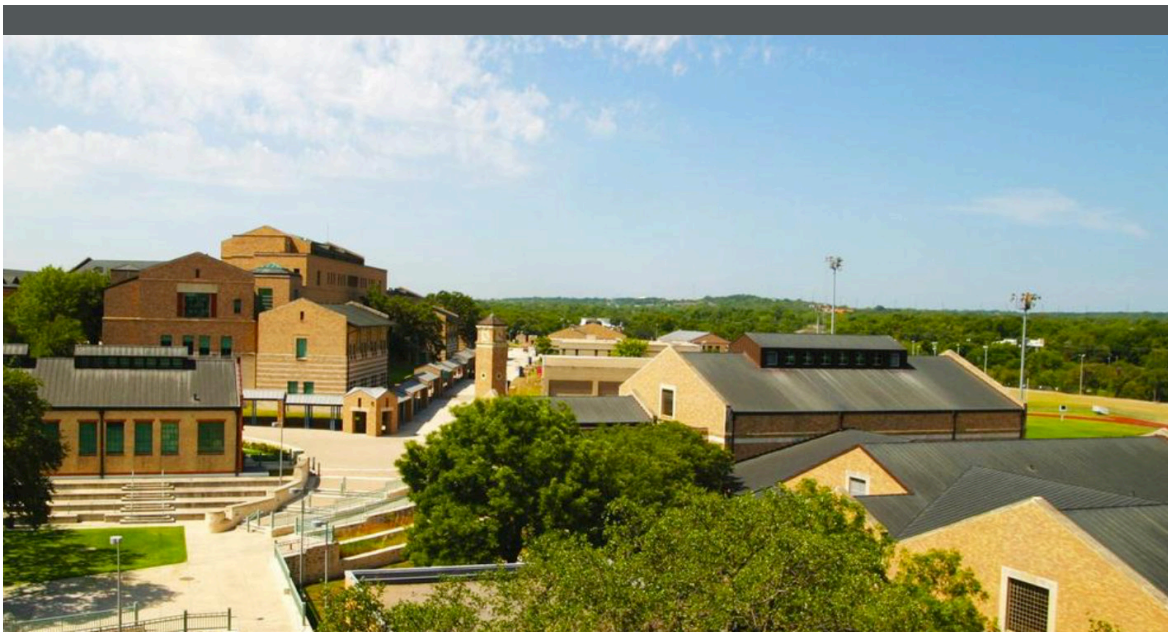
WINTER 2020

CHAMBERLIN
Roofing & Waterproofing

NEWSLETTER

Texas School Receives A+ Remediation



Chamberlin performed roof replacement and waterproofing scopes at Texas School for the Deaf in Austin, Texas.

Texas School for the Deaf (TSD) in Austin, Texas, is a state-operated primary and secondary school for deaf children to help them learn, grow and belong. The oldest public school in Texas that has been continually in operation, Texas School for the Deaf's goal is for every child across the state of Texas who is deaf or hard of hearing to receive educational services that meet his or her unique needs. With that goal in mind, the TSD facility supports specialized educational programs, teaching strategies and essential resources in five key areas that enhance learning opportunities and promote educational excellence for these children, while also providing needed support to their families and the professionals who serve them. The school opened in 1857 with just an old farm house, three log cabins and a smokehouse. In the 1960s, an east campus was built. In the late 1980s, plans began to consolidate TSD's two campuses into 458,000 square feet of new construction. One reason for the $65 million-dollar appropriation by the state Legislature was a sense that the School for the Deaf facilities were both outdated and inefficient. Another reason was the hope that consolidating the campuses would save money—one campus would need one health center instead

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CONSULTANT'S CORNER

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Structural Engineer and Senior Consultant
Raths, Raths & Johnson

Moisture Remediation in Single Wythe Masonry

Standards, testing and proven industry guidelines are key to performance.

A unique seven-story building in the Midwest exhibited leakage problems resulting in interior finish damage and mold problems. The leakage problem, evaluated following the protocol of ASTM E2128,[1] identified two major water entry paths. The first and

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of two, one security department, one maintenance department and one cafeteria. One hundred and sixty three years after opening, the campus now has 11 buildings on site, a football field, running track and over 550 students attending.

