CHAMBERLIN

Roofing & Waterproofing

NEWSLETTER

Chamberlin Revitalizes San Antonio High-Rise

Ashford Oaks, a 13-story office building in San Antonio, Texas, built in 1984, was recently renovated under Woodside Capital Partners with upgraded elevators, exterior quality enhancements and an improved parking garage. Time and weather had taken its toll on this 34-year-old building, deteriorating the sealants and gaskets allowing water to infiltrate the building.

SPRING 2018

The original building construction did not include tieback anchors, which has since become standard practice for safety purposes. This lead Chamberlin to believe that no work had been done on the building envelope since it was first built. Naturally, tieback anchors were installed prior to work beginning so all scopes could be completed safely.

Chamberlin Roofing & Waterproofing was selected to perform a complete replacement of all sealants on the Ashford Oaks building envelope. This included wet glazing with Tremco Spectrum 2 as well as panel-topanel joints and window perimeter joints with Tremco Spectrum 3.

EXPECT THE UNEXPECTED

Once construction began, some of the building's joint sealants were found to have been installed with no backer rod. Backer rod creates the proper depth-to-width ratio of sealant in the joint and prevents three-sided adhesion. The backer rod is inserted into the joint first, so the sealant only adheres to the stone on either side, but does not adhere to the backer rod at the back. This gives the joint maximum flexibility to sustain the building's movement over time.



Recently renovated high-rise office tower Ashford Oaks in San Antonio, Texas.

Backer rod is held in place by compression, and the rod selected should be about 20 percent larger than the maximum expected joint opening.

In areas where no backer rod was installed at Ashford Oaks, the joints were completely filled with sealant making the razor removal of the old sealant by hand a time-consuming process. After the old sealant was

(Continued pg. 3...see ASHFORD OAKS)

GUEST COLUMN:

By Kurt Fester



Kurt Fester Project Engineer NRCA

Chemical Considerations

An important consideration in roof system design is the environment in which a roof system will be exposed, but often little more than foot traffic and the weather are factored into the designs. Roofs must be able to withstand not only meteorological phenomena but also all the other things to which roofs are exposed. The purpose a building serves, the purposes nearby buildings serve and the location of equipment for other trades all play a role in a roof system's ability to perform well.

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New Tax Law to Recover Replacement Costs

The following is an excerpt from The National Roofing Contractors Association (NRCA) about an important provision in the new tax law during 2018 which allows you to fully expense the cost of any improvements to nonresidential roofs in the year of purchase.

"NRCA is pleased the Tax Cuts and Jobs Act expands the definition of gualified real property eligible for full expensing under Section 179 of the tax code to include improvements to nonresidential roofs. Section 179 allows certain taxpayers to immediately expense the cost of qualifying property rather than recovering such costs over multiple years through depreciation. The Tax Cuts and Jobs Act significantly expands the expensing limits under Section 179 with the maximum amount a business may expense now set at \$1 million and the phase-out threshold increasing to \$2.5 million. These new limits are effective for properties placed in service in taxable years beginning after Dec. 31, 2017, and the amounts will be indexed for inflation starting in 2019.

In addition to expanding the amounts that may be expensed, the Tax Cuts and Jobs Act expands the definition of qualified real property eligible for section 179. As of January 1st, gualifying property for Section 179 includes 'improvements to nonresidential real property placed in service after the date such property was first placed in service: roofs; heating, ventilation, and air-conditioning property; fire protection and alarm systems; and security systems'. Given these changes to Section 179 by the Tax Cuts and Jobs Act, qualifying taxpayers (generally small and mid-sized businesses) may now elect to fully expense the cost of any improvements to nonresidential roofs beginning in 2018 and future years. Essentially, any improvements to nonresidential roofs, including full re-roofs of existing buildings, now may be expensed in the year of purchase by any taxpayer eligible to deduct expenses under Section 179."

You can find more information at http://www.nrca.net/0118-tax-law or by contacting a tax professional.



