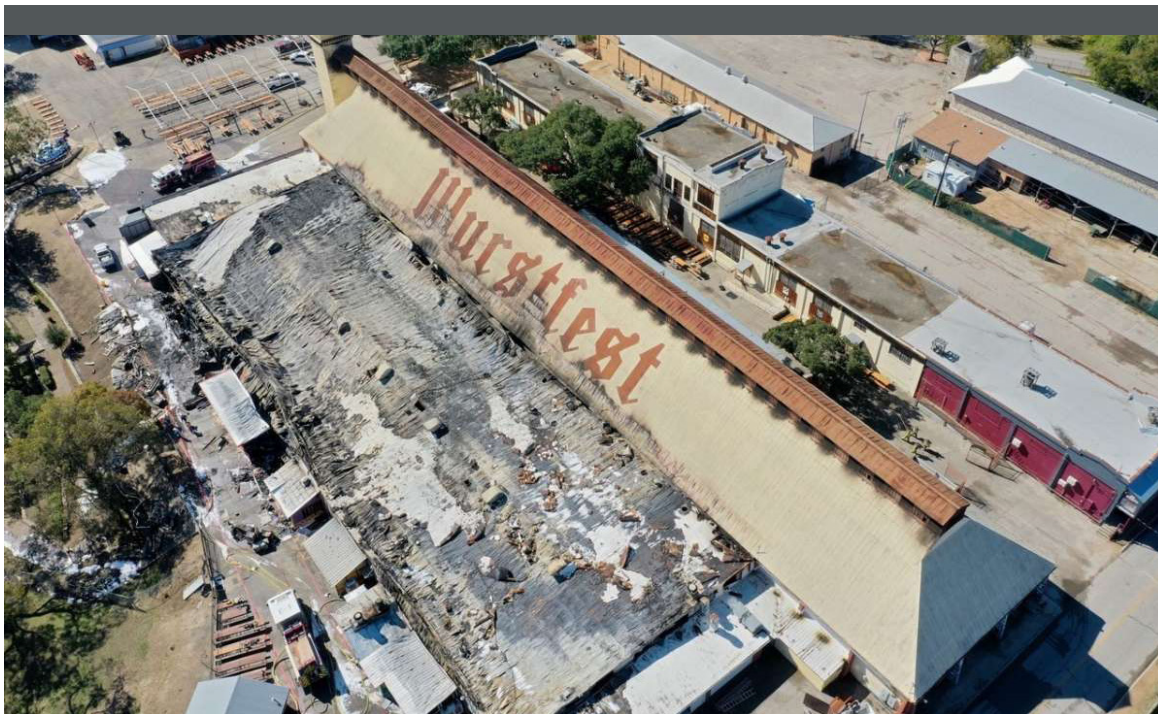


New Braunfels Receives the Wurst Renovations



A fire destroyed the Marktplatz and damaged the iconic Wursthalle of Wurstfest in New Braunfels, Texas.

Wursthalle in New Braunfels, Texas, is the main event center for Wurstfest. From humble beginnings as a one-day affair, it has grown into an annual 10-day festival commemorating German culture. Wurstfest is a non-profit corporation designed to promote local commerce, especially through tourism, and preserve the community's heritage. It provides a vehicle for local civic organizations to raise large amounts of money for a wide variety of community projects. Wurstfest is a special event that visitors can

attend, enjoy themselves and leave gratified, knowing that their expenditures will go towards worthwhile projects.

When the 2019 Wurstfest concluded, a fire started destroying the Marketplatz and damaging the iconic Wursthalle. Members of the Wurstfest Rebuild Committee swiftly brought on Design/Builder Byrne Construction to help them complete rebuild in time for the 2020 Wurstfest. Byrne engaged Marmon Mok Architecture as their design

(Continued pg. 2...see WURST)

Guest Column



Dwayne E. Sloan
Technical Director
Building & Life Safety Technologies
UL LLC

Catastrophic Exterior Wall Fires in High-Rise Buildings

Horrific fires involving the exterior walls of high-rise buildings have fueled debate over how to best mitigate rapid-fire progression on building exteriors. These fires represent a global challenge that begs for a solution.

Recent exterior wall fires involving high-rise buildings have fueled discussion and debate over how to mitigate rapid-fire progression on exterior walls that are clad with various construction materials.