In 2015, over 15 years after the new campus was built, several buildings were experiencing water intrusion. Chamberlin kicked off a four-year project to rectify the water intrusion and re-roof different sections of the campus.

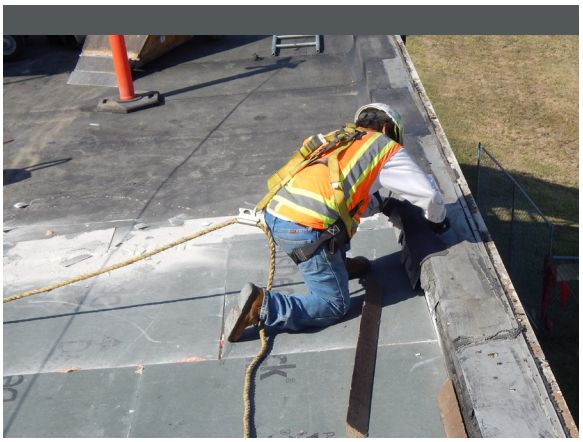
TOP OF CLASS SAFETY PLAN

While the buildings under construction were not occupied, the school was still operating during construction so the protection of not only crew members but also students and teachers was a primary focus. Chamberlin began by developing a site-specific safety plan for the project, and the superintendent communicated the plan to all crew members. A Job Hazard Analysis (JHA) was also developed for this project which covered each task on the job, potential hazards associated with those tasks and how to prevent those hazards from causing an accident. The superintendent reviewed it with crew members each day before work began.

Warning and directional signage as well as designated pathways were in place for foot traffic. Visible signage was of high importance for those who may not be able to receive an audible warning if they approach potential safety hazards. All equipment was inspected daily by a competent person before use. Personal protective equipment was worn at all times, and Chamberlin's zero tolerance fall protection policy was in place. Weekly toolbox talks were held for all crews covering pertinent safety topics and reinforcing Chamberlin's safety policies and procedures.

A CALCULATED APPROACH

Chamberlin's scope included modified bitumen roofing, prefinished metal panels, cementitious and reactive waterproofing, through-wall flashing, joint sealants and expansion control. The metal deck under the modified bitumen roofing system on the Seeger Gym was rusted to the point of needing to



Installing modified bitumen roof system on the Seeger Gym

Completed installation of modified bitumen roof system

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Figure 1: Typical ASTM C1601 test setup

most severe was leaking windows, particularly around packaged through-wall air conditioner (PTAC) units as well as at frame joints and glazing gaskets.

Two before-and-after investigative ASTM C1601[2] tests were conducted (Figure 1). Although there are no industry standards for permeability rates, measured rates are judged to be reasonable for masonry assuming that there was a functional drainage cavity and flashing. Unfortunately for this building, water which penetrated the wall could not be handled by a deficient flashing system. Unsatisfactory initial installation of windows and masonry meant both had to be corrected to prevent further infiltration and damage.

Methods of Correction

The customary approach to repairs for leakage problems like this would have been to:
1. repair window openings, particularly the window flashing;
2. repair windows and PTAC sleeves; if not economical or feasible, replace them;
3. repair or replace the masonry flashing.

Windows and PTAC unit problems could be addressed in this manner, but the masonry presented several obstacles to conventional repairs. The non-loadbearing masonry envelope was constructed with a single wythe through-the-wall (TTW) partially reinforced brick, which was stacked from grade to roof and anchored laterally at floor lines. Cells containing reinforcing bars (rebar) were grouted, but remaining cells were not. The wall was laid overhand from the floor slabs,

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be replaced. This replacement had to be completed in a 24-hour time period due to weather concerns with the building being exposed. This meant the new modified bitumen roof installation would begin as the metal decking was laid, so both would be installed simultaneously. The crews worked around the clock with steel fabricator Patriot Erectors to complete the removal and replacement of the metal decking, an inspection of the decking and the new roof system installation in just 24 hours. Chamberlin had two crews taking shifts within the 24 hours to ensure the safety of the workers. An additional challenge was access for this installation. It was not safe to walk on the rusted metal deck after the existing roof was removed, so the crew members had to stand on the building's steel frame beams. All crew members were tied off 100% of the time while performing this scope.

