

# Roofing Products International Re-Flex TPO Fully Adhered Installation Specification

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## Part 1 – General

### 1.01 System Description

A. Fully adhered thermoplastic sheet roof membrane system using Re-Flex Seam Tapes or Heat Weld.

### 1.02 Specification Designations

A. See Plates.

### 1.03 Regulatory Requirements

A. Conform to all applicable building and jurisdictional codes, including roof assembly wind uplift and fire resistance requirements.

B. Follow your local jurisdiction requirements for disposing of used and expired adhesives and sealants.

### 1.04 Delivery, Storage and Protection

A. Deliver products to site in original containers and seals unbroken and labeled with manufactures' name, product brand name and type.

B. Store materials in weather protected environment, clear of ground and moisture, in accordance with RPI's instructions.

C. All materials stored outside shall be raised above ground or roof level on pallets, and covered with a tarpaulin or other waterproof material. Factory- installed plastic wrapping is not an adequate covering. Extreme heat conditions may require special storage requirements. Contact RPI for suggestions.

D. Follow RPI directions and requirements for protection of materials prior to and during installation.

E. Materials that are wet or damaged to the extent that they will no longer serve their intended purpose shall not be used. All roof insulation that has been wet is considered damaged, even if later dried out. Remove all damaged materials from the jobsite.

### Environmental Requirements & Restrictions

A. Do not apply roofing materials during inclement or threatening weather.

B. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during the same day.

C. High or gusting winds make the installation or materials difficult.

D. Material installation during periods of high ambient temperatures, typically above 90°F, can result in poor installation quality due to condensation on the membrane surface and excessively fast adhesive drying rates.

E. Material installation during periods of low ambient temperatures, typically below 40°F, can result in poor installation quality due to increased material stiffness and vulnerability to damage and excessively slow adhesive drying rates. To avoid these problems:

1. Store accessory materials in a warming box.
2. Use as soon as possible.
3. Allow adhesive to properly cure.
4. During cool temperatures, use a weighted lawn roller over membrane. Do not install fully adhered system until the temperature is 40°F and rising.

### 1.05 Working Environment

A. Provide a safe working environment, including, but not limited to, adequate fall protection, restriction of unauthorized access to the work area, and protection of the building and its occupants.

B. Safe work practices should be followed, including, but not limited to, keeping tools in good operating order, providing adequate ventilation if adhesives are used, and daily housekeeping to remove debris and other hazards.

## Part 2 – Products

### 2.01 Membrane

A. RPI Re-Flex TPO (smooth reinforced) thermoplastic polyolefin membrane.

B. RPI Re-Flex TPO Fleece Back Thermoplastic polyolefin membrane.

### 2.02 Flashings

A. RPI Re-Flex TPO system membrane flashings.

B. RPI Re-Flex TPO Fleece-Back membranes are optional flashing membranes for all RPI Re-Flex TPO roofing systems. These membranes may be a solution when a contaminated substrate is encountered.

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## 2.03 Flashing Accessories

A. RPI Re-Flex pre-formed flashing accessories to be Re-Flex Uncured EPDM, or Re-Flex TPO flashing membrane.

1. RPI Re-Flex laminated metal flashings to be a minimum of 25 mils of non-reinforced thermoplastic membrane of same type as roofing membrane.
2. Pre-formed Vent Boots with stainless steel clamping bands.
3. Preformed Universal Corners for reinforcement of inside and outside corners.
4. Pre-formed Expansion Joint Covers for roof-roof and roof-wall expansion joints.
5. Membrane Flashing Strips for miscellaneous applications.
6. Re-Flex Detailing Membrane, for flashing of miscellaneous penetrations in lieu of preformed accessories.
7. Re-Flex TPO Cover Strip for stripping in of flat metal edges.

## 2.04 Fasteners

A. Membrane fasteners and plates, insulation fasteners and plates, and flashing fasteners and termination bars. Refer to the Insulation Attachment Table at the end of this section for the correct type, length and diameter.

## 2.05 Adhesives and Sealants

A. RPI Re-Flex TPO bonding adhesives, sealants and caulking.

1. Royal Edge Bonding Adhesive (solvent-based).
2. Royal Edge H2O Bonding Adhesive (low VOC).
3. Royal Edge 2-Part Pourable Sealant for use in metal pitch pocket sealant pans.
4. RPI Re-Flex Lap Caulking for use in sealing termination bars, T-joints and other flashing details and penetration clamping bands.
5. RPI Re-Flex TPO Cut Edge Sealant.
6. Royal Edge Water Cut-Off Mastic for use in sealing behind termination bars and at drain flanges as a water cut-off.
8. RPI Re-Flex Primer/Activator for preparing epdm flashing surfaces before applying Bonding Adhesive and preparing surfaces before applying TPO taped backed products.

