Only a few weeks after Chevron’s research group moved into its newly constructed corporate research and technology center, a winter rainstorm struck, and within hours, unsightly drips and puddles began appearing throughout the facility.

In the 10 years that followed, Chevron spent $35,000 to $40,000 every year to solve the problems. Despite numerous recaulking and resealing attempts, the situation still looked bleak. At one point, more than 65 leaks were detected.

Finally, a long-awaited solution to the problem was found when Dow Corning Corporation was contacted to provide a third-party opinion about the problem.

Leaks Create Costly Damage

Many repair solutions had been tested and tried, and with each one that failed, the expenses, frustration and pressure mounted.

“We walked through and saw the lab people had rigged tubing from the leaking windows to water their plants,” said Doug Walker of Dow Corning’s sales and technical service facility in Fremont, Calif. While this creative approach kept the plants healthy, it did little to minimize the damage to the building.

“The interior was damaged” said Sal Salmeron of Chevron’s Facilities and Services Group. “Water ran down the Sheetrock and onto the carpet. This went on for years until Dow Corning got involved and got it fixed.”

Architectural Wall Services Ltd., Oxnard, Calif, and Dow Corning worked together to conduct a number of field and laboratory tests to better understand the leaks and their effects, as well as to evaluate the original weatherproofing materials and the material/substrate compatibility. Dow Corning sales and technical service and development representatives were sent to the site to identify, understand and solve the persistent problems.

Through this testing and observation, the leaks were found to be primarily at the window heads and sills. Many specific problems were noted, including adhesive failure at the sill-to-precast and sill-to-sill sections; undersized compensating channel joints; incompatible sealant at the weep tubes; and damaged or missing weep tubes. The problems were compounded by irregular cracks in the precast concrete panels; these cracks and the previously attempted repairs adversely affected the building’s aesthetic features.

After the testing, specifications and drawings were developed, and a protocol—based on the silicone sealants—was executed, then evaluated. After proving that the protocol worked, a plan was developed to repair the entire building.

Building Repaired Step by Step

Pacific Sealants, Livermore, Calif, was selected as the weatherproofing contractor. They applied DOW CORNING 1593 Cleaner/Primer to prepare the surfaces and ensure proper bonding of the sealants. DOW CORNING 790 Silicone Building Sealant was used on the precast-to-precast panels.

“We selected this sealant to ensure maximum performance at the joints,” said Jim Burgess, owner/manager of Pacific Sealants. “It’s an extremely elastic sealant; it stretches quite a bit.”

The next step was to correct the irregular cracks and attempted crack repairs in the precast concrete panels. The cracks were filled and protected with ALLGUARD™ Elastomeric Coating. This coating also improved the appearance of the building’s exterior.

“The ALLGUARD sealant was used at one elevation
drop and we found it did a good job keeping the water from entering the precast panels,” Burgess said.

Compatibility Key to Stopping Leaks

The key to stopping the leaks was the compatibility of the sealants and coatings, both with themselves, the substrates and the old joints.

“Silicones are basically impervious to ultraviolet light, which is the most damaging of all the things that can happen to organic compounds,” said Jim McKune of Architectural Wall Services. “We also like silicones because they have good movement capability.”

“Also, it was to our benefit to have one company involved,” McKune said. “It meant we had access to a complete system, and that is advantageous. Dow Corning has backed the project with warranties, so we have a lot of confidence, not only in the products, but also in the company.”

That confidence has proven to be well-deserved. The joints and seals on the Chevron facilities have performed without major incident since their installation in 1992. In fact, a year after the project was completed, a party was held to celebrate a full year without water intrusion and damage.

“The joints are holding as well as we expected, and we did this without making any modifications to the structure,” said Phil Jensen, Chevron Corporation liaison for the building project.

Dow Corning’s Walker said the total bill from Pacific Sealants amounted to less than 10 percent of what had been spent on remedial patching and caulking during the 10-year saga. Since the project was completed, the building has also held tight against several rainy seasons, thus ending an era of leaks, repairs and hand-wringer.