



SWRIInstitute Trinity Project Awards Program

Aon Center Facade Sealant Replacement Project

Work Scope:

Western Specialty Contractors (WSC), a 100-year-old family-owned restoration contractor headquartered in St. Louis, with 30+ branches nationwide, completed the Aon Center Facade Sealant Replacement Project in 2014. The project team consisted of Piedmont Realty Trust, Wiss, Janney, Elstner Associates (WJE), and Dow Corning.

The Aon Center, originally constructed in 1974 using 43,000 slabs of thin Italian Carrara marble, was built to house the Standard Oil Company of Indiana. The Standard Oil Building, as it was originally called, was renamed The Amoco Building, when the company changed names in 1985. With 83 floors and a height of 1,136 feet (346 m), it is the third tallest building in Chicago. Also during 1985, a facade inspection revealed numerous cracks in the exterior cladding. As a result, the entire facade was reclad using granite panels between the years of 1990-1992. In 1998, Amoco sold the building and it was renamed The Aon Center.

Since the specification on the reclad project called for the use of a urethane sealant, by the years of 2009-2010 (nearly 20 years) it was clear that the sealant between the granite panels had reached its useful life. WJE engaged several prequalified facade contractors to provide pricing for a complete, 100% exterior sealant replacement on the facade, using a silicone sealant. The chosen product for replacement was Dow Corning 756. Since silicone sealant is an inorganic material, it is able to be installed at lower temperatures, yield a longer material warranty, as well as sustain ultra-violet rays better than urethane.

WSC was the selected contractor to complete the two-year project, which totaled \$3,100,000 and encompassed nearly 100 miles, or 528,000 LF, of sealant replacement. Due to the height of the building, and its proximity within Chicago's bustling Central Business District, the site conditions, inclement wind/weather, and logistics, yielded constant difficulties that had to be overcome by the onsite field crews. Furthermore, it was mandated that WSC use the house rig (scaffold), that proved to be quite unreliable. Nearly 40% of each workday was hampered by mechanical issues with the scaffold. As a result, the project took twice as long, being substantially complete in a total of four (4) years.

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Abstract:

The Aon Center Facade Sealant Replacement Project is worthy of a Trinity Award primarily due to the magnitude of sealant that required replacement, along with the difficulty of maintaining a water-right exterior for the occupied tenants of the building during this project.

Wind gusts upwards of 120 mph during the course of the workday, coupled with crews working two back-to-back shifts each day, with only select hours for noise-related tasks, such as cutting out the existing urethane sealant, resulted in continuous scheduling conflicts.

Lastly, the project required a V.I.P warranty to the Owner, which encompasses labor and material, for twenty (20) years.

Unforeseen Conditions:

Unforeseen conditions experienced on this project included weather delays, wind delays, political events/shut-downs (such as the NATO Summit), and mechanical failures on the rigging equipment. The house rig (scaffold) had to be inspected monthly by the Owner-supplied contractor, Manntech, which more often than not, required repairs and down-time for the field crews.

Problems/Challenges/Solutions:

The North elevation of the building site housed both an active hotel, as well a san outdoor restaurant patio, both of which had to be protected with heavy-duty canopies throughout the duration of the repairs. Even a small piece of removed sealant falling from 1,000 ft. in the air could "end up in a patron's salad causing much grief".

Safety Considerations:

WSC requires 100% compliance of all field crews to wear hard hats on every project, however, due to the extremely high wind gusts the in-house Safety Director mandated on this project to remove all hard hats from the working crews. In the event that a hefty wind gust were to remove the hard hat from the worker's head during the project, the damage that could result was not a risk WSC was willing to take.

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All tools, material, cords, etc. were tethered to the stage using heavy-duty rope cord so that the risk of any object leaving the scaffold and injuring property or pedestrians below would be eliminated.

Approximately 5,000 man days were expended on this project and Western Specialty Contractors is extremely proud to note that there was not one (1) single injury during the entire 4-year duration of the project. With an EMR of 0.55 and 1,300 self-performing tradesman active the majority of the year, WSC leads the industry in safety.

Community/Environmental Impact:

Working on an occupied building, adjacent to other businesses that are quite active all hours of the day/night, as well as being across the street from Maggie Daley/Millennium Park, one of Chicago's busiest attractions, required that WSC conduct a site-specific safety meeting every day of the project.

The noise from the grinders, caulk cutters, etc. that were used to remove the existing expired urethane sealant were a bit noisy, so the hours in which the crews were restricted to performing those duties were 6-9am, as well as 6-9pm.

Technology/Innovation:

N/A

Site Constraints:

Randolph Street bordered the property to the South, which is an extremely active street for both vehicular and pedestrian traffic. Buildings also flanked the Aon Center to the East and the West, not to mention the hotel/restaurant to the North.

Quality Control/Field Testing:

At the commencement of the project, an extensive field mock-up was performed that served the basis for all work during the project. Altogether, there were 16 drop locations across all four (4) elevations, and both Dow Corning and WJE performed a minimum of three (3) pull tests to check proper adhesion per drop location, for a total of 48 pull tests by each firm during the duration of the project. WSC is proud to say that not a single pull test experienced a failure of adhesion on the entire project.

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Rigging Approach:

WSC was mandated to use the house rig (scaffold) on the building, supplied and maintained by Manntech. The equipment was inspected monthly and frequently required repairs.

Each working rig (scaffold) was approximately fifty (50) feet in length, with three (3) motors and three (3) cables per scaffold. A total of six (6) field crew, at a maximum, were allowed on the stage at any given time, which is three (3) times more than the average swing scaffold allowance.

At the base of the building, light fixtures prevented the house rig (scaffold) from going all the way to grade level. As a result, WSC erected four (4) stories of systems pipe scaffolding to conform to the in/outs of the granite facade pattern so that the work could be performed at those locations near the base of the building.

Sustainment:

Using Dow Corning 756 sealant on this project provided the Owner with a 20-year V.I.P labor and material warranty, which far exceeds the previous product that was used on the facade.

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