## 2.06 Traffic Protection

A. RPI Re-Flex TPO pads and rolls.

## 2.07 Insulation

Insulation of the following types. Minimum 1/2" thickness. Board size to be 4' x 8' panels for mechanical attachment, 4' x 4' and 4' x 8' for Fully Adhered attachment and tapered systems.

1. Polyisocyanurate insulation with glass-based facer meeting or exceeding the requirements for ASTM C-1289 (min. 16 psi compressive strength).
2. Extruded polystyrene insulation meeting or exceeding the requirements for ASTM D-578, Type X (min. 15 psi compressive strength).
3. Expanded polystyrene insulation with plastic facer meeting or exceeding the requirements for ASTM D-578, Type II (min. 15 psi compressive strength).

## 2.08 Insulation – High Traffic Applications

A. Foam insulation of the following types. Minimum 1" thickness. Board size to be 4' x 4' and 4' x 8' for adhered attachments and tapered systems.

1. Polyisocyanurate insulation with glass-based facer meeting or exceeding the requirements for ASTM C-1289 (min. 25 psi compressive strength)
2. Extruded polystyrene insulation meeting or exceeding the requirements for ASTM D-578, Type IV (min. 25 psi compressive strength).
3. Expanded polystyrene insulation meeting or exceeding the requirements for ASTM D-578, Type IX (min. 25 psi compressive strength).

## 2.09 Recover Board

A. High density wood fiber insulation, minimum 1/2", ASTM C-208, Class E.

B. Foam recover board of the following types. Board size to be 4' x 8' panels for mechanical attachment and 4' x 4' and 4' x 8' for Fully Adhered attachment and tapered systems.

1. 1/2" polyisocyanurate recover board insulation with glass-based facer meeting or exceeding the requirements for ASTM C-1289 (min. 16 psi compressive strength).

## 2.10 Other Accessories

A. Subject to compliance with requirements, provide the following products not available from RPI:

1. Wood Nailers: New wood nailers shall be pressure-treated for rot resistance, #2 or better lumber. Asphaltic or creosote-treated lumber is not acceptable.
2. Roofing Nails: Galvanized or not ferrous type and size as required to suit application.
3. Temporary Sealant: Polyurethane foam sealant or similar as required to provide temporary watertight sealing of roofing.
4. Air/Vapor Barrier: Polyethylene sheeting, min. 6 mil for TPO only.
5. Air/Vapor Barrier: Asphalt impregnated kraft paper composite (Permate by BMCA Insulation Products).

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6. Fire Barrier: Silicone-treated fiberglass-faced gypsum panels, min. ¼" thick (Dens-Deck® or Dens-Deck® Prime, by Georgia-Pacific).

7. Urethane Adhesive: Insulation adhesive of acceptable type from approved manufacturer. Requires special approval from RPI Contactor Services.

## Part 3 Execution

### 3.01 Site Conditions

A. Obtain verification that the building structure can accommodate the added weight of the new roofing system. Take test cuts of existing roof system to determine the types and condition of existing assemblies.

B. Confirm the adequacy of the new roofing system to provide positive slope to drain. Eliminate ponding areas by the addition of drainage locations or by providing additional pitch to the roof surface. Check for proper slope in drain sump areas.

C. All defects in the roof deck or substrate shall be corrected by the responsible parties before new roofing work commences. Verify that the deck surface is dry, sound, clean and smooth, free of depressions, deflections, or projections. RPI is not responsible for determining the adequacy of the deck.

D. Protect building surfaces against damage and contamination from roofing work.

E. Where work by other trades must continue over completed roof areas, it is the general contractor's responsibility to protect the finished roofing system from damage. When no general contractor is involved, the roofing contractor is responsible for protecting finished roofing surfaces from damage.

F. Deck preparation is the sole responsibility of the building owner or roofing contractor. All defects in the roof deck or substrate shall be corrected before roofing work commences.

G. Prepare substrate surfaces thoroughly prior to application of new roofing materials. This is particularly important for recover and reroofing applications. Preparation includes, but is not limited to, removal of existing flashings, replacements of wet/damaged existing roofing materials, removal of loose aggregate, removal of abandoned equipment, supports and penetrations, replacement of damaged decking, etc. Providing a smooth, clean and dry substrate minimizes the likelihood that underlying deficiencies will cause premature deterioration or failure of the new roofing system.

### 3.02 Preparation of Roofing Area – New and Tear-off Applications

A. Remove all existing roofing materials to the roof decking, including flashings, metal edgings, drain leads, pipe boots, and pitch pockets, and clean substrate surfaces of all asphalt and adhesive contaminants.

