

## Detail and Precision on Project 180



*Rendering of completed sidewalk on streetscapes portion of Project 180.*

Oklahoma City is growing, but among all the exciting new construction and building expansions, there are also many existing structures receiving a facelift. One of the most anticipated developments currently underway is Project 180 located in downtown Oklahoma City. Project 180, which began in 2010, is a redesign of downtown streets, sidewalks, parks and plazas constructed to improve the aesthetic appearance of Oklahoma City's historic Bricktown in order to make it more accessible and enjoyable for pedestrians. Other additions include landscaping, public art, marked bike lanes, decorative street lighting and on-street parking spaces to accommodate the growing area.

Chamberlin recently completed the restoration of the streetscapes portion of the project on Robert S. Kerr Ave. and N. Robinson Ave., a high traffic area of the



*Map detail of downtown Oklahoma City.*

city. Surface water from street level was making its way through a failed caulking joint to a basement directly underneath a commercial building. The leaks were causing the concrete above the basement to severely deteriorate. To remediate, Chamberlin performed a scope of work that consisted of

*(Continued pg. 2...see PROJECT 180)*

### CONSULTANT'S CORNER:

*Philip J. Sumang, P.E.  
President, EDI Building Consultants, Inc.*



### Basic Do's and Don'ts of Waterproofing

On the surface, achieving effective weather-resistance seems like an easy objective to accomplish. The design for weather-tightness can be summed up in a simple concept known as "the 4Ds":

- Deflection** – keep water away from potential points of entry.
- Drainage** – provide means of removing water that enters.
- Drying** – allow moisture to be removed by ventilation or diffusion.
- Durability** – provide materials with appropriate durability.

*(Continued pg. 2...see DO'S AND DON'TS)*



## INSIDE this issue

**Detail and Precision on  
Project 180.....2 - 3**

**Basic Do's and Don'ts of  
Waterproofing.....2 - 5**

**Trophy Case.....5**

**Employee Profile.....5**

**Projects in Progress...6**

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patching existing damages to the concrete above the underground basement, surrounding areas and sidewalks along with new waterproofing installation.

The damage to the concrete on top of the basement was very extensive and required the entire sidewalk to be demolished and removed. Chamberlin also removed all of the old waterproofing and buffed out all bulges and imperfections as well as patched existing holes with a cementitious filler to ensure the waterproofing would be installed properly and adhere to the substrate. Once prepared, a liquid membrane was applied to the concrete followed by the installation of sheet waterproofing.

As this is a beautification project with a lot of landscaping, the placement of root systems from trees was taken into consideration during the waterproofing installation. Chamberlin strategically maneuvered material around the current tree roots in order to prevent possible future root penetration through the completed waterproofing.

Upon completion of the scope, it was necessary for Chamberlin to ensure the installation was watertight. Water tests were performed on the area over a 24-hour period by creating water dams and allowing a two-inch pool of water to sit during that stretch of time. Chamberlin precisely measured the standing water to ensure there was no penetration into the basement below. Chamberlin's work proved to be successful with no leaks detected during the water tests.

Soon after the completion of the water tests, Chamberlin installed a drainage board thus allowing concrete to be poured by a third party in order to complete the entire streetscapes scope of work.

Project 180 was one that proved challenging and rewarding for Chamberlin's crew as they rose to the occasion to complete the work with the surrounding areas still very much in use. Shane Allen, project manager for the general contractor, Rudy Construction, was impressed with Chamberlin's ability to meet challenges and work together.



*The concrete on the sidewalk and above the basement was severely damaged.*



*Chamberlin performed water tests to ensure there were no leaks to the underground basement.*

(Continued pg. 3...see PROJECT 180)

## (DO'S AND DON'TS Continued from pg. 1)

Unfortunately, the objective is often times more difficult to achieve in reality than is implied by the simple concept of the 4D's. The reality is that water infiltration reportedly accounts for up to 80 percent of construction litigation. To help bridge the gap between concept and reality, I've outlined below a few "Do's and Don'ts" I've learned over more than two decades of investigating building enclosure failures. Although these additional recommendations only scratch the surface of waterproofing design and performance issues, they should provide additional context to the "4Ds" and the basic principles of waterproofing design.

### Do's

**Do** design the exterior enclosure systems to eliminate or reduce the environmental loads on the exterior whenever feasible. On a macro level, changing the building siting and orientation can reduce the loads on an enclosure system. On a micro level, incorporation of design details such as drip edges, projecting elements, and recessed windows can be effective in limiting exposure to precipitation and other environmental loads.