The new Tax Cuts and Job Acts expands the definition of qualified real property eligible for full expensing under Section 179 of the tax code to include improvements to nonresidential roofs.

| | EPDM | PVC | ТРО |
|---|--|---------------------|---------------------|
| Asphalt | Not recommended | Not recommended | Ask manufacturer |
| Coal tar | Not recommended | Not recommended | Not recommended |
| Diesels and fuels | Not recommended | Not recommended | Not recommended |
| Grease | Not recommended | Not recommended | Not recommended |
| Heavy oil solvents (dry cleaning) | Not recommended (performs well against other solvents) | Not recommended | Not recommended |
| Liquid chlorine | Ask manufacturer | Not recommended | Not recommended |
| Oils and fats | Not recommended | Ask manufacturer | Ask manufacturer |
| Paint thinner | Not recommended | Not recommended | Not recommended |
| Strong acids | Not recommended | Not recommended | Not recommended |
| Strong oxidizing agents | Ask manufacturer | Not recommended | Not recommended |

(CHEMICAL CONSIDERATIONS Continued from pg. 1)

Figure 1: Chemical compatibility of single-ply membranes.

SOURCES OF INCOMPATIBLE SUBSTANCE

Roof membrane chemical incompatibility is not binary. Instead, there is a spectrum a chemical falls on based on the effect it has on the membrane to which it is exposed. More mild interactions may result in nothing more than a reduction in a membrane's ability to resist ultraviolet (UV) exposure and heat, while in more severe cases contact between a chemical and a membrane could mean disintegration.

Chemicals listed by manufacturers as incompatible usually mean serious damage and premature roof failure can result, so these lists should be taken seriously. It is always a good idea to check with manufacturers about whether a chemical needs to be completely avoided or if exposure to it should be limited. Following are some sources of incompatible substances.

ROOFTOP EXHAUST

Depending on a building's usage, a roof system can adversely be affected by what comes out of a structure's chimneys and exhaust vents.

(Continued pg. 3...see CHEMICAL CONSIDERATIONS)

BOMA

CEPP



(ASHFORD OAKS Continued from pg. 1)

removed, crew members grinded the joint to remove any contaminants from the surface to allow for proper adhesion. Once the joints were cleaned and prepped, the crew installed backer rod and sealant for a water tight building envelope. Although this discovery created more work than expected, the crew stayed on schedule by working 10-hour days and weekends as needed.



Chamberlin executed 20 swing stage drops around Ashford Oaks to perform the complete replacement of all sealants on the building envelope.

A panel malfunction on the 13th floor prompted the owner to bring in a consultant to assess the building. Building Exterior Solutions, a Terracon Company, discovered that the row of panels on the 13th floor was connected by a different method than the rest of the building's panels. For most of the building, mechanical fasteners were used to attach the heavy granite panels to the building's structure. On the 13th floor, however, the panels were attached with liner-block and epoxy adhesive. Chamberlin had just completed the cut-out and re-caulk of the 13th floor, and the consultant continued their investigation to determine if the new sealant would be strong enough to support the panels' weight or if an additional means of attachment would be necessary.

In the meantime, they determined that the rest of the building was safe to work on, so Chamberlin was able to complete their wet glazing scope on the other levels.

QUALITY ASSURANCE

Chamberlin Roofing & Waterproofing and other restoration subcontractors were approached by the owner of Ashford Oaks to revamp the envelope of the office building. The candidates had to perform a mock-up installation prior to being awarded the project, and Chamberlin came out on top with the best workmanship and most competitive price.

When asked what one should notice about a well-installed caulk joint, Chamberlin Project Estimator, Nick Flory stated, "Nothing. You do not want it to stand out; you want it to blend smoothly into the building." Chamberlin's diligent work resulted in aesthetically pleasing sealant joints with a concave finish as well as good adhesion.

Tremco and Chamberlin both conducted extensive quality control checks throughout the project. These included pull tests where the sealant was tested for proper adhesion and elongation. Not one test failed throughout the process, and Chamberlin crew members were observed working safely and efficiently.



Existing wet glazing at Ashford Oaks.

Woodside Capital Partners was very pleased with the finished product and also commended Chamberlin crew members and office staff for their professional and cooperative handling of the project's challenges as well as pushing through for a job well done.

SAFETY

Chamberlin completed 20 drops around the building during their scope. Attention to detail was crucial for safely rigging the swing stage each time. The crew would lower the stage to the ground and then start the process of moving the swing stage, outriggers and weights to the new drop location. There, the swing stage was reconstructed and secured to tieback anchor points. Chamberlin's crew members were tied off with separate lifelines and anchor points.

Flory was impressed with the crew's performance and safety mindset. He said, "The guys are the ones out there every day, getting it done. They did a good job and they did it safely."