B. Confirm quality and condition of roof decking by visual inspection, and by fastener pull-out testing. It is strongly recommended that a moisture survey be performed to existing roofing components that are to be recovered. RPI will not be responsible for damage determined to result from trapped moisture in the existing roof system. Remove and replace all existing roofing materials that contain moisture.

C. Secure all loose decking. Remove and replace all deteriorated decking.

D. Remove abandoned equipment and equipment supports.

E. Confirm that height of equipment supports will allow the installation of full-height flashings.

### 3.03 Preparation of Roofing Area – Recover Applications

A. Remove all stone ballast, loose gravel, dirt, dust and debris from the roof surface.

B. Open and remove blisters and ridges from the roof membrane.

C. Cut existing membrane away from all perimeter and penetration securements.

D. Remove all existing flashings, including metal edgings, drain leads, pipe boots, and pitch pockets, and clean substrate surfaces of all asphalt and adhesive contaminants. If the wall/curb flashings are in good condition and tightly adhered to the substrate, new TPO flashing materials may be installed over these to a height of 18"

E. It is strongly recommended that the building owner have a moisture survey performed to ascertain the condition and suitability of the existing roofing materials to receive a recover system. A survey is required if wood fiber insulation is used in a recover system. RPI will not be responsible for damage to the roofing system if it results from moisture in the existing roofing system. Remove and replace all existing roofing materials that contain moisture.

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- F. Confirm quality and condition of roof decking by visual inspection if possible, and by fastener pull-out testing. Remove and replace all deteriorated decking.
- G. Remove abandoned equipment and equipment supports.
- H. Raise equipment supports to allow the installation of full-height flashings.
- I. Recover installation over coal tar pitch roofs require that the existing loose gravel be vacuumed or broomed (do not spud): if high spots remain, use a thicker insulation board to provide a smooth substrate for the RPI Re-Flex membrane. Recover installations with RPI Re-Flex TPO membranes over coal tar pitch roofs require the installation of minimum ½" recover board prior to the installation of the membrane. Do not use EPS/XEPS over coal tar pitch roofs.

## 3.04 Wood Nailer Installation

### A. Acceptable Material

#### 1. Solid Blocking:

Wood, #2 Grade or better, nominal 5/4" x 4" minimum; stagger multiple layers.

#### 2. Shim Material:

Pressure treated plywood, ½" x width to match solid blocking.

### B. Existing Nailers:

Anchor to resist 250 lb. Per ft. load applied in any direction.

1. Screws 16" on center attachment to structural wood, steel decks. Min. 1" thread embedment.
2. Spike 16" on center attachment to concrete decks. Min. 1" shank penetration.
3. 12" on center attachment to gypsum concrete, cellular concrete, cementitious wood fiber decks. Min. 1-1/2" thread embedment.
4. 3 anchors per length of wood nailer minimum.

### C. New Nailers

Anchor to resist 250 lb. Per ft. load applied in any direction.

1. Screws 16" on center attachment to structural wood, steel decks. Min. 1" thread embedment.
2. Spikes 16" on center attachment to concrete decks. Min. 1" shank penetration.
3. 12" on center attachment to gypsum concrete, cellular concrete, cementitious wood fiber decks. Min. 1-1/2" thread embedment.
4. 3 anchors per length of wood nailer minimum.

### D. Shim Material

Secure simultaneously with overlying solid wood nailer.

1. Shim material must be continuous; spaced shims are not acceptable.

## 3.05 Barrier Board Installation

### A. General

1. Barrier board shall typically be installed when required by design professional or code authority to address code or approval requirements.

### B. Placement:

1. Butt barrier boards together with a ¼" maximum space between adjoining boards. Fit barrier boards around penetrations with perimeter with a ¼" maximum space between board and penetration.
2. Install barrier boards in pieces a minimum of 2' x 2' in size.
3. Barrier boards installed over steel decking shall have boards placed perpendicular to deck flutes with edges over flute surface for bearing support.
4. Barrier boards that are wet, warped or buckled shall not be installed and must be discarded. Boards that are broken, cracked, or crushed shall not be installed unless the damaged area is first removed and discarded.
5. Barrier boards that become wet or damaged after installation must be removed and replaced.
6. Install no more barrier board than can be properly covered by the end of each day with roofing membrane.

### C. Securement

#### 1. Mechanical Attachment:

- a. Use appropriate type and length of fastener for structural deck type. See Insulation Attachment Table.
- b. Install required number of fasteners per board size and type of roofing system installed.
- c. Additional fasteners must be installed in corner/perimeter roof areas for all Royal Edge systems.
- d. Pre-drilling is required for concrete decks, and may be required for barrier concrete and lightweight cementitious decks.
- e. Install fasteners such that the fastener plate is tight and pulled slightly below the board surface.

