



WeatherBond PRO Weld-Free TPO Fully Adhered Roofing System

Part II - Installation

May 2009

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Installation Details



WeatherBond PRO Weld-Free TPO Fully Adhered Roofing System

Part II - Installation

May 2009

FOR WEATHERBOND INSTALLERS

THE INFORMATION CONTAINED HEREIN IS TO SERVE AS CRITERIA FOR WEATHERBOND INSTALLERS REGARDING THE APPLICATION OF THIS WEATHERBOND PRO WELD-FREE TPO FULLY-ADHERED WELD-FREE ROOFING SYSTEM. INSTALLERS ARE ADVISED TO FULLY FAMILIARIZE THEMSELVES WITH "DESIGN CRITERIA," PART I, PRIOR TO PERFORMING THE ROOFING INSTALLATION.

A. PRECAUTIONS

1. The following projects should be forwarded to WeatherBond for review prior to installation:
 - a. Projects where the building height exceeds 250'.
 - b. Air pressurized buildings, canopies, buildings with large openings where the total wall openings exceed 10% of the total wall area on which the openings are located (such as airport hangars, warehouses, and large maintenance facilities).
 - c. Cold storage buildings and freezer facilities
 - d. Projects where the TPO is expected to come in direct contact with petroleum-based products or other chemicals.

B. GENERAL JOB SITE CONSIDERATIONS

Material Safety Data Sheets (MSDS) must be on location at all times during transportation, storage and application of materials. The applicator shall follow all safety regulations as recommended by OSHA and other agencies having jurisdiction.

1. Subject to project conditions, it is recommended to begin the application of this roofing system at the highest point of the project area and work to the lowest point to prevent water infiltration. This will include completion of all flashings, terminations and daily seals.
2. On phased roofing, temporary closures should be provided to prevent moisture infiltration.
3. When possible on multiple level roofs, begin the installation on the highest level to avoid or minimize construction traffic on completed roof sections.
4. On projects at high altitudes (6,000' and above), rapid flash off (drying) of Bonding Adhesive and Splicing Cement will

occur due to low atmospheric pressure.

C. JOB SITE MATERIAL STORAGE AND HANDLING

1. Deliver materials to the job site in original, unopened containers.
2. When loading materials onto the roof, the WeatherBond Installer must comply with the requirements of the specifier/owner to prevent overloading and possible disturbance to the building structure.
3. Job site storage temperatures in excess of 90° F (32° C) may affect shelf life of curable materials (i.e., uncured flashing, adhesives, sealants, primers, Peel & Stick White EPDM Seam Tape and Peel & Stick or Pressure Sensitive White Flashing/Accessories).
4. Cold temperatures will not restrict the installation of this roofing system. **When the temperature is expected to fall below 40° F (5° C)**, outside storage boxes should be provided on the roof for temporary storage of liquid adhesives, sealants, primers, Peel & Stick White EPDM Seam Tape and Peel & Stick/Pressure Sensitive White Flashing/Accessories. Containers must be rotated to maintain their temperature above 40° F (5° C).

Note: Prolonged exposure of Peel & Stick/Pressure Sensitive White Flashing and Peel & Stick White EPDM Seam Tape to temperatures below 40° F (5°C) will cause the preapplied adhesive tape to lose tack and in extreme cases, not bond to the substrate. Refer to “Membrane Splicing with Peel & Stick White EPDM Seam Tape” for application procedures in colder temperatures.

5. Do not store adhesive containers with opened lids due to the loss of solvent, which will occur from flash off.
6. Insulation/underlayment must be stored so it is kept dry and is protected from the elements. Store insulation on a skid and completely cover with a breathable material such as tarp or canvas. If the insulation is lightweight, it should be weighted to prevent possible wind damage.

D. SUBSTRATE PREPARATION

1. **On retrofit - recover projects**, cut and remove wet insulation, as identified by the specifier, and fill all voids with new insulation so it is relatively flush (+/- 1/4") with the existing surface.
 - a. **For existing PVC membranes**, if the membrane is not removed, it must be cut into maximum 10' by 10' sections. All PVC flashings at the perimeter, roof drains and roof penetrations must be removed.
 - b. When installing this roofing system over an existing **gravel surfaced built-up roof, loose gravel must be removed**. Power brooming is recommended by WeatherBond to remove the loose gravel, which may trap moisture. Any uneven areas of the substrate must be leveled to prevent insulation from bridging.
 - c. When installing this roofing system over an existing smooth surfaced modified bitumen, TPO membrane shall be positioned with the length of sheets parallel to modified bitumen field splices. At end laps or other locations where TPO splices intersect modified bitumen field seams, Pressure Sensitive White “T” Joint Covers or 6" wide White Pressure Sensitive White Uncured Flashing must be applied over intersections.
2. **For all projects** (new or retrofit), the substrate must be relatively even without noticeable high spots or depressions. Accumulated water, ice or snow must be removed to prevent the absorption of moisture in the new roofing components and roofing system.
3. Prior to the placement of membrane underlayment, clear the substrate of debris and foreign material that may be harmful to the roofing system. Gaps greater than 1/4" must be filled with an appropriate material.

E. VAPOR RETARDER INSTALLATION

Follow the respective vapor retarder manufacturer's recommended installation procedures and the specifier's instructions for the installation of the product specified.

F. INSTALLATION OF WOOD NAILERS (If Required)

1. Install wood nailers in those locations that have been designated by the specifier.
2. The wood nailer must be installed so the top of the wood nailer is relatively flush (+/- 1/4") with the top surface of the membrane underlayment and the width of the wood nailer exceeds the width of the metal flange (where applicable at edgings, scuppers, etc.) as shown on the appropriate WeatherBond detail.
3. Follow the specifier's guidelines for the securement of the wood nailers.

G. INSULATION PLACEMENT AND ATTACHMENT

To verify acceptability of an insulation/underlayment, refer to Part I, "Design Criteria."