(CHEMICAL CONSIDERATIONS Continued from pg. 2)

Animal and vegetable fats commonly end up in the exhausts of buildings where food is prepared, such as restaurants, banquet halls, hotels and grocery stores. Chlorine found in indoor pools and by-product chemicals from factories and manufacturing plants all can seriously compromise a roof system.

The roof system designer bears responsibility for ensuring a building's main function is explored and known so potential sources for incompatible substances can be discovered and minimized.

THE ATMOSPHERE

IREM

The building on which a roof system is being designed or exists is not the only source of potential hazards to membrane compatibility. Nearby surroundings also must be considered.

GAF, Parsippany, New Jersey, provides a fairly comprehensive suggestion guide for membrane incompatibility, which states exposure to oils, diesels

R

| | Coal tar | Asphalt | Polymer-modified bitumen |
|-------------------------------|-----------------|-----------------|-----------------------------|
| Petroleum products | Good resistance | Not recommended | Not recommended |
| Strong oxidizing agents | Not recommended | Not recommended | Not recommended |
| Strong bases | Not recommended | Not applicable | Not applicable |
| Different polymer modified | Good resistance | Good resistance | Ask manufacturer |

Figure 2: Chemical compatibility of bituminous membranes.

(Continued pg. 4...see CHEMICAL CONSIDERATIONS)

3

TEXO

(CHEMICAL CONSIDERATIONS Continued from pg. 3)

and jet fuels potentially can lead to rapid absorption and further degradation of thermoplastic membranes. Proximity to airports and areas where heavy machinery and factory equipment frequently is in use can be extremely important considerations when designing and/or maintaining a roof system.

PRIOR ROOF SYSTEMS

A number of thermoset and thermoplastic membrane manufacturers, as well as some asphalt manufacturers, note in product literature their products are not compatible with petroleum-based products such as bituminous materials and should not be laid directly over such roof systems. In these cases, separation by a slip sheet or cover board is commonly recommended by manufacturers, as well as NRCA.

OTHER TRADES

Another major influence on roof membrane performance is rooftop work performed by other trades. HVAC units often end up on roofs and, as a result, so do the people who maintain the equipment. Evaporator coils require cleaning to function properly. However, a cleaner's chemical composition can drastically vary and, in some cases, lead to incompatibility issues with the membrane. Some cleaners basically are just a detergent, which is resisted well by most membranes, while others can contain strong oxidizing agents such as strong acids or strong bases — both can be bad news for most membranes. This problem is compounded when those responsible for an HVAC unit have no knowledge of the roof system the unit sits on or what chemicals can cause compatibility problems.

When work must be completed on a roof, knowledge about the roof system's materials

is important even in situations when the roof system itself is not what requires attention.

SINGLE-PLY MEMBRANES

Within the single-ply membrane realm, different materials and manufacturers exist, resulting in differences in levels of chemical resistance and suggested tolerances for exposure to certain materials.

While conducting research for this article, I reviewed information provided by Canadian General Tower Ltd., Cambridge, Ontario; Carlisle Construction Materials, Carlisle, Pennsylvania; Cooley Engineered Membranes, Pawtucket, Rhode Island; Duro-Last® Inc., Saginaw, Michigan; Fiber-Tite, Wooster, Ohio; Firestone Building Products Co. LLC, Nashville, Tennessee; Flex Membrane International Corp., Leesport, Pennsylvania; GAF; IB Roof Systems, Irving, Texas; Johns Manville, Denver; Mule-Hide Products Co. Inc., Beloit, Wisconsin; Sika® Sarnafil, Canton, Massachusetts; and Tremco Inc., Beachwood, Ohio.

Although all these organizations were considered, only about half had readily available product information regarding chemical compatibility of the membranes they produced, and fewer still had more than a couple of sentences within application instructions.

EPDM

EPDM membranes have some vulnerability when exposed to animal fats and oils from vegetables and animals, as well as petroleum-based products such as gasoline and other fuels. Johns Manville makes special mention to avoid direct contact with other roofing products such as bituminous systems, which also may lead to incompatibility issues.



Soprema two-ply modified bitumen roofing system, GAF PVC roofing system and Firestone TPO roofing systems installed at Dallas Love Field airport. Photo courtesy of Chamberlin Roofing & Waterproofing.



Carlisle PVC roofing system installed on River Spirit Casino and Margaritaville Resort. Photo courtesy of Chamberlin Roofing & Waterproofing.