#### 2. Hot Asphalt

- a. Use ASTM D-312, Type III or Type IV asphalt
- b. Apply asphalt at the rate of 25 lbs. Per 100 sq. ft. over the entire surface to which the board is to be adhered.
- c. Asphalt application rates of up to 60 lbs. Per 100 sq. ft. may be required if the substrate surface is rough or porous, such as an existing flood coat and gravel surfacing.
- d. Apply asphalt at its EVT temperature to obtain a proper bond, typically within the range of 425-475°F.
- e. Walk in the boards after installation to ensure a proper bond.

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- f. Maximum board size: 4' x 4'.
  - g. Hot asphalt application requires priming of concrete and barrier decks and existing asphaltic roofing systems.
3. Foam Adhesive
- a. Depending on foam adhesive type, apply adhesive in full ¼" – ½" thick coverage or in ¾" – 1" continuous beads according to the manufacturers instructions.
  - b. Adhesive beads shall be evenly spaced at the rate required for the insulation board size and type of roofing system being installed.
  - c. Apply adhesive when the air and surface temperature is at least 40°F.
  - d. Additional adhesive beads must be installed in corner/perimeter roof areas for Royal Edge Fully Adhered systems.
  - e. Walk in the boards after installation to ensure a proper bond.
  - f. Maximum board size: 4' x 4'.

## 3.06 Air/Vapor Barrier Installation – Loose Applied

### A. General

- 1. Air/vapor barrier sheet shall typically be installed when required by design professional to address internal building air pressure or humidity conditions.
- 2. Insulation must be installed over the air/vapor barrier sheet and mechanically attached to the deck.

### B. Application

- 1. Install air/vapor barrier sheet loose-applied to the deck or fire barrier board so that wrinkles and buckles are not formed.
- 2. Overlap air/vapor barrier sheet a minimum of 6" for side and end laps. Tape laps together with duct tape.
- 3. Seal perimeter and penetration areas with foam sealant.

## 3.07 Air/Vapor Barrier Installation – Adhered

### A. General

- 1. Air/vapor barrier sheet shall typically be installed when required by design professional to address internal building air pressure or humidity conditions.
- 2. Insulation must be installed over the air/vapor barrier sheet and mechanically attached to the deck or fully adhered to the air/vapor barrier sheet.

### B. Application

- 1. Apply compatible adhesive to the structural deck or fire barrier board at the rate recommended by manufacturer.
- 2. Install air/vapor barrier sheet into the adhesive applied to the deck or fire barrier board so that wrinkles and buckles are not formed. Broom air/vapor barrier sheet to ensure full embedment into the adhesive.

- 3. Overlap air/vapor barrier sheet a minimum of 6" for side and end laps. Adhere laps together with compatible adhesive or tape.
- 4. Seal perimeter and penetration areas with foam sealant.

## 3.08 Recover Board/Insulation Installation

### A. General

- 1. Insulation board shall be installed as required, in accordance with the Design Table.
- 2. A recover board overlay must be installed over expanded or extruded polystyrene insulation for all membrane applications adhered in solvent-based bonding adhesive. The use of an overlay board with the joints taped is required for all membrane applications adhered in hot asphalt over polystyrene insulation.
- 3. The use of extruded and expanded polystyrene insulations is limited to a maximum roof membrane temperature of 165°F.

### B. Placement:

- 1. Butt insulation boards together with a 1/8" maximum space between adjoining boards. Fit insulation boards around penetrations and perimeter with a 1/8" maximum space between board and penetration.
- 2. Install insulation boards in pieces a minimum of 2' x 2' in size. Every piece shall be properly secured to the substrate.
- 3. Insulation boards installed in multiple layers shall have the joints between boards staggered a minimum of 6" between layers.
- 4. Insulation boards installed over steel decking shall have boards placed perpendicular to deck flutes with edges over flute surface for bearing support.
- 5. Insulation shall be tapered to provide a sump area a minimum of 36" x 36" at all drains.
- 6. Insulation boards that are wet, warped or buckled shall not be installed and must be discarded. Insulation boards that are broken, cracked, or crushed shall not be installed unless the damaged area is first removed and discarded.
- 7. Insulation boards that become wet or damaged after installation must be removed and replaced.
- 8. Do not install more insulation than can be made watertight and covered in be the end of each work period.

