



WeatherBond TPO Fleece / WeatherBond PVC Fleece / WeatherBond KEE HP Fleece Fully Adhered and Mechanically Attached Roofing Systems

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Note: In addition to information listed in this section Specifiers and contractors should reference Spec Supplement and Design Reference Sections for other pertinent information.

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WeatherBond TPO Fleece / WeatherBond PVC Fleece / Weatherbond KEE HP Fleece Fully Adhered and Mechanically Fastened Roofing Systems

January 2023

This section is to serve as a guide regarding the design and installation of WeatherBond's Fully Adhered and Mechanically Attached Thermoplastic Fleece Membrane Roofing Systems. Additional information essential for the design and installation of the roof system mentioned herein are also included in the Design Reference Section and also listed in the form of a Specification Supplement.

Various Tables have been included in Paragraph 1.05 citing various recommendations. Appropriate Table should be referenced to ensure proper coverage.

PART I – GENERAL

1.01 Description

WeatherBond's Thermoplastic (TPO/PVC/KEE HP) Fleece Fully Adhered Roofing Systems utilizes WeatherBond TPO or Weatherbond PVC or KEE HP PVC membrane laminated to non-woven polyester fleece backing.

A. Fully Adhered Roofing Systems

1. **TPO Fleece Fully Adhered Roofing System** incorporates 45, 60 or 80-mil thick, 12' or 6' wide, scrim-reinforced, white, gray, tan or Special Color TPO (60-mil only) Thermoplastic Polyolefin (TPO) membrane laminated to a 55-mil thick non-woven polyester fleece-backing resulting in a total finished sheet thickness of 100, 115 or 135-mils.
2. **PVC FRS Fleece Fully Adhered Roofing System** incorporates 60 or 80-mil thick, 10' wide, fiberglass reinforced scrim (white, gray, light gray and tan) Polyvinyl Chloride (PVC) membrane laminated to a 55-mil thick non-woven polyester fleece-backing resulting in a total finished sheet thickness of 115 or 135-mils.
3. **PVC Fleece Fully Adhered Roofing System** incorporates 60 or 80-mil thick, 10' wide, polyester reinforced scrim (white, gray, light gray, slate gray and tan) Polyvinyl Chloride (PVC) membrane laminated to a 55-mil thick non-woven polyester fleece-backing resulting in a total finished sheet thickness of 115 or 135-mils.
4. **KEE HP FRS Fleece Fully Adhered Roofing System** incorporates 50, 60 or 80-mil thick, 10' wide, fiberglass reinforced scrim, (white, gray, light gray, slate gray and tan) KEE HP Polyvinyl Chloride (PVC) membrane laminated to a 55-mil thick non-woven polyester fleece-backing resulting in a total finished sheet thickness of 105, 115 or 135-mils.
5. **KEE HP Fleece Fully Adhered Roofing System** incorporates 50, 60 or 80-mil thick, 10' wide, polyester reinforced scrim, (white, gray, light gray, slate gray and tan) KEE HP Polyvinyl Chloride (PVC) membrane laminated to a 55-mil thick non-woven polyester fleece-backing resulting in a total finished sheet thickness of 105, 115 or 135-mils.

NOTE: The membrane is fully adhered to an acceptable substrate with a spray, extrusion or splatter applied, two-component, low-rise Flexible DASH or HydroBond Adhesive. Adjoining sheets of Thermoplastic Fleece membrane are overlapped and joined together with a minimum 1-1/2" wide hot air weld.

NOTE: TPO FR Fleece membrane is also available for mechanically fastened systems over combustible decks – see 'Attachment III – TPO FR Fleece Mechanically-Fastened Membrane Option' at the end of this specification.

B. Mechanically Attached Roofing System

1. **TPO/PVC/KEE HP Fleece Mechanically Attached Roofing System** as an option to fully adhering the Thermoplastic Fleece Membrane with Flexible DASH Adhesive, the membrane may be loose laid and mechanically attached over an approved substrate to an acceptable deck minimum 22 ga. steel deck or wood deck refer to Attachment II in this specification.

1.02 General Design Considerations

- A. There are no maximum slope restrictions for the application of this roofing system.
- C. Chemical compatibility will depend on type of membrane used. WeatherBond should be contacted for verification of compatibility with specific products, chemicals or waste products that may come in contact with the roof membrane.
- D. It is the responsibility of the building owner to review local, state and regional codes to determine their impact on this Weatherbond Roofing System.
- E. It is the responsibility of the building owner or his/her designated representative to verify structural load limitation.
- F. Coordination between various trades is essential to avoid unnecessary rooftop traffic over completed sections of the roof and to prevent possible damage to the membrane roofing system and insulation facer.
- G. Concentrated loads from rooftop equipment may cause deformation of insulation/underlayment and possible damage to the membrane if protection is not provided. At protection course or sleepers must be specified.
- H. Drainage
 - 1. Drainage must be evaluated by the specifier in accordance with all applicable codes. Slopes may be provided by tapering the structure or through the use of tapered insulation; a sufficient number of roof drains should also be specified and properly located to allow for positive drainage. Significant ponding that could remain after 48 hours should be eliminated with the addition of auxiliary drains in low areas where ponding is anticipated.

WeatherBond specifically disclaims responsibility for design of and selection of an adequate drainage system and drain accessories. Selection must be made by the building owner or owner's design professional.

