TechTip R7 – SPF Roof Systems on Wires and Conduit

On many SPF roofing projects, the building owner or homeowner may have allowed a network of wires, cables and piping (WCP) to accumulate on their low-slope roofs. These cables and wiring can be from cable or dish television services, telephone wires or LAN cables. They may also be used to control and power roof-mounted HVAC equipment. Piping is typically used for natural gas, refrigerant, condensate or water service to and from HVAC equipment. WCP may be exposed or protected by metal or plastic conduit.

Often, WCP can lie directly on the existing roof surfaces. As SPF contractors, we are not typically qualified to remove and re-route WCP, and we typically don't include this type of work in our projects.

Sometimes, either through lack of understanding or frustration, SPF contractors will spray WCP that lie directly on the roof surface (Figures R7-1 and R7-2).

Figure R7-1: Power cables and piping improperly covered by a SPF roofing system
Courtesy Mason Knowles Consulting:

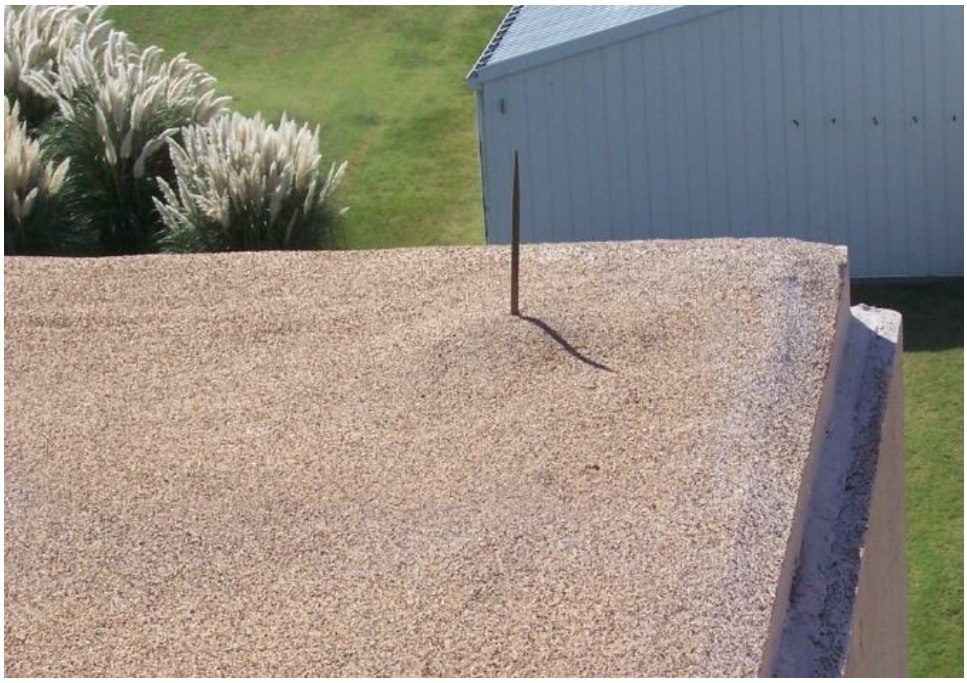

Figure R7-2: Lightning arrest cables improperly covered by a SPF roofing system
Courtesy Bruce Schenke

Spraying over WCP is not industry best practice, and it is bad idea for several reasons:

1. It can make it difficult for equipment service personnel to troubleshoot or replace these items when necessary. Replacing WCP will often mean destruction of the SPF and coating, and a potential customer call back to repair the damaged roof – or worse yet, to address a roof leak caused by destruction of the SPF roof.

2. It will likely result in ghosting of the foam, which creates a noticeable high spot or line in the foam. These high spots will have a negative effect on proper drainage, resulting in unnecessary ponding and shortened roof service life.

3. WCP can be easily damaged if the roof system ever needs to be scarified or removed. While loss of internet, television or HVAC service presents an inconvenience, cutting through pressurized pipes or energized power cables with a spud, scarifier or other power tool can result in serious injury or even death.

4. Lightning arrest cables imbedded in a SPF roofing system present a safety hazard and violates building codes. A lightning strike can heat buried cable and potentially ignite the foam.