1. Do not install more insulation/underlayment than can be covered by membrane and made watertight in the same day.
2. All insulation boards must be butted together with no gaps greater than 1/4". Gaps greater than 1/4" must be filled with the same material.
3. When multiple layers of insulation are specified, staggering joints between layers is recommended.
4. When mechanical attachment of insulation is specified, **WeatherBond Approved Insulation** must be secured to the roof deck with **1 insulation fastener and plate per every 2 square feet** of insulation (refer to Details WFA-27.1 or WFA-27.2 for fastening pattern) **except as follows:**

For structural concrete, minimum 22 gauge steel or minimum 15/32" thick plywood decks a reduced fastening density can be used:

- a) When a **single or top layer of minimum 1-1/2" thick WeatherBond Polyisocyanurate** insulation is specified, the WeatherBond Approved Insulation may be secured at the minimum rate of **1 per 3.2 square feet** (10 fasteners per 4' x 8' board; 5 fasteners per 4' x 4' board). Refer to Details WFA-27.6.
 - b) When a **single or top layer of minimum 2" thick WeatherBond Approved Polyisocyanurate** insulation is specified, the insulation may be mechanically fastened with **one WeatherBond Fastener and Plate every 4 square feet**. Refer to **Detail WFA-27.3**.
 - c) **Dens-Deck Prime (1/4" or 1/2" thick)** may be fastened at the rate of **12 fasteners/plates per 4' x 8' board** (1 per 2.67 square feet). **Dens-Deck Prime (5/8" thick)** may be fastened at the rate of **8 fasteners/plates per 4' x 8' board** (1 per 4 square feet).
 - d) **On reroof/no tearoff projects** with a maximum roof height of 40', **any WeatherBond Approved Insulation** (i.e., Recovery Board, Polyisocyanurate less than 1-1/2" thick) may be secured at the minimum rate of **11 Fasteners per 4' x 8' board (5 Fasteners per 4' x 4' board)**. This option is **not applicable for 15-year Warranty projects** or refer to WFA-27-5
6. **Oriented strand board (OSB)** when specified as the membrane underlayment, must be mechanically fastened to the deck in accordance with WeatherBond Detail **WFA-27.4**. If OSB is to be used in conjunction with WeatherBond Approved urethane based adhesive, an OSB/Polyisocyanurate composite board is recommended. Refer to "Attachment III" at the end of this specification when FAST Adhesive is specified.
 8. When specified, WeatherBond Fasteners must be used in conjunction with the 3" diameter Insulation Fastening Plates.
 10. For applicable WeatherBond Fasteners and minimum deck penetration, refer to "Attachment I" at the end of this section.
 11. **WeatherBond FAST Adhesive** (a spray applied, two component, low-rise adhesive) may be used for insulation attachment in lieu of mechanical securement. Refer to Attachment III at the end of this section for applicable requirements.

12. **DASH DC**, a two component polyurethane adhesive applied in approximately 1/2" to 3/4" beads spaced a maximum of 12" on center in the field of the roof and 6" on center at the perimeter (based on building height) may be utilized. Refer to the applicable Technical Data Bulletin for specific installation instructions.
13. When adhesive marketed by others is specified, contact the respective manufacturer regarding specific installation requirements and available warranty coverage. WeatherBond warranties exclude products not supplied or marketed through WeatherBond .
14. The specifier may select an alternate insulation attachment that incorporates a solid mopping of the insulation with hot asphalt (ASTM D312, Type III or IV). Typical precautions include, but are not limited to, the following.
 - a. The existing gravel surfaced built-up roof must be scraped to remove all loose gravel. Large blisters that may prevent continuous embedment of insulation must be repaired. The surface of the substrate must also be dry and clear of foreign material.
 - b. On coal tar pitch, when deemed compatible by the specifier, minimum 1" Polyisocyanurate is the required membrane underlayment.
 - c. For successful attachment, proper asphalt temperatures must be maintained and the specifier's requirements concerning the installation of a base sheet (where required) and quantity of hot asphalt must be followed.
 - d. The maximum insulation board size shall not exceed 4' X 4'. Trim insulation boards around crickets and saddles to ensure continuous embedment.
 - e. Care must be exercised to prevent contamination of the top surface of the insulation. Asphalt oozing through insulation joints must be wiped from the surface.
 - f. When specified, a grid nailer shall be installed in accordance with WeatherBond 's WFA-7 Details.

H. MEMBRANE PLACEMENT AND BONDING

1. **Ensure** that water does not flow beneath any completed sections of the membrane system by completing all flashings, terminations and daily seals by the end of each workday.
2. **Sweep** all loose debris from the substrate.
3. **Position** TPO membrane over the acceptable substrate without stretching.
4. **Allow** membrane to relax approximately 1/2 hour prior to bonding.
5. **Fold** membrane sheet back so half of the underside of the sheet is exposed. Sheet fold should be smooth without wrinkles or buckles.
6. **Stir** Bonding Adhesive thoroughly scraping the sides and the bottom of the can (minimum 5 minutes stirring is recommended). Bonding surfaces must be dry and clean.

CAUTION: If aesthetics are of concern protect the white surface next to the edges of the folded membrane sheet so Bonding Adhesive will not discolor the white surface. Do not place Bonding Adhesive containers or their lids directly on the white surface of the WeatherBond PRO White TPO membrane.

7. **Apply** WeatherBond PRO TPO Bonding Adhesive evenly, without globs or puddles with a plastic core medium nap paint roller. A 9" roller will easily fit into the 5-gallon containers.

Apply WeatherBond TPO Bonding Adhesive to both the membrane sheet and the substrate to achieve continuous coating of both surfaces at a coverage rate of approximately 120 square feet per gallon per one surface (membrane or substrate) or approximately 60 square feet per gallon per finished surface (includes coverage on both membrane and substrate).

CAUTION: Due to solvent flash off, condensation may form on freshly applied Bonding Adhesive when the ambient temperature is near the dew point. If condensation develops, possible surface contamination may occur and the application of Bonding Adhesive must be discontinued. Allow the surface to dry and apply a thin freshener coat at the coverage rate, which is approximately half of the coverage rate stated above to the previously coated surface when conditions allow for continuing.

8. **Allow** adhesive to dry until it is tacky but will not string or stick to a dry finger touch.
9. **Roll** the coated membrane into the coated substrate while avoiding wrinkles.
10. **Brush** down the bonded half of the membrane sheet, immediately after rolling the membrane sheet into the adhesive, **with a soft bristle push broom** to achieve maximum contact.
11. **Fold** back the unbonded half of the membrane sheet and repeat the bonding procedure.

