Goal of Final Inspections

“I have another job for you”

Robb G. Smith, FRCI, RRO, RRC
SPFA PCP Insulation & Roofing Certified Field Examiner  No. 14
Your Presenter

Robb Smith

- 35 years in the roofing industry
- 20+ years of specifying and inspecting SPF roofs
- Past President of RCI Inc., Raleigh, NC
- Registered Roof Consultant & Roof Observer
- Certified SPFA PCP Field Examiner for roofing and insulation
- SPFA R-1 Fundamentals of Roofing - Course developer and presenter
ANTITRUST POLICY STATEMENT FOR SPRAY POLYURETHANE FOAM ALLIANCE MEETINGS

• It is and shall remain the policy of the Spray Polyurethane Foam Alliance (“SPFA”), and it is the continuing responsibility of every SPFA member company, SPFA meeting or event participant, as well as SPFA staff and leadership to comply in all respects with federal and state antitrust laws. No activity or discussion at any SPFA meeting or other function may be engaged in for the purpose of bringing about any understanding or agreement among members to (1) raise, lower or stabilize prices; (2) regulate production; (3) allocate markets; (4) encourage boycotts; (5) foster unfair or deceptive trade practices; (6) assist in monopolization; or (7) in any way violate or give the appearance of violating federal or state antitrust laws.

• Any concerns or questions regarding the meaning or applicability of this policy, as well as any concerns regarding activities or discussions at SPFA meetings should be promptly brought to the attention of SPFA's Executive Director and/or its legal counsel.
SPF Roofing Final Inspection

• Your focus should not be on just the Mfgr’s warranty requirements, or the inspector's expectations, but more importantly, **exceeding** client expectations to get more work.

• This session will illustrate
  – High roofing standards with upgraded details
  – Conditions that should not have been left for the owner to see during his final walkthrough.
  – How to prevent an inspector’s punch list.
  – A roof that looks **CLEAN** and **PROFESSIONAL**.
Owners may want the following at the job site

- A copy of the project specifications available on the job site - with detail drawings
- Schedule of rooftop equipment that will be shut down & re-started
- Work Hours – start and quit
- Steps to protect employees / public from odors & overspray
- Description of how and where materials are stored
  - This should be discussed during the Pre-Construction meeting
Daily Log – Inspectors may want the following

• General description Scope of Work
• Roof plan – locations for:
  – Slit & core samples – retain samples
  – Foam thickness
• Lbs. of foam used
• Gallons of coating applied
• Number of squares foamed and/or coated
• Name of foreman & number of crew
Daily Log – Inspectors may also want to see the following

- Hours – start and quit
- Ambient temperatures – at least 2x times daily
- Dew point temperatures – at least 2x times daily
  - Record times taken
- Core cut sample – down to the deck – examined for:
  - Cell structure will indicate existence of moisture
  - Moisture that affects adhesion – blistering
- Retain core samples
Avoid arguments at the end of the job
Contract language

Have your attorney review it
Contract language*

Avoid words like

- “thickness” without definition
- SPF to be applied at a thickness of 2”

Qualify thickness with "average" and ”minimum”

Better wording

SPF to be applied at a thickness of 2” with a minimum of 1-3/4”

*Courtesy of Spray Foam magazine 1/2016 “Ask the Experts” column
Consult your attorney for a legal opinion
Contract language*

Avoid words like
• “thickness” without definition
• “nominal” – it doesn’t mean “average”

Definition –

“used about something that is officially described in a particular way when it is not really true or correct”

*Courtesy of Spray Foam magazine 1/2016 “Ask the Experts” column
Consult your attorney for a legal opinion
Contract language*

Avoid words like

- “thickness” without definition
- “nominal” – it **doesn’t** mean “average”
- “minimum” without definition
- “thickness average, range or tolerance” without definition

Have all parties agree on the procedures used to measure thickness - (both for foam and coating)

*Courtesy of Spray Foam magazine 1/2016 “Ask the Experts” column
Consult your attorney for a legal opinion
Contract language

Fix the language, then have your attorney review it
Staging
Material storage and SDS

Fence it off

Now called SDS (Safety Data Sheets)

Clean the grounds daily
Protection
Masking –
Eliminate evidence of overspray
Wind

• Know the surroundings
  • Employees / Tenants / Public
  • Adjacent bldgs., neighbors – windows
  • Cars
Tenting

Wind control
Tenting

Protect public in the area
Detailing the roof
Detailing the roof

Std. is 8” min. height

Curb not raised – simple fix
Raise curbs

New 2x6

8” min. height
Raised curbs

Clean finished condition

8”
Masking – the result

Straight lines
Details

Clean, Professional Image

No overspray
Overflow drains

Overflow cut down to – 2” above low point
Provide unobstructed drainage
Overflow drains are required

Built in 1938

New overflow drain
Expansion Joints

Rubber EJ covers often leak at open seams.
Expansion joints are needed to separate movement between building sections.
Expansion Joints