On the Clinger Gym, Chamberlin installed a large standing seam barrel roof. Installation of this type of design can be very tedious. When installing a standing seam roof, it is important to have accurate and precise measurements for creating the metal panels. If the panels are too short, it can create costly issues such as having to refabricate entire panels. Chamberlin technicians took great care with their measurements and Chamberlin sheet metal experts fastidiously fabricated the panels to be installed. The material is costly, so minimal material waste was also a consideration. The roof system was successfully installed and watertight.

GROUP PROJECT

Prior to joint sealant installation, Chamberlin conducted an adhesion test mock-up to ensure the product and substrate worked together to create an optimal bond. The installation began with cleaning each joint, so the substrate was prepared for proper sealant adherence. The crews carefully installed the backer rod utilizing the proper width-to-depth ratio and finished by installing the sealant resulting in smooth, concave joints. Chamberlin conducted routine adhesion checks throughout the project. These newly sealed joints will help keep water out of the buildings and improve their aesthetic appeal.

Chamberlin installed modified bitumen roofing on the Seeger Gym in addition to a ballasted roofing system in the rooftop equipment area.

HONOR ROLL

Chamberlin's attention to detail and expertise gained from decades of roofing and waterproofing experience helped them deliver high-quality installations for this school campus. The Texas School for the Deaf revitalization was completed on schedule with zero safety incidents.

The project stakeholders were very pleased with the final outcome of the project and the hard work and dedication Chamberlin put into the job. Subsequently, Chamberlin has been requested for two additional projects at Texas School for the Deaf. ■

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precluding the possibility of creating a drainage cavity behind the brick using studs, sheathing and a weather-resistive barrier. Given this construction method and the type of masonry, the wall was intended to function as a barrier wall rather than a cavity wall.

Standard recommendations which would have enhanced barrier wall performance, such as applying parging, dampproofing or non-moisture sensitive insulation to the back of the wall, were not followed at initial construction. Batt insulation was installed between interior studs in direct contact with the masonry and the interior wall was finished with paper-faced drywall.

Without a defined drainage cavity capable of managing water without adverse effects, the very concept of flashing is questionable, yet a valiant attempt was made. A plastic sheet material was laid in the bed joint at floor line. Without sheathing, a drainage cavity and unsealed laps, the intended function of this plastic sheet flashing material is unclear.

The inside edge of the flashing was attached to the outside face of the open interior furring studs (Figure 2). The outside edge of the flashing was held back from the brick face, penetrated by rebar, not adhered to the substrate and dammed by mortar as shown in Figure 3.

Additionally, the sheet masonry flashing was not integrated with window flashing and a plastic vapor retarder was installed behind the drywall, precluding effective

Figure 2: Inside edge of wall flashing secured to open stud furring. (Batt insulation removed for inspection.)

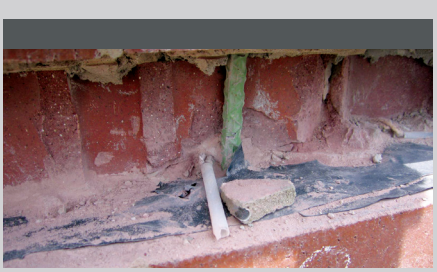

Figure 3: Condition of original wall flashing.

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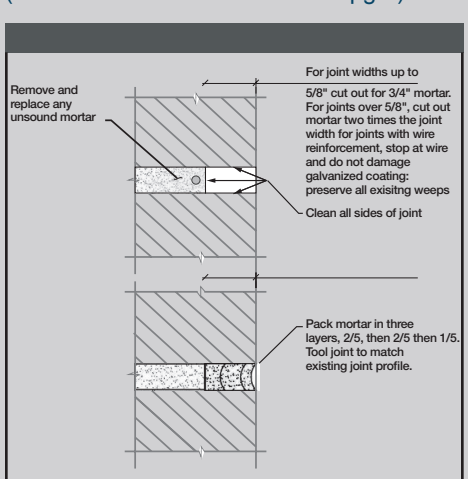

Figure 4: Repointing detail on repair drawings

drying to the interior. If the wall had performed properly, it could have been considered an example of brilliant value engineering. Given the leakage problems, the wall is considered an unfortunate deviation from industry practices, resulting in nonperformance behavior as well as a repair challenge.

