



Thermoplastic Single Ply and Multi-Ply Roofing Systems

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FLEX TPO PLUS MECHANICALLY ATTACHED ROOF MEMBRANE INSTALLATION GUIDE

This guide is intended to be a point of reference in assisting the Flex Authorized Applicator to installing the Flex Thermoplastic Roof System in accordance to the basic requirements of current Flex Details and Specifications for acceptance of the installation for a roof warranty application. The installer should always refer to the project specifications for details and application requirements for each unique roof system installation.

1.0 Substrate Preparation

Defects in the substrate surface must be reported and documented to the Building Owner's Representative for assessment. The roofing contractor shall not proceed with the roof system installation until the defects in the substrate have been corrected.

- A. **Recover or Retrofit Roofing Applications:** The project specifier shall identify damaged or wet insulation areas. The insulation as indicated shall be cut out and removed from the roof area. The removed insulation shall be replaced with new insulation of the proper size to fill the space (flush with existing surface $\pm 1/4"$) and obtain a relatively smooth surface acceptable for the installation of the new roof system.
- B. **Existing Single Ply Roof Membranes:** If the existing membrane is to be left in place it must be cut into sections no larger than 100 square feet per each section. All flashing must be removed at the perimeter edge, roof drains and roof penetrations.
- C. **Gravel Surfaced Built Up Roofing:** The loose gravel must be removed either by vacuuming or power brooming. The surfaced must be leveled to prevent the insulation or recover board from bridging.
- D. **All Projects:** The substrate must be smooth and relatively even without high spot or depressions. Any accumulated water, ice or snow must be removed to prevent the absorption of moisture in the new roofing components and roofing system. The substrate shall be clean and free from debris and any other foreign material.

1.1 Vapor or Air Barrier Installation

Install the barrier in accordance with the manufacturer's written instruction and the project specifications for the installation of the specified product.

1.2 Wood Blocking

- A. Install wood blocking as indicated by the project specifications and in accordance with current Flex Details and Specifications. Blocking is always required at roof edges and roof penetrations.
- B. The wood blocking is installed so the top of wood is flush with the top surface of the roof insulation or cover board.
- C. The wood blocking width is to exceed the width of flange to be attached to the blocking.
- D. The securement of the blocking shall be in a manner to meet or exceed the local building code requirements and the wind uplift pressure resistance required in the project specifications.

1.3 Insulation/Recover Board

- A. Only install as much insulation or recover board that can be covered with roofing membrane and be made watertight in the same day.
- B. Insulation/recover boards are to be installed butted together with no gaps larger than 1/4" in the joints acceptable. Gaps in the joints larger than 1/4" must be filled.
- C. Top surfaces of the insulation/recover boards are to be aligned and flush with each other. Differences in the top edge alignment greater than 1/8" are not acceptable.
- D. Insulation/recover board that is to be installed in multiple layers must have the joints staggered between each layer.
- E. Insulation /recover board is mechanically attached to the roof deck with Flex Fasteners and Insulation Plates.
- F. Insulation/recover board is adhered to an approved roof deck with Hot Steep Asphalt or Flex Insulation Board Adhesive.

1.4 Restrictions

- A. Precautions must be taken when installing materials with Hot Steep Asphalt in temperatures lower than 40°F. The hot asphalt must be delivered to the application point at the asphalt manufacturer's recommended EVT.
- B. Adhesives and sealants must be protected when ambient temperatures are lower than 40°F. Insulated, heated storage boxes must be provided to store the products on the roof for temporary storage.
- C. Insulation and underlayment must be stored in a manner to keep the products dry and protected from the elements. The products must be stored off the roof surface on skids and covered with a breathable watertight cover.

2.0 Mechanically Attached Membrane Placement and Securement

- A. The substrate must be clean and dry prior to installing the Flex Roof Membrane.
- B. The type of Flex fastener is dependent upon the deck type. The specific type of approved fastener is found in the components section of Flex's Technical Manual if the proper fastener cannot be determined contact the Flex Technical Service Department.
- C. The number of perimeter sheets, the fastening placement density, and the field membrane securement is dependent on the wind uplift pressure resistance required by the project specifications and physical location. Contact the Flex Technical Service Department for assistance if required.
- D. Perimeter sheets are installed in a manner that picture frames the entire roof edge of each roof section.

