ACME CORRUGATED BOX COMPANY...

"It's All About the Wrapper!"

By William A. Kirn, RRC

THE BUILDING OWNER

Manufacturing corrugated boxes may not seem very exciting or sexy, but at the Acme Corrugated Box Company (ACBCo), it is everything. No consumer wants to see a water-stained corrugated box, fearing that the contents are wet or damaged. A water-stained box just cannot be sold and must be discarded. That is why Jeremy Cohen, facilities manager and plant engineer at ACBCo, takes his responsibilities very seriously. He needs to make sure the product, the employees, and the equipment are protected. So the watertight integrity of the roof is of primary importance.

During the due diligence phase prior to acquiring the property in Hatboro, PA, it became apparent to the ACBCo team that the roof systems on the 220,000-sq-ft structure would require rehabilitation in addition to routine maintenance.

On most roof sections, the strata consisted of a cast-in-place gypsum deck and the original coal-tar built-up roof that had been recovered circa 1996 with a two-ply modified-bitumen membrane set in asphalt. There were numerous blisters in the membrane. In addition, the roof slopes were designed with a flat valley line between drain fixtures, which resulted in the undesirable condition of ponding water on the surface. Another issue of concern was the seasonal flow of coal-tar bitumen from beneath the metal edging along the edge. This condition was very unsightly and did not present a professional and industry-leading image to ACBCo customers and vendors visiting the facility.

In 2008, under Mr. Cohen's direction, ACBCo initiated a five-year program intended to address the issues noted during the prepurchase assessment, as well as to optimize the service life expectancy of the modified-bitumen system. The ACBCo team recognized that by optimizing service life expectancy, they could defer replacement of the existing roof, which would require an expensive, complete tear-off and removal that also might disrupt business operations.

THE CONSULTANT

Mr. Cohen recognized that ACBCo staff did not possess the knowledge or experience necessary to implement the initiative and that it would be prudent to utilize the services of a roofing professional to prepare bidding documents and provide contract administration services. ACBCo engaged Roof Management Services, Inc. (RMS) of Huntingdon Valley, PA, for this purpose. Joseph R. Heidt, RRC, CDT, and Roger A. Johnes, RRO, of RMS surveyed the individual roof sections and prioritized the implementation of the rehabilita-

Field of roof before restoration.

Coal tar seeping over roof edge.

tion initiative. The objectives of the program were to stabilize the modified-bitumen membrane, minimize ponding water, and attempt to stem the seasonal flow of coal-tar bitumen along the roof edge. The rehabilitation program included repair of blisters in the modified-bitumen membrane; application of sprayed polyurethane foam along the edge, as well as between existing paired drains to create a "saddle" to displace ponding water; replacement of the existing light-gauge, brake-formed metal edging with a wind-rated edging assembly; and the application of National Coatings Corporation's "AcryShield Roof Maintenance" system.

Heidt reported that "the use of sprayed polyurethane foam in conjunction with acrylic coating provides a remedy for detrimental conditions while at the same time extending the service life expectancy of the roof system well into the future."

Ponding water in valley line before resloping with SPF.

National Coatings Corporation "AcryShield Roof Maintenance" (ARM) system incorporates AcryShield A501 and A503 base coats with the A500 topcoat. In addition to slowing the normal weathering process of the modified-bitumen membrane, it was expected that the highly reflective system, in conjunction with the sprayed polyurethane foam, would reduce surface temperature and stop or significantly reduce the continued flow of the coal tar over the roof edge.

THE CONTRACTOR

A. Poletto and Associates, Inc. of West Chester, PA, was awarded the project in a competitive bid process. Tony Poletto, president of the firm, had considerable experience and a proven track record with maintenance projects, especially in detailing odd-shaped penetrations and in the application of coatings on varied roof systems. Based upon his

Valley line after resloping with SPF and coating.

Detail of proper penetration repair using polyester scrim and coating.

Field of roof of finished project.

Field of roof of finished project.

extensive experience, Poletto has been successful in identifying roofs that are candidates for rehabilitation and maintenance, thus extending service life expectancy and sparing the building owner the considerable expense of tear-off and replacement.

THE COATING SUPPLIER

National Coatings Corporation's ARM program was selected based upon proven long-term durability. As technical director and key accounts manager, the author was directly involved in this project, assisting with the specification development and inspecting the coating application and completion. The AcryShield A500 topcoat has a long and proven track record, having been sold since 1981.

THE COMPLETED PROJECT

Tony Poletto noted that the entire project went smoothly. He inspected the roof in the summer of 2010, one year after installation. "I was very pleased with the way the coating system has performed. We experienced a very severe winter followed by the hottest summer on record in our area. The system met all expectations."

Roof surface temperatures taken during various times of the day graphically demonstrated how the coating system dramatically reduced the surface temperature, thereby stopping the continued flow of coal tar out from the existing roof. Roof-surface temperatures were taken before and after coating.

Roof-surface temperature before coating
140°F
Roof-surface temperature after coating
100°F
Ambient air temperature
88°F
Time of day
3 PM

Mr. Cohen was extremely impressed with the quality of the work, the professional conduct of the crew, and their responsiveness to his questions and comments. The use of the coating system eliminated the need for costly roof tear-off and replacement and disruption of the manufacturing lines. There were no concerns about leaks at nighttime tie-offs or falling debris from the underside of the roof deck.

Once again, Jeremy Cohen, ACBCo facilities manager, can sleep easier, confident his company's product, corrugated boxes, will be free of water stains for many years to come.

William A. Kirn, RRC

Bill Kirn is technical director and key accounts manager for National Coatings Corporation. He has been conducting research on roofing and construction materials for over 25 years, with emphasis on coatings and polymer applications. Bill is a Registered Roof Consultant and was on the faculty of the Roofing Industry Educational Institute. He is a recipient of the Richard M. Horowitz Award for excellence in writing for *Interface*. Kirn has served on the board of directors of the Cool Roof Rating Council (CRRC) and recently retired as chair of the CRRC Technical Committee. He is past president of the Reflective Roof Coating Institute (RRCI) and is on the board of directors of the Energy Coordinating Agency, a nonprofit organization that assists low-income seniors with energy-related needs in Philadelphia, PA. Kirn holds a B.S. in chemistry from Temple University, a master's in organic chemistry from St. Joseph's University, and an MBA from Temple University. He, his wife Jo-Anne, and their German shepherd, Kellie, reside in King of Prussia, PA.