(Continued pg. 2...see WALL FIRES)

INSIDE this issue

**New Braunfels
Receives Wurst
Renovations.....2-3**

**Exterior Wall Fires
in Highrises.....2-4**

Industry Honors.....5

Chamberlin 'U'5

Projects in Progress....6

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(WURST continued from pg. 1)

partner who presented new renderings and construction updates for Wursthalle at the February 2020 City Council meeting. "We rebuilt after a flood in 2015, we will rebuild after this," said Kelly Kistner, chief of safety and security for Wursthalle. "We will come back stronger than before, and we will come back better." The Marktplatz was designed to be a separate building from Wursthalle, or rather four buildings linked by a single roof with large overhangs. This was designed to enhance crowd control and improve the experience of festival goers through air flow and natural lighting. The new buildings were designed in a German look with Fachwerk styling that features external wood supports.

Chamberlin was selected by Design/Builder Byrne Construction for concrete restoration on Wursthalle and waterproofing installation on the new Marktplatz. Crew members worked hard to rectify the damage to Wursthalle and help build a new Marktplatz.

SMART SCHEDULING

Time was of the essence on this project, as everything had to be completed within seven months

for the 60th Annual Wursthalle. Construction had to conclude by the middle of October to allow the vendors enough time to set up their booths. The schedule was to remain the same even after COVID-19 hit and Wursthalle was canceled.

After the fire, Chamberlin crew members were one of the first trades on site in March of 2020 working under Byrne Construction. While roof repairs were needed, the buttresses and walls had to be repaired first to stabilize the building. Shoring was in place to secure the roof while the first task at hand was tackled. The project schedule was short and tight.

WORKING OUR HINTERN OFF

The Marktplatz was attached to Wursthalle and, when it burned down, it damaged the buttresses that were supporting the adjoining wall and roof of the hall. The extreme heat from the fire caused the concrete buttresses to crack and pull away from the wall in some areas. It also caused severe spalling in multiple locations.

Nineteen buttresses were in need of concrete repairs. The crew began by removing all loose spalls and



Rendering of the new Marktplatz



Nineteen buttresses with unique imprints on the concrete needed repair at Wursthalle

(Continued pg. 3...see WURST)

(WALL FIRES continued from pg. 1)



To better understand the exterior wall flammability issue and move towards solutions this article will:

- Discuss the factors that influence building construction related to these types of fires
- Provide an understanding of certain fire tests that are sometimes misconstrued as suitable for the evaluation of exterior walls
- Examine the importance of selecting tests for specific regions, codes, and regulations.

The article will also cover UL's third-party certification approach that can be used to identify exterior wall assemblies that have successfully complied with required test methods. This information can hopefully be useful in preventing future exterior wall fires of these types.

In October 2019, the long-awaited Grenfell Tower Inquiry Phase 1 Report was released. The Grenfell Tower inquiry is a public investigation independently examining the circumstances surrounding the fire at Grenfell Tower that occurred on June 14, 2017. According to the inquiry report a fire broke out on the fourth floor of the 24-story housing flat in North Kensington, London, and spread to the building exterior. It quickly raced up the building exterior, ultimately resulting in 72 deaths. The report can be viewed at <https://www.grenfelltowerinquiry.org.uk/phase-1-report>.

CONSTRUCTION CONSIDERATIONS

There are several factors influencing exterior wall construction today. First, due to the fast pace of today's construction and the need for less costly, easier to install designs,

(Continued pg. 3...see WALL FIRES)

(WURST continued from pg. 2)

unsound concrete from identified buttresses and the wall using hand tools only. No mechanized tools were used for fear the vibrations would cause even more cracking and damage. The crew then prepared the concrete surfaces per Sika Sarnafil requirements, coating all exposed reinforcements and steel plates with Sika Armatec 110 EpoCem to receive Sika VOH repair mortar. To repair the cracks, Chamberlin installed stabilization ports into the wall, injected the cracks with Sikadur 35 Mod LV, removed the ports and then sealed over the cracks.



Chamberlin installed peel and stick waterproofing at the new Marktplatz

Due to the age of Wursthalle, the buttresses and wall still had the imprint of the original forms. The crew had to match those imprints so the patches and repairs would blend evenly with the parts that were not destroyed in the fire. Through several mock-ups and trial runs, a solution to diligently match the imprints to make the building cohesive was found.