Note:

- 1. On projects where there are multiple roof level and roof levels meet at a common wall, if the difference in height of the roof levels is greater than 3' the adjacent edge of the higher level is determined to be the perimeter edge. The roof area of the lower level where it meets the wall does not require perimeter sheets.
- 2. Expansion Joints, control joints, divider and fire walls in the field of the roof or roof ridges with slopes less than 3:12 are not to be considered as part of the roof perimeter.

2.01 Field Membrane Securement

- A. The field membrane sheets are positioned so that adjoining field membrane sheets overlap 5 1/2" to 6" at those locations where fasteners and plates are located. Typically along the length of the membrane.
- B. The end roll sections are also mechanically fastened and overlapped 5 1/2" to 6" to cover the fastener and plate and provide for an adequate hot air weld.
- C. The membrane is secured at the approved fastener density with the appropriate type of fastener approved for the deck and the wind uplift pressure resistance.
- D. Unroll and position the sheet.
- E. Install a fastener and plate in one end of the sheet on the appropriate fastener mark. Go to the opposite end of the sheet and pull sheet into position along the lay line and install a fastener and plate at the appropriate mark. Place the remaining fasteners and plates.
- F. Hot air weld the seam and continue in sequence installing the remainder of the sheets across the roof area.
- G. Additional securement must be provided at the perimeter of each roof level, roof section, expansion joint or roof divider, all roof penetrations and curbs, adjacent walls and at any angle change where the slope exceeds 2:12.
- H. All seams must be completed by hot air welding the same day they are installed. Thoroughly probe the seams with a seam probe and repair any voids or defects discovered

3.0 Flashing

- A. General Flashing Conditions
Flex Reinforced Flashing Membrane is to be installed for the flashing of parapet walls, roof equipment curbs, expansion joints and roof dividers, and for most other roof detail flashing areas. Flex non reinforced flashing membrane may be used for

those areas where the use of pre-formed accessories cannot be installed such as certain pipe penetrations, corners, and scuppers details.

1. Reroofing Flashing Conditions. Existing flashings must be removed prior to installing the new Flex Flashing Membrane.
2. Termination Bar, surface mounted reglet, or surface mounted counter flashings must be installed directly to the wall surface.

B. Application

Adhere the flashing membrane to walls, curbs and other vertical surfaces with Flex Flashing Adhesive. The Flashing Adhesive is applied to both the membrane and the surface to which it is bonded. The coverage rate is dependent on the type of substrate but should average approximately 60 square feet per gallon for both the membrane and the substrate. The flashing adhesive is allowed to dry until it is tacky and the flashing membrane is rolled into the adhesive.

1. Complete all seams of the flashing membrane by the hot air welding method.
2. Refer to the current Flex Membrane installation for applicable detail requirements.

4.0 Accessories

A. Walkway Pads

1. Install walkway pads in those locations as designated in the specifications.
2. Thoroughly clean and prepare the area of the roof membrane that is to be hot air welded to the walkway pad.
3. The Flex Walkway Pad is installed in maximum lengths of 10'.
4. Position sections of the walkway pad to leave a space between adjacent sheets approximately 2" wide.
5. Do not cover field seams with the Walkway Pad. Position the pads to leave minimum 4" wide are exposed at the field seams.
6. Hot air weld all four sides of the walkway pad to the field membrane.

B. Pavers

1. Either a protection sheet of Flex MF/R Flashing Membrane or Flex 180N Geotextile Separation Layer must be installed under all concrete paver blocks.

5.0 Night Seal

- A. The new roof membrane must be sealed at the end of each work day to prevent water infiltration.
- B. The membrane may be temporarily sealed by securing the down slope edge with roof cement, hot asphalt, spray urethane foam or similar water blocking materials.
- C. Embed the membrane into the sealant product and insure continuous contact.
- D. The following day when the installation is resumed cut away and discard the membrane where the night seal was applied before continuing with installing the adjoining section.