

PUF Performs in Hurricane Hugo

by Daniel Benedict

The winds of Hurricane Hugo had barely subsided when I began to research its effects on roofing systems in some of the ravaged areas.

What I found in my investigations both in Puerto Rico and Charleston, S.C., was that spray polyurethane foam roofing had performed well, sparing a number of the hurricane's victims some of the problems and dollar losses normally associated with such a disaster.

Puerto Rico

On Nov. 17, 1989, I inspected hurricane damage on the Puerto Rican Island of Vieques, six miles off the coast of the West Indies commonwealth.

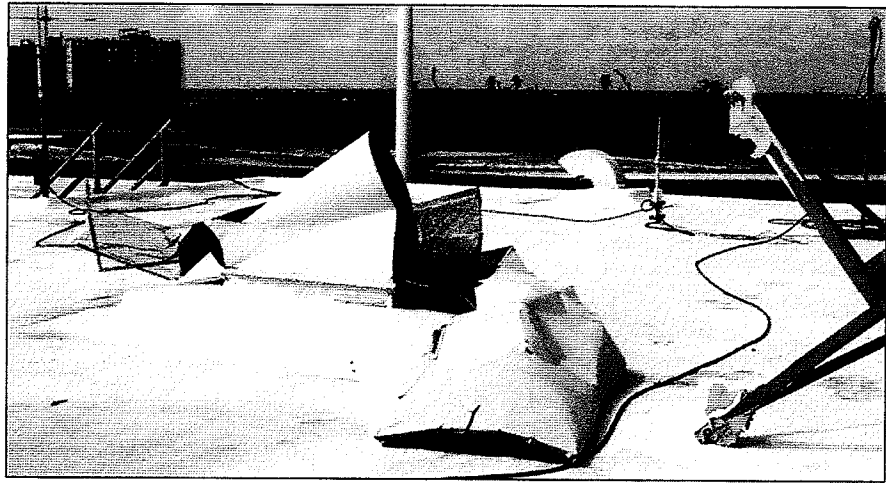
Vieques was devastated by Hugo, suffering nine hours of 140 mph winds with gusts up to 175 mph. Alpha Chemical Distribution Corp., a PFCD member, had to apply polyurethane foam and elastomeric coating to several government-owned manufacturing facilities.

These buildings had metal decks and a hodgepodge of roofing systems, consisting of hot-mopped or mechanically-fastened insulation with modified bitumen, single-ply or BUR roofs. All or most of these buildings' roofs were gone.

According to the Puerto Rico Industry Development Co., 2 million of the 10 million square feet of roofing it owns were lost. None of that 2 million square feet was polyurethane foam.

On the 150,000-square-foot PUF American Airlines terminal roof at Luis Munoz Marin International Airport, only mechanical damage was suffered.

A communications antenna 15



Hurricane Hugo's winds tore the equipment off the roof of this American Airlines terminal in Puerto Rico, but no leaks in the spray polyurethane foam resulted.

feet in diameter had been uprooted and tore a section of the polyurethane foam. Despite this damage, no leaks resulted. The PUF roof had a 55-mil-thick elastomeric coating on it 3-1/2 years old.

This compared dramatically to the Eastern Airlines terminal just across the taxiway. On that structure, about 25,000 square feet of the one-year-old, mechanically fastened, single-ply roof and flashing were lost.

A large portion of the American Airlines roof was power-washed and primed after the hurricane and another 15 mils of elastomeric coating applied.

Downtown

In downtown San Juan, about 75 percent of the Fomento building's 50,000 square feet of single-ply membrane had been blown off, as had 45 percent of the insulation board. The interior top floors and offices had received four inches of leaking water in areas, creating extensive damage.

Where the single-ply membrane was secure and the insulation beneath it dry, half-inch gypsum board was mechanically fastened through the existing system to the concrete deck.

Then 1-1/2 inches of spray PUF

was applied and a breathable primer and a minimum of one inch of aggregate installed. The balance of old insulation was removed, the deck primed and polyurethane foam applied to create slopes with no ponding.

All vertical and surrounding areas had several coats of an elastomeric coating applied to prevent ultraviolet deterioration.

Nearby, the entire 148,000 square-foot expanse of roof on a television station and newspaper building had no leaks, little mechanical damage from antennas and towers and no loss of aggregate.

The aggregate only had to be raked and leveled in small areas after the storm. The building had a two-year-old PUF roof and aggregate over both a modified bitumen roof that had provided three years of leaks and an unsatisfactory BUR roof.

South Carolina

I visited several locations in Charleston, S.C., including schools, industrial complexes and commercial buildings. All had roofing systems using spray polyurethane foam and elastomeric coatings.

The PUF systems for the majority of roofs had suffered damage

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only from falling trees and flying debris. One school needed only minor repairs to the system, with the exception of the gymnasium roof, which originally was a tectum deck. Hugo had lifted off and carried away the majority of this roof, and it was beyond repair.

The State Ports Authority Building, located farther down the coast, had polyurethane foam and elastomeric coating on about 10,000 square feet of roof area.

Despite winds strong enough to move a huge air conditioning unit off its base, no significant damage to the roof or any leaks resulted, except for a minor loss of stainless steel flashing and gutters.

My trip showed that spray polyurethane foam roofing systems performed well in the roofing havoc created by Hurricane Hugo. **CG**



The spray polyurethane foam roof in the foreground on this high school in the Charleston area endured Hurricane Hugo, but the tectum deck of the gymnasium in the background gave way.