- 2. Small incidental areas of ponded water will not impact the performance of this roofing system; however in accordance with industry standards, the roofing assembly should be designed to prevent ponding of water on the roof for prolonged periods (longer than 48 hours). Good roofing practice dictates proper drainage to prevent possible excessive live loads and, in the event of a roof leak, to minimize potential interior damage to the roofing assembly and to the interior of the building.
 - 3. For roofing systems utilizing white membranes, a slope greater than 1/8" per horizontal foot is recommended to serve the long-term aesthetics.
 - 4. Tapered edge strips, crickets or saddles are recommended where periodic ponding of water may occur.
- I. On new construction projects, especially in cold climate regions, moisture generated due to the construction process could adversely impact various components within the roofing assembly if not addressed.
- J. On structural concrete decks, when a vapor retarder is not used, gaps in the deck along the perimeter and around penetrations must be sealed along with vertical joints between tilt-up panels, if present, to prevent infiltration of hot humid air and possible moisture contamination resulting from condensation. This is specifically important when adhesive is used to attach the roof insulation.

CAUTION: If left unaddressed, collected moisture could weaken insulation boards and facers resulting in a blow-off or increase the probability of mold growth.

- K. Retrofit – Recover Projects (When the existing roofing material is left in place)
 - 1. The removal of existing wet insulation and membrane must be specified. The specifier shall select an appropriate and compatible material as a filler for voids created by removal of old insulation or membrane.
 - 2. On existing built-up roof where partial removal is specified to remove wet or damaged insulation, priming the structural deck, with a WeatherBond primer, is required where residual asphalt is present to ensure adequate adhesion of the new insulation. In lieu of priming and the use of insulation adhesion, insulation used to fill voids or to replace wet sections may be mechanically attached.
 - 3. Entrapment of water between old and new membrane can damage and deteriorate new insulation/underlayment between the two membranes. If a vapor retarder or air barrier is not specified, WeatherBond recommends existing membrane be perforated to avoid potential moisture accumulation to allow for detection of moisture to enable the building owner to take corrective action. This can be accomplished by drilling approximately 3/4" diameter holes every 100 square feet in the existing built-up roof or single-ply membrane (excluding PVC membrane).

4. Existing non-reinforced PVC membrane must be totally removed. If not removed it must be cut into maximum 10' by 10' sections and the new membrane underlayment must be mechanically attached. Flashing must be totally removed.
5. When Specifying this roofing system over existing gravel surfaced built-up roof, loose gravel must be removed to avoid the entrapment of moisture. In all cases, a membrane underlayment is required. Refer to Paragraph 3.02G, Insulation/Substrate Requirements, for minimum thickness of acceptable underlayment.
6. Existing Phenolic Foam insulation must be removed prior to the installation of this roofing system.
7. Refer to Section 3.02 for more information about securement of existing roof.

1.03 Quality Assurance

Building codes are above and beyond the intended purpose of this specification. The building **owner, owner's representative** or **Specifier** should verify local codes for applicable requirements and limitations. It is the responsibility of the specifier to review local, state and regional codes to determine their impact on the specified WeatherBond Roofing System.

- A. When recovering or retrofitting an existing roof system, the addition of new insulation (type and thickness) may alter the fire performance characteristics of the assembly. Building owners or their designated representatives shall consult the local code enforcement agency to avoid potential code violation.
- B. WeatherBond recommends the use of WeatherBond supplied products for use with this WeatherBond Roofing System. The performance or integrity of products by others, **when selected by the specifier and accepted as compatible by WeatherBond**, is not the responsibility of WeatherBond and is **disclaimed** by the WeatherBond Warranty.
- C. Solar reflectance of this roofing product may decrease over time due to environmental defacement such as dirt, biological growth, ponded water, etc. The roof should be monitored at regular intervals and maintained or cleaned when necessary to assure maximum solar reflectance.
- E. Refer to the Design Reference DR-07-22 "CRRC/LEED Information" for information. (i.e. solar emittance, solar reflectance and recycled content.)

1.04 System Recommendations

- A. See Tables Below for information regarding Warranted Systems and Design Criteria:
 1. **TABLE I - Underlayment/Insulation and Required Attachment Assemblies for Fully Adhered Fleece Roofing Systems** Identifies required underlayments for fully adhered roofing systems. The Table also identifies fastening density or adhesive bead spacing and required edge terminations.
 2. **TABLE II – Bead Spacing for Fleece Membrane Adhesion** Identifies required bead spacing for field and perimeter sheets.
 3. **TABLE III – Minimum Perimeter Width** Identifies required minimum perimeter sheet widths for various building heights.

Underlayment/Insulation and Required Attachment Assemblies for Fully Adhered Fleece Roofing Systems

Table I

Other Requirements are Listed in Additional Design Considerations following this Table

Maximum Peak Gust Wind Speed	Minimum Membrane Underlayment	Insulation/Underlayment Attachment			Metal Edging
		# of Fasteners per 4' x 8' board size (1)	Adhesive Ribbon Spacing for 4' x 4' size board		
			Field	Perimeter	
55 MPH	1" (20-psi) Polyisocyanurate	16 (6)	12" (4)(5)	6" (4)	TPO Drip Edge (3)
	1-1/2" (20-psi) Polyisocyanurate	10			
	2" (20 -psi) Polyisocyanurate	8			
	1/2" XFP HD (2)	12			
	1/4" DensDeck or 1/4" Securock (2)	12			

- (1) For Building heights between 51'-100', enhance 12'-wide perimeter with 50% more fasteners and plates.
- (2) Cover boards must be installed over a min. 1" thick approved WeatherBond Insulation.
- (3) WeatherBond HPW or HPWX Fasteners must be used to secure TPO Drip Edge to perimeter wood nailers.
- (4) Gravel Surface BUR - Field @ 6" O.C. / Perimeter @ 4" O.C
- (5) Steel Decks - Field & Perimeter @ 6" O.C.
- (6) Reduced Fastening (11 fasteners per 4 x 8 board) is acceptable on Reroof/No Tear off projects with a maximum roof height of 40'.