I. MEMBRANE SPLICING WITH PEEL & STICK WHITE EPDM SEAM TAPE

1. General

- a. **Tape splices must be a minimum of 4" wide** using 3" wide Peel & Stick White EPDM Seam Tape extending 1/8" minimum to 1/2" maximum beyond the splice edge. Field splices at roof drains must be located outside the drain sump.
 - b. **Prior to Peel & Stick White EPDM Seam Tape application, the splice area must be primed with TPO Primer.**
 - c. **Cold Weather Restrictions - When Temperatures are Below 40° F (5° C)**
 - 1) Peel & Stick White EPDM Seam Tape must be stored in a warm, dry area. Hot boxes must be provided for temporary storage to maintain the temperature of Peel & Stick White EPDM Seam Tape above 40° F (5° C).
 - 2) After TPO Primer has been applied and allowed to properly dry, **heat the primed area of the bottom membrane sheet** with a hot air gun as the tape is applied and pressed into place.
 - 3) When temperatures will fall below 20° F (-7° C), use a steel roller to apply pressure to the tape prior to removing the release film.
 - 4) Position the top sheet and remove the release film. Prior to rolling the splice with the 2" steel roller, apply heat to the top side of the splice area with a hot air gun. The heated surface should be very hot to the touch of bare skin (approximately the temperature of hot tap water). Take care not to burn or blister the membrane.
 - d. In warmer temperatures, it is recommended to keep Peel & Stick White EPDM Seam Tape in a shaded area out of direct sunlight.
2. Position membrane sheet to allow for required splice overlap. Mark the bottom sheets with an indelible marker approximately 1/4" to 1/2" from the top sheet edge. The pre-marked line on the membrane edge can also be used as a guide for positioning seam tape.

Fold the top sheet back and Apply TPO Primer to the bottom sheet to achieve a thin, even coat to the seam area. WeatherBond TPO Primer must be applied past the seam edge to the marked line. Splice area must be uniform in color, streak-free and free of globs or puddles.

- a. TPO Primer shall be applied with a medium nap paint roller.
 - b. Solvent Resistant Gloves are required for hand protection when primer is used.
5. **Allow** Primer to dry until tacky but does not transfer to a dry finger touch.

Note: Due to solvent flash-off, condensation may form on freshly applied TPO Primer when the ambient temperature is near the dew point. If condensation develops, the application of Primer and Peel & Stick White EPDM Seam Tape must be discontinued since proper adhesion will not be achieved. Allow the primer surface to dry and apply a thin freshener coat of TPO Primer to the previously coated surface and apply Peel & Stick White EPDM Seam Tape when conditions allow.

6. **Unroll** approximately 3' of Peel & Stick White EPDM Seam Tape. Align tape edge with marked line and press tape down to bottom sheet using firm, even, hand pressure. Continue for the length of the splice. Tape roll ends must be overlapped 1". Allow top sheet to rest on release film on backside of tape. **Do not remove the release film.**

Note: Tape placement is critical to obtain a minimum splice width of 4". A minimum of 1/8" to a maximum of 1/2" of tape must extend beyond the splice edge. A continuous piece of Peel & Stick White EPDM Seam Tape must be used at all field or factory splice intersections.

7. Reposition the top sheet back onto the bottom sheet and align with the marked line to ensure the 1/8 to 1/4" of seam tape exposure.
8. Fold back the top sheet and apply TPO Primer to the seam area and allow to dry.
9. Reposition the top sheet on the bottom sheet and **Pull** release film from Peel & Stick White EPDM Seam Tape beneath the top sheet and allow the top sheet to fall freely onto exposed tape.
10. **Press** the top sheet onto the tape using firm, even, hand pressure across the splice towards the splice edge.
11. **Immediately roll** the splice using positive pressure when using a 2" wide steel roller. Roll across the splice edge, not parallel to it.
12. **Install** WeatherBond's Peel & Stick "T" Joint Cover, a 6" wide section (with rounded corners) of Peel & Stick White Flashing or White Uncured EPDM Flashing over **all field splice intersections (See Detail WFC-2.2)**

J. WEATHERBOND LAP SEALANT APPLICATION

1. General

- a. Lap Sealant is **required** on all seam edges.

Lap Sealant is required at the following locations.

- 1) Edges of Peel & Stick White Flashing and Peel & Stick White accessories (pipe seals, corners, pourable sealer pockets, etc.).
 - 2) Splice tape overlaps.
 - 3) Splices between adjoining sections of Peel & Stick Flashing.
 - 4) Intersections between Peel & Stick Flashing and joints in metal edgings.
4. **Apply a 5/16" (minimum 1/4") diameter bead** of Lap Sealant to completely cover the splice edge. When a 5/16" diameter bead of Lap Sealant is applied, approximately 22 linear feet of coverage per tube can be achieved.
 5. **Feather** the WeatherBond White Lap Sealant with the specially preformed tool or nozzle (included in the Lap Sealant cartons) so the high point or crown of the Lap Sealant is located over edge of splice.

Clean the feathering tool occasionally for consistent crowning of Lap Sealant.

APPLICATION OF LAP SEALANT SHOULD BE COMPLETED BY THE END OF THE DAY. Delayed Lap Sealant application (not within the same day) will require scrubbing of accumulated dirt and dust along the splice edge, rinsing with clean water and cleaning with Weathered Membrane Cleaner or Primer.

K. ADDITIONAL MEMBRANE SECUREMENT

Additional membrane securement is required at the perimeter of each roof level, roof section, curb, skylight, interior wall, penthouse, etc., at any inside angle change where slope or combined slopes exceed 2" in one horizontal foot, and at other penetrations in accordance with the applicable WeatherBond details.