NEW THINGS TO CELEBRATE

The fire brought all of Marktplatz to the ground, making an entire redesign necessary. Chamberlin's scope included furnishing and installing self-adhered membrane flashing at window and door openings, structural columns up to the I-beams and at the base of the wall where stucco meets stone.

The walls were an extremely unique product, an insulated metal stud panel system that utilizes EPS (High Density Expanded Polystyrene) from Novidesa that is manufactured in Mexico City. These panels replace typical batt and rigid insulation, metal stud framing, sheathing and waterproofing in one step. The challenge for Chamberlin was how to integrate these panels with Chamberlin's waterproofing into a warrantable product. Byrne Construction, Carlisle Coatings and Waterproofing Inc. and Chamberlin went

through several mock-ups to determine an installation method that would successfully seal off the I-beams and wall panels at the base of walls, openings and structural columns with the peel and stick waterproofing.

The scope also included installing site sealants at various locations on the limestone façade, men's and women's restrooms and hollow metal door frames. Water repellents were installed on the exterior stone at the end of the buildings, the urinal walls, exterior tap wall and at the trash enclosure stone. Lastly, Chamberlin installed stainless steel to the top of the stone walls at the through-wall condition at the end of the buildings.

PROST!

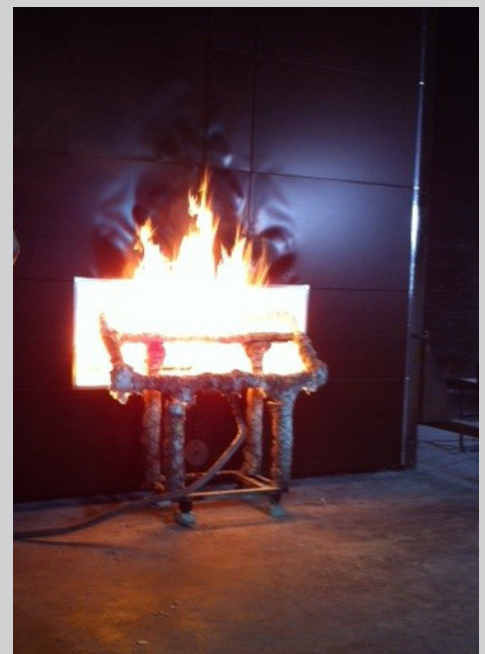
Chamberlin was able to rectify the buttresses and stabilize Wursthalle as well as help rebuild the Marktplatz within a short time frame and zero safety incidents. While finding new ways to work peel and stick waterproofing into a unique wall system and keeping the history of Wursthalle intact, Chamberlin contributed to a dedicated project team led by Byrne Construction who helped the long-time German traditions continue in New Braunfels. ■

(WALL FIRES continued from pg. 2)

new materials are constantly being introduced into the marketplace. The combination of new and existing products creates an expansive list of exterior wall components options for designers and builders. The material combinations and their means of installation must be evaluated appropriately to determine whether they are suitable for use as a complete assembly. Fire testing has demonstrated that the testing individual materials does not always result in a reliable determination of fire performance once multiple materials are combined into an exterior wall system. It is only through fire testing of the complete wall assembly that an accurate assessment of fire performances can be made.

Another challenge is the growing attention to building envelope performance such as thermal performance, air leakage, permeability, water infiltration, etc. In some areas, this is even driven by local codes and regulations. The result is insulation products with higher thermal properties and increased use of air barriers and vapor barriers. Consequently, these new wall constructions also require testing and evaluation for their conformance to the appropriate exterior wall fire requirements as a complete unit.

Another building construction factor is the increased use of exterior veneer materials that are aesthetically pleasing, but lack evidence of compliance with codes or regulations for fire safety. Around the globe, especially since the Grenfell tragedy, there has been a strong focus on the challenges associated with non-fire-retardant metal composite panel construction, which is versatile and aesthetically



(Continued pg. 4...see WALL FIRES)

pleasing, but does not always perform well when subjected to certain exterior wall fire tests.

HOLISTIC FIRE SAFETY APPROACH

Many building professionals, fire protection experts and design professionals are aware that taking a holistic approach to fire protection within buildings is ideal. This includes choosing materials that have been assessed for their reaction-to-fire properties (to slow the spread of fire) and considering detection and alarm, fire suppression and compartmentalization. However, there is not always a clear understanding of which fire tests or protection approaches should be used for exterior wall fires.