Additional Design Considerations

- 1 - Building height shall not exceed 100 feet*
- 2 - Local Wind Zone per ASCE 7 shall not exceed 130 mph*
- 3 - Acceptable decking: 22-gauge or heavier steel, structural concrete, 1-1/2" wood plank, or 15/32" plywood.
- 4 - All "T-joints" must be overlaid with appropriate flashing material

Table II

Bead Spacing for Fleece Membrane Adhesion

Peak Gust Wind Speed Warranty	Warranty Length in Years					
	5 to 15 years		20 years		25 years	
	Field	Perimeter*	Field	Perimeter*	Field	Perimeter*
55 MPH	12"	6"	6"	6"	4"	4"

FS = Full Spray, Splatter or Ribbons @ 4" o.c.

*Refer to Table III

Table III Minimum Perimeter Width

Width of Perimeter	Building Height
4 feet	25 feet
8 feet	26 to 50 feet
12 feet	51 to 75 feet
18 feet	76 to 100 feet
Contact WeatherBond	Greater than 100 feet

- C. The formation or presence of mold or fungi in a building is dependent upon a broad range of factors including, but not limited to, the presence of spores and nutrient sources, moisture, temperatures, climatic conditions, relative humidity, and heating/ventilating systems and their maintenance and operating capabilities. These factors are beyond the control of WeatherBond and WeatherBond shall not be responsible for any claims, repairs, restoration or damages relating to the presence of any irritants, contaminants, vapors, fumes, molds, fungi, bacteria, spores, mycotoxins, or the like in any building or in the air, land, or water serving the building.

1.06 Job Conditions

- A. On phased roofing, temporary closures should be provided to prevent moisture infiltration. When a temporary roof is specified, 725TR in conjunction with CCW-702 or CAV-GRIP III Low-VOC Adhesive/Primer may be used. Refer to Product Section Part II for additional product information and Specification Supplement G-07-22.
- B. When possible on multiple level roofs, begin the installation on the highest level to avoid or minimize construction traffic on completed roof sections.
- C. On projects at high altitudes (6,000' and above) rapid flash-off (drying) of Bonding Adhesive and Primers will occur due to low atmospheric pressure. Dual Tank Splatter application not approved for applications over 5,000 feet above sea level. Contact WeatherBond for all bead applications over 5,000 feet above sea level.
- D. Polyurethane foam application shall not proceed during periods of inclement weather. Follow WeatherBond requirements for application temperatures and humidity levels.
- E. Wind barriers shall be used if conditions could affect the quality of the sprayed polyurethane foam and to prevent possible over spray.
- F. Vapor Retarders
1. WeatherBond does not require a vapor retarder for the protection of the membrane; however, it should be considered by the specifier for the protection of the roofing assembly (i.e. primarily insulation, underlayment and adhesives). The following criteria should be considered by the specifier:
 - a) Use of a vapor retarder to protect insulation and reduce moisture accumulation within an insulated roofing assembly, should be investigated by the specifier. Consult latest publications by ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.) and NRCA (National Roofing Contractors Association) for specific information.
 - b) In the generally temperate climate of the United States, during the winter months, water vapor flows upward from a heated, more humid interior toward a colder, drier exterior. Vapor retarders are more commonly required in northern climates than in southern regions, where downward vapor pressure may be expected and the roofing membrane itself becomes the vapor retarder.
 - c) On cold storage/freezer facilities, the perimeter and penetration details must be selected to provide an air seal and prevent outside air from infiltrating and condensing within the roofing assembly.
 3. When a vapor retarder is specified, 725TR Air and Vapor Barrier may be used. Refer to Part II "Products" for necessary information and Spec Supplement G-07-22 "Application Procedures for 725TR Air and Vapor Barrier" for product Installation.
- G. Wood nailers are required for the securement of metal edgings, scuppers, and insulated pipes. Wood nailer shall be

secured per specifier recommendation or in accordance with Factory Mutual's property Loss Prevention Data Sheet 1-49. Refer to Design Reference DR-08-22 "Wood Nailer Securement Criteria" in WeatherBond Technical Manual shall be referenced.

- H. Do not apply Flexible DASH Adhesive when surface and/or ambient temperatures are below 25° F, unless, heated spray equipment is being utilized. Heated spray equipment may include, blankets, preheater and/or heated hoses.