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## C. Mechanical Securement

1. This application is suitable for all deck and types of insulation.
2. Use appropriate type and length of manufacturer's installation requirements for fasteners and plates used with steel, wood, gypsum, concrete and cementitious fiber decks. Install the required number of fasteners for types of insulation and board size in accordance with the Insulation Attachment Chart.
3. Pre-drilling is required for all concrete decks. Use appropriate fasteners and follow manufacturer's installation requirements for gypsum, concrete and cementitious fiber decks.
4. Screws and plates should be fastened secure enough to the seat the plate firmly onto the insulation board. A slight countersink is acceptable. Do not over torque the fasteners. Any fasteners that are over torqued or stripped should be removed and replaced.
5. Use appropriate fastener size and length to allow for required penetration of decking.

## D. Adhesive Adhered Insulation

1. Apply adhesive according to manufacturer's specifications to meet required wind lift minimums. Depending upon adhesive type, apply specified coating or adhesive ribbons.
2. Adhesive ribbons should be evenly spaced at the rate required by the manufacturer for the board type, size, and thickness to meet assembly requirements.
3. Do not apply adhesives when temperatures are below manufacturers minimum application temperature.
4. Additional adhesive must be applied in the corner/perimeter applications.
5. All boards should be "walked in" to ensure 100% adhesion.
6. Maximum board size: 4 ft. X 4 ft.

## 3.09 Membrane Installation

### A. Membrane Placement

1. Lay membrane into position so that wrinkles or excess material swells are not formed. Any areas exhibiting wrinkles or swells must be removed before the sheet is to be adhered.
2. Always install full width rolls on the perimeters and field.
3. Overlap the membrane a minimum of 3" for the installation of Seam Tape between the membranes.

A minimum 3" lap for side and end run seams is required for Re-Flex Fully Adhered TPO System.

4. Install the field membrane so the seams do not buck water. When installing a flecce-backed membrane, the ends should be butted together, not overlapped, and cover taped with 6" Re-Flex TPO Cover Tape.
5. All field cut edges of Re-Flex TPO should be caulked with Re-Flex TPO Lap Caulk.
6. Round the corners of all flashing details. Royal Edge Seam Tape should extend past the seam edge on all details. On details where the tape does not extend past the seam edge, the edge should be caulked with RPI Re-Flex TPO Lap Caulk.

### B. Mechanical Attachment At Angle Changes

1. Mechanically attaching the fully adhered field membrane into inside angle changes is not required if the field membrane is fully adhered into the angle change without bridging. The membrane at the angle must be completely hand rolled up the verticle slope and onto the roof deck to ensure 100% adhesion at the angle change.
2. When the field membrane cannot be adhered completely into the angle change, it is required to mechanically attach the membrane using approved fasteners and 2" plates secured a maximum of 12" O.C. When utilizing the field membrane and wall flashing in one sheet, the mechanical attachment can be stripped in with RPI Re-Flex 6" TPO Cover Tape. When installing the wall flashing as a separate flashing, the flashing must be fully adhered to the verticle surface with RPI Re-Flex TPO Bonding Adhesive (solvent based). Where the wall flashing and field membrane meet, both surfaces must be primed with RPI Re-Flex Primer/Activator. The wall flashing membrane extending onto the field membrane a minimum of 3" past the 2" plates and seamed using RPI Re-Flex TPO Seam Tape.

### C. Hermetically Sealed Systems

1. Seal the wall angle change area beneath the membrane at the deck and verticle wall with approved sealer and terminate the membrane a minimum of 3" above the deck. Apply Water Cut-Off Mastic between the wall and membrane.
2. Install a Royal Edge Termination Bar over the membrane and Water Cut-Off Mastic.
3. Install the wall flashing onto the wall and down over the field membrane.
4. Seam the membranes with RPI Re-Flex Seam Tape.

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## 3.10 Flashing Installation

### A. General

1. Flash all perimeter, curb, and penetration conditions with coated metal, membrane flashing, and flashing accessories as appropriate to the site condition.
2. All coated metal and membrane flashing corners shall be reinforced with preformed corners or unreinforced membrane.
3. All cut edges of reinforced TPO membrane must be sealed with RPI Re-FlexLap Caulk or RPI Re-Flex Cut Edge Sealant.
4. When using bonding adhesive, be sure to use adhesive specific to membrane type.
5. Minimum flashing height is 8".