Metal EJs withstand abuse and joints don’t require maintenance

Waterproof vapor barrier membrane (APP, SBS, TPO, PVC)

Metal EJs not recommended for joints longer than 50 ft.
Expansion Joints

Completed expansion joint
Expansion Joints

Existing EJ Covered with TPO membrane
Expansion Joints

- TPO covered expansion joint
- Support conduit over EJ
- Foam Pipe Insulation under TPO
Conduit not set on blocks
Expansion Joints

Wrap over edge fasten with term bar

TPO Termination
Difficult penetrations

Before
Difficult penetrations
Under equipment

Install foamed slip sheet
Slip sheet
Build a curb

24 ga. sheet metal cap
Completed with new curb
Don’t do this

Leak source
Don’t do this

Leak source
Walls / Curbs – Tree bark foam

Exposed foam
Folds / rolls in the foam on walls and curbs

Exposed foam
Pin holes foam & coating
Penetrations
Proper 1½” soil pipe flashing
$1\frac{1}{2}''$ vent pipe
1½” vent pipe
Final inspection

• As the Inspector approaches the site – what does he see?
• How are the surrounding grounds?
• Are they clean?
Final inspection

What’s the roof going to look like?
Masking – leftovers
Equipment not lifted

Trimmed and exposed foam
Exposed foam
Surface contamination – UV degradation
Coating lamination problem – blisters

Poor coating adhesion
Inadequate coating lamination
Coating blister

Contamination on the base coat surface
Surface contamination
Inspections - Tools and Processes
Tools you should have on site

- Sharp knife
- An optical comparator
- Compatible sealant to fill hole
Slit sampling
Optical comparator – Finescale® 6x Magnifying Comparator

Best tool for measuring DFT

#140 Caliper style
Roof Sampling – Slits

• **Slits are examined for:**
  – Foam pass thickness
  – Cell structure
  – Evidence of UV degradation
    • Between lifts - foam on foam surface
    • Coating on foam surface
  – Peel strength at foam to coating surface
  – Evidence of pinholes
  – Evidence of surface contamination
  – Coating thickness
Roof Sampling – Slits

• Coating thickness –
  – Does the spec call for **Average** min. thickness or **Minimum** thickness
  – Same at the **edge** as the middle of the roof
  – Same on the **walls*** as the middle of the roof
  – Same on the **flashing** as the middle of the roof
  – Same **under equipment*** as the middle of the roof

*unless otherwise stated in spec or contract
Roof Sampling – Slits

- Minimum – 5 slits for 10,000 s.f. or less *
- At least 1 slit should be from an edge or wall
- 3 additional slits per add. 10,000 s.f. *
- Each slit should be probed for foam depth
- Each slit will numbered
- The location of each slit is marked on roof plan

* SPFA Recommendations
Roof Sampling – Slits

• Slit samples should be read immediately and note where DFT is less than spec’d.

• Where thin coating is found, 4 more are taken in a 5 ft. radius

• If additional slits are thin, 4 more slits are taken in a 10 ft. radius.
Roof Sampling – Slits

Sample A = thin DFT requires more slits

Sample 1 = thin DFT requires more slits
Tools you should have on site

- Sharp knife
- An optical comparator
- Digital anemometer
Digital Thermo – Anemometer

Shows % RH
Tools you should have on site

- Sharp knife
- An optical comparator
- Digital anemometer
- Tubes of caulking (compatible with coating)
- Moisture meter
- Sharpie marking pen
- Paper for drawing roof plan
Inspector’s Tool
Core cutter – 3” diameter

Allows for a 2”x2” sample
Additional profit opportunities
Safety Opportunity – sell rails

Mandatory fall protection when the hatch is open

Required under OSHA 29 CFR 1910.23

Potential $10,000 fine
Sell SPF on ducts

SPF contractor’s unique advantage
Typical duct insulation

Interior is only 1” of fiberglass
Typical duct insulation

Interior is only 1” of fiberglass
Sell SPF on ducts

Insulated & Watertight

May not be appropriate for all climate zones
In summary – get more work by delivering a roof with:

- Equipment raised where necessary so the roof is serviceable
- Equipment is properly flashed
- Primary and overflow drainage provided
- Coating edges are masked for straight lines
- The roof system that meets or exceeds the contract
  - Minimum **foam** and **coating** thicknesses
- The roof and job site kept clean and safe
- Good communications with the Owner / Rep
Produce a new roof – with a Clean and Professional appearance

Photo courtesy of Central Coating Co.
And the last thing the Owner says is . . .

“Could you look at another building for me”
Reference Documents

• Spray Polyurethane Foam Roof System
  – Maintenance Manual – SPFA 127
  – Guidelines for Roof Assembly Evaluation for SPF Roof Systems – SPFA138

• www.sprayfoam.org for Technical Information
The End

Thank you for your time