Securement may be achieved as follows:

1. WeatherBond standard 2 3/8" diameter Seam Fastening Plates or HPWX Plates may be used to secure the membrane, which will be flashed with a separate piece of WB PRO TPO Reinforced Membrane as shown in the applicable WeatherBond Detail.
2. As an option, 6" wide TPO PS RUSS may be installed in conjunction with WeatherBond Fasteners and 2 3/8" diameter Seam Fastening Plates spaced a maximum of 12" on center below the deck membrane. The securement strip shall be installed horizontally at the base of walls or penetrations. The deck membrane is primed with TPO Primer, spliced to the RUSS and continued as wall flashing resulting in continuous membrane flashing without penetration of the deck membrane.
1. Securement of the membrane shall be a maximum of 12" on center. Fasteners shall be positioned 6" minimum to 9" maximum from the inside or outside corner.
2. Refer to the "Insulation Fastening Criteria" chart in "Attachment I" at the end of this section for the required WeatherBond Fastener/Plate with the corresponding deck type.
3. After securing the membrane, flash in accordance with the appropriate detail.

L. FLASHING

1. General Flashing Considerations

- a. All existing **loose** flashing must be removed prior to the application of new membrane. New membrane flashing must extend above all existing intact flashing but must not conceal weep holes or cover existing throughwall counterflashing.
- b. Install surface mounted reglets and compression bar terminations directly to the wall surface.
- c. All vertical field splices at the base of a wall or curb must be overlaid with Pressure Sensitive White "T" Joint Covers, a 6" by 6" section (with rounded corners) of Pressure Sensitive White Uncured TPO Flashing.
- d. **Peel & Stick Uncured Flashing** must be limited to the overlayment of vertical seams (as required at angle changes), or to flash inside/outside corners, vent pipes, scuppers and other unusually shaped penetrations where the use of Molded Pipe Seals or Pressure Sensitive Cured Cover Strip is not practical.

Note: Even when working in elevated temperatures, in most cases a heat gun will be required to elevate the temperature of Pressure Sensitive White Uncured Flashing between 105° F and 110° F (40 and 43°C) to permit proper forming of the uncured flashing.

- e. When using **Pressure Sensitive Cured Cover Strip** to overlay 2 3/8" Seam Fastening Plates or metal edging flanges, etc., **WeatherBond TPO Primer** must be used to clean the membrane and metal flanges.

Note: When using Pressure Sensitive/Peel & Stick White EPDM products in colder temperatures, use a heat gun to warm the product. Apply heat to the TPO/EPDM flashing side of the product. Do not apply heat directly to the preapplied adhesive. The Pressure Sensitive White Flashing must be applied immediately after Primer flashes off. Refer to “Membrane Splicing with Peel & Stick White EPDM Seam Tape” for application procedures in colder temperatures.

- f. In areas where metal counterflashing or surface mounted reglets are used as the vertical termination, they must be sealed with a rubber grade caulking to prevent moisture migration behind the new wall flashing.
- g. WeatherBond's Termination Bar (with Water Cut-Off Mastic) should be installed under all metal counterflashings and surface mounted reglets used for vertical wall terminations.

2. Walls, Parapets, Curbs, Skylights, etc.

- a. Use continuous deck membrane with Pressure Sensitive RUSS (Reinforced Universal Securement Strip) or 2 3/8" Seam Fastening Plates along the base of the wall.
 - 1) When using Pressure Sensitive RUSS, refer to Paragraph L, Additional Membrane Securement, for attachment criteria.
 - 2) When 2 3/8" Seam Fastening Plates are used to secure continuous deck membrane, use minimum 6" wide Pressure Sensitive Cover Strip to overlay fasteners and plates.
- b. When the use of continuous deck membrane for wall flashing is not feasible, a separate piece of cured TPO membrane may be used.
 - 1) When **Peel & Stick Seam Tape** is used, the **membrane and flashing** (Cured TPO Flashing) must be cleaned with **WeatherBond TPO Primer**. Refer to “Membrane Splicing with Peel & Stick White EPDM Seam Tape” for splicing procedures.
- c. Adhere flashing to the wall and terminate in accordance with the applicable WFC-9 Termination Details.
- d. Use a Peel & Stick White “T” Joint Cover, 6" by 6" Pressure Sensitive White Uncured Flashing or Uncured Flashing with rounded corners (maximum 10-year warranty) to overlay vertical splices as shown on the applicable WFC-12 Detail.
- e. Refer to WFC-15 Details for various corner flashing options.

3. Roof Drains (WFC-6 Details)

- a. Provide a smooth transition from the roof surface to the drain clamping ring. Prepare the substrate around each roof drain to avoid membrane bridging in excess of 2" at the sump area and possible distortion at the drain clamping ring.

Note: When reinforced membrane has been specified and the slope at the drain sump is greater than 3" in 12", a separate piece of cured non-reinforced membrane must be extended into the drain sump as shown on the applicable detail.

- b. The mating surfaces between the clamping ring and drain base must be clean and have a smooth finish.
- c. Field splices at roof drains must be located at least 6" outside the drain sump.
- d. Cut membrane so it extends approximately 1/2" beyond the attachment points of the clamping ring. The hole in the membrane must not restrict water flow or be smaller than the drain pipe.
- e. Remove all existing flashing material to prepare for the membrane seal (application of WeatherBond Water Cut-Off Mastic).

- f. All bolts and/or clamps must be in place to provide compression on the Water Cut-Off Mastic.
- g. Use drain strainers, which have been approved by the specifier in accordance with applicable codes.

4. **Other Penetrations**

- a. Flash pipes and round supports with Molded Pipe Seals or Pressure Sensitive White Pipe Seals, when feasible, in accordance with the applicable detail.
- b. Form Field Fabricated Pipe Seals using Pressure Sensitive White Uncured EPDM Flashing around pipes, round supports and structural steel tubing with corner radius greater than 1/4" in accordance with WFC-14 Details.
- c. When flashing seamless metal posts, maximum 4" by 4", with a corner radius less than 1/4", apply a field fabricated pipe flashing with a double vertical wrapping.
- d. Flexible penetrations (braided cables, conduits, wires, etc.) must be enclosed in a stable gooseneck and flashed in accordance with the applicable WFC-14 Detail.
- e. Hot pipes which exceed 180° F must be insulated with metal collars and rain hoods and flashed in accordance with the applicable WFC-14 Details.
- f. For pipe clusters or unusually shaped penetrations, a pourable sealer pocket must be utilized. Refer to applicable WFC-16 Details.

M. **ROOF WALKWAYS**

Install walkways in locations designated by the specifier in accordance with "Design Criteria," Part I.

