



SHORT FORM SPEC MECHANICALLY ATTACHED ROOFING SYSTEM

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This GUIDE-SPEC is a brief outline of WeatherBond's WeatherBond Pro Mechanically Attached Roofing System requirements and is intended for use as a submittal with a bid package. Specifiers and the WeatherBond Roofing Contractor must comply with the "Design Criteria" and "Application" sections of WeatherBond's Specifications prior to design or bid.

PART I GENERAL 1.01 DESCRIPTION

The WeatherBond Pro Mechanically Attached Roofing System incorporates 12', 10' or 8' wide, white, 45, 60, 72 or 80-mil thick scrim-reinforced WeatherBond Pro Thermoplastic Polyolefin (TPO) membrane. Insulation is mechanically attached to an acceptable roof deck. WeatherBond Pro perimeter sheets (6', 5' or 4' wide respectively) are installed along the building edges and field membrane sheets are mechanically attached to the roof deck with the appropriate WeatherBond Fasteners and Fastening Plates. Adjoining sheets of WeatherBond Pro membrane are overlapped and joined together with a minimum 1-1/2" wide hot air weld. Refer to the "Design Criteria" section for the required number of perimeter membrane sheets and the required fastener spacing.

1.02 QUALITY ASSURANCE

- A. This roofing system must be installed by a WeatherBond Roofing Contractor in compliance with shop drawings as approved by WeatherBond. There must be no deviations made without the **PRIOR WRITTEN APPROVAL** of WeatherBond.
- B. Upon completion of the installation, an inspection may be conducted by a Field Service Representative of WeatherBond to ascertain that the membrane roofing system has been installed according to WeatherBond's published specifications and details applicable at the time of bid.
- C. This roofing system meets **Underwriters Laboratories** (UL) and **Factory Mutual** (FM) requirements.

1.03 SUBMITTALS

- A. 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.
- B. For all projects (prior to project inspection by WeatherBond) a final shop drawing must be approved by WeatherBond.

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 the 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° Fahrenheit before use.
- E. Do not store adhesive containers with opened lids due to the 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. This system **must not be applied** on projects where the **slope exceeds 18"** in one horizontal foot. 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 assembly should be investigated by the specifier. Consult the publications by ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.) and NRCA (National Roofing Contractors Association) for specific information.
- E. Coordination between trades is essential to avoid unnecessary traffic over sections of the roof and to prevent damage to the membrane roofing system.

1.06 WARRANTY

- A. A 15 or 20 Year Membrane Material Warranty is available at 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, 45, 60, 72, 80-mil thick reinforced Thermoplastic Polyolefin (TPO) membrane is used for this system. Field membrane sheets are 12', 10' or 8' wide by 100' long based on project conditions. Perimeter sheets are 6' wide (used with 12' field sheets), 5' wide (used with 10' field sheets) or 4' wide (used with 8' field sheets). For physical properties of membrane, refer to page 4.

2.03 RELATED MATERIALS

WeatherBond Pro Non-Reinforced or Reinforced Flashing, Bonding Adhesive, Cut Edge Sealant, Water Cut-Off Mastic, PT 304 Sealant, Seam Adhesive, 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 the application of the new roofing system.

3.02 ROOF DECK CRITERIA

- A. 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 Contractor shall not proceed with installation unless defects are corrected.
- C. Acceptable decks and the applicable WeatherBond Fasteners:
1. **Steel, 22 gauge or heavier** - WeatherBond HPWX Fasteners/HPWX Plates are required with a

minimum pullout of 500 pounds per fastener.

2. **Lightweight Insulating Concrete over steel** - WeatherBond HPWX Fasteners/HPWX Plates are required with a minimum pullout of 360 pounds per fastener (into steel deck below the lightweight concrete).
3. **Structural Concrete, rated 3,000 psi or greater** - Acceptable Fasteners (with HPWX Plates) are required with a minimum pullout of 800 pounds per fastener.
4. **Wood Plank or minimum 15/32" thick Plywood** - WeatherBond HPWX Fasteners/HPWX Plates are required; minimum pullout of 360 lbs. per fastener.
5. On oriented strand board (OSB) decks, HPWX Fasteners and HPWX Plates may be used providing a pullout of 360 pounds can be obtained.

3.03 SUBSTRATE PREPARATION

- A. On retrofit-recover projects, cut and remove wet insulation, as identified by specifier, and fill all voids with new insulation so it is relatively flush with 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 applicable cautions and warnings.

A. Insulation Attachment

1. WeatherBond Insulation shall be mechanically attached to the roof deck as follows:
 - a. For Recovery Board or minimum 1-1/2" thick Polyisocyanurate, a minimum of 5 fasteners and plates per 4' x 8' board are required.
 - b. For Polyisocyanurate less than 1-1/2" thick or Foamular or DOW Extruded Polystyrene, any thickness, a minimum of 6 fasteners and plates per 4' x 8' board are required.

Note: Extruded polystyrene insulation is for use directly under white WeatherBond Pro membrane only.

 - c. Insulation boards 4' x 4', regardless of thickness, must be attached at the minimum rate of 1 fastener and plate every 4 square feet.
2. WeatherBond HPWX Plates, Seam Fastening Plates (2" diameter) or Insulation Fastening Plates (3" diameter) must be used with appropriate Fastener for insulation attachment.

B. Membrane Placement, Attachment and Hot Air Welding

1. A minimum of one perimeter sheet shall be installed at edges of each roof level and 12', 10' or 8' wide membrane shall be installed in the field of the roof.
3. Membrane sheets shall be mechanically attached with the appropriate WeatherBond Fastener/Fastening Plate spaced 6" to 12" on center, depending on project criteria, within the membrane splice. Refer to the "Design Criteria" section for required number of perimeter membrane sheets and fastener spacing.
4. Overlap adjacent membrane sheets approximately 5-1/2" at those locations where Fastening Plates are located (along length of the membrane) and a minimum of 2" at end roll sections (width of the membrane).
5. Hot air weld the membrane sheets a minimum of 1-1/2" with an Automatic Hot Air Welding Machine.
6. 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" in one horizontal foot and at all other penetrations in accordance with WeatherBond 's Details published with WeatherBond 's Specifications.

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

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

practical. Terminate the flashing in accordance with an appropriate WeatherBond VWPC-9 Termination Detail.

2. On vertical surfaces, such as walls, curbs and pipes, Bonding Adhesive is not required when the flashing height is 12" or less and the 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 1 horizontal foot.

Rubber Pavers, 24" X 24" X 2", weighing approximately 6 pounds per square foot may be loose laid directly over the membrane. Installation instruction sheets are available from WeatherBond.

2. **Copings, counterflashing and other metal work**, not supplied by WeatherBond, shall be attached to prevent metal from pulling free or buckling and sealed to prevent moisture from entering the roofing system or building.

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 pphm, 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, Attachment I.

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