wet glazing sealants. epoxy sealers, deck coating and elastomeric coating Project Description: MarketPoint office for Medicare advantage

OU MEDICAL - ADULT BED TOWER - OKLAHOMA CITY, OK

New Construction Roofing Contract Amount: \$2,900,000 (approx.) **Owner: University Hospitals Trust** Architect: Perkins+Will **General Contractor: Turner Construction Company** Scope of Work: Installation of TPO roofing, PVC membrane roofing, subroof, flashing and sheet metal Project Description: Ten-story patient tower

COVENANT NEW WEST TOWER - LUBBOCK, TX

New Construction Waterproofing Contract Amount: \$700,000 (approx.) **Owner: Covenant Health System** Architect: HKS. Inc. General Contractor: Dunn + Teinert, JV Scope of Work: Pre-applied sheet waterproofing, modified bituminous sheet waterproofing, air and water barrier, joint sealants, expansion control, thermal insulation Project Description: Women's services hospital wing

BEDFORD JUNIOR HIGH SCHOOL - BEDFORD, TX

Remedial Roofing and Waterproofing Contract Amount: \$4,000,000 (approx.) Owner: HFB ISD Consultant: Armko Industries General Contractor: Chamberlin Roofing & Waterproofing Scope of Work: Installation of water repellents, joint sealants, site and paving sealants, flashing and sheet metal, TPO roofing, PVC membrane roofing, coping, counterflashing and metal roof panels Project Description: Texas public school

LEWISVILLE MULTIGENERATIONAL REC CENTER - FORT WORTH, TX

New Construction Roofing Contract Amount: \$1,000,000 (approx.) **Owner: City of Lewisville** Architect: Barker Rinker Seacat **General Contractor: Byrne Construction Services** Scope of Work: Installation of cap wall and curb flashings, TPO roofing, subroof, flashing and sheet metal **Project Description: Community center**

MARRIOTT CESAR CHAVEZ - AUSTIN, TX

New Construction Roofing Contract Amount: \$400,000 (approx.) **Owner: Austin 20 Hotel, LLC** Architect: HKS, Inc. General Contractor: DPR Construction. Inc. Scope of Work: Installation of TPO roofing, standing seam roofing, PAC-TITE coping and fascia Project Description: Hotel and convention space

GREY HOUSE - HOUSTON, TX

Remedial Waterproofing Contract Amount: \$2,000,000 (approx.) Owner: River Oaks District, L.P. Architect: WJE General Contractor: Chamberlin Roofing & Waterproofing Scope of Work: Installation of caulking stucco control joints, coping, window head jambs, window sealants, repairing caulk joints and sealing all stucco Project Description: Uptown luxury apartments

FLUOR WET SEAL AND RE-CAULK - SUGAR LAND, TX

Remedial Waterproofing Contract Amount: \$1,000,000 (approx.) **Owner: Lake Pointe Plaza** General Contractor: Fluor Enterprises. Inc. Scope of Work: Tieback anchor installation, wet glazing and joint sealant replacement **Project Description: Corporate campus**

AUSTIN INDEPENDENT SCHOOL DISTRICT HQ - AUSTIN, TX

Remedial Waterproofing Contract Amount: \$1,000,000 (approx.) **Owner: AISD** Architect: Page Southerland Page **General Contractor: Balfour Beatty Construction** Scope of Work: Installation of air barriers, joint sealants, pre-formed silicone restoration overlay system, flashing and sheet metal Project Description: Austin school district headquarters

For a complete list of specialty contracting services, visit www.chamberlinltd.com.

ROOFING/SHEET METAL

- Modified Bitumen/BUR
- Single ply
- Reflective coatings
- Vegetative roofing
- Metal standing seam
- Roof related sheet metal
- Tile

WATERPROOFING/CAULKING

- Joint sealants
- Membrane waterproofing
- Elastomeric wall coatings
- Traffic coatings
- Expansion joints
- Dampproofing/flashing
- Water repellents/metal flashing

BUILDING/GARAGE RESTORATION

- Concrete/Masonry restoration
- Exterior cleaning & coating
- Epoxy & grout injection
- Bearing pad replacement
- Structural repair
- Paver repair & replacement

ROOF MAINTENANCE/LEAK REPAIR

- Roofing & waterproofing expertise
- Leak repair specialists
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- Roof & building envelope surveys
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- On-call service 24 hours/365 days a year
- Free estimates