1.07 Product, Delivery, Storage and Handling

- A. Deliver materials to the job site in the original, unopened containers.
- B. When loading materials onto the roof, the WeatherBond Authorized Roofing Contractor must comply with the requirements of the specifier/owner to prevent overloading and possible disturbance to the building structure.
- C. Job site storage temperatures in excess of 90°F (32°C) may affect shelf life of curable materials (i.e., Flexible DASH Adhesive- Parts A and B, HydroBond Adhesive, uncured flashing, cleaners, sealants, primers, quick applied products, and Pourable Sealer.)
- D. Prolonged exposure of quick applied products to temperatures below 40°F (5°C) will cause the pre-applied adhesive to lose tack and in extreme cases, not bond to the membrane. Refer to Product Data Sheets for individual products for temperature restrictions.
- E. Flexible DASH Adhesive must be a minimum of 70°F (21°C) at the time of use. Use drum band, blanket heaters and hot boxes when necessary.
- F. Fleece Membrane should be stored in its original plastic wrap or be covered to protect from moisture. Moisture absorbed by the fleece-backing must be removed by using a wet-vac system and allowed to dry completely, prior to membrane adhesion.
- G. PVC or KEE HP PVC Membrane that has been exposed to the elements for approximately 7 days must be prepared with PVC and KEE HP Membrane Cleaner prior to hot air welding. Refer to Section 3.06, Paragraph B.2., Exposed Membrane Seam Preparation, for requirements.
- H. Do not store adhesive, primer, cleaners, etc., containers with opened lids due to the loss of solvent, which will occur from flash-off.
- I. When the temperature is expected to fall below 40°F (5°C), heated storage boxes should be provided on the roof for temporary storage of liquid adhesives and sealants. Adhesive and sealant containers should be rotated to maintain their temperature above 40°F (5°C).

Part II – PRODUCTS

2.01 Membranes

The components of this WeatherBond 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 as compatible by WeatherBond**, is not the responsibility of WeatherBond.

2.02 Membranes

A. Fleece TPO Membrane

1. **Fleece TPO membrane** incorporates 45, 60 or 80-mil thick Thermoplastic Polyolefin (TPO) membrane laminated to a 55-mil non-woven fleece backing resulting in a total finished sheet thickness of 100, 115 or 135-mils. Membrane sheets are available in rolls 12' or 6' wide by 50' or 75' long. Fleece TPO Membrane is available in white, gray or tan in the 100 and 115 thicknesses and conforms to the following:

OPTION: 115-mil Fleece TPO is available in 5 special colors (Medium Bronze, Rock Brown, Terra Cotta, Slate Gray and Patina Green) in 12' x 100' long rolls as a limited stock item, depending on stock levels product may require a lead time. Contact WeatherBond for availability.

OPTION: 115- and 135-mil Fleece TPO (white only) reinforced membrane is available with an optional APEEL Protective Film. APEEL Protective Film can be left in place for up to 90 days without affecting the integrity of the film, guarding the TPO membrane's surface from scuffs and dirt accumulation during installation. Durable and easy to remove, APEEL Protective Film improves aesthetics and long-term reflectivity. Available 6' and 12' widths by 100' long rolls for 115-mil membrane and 6' and 12' widths by 75' long rolls for 135-mil membranes. 135-mil Fleece APEEL TPO requires a minimum order of 200 squares and 2-3 week lead time. Also available, APEEL 6" Cover Tape, allowing 100% coverage of the TPO surface. APEEL Cover Tape rolls are 1,640 feet long

Property	Test Method	Property of Unaged Sheet	Property After Aging (1) 28 days @ 240° F
Thickness of reinforced sheet over fleece, in. (mm) tolerance is ±10	ASTM D 751	0.045 (1.14) – VF 100 0.060 (1.52) – VF 115 0.080 (2.03) – VF 135	
Weight, lb/sq.ft.		0.27 VF 100 0.34 VF 115 0.44 VF 135	
Breaking Strength, min, lbf (kN)	ASTM D 751 Grab Method	300 (1.3) min. VF 100 400 (1.8) min. VF 115 425 (1.9) min. VF 135	375 (1.6) min. VF 100 400 (1.8) min. VF 115 425 (1.9) min. VF 135
Elongation at break of internal fabric,%	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, °F (°C)	ASTM D 2137	-40 (-40) min. -50 (-46) typical	
Linear Dimensional Change (shrinkage), %	ASTM D 1204	+/- 1.0 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, %	ASTM D 471 (fleece removed, edges sealed)	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	40 (7.0) typical VF 100 60 (10.5) typical VF 115 70 (12.3) typical VF 135	
Water vapor permeance, Perms	ASTM E 96	0.10 max. 0.05 typical	
Puncture resistance, lbf (N)	FTM 101C Method 2031	350(1.6) min. VF 100 450 (2.0) typical VF 100 400 (1.8) min. VF 115 500 (2.2) typical VF 115 425 (1.9) min. VF 135 525 (2.3) typical VF 135	350(1.6) min. VF 100 450 (2.0) typical VF 100 400 (1.8) min. VF 115 525 (2.3) typical VF 115 425 (1.9) min. VF 135 600 (2.6) typical VF 135
Puncture resistance, Joules	ASTM D5635	20 VF 100 25 VF 115 32.5 VF 135	
Resistance to xenon-arc Weathering (2) Xenon-Arc, 17,640 kJ/m ² VF 100, 20,160 kJ/m ² VF 115, 27,720 kJ/m ² VF 135 total radiant exposure visual condition at 10X	ASTM G 155 0.70 W/m ² 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 14,000 hours exposure at 0.35 W/m ² irradiance. B.P.T. is black panel temperature.			