**Do** shed water off surfaces and avoid surface rundown. This "Do" is intended to reduce or eliminate moisture loads on the cladding system. When water is permitted to run down a surface, it increases the likelihood it will find a path for infiltration, such as a failed sealant joint or deteriorated gasket. Permitting water rundown can also degrade the appearance of the building enclosure by increasing dirt pickup and biological growth and decrease the durability of the cladding by causing erosion of finishes and freeze-thaw deterioration in northern climates.

**Do** provide waterproofing detailing that utilizes bulk-water management strategies that limit moisture intrusion from each of the primary transport mechanisms of gravity, wind and capillary suction. A commonly used detail that is notorious for poor waterproofing performance, because it often fails to address the primary transport mechanisms, is the practice of cutting masonry through-wall flashing flush with the exterior face of the masonry and not providing a drip edge. This detail often permits water to circumvent the flashing by allowing capillary suction to draw water inward and under the flashing.

(Continued pg. 3...see DO'S AND DON'TS)



Chamberlin crew member applies a cementitious filler to ensure the waterproofing would be installed properly and adhere to the substrate.

"I have been thoroughly impressed with Chamberlin's field and office personnel. They have been very responsive to performing the work on the streetscape projects. Their communications have been superb. When building such high profile projects, that goes a long way," said Allen. "These projects are very detailed and require precise coordination. We are thankful that all of our subcontractors are on board with us. I also appreciate the quality of work that is being performed. Chamberlin always checks with the A/E to make sure everything is up to par with their items of work before turning it over to us. We look forward to building the

next phase of the downtown streetscapes with them."

This project, as Allen highlighted, was high profile due to the historic location and required precise coordination and attention to detail. Streets were blocked off to vehicular and pedestrian traffic around the work area which required Chamberlin to stay on schedule in order to complete their portion of work on time. Extending the amount of time traffic was being detoured was not an option.

Safety on this project was incredibly important in such a heavily populated area.



Chamberlin applied waterproofing on multiple sidewalks for Project 180.

"As always, safety is top-of-mind on every project, and this one was no different," said Kraig Murray, safety coordinator for Chamberlin. "We always want to make sure that our team, the public and the project are safe at all times. We successfully completed our phases of the project with no injuries or safety infractions."

Since completing the scope for their first phase of work, Chamberlin is currently preparing to start on the second phase of streetscape restoration at N Robinson Ave. and NW 4<sup>th</sup> Street. To read more on Project 180, visit [www.okc180.com](http://www.okc180.com). ■

## (DO's AND DON'TS Continued from pg. 2)



Excavation at a cut back flashing prior to remediation. The flashing installation was a significant source of water infiltration since original construction.

**Do** provide robust detailing and ensure that more than a single line of defense against water intrusion is provided. When detailing the exterior cladding systems, some water intrusion should be expected to get past the exterior cladding system, and waterproofing detailing should provide a means for dissipating water to prevent accumulation and subsequent damage. Because sealant failures are inevitable and periodic sealant maintenance is unavoidable, reliance on a single bead of sealant as the sole means of preventing water infiltration is not a prudent waterproofing approach. A robust waterproofing system should accommodate the eventual water intrusion from the failure of sealant joints.

**Do** drain water to the exterior as quickly as is feasible in drainage wall designs instead of draining it into the drainage cavity. The more quickly a cladding system can dissipate water, the greater its capacity to resist water intrusion.

(Continued pg. 4...see DO'S AND DON'TS)



**Do** keep it simple. Clean, simple and elegant often describe the most durable and effective waterproofing details. Limit the inclusion of design details that are difficult to successfully execute. Don't needlessly complicate detailing by incorporating unnecessary plane changes or complicated geometry, and if complexity is unavoidable, provide isometric drawings to depict the waterproofing detailing at horizontal and vertical intersections. If the designer is not able to draw a workable waterproofing solution, you can bet that a functional waterproofing installation is unlikely to occur.

**Do** provide waterproofing detailing for interface conditions between cladding system, joints, junctures, penetrations and unique conditions. The detailing should be consistent with the designer's selected water management approach and should ensure proper integration of components and systems.