TPO

Among thermoplastic polyolefin (TPO) membrane manufacturers, there are fewer reservations about exposure to fats and oils, but Mule-Hide Products stresses caution be taken to avoid situations where direct contact with mineral oils, vegetable oils, animal oils and animal fats could occur.

GAF provides comprehensive recommendations for its TPO products and allows for use in areas where fats and grease are present though it notes some reduction in UV and heat resistance may result. Furthermore, and more fairly representative of the market, it suggests avoiding strong oxidizing agents, strong and dilute acids, oils, diesels, jet fuels and solvents.

PVC

According to manufacturer information, PVC exhibits similar strengths and weaknesses in chemical compatibility as TPO. Some manufacturers note an increased susceptibility to some acids and fats. Grease, diesels, fuel (including jet fuels), solvents and oils should be avoided.

Duro-Last provides a list of other roofing materials that create incompatible substrates. It suggests using a slip sheet or cover board between new membranes and other items listed including acrylic coatings, extruded polystyrene, polymer-modified bitumen,

(Continued pg. 5...see CHEMICAL CONSIDERATIONS)

Quality Recognition

Since 1962. Sika Sarnafil has been developing and producing polymeric roofing membranes and system solutions for new buildings and renovation projects. Their goal is the reliable protection of man and material with careful attention to the guality of materials and installation. Chamberlin Roofing & Waterproofing has been installing Sika products for nearly 15 years and their balcony restoration at The Driskill Hotel in Austin, Texas, was honored with 2nd place in Sika Sarnafil's 2017 Project of the Year awards program. This competition highlights quality workmanship in the areas of design, application and installation.

The Driskill balcony restoration was also awarded an Outstanding Construction award by the Austin Chapter of the Associated General Contractors (AGC). Founded in 1946, AGC Austin is dedicated to the principles of skill, integrity and responsibility in the



The Driskill Hotel in Austin, Texas.

commercial construction industry. Their awards program recognizes projects for difficulty in construction, innovative techniques, quality and timeliness of completion.

Additionally, the AGC of Oklahoma strives to build a professional construction community of excellence. Their members are recognized as leaders of construction performing over 80% of all commercial and industrial construction work in the state. Chamberlin Roofing & Waterproofing's River Spirit Phase II Margaritaville Expansion project was honored with an AGC Build Oklahoma award, representing the "Best of the Best" commercial building projects in the state.



AGC Austin presented Chamberlin the Outstanding Construction award for their balcony repair and replacement at The Driskill Hotel in Austin, Texas.

(CHEMICAL CONSIDERATIONS Continued from pg. 4)



Completed modified bitumen roofing system on Texas Children's Hospital. Photo courtesy of Chamberlin Roofing & Waterproofing.

shingles, aluminum-coated asphalt, granulated cap sheets, "old" Duro-Last roofs, TPO membranes, coated or smooth asphalt, polyurethane, sprayed urethane foam, expanded polystyrene, mineral-surfaced caps, coal-tar pitch and PVC/CPA membranes.

OTHER SINGLE-PLY MEMBRANES

Although a vast majority of single-ply membranes in the current market fall into one of the previously mentioned categories, a few manufacturers make other products. Most of these are classified as either ketone ethylene ester (KEE) or a KEE-PVC blend.

Also included is Carlisle Construction Materials' polyepichlorohydrin membrane and Tremco's TPA. These do not appear to perform dissimilarly to other thermoplastic membranes. GAF literature suggests its self-produced KEE-PVC blend undergoes less absorption and degradation when exposed to fats, oils, fuels, diesels and diluted acids than their other thermoplastic membranes.

Figure 1 shows 10 common roofing environment materials and how the three most prominent single-ply membranes in the market perform against them. The resistance descriptions are not standard for all EPDM, PVC and TPO membranes manufactured but are based on themes present across manufacturers of the same membrane type. Still, it's important to consult the manufacturer to be sure, on a case-by-case basis, how well a membrane will perform in a given situation.

BITUMINOUS ROOF SYSTEMS

Concerning chemical compatibility, membranes made from bitumens such as asphalt, polymer-modified asphalt and coal tar are robust roofing materials. All are time-tested membranes with many similarities.

Roof systems made from asphalt, a product derived from petroleum, are more susceptible to interactions with other substances derived from petroleum such as oils, fats and fuels. Coal tar does not have the same compatibility issues with other substances derived from coal or petroleum products.