B. Fleece PVC Membranes

1. **Fleece PVC FRS membrane** incorporates 60 or 80-mil thick, fiberglass reinforced scrim, Polyvinyl Chloride (PVC) membrane laminated to a 55-mil thick non-woven polyester fleece-backing resulting in a total finished sheet thickness of 115 or 135-mils. Membrane sheets are available in rolls 10' wide by 100' long for 115-mil membrane and 10' wide by 75' long for 135-mil membranes. Fleece PVC FRS Membrane is available in white, gray, light gray and tan and 135 thicknesses and conforms to the following:

Property	Test Method	Requirement	Fleece FRS PVC 115-mil	Fleece FRS PVC 135-mil
Thickness of reinforced sheet over fleece, in. (mm)	ASTM D 4434	0.016 min. (0.40)	0.025 typ. (0.635)	0.030 typ. (0.762)
Breaking Strength (MD x CD), lbf (N)	ASTM D 751	200 min. (0.022)	450 x 400 (0.05 x 0.045)	500 x 450 (0.056 x 0.045)
Elongation break of reinforcement (MD X CD), %	ASTM D 751	15 min.	70 x 100	70 x 100
Seam Strength, min. (% of breaking strength)	ASTM D 751	>75	PASS	PASS
Tearing Strength (CD), lbf (N)	ASTM D 751	45 (200)	60	60
Low Temperature Bend	ASTM D 2136	No Cracks - 5x	PASS (-40° C)	PASS (-40° C)
Linear Dimensional Change, % (MD x CD)	ASTM D 1204	± 0.5 max.	0.36 x 0.00 typ.	0.36 x 0.00 typ.
Ozone Resistance	ASTM D 1149	No Cracks – 7x	PASS	PASS
Water Absorption Resistance, mass %	ASTM D 570	± 3.0 max.	2.0 typ.	2.0 typ.
Field Seam Strength, lbf/in. (kN/m)	ASTM D1876	No Requirement	25 (4.4) min. 60 (10.5) typ.	25 (4.4) min. 60 (10.5) typ.
Water Vapor Permeance, Perms	ASTM E 96	No Requirement	0.10 max. 0.05 typ.	0.10 max. 0.05 typ.
Puncture Resistance, Dynamic, J (ft-lbf)	ASTM D 5635	20 (14.7)	PASS	PASS
Puncture Resistance, Static, lbf (N)	ASTM D 5602	33 (145)	PASS	PASS
Xenon-Arc Resistance 12,600 kJ/m ² total radiant exposure 10,000 hrs	ASTM G 155	No Cracks or Crazing – 10x	PASS	PASS
Properties After Heat Aging, Breaking Strength, % retained	ASTM D 3045	90 min.	90 min.	90 min.
Properties After Heat Aging, Elongation Reinf., % retained	ASTM D 3045	90 min.	90 min.	90 in.

2. **Fleece PVC membrane** incorporates 60- or 80-mil thick, polyester reinforced scrim, Polyvinyl Chloride (PVC) membrane laminated to a 55-mil non-woven fleece backing resulting in a total finished sheet thickness of 115, or 135-mils. Membrane sheets are available in rolls 10' wide by 100' long for 115-mil membranes and 10' wide by 75' long for 135-mil membranes. Fleece PVC Membrane is available in white, gray, light gray, slate gray and tan and conforms to the following:

Property	Test Method	Requirement	Fleece PVC 115-mil	Fleece PVC 135-mil
Thickness of reinforced sheet over fleece, in. (mm)	ASTM D 4434	No requirement	0.060 typ. (0.152)	0.080 typ. (0.203)
Membrane Thickness over scrim, in. (mm)	ASTM D 4434	0.016 min. (0.40)	0.027 typ. (0.686)	0.037 typ. (0.940)
Breaking Strength (MD x CD), lbf (N)	ASTM D 751	200 min. (890)	420 x 380 (73 x 66)	450 x 410 (79 x 72)
Elongation break of reinforcement (MD X CD), %	ASTM D 751	15 min.	30 x 30	30 x 30
Tearing Strength (MD x CD), lbf (N)	ASTM D 751	45 (200)	197 x 165 (876 x 734)	173 x 191 (769 x 849)
Low Temperature Bend	ASTM D 2135	No Cracks - 5x	PASS (-40° C)	PASS (-40° C)
Linear Dimensional Change, %	ASTM D 1204	± 0.5 max.	0.4 typ.	0.4 typ.
Water Absorption Resistance, mass %	ASTM D 570	± 3.0 max.	2.0	2.0
Puncture Resistance, Dynamic, J (ft-lbf)	ASTM D 5635	20 (14.7)	40 (29.5)	42.5 (31.3)
Puncture Resistance, Static, lbf (N)	ASTM D 5602	33 (145)	63.99 (284.6)	63.99 (284.6)
Federal Puncture (Max. Load in lbf)	FTM-101C	No Requirement	380	460
Xenon-Arc Resistance 12,600 kJ/m ² total radiant exposure 10,000 hrs	ASTM G 155	No Cracks or Crazing – 10x	PASS	PASS
Properties After Heat Aging, Breaking Strength, % retained	ASTM D 3045	90 min.	90 min.	90 min.
Properties After Heat Aging, Elongation Reinf., % retained	ASTM D 3045	90 min.	90 min.	90 min.