5. Suspended high voltage wires can be an extreme risk and may need a minimum clearance distance for worker safety purposes. Any electrical wires on a roof top, above a roof top or even connected to photovoltaic panel systems must be installed and evaluated out by a competent person before proceeding with any work.

The best way for SPF contractors to address this issue is during the first roof inspection, prior to SPF installation. If there are WCP issues that need to be addressed, clearly make this part of the building owners or homeowners' responsibility in your statement of work. They will need to call a qualified person to make these repairs or modifications. Repairs should always be performed in accordance with building and electrical codes and may include encasing all wires and cables inside appropriate conduit and providing sufficient elevation of the conduit (typically 4"-6") above the finished roof surface to facilitate application of foam and coatings (Figures 3 and 4).

Since they can quickly weather, wood block supports need regular replacement and are not ideal for support of WCP. Pads and blocks used to support WCP should not be foamed in place unless they are made from waterproof materials. Most conduit and piping is subject to movement from wind or expansion and contraction. These systems should be supported on floating blocks that should have a wear pad between the support and SPF roofing system. Wear pads (Figures R7-3 and R7-4) are suggested to prevent premature wear of the coating.

In some cases, wires and cables can be re-routed below the roof deck and penetrate the roof through roof penetration housings (Figure R7-5). In other cases, wires and cables can be suspended on the tops or sides of curbs (Figure R7-86).

The bottom side of the roof decking will also need to be inspected if any screw attachments are anticipated (e.g., installation of backerboard). Many times, wires are run to the underside of the roof deck which can be damaged with roofing work completed from the top side involving screws penetrating the roof decking.

Figure R7-3: Power cables properly installed in conduit elevated on support pads above roof
Courtesy Bruce Schenke

Figure R7-4: Piping system properly installed and elevated on support pads above the roof
Courtesy Bruce Schenke

Figure R7-5: Power cables properly installed from roof penetration housing to load
Courtesy Mason Knowles Consulting

Figure R7-6: Wiring properly supported above roof on top of curb
Courtesy Mason Knowles Consulting

ABOUT THE SPRAY POLYURETHANE FOAM ALLIANCE (SPFA)

Founded in 1987, the Spray Polyurethane Foam Alliance (SPFA) is the voice, educational and technical resource, for the spray polyurethane foam industry. A 501(c)6 trade association, the alliance is composed of contractors; manufacturers and distributors of polyurethane foam, related equipment and protective coatings; and consultants who provide inspections and other services. The organization supports the best practices and the growth of the industry through several core initiatives, which include educational programs and events, the SPFA Professional Installer Certification Program, technical literature and guidelines, legislative advocacy, research, and networking opportunities. For more information, please use the contact information and links provided in this document. www.sprayfoam.org

DISCLAIMER

THIS DOCUMENT WAS DEVELOPED TO AID CONTRACTORS AND INSTALLERS IN THE PROPER APPLICATION OF SPRAY-APPLIED POLYURETHANE FOAM SYSTEMS. THE INFORMATION PROVIDED HEREIN, BASED ON CURRENT CUSTOMS AND PRACTICES OF THE TRADE, IS OFFERED IN GOOD FAITH AND BELIEVED TO BE TRUE TO THE BEST OF SPFA'S KNOWLEDGE AND BELIEF.

THIS DOCUMENT IS MADE AVAILABLE "AS IS" AND WITHOUT WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, SATISFACTORY QUALITY, AND NON-INFRINGEMENT. TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, SPFA, ITS OFFICERS, DIRECTORS, EMPLOYEES, AUTHORIZED AGENTS AND VOLUNTEERS DISCLAIM ANY AND ALL LIABILITY OR RESPONSIBILITY FOR ANY LOSSES, DAMAGES, COSTS AND/OR INJURIES OF ANY KIND OR NATURE ARISING OUT OF OR RESULTING FROM THE USE AND/OR RELIANCE UPON THE CONTENTS OF THIS DOCUMENT.

DOCUMENT HISTORY

Date	Sections Modified	Description of Changes
May 2019	New Document	
January 2021	New Format	New TechTip Format