### B. Coated Metal Flashings:

1. Coated metal flashing allows much of the metalwork used in typical roofing applications to benefit from the security of heat-welded membrane seaming, with a corresponding reduction in required metalwork maintenance during the life of the roofing system.
2. Coated metal shall be formed in accordance with construction details and SMACNA guidelines.
3. Coated metal sections used for roof edging, base flashing, and coping shall be butted together with a ¼" gap to allow for expansion and contraction. Heat weld a 6"wide reinforced membrane flashing strip to both sides of the joint, with approximately 1" on either side of the joint left unwelded to allow for expansion and contraction. 2" wide aluminum tape can be installed over the joint as a bond-breaker to prevent welding in this area.
4. Coated metal used for sealant pans and scupper inserts, and corners of roof edging, base flashing and coping shall be overlapped or provided with separate metal pieces to create a continuous flange condition, and pop-riveted securely. Heat weld a 6" wide reinforced membrane flashing strip over all seams that will not be sealed during subsequent flashing installation.
5. Provide a ½" hem for all exposed metal edges to provide corrosion protection and edge reinforcement for improved durability.
6. Coated metal base flashings must be provided with min 4" wide flanges nailed to wood nailers. Coated metal base flashings must be formed with a 1" cant.
7. In addition, provide a ½" hem for all metal flange edges whenever possible to prevent wearing of the roofing and flashing membranes at the flange edge.
8. Coated metal flashings are nailed to treated wood nailers or otherwise mechanically attached to the roof deck, or to the wall or curb substrate, in accordance with construction detail requirements.

9. When installing coated metal on walls or curbs that cover the existing flashing, the flashing does not need to be removed provided it is in good condition and tightly adhered.

### C. Outside Corners Using RPI Re-Flex Uncured EPDM

1. Using a Scrub Pad, apply RPI Re-Flex Primer/Activator to substrate and Uncured flashing.
2. After Primer/Activator has flashed off, apply Royal completely ng Adhesive to the substrate and Uncured Flashing using a stiff bristle brush.
3. After the Bonding Adhesive has flashed off, apply the Uncured flashing in the proper position, up the corner and onto the roof deck. Repeat the process.
4. Prime the final layer of membrane and apply a piece of 6 inch long piece of 3 inch Seam Tape. The Seam Tape should extend onto the roof, (horizontal) 4 inches, and up the corner, (vertical) 2 inches. Wrap the Seam Tape around the outside corner. Leave the paper on the tape.
5. Position the field membrane and make the cut for the outside corner. Fold back the field membrane and apply Primer/Activator where the field membrane meets the Seam Tape. Apply Bonding Adhesive to the rest of the field membrane.
6. After the adhesive and Primer/Activator has flashed off, remove the seam tape release paper and mate the surfaces together.
7. Using a hand roller, roll the field membrane into the angle changes, vertical surfaces, and outside corner flashings to ensure 100% adhesion.
8. Wrap the open wall area at the corner with RPI Re-Flex TPO membrane. Apply RPI Re-Flex Lap Caulk to the field membrane at the corner cut.

### H. Parapet and Building Walls

1. Flash walls with loose-applied membrane flashing applied to the wall substrate with bonding adhesive, or with coated metal flashing fastened 4" on center to wood nailers.
2. Apply Water Cut-Off Mastic between the flashing membrane and the wall. Secure membrane flashing at the top edge with a termination bar. Exposed termination bars shall be mechanically fastened a maximum of 6" on center (fastener in every hole): termination bars that are counterflashed shall be fastened 12" on center.
3. Metal counterflashings may be optional with fully adhered membrane wall flashings depending on guarantee duration. All termination bars must be sealed with RPI Re-Flex Lap Caulk.

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4. Flash wall scuppers with a coated metal that is mechanically attached to the wall and integrated as part of the wall flashing.

5. Maximum flashing height without intermediate fastening:

- 18" – Loose-Applied Flashing
- 54" – Adhered Flashing

6. Metal cap flashings shall be provided with a continuous clip fastened 12" o.c.

## I. Round and Square Tube Penetrations

1. Flash penetrations with preformed vent boots provided that the penetrations are accessible from the top. Otherwise, field-fabricate flashing with two-piece field fabricated flashings of unreinforced TPO or EPDM uncured membrane.

2. All flashings require the installation of a stainless steel draw band around the top of the flashing. Seal the top edge with Water Block and add clamping band. Apply RPI Re-Flex Lap caulking.

3. If the field membrane cannot be completely adhered into any angle change, the membrane must be mechanically attached at the base and mechanically fastened with screws and plates, a minimum of 12" on center, with a minimum of four fasteners per penetration. The fasteners should be covered with 6" RPI Re-Flex TPO Cover Tape.

## J. Irregularly-Shaped Penetrations

1. Flash irregularly shaped penetrations with flanged sealant pans formed of coated metal, secured to the deck through the roof membrane with screws 6" on center, a minimum of two per side.

2. Strip in metal flange verticle metal seam with with 8" wide membrane flashing strips heat welded to both the roof membrane and the metal flanges. Flanges can also be flashed in with RPI Re-Flex uncured EPDM and covered with RPI Re-Flex TPO Cover Tape.