WeatherBond Pressure-Sensitive Molded Walkway Pads (with Factory-Applied Tape) or Walkway Rolls

If a 30' long walkway roll is to be used, the White Peel & Stick Seam Tape must be applied to the side of the walkway, which faces upward after unrolling to prevent curling. Allow a 1" wide break between maximum 10' lengths of walkway roll. Round all corners of the walkway roll prior to application.

Discontinue walkways over all field splices to provide a minimum 1" gap over the seam edge.

1. **Attachment With White Peel & Stick EPDM Seam Tape/WeatherBond TPO Primer**

- a. If necessary, **scrub** the membrane with Weathered Membrane Cleaner to remove contaminants. Rinse with clean water and allow to dry.
- b. When using Pressure-Sensitive Walkway Pads, prime the membrane surface with TPO Primer and allow to properly dry. When using walkway rolls, prime the mating surfaces of the membrane and underside of the walkway roll with TPO Primer and allow to dry.
- c. If walkway rolls are used, the White Peel & Stick EPDM Seam Tape positioning (along the width or length of the pad) will vary depending on direction of roof slope; however, the maximum distance between parallel rows of tape shall not exceed 15".
- d. **Remove** release film from Peel & Stick White EPDM Seam Tape and place walkway pad/roll over the TPO Primer applied to the TPO membrane.
- e. **Walk** the pad/roll into place to ensure proper adhesion.

Note: On WeatherBond White Roofing Systems, when aesthetics are of importance, care should be exercised when applying TPO Primer to membrane surface to avoid discoloration outside walkway area.

N. DAILY SEAL

1. On phased roofing, when the completion of flashings and terminations is not completed by the end of each work day, provisions must be provided to temporarily close the membrane to prevent water infiltration.
2. Temporarily seal any loose membrane edge down slope using Thermoplastic Pourable Sealer. Caution must be exercised to ensure the membrane is not temporarily sealed near drains in such a way as to promote water migration below the membrane.
3. Pourable Sealer, when utilized, shall be applied as follows:
 - a. On existing built-up roofs, remove the gravel. The surface must be clean and dry.
 - b. Apply the Pourable Sealer along the loose edge of the TPO membrane. If necessary, use a trowel to spread Pourable Sealer to achieve complete coverage.
 - c. After embedding the membrane in Pourable Sealer, CHECK FOR CONTINUOUS CONTACT. Provide continuous pressure over the length of the temporary seal with 15' lengths of 2-1/2" diameter Lay Flat Tubing filled with dry sand.

Note: Wood nailers will not provide constant compression due to warping and an uneven substrate.
 - d. When work is resumed, pull the membrane free; trim and remove where the Pourable Sealer was applied.
4. When using urethane foam as a daily seal, follow manufacturer's installation requirements. Trim and remove membrane where urethane foam is applied.

O. CLEAN UP (for WeatherBond PRO TPO White Roofing Systems)

If required by the specifier to ensure the aesthetics of the white surface of the WeatherBond PRO White TPO membrane, the following procedures should be utilized:

1. Handprints, footprints, general traffic grime, industrial pollutants and dirt may be cleaned from the membrane surface by scrubbing with warm water and a low sudsing soap; rinse the area completely with clean water. Weathered Membrane Cleaner can also be utilized.
2. WEATHERBOND TPO Bonding Adhesive and TPO Primer residue may be cleaned using the following procedures:
 - a. Saturate a clean Splice Wipe with clean Weathered Membrane Cleaner.
 - b. Scrub exposed Bonding Adhesive or TPO Primer with the saturated Splice Wipe until all residue is removed from the membrane. For easier removal, it may be necessary to change splice wipes frequently.

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This specification represents the applicable information available at the time of its publication. Owners, specifiers and WeatherBond Installers should consult WeatherBond or their WeatherBond Independent Sales Representative for any information that has subsequently been made available.

“Attachment I”

Withdrawal Resistance Criteria

May 2009

Deck/Parapet Type and Minimum Pullout Per Fastener	WeatherBond Fasteners	Minimum Penetration	Pilot Hole Depth	Pilot Hole Diameter
Steel, 22 gauge or heavier 360 pounds	HPWX	3/4"	N/A	N/A
Steel, less than 22 gauge 300 pounds	HPWX	3/4"	N/A	N/A
Structural Concrete, rated 3,000 psi or greater 800 pounds	Contact WeatherBond	1"	(1)	7/32"
	Contact WeatherBond	1"	(1)	3/16"
Wood Planks, minimum 15/32" thick Plywood 360 pounds	HPWX	Min. 1" (6)	N/A	N/A
Minimum 7/16" thick oriented strand board (OSB) 250 pounds	HPWX	Min. 1"	N/A	N/A
Cementitious Wood Fiber 225 pounds	Contact WeatherBond	1-1/2"	(3)	(3)
Gypsum 300 pounds	Contact WeatherBond	1-1/2" (HP-NTB) 2" (Lite Deck)	(1)	1/2" or 7/16" (4)
Masonry (block, brick or concrete)	Term Bar Nail-In (5)	3/4"	1"	1/4"

Notes:

N/A = Not Applicable

- (1) The pilot hole must be predrilled to a sufficient depth to prevent contact between the fastener point and any accumulated dust in the predrilled hole. This will help prevent bottoming out of the fastener during installation.
- (2) When specified, the NTB Fastener and accompanying 3" diameter fastening plate may be used for attachment of insulation. The 2" diameter fastening plate must be used in conjunction with RPS (additional membrane securement).
- (3) Most cementitious wood fiber decks do not require pre-drilling; however, WeatherBond should be contacted prior to installation for verification of specific types that may require a pilot hole to be predrilled.
- (4) Pilot hole size may be varied to maximize pullout resistance.
- (5) Used for the securement of compression bar terminations or Seam Fastening Plates (used for additional membrane securement into vertical masonry surfaces). **Do not use for insulation securement.**
- (6) For wood planks only, maximum fastener penetration shall not exceed 1-1/2".

“Attachment II”

Direct Application Over Lightweight Insulating Concrete

May 2009

When specified, the WeatherBond PRO TPO membrane may be adhered directly to a **new approved cellular or perlite lightweight insulating concrete** with a **minimum compressive strength of 225 psi**.

