

Phase Two of Atlanta condo sealed with silicones after ten years' service in first tower

PROJECT

Architect and consultants for the Mayfair Renaissance Condo Tower in Atlanta wanted to identify the optimum weathersealing system for window glazing and for expansion joints in EIFS panels. All sealing materials were required to withstand rigorous laboratory evaluations and on-site testing prior to construction to ensure weatherproofing performance.

Silicone sealants and extruded silicone seals are key weatherproofing components in the new 35-story Mayfair Renaissance Condo project in Atlanta, Georgia, this the second phase of a twin high-rise structure designed by Smallwood, Reynolds, Stewart & Stewart. The same two joint sealants were used on the original pre-cast concrete tower, originally constructed as apartments in 1989. The two silicone formulations have proven so successful in preventing water intrusion that they were also specified for the newly completed structure, which is built with pre-fabricated EIFS panels.

Designed with outstanding weather resistance as a top priority, sealing the Mayfair Renaissance tower was a complex task. Despite excellent performance in the first tower, the architects wanted to be certain that each component demonstrated superior performance, and extensive testing was conducted at Construction Research Laboratories in Miami.

Testing -

"The window and curtainwall systems were rigorously tested for water and air infiltration," commented Matt Waddell of Hardin Construction, general contractor on the Phase Two project. "The



sealants, windows and other components were even subjected to simulations of a 120-mph hurricane-force wind in a special chamber to confirm their weatherproofing performance."

According to Jim Warbrouck at Curtainwall Design Consultants, exterior wall consultant to the building owner, a pre-construction mock-up was also used on-site to confirm structural and weatherproofing performance. "A test section was constructed, about 40 feet wide and approximately two stories high," said Warbrouck. "The contractor built a section of the actual exterior as it was designed," he said, "so it would be subjected to the same structural loading as the completed tower. Then we tested for air and water penetration to

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Water Penetration vs. Water Vapor Transmission

Water can be encountered in concrete, concrete masonry, brick and natural stone structures in either liquid form or vapor (gas) form.

Water in liquid form is prevented from passing through concrete, concrete ma-

sonry, brick and natural stone structures by waterproofing materials. Generally speaking, waterproofing is required where hydrostatic pressure is present or structures are exposed to the elements above grade.

Water in vapor (gas) form is prevented from passing through concrete by vapor barrier materials. In many cases where there is no hydrostatic pressure under a slab on grade, moisture from deeper in the substrate rises as vapor through the process of osmosis. Given sufficient pressure, this vapor penetrates through the concrete and can condense into water when reaching air-conditioned space

where it can delaminate finished floor surfaces.

Generally speaking, vapor barriers are required under concrete slabs on or below grade which are covered with a non-breathable floor covering (i.e. vinyl tiles, epoxy coating, adhesive/glue for carpeting, etc.) in occupied or working areas. They are usually not required under concrete slabs on or below grade, which are exposed to an open space and not covered with a non-breathable floor covering such as in parking garages, etc.

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ensure that it would remain weather-tight. The silicone sealants demonstrated excellent adhesion and durability,” he added.

Materials -

Expansion joints between the EIFS panels at the Mayfair Renaissance were sealed with *Dow Corning*® 790 Silicone Building Sealant, an ultra-low modulus, high-elongation material designed to deliver adhesion to a wide range of substrates, including masonry, stone, concrete, wood, steel, aluminum and plastics. The material’s very low modulus was a key feature in the new design to avoid stressing the EIFS panels at the bond line. Its outstanding flexibility allows the sealant to absorb building movement, thermal expansion and other stresses.

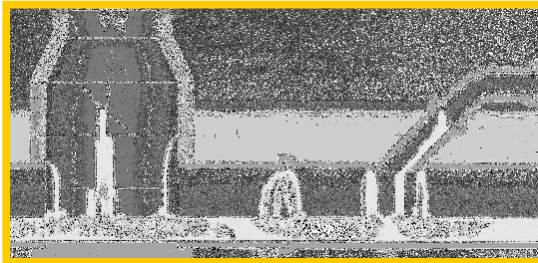
“The first tower demonstrated the performance of *Dow Corning*® 790 Sealant between sections of pre-cast concrete, and in the second phase we specified the same product as the primary weatherseal between EIFS panels,” explained Bill Reynolds of Smallwood-Reynolds. “As the testing verified, the adhesion, UV resistance and flexibility of the silicone material helped us design a very durable, waterproof exterior that will withstand many years of severe weather conditions.”

For adhesion to metal window frames, Reynolds and his team specified *Dow Corning*® 795 Silicone Building Sealant, a high-performance structural glazing and weather-sealing formulation developed for use on glass, anodized and coated aluminum, steel and granite, as well as concrete, brick and a number of plastics. The new Mayfair Renaissance tower has approximately 900 windows in its 29 units, along with nearly 600 sets of French doors for balcony access, all sealed with the same sealant that proved its capabilities in the 315 units of the first phase. Mike Strickland of Metro Waterproofing estimated that his firm applied a total of 2000 gallons of the two silicone sealants on the new tower. □



This is **Mike Powell**. Mike is our new addition to our Seattle customer service / inside-sales staff.