3. Fill sealant pans with Royal Edge 2-part Pourable Sealant. Alternatively, fill sealant pans with non-shrink quick-set grout, and top off sealant pans with a 2" minimum thickness of 2-part Pourable Sealant.

## K. Curbs and Ducts

1. Flash curbs and ducts with fully adhered RPI Re-Flex TPO membrane flashing using Royal Edge TPO Bonding adhesive, or with coated metal flashing fastened 4" on center to wood.

2. Secure membrane flashing at the top edge with a termination bar. Water block shall be applied between the curb/duct surface and membrane flashing

underneath all mechanically fastened 6" on center maximum, termination bars that are counterflashed shall be fastened 12" on center.

3. The field membrane shall be fully adhered into the angle change and up the vertical surface using RPI Re-Flex TPO Bonding Adhesive. Where the field membrane cannot be completely adhered into the inside angle change; it should be mechanically fastened using approved screws and 2" plates into the deck at the base of the wall or angle change. The field membrane should be fastened every 12" O.C. maximum spacing and flashed in with RPI Re-Flex TPO Cover Tape.

4. All coated metal curb flashings and loose membrane flashings must be provided with separate metal counterflashings, metal coping, or flashing with equipment flanges.

5. Metal counterflashings may be optional with fully adhered membrane curb and duct flashings depending on guarantee duration.

6. All termination bars must be sealed with RPI Re-Flex caulking.

## L. Expansion Joints

1. Install prefabricated expansion joint covers at all flat type and raised cant/curb type expansion joint conditions. All metal nailing strips must either be nailed to wood nailers, cants or curbs, or secured to walls with approved screws or expansion anchors appropriate to substrate type.

2. Roof membrane must be mechanically attached along the base of raised cant/curb expansion joints with screws and plates a minimum of 12" O.C..

3. Expansion joint bellows must be twice the width of the expansion joint opening to allow for proper expansion/contraction

4. Metal nailing strip must be set in Water Cut-Off Mastic and secured with fasteners and neoprene washers fastened 6" O.C..

## M. Roof Drains

1. Roof drains must be fitted with compression clamp rings and strainer baskets. Original cast iron and aluminum drains, as well as retrofit-type cast aluminum and molded plastic drains, are acceptable.

2. Roof drains must be provided with a min. 36" x 36" sumped area.. Slope of tapered insulation within the sumped area shall not exceed 4" in 12".

3. Extend the roofing membrane over the drain opening. Locate the drain and cut a hole in the roofing membrane directly over the drain opening. Allow a minimum of 1/2" of membrane flap extending past the drain flange into the drain opening. Punch (do not cut) holes through the roofing membrane at drain bolt locations.

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4. For cast iron and aluminum drains, the roofing membrane must be set in a full bed of Water Block on the drain flange prior to securement with the compression clamping ring. Typical Water Cut Off application rate is one 10.5 oz. Cartridge per drain.

5. For fleece-backed roof membrane applications, the fleece-backed membrane is cut just short of the drain flange. A separate smooth reinforced membrane drain flashing sheet is heat welded to the roofing membrane and set into the drain bowl in a full bed of Water Block, and secured as above.

6. Do not allow field seams to extend into the sump area. Where field seams will be located within the sump area, a separate smooth roof membrane drain flashing a minimum of 12" larger than the sump area must be installed. The membrane flashing shall be heat welded or taped to the roof membrane. Alternately, if the seam does not run under the clamping ring, it can be covered with a 6" wide Cover Tape membrane strip or a Cover Strip heat welded to the membrane.

7. Tighten the drain compression clamping ring in place.

## N. Scuppers

1. Coated metal roof edge scuppers must be provided with a min. 4" wide flange nailed to wood nailers, with hemmed edges and secured with continuous clips in accordance with the manufacturer's assembly specifications.

2. When heat welding, coated metal wall scuppers must be provided with 4" wide flanges, with additional corner pieces pop-riveted to the flanges to create a continuous flange. All flange corners must be rounded.

3. Install wall scuppers over the roof and flashing membrane and secure to the roof/deck/wall with approved fasteners 6" O.C., a minimum of 2 fasteners per side.

4. All corners must be reinforced with RPI Re-Flex TPO Universal Corners, or flashed in with RPI Re-Flex uncured EPDM flashings.

5. Strip in scupper with flashing membrane target sheet.

6. Alternately, a wall scupper box may be field flashed using unreinforced flashing membrane heat welded to the membrane on the wall face and roof deck and terminated on the outside wall face with a termination bar, Water Block, and caulk.

## O. Heater Stacks

1. Field-fabricated two-piece membrane flashings of RPI Re-Flex unreinforced TPO flashing are typically installed at heater stacks.