3. **Fleece KEE HP membrane** incorporates 50-, 60- or 80-mil thick Polyester Reinforced Elvaloy KEE HP PVC membrane laminated to a 55-mil non-woven fleece backing resulting in a total finished sheet thickness of 105-, 115, or 135- mils. Membrane sheets are available in rolls 10' wide by 100' long for 105- and 115-mil and 10' wide by 75' long for 135-mil. Fleece KEE HP Membrane is available in white, gray, light gray and tan and conforms to the following:

Property	Test Method	Fleece KEE HP PVC 105-mil	Fleece KEE HP PVC 115-mil	Fleece KEE HP PVC 135-mil
Thickness of reinforced sheet over fleece, in. (mm)	ASTM D 4434	0.050 min. (1.27)	0.060 typ. (1.52)	0.080 typ. (2.03)
Thickness over scrim, in. (mm)	ASTM D 4434	0.024 min. (0.61)	0.029 typ. (0.74)	0.036 typ. (0.91)
Breaking Strength (MD x CD), lbf (kN/m)	ASTM D 751	410 x 360 (72 x 63)	450 x 410 (79 x 72)	500 x 490 (87 x 86)
Elongation break of reinforcement (MD x CD), %	ASTM D 751	35 x 30	35 x 30	35 x 30
Tearing Strength (MD x CD), lbf (N)	ASTM D 751	120 x 150 (534 x 222)	120 x 150 (534 x 222)	120 x 150 (534 x 222)
Low Temperature Bend	ASTM D 2135	PASS (-40° C)	PASS (-40° C)	PASS (-40° C)
Linear Dimensional Change, %	ASTM D 1204	0.4 typ.	0.4 typ.	0.4 typ.
Water Absorption Resistance, mass %	ASTM D 570	1.25	0.87	0.89
Puncture Resistance, Dynamic, J (ft-lbf)	ASTM D 5635	PASS	PASS	PASS
Puncture Resistance, Static, lbf (N)	ASTM D 5602	63.99 (284.6)	63.99 (284.6)	63.99 (284.6)
Federal Puncture (Max Load in lbf)	FTM-101C	332	384	482
Xenon-Arc Resistance 12,600 kJ/m ² total radiant exposure 10,000 hrs	ASTM G 155	PASS	PASS	PASS
Properties After Heat Aging, Breaking Strength, % retained	ASTM D 3045	90 min.	90 min.	90 min.
Properties After Heat Aging, Elongation Reinf., % retained	ASTM D 3045	90 min.	90 min.	90 min.

2.02 Insulations/Underlayments

A. General

1. Roof insulation thickness must be determined by the thermal value required for each project and may be subject to code approval limitations. On projects where a vapor retarder is used, the specifier must calculate insulation thickness to ensure the temperature at the vapor retarder will not fall below the calculated dew point.
2. Multiple layers of insulation are recommended with all joints staggered between layers.
2. For minimum recommended R-Values, previously published by American Society of Heating and Air-Conditioning Engineers (ASHRAE), consult local building code official for applicable requirements.
3. For Insulation fastening pattern and densities refer to WeatherBond Applicable Details and Design Reference DR-05-22 "Insulation Fastening Patterns".
4. When new insulation or cover boards are specified, the use of WeatherBond Insulation and WeatherBond marketed cover board is required. Any of the WeatherBond Insulation/Underlayment may be specified subject to design restrictions included with each of the following tables.

B. WeatherBond Polyisocyanurate

Table B1 Polyisocyanurate (See below for product descriptions)				
Insulations / Underlayment	Minimum Thickness	ASTM	Roofing System Acceptability	
			Fully Adhered	Mechanically Fastened
WeatherBond XP Polyiso	*1.5"	C1289, Type II, Class 1, Grade 2 or 3	√	√
WeatherBond XFP Polyisocyanurate	*1.5"	C1289, Type II Class 2, Grade 2 or 3	√	√
WeatherBond XFP HD Polyiso Composite (XFP HD)	2"	C1289, Type IV, Class 2, Grade 2 or 3	√	√
WeatherBond XP-NB Polyiso Composite (OSB)	1.5"	C1289, Type V, Class 1, Grade 2 or 3	√	N/A
Design Restrictions				
-Maximum Flute Spanability shall be limited to 2-5/8" when 1" Minimum Polyiso Insulation is to be used. -Minimum thickness of insulation board may be restricted by wind speed coverage, refer to Tables in Paragraph 1.05. *1.5 minimum for fully adhered systems. 1" minimum for mechanically attached systems or as a base layer for fully adhered.				
Notes: N/A = Not Acceptable √ = Acceptable				

NOTE: XFP HD Cover Board is listed in Paragraph C4 below.