*Deterioration of a glulam beam due to improper integration of balcony and wall interface detailing.*

**Do** select cladding system components with the appropriate durability for expected service life. Components that are not readily accessible or cannot be easily maintained, should have a service life equal to that of the overall cladding system. The choice of masonry through-wall flashing is a typical example of where improper component selection can be a costly mistake. Plastic and rubber flashings are commonly

specified because of the lower initial cost; however, stainless steel and copper flashing are extremely durable but cost significantly more than their plastic and rubber counterparts. Cost, durability, and appropriate detailing requirements should be carefully evaluated when making a flashing selection. Replacement costs for masonry through-wall flashing can be as much as \$200 per linear foot.

**Do** consider access for maintenance and design details where cladding materials have a maintenance interval shorter than the service life of the enclosure system to permit anticipated maintenance and replacement without extraordinary or unusual effort. Sealant joints, seals in window systems and coatings are common materials that will require periodic maintenance.

#### Don'ts

**Don't** use design details that require installation perfection or unrealistic durability expectations to achieve the required waterproofing performance. Pay attention to manufacturer's recommendations and limitations published in evaluation reports and product literature. Be aware that selecting a product that conforms to a standard does not assure that the product will perform adequately in all applications. When developing waterproofing details and selecting products, it is essential to determine what the exposure conditions and system performance requirements are and how these affect the performance of the proposed materials and details.

**Don't** use materials or cladding components in applications that push the limits of performance beyond the normal or intended use. A simple example of this situation would be the use of a cladding system or window assembly in a sloped wall application. By changing the wall orientation to increase the skyward exposure of the assembly, the moisture loads on the wall assembly are increased significantly beyond the normal loads experienced by a similar vertical wall assembly. In a vertical wall, the pattern of wetting during a rainfall event is typically concentrated at the top of the wall and at

the corners unless the wind is blowing water into the plane of the assembly. However, in a sloped wall application, wetting occurs over the entire surface of the wall during all rainfall events, and water cannot be shed off the wall surface through the use of drip edges and projections. In essence, a sloped wall assembly should be thought of as a roof from a waterproofing perspective and conventional wall waterproofing detailing will not be durable or effective. Gaps, open joints and failure or defects in seals and sealants will be a significant source of water infiltration.



*Sloped EIFS and window assemblies, vertical and horizontal offsets. The epitome of complexity, poor detailing, and pushing performance limits. Surprise. It leaked and wasn't durable.*

**Don't** use incompatible materials. Waterproof performance relies on appropriate detailing and proper integration of system components such as weather resistive barriers, flashings, sealants and coatings, and the use of incompatible materials can prevent otherwise appropriate details from functioning as intended. Incompatibilities between polyurethane coatings and silicone sealants, butyl flashings and asphalt products, and galvanic corrosion between dissimilar metals are just a few common examples. Always consult the manufacturer's literature

(Continued pg. 5...see DO'S AND DON'TS)

## Trophy Case: Project and Safety Excellence Awards

Chamberlin Roofing & Waterproofing was awarded two Excellence in Construction awards by local chapters of the Association of Builders and Contractors (ABC) as well as a Construction Users Roundtable (CURT) Construction Industry Safety Excellence award.



Left to right: Mel Bowman with Overhead Door Company of Tulsa, Inc.; Jeremy Dale, Chamberlin Project Manager and Bobby Barnes, Superintendent with the Oklahoma Chapter ABC Award.

The ABC Oklahoma Chapter recognized Chamberlin in the "Specialty Contracting" category for their waterproofing work on The University of Oklahoma's Radar Innovations Laboratory, a new 35,000 square foot state-of-the-art education facility. Chamberlin was presented the award in October at the Cox Business Center in Tulsa, OK.

TEXO, the North and East Texas ABC chapter, awarded Chamberlin for the restoration of a 102-year old Texas historic landmark, The White Rock Pump Station. In less than a year,



Ryan Grigsby, Senior Project Manager with TEXO Award.

Chamberlin successfully restored the facility to its former aesthetic glory while preserving its historical integrity.



Gregory Sizemore, Executive VP, CURT presents Jeremy Waldorf, Chamberlin Safety Director with the Construction Users Roundtable Award.

Chamberlin was also awarded the Construction Users Roundtable (CURT) Construction Industry Safety Excellence award for their outstanding safety program. Chamberlin strives daily to improve their safety culture and to get every one of their employees home safely to their families each night. ■

### (DO'S AND DON'TS Continued from pg. 4)

and the manufacturer's technical representative when making product selections with unfamiliar materials or material combinations.