Obstacles to Flashing Repair

Conventional repair of the flashing would not be easy and might not have solved the masonry problem because of several challenges:

1. since the wall was stacked for seven stories, removing bands of brick could be risky;
2. penetration of the flashing by rebar, which was a problem in the original construction, would remain a problem during the repair;
3. removing and replacing TTW brick presents special problems because face shell must be removed to slide the replacement brick around the rebar and then somehow restored;
4. cells containing rebar must be regrouted;
5. there would still be no defined drainage cavity and batt insulation would remain in contact with the back of the brick;
6. removing and replacing large portions of TTW brick changes the stress distribution within the wall.

While all six challenges are of concern, the last was of particular concern. When a portion of stacked TTW brick is removed for flashing repair, the gravity dead load is transferred to adjacent brick and replacement brick will have no dead load stresses. For a one-story brick veneer wall, stress redistribution has not proven to be a problem. For a seven-story wall, there was concern that changing stress distribution in this way could initiate cracking for the same reason that an unreinforced opening in structural masonry would. It was not difficult to decide that replacing the flashing was probably not a good idea.

Repointing as Alternative Means of Repair

Although results of the C1601 tests indicated that the masonry permeability rate might be acceptable for a wall with a functioning drainage and flashing system, the dysfunction of the actual flashing system mandated some kind of response. It was decided to essentially abandon the existing flashing system and use repointing to reduce the permeability of the wall and rely on the absorptive and drying properties of the masonry to compensate for whatever permeability remained.

As part of the repair plan, a repointing detail was prepared (Figure 4). The detail is in essential conformance with BIA recommendations.[3] It has been the author's experience that repointing can reduce the permeability of a brick wall to negligible and barely measurable rates. This finding is corroborated by Whitlock[4] and Coney[5]. Two before-and-after C1601 tests of a mockup area were specified as recommended by Hoigard.[6,7] Tests were not specified as a quality control measure – after all, the detail was abundantly clear and repointing is routine – but to determine if the improvement achieved would justify abandoning the existing flashing. Repointed areas looked very good during a visual examination after the fact. Test results, in the table, distinctly indicated otherwise.

C1601 Test Location	Rate Before Repointing (gal/12sf/hr)	Rate After Repointing (gal/12sf/hr)
1	1.6	2.0
2	3.4	2.2

Remarkably, the permeability rate actually increased at one mockup test location and rates at both locations can hardly be considered negligible. How could this happen?

Repointing was diagnosed by cutting out representative head and bed joints. Bed joints (Figure 5) were clearly not placed in three lifts as required in the details. Bond of the pointing mortar to the brick surface was poor and failed during the sawing operation. Head joints (Figures 6 and 7) were also not placed in three lifts and the only apparent preparation was to plunge a grinder into the head joint as far as it would go without cutting the brick above and below the joint. The bond of the head joint pointing mortar was so weak that the mortar could be removed like a slice of bread. Unfortunately, the repointing proved deficient and, consequently, repointing accomplished nothing.■

Figure 5: Bed joint repointing mortar placed in one lift and not well bonded to brick surface.

To continue reading article and source citations, visit: www.chamberlinltd.com/articles/moisture-remediation-single-wythe-masonry

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dynamicsofmasonry.com

Robert J. Kudder, PhD, PE, SE, FASTM, is a structural engineer and senior consultant at Raths, Raths & Johnson in Willowbrook, IL, with expertise in observation, field and laboratory testing and repair of non-performing and distressed structures, particularly the performance testing and evaluation of building walls. He is active in The Masonry Society, American Society of Civil Engineers, Structural Engineers Association of Illinois, Construction Specifications Institute, Exterior Design Institute and ASTM E06.55.15-Water Leakage Through Walls, E06.55-Performance of Building Walls, E06.58-Performance of Exterior Insulation and Finish Systems. Kudder earned a Bachelor of Engineering from The Cooper Union and a Doctor of Philosophy and Master of Science from Northwestern University. Contact info: rjkudder@rrj.com and 630.325.6160.

