

WEATHERBOND™

SHORT FORM SPEC FULLY ADHERED ROOFING SYSTEM

December 2006

This SHORT FORM SPEC is a brief outline of WeatherBond's WeatherBond Pro Fully Adhered Roofing System requirements and is intended for use as a submittal with a bid package. Specifiers and WeatherBond Roofing Contractors must comply with the "Design Criteria" and "Application" sections of WeatherBond's Specifications prior to design or bid.

PART I GENERAL

1.01 DESCRIPTION

This WeatherBond Pro Adhered Roofing System incorporates maximum 12' wide, white, 45, 60, 72 or 80-mil thick scrim-reinforced WeatherBond Pro Thermoplastic Polyolefin (TPO) membrane. Insulation is typically mechanically fastened to the roof deck with fasteners and plates or secured with Insulation Adhesive and the membrane is fully adhered to the insulation with WeatherBond Pro Bonding Adhesive. Adjoining sheets of membrane are overlapped approximately 2" and joined together with a minimum 1-1/2" wide hot air weld.

1.02 QUALITY ASSURANCE

- A. This roofing system must be installed by a Contractor in compliance with shop drawings as approved by WeatherBond. There must be no deviations made without the **PRIOR WRITTEN APPROVAL** of WeatherBond.
- B. This roofing system meets Underwriters Laboratories (UL) and Factory Mutual (FM) requirements.

1.03 SUBMITTALS

- A. To ensure compliance with WeatherBond's warranty requirements, the following projects should be sent to WeatherBond for review prior to installation, preferably prior to bid.

1. Projects where the building height exceeds 250'.

2. Air pressurized buildings, canopies and buildings with large openings where the total wall opening exceeds 10% of the total wall area where openings are located.
3. Cold storage buildings and freezer facilities.
5. Projects where the membrane is expected to come in direct contact with petroleum based products or other chemicals.

- B. Along with the project submittals (shop drawing and Application for Job Approval), when fastener pullout values do not meet the requirements listed in the WeatherBond specification, test results with the appropriate WeatherBond fastener must be submitted by the roofing contractor for review.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the job site in the original, unopened containers labeled with the manufacturer's name, brand name and installation instructions.
- B. Store WeatherBond Pro membrane in original undisturbed plastic wrap.
- C. Job site storage temperatures in excess of 90° F may affect shelf life of curable materials (i.e., adhesives and sealants).
- D. When liquid adhesives and sealants are exposed to lower temperatures, restore to a minimum of 60° F before use.
- E. Do not store adhesive containers with opened lids due to loss of solvent which will occur from flash off.
- F. Insulation and 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.

1.05 JOB CONDITIONS

- A. There are no maximum slope restrictions for application of this roofing system. When the roof slope exceeds 5" per horizontal foot, use of an automatic welding machine may be more difficult. A hand held welder should be specified.
- B. Existing roofing material must be investigated by the specifier and all wet material must be removed.
- C. Existing phenolic insulation and sprayed-in-place urethane roofs must be removed prior to installation of this system.

- D. The use of a vapor retarder to protect insulation and reduce moisture accumulation within an insulated roofing assembly should be investigated by the specifier. Consult the latest publications by ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.) and NRCA (National Roofing Contractors Association).
- E. Coordination between trades is essential to avoid unnecessary rooftop traffic over sections of the roof and to prevent subsequent damage to the membrane system.

1.06 WARRANTY.

- A. A 15 or 20-year Membrane Material Warranty is available for no charge.

PART II PRODUCTS

2.01 GENERAL

The components of this roofing system are to be products of WeatherBond or accepted by WeatherBond as compatible. The installation, performance or integrity of products by others, **when selected by the specifier and accepted by WeatherBond**, is not the responsibility of WeatherBond and is **expressly disclaimed** by the WeatherBond Warranty.

2.02 MEMBRANE

WeatherBond Pro, white, reinforced 45, 60, 72 or 80-mil thick Thermoplastic Polyolefin (TPO) membrane is used for this roofing system. Membrane is available in widths of 12', 10' or 8' and lengths of 100'. For membrane physical properties, refer to page 4.

2.03 RELATED MATERIALS

WeatherBond Pro Non-Reinforced or Reinforced Flashing, Bonding Adhesive, Cut Edge Sealant, Seam Adhesive, Water Cut-Off Mastic, PT-304 Sealant, Weathered Membrane Cleaner, Molded Pocket Sealant, Heat Weldable Walkway Pads, Pre-Molded Inside/Outside Corners, Pipe Flashings, Curb Wraps and Sealant Pockets.

PART III EXECUTION

3.01 GENERAL

- A. When feasible, begin the application at the highest point of the highest roof level and work to the lowest point to prevent moisture infiltration and to minimize construction traffic on completed sections. This will include completion of all flashings, terminations and daily seals.
- B. Follow criteria outlined in the "Design Criteria" section to prepare the roof deck or the existing substrate prior to application of the new roofing system.

