



Application Guidelines for Fasteners Used with Flexible Membrane Roofing Systems

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Disclaimer

SPRI has prepared these generic specifications for use only as a guideline. The guide is not intended to be used verbatim as an actual specification. Specific installation instructions and procedures for each particular job must be obtained from the manufacturer supplying the materials. SPRI, its members and employees do not warrant that this standard is proper and applicable under all conditions.

1.0 General

1.01 Description

- A. This guideline describes typical application methods for fasteners used in flexible membrane systems. These fasteners may be used with stress plates, membrane attachment devices, batten bars, and other related components. The SPRI manufacturer/supplier shall be contacted for specific information about particular products and systems.
- B. These fasteners may be used in new roofing, replacement, and recovering on substrate types that have been accepted by the SPRI manufacturer/supplier.
- C. Related Work
[Reference appropriate sections here, e.g.:
 - 1. Sheet metal
 - 2. Concrete
 - 3. Sealants and caulking
 - 4. Plumbing
 - 5. Masonry
 - 6. Carpentry
 - 7. Curtain Wall
 - 8. HVAC
 - 9. Electrical
 - 10. Vapor and Air Retarders
 - 11. Membrane Roofing
 - 12. Insulation]

1.02 Scope

The roofing contractor shall furnish and install fastener assemblies as described in this guideline and in accordance with the requirements of the SPRI manufacturer/supplier.

1.03 Quality Assurance

- A. The fastener assemblies shall be installed by the authorized contractor applying the roofing system.
- B. The use of the fastener assembly shall be approved by the fastener manufacturer/supplier and accepted by the membrane and insulation manufacturers/suppliers.
- C. *[Insert applicable code/insurance requirements as identified by the owner or his representative here.]*
- D. The fastener manufacturer shall provide, on request, typical physical property data and/or certification of compliance with such data.
- E. Inspection of the work by an independent agent does not relieve the roofing contractor from providing quality workmanship, nor from following these specifications and the fastener manufacturer's specific procedures.

1.04 Submittals

- A. Shop drawings required by the project specifications shall be based on the SPRI system manufacturer/supplier details prior to submittal.
- B. The contractor shall verify that the project specifications for mechanical attachment are in accordance with the recommendations of the SPRI manufacturer/supplier of the various components to be secured.
- C. The contractor shall submit evidence that the system to be installed meets specified code/insurance requirements
- D. The contractor shall submit evidence that the fastener is compatible with and appropriate for the existing substrate.

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- E. For projects that require pull-out tests: The contractor shall submit results of sufficient pull-out tests to be representative of all deck areas in accordance with ANSI/SPRI FX-1-2006.
- F. *[Other submittal requirements may be listed here.]*

1.05 References

- A. *Flexible Membrane Roofing: A Professional's Guide to Specifications, SPRI, 2003.*
- B. ANSI/SPRI WD-1, Wind Design Practice for Roofing Assemblies, 2008
- C. Procedure for Evaluation of Corrosion Resistance of Steel Fasteners. SPRI, Revised 2000
- D. Guidelines for Recovering Existing Roof Systems. SPRI, 1987, Revised 2000.
- E. Approval Guide 1988 – Equipment, Materials, Services for Conservation of Property. Factory Mutual Systems, 1988.
- F. Application Guidelines for Insulations Used with Flexible Membrane Roofing Systems. SPRI, 1988, Revised 2003.
- G. ANSI/SPRI FX-1-2006, Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners.

1.06 Delivery, Storage & Handling

- A. Materials shall be delivered in manufacturer's/ supplier's standard packages and containers.
- B. Packaging shall be clearly labeled with the manufacturer's/supplier's name, product name, and such identifying numbers as are appropriate.
- C. Care shall be taken to prevent damaging the fastener components during delivery, handling and storage.
- D. All materials shall be stored in accordance with the recommendations of the manufacturer/supplier.
- E. Appropriate safety information available from the manufacturer/supplier shall be reviewed.