2. **WeatherBond XP Polyiso** – A foam core insulation board covered on both sides with a medium weight fiber-reinforced felt facer meeting ASTM C 1289-06, Type II, Class 1, Grade 2 (20 psi) or Grade 3 (25 psi). The product is available in 4' x 8' standard size with a thickness from 1 to 4 inches. 4' x 4' tapered panels are also available.
3. **WeatherBond XFP Polyisocyanurate**– A foam core insulation board covered on both sides with a coated glass fiber mat facer meeting ASTM C 1289-06, Type II, Class 2, Grade 2 (20 psi) or Grade 3 (25 psi). The product is available in 4' x 8' standard size with a thickness from 1 to 4 inches. 4' x 4' tapered panels are also available.
4. **WeatherBond XFP HD Cover Board** – Composite insulation panel comprised of ½-inch high-density Polyiso cover board laminated during the manufacturing process to XFP rigid Polyiso roof insulation meeting ASTM C1289 Type IV, Class 2, Grade 2 (20 psi) or Grade 3 (25 psi). Available in 4' x 8' boards with thickness from 2" to 4.5". 4' x 4' panels are also available.
5. **WeatherBond XP-NB Polyiso** – XP Polyiso insulation bonded on the bottom side with a medium weight fiber-reinforced felt face and laminated with a top surface of 7/16" or 5/8" thick Oriented Strand Board (OSB) meeting ASTM C1289, Type V, Class1 Grade 2 (20 psi) or Grade 3 (25 psi). Available in 4' x 8' boards with thickness from 1-1/2" to 4".

C. **EPS : Expanded Polystyrene**

Table C1 EPS : Expanded Polystyrene (See below for product descriptions)				
Insulations / Underlayment	Minimum Thickness	ASTM	Roofing System Acceptability	
			Adhered	Mechanically Fastened
InsulFoam I	1"	C578 Type I	N/A	√ (1)(3)
InsulFoam VIII	.75"	C578 Type VIII	N/A	√ (1)
InsulFoam II	.75"	C578 Type II	N/A	√ (1)
InsulFoam IX	.75"	C578 Type IX	N/A	√ (1)
InsulFoam HD Composite (XFP HD)	1.5"	C578 Type (I, VIII, II, or IX)	√	√
InsulLam (Various Cover Boards)	1.5"	C578 Type (I, VIII, II, or IX)	√	N/A
InsulFoam SP	1"	C578 Type VIII	N/A	√
InsulFoam SP	2"	C578 Type VIII	(2)	√
Design Restrictions				
-Local Codes must be consulted regarding the acceptance of expanded insulation directly over steel decks. When specified, minimum thickness shall be designated by the manufacturer. -Expanded polystyrene roof insulations cannot be installed directly over coal-tar pitch roof surfaces or existing PVC membranes. A separation layer of minimum 1/2" XFP HD, Recovery Board or Polyiso Insulation shall be used. (1) WeatherBond PVC Membrane is not acceptable for this application. (2) May be used as a substrate for WeatherBond PAS TPO membrane Only. (3) Minimum 1.25 lbs/cubic ft (pcf) density required for WB TPO Membrane (White Membrane Only)				
Notes: N/A = Not Acceptable √ = Acceptable				

NOTE: R-Tech Fanfold Recover Board is listed in Paragraph E7 below.

NOTE: Insulation boards listed in 'a' through 'd' may be specified beneath XFP HD, WB Recovery Board, DensDeck Prime or Securock

- InsulFoam I (EPS: Expanded Polystyrene)** – A closed-cell lightweight expanded polystyrene (EPS) that meets ASTM C578, Type I. Nominal density of 1.0 lbs/cubic ft (pcf) available in 4' x 4' or 4' x 8' sizes with thickness from 1/4" to 40". Custom lengths, widths and tapered boards are available.
- InsulFoam VIII (EPS: Expanded Polystyrene)** – A closed-cell lightweight expanded polystyrene (EPS) that meets ASTM C578, Type VIII. Nominal density of 1.25 lbs/cubic ft (pcf) available in 4' x 4' or 4' x 8' sizes with thickness from 1/4" to 40". Custom lengths, widths and tapered boards are available.
- InsulFoam II (EPS: Expanded Polystyrene)** – A closed-cell lightweight expanded polystyrene (EPS) that meets ASTM C578, Type II. Nominal density of 1.5 lbs/cubic ft (pcf) available in 4' x 4' or 4' x 8' sizes with thickness from 1/4" to 40". Custom lengths, widths and tapered boards are available.
- InsulFoam IX (EPS: Expanded Polystyrene)** – A closed-cell lightweight expanded polystyrene (EPS) that meets ASTM C578, Type IX. Nominal density of 2.0 lbs/cubic ft (pcf) available in 4' x 4' or 4' x 8' sizes with thickness from 1/4" to 40". Custom lengths, widths and tapered boards are available.
- InsulFoam HD Composite** – InsulFoam expanded polystyrene (EPS) insulation laminated with a top surface of 1/2" thick XFP HD. Available in 4' x 8' boards with thickness from 1-1/2" to 7".
- InsulLam** – InsulFoam expanded polystyrene (EPS) insulation laminated with a top surface of 7/16" or 5/8" thick Oriented Strand Board (OSB), 1/2" DensDeck Prime, 1/2" Securock, or 1/2" Recovery Board. Available in 4' x 8' boards with thickness from 1-1/2" to 7".
- InsulFoam SP** – A closed-cell lightweight expanded polystyrene (EPS) with a factory-laminated fiber glass facer. Nominal density of 1.25 lbs/cubic ft (pcf), available in 4' x 8' size, and meets ASTM C578, Type VIII. Designed for low-sloped roof applications that employ mechanically attached or WeatherBond PAS TPO membranes.

- D. **XPS: Extruded Polystyrene** – Dimensionally stable with high thermal and low water absorption performance capability. XPS is available in varying compressive strengths thicknesses and sizes. Refer to specific Technical Data Bulletins for physical properties and additional technical information.