The Authorized Applicator must provide WeatherBond with a copy of a certification letter from the lightweight insulating concrete manufacturer which references the project name and location and contains the manufacturer's brand name, minimum compressive strength, average wet and air dry densities.

The substrate must be free of any debris, fins, loose and foreign materials. Fill any gaps in the substrate greater than 1/4" with an appropriate material.

Application Cautions

1. Do not proceed with the membrane installation until the lightweight insulating concrete substrate has cured a minimum of 48 hours. If necessary, consult with the lightweight insulating concrete manufacturer concerning additional drying time.
2. After rain or other precipitation, follow the manufacturer's requirements concerning proper visual inspection and additional drying time prior to adhering the membrane.
3. Prior to membrane installation, darker areas, especially along hairline cracks in the concrete, may serve as an indication of moisture entrapment and possible standing water beneath the surface. If this condition is found, consult with the lightweight insulating concrete manufacturer for proper corrective measures.
4. Except when lightweight insulating concrete is poured over slotted steel decks, the roofing contractor must conduct core cuts at the minimum rate of 1 every 2,000 square feet. The core cuts should be located around hairline cracks (if present) where darker areas are visible. After core cuts have been taken, the substrate should be examined for evidence of moisture above the structural deck and, if found, a wet/dry vacuum system, as recommended by the lightweight insulating concrete manufacturer, must be utilized to remove standing water from beneath the surface of the concrete.
 - a. To ensure the efficient operation of the vacuum system, a tight seal must be provided between the nozzle of the vacuum and the lightweight concrete substrate.
 - b. A one-way pressure relief vent, approved by WeatherBond, must be installed over each core cut in accordance with Detail WFC-14.

“Attachment III”

Insulation Attachment With FAST™ Adhesive

May 2009

- A. FAST Adhesive may be used to attach the following roof insulations to an approved roof deck/substrate:
1. Polyisocyanurate (1" minimum thickness), minimum 1/2" thick HP Recovery Board or minimum 1/4" thick Dens-Deck or Dens-Deck Prime. If tapered Polyisocyanurate insulation is used, 1/2" minimum thickness is acceptable.
 2. Expanded Polystyrene (EPS) insulation overlaid with WeatherBond Recovery Board or Dens-Deck/Dens-Deck Prime. A composite board can be used to eliminate the need for an additional layer of FAST Adhesive.
 3. Extruded Polystyrene insulation overlaid with Recovery Board or Dens-Deck/Dens-Deck Prime.
 4. When oriented strand board (OSB) is proposed as the membrane underlayment, a polyisocyanurate/OSB composite board may be used since attachment of individual OSB panels is not recommended due to board stiffness and potential bowing on uneven surfaces.

Insulation board sizes up to 4' x 8' may be used providing full attachment is achieved. Trimming or slitting of boards may be required on uneven surfaces. If necessary, use maximum 4' x 4' boards so full embedment of boards may be achieved.

B. Cautions and Warnings

1. **Do not apply FAST Adhesive** when surface and/or ambient temperatures are below 25° F and rising when using heated spray equipment.

When using FAST Adhesive in **non-heated spray equipment**, surface and/or ambient temperatures must be **60°F or warmer**.

2. The temperature of FAST Adhesive must be at a **minimum of 70°F at the time of use**. Use drum band heaters when necessary.

C. Roof Deck/Substrate Criteria

FAST Adhesive can be used to attach insulation to new or tearoff construction over structural concrete, fibrous cement (i.e., Tectum), gypsum, cellular or perlite lightweight insulating concrete (min. 200 psi compressive strength), wood and steel decks.

FAST Adhesive may also be used to attach insulation to an existing asphalt or coal tar pitch, modified bitumen or mineral surfaced cap sheets as follows:

1. On tearoff projects, the existing roof deck must be investigated and all wet and deteriorated material must be replaced. All loose base sheet material or asphalt must be removed prior to FAST Adhesive application.
2. The deck surface must be cleaned using compressed air, vacuum equipment or hand/power brooms to remove dust, loose dirt or debris. If excessive dust or dirt is present, a primer may be required prior to application of the adhesive. Contact WeatherBond for specific primer requirements.
3. For new galvanized steel decks, power washing is required to remove finishing oils, if present.
4. For projects with existing Type III or IV asphalt, coal tar pitch, modified bitumen or mineral surface cap sheets, the existing roof must be inspected to determine if moisture is present within the existing assembly. Wet insulation and membrane shall be removed and replaced with compatible materials.
 - a. Blisters, buckles, wrinkles and fishmouths shall be cut out or mechanically fastened.

- b. Remove loose gravel, dust and residue from a gravel surfaced BUR by using of a Hydro-Vac (wet vacuum equipment). Power vacuum equipment or a power sweeper followed by air blowing or another suitable means are also acceptable. Care shall be exercised in areas where evidence of ponding is obvious (remove residue from low areas prior to proceeding).

CAUTION: On coal tar pitch, when using WeatherBond PRO TPO, minimum 1inch thick polyisocyanurate is

D. Adhesive Coverage Rates

The coverage rate for FAST Adhesive will vary depending on the substrate as follows:

Roof Deck/Substrate	Square Feet per 50 Gallon "Drum Set"	Square Feet per 15 Gallon "Drum Set"
Gypsum, Cellular Lightweight Insulating Concrete, Structural Concrete or Wood	8500-9000	2500-2700
Fibrous Cement	5500-6500	1650-2000
Steel	8500-9000	2500-2700
Smooth BUR, Modified Bitumen or Mineral Cap Sheet	8500-9000	2500-2700
Gravel BUR	5000-6000	1500-1800
Insulation (for multiple layers)	8500-9000	2500-2700
WeatherBond 725 Air and Vapor Barrier	8500-9000	2500-2700

E. Adhesive Catalyst Criteria

1. FAST Adhesive Catalyst is required for use in the Part B side of FAST Adhesive when temperatures are below 50°F to accelerate adhesive set up time and allow insulation to be walked into place in a minimal amount of time (5 to 10 minutes).

FAST Adhesive Catalyst is recommended for temperatures between 50°-70°F. If adhesive is not catalyzed, preliminary fastening of insulation at corners or weighting of individual boards may be required in temperatures below 70° F since adhesive set up time will be slower.