1.07 Job Conditions

- A. When staging material on the roof and during application, the contractor shall ensure that overloading of the deck and structure does not occur. The load limit for this project is _____. *[Specify load limit here.]*
- B. The fasteners shall be suitable for the deck. *[Indicate deck type and thickness. Most fasteners require a minimum deck thickness to ensure reliable installation and performance.]*
- C. Any deteriorated deck, substrate, or wet insulation which is discovered shall be promptly reported to the architect or owner so that appropriate repairs may be accomplished.
- D. The existing roof surface shall be free of visible moisture, such as ponded water, ice or snow.
- E. The contractor shall conform to OSHA and other safety requirements.
- F. *[The interior environment of the building may adversely affect the fastener material. Indicate any such conditions here.]* The interior environment of the building is _____. The designer/contractor shall contact the SPRI fastener manufacturer/supplier for a determination as to the suitability of the proposed fastener for this environment, or any protective measures or alternative materials which may be required.
- G. *[Insert fastener-specific considerations here.]*

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1.08 Warranty

[A warranty may be available from the SPRI fastener manufacturer/supplier. The specifier shall consult the SPRI fastener or membrane manufacturer/supplier for durations and terms available, and shall require a sample copy of the fastener warranty to be included in the submittal package.]

2.0 Products

2.01 General

Fastener products shall be manufactured and supplied by SPRI member companies.

2.02 Fasteners

The fastener shall meet the following specifications:
[List specific property requirements here.]

- A. Type: _____
- B. Material: _____
- C. Corrosion Resistance *[Indicate appropriate test and specify performance requirements here]* _____
- D. Engagement or Embedment
Minimum: _____
Maximum: _____
- E. Pull-Out Force: Minimum _____ lbf.
[Pull-out requirements for fasteners are dependent upon deck type, system type, and uplift requirements for building location and wind exposure.]

2.03 Related Materials

- A. Insulation
- B. Roofing Membrane

3.0 Execution

3.01 Pre-Job

Refer to applicable Membrane section of this Guide.

3.02 Substrate Inspection/Approval

Fasteners shall only be installed into a structurally sound roof deck. The roofing contractor shall notify the owner or architect in writing of any defects in the deck. Work shall not proceed until the deck has been repaired or replaced.

3.03 Substrate Preparation

- A. The SPRI manufacturer's/supplier's specifications for substrate preparation shall be satisfied prior to insulation and fastener application.
- B. All areas of existing wet/unacceptable insulation shall be removed and replaced.

3.04 Vapor Retarder

Refer to applicable Membrane section of this Guide.

3.05 Wood Nailers

Nailers shall be securely anchored to resist the minimum forces required by the SPRI membrane manufacturer/supplier. *[Loss Prevention Data Sheet 1-49, "Perimeter Flashing," (Factory Mutual Systems, June 1985) contains recommendations for type, spacing and size of fasteners.]*

3.06 Insulation

If mechanical attachment of the insulation is specified: Only fasteners, stress plates, and fastening patterns accepted for use by the roofing membrane

manufacturer/supplier and which meet applicable code/insurance requirements shall be utilized. Fastening patterns and stress plates shall meet the requirements of the insulation manufacturer/supplier.

3.07 Fasteners

- A. Fasteners shall be driven perpendicular to the work surface.
- B. The fastener assembly (distribution plates, batten bars, and fasteners) shall be installed to avoid damage to the membrane, insulation, other substrate, or deck.
- C. The fastener manufacturer's recommendations shall be followed:
 - 1. for correct fastener and stress plate (if applicable) for specific applications.
 - 2. for correct drill bit for drilling correct pilot hole size (diameter and depth) for the particular deck.
 - 3. for installation tools.
- D. Fasteners installed in steel decking shall engage the top flute. *[Factory Mutual stipulates this requirement for approval; however, it can be difficult to achieve, especially in retrofit applications. If top flute engagement is expected to be achieved for all fasteners, it should be emphasized in pre-bid discussion and again in pre-job conference after award of contract.]*
- E. Fasteners that are improperly installed shall be removed or corrected.
 - 1. Overdriven (causing the stress distribution surface to deform), snapped (loose sections), and bent fasteners shall be removed.
 - 2. Underdriven fasteners shall be corrected.

3.08 Separation Layer

Refer to applicable Membrane and Insulation sections of this Guide.

3.09 Metal Flashings

Metal flashings shall be securely anchored to resist the minimum forces required by the SPRI membrane or metal edge manufacturer/supplier and the applicable building codes.

3.10 Membrane Installation

Refer to applicable Membrane section of this Guide.

3.11 Flashings

Membrane flashings shall be securely anchored to resist the minimum forces required by the SPRI manufacturer/supplier and the applicable codes.

3.12 Surfacing

Refer to applicable Membrane section of this Guide.

3.13 Walkways

Refer to applicable Membrane section of this Guide.

3.14 Water Cut-offs

Refer to applicable Membrane section of this Guide.

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