**Don't** incorporate vapor retarders and vapor barriers in the design of an enclosure assembly in a manner or location that results in interstitial condensation or moisture accumulations. A hygrothermal analysis should be performed on enclosure assemblies to evaluate the drying potential of the assemblies and to determine if the placement of vapor retarding materials results in moisture accumulations from condensation or slow drying.

Although the above recommendations are not a comprehensive coverage of enclosure design, following the

concept of the "4D's" and the recommended "Do's and Don'ts" should go a long way to help the objective of weather-tightness become a reality. ■

*Mr. Sumang is the President of EDI Building Consultants and has more than 25 years of investigative and remedial design experience for structural, waterproofing and building enclosure projects. Mr. Sumang has both a degree in structural engineering from Marquette University and an MBA in Finance from Rice University. He is a registered professional engineer and forensic expert in the area of building enclosure systems and waterproofing, and is an active participant in professional organizations that develop construction standards, practices and guidelines. He can be reached at 713-772-6300 or psumang@edibc.com.*

## Employee Profile

**Adam Matthys**  
General Manager —  
Waterproofing & Caulking  
San Antonio, TX



Adam Matthys is a prime example of the saying, "Hard work pays off." Currently the General Manager of the waterproofing operations in San Antonio, Adam admits accepting the job at Chamberlin was the best career choice he ever made.

### Experience:

While attending college at Southwest Texas State, Adam began working as a laborer on the weekends learning how to caulk and install waterproofing. He gradually began running small projects learning the role of a superintendent. After a friend, Lyle Coston, was offered a job at Chamberlin in 2000, Adam joined him and worked in the field as a superintendent in Houston for about 3 years. At the same time, he was taking online courses to obtain a Business Management degree from the University of Phoenix, and several years later, Adam gradually worked his way up through various positions and earned the role of General Manager in San Antonio.

### A Day in the Life:

On any given day, you can find Adam working on construction document takeoffs or putting together a proposal. He works closely with operations team members to help make project estimates as accurate as possible.

"Among Adam's many contributions are superb accuracy on estimates, excellent business development accomplishments, handling operation issues, negotiating contracts and dealing with day to day issues in San Antonio," said Executive Vice President, Art Canales. Adam has come to pride himself on consistently bidding and selling profitable work, which is a testament to 14 years of hard work.

### Outlook:

Adam is big on customer service. He believes it is important to do what you say and say only what you can deliver. He is great at maintaining business relationships because he makes a point to always respond to his clients regardless of what the request is.

### Outside the office:

If he is not bidding work at the office, Adam enjoys spending time with his wife and two kids. They particularly like to take family trips to Colorado and Arkansas when time allows. When he is not juggling all of the kid's extra-curricular activities, Adam enjoys golfing, hunting and relaxing with a nice cold one. ■

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

### ADAM'S ANSWERS:

Bottle (Either, beer is good!) Draft

Aisle Window

Sweet-N-Low Sugar

Debit Credit

Hot-Tub Pool



# PROJECTS IN PROGRESS

## LOCATIONS:

Call the nearest local office  
or 1-800-749-1432

### HOUSTON

7510 Langtry  
Houston, Texas 77040  
Ph. (713) 880-1432  
Fax (713) 880-8255

### DALLAS/FT. WORTH

2346 Glenda Lane  
Dallas, Texas 75229  
Ph. (214) 273-9110 / (817) 237-1927  
Fax (214) 273-9120 / (817) 237-2676

### AUSTIN

1515 Dungan Lane, Ste. 210  
Austin, TX 78754  
Ph. (512) 275-1600  
Fax (512) 275-1603

### SAN ANTONIO

9035-E Aero St.  
San Antonio, TX 78217  
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

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Tulsa, OK 74116  
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Fax (918) 439-0067

Also licensed in  
Arkansas, Louisiana and  
New Mexico.