2. FAST Adhesive Catalyst is available in 1-gallon (8 pints) containers. The catalyst should be added in small quantities until experience is gained for proper judgment.
3. Mixing can be achieved with a minimum 1/2 horsepower collapsible drum mixer or equivalent such as Binks Model #31296. It is imperative that thorough mixing (15 minutes for FAST 100 and 10 minutes for FAST 100-LV) is achieved in order to maintain a consistent blend of materials for proper reaction of adhesive.

The Part B side of FAST Adhesive must be at least 70° F prior to adding catalyst. The catalyst must be agitated prior to adding to the Part B side to promote proper dispersion.

The amount of catalyst to be added to the Part B side of FAST Adhesive will vary based on the temperature of the surface to be sprayed as follows. This information is also included on the Catalyst container label.

Surface Temperature	Amount of Catalyst Added to Part B Side of FAST 100 Adhesive		Amount of Catalyst Added to Part B Side of FAST 100-LV Adhesive	
	50 Gallon Drum (oz.)	15 Gallon Drum (pints)	50 Gallon Drum (oz.)	15 Gallon Drum (pints)
25° F	12	2-1/2	43	8
32° F	10	2	34	6-3/4
40° F	8	1-3/4	24	5
50° F	6	1-1/4	18	3-14
60° F	4	1	8	1-1/2
70° F	2	1/2	4	1/2

1 pint = 16 oz. and 8 pints = 1 gallon

Note:
 (1) FAST 100-LV Adhesive cannot be used for surface/ambient temperatures below 60° F unless applied with heated spray equipment.

F. Installation Criteria

1. Check to ensure the substrate is dry. FAST Adhesive cannot be applied to a wet or damp surface.
2. Spray-apply FAST Adhesive over the dry substrate area at the coverage rate indicated previously to allow for full coverage.
3. Allow the adhesive to rise up approximately 1/8" and develop strings prior to setting insulation boards into adhesive.

Note: String-time is measured by touching the adhesive with a splice wipe and looking for development of “strings” of adhesive as you pull the splice wipe out of the adhesive. With FAST Adhesive, string time is generally around 1-1/2 – 2 minutes after application at room temperature.

4. **Walk the boards into the adhesive and roll using the 30" wide, 100 – 150 pound weighted steel roller** to ensure full embedment. Optimal set up time should be approximately 5 to 10 minutes. As an option, a nylon bristle push broom may be used.

CAUTION: Walking on the boards immediately after placement in adhesive can cause slippage/movement until the adhesive has started to set up.

On roofs with a slope greater than 1/2" in 12", begin adhering insulation at the low point and work upward to avoid slippage.

One person should be designated to walk/roll in all boards and trim/slit or apply weight as needed to ensure adequate securement.

5. Position all edges of the boards on the top flutes of steel decks for adequate support.
6. If multiple layers of insulation are specified or required, spray-apply FAST Adhesive over the base layer once fully secured and follow procedures noted above for attachment of each insulation layer.

“Attachment IV”

WeatherBond Water Based Bonding Adhesive

May 2009

A. General Cautions and Warnings

1. Review the applicable Material Safety Data Sheet for complete safety information prior to use.
2. This adhesive is designed to be applied when the ambient temperature is 40° F (4°C) and rising. Do not apply if ambient temperature will drop below 32° F (0° C) before adhesive dries. Do not allow to freeze. Do not store below 40° F.
3. Opened containers of WeatherBond Water Based Bonding Adhesive should be used within 48 hours. The adhesive will form a thick surface skin that will not re-dissolve. Adhesive can be used once the skinned layer is removed.
4. WeatherBond Water Based Bonding Adhesive is approved for use on Polyisocyanurate, Recovery Board, Dens-Deck Prime, oriented strand board, plywood, cellular lightweight, and structural concrete. WeatherBond Water Based Bonding Adhesive is not acceptable over existing roof systems or decks with residual adhesive or asphalt.
5. Immediately broom the bonded portion of the sheet with a soft bristle push broom to achieve maximum contact. **Brooming is critical.**

B. Application

1. Stir the WeatherBond Water Based Bonding Adhesive until settled material or phased liquid is redistributed and the adhesive is uniform in color.
2. Apply adhesive to the membrane and the substrate (at the recommended rate) in a uniform manner avoiding globs, puddles, and uncoated areas.
3. Application methods:
 - a) Roller Application – Use a medium nap roller.
 - b) Mechanical Roller Application – Follow the manufacturer’s safety and use procedures.
 - c) Mechanical Spray Application – Follow the manufacturer’s safety and use procedures.
 - 1) Tip sizes between .019" to .023" in a Graco 510 gun.
 - 2) A minimum fluid pressure of 2,500 psi is required for a fair pattern.
 - 3) Back rolling is recommended.
 - 4) Flush with water at the end of the day.
4. The adhesive must be allowed to dry until the adhesive does not transfer to a dry finger touch or pull away from the membrane. The dried adhesive should remain tacky before assembly.
5. Mate the membrane with the adhesive coated substrate, while avoiding wrinkles.
6. Immediately broom the bonded portion of the sheet with a soft bristle push broom to achieve maximum contact. The adhesive contains no solvents to react with the membrane; therefore, brooming the sheet is critical.
7. Extended drying times can be expected in cool, overcast, humid, shaded or late day applications. The adhesive must be dry to avoid permanent blisters from trapped moisture. Coated areas exposed to moisture shall be allowed to dry and then recoated. All adhesive residue in the splice area must be removed.

“Attachment V”

Membrane and Splice Repairs

May 2009

A. GENERAL

1. Prior to initiating repairs, the membrane must be cleaned to remove field dirt and other contaminants. Using a scrub brush, scrub the splice areas with warm water and a low-sudsing soap (Spic and Span, Tide, Lestoil). Rinse with clean water and allow to dry prior to applying Weathered Membrane Cleaner or Primer as required.
2. Saturate a clean HP Splice Wipe or natural fiber rag (cotton) with Weathered Membrane Cleaner and scrub the area in a circular motion. Continue cleaning until the surface is a consistent matte black color without streaking.