Welcome aboard, Mike!



CHEMICAL GROUT STOPS INFILTRATION PERMANENTLY

Chemical grout was first developed and applied in 1955. Since that time it has been used to stop leaks in sewers, manholes, tanks, vaults, tunnels, and many other applications all over the world. Recent studies and over 40 years of experience indicate that America’s first trenchless technology is still the best, most cost-effective, long-term defense against infiltration of groundwater into structurally sound sewer systems.

CHEMICAL GROUT FORMS A WATERPROOF COLLAR AROUND LEAKING PIPES AND MANHOLES

Chemical grouts do not stop sewer leaks simply by filling joints and cracks. Instead, grouting chemicals are forced through joints and cracks and into the surrounding soil where they gel with the soil to form a waterproof mass which cannot be pushed back into the sewer system.

This water-tight collar adheres to the outer surface of the pipe or manhole where it will stay indefinitely unless removed by excavation or exposed to sunlight for long periods of time. If groundwater pressures increase, the collar will be pressed even more tightly against the structure, increasing its ability to stop leaks.

If the humidity in the soil declines for a long period, the grout may begin to dry, also. However, when the soil humidity returns, the grout will absorb moisture and return to its original condition. The soil humidity around leaking manholes and sewers is almost always high enough to prevent any significant shrinkage of the gel.



Waterproof Grout Collar

STOP LEAKS FIRST AT THE FOUR CRITICAL POINTS OF ENTRY

Most infiltration enters structurally sound sewer systems through joints, manholes, service connections, and the first few feet of the service lateral. The best and most economical way to stop these leaks is with chemical grout.

Chemical grouting usually costs less than ten dollars per foot for average residential lines. That makes it the least expensive rehabilitation method available, and it is also the least disruptive.

GROUT CAN STOP THE LEAKS OTHER PROCESSES MISS

Many trenchless processes are available for structural rehabilitation of pipelines, manholes, and even service laterals, but they need chemical grout, also. A barrier of chemical grout on the outside of manholes will protect interior linings from hydrostatic pressure. Stopping leaks with chemical grout before cured-in-place linings are installed will prevent resin washout and result in much stronger pipes with more uniform wall thicknesses.

It is now recognized that full-length liners seldom reduce infiltration by more than 50%. Groundwater which cannot enter through joints and cracks can quickly migrate to service connections and manholes..

Sealing these potential entry points with chemical grout can stop leaks completely and allow you to realize the maximum benefit from your rehabilitation investment.

CHEMICAL GROUT ALLOWS SERVICE LINES TO BE SEALED COST-EFFECTIVELY

Service laterals are often a source of significant infiltration but, without chemical grout, it is seldom cost effective to stop the leaks. It usually costs less to treat the groundwater than to stop infiltration in these lines. However, chemical grout is so economical and effective that a positive return on investment can be realized.

Studies have shown that most infiltration

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Before assuming that there is a water problem, we strongly recommend carrying out "anhydrous calcium chloride tests" (ASTM F-1869-98) on existing slabs on or below grade where finished floor surfaces have delaminated to determine the amount of vapor pressure in lbs per 24 hours/1000 SF. This test method was developed by the Rubber Manufacturer's Association in the 1950's, and has been widely accepted by the flooring industry as a quantitative measure of slab moisture.

The majority of floor covering material manufacturers and specification institutes recognize this test and deem that it is safe to install most flooring materials if the slab emission is 3.0 lbs or less. However, we recommend to consult floor covering materials manufacturer for permissible limits. Test kits can be obtained from Aquafin, Inc. or other suppliers. □

NOTE:

1.) A new test method: ASTM F2170, standard test method for determining relative humidity in concrete floor slabs using in-situ probes, is now available.

2.) AQUAFIN® -1K, -2K/M & -IC cementitious waterproofing materials prevent water in liquid form from passing through above referenced substrates, but are not vapor barriers, allowing the substrate to breathe.

3.) AQUAFIN® VAPORTIGHT COAT® -SG1 and SG2 are extremely high density epoxy based products that prevent water in gas and liquid form from passing through above referenced substrates. They are a vapor barrier.



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into service lines occurs within a few feet of the main. There are two primary reasons for this; all are usually above the water table, and groundwater flows easily in the backfill of a mainline trench because of the French drain effect.

CHEMICAL GROUT OFFERS A LONG-TERM SOLUTION TO ROOT INTRUSION

Roots are often a costly, destructive intruder in sewer pipes. They can enter through microscopic openings, then quickly grow in size and strength. This growth can crack and move even the strongest pipes, leading to leaks which overload treatment plants, clog pipes with silt, and wash away essential side-

fill support.