For example, there have been discussions in some areas about relaxing requirements for exterior wall testing if the interior of the building is protected by sprinklers. For an exterior wall fire originating external to the building, it should be understood that the interior sprinkler system is not designed to protect the building's exterior surface, so significant fire and smoke damage could still occur to the structure.

SELECTING AN APPROPRIATE FIRE TEST

Another misconception is that the large-scale fire test conducted in accordance with UL 263 Standard for Fire Tests of Building Construction and Materials (ASTM E 119) which is used to establish hourly fire resistance ratings should be challenging enough to examine fire growth for an exterior wall assembly. This test method is useful for evaluating

building assemblies for limiting the spread of flame between building compartments (utilizing walls and/or horizontal assemblies) or protecting structural steel members such as beams and columns. However, it is not intended to evaluate fire progression extending to the outside of an exterior wall assembly, which was an important factor in the Grenfell Tower and other recent high-rise fires, such as:

Monte Carlo Hotel, Las Vegas Nevada – 2008
Mermoz Tower, France – 2012
Lacrosse Building, Melbourne Australia – 2014
Torch Tower, Dubai UAE – 2015
Address Downtown Hotel, Dubai UAE – 2015
Grenfell Tower, London England – 2017
Torch Tower, Dubai UAE – 2017

Tests such as the NFPA 285 multi-story apparatus fire test are specifically designed to evaluate the ability of an exterior wall system to prevent an interior contents fire to leapfrog up the outside of an exterior wall system.

INTERNATIONAL EXTERIOR WALL TEST CONSIDERATIONS

In recognition of the importance of establishing the most representative test, there are various standards groups around the world focusing on exterior wall test methodologies. The good news is that the issue of flammability of exterior walls is being addressed seriously, and many jurisdictions are updating or creating new codes and performance standards. The challenge is that there are several different methods being implemented in different countries and regions that may not have the exact same scope or deliver the same outcomes. It is important to understand the methods used to qualify a product or

system to ensure it is suitable for use in exterior wall construction.

Many of these prominent full-scale exterior wall fire test methods are already embedded into codes and regulations. For example, the International Building Code (IBC) and NFPA 5000 make reference to NFPA 285 for buildings of Types I, II, III and IV over 40 feet in height and buildings employing foamed plastics in the exterior wall. Table 1 lists some of the test methods and the countries where they are typically enforced. This is not intended to be a comprehensive list, as there are other methods under development.

CERTIFICATION APPROACH

Historically, the acceptance of wall systems utilizing non-combustible materials involved a fairly complex review of building code requirements, test reports covering individual components, engineering analysis and manufacturer's installation instructions. With the increased demand and availability of combustible insulation products, combustible water barriers and façade veneers coupled with the occurrence of several catastrophic exterior wall fires on high-rise buildings, fire prevention requires a robust fire testing and certification program for wall assembly systems to determine that installed systems comply with the most current model codes and standards. ■

TABLE 1 - EXTERIOR WALL TEST METHODS

Test Method	Country	Fire Source ¹⁰
NFPA 285 ¹	US, UAE	Gas burner; up to 40 kW/m ² @ 1 m height above the opening
BS 8414-1 ²	UK, UAE	Wood crib; Approximately 75 kW/m ² @ 1 m height above the opening
ISO 13875-2 ³	International	Propane; 55 kW/m ² @ 0.6 m height above the opening
AS 5113 ⁴	Australia	Based on ISO 13875-2 or BS-8414-1
JSA JIS A1310 ⁵	Japan	Based on ISO 13875-2
LEPIR II ⁶	France	600 kg wood crib
SP Fire 105 ⁷	Sweden / Denmark	60 liters of heptane
CAN/ULC S134 ⁸	Canada	Gas burner; 45 kW/m ² @ 0.5 m height above the window
FM 4880 ⁹	International	340 kg wood crib; no opening

To continue reading and view references visit www.chamberlinltd.com/Exterior_Wall_Fires.

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Dwayne Sloan is the Technical Director for UL's Built Environment division. Dwayne provides technical oversight of certification and testing activities for exterior wall systems among many other product areas. He serves on several international, UL, NFPA, and ASTM committees, including the NFPA Fire Test Committee responsible for NFPA 285. During his 32 years at UL, he has worked in and managed a variety of UL's fire protection areas, with 17 years as the Reaction to Fire Principal Engineer. He is the current Chair of UL's Fire Council and is a UL Corporate Fellow. For more information regarding this topic contact Dwayne Sloan at Dwayne.E.Sloan@ul.com or visit www.ul.com/exteriorwalls.