2. Heater stacks must be equipped with roof jack metal cone-shaped or vertical tube-type flashing sleeves so that the membrane flashing is not adhered directly to the heater stack.

3. Apply Water Cut-Off Mastic to the bottom of the roof jack and mechanically attach the roof jack thru the new field membrane to the structural deck with approved screws prior to flashing installation.

4. All stack flashings must be secured at their top edge by a stainless steel clamping band placed over Water Cut Off Mastic, and sealed with RPI Re-Flex Caulking.

5. Field-fabricated membrane flashings must be adhered to the flashing sleeve with RPI Re-Flex TPO Bonding Adhesive.

## P. Wood Support Blocking

1. Wood support blocking, typically 4" x 4", is typically installed under light-duty or temporary roof-mounted equipment, such as electrical conduit, gas lines, and condensation drain lines.

2. Install wood support blocking over a protective layer of RPI Re-Flex TPO membrane or RPI Re-Flex Walkway Rolls.

## Q. Satellite Dish Support Bases

1. Install satellite dish support bases over a protective layer of RPI Re-Flex Walkway Rolls.

## R. Lightning Suppression Clips

1. Embed lightning suppression clips in RPI Re-Flex Caulking applied to a protective layer of RPI Re-Flex TPO Flashing membrane heat welded or taped to the roof membrane.

2. Alternatively, secure lightning suppression clips to the roof surface by means of 2" wide RPI Re-Flex TPO Flashing membrane strips heat welded or taped to the roof membrane.

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## 3.11 Traffic Protection

A. Walkway rolls must be installed at all roof access locations including ladders, hatchways, stairs and doors. Install walkway rolls at other designated locations included roof-mounted equipment work locations and areas of repeated rooftop traffic.

B. Walkway rolls must be spaced 2" to allow for drainage between the pads.

C. Heat-weld walkway rolls to the roof membrane surface around the entire perimeter of the pad/roll.

D. RPI Re-Flex TPO walkway rolls may also be installed with RPI Re-Flex Primer/Activator and 3" seam tape. First, roll or brush the TPO primer onto the back of the TPO pad along the edges and down the middle of length of the pad. Clean and prime roof membrane where the pad will be installed. Install tape to the back of the pad where cleaned (edges and middle) and roll in with a silicone hand roller. Remove the release paper and install the taped pads directly onto the roof membrane. Secure the pads by rolling into place.

## 3.12 Temporary Closures

A. The roofing installation must be made watertight at the end of each day's activity to prevent water infiltration into the completed roofing system installation.

B. Complete all flashings and terminations as the roofing installation progresses.

C. At the edge of the completed roofing system installation, extend the roofing membrane a minimum of 6" beyond the edge. Seal the roofing membrane to the surrounding deck or substrate surface with RPI Water Cut-Off Mastic or foam sealant.

D. Remove all temporary night seal materials prior to continuing with the roof installation and dispose of properly.

## 3.13 Field Quality Control

A. Inspect completed roof sections on a daily basis. It is the contractor's responsibility to probe all heat-welded seams and perform an adequate number of seam cuts to ascertain seam consistency.

B. Immediately correct all defects, irregularities, and deficiencies identified during inspections.

C. Remedial work shall be performed with like materials and in a manner consistent with the balance of the roofing installation so as to minimize the number of repair patches.

D. Excessive patchwork will require replacement of the entire affected membrane section, from lap to lap.

## 3.14 Cleaning

A. Remove bonding adhesive, bituminous markings and other contaminants from finished surfaces.

In areas where finished surfaces are soiled by asphalt or any other source of soiling caused by work of this or other sections, consult manufacturer of surfaces for cleaning advice and conform to those instructions.

B. Cut out and remove any sheet membrane contaminated with solvent-based adhesive, bituminous markings, and other contaminants from finished surface. Repair sheet damage by first cleaning the area with an all-purpose cleaner, then rinse off soapy residue. Reactivate membrane using the appropriate RPI Re-Flex cleaner, wiping with a damp (not saturated) rag. Complete repair by installing a patch of like material to specific system requirements.

## 3.15 Maintenance

A. Upon completion of the roofing system, provisions should be made to establish a semi-yearly inspection and maintenance program in accordance with standard good roofing practice and RPI guarantee requirements.

B. Repair cuts, punctures and other membrane damage by cleaning membrane (see section 3.10.G) followed by heat welding a membrane repair patch of sufficient size to extend a minimum of 2" beyond the damaged area.

C. Any damage to adhered membrane areas or at locations of mechanical attachment shall be repair so that the repaired area remains fully adhered or mechanically attached.