Industry Honors for Excellent Workmanship

Field Operations Managers Andy Joe Kuchta (left) and Austin Bartlett (right) celebrated Superintendent Artemio Sanchez's TEXO Craft Professional of the Year honor.

Chamberlin Roof Maintenance & Leak Repair Superintendent Artemio Sanchez was honored with the 2019 TEXO Craft Professional of the Year award. This distinction is awarded annually to one carefully selected tradesperson and recognizes professionals in the construction industry who demonstrate high levels of productivity, safety and expertise.

Artemio holds safety as a primary focus on each project he undertakes. He is mindful of other crews, trades and pedestrians around the jobsite. His trained eye is continually on the lookout for potential hazards that can be corrected before becoming an incident. His forethought and planning also help him identify potential issues with installation, material compatibility, scheduling and more. Reviewing plans and attending pre-construction meetings with project stakeholders helps him fully understand Chamberlin's scope. He is an integral part of developing solutions with the project team.

Artemio is a lead-by-example supervisor who encourages, teaches and mentors his crew. He believes that developing team members is the foundation for growth and collective future success. He also participates in recruiting efforts to sustain and grow our workforce.

In Artemio's 20+ years with Chamberlin, he has consistently upheld Chamberlin's core values of safety, quality and teamwork. He has been a great asset on many projects, and Chamberlin is proud to have Artemio on their team. ■

Chamberlin was honored to receive an Engineering News-Record (ENR) Texas & Louisiana Best Project Award for their work on the Glassell School of Art building at the Museum of Fine Arts Houston. Judges selected the winning entries based on overcoming challenges, teamwork, safety, innovation and contribution to the industry.

The new Glassell building doubled in size, encompassing 93,000 square feet plus a sprawling plaza. Chamberlin installed over 250,000 square feet of waterproofing products below and above grade for the facility along with joint sealants, expansion joints and a PVC roofing system. In two years, Chamberlin sealed the new Glassell School of Art watertight, leaving a space for Houstonians to access performing arts and education for years to come. ■

Employee Profile

Monica Pfeiffer
Senior Director
Marketing & Business Development
Houston, Texas

Experience:
Monica brought extensive knowledge in media and communications when she started at Chamberlin. While she admittedly didn't know a thing about construction, she came in motivated and eager to learn. By reading product manuals, visiting jobsites and climbing 40-foot ladders to observe projects, her eyes were quickly opened to a whole new world.

A Day in the Life:
Though Monica started in 2004 as a Marketing Coordinator working on communications and sales communique, these days Monica spends most of her time interfacing with our clients and leading our business development and marketing teams. When she's not in internal meetings or meetings with clients, you can find her on the phone with members of the business development team following up on opportunities, reviewing proposals or overseeing projects from our marketing team.

Outlook:
Monica believes our field installation teams are the front lines of our marketing and business development efforts. How they perform on our clients' buildings speaks louder volumes than any marketing literature we can produce. Our field team does the one thing that Chamberlin gets paid to do – install roofing and waterproofing products in a high-quality fashion and safely.

Outside the Office:
When not in the office, you can find Monica moonlighting as a group fitness instructor at local gyms teaching BodyPump and BodyCombat, traveling with her husband, Daniel, or annoying her son, Ellery, with her singing. ■

We asked Monica to choose her favorites from this random list of things as a way to get to know her a little better:

MONICA'S LIST:	
Football	Baseball
Summer	Winter
Coffee	Tea
Stay in	Go out
*NSYNC	Backstreet Boys

PROJECTS IN PROGRESS

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Fax (214) 273-9120

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Buda, TX 78610
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Fax (512) 523-9350