3.02 ROOF DECK CRITERIA

- A. The proper substrate shall be provided by the building owner. The structure shall be sufficient to withstand normal construction loads and live loads.
- B. Defects in the roof deck must be reported and documented

to the specifier, general contractor and building owner for assessment. The WeatherBond Authorized Contractor shall not proceed with installation unless the defects are corrected.

- C. Acceptable decks and applicable WeatherBond Fasteners:
 1. **Steel, 22 gauge or heavier** – WeatherBond PRO HPWX Fasteners are required; minimum pullout of 360 pounds per fastener.
 2. **Steel less than 22 gauge** – WeatherBond PRO HPWX Fasteners are required; minimum pullout of 300 pounds per fastener.
 3. **Structural Concrete, rated 3,000 psi or greater** - Fastener minimum pullout of 800 pounds per fastener.
 4. **Wood Plank or minimum 15/32" thick Plywood** - WeatherBond HPWX Fasteners are required; minimum pullout of 360 pounds per fastener.
 5. **Oriented Strand Board (OSB), minimum 7/16" thick** - WeatherBond HPWX Fasteners are required; minimum pullout of 250 pounds.
 6. **Gypsum and Cementitious Wood Fiber** - Fastener minimum pullout of 300 pounds per fastener into gypsum and 225 pounds per fastener into cementitious wood fiber.

3.03 SUBSTRATE PREPARATION

- A. 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 with the existing surface.
- B. For all projects, substrate must be even without noticeable high spots or depressions, and must be free of accumulated water, ice or snow.
- C. Clear the substrate of debris and foreign material. Fresh bitumen based roof cement must be removed or concealed.

3.04 INSTALLATION

Refer to the applicable Material Safety Data Sheets and Technical Data Bulletins for cautions and warnings.

A. Insulation Attachment

1. Insulation shall be mechanically attached to the roof deck at a minimum rate of 1 every 2 square feet except as follows.
 - a. When a single or top layer of **minimum 1-1/2" thick Polyisocyanurate** Insulation is specified, Insulation may be mechanically attached at the minimum rate of 1 every **3.2 square feet** (10 fasteners per 4' x 8' board). Refer to Detail WBPA-27.4 for requirements.
 - b. When a single or top layer of **minimum 2" thick Polyisocyanurate** Insulation is specified, Insulation may be mechanically attached at the minimum rate of 1 every **4 square feet** (8 fasteners per 4' x 8' board). Refer to Detail WBPA-27.2 for requirements.

2. When an approved oriented strand board (OSB) is specified as the membrane underlayment, it must be mechanically fastened to the roof deck with 17 fasteners per 4' x 8' board in accordance with WeatherBond Detail WBPA-27.3
3. Insulation Fastening Plates, nominal 3" diameter, must be used with the appropriate Fastener for insulation attachment.
4. When mechanical attachment of the insulation is not desired, an alternate insulation attachment method may be specified which incorporates the use of FAST Adhesive, OlyBond 500, VersiGrip Adhesive or a solid mopping of hot asphalt.

B. Membrane Installation and Hot Air Welding

1. Sweep loose debris from the substrate.
2. Position WeatherBond Pro Membrane over acceptable substrate and fold membrane back so half the underside is exposed.
3. Apply WeatherBond Pro Bonding Adhesive to the exposed underside of the membrane and the corresponding substrate area with a plastic core medium nap paint roller at a coverage rate of approximately 60 square feet per gallon per finished surface (includes coverage on both membrane and substrate).
4. Allow adhesive to dry until tacky and roll coated membrane into coated substrate and avoid wrinkling.
5. Brush down the bonded section of membrane immediately with a soft bristle push broom.
6. Fold back the unbonded half of the sheet and repeat the bonding procedure.
7. Install adjoining membrane sheets in the same manner, overlapping edges a minimum of 2" to provide for a minimum 1-1/2" hot air weld. It is recommended that all splices be shingled to avoid bucking of water.
8. Hot air weld the membrane sheets a minimum of 1-1/2" with an Automatic Hot Air Welding Machine.
9. Membrane that has been exposed to the elements for approximately 7 days must be prepared with Weathered Membrane Cleaner. Wipe the surface where Weathered Membrane Cleaner has been applied with a clean, dry Seam Wipe or other white rag to remove cleaner residue prior to hot air welding.

C. Additional Membrane Securement

The membrane must be secured at the perimeter of each roof level, roof section, expansion joint, curb, skylight, interior wall, penthouse, etc., at any angle change which

exceeds 2" per horizontal foot and at all other penetrations in accordance with WeatherBond's published details.