### DYLAN APARTMENTS – DALLAS, TX

#### Remedial Waterproofing

Contract Amount: \$1,500,000 (approx.)  
Owner: Canyon Capitol Realty Advisors, LLC  
Consultant: Wiss, Janney, Elstner Associates, Inc.  
General Contractor: Chamberlin Roofing & Waterproofing  
Scope of Work: Dampproofing, elastomeric coating, spray air barrier, joint sealants, veneer plastering, painting, flashing and coping  
Project Description: Luxury apartments and townhomes

### KC 46A HANGAR – McCONNELL AFB, KS

#### New Construction Waterproofing

Contract Amount: \$250,000 (approx.)  
Owner: U.S. Army Corps of Engineers  
Architect: Burns & McDonnell  
General Contractor: Archer Western Aviation Partners  
Scope of Work: Dampproofing, bentonite waterproofing, air barrier, firestopping, joint sealants and expansion joints  
Project Description: Three hangars to house KC-46 Pegasus tanker fleet

### OIL & GAS TECHNOLOGY CENTER – OKLAHOMA CITY, OK

#### New Construction Waterproofing

Contract Amount: \$450,000 (approx.)  
Owner: GE Global Research  
Architect: Miles Associates  
General Contractor: Flintco, LLC  
Scope of Work: Below-grade sheet waterproofing, air barrier and joint sealants  
Project Description: GE and Devon Energy's technology center

### BAYLOR STADIUM – WACO, TX

#### New Construction Waterproofing

Contract Amount: \$1,500,000 (approx.)  
Owner: Baylor University  
Architect: Populous, Inc.  
General Contractor: Austin Commercial  
Scope of Work: Air barrier, firestopping, roof coating, joint sealants, flashing and expansion joints  
Project Description: McLane Football Stadium

### THE METHODIST HOSPITAL RESEARCH INSTITUTE – HOUSTON, TX

#### Remedial Waterproofing

Contract Amount: \$250,000 (approx.)  
Owner: Houston Methodist Hospital  
Architect: WHR Architects  
General Contractor: Chamberlin Roofing & Waterproofing  
Scope of Work: Removal of existing waterproofing and installation of new topping slab, cold applied waterproofing membrane, rigid insulation and concrete pavers  
Project Description: Twelfth floor terrace renovation

### HOUSTON METHODIST SUGAR LAND – SUGAR LAND, TX

#### New Construction Roofing

Contract Amount: \$1,000,000 (approx.)  
Owner: Houston Methodist Hospital  
Architect: Watkins Hamilton Ross Architects  
Consultant: Zero-Six Consulting, LLC  
General Contractor: Vaughn Construction  
Scope of Work: Modified bitumen roof system, sheet metal flashing and metal panel entry canopy  
Project Description: Bed tower and cath lab addition

### HOMEWOOD SUITES GARAGE RENOVATION – SAN ANTONIO, TX

#### Remedial Waterproofing

Contract Amount: \$150,000 (approx.)  
Owner: Chatham San Antonio, LLC  
Architect: DLR Group  
General Contractor: Swinerton Builders  
Scope of Work: Elastomeric and traffic coating  
Project Description: Parking garage for hotel and downtown customers

### BAYLOR COLLEGE OF MEDICINE (CNRC) – HOUSTON, TX

#### Remedial Waterproofing

Contract Amount: \$950,000 (approx.)  
Owner: Baylor College of Medicine  
Consultant: Zero-Six Consulting, LLC  
General Contractor: Chamberlin Roofing & Waterproofing  
Scope of Work: Demolition and removal of existing tiles, topping slab and waterproofing; installation of new hot-applied waterproofing membrane, rigid insulation and concrete pavers  
Project Description: Children's Nutrition Research Center

### KNOX PARK – DALLAS, TX

#### New Construction Roofing and Waterproofing

Contract Amount: \$500,000 (approx.)  
Owner: Knox Apartments Owner, LLC  
General Contractor: MCRT North TX/Mountain States Construction, LLC  
Scope of Work: Single ply roof system, flashing and coping, blindside waterproofing, fluid applied waterproofing, fire sealant and elevator pit waterproofing  
Project Description: Multi-family residence

### INDIGO HOTEL – AUSTIN, TX

#### New Construction Waterproofing

Contract Amount: \$300,000 (approx.)  
Owner: 9th Red River, LLC  
General Contractor: Journeyman Construction  
Architect: Mitchell Carlson Stone, Inc.  
Scope of Work: Below-grade and cold fluid-applied waterproofing, elevator pit waterproofing, traffic coating, air barrier and joint sealants  
Project Description: 10-story hotel

For a complete list of specialty contracting services, visit [www.chamberlinltd.com](http://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
- Preventative roof maintenance plans
- Roof & building envelope surveys
- Proactive Roof Asset Management
- On call service 24 hours/365 days a year
- Free estimates