Industry Honors for Safety, Quality and Teamwork

Chamberlin was recognized by industry organizations throughout 2020 for their outstanding construction performance and excellent safety program. They are honored by the accolades and proud to stand with the other distinguished companies celebrated in these awards programs.

ASSOCIATION OF GENERAL CONTRACTORS (AGC) CONSTRUCTION SAFETY EXCELLENCE AWARD (CSEA)



The AGC CSEA is a national program that assesses candidates' commitment to safety, occupational health management and risk control. The judges evaluate a company's commitment to safety by upper management, active employee participation, safety training, work site hazard identification and control plus safety program innovation.

In the commercial construction industry, over 70% of falls happen while working on roofs, ladders, scaffolding and staging. Most of Chamberlin's work is performed in these areas, and they understand the severity of the risk and absolute need for proper safety precautions and policies. Chamberlin placed third in the AGC CSEA Specialty 1.2M - 2M work hours category.

ASSOCIATED BUILDERS AND CONTRACTORS (ABC) SAFETY TRAINING EVALUATION PROCESS (STEP)

ABC believes world-class safety programs have three main components: a commitment from company leadership to embrace safety as the core value upon

which decisions are made, a top-to-bottom safety culture that empowers all employees to create the safest work environment possible and systems and processes that focus on how to prevent a hazard or incident from occurring.

The STEP program measures participating ABC member firms on their safety processes and policies in 20 key components with the goal of implementing or enhancing safety programs that reduce jobsite incident rates. Chamberlin achieved STEP Diamond, which is the highest level of recognition in the program.

AIR BARRIER ASSOCIATION OF AMERICA (ABAA) AIR BARRIER EXCELLENCE AWARD

ABAA is active in the areas of research, education, standards development, building codes and technical resources for the air barrier industry. The organization has raised the level of quality in the industry through a Quality Assurance Program and offers premier training, certification, product evaluations, contractor accreditation and site quality control audits.

ABAA Air Barrier Excellence Awards are presented to an ABAA Accredited Contractor who has successfully completed a minimum of five site audits and been assessed a total zero demerit points by ABAA site auditors. Chamberlin was one of 15 contractors in 2020 who received this distinction.

COATINGS PRO CONTRACTOR AWARD

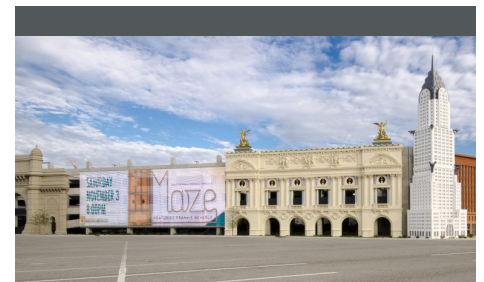
CoatingsPro showcases projects and crews that demonstrate excellence in the commercial and industrial high-

performance coatings sectors in this annual program. Chamberlin was recognized as a second-place winner in the Specialty Contractor category for their skin restoration on the CHRISTUS Santa Rosa Pavilion in San Antonio, Texas. The projects are evaluated on criteria such as challenges and problem solving, compliance with OSHA regulations, value engineering, innovation, efficiency and the unique nature of the project.



AGC BUILD OKLAHOMA AWARD

This awards program represents the "Best of the Best" commercial building projects in Oklahoma for the year. Chamberlin was recognized for renovating the Winstar parking garage in Thackerville, Oklahoma, to stop water infiltration the structure had experienced for over five years. ■



Chamberlin University



An important aspect of Chamberlin's quality initiative is Chamberlin University which was developed in 2006 to train and educate our workforce. Chamberlin has graduated hundreds of technicians and superintendents from the course and invested thousands of hours in Chamberlin 'U' training and education. Educating Chamberlin team members on safety, technical skills and soft skills empowers them to deliver quality, cost-effective projects that are completed safely and productively.