D. Membrane Flashing

1. Flash all walls and curbs with WeatherBond Pro reinforced membrane. Non-Reinforced membrane shall be limited to inside and outside corners, field fabricated pipe seals, scuppers and Sealant Pockets where the use of pre-molded accessories are not practical. Terminate the flashing in accordance with an appropriate WeatherBond WBPC-9 Termination Detail.
2. On vertical surfaces, such as walls, curbs and pipes, Bonding Adhesive is not required when flashing height is 12" or less and membrane is terminated under a metal counterflashing (nailed). When a coping or termination bar is used for vertical terminations, Bonding Adhesive may be eliminated for flashing heights 18" or less.

E. Other Related Work

1. **Walkways** are required for all traffic concentration points (i.e., roof hatches, access doors, rooftop ladders, etc.), regardless of traffic frequency. Walkways are also required if regular maintenance (once a month or more) is necessary to service rooftop equipment. Walkways are considered a maintenance item and are excluded from the WeatherBond Warranty.
2. WeatherBond Pro Heat Weldable Walkway Rolls are required when walkway pads are specified and are heat welded to the WeatherBond Pro Membrane. When concrete pavers are used, they shall be loose laid and installed in conjunction with a slip-sheet of reinforced membrane or two layers of MP Safeguard Mat. Concrete pavers are not recommended when the roof slope is greater than 2" per horizontal foot.

WeatherBond Rubber Pavers, 24" X 24" X 2", weighing approximately 6 pounds per square foot, may be interlocked and loose laid directly over the membrane. Installation instruction sheets are available from WeatherBond.
3. **Copings, counterflashing and other metal work**, not supplied by WeatherBond, shall be fastened to prevent metal from pulling free or buckling and sealed to prevent moisture from entering the roofing system or building.

Attach copies of the applicable WeatherBond Details, which pertain to the individual project to complete a bid package submittal.

Membrane Physical Properties

Property (Metric-SI Units)	Test Method	Property of Unaged Sheet 45 or 60-mil		Property After Aging (1) 28 days @ 240° F 45 or 60-mil	
Tolerance on Nominal Thickness, %	ASTM D 751	±10		±10	
Thickness Over Scrim, min, in. (mm)	ASTM D 6878 Optical Method	45-mil 0.015 (0.381) ±10	60-mil 0.020 (0.508) ±10		
Breaking Strength, min, lbf (kN)	ASTM D 751 Grab Method	45-mil 225 (1.0) Min. 320 (1.4) Typical	60-mil 250 (1.1) Min. 360 (1.6) Typical	45-mil 225 (1.0) Min. 320 (1.4) Typical	60-mil 250 (1.1) Min. 360 (1.6) Typical
Elongation at Break of Fabric, min, %	ASTM D 751	25 Typical		25 Typical	
Tearing Strength, min, lbf (N) 8" by 8" specimen	ASTM D 751 B Tongue Tear	55 (245) Min. 130 (578) Typical		55 (245) Min. 130 (578) Typical	
Brittleness Point, max, °F (°C)	ASTM D 2137	-40 (-40) Min. -50 (-46) Typical			
Linear Dimensional Change (shrinkage), %	ASTM D 1204			+/- .05 max -0.2 Typical	
Ozone Resistance, 100 pp hm, 168 hours	ASTM D 1149	No Cracks		No Cracks	
Resistance to Water Absorption After 7 days immersion @ 158°F (70°C) Change in mass, max, %	ASTM D 471 (Top Surface Only)			4.0 max 2.0 Typical	
Resistance to microbial surface growth, rating (1 is very poor, 10 is no growth)	ASTM D 3274 2 yr. S. Florida			9 – 10 Typical	
Field seam strength, lbf/in. (kN/m) Seam tested in peel	ASTM D1876	25 (4.4) Min. 60 (10.5) Typical			
Water vapor permeance, Perms	ASTM E 96	0.10 Max. 0.05 Typical			
Puncture resistance, lbf (N)	FTM 101C Method 2031	45-mil 250 (1.1) Min. 325 (1.4) Typical	60-mil 300(1.3) Min. 350 (1.6) Typical		
Resistance to xenon-arc Weathering (2) Xenon-Arc, 10,080 kJ/m total radiant exposure, Visual condition at 10X	ASTM G 155 0.70 W/m 80°C B.P.T.			No Cracks No loss of breaking or tearing strength	
(1) Aging conditions are 28 days at 240° F (116° C) equivalent to 400 days at 176° F (80° C) for breaking strength, elongation, tearing strength, linear dimensional change, ozone and puncture resistance.					
(2) Approximately equivalent to 8000 hours exposure at 0.35W/m.					

Note: For Physical Properties of the 72 and 80-mil WeatherBond Pro membrane, refer to the WeatherBond Pro Design Criteria Specification, Part I.

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