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

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

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

Also licensed in Arkansas and Louisiana

Covenant Health Lubbock - Lubbock, TX
New Construction Waterproofing
Contract Amount: $800,000 (approx.)
Owner: Covenant Health System
Architect: HKS Architects, Inc.
General Contractor: Dunn + Teinert, a Joint Venture
Scope of Work: Installation of sheet waterproofing, pre-applied sheet waterproofing, modified bitumen sheet waterproofing, air barrier, joint sealants, expansion joints, sheet metal flashing and trim
Project Description: New Hope Tower Medical Center expansion

Emerald by the Sea - Galveston, TX
Remedial Waterproofing
Contract Amount: $300,000 (approx.)
Owner: Emerald by the Sea – Moarefi Management Solutions
General Contractor: Chamberlin Roofing & Waterproofing
Scope of Work: Installation of pool deck waterproofing and metal flashings
Project Description: High-rise condominium pool deck renovation

Baylor IHA/BSWI - Exterior Façade - Irving, TX
New Construction Waterproofing
Contract Amount: $350,000 (approx.)
Owner: Irving Hospital Authority
Architect: Perkins and Will
General Contractor: Turner Construction Company
Scope of Work: Installation of dampproofing, sheet waterproofing, thermal insulation, air barrier, flexible flashing, joint sealants, expansion control, sheet metal flashing and trim
Project Description: North façade of the Baylor Hospital

TSU Strahan - San Marcos, TX
Roof Replacement
Contract Amount: $400,000 (approx.)
Owner: Texas State University
Architect: Sink Combs Dethlefs Sports Architecture
General Contractor: Turner Construction
Scope of Work: Removed SBS premium modified bitumen roof and installed roof tiles, hot modified roofing, PVC membrane roofing, joint sealants, flashing and sheet metal
Project Description: College sports coliseum

HEB SA21 - San Antonio, TX
New Construction Roofing
Contract Amount: $600,000 (approx.)
Owner: HEB
Architect: Stantec
General Contractor: SpawGlass Construction
Scope of Work: Installation of fluid-applied waterproofing, water repellents, air barrier, joint sealants, sheet metal flashing and trim, wood blocking and sheet metal coping
Project Description: Grocery store

The Sophie - Houston, TX
New Construction Roofing and Waterproofing
Contract Amount: $2,000,000 (approx.)
Owner: Memorial Condominium, LLC.
Architect: Mirador Group
General Contractor: EE Reed Construction
Scope of Work: Installation of hot fluid-applied rubberized asphalt waterproofing, below-grade waterproofing, traffic coatings, thermal insulation, air barrier, sheet metal flashing, joint sealants, hot modified roofing, flashing and sheet metal
Project Description: Luxury condominiums

TNI Phase 2 - San Antonio, TX
Remedial Waterproofing
Contract Amount: $600,000 (approx.)
Owner: Methodist Healthcare System of San Antonio
Consultant: Raba Kistner
General Contractor: Chamberlin Roofing & Waterproofing
Scope of Work: Installation of joint sealants and expansion joint repairs
Project Description: Hospital parking garage

Halliburton Carrollton C2-C4 - Dallas, TX
Roof Re-Cover
Contract Amount: $650,000 (approx.)
Owner: Halliburton
General Contractor: Chamberlin Roofing & Waterproofing
Scope of Work: Removal of gravel from existing built-up roof system and installation of insulation and TPO roofing over existing roof
Project Description: Office building

YES Tallyho Campus - Houston, TX
Roof Replacement
Contract Amount: $1,000,000 (approx.)
Owner: YES Prep Public Schools
Architect: Element Architects
General Contractor: Linbeck Group, LLC
Scope of Work: Removed TPO roofing and installed 60 mil TPO smooth membrane
Project Description: Public charter school

2204 San Antonio - Austin, TX
New Construction Roofing and Waterproofing
Contract Amount: $600,000 (approx.)
Owner: Lincoln Ventures
Architect: Gensler
General Contractor: JE Dunn
Scope of Work: Installation of hot fluid-applied rubberized asphalt waterproofing, pre-applied sheet waterproofing, fluid-applied waterproofing, cementitious and reactive waterproofing, traffic coating, air barrier, firestopping, joint sealants, roof pavers, sheet metal flashing and trim
Project Description: Student housing

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