In 2020, Chamberlin graduated over 30 students, with more classes still underway. The recent apprentices studied the basics of roofing technology, the roofing industry, roofing assemblies and jobsite safety. Other courses covered torch roofing and joint sealants. The graduates received credentials such as Level 1 Roofing Insulation Installer and CERTA Torch Certification. We are proud to have these driven technicians on the Chamberlin team. ■

LOCATIONS:

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Houston, TX 77040
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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

*Also licensed in Arkansas
and Louisiana*

POST HTX - HOUSTON, TX

Roof Replacement

Contract Amount: \$7,500,000 (approx.)
Owner: Lovett Commercial
Architect: OMA & Powers Brown
General Contractor: Harvey Builders
Scope of Work: Removal of existing roof and installation of TPO roofing, wood blocking, wall and curb flashings and sheet metal
Project Description: Multi-tenant shopping mall and event space

DUNBAR HIGH SCHOOL RENOVATION - FORT WORTH, TX

Roof Repair and New Construction Roofing

Contract Amount: \$300,000 (approx.)
Owner: Fort Worth ISD
Architect: VLK Architects, Inc.
General Contractor: JE Dunn
Scope of Work: Removal of capping and sealing and installation of wood blocking, hot modified roofing, TPO roofing, counterflashing, expansion joints, sheet metal flashing and trim
Project Description: Addition to public high school building

UT ENERGY ENGINEERING BUILDING - AUSTIN, TX

New Construction Roofing

Contract Amount: \$1,000,000 (approx.)
Owner: University of Texas at Austin
Architect: Jacobs Engineering Group, Inc.
General Contractor: Beck Group
Scope of Work: Installation of wood blocking, hot modified roofing and TPO roofing
Project Description: Chemical and mechanical engineering building

OU RESEARCH PARKING GARAGE - OKLAHOMA CITY, OK

Remedial Waterproofing

Contract Amount: \$650,000 (approx.)
Owner: University of Oklahoma
Architect: GSB Inc.
General Contractor: Chamberlin Roofing & Waterproofing
Scope of Work: Installation of traffic coating
Project Description: University parking garage

TWO AND THREE ALLEN CENTER - HOUSTON, TX

Remedial Waterproofing

Contract Amount: \$600,000 (approx.)
Owner: Brookfield Properties
Architect: Morrison Dilworth + Walls
General Contractor: Tellepsen
Scope of Work: Installation of hot-applied waterproofing, air barrier, cold-applied waterproofing, expansion joints, sheet metal flashing and trim
Project Description: Three high-rise office buildings

CHOCTAW RESORT AND CASINO EXPANSION - DURANT, OK

New Construction Roofing

Contract Amount: \$4,000,000 (approx.)
Owner: Choctaw Nation of Oklahoma
Architect: JCJ Architecture
General Contractor: Tutor Perini Building Corp
Scope of Work: Installation of membrane roofing, coping, wood blocking, flashing and sheet metal
Project Description: Hotel and resort

405 COLORADO - AUSTIN, TX

New Construction Waterproofing

Contract Amount: \$850,000 (approx.)
Owner: 405 Colorado Holding, LP
Architect: Duda/Paine Architects
General Contractor: JE Dunn
Scope of Work: Installation of hot-applied waterproofing, traffic coating, sheet waterproofing, weather barrier, thermal insulation, firestopping, joint sealants, sheet metal flashing and trim
Project Description: High-rise office building

BEXAR COUNTY PARKING GARAGE - SAN ANTONIO, TX

New Construction Waterproofing

Contract Amount: \$450,000 (approx.)
Owner: Bexar County Public Works
Architect: Saldana & Associates
General Contractor: Joeris
Scope of Work: Installation of dampproofing, fluid-applied waterproofing, traffic coating, water repellents, thermal insulation, sheet metal flashing and trim, flexible flashing, firestopping, joint sealants and expansion control
Project Description: Office space and parking garage

CHILDREN'S PLANO RE-SKIN - PLANO, TX

Remedial Waterproofing

Contract Amount: \$1,000,000 (approx.)
Owner: Children's Medical Center of Dallas
Architect: WJE
General Contractor: Chamberlin Roofing & Waterproofing
Scope of Work: Installation of air barrier, sheet metal flashing and trim
Project Description: Medical center

LANIER HIGH SCHOOL - SAN ANTONIO, TX

Roof Re-Cover

Contract Amount: \$250,000 (approx.)
Owner: San Antonio Independent School District
Architect: LPA
General Contractor: Gilbane Building Co.
Scope of Work: Installation of soffit panels, sheet metal flashing and trim
Project Description: Public high school

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

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- Modified Bitumen/BUR
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- Vegetative roofing
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- Elastomeric wall coatings
- Traffic coatings
- Expansion joints
- Dampproofing/flashing
- Water repellents/metal flashing

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