Note: Extreme conditions of accumulated dirt may require detergent and water cleaning as referenced above.

B. REPAIRS OF CUTS AND TEARS (Surface Splice)

Repairs to cuts and tears in the membrane must be accomplished by splicing a membrane section over the affected area.

1. Select a repair membrane, which is the same material as that to be repaired.
2. When using Peel & Stick Cured Cover Strip or PS Seam Tape for repairs, after thoroughly cleaning the membrane to remove field dirt, etc., apply multipurpose Primer to the splice areas. Apply Peel & Stick Cured Cover Strip or Cured Membrane/PS Seam Tape and roll the splice areas. Apply “T” Joint Covers at splice intersections. Lap Sealant is applied at flashing and tape overlaps in accordance with standard procedures.
3. When using Splice Adhesive (maximum 10-year warranty), for areas where a section of the cured membrane has been cut and removed, In-Seam Sealant must be placed 1/2" from all edges of the open area. For small holes, punctures, or tears in the cured membrane, if In-Seam Sealant can completely cover the damage with a normal bead, the sealant can be placed directly over the puncture. Follow standard cleaning and splicing procedures as outlined in the “Application” section.
4. When the repair membrane is Uncured EPDM Flashing, the use of In-Seam Sealant is not required.
5. Extend the repair membrane section at least 3" in every direction from the cut or tear. Round the corners of the repair membrane prior to splicing.

C. SPLICE REPAIRS

1. **Repair of Improperly Installed Tape Seams**
 - a. Improperly installed tape splices include, but are not limited to, fishmouths at field splices, lack of or improper use of Primer, condensation formation on primer or incorrect tape placement, etc.
 - b. Clean the splice area with multipurpose Primer on both sides extending past the width of the new flashing overlay to be installed.
 - c. Overlay the defective splice area with a minimum 6" wide Peel & Stick Cured Cover Strip centered over the edge of the splice.

- d. **If fishmouths are present in the field splice**, the fishmouth must be cut by removing the top layer of membrane prior to overlaying the splice. The flashing overlay **must** be supported by the bottom layer of cured membrane.

2. **Repair of Improperly Installed Adhesive Splices**

- a. Improperly installed splices include, but are not limited to, missing In-Seam Sealant, fishmouths at field splices, overly dry or wet Splice Adhesive or incorrect coverage rate.
- b. Pull any loose edges of the splice apart, reapply splicing cement and mate the two surfaces together. Do not reapply In-Seam Sealant.
- c. Clean the splice area with multipurpose Primer on both sides extending past the width of the flashing to be applied.
- d. Overlay the defective splice area with a minimum 6" wide Peel & Stick Cured Cover Strip or Overlayment Strip (centered over the edge of the splice).
- e. **If fishmouths are present in the field splice**, the fishmouth must be cut by removing the top layer of membrane prior to overlaying the splice. The flashing overlay **must** be supported by the bottom layer of cured membrane.

WEATHERBOND PRO WELD-FREE TPO FULLY ADHERED ROOFING SYSTEM

INSTALLATION DETAILS

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OTHER DETAILS

WFA-6 Roof Drain Sump for Reinforced Membrane System
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WFA-14 One-Way Air Pressure Relief Vent

Metrics

Length

1/8 inch = 3 mm
1/4 inch = 6 mm
15/32 inch = 12 mm or 1.2 cm
1/2 inch = 13 mm or 1.3 cm
5/8 inch = 16 mm or 1.6 cm
3/4 inch = 19 mm or 1.9 cm
1 inch = 2.5 cm
1-1/4 inches = 3.8 cm
1-1/2 inches = 4 cm
2 inches = 5 cm
2-1/2 inches = 6.5 cm
3 inches = 8 cm
4 inches = 10.5 cm
5 inches = 12.7 cm
5-1/2 inches = 14 cm
6 inches = 16.5 cm
7 inches = 18 cm
9 inches = 23 cm
12 inches = 31 cm
14 inches = 35 cm
18 inches = 46 cm
24 inches = 61 cm
3 feet = .9 m
3 feet, 6 inches = 1.1 m
4 feet = 1.2 m
4 feet, 6 inches = 1.4 m
5 feet = 1.5 m
8 feet = 2.4 m
10 feet = 3 m
40 feet = 12 m
50 feet = 15.2 m
65 feet = 20 m
75 feet = 22.9 m
85 feet = 26 m
100 feet = 30 m
120 feet = 37 m
250 feet = 76.2 m
6000 feet = 1829 m

10 feet per minute = 3 m per minute
15 feet per minute = 4.6 m per minute

.028 inch = .7 mm
.035 inch = .9 mm
.045 inch = 1.1 mm
.060 inch = 1.5 mm

Length (continued)

2 inches in 12 inches = 16 cm/m
3 inches in 1 horizontal foot = 25 cm/m
5 inches in 12 inches = 41 cm/m
18 inches in 12 inches = 150 cm/m
22 linear feet = 6.6 m
75 linear feet = 23 m
300 linear feet = 91.5 m

1 per 2 square feet = 1 per 1.86 m²
1 per 4 square feet = 1 per 3.72 m²
1 per 5.3 square feet = 1 per 4.93 m²
1 per 6.4 square feet = 1 per 5.95 m²
60 square feet = 5.6 m²
100 square feet = 9.3 m²
120 square feet = 11.2 m²
150 square feet = 14 m²
250 square feet = 23 m²
720 square feet = 67 m²
2000 square feet = 186 m²

Weight

80 pounds = 36 kg
300 pounds = 136 kg
360 pounds = 163 kg
500 pounds = 227 kg
800 pounds = 363 kg

Miles Per Hour

55 mph = 88 km per hour
72 mph = 115 km per hour
79 mph = 127 km per hour
80-89 mph = 128 – 143 km per hour
90-99 mph = 144 – 159 km per hour
100 mph = 161 km per hour

Fahrenheit/Celsius

20° Fahrenheit = -7° Celsius
40° Fahrenheit = 4.5° Celsius
90° Fahrenheit = 32° Celsius
120° Fahrenheit = 49° Celsius

Volume

8 ounces = .24 l
1 gallon = 3.78 l
5 gallon = 19 l

225 psi = 15.8 kg/cm²
3000 psi = 211 kg/cm²