

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
- + Flashings
- + Roof drainage

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 ensure quality
- + Continuously refining our understanding of building technologies

SOLUTIONS FOR THE ENTIRE BUILDING ENVELOPE

Rooftop Attachment of Lightning Protection Systems

The design and installation of lightning protection systems on roofs is most successfully accomplished through a team effort, including a roof consultant, a lightning protection contractor, and a roofing contractor. Determining the necessity of a lightning protection system for a given building and compliance with relevant UL standards is best left to the lightning protection experts. Knowledge of roof systems and understanding of roof detailing, however, is typically outside their area of expertise. Without the assistance of a roof consultant, installation of lightning protection components often results in penetrations through the roof system with little or no regard for the long-term weathertightness or durability of the attachment methods or the aesthetics of the installation. When it comes to installation of the system, the conductor cable and air terminals (the technical term for "lightning rods") should only be installed by a UL listed contractor, but installation of the hardware necessary to attach those items to the roof requires the skills of a roofing contractor.

Copper loop fasteners for securing the conductor cable are designed to be fastened with screws. Considering that these loops need to be installed every 3'-0" on center, this can amount to a significant quantity of screws all of which create holes where water may enter the roof system. An alternative is to solder a copper plate and threaded rod assembly (photo below) to copper flashings or roof pans and fasten the loops to the threaded rods with nuts. Copper mounting hardware for air

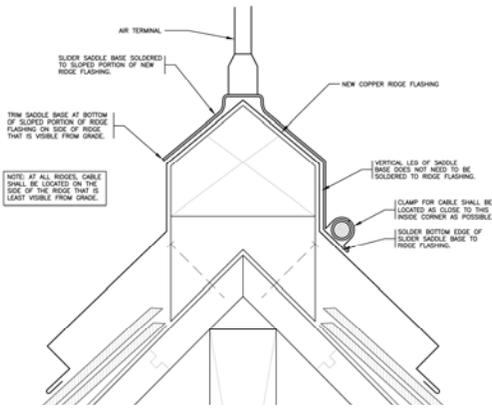


terminals can be soldered directly to copper roof or flashing elements as shown in Figure 1 (see reverse) to eliminate penetrations associated with mechanical fasteners. Any soldering associated with the attachment hardware should be performed by the roofing contractor.

The placement of the conductor cable is important both for aesthetics as well as the durability of the connections. Running the cable along a longitudinal edge or break in a copper flashing (as shown in Figure 1) or tucking the down lead behind a downspout can help minimize the visibility of these elements from grade. Conductor cable installed along the eave of a roof or laid in a built-in gutter can be torn loose by snow and ice. Together, the design professional and lightning protection contractor can devise creative solutions to avoid such problematic locations, such as securing the cable to a heavy gauge copper or stainless steel bar to span over a built-in gutter, where it can then run longitudinally along the cornice.

Lightning protection companies sometimes rely on adhesives to secure components to the roof. If an adhesive is to be used, it is important to ensure that it is compatible with the substrate to which it will be applied. Beware that the long-term holding power of adhesives is questionable. The use of adhesive, therefore, is not recommended in locations that are within the path of flowing water or subject to snow and ice accumulation.

All of the lightning protection system attachment methods discussed above require the coordinated efforts of an entire team. A roof consultant, lightning protection contractor, and roofing contractor must work together through the design and installation process in order to ensure the new lightning protection system is operational, safe, secure, and watertight.



◀ Figure 1: This detail designed by Levine & Company involves bending the air terminal mounting bracket to conform to the shape of the ridge and soldering it to the copper ridge flashing.



In this installation, air terminals are secured to copper straps which are soldered to the new copper balustrade cap, providing a strong connection without puncturing the cap with mechanical fasteners. ▶

PRINCIPAL ENDEAVORS

Jeffrey Levine, Founding Principal of Levine & Company, hit the road during the month of October for two speaking engagements. At the Annual Conference of the Eastern Region Association of Higher Education Facilities Officers (ERAPPA) in Halifax, Nova Scotia, Canada, Jeff presented “All You Need To Know About Slate Roofs: New Guidelines From The National Slate Association.” Later that month, at the 2011 Building Envelope Technology Symposium hosted by The Institute of Roofing, Waterproofing, & Building Envelope Professionals (RCI, Inc.) in Charlotte, NC, Jeff gave a presentation titled “What Do You Mean There Is No Base Flashing Height? How To Detail Your Way Out of (Almost) Anything.”



All You Need To Know About Slate Roofs:
New Guidelines From
The National Slate Association
Jeffrey S. Levine



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