



The roofing industry has undergone many changes throughout the years in systems, equipment and regulations with the biggest change being the introduction of single-ply systems.

Single-ply roofing first made its mark on the United States in the mid 1960's from manufacturers in Germany, Italy, France and Sweden where they had been successfully installed for several years. Single-ply roofing systems offered an extremely versatile, durable and cost effective alternative to Built-Up roofing which was experiencing rising costs due to fluctuations in the oil market.

Single-ply roof systems typically require less labor and equipment for installation. Although there were many problems in the early days due to inadequate materials and poor installations, today's manufacturers produce top quality membranes who only sell their merchandise to qualified experienced contractors. Single-ply systems have come full-circle in the nineties, and, in fact,

hold the largest market share in the commercial roofing industry.

Single-ply membranes are flexible sheets. Most comprise of compounded synthetic materials factory produced to strict specifications as opposed to built-up roofs (BUR) which are generally constructed on the roof itself and subject to weather and material inconsistencies. Single-ply materials have a very complex structure so the Single Ply Roofing Institute (SPRI) has simplified its classifications into 3 types. The most common of which are listed below.

Thermosets: EPDM (ethylene propylene diene monomer), which is the most popular, and CSPE (chlorosulfonated polyethylene (Hypalon™)). Thermoset membranes can be mechanically attached, fully adhered and / or ballasted. Seams and details are fully adhered with sealant or double sided tapes.

Thermoplastics: PVC (polyvinyl chloride), PIB (polyisobutylene), CPA (copolymer alloy) and CPE (chlorinated polyethylene) among others with PVC being the most popular. Thermoplastics are also mechanically attached, fully

adhered and / or ballasted. Seams and details are typically heat fused with hot air although they can be solvent welded.

Polymer - Modified Bitumen: APP (atactic polypropylene) and SBS (styrene butadiene styrene copolymer) which are both available in smooth or granular covered sheets. Modified bitumens can be torch applied, hot mopped or laid in cold adhesive. The same applies to seams and details.

Pfister recently installed a PVC roof on St. Joseph's Chapel located at Mary Help of Christians Academy in Haledon, New Jersey. The Salesian Sisters have maintained the chapel since its construction in 1976. The roof consisted of 1" insulation board, 30 lb. basesheet and Ludowici terra cotta flat tile which was nailed directly through the insulation board into the wood substrate below.

Almost immediately upon the Chapel's completion there were problems during driving rains or snow accumulations.

Approximately 5 years after the chapel's original construction, major modifications were made to the existing gutter system to try and alleviate these

problems. Although this helped somewhat, it did not resolve all of the problems. Over time, major portions of tile were removed, new waterproofing installed and the existing tile reinstalled.

In 1996, the Sisters realized the life of the chapel roof could no longer be extended and must be replaced. They called Pfister Industries who discussed roofing systems, underlayments and reuse of the existing tile. Pfister also recommended that they contact an independent roofing consultant. They retained the services of Mr. William Andresen of Fountainhead, who wrote a specification around a fully adhered Sarnafil 60 mil PVC Membrane after meeting on site with Wayne Pfisterer. The Sisters chose a Terra Cotta Red roofing membrane.

Barricades and caution tapes were used to keep the students out of work areas as school was in full session. Because wet or frost covered PVC is extremely slippery and almost impossible to walk on at any slope, workers were required to wear safety harnesses through the job. Extreme care was taken during the removal process. Tiles in good condition were palletized and transported to the Pfister yard to be used for repairs or installed on a roof better designed for tile.

Each side of the octagon-shaped roof had to be completed before the next section could be started. After the tiles were removed, the exposed areas were tarped. Old insulation and underlayment were removed to expose the wood decking and repairs were made as necessary. Over the prepared substrate, 2" isocyanurate insulation board was mechanically fastened. Because of the 8/12 pitch of the roof, handling the sheets and the adhesive proved to be a challenge. The rolls were first laid out on the ground and cut to size. They were then tacked into place on the roof and folded back half way to allow the adhesive to be spread on both surfaces and then folded back onto the insulation board. This adhesive process was repeated continuously. After all the field membranes were installed, fabricated PVC metal



Removal and stacking of the roof tile. Photo Courtesy of Pfister Industries, Inc.



Application of the terra cotta field membrane. Photo Courtesy of Pfister Industries, Inc.



Preparing the tile for shipment to the Pfister stock yard. Photo Courtesy of Pfister Industries, Inc.

was installed on all ridges. A second layer of PVC membrane was then installed over these ridges and welded on either side. This proved to be a functional and aesthetically pleasing detail. A combination of brown PVC metal edging and metal box cutters were installed in the appropriate areas around the perimeter. In March, 1997, the Salesian Sisters were issued a Sarnafil 10-year warranty and the Chapel's new terra cotta red roof shines brightly for all to see. We would like to thank the Mission-

ary Society of the Salesian Sisters with special thanks to Sr. Agatha & Sr. Rose for all their kindness and understanding during this project. RM

Wayne Pfisterer is vice president of Pfister Industries Inc., and a member of ROOFER Magazine's 1997 Editorial Advisory Board. Questions or Comments? Mr. Pfisterer can be reached at: www.pfister@prodigy.net

