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RIDGEWALKER NEWS

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Insights into Today's Roofing Issues

Professional Services

- Roof consulting
- Construction documentation and administration
- Condition assessment reports
- Leak investigations
- Cost estimating
- Hands-on surveys and test probes
- Historic building restoration and rehabilitation
- Facilities maintenance plans
- Materials analysis and selection
- Preservation planning

Steep-Slope Roofing

- Slate
- Wood shingles
- Clay tile
- Standing seam and batten seam copper
- Asphalt shingles
- Flashings
- Rainwater conduction systems

Low-Slope Roofing

- Flat seam copper
- Built-up roofing
- Modified bitumen systems
- EPDM
- Fluid-applied systems
- Flashings

Building Envelope

- Exterior masonry
- Windows and doors
- Stained and leaded glass
- Architectural woodwork
- Ornamental ironwork
- Steeples, parapets, and cornices

Competence

- Expertise in roofing technology and building pathology
- Holistic approach to identifying and treating deterioration
- Hands-on, up-close surveys from ladders and high reach equipment
- Principal involvement in all projects
- Attention to detail
- Close client collaboration
- Frequent site visits during construction to monitor quality
- Continuously refining our understanding of building technologies

SOLUTIONS FOR THE ENTIRE BUILDING ENVELOPE

Drainage, Thermal Movement, and a Double Outlet Tube

One of the biggest challenges of designing flat seam copper roofs and gutter liners is proper accommodation of thermal movement. Changes in temperature cause metal pans to expand and contract. This thermal movement imparts stress on the soldered seams. Where flat seam roof areas, or a built-in gutter and a flat seam roof, intersect perpendicularly, stress on the soldered seams is compounded at the point of intersection. If the intersection occurs at a low point, for instance at an outlet tube, cracked soldered seams can potentially result in a catastrophic leak. In this situation, the best bet is to accommodate thermal movement as much as possible, but also to plan for failure.

Levine & Company encountered such a condition at St. Mary's Episcopal Church in Ardmore, Pennsylvania, where a large gusset intersects a wide built-in gutter with an outlet tube located at the point of intersection (see figure 1). The solution involved five key details. First, the new gutter liner was constructed from relatively small flat seam copper pans which are better able to accommodate thermal movement at right angle intersections than 8- or 10-foot long copper sheets. A new, raised expansion joint was installed closer to the outlet tube to isolate the flat seam gutter pans from the longitudinal pans used elsewhere in the gutter. The north end of the gutter was re-sloped away from the point of intersection (the high point used to be located at the far corner of the building), significantly reducing the amount of water flowing toward the intersection. Ice dam protection membrane was installed below the copper pans at the point of intersection to catch water should it penetrate the gutter or gusset. The final touch was a double outlet tube; a back-up plan, if you will, acknowledging that although we did our best to accommodate stress on the soldered seams, if a seam should crack in the future, no water will enter the building.

The double outlet tube we designed is a tube within a tube (see figure 2). The inner tube receives all the water from the flat seam gutter and gusset, provided, of course, that the soldered seams remain intact (we have every confidence that they will). The ice dam protection membrane below the gutter liner laps inside the mouth of the outer tube, or "sleeve," thus creating a secondary layer of protection. Any water which might penetrate the flat seam copper flows along the ice dam protection membrane, through the sleeve, and ultimately into the downspout (exactly where it should be).

Figure 1: Built-in gutter and gusset intersection

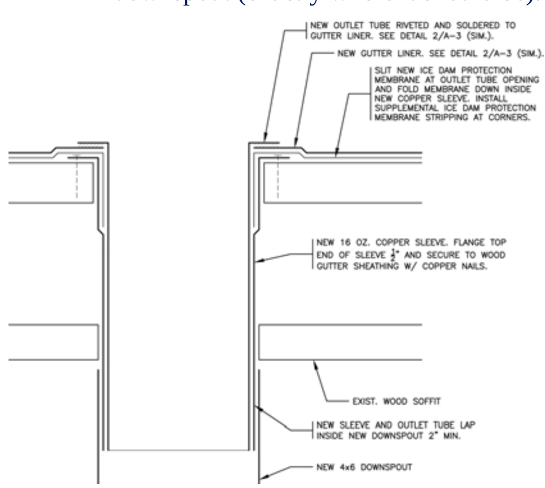
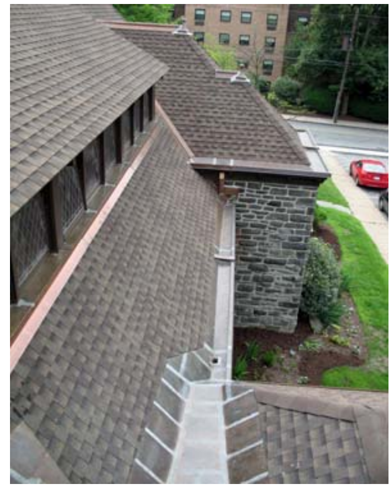


Figure 2: Detail of double outlet tube

St. Mary's Episcopal Church Roof Rehabilitation

St Mary's Episcopal Church was designed by the renowned Philadelphia architectural firm Furness & Evans and constructed in 1887 with later additions constructed in the late 19th and early 20th centuries. Multiple layers of asphalt and wood shingles were replaced with dimensional asphalt shingles. New insulated nailboard panels were installed below the shingles to increase the energy efficiency of the previously uninsulated roof. Ongoing problems with overflowing gutters and ice damming were resolved by deepening the existing built-in gutters, installing new copper gutter liners, replacing existing downspouts, and adding several new downspouts and new expansion joints. In addition, thirty-three bulging, leaded-glass clerestory windows were restored, architectural woodwork at, and above, the eaves was repaired and painted, and a new weathervane was fabricated and installed to match the broken, original weathervane.

This project was selected for a 2010 Historic Preservation Award from the Historical and Architectural Review Board and Historical Commission of Lower Merion Township.



Update: Availability Issues for Architectural Sheet Metal

In the Spring 2012 issue of Ridgewalker News, we reported that Follansbee Steel's TSC II® and Revere Copper Product's FreedomGray™ sheet metal were no longer available, at least temporarily, due to Follansbee's closure. Since that publication, Revere Copper Products, Inc. has announced its purchase of the assets of Follansbee Steel. Revere intends to move the manufacturing equipment to Rome, New York and resume production of FreedomGray™. The purchase agreement also allows Revere to manufacture TSC II®, a product previously trademarked by Follansbee. Revere has stated that the relocation is anticipated to take six months and they expect to begin production of one or both metals in December of 2012.

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