Mechanical cutters will clear a pipeline temporarily, but they also stimulate growth. Chemicals can kill the roots and retard new growth, but the residual chemicals are usually washed away in a year or less.

However, when a special growth inhibitor is mixed with chemical grout, it is encapsulated and cannot be lost. As a result, roots cannot penetrate the protective gel.

INVEST IN THE BEST

An experienced grout installer with good equipment and a positive record is a good investment. While chemical grout is the least expensive way to stop infiltration, the least expensive applicator is not always the best buy. □



Leaks in concrete structures keep coming back unless they are permanently sealed with chemical grout...

In spite of the best efforts of architects, engineers, and contractors, concrete structures sometimes move in unanticipated places, and cracks appear. If the movement which caused the crack stops, the crack plane becomes stable. However, many cracks do not stabilize. Instead, they continue to move throughout the life of a structure due to thermally induced forces within the structure, or due to soil moisture changes. Such cracks often become wider or narrower at various times throughout the year.



This continuous movement makes it almost impossible to permanently stop water leaks with repair materials which become rigid when they cure. To function as a permanent water-stop, an ideal material would...

1. Be thin enough to penetrate very small cracks
2. Set quickly
3. Bond to wet surfaces
4. Work in and under water
5. Possess good elastic strength
6. Tolerate unavoidable debris

The material would be even better if it were...

1. Easy to handle

2. Inert after cure
3. Approved for contact with potable water
4. Tolerant to mix variation and field conditions.

For over 40 years, chemical grout has been used to stop leaks in basements, commercial buildings, dams manholes, parking garages, reservoirs, storage tanks, subways, tunnels, wastewater treatment plants, and in other structures. There are four primary reasons why chemical grout is the material of choice to stop leaks:

Fills Cracks Completely - Chemical grout can penetrate any crack that will allow water movement, and fill it with a permanent waterproof seal from the inside of the structure to the outside, from the bottom of the crack to the top.

Forms a Permanent Seal - Chemical grout forms an adhesive bond, a mechanical lock, and a compression seal with the walls of the crack it fills. This prevents any water from by-passing the grout and migrating between it and the walls of the crack. Chemical grout is also extremely resistant to chemical attack.

Remains Flexible - Chemical grout cures into a flexible, rubber-like material which can withstand tremendous compression or expansion without being harmed. As a result, it will permanently seal cracks in concrete structures against infiltration or ex-filtration.

Safe to Use - Chemical grout is safe to install when handled according to label instructions. Some polyurethane foam grouts are approved for contact with potable water, and some are approved for use near food preparation. □

Energy Sill Sealer



The Only Self-Adhesive Air and Moisture Sill Barrier

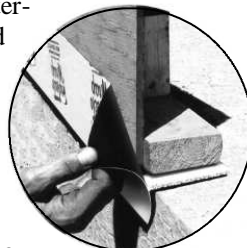
Known as a major cause of energy loss and water infiltration in residential and commercial construction, the voids and irregularities between the top of the concrete foundation and sill plates leak. These leaks are a major cause of costly callbacks for builders across the nation. Triple Guard's triple protection adheres to the face of the foundation, adheres to the top of the foundation wall and adheres to the face of the sill plate/skirt board, totally sealing off the cold joint between the foundation and frame construction.

Concrete shrinks as it cures creating a rough and uneven surface on the top of the foundation wall. Building codes require a

sill sealer to be placed between the top of the foundation and the sill plate. Conventional sill sealers do not have the thickness or the self-adhesive characteristics of Triple Guard

to give them the ability to conform or seal up these irregularities leaving a tremendous amount of voids.

These voids have long been recognized as one of the leading causes of basement water leaks, insect/rodent infiltration and a major area for heat and air conditioning loss.



This unique and patented design combines the peel and stick waterproofing characteristics of Protecto Wrap Company's waterproofing membranes with a 3/8" thick closed cell foam sill sealer forming a gasket seal to virtually eliminate any air, moisture and insect/rodent infiltration beneath the sill plate.

ADVANTAGES

- Triple Guard offers three adhesive membrane areas for sealing off the cold joint

between the foundation and construction framing.

- Helps lower energy costs by stopping heating and air conditioning loss at the foundation to sill plate interface.
- A full 3/8" closed cell foam provides 1 1/2 times more protection from energy loss over standard 1/4" sill sealers used by builders today.
- Exceeds all local, state and national building codes.
- Mildew and water resistant—helps prevent sill plate rot.
- Adheres and conforms to irregularities found in the top of foundation walls.
- Works on residential and commercial construction, slab on grade, crawl spaces or with basements.
- Convenient 3 1/2" and 5 1/2" widths (custom sizes available in quantities)
- Virtually eliminates air, moisture and insect/rodent infiltration beneath the sill plate.
- Protecto Triple Guard Energy Sill Sealer™ comes with Protecto Wrap Company's Lifetime Guarantee.



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Call us. It can make the difference between a job done right or a job done again.

Inside this issue:

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