To continue reading article, visit: https://www.chamberlinltd.com/articles/ chemical-considerations/

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MICROSOFT DATA CENTER - SAN ANTONIO, TX

PROJECTS IN PROGRE

New Construction Waterproofing Contract Amount: \$450,000 (approx.) **Owner: Microsoft Corporation** Architect: Corgan Associates, Inc. General Contractor: Rogers O'Brien Construction Company, Ltd. Scope of Work: Installation of below-grade sheet waterproofing, joint sealants, expansion joints and air barrier Project Description: Data center

FIVE STAR FORD OF PLANO - PLANO, TX Roof Replacement Contract Amount: \$200,000 (approx.)

Owner: Pack Prop. X-XI, LLC Architect: ASM Architects INC General Contractor: Schwob Building Company, Ltd. Scope of Work: Removal of existing TPO membrane and installation of new TPO roofing system, flashing and sheet metal Project Description: Luxury car dealership

UNT DALLAS STUDENT LEARNING CENTER -DALLAS, TX

New Construction Roofing and Waterproofing Contract Amount: \$1,700,000 (approx.)

Owner: The University of North Texas Architect: Moody Nolan General Contractor: Austin Commercial Scope of Work: Installation of PVC roofing system, sheet metal roofing, flashing and trim, hot fluid rubberized asphalt waterproofing, sheet waterproofing, thermal insulation, spray-applied air barrier and joint sealants Project Description: Higher education student success center

TRINITY ISD RENOVATIONS AND CONVERSIONS -DALLAS, TX

Remedial Waterproofina Contract Amount: \$100,000 (approx.) Owner: Trinity Independent School District Architect: SZH Architecture General Contractor: Collier Construction Company Scope of Work: Bituminous dampproofing, thermal insulation, urethane grout injection and joint sealants Project Description: Additions to elementary and high school

OU MEDICAL - ADULT BED TOWER -**OKLAHOMA CITY, OK**

New Construction Waterproofing Contract Amount: \$2,800,000 (approx.) Owner: University Hospitals Trust Architect: Perkins+Will General Contractor: Turner Construction Company Scope of Work: Installation of hot fluid rubberized asphalt waterproofing, horizontal and vertical pre-applied sheet waterproofing, fluid-injected composite waterproofing, fluid-applied waterproofing, spray-applied air barrier, joint sealants and pavers Project Description: Medical tower

STRAHAN COLISEUM - SAN MARCOS, TX

New Construction and Roof Replacement Contract Amount: \$350,000 (approx.) Owner: Texas State University Architect: Sink Combs Dethlefs General Contractor: Turner Construction Company Scope of Work: Removal of existing roof system and installation of PVC roofing system, modified roofing, joint sealants, sheet metal flashing and trim

Project Description: Expansion of the university's coliseum

MEMORIAL HERMANN HP 2 – HOUSTON, TX New Construction Roofing Contract Amount: \$4,300,000 (approx.) Owner: Memorial Hermann Health System Architect: WHR Architects, Inc. General Contractor: Vaughn Construction Scope of Work: Installation of modified bitumen roofing system, PVC roofing and PMMA liquid-applied roofing Project Description: Multi-level hospital addition

Hays HIGH SCHOOL – BUDA, TX New Construction Roofing

Contract Amount: \$750,000 (approx.) **Owner: Hays County Independent School District** Architect: Stantec General Contractor: Bartlett Cocke Scope of Work: Installation of below-grade waterproofing, water repellents, rigid insulation, fluid-applied air barrier, flashing, firestopping, joint sealants and expansion joints Project Description: New high school

TRAMMELL CROW CENTER REPOSITIONING -

DALLAS, TX

Remedial Waterproofing Contract Amount: \$500,000 (approx.) Owner: The University of North Texas Architect: HOK **General Contractor: Turner Construction Company** Scope of Work: Hot fluid rubberized asphalt waterproofing, spray-applied air barrier, roof payers and joint sealants Project Description: Office skyscraper

KENDALL COUNTY LAW ENFORCEMENT CENTER -

BOERNE, TX New Construction Waterproofing

Contract Amount: \$400,000 (approx.) **Owner: Kendall County** Architect: Brinkley Sargent Wiginton Architects General Contractor: Turner Construction Company Scope of Work: Elevator pit waterproofing, cavity wall insulation, air barrier, flashing, joint sealants, expansion joints and fire sealants Project Description: Expansion of law enforcement center

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