Table D1 XPS: Extruded Polystyrene (See below for product descriptions)				
Insulations / Underlayment	Minimum Thickness	ASTM	Roofing System Acceptability	
			Fully Adhered	Mechanically Attached
Thermapink 18	.75"	Refer to Product Data Sheet	N/A	√ (1)
Thermapink 25	1"	Refer to Product Data Sheet	N/A	√ (1)
Foamular 400	1"	Refer to Product Data Sheet	N/A	√ (1)
Dow Styrofoam Deckmate Plus	1"	Refer to Product Data Sheet	N/A	√ (1)
Design Restrictions				
<p>-Local Codes must be consulted regarding the acceptance of expanded insulation directly over steel decks. When specified, minimum thickness shall be designated by the manufacturer.</p> <p>-Extruded polystyrene roof insulations cannot be installed directly over coal-tar pitch roof surfaces or existing PVC membranes. A separation layer of minimum 1/2" XFP HD, Recovery Board or Polyiso Insulation shall be used.</p> <p>-Refer to related products listed in Spec Supplement P-01-22 "Related Products" for other products which may be suitable for use. WeatherBond must be contacted for specific requirements.</p> <p>(1) WeatherBond PVC Membrane is not acceptable for this application.</p>				
Notes: N/A = Not Acceptable √ = Acceptable				

2. Thermapink 18 or 25 Extruded Polystyrene
3. Foamular 400 Extruded Polystyrene
4. Dow Styrofoam Deckmate Plus Extruded Polystyrene

B. **Cover Boards / Slip Sheets**

Table E1 Cover Boards / Slip Sheets (see below for product descriptions)				
Insulations / Underlayment	Minimum Thickness	ASTM	Roofing System Acceptability	
			Fully Adhered	Mechanically Attached
XFP HD	.5"	C1289, Type II, Class 4 (109 psi)	√	√
XFP HD Plus	.5"	C1289, Type II, Class 4 (109 psi)	√	√
XP HD		C1289, Type II, Class 1, Grade 3	N/A	√
Securock Cover Board	.25"	Refer to Product Data Sheet	√	√
DensDeck StormX Prime	.625"	C1177	√	√ (1)
DensDeck Prime	.25"	C1177	√	√ (1)
DensDeck	.25"	C1177	N/A	√ (1)
R-Tech Fanfold Recovery Board	.5"	C578 Type (I, VIII, II. or IX)	N/A	√ (2)
HP Protection Mat	6 oz	Refer to Technical Data Bulletin	N/A	√
Design Restrictions				
-R-Tech Fanfold not recommended for direct use over Type B and F steel decks. -XFP HD not recommended for direct use over steel decks in lieu of thermal barrier. Fire testing standards yet to be established. -Securock Cover Board, Recovery Board, DensDeck StormX Prime, DensDeck Prime or DensDeck may not be used directly over New or Existing Lightweight Insulating Concrete Decks existing or Structural Concrete. - DensDeck, DensDeck Prime and DensDeck StormX Prime not recommended for use directly over existing roofing membrane -R-Tech Fanfold primarily for use in existing roof re-covers applications or directly over structural or lightweight insulating concrete. (1) Permitted for use on combustible decks with slopes greater than 2" per foot for compliance with external fire codes, refer to UL listings or contact WeatherBond. (2) Install Polymeric Side Up when installing WeatherBond PVC membrane.				
Notes: N/A = Not Acceptable √ = Acceptable				

2. **XFP HD** – a rigid insulation panel composed of a high-density (100 psi), closed-cell polyisocyanurate foam core laminated to coated-glass fiber-mat facer for use as a cover board or recover board. Available 1/2" thick 4' x 8' panel weight 11 lbs with an R-value of 2.5.
3. **XFP HD Plus** – A rigid insulation panel composed of a high-density (109 psi max), closed-cell polyisocyanurate foam core laminated to premium-performance coated-glass fiber-mat facer for use as a cover board or recover board. Available 1/2" thick 4' x 8' panel weight 11 lbs with an R-value of 2.5. Meets an FM 1-90 using only 8 fasteners per 4' x 8' board.
4. **XP HD** – a closed-cell polyisocyanurate foam core insulation board covered on both sides with glass-reinforced felt (GRF) facer meeting ASTM C 1289, Type II, Class 1, Grade 3. The product is available in 4' x 4' and 4' x 8' standard sizes with a thickness of one half inch.
5. **Securock Cover Board** – A uniform composition of fiber-reinforced with no facer for use as a cover board or a thermal barrier. Available in 1/4" to 5/8" thick and 4' x 4' or 4' x 8' size boards. Long uninterrupted runs (>200') may require slight gapping due to thermal expansion.
6. **DensDeck StormX Prime** –a reinforced gypsum cover board with an enhanced, moisture-resistant core and coated glass mat facers on the top and bottom side. The top surface is pre-primed and provides excellent bond strength for adhered membrane for use as a cover board. DensDeck StormX Prime is extremely durable and is approved for use in assemblies meeting FM's Very Severe Hail (VSH) Classification. Available in 5/8" thickness and 4' x 4' or 4' x 8' size boards.
7. **DensDeck Prime** –gypsum core that incorporates glass-mat facings on the top and bottom side. The top surface is pre-primed and provides excellent bond strength for fully adhered membrane for use as a cover board. Available in 1/4" to 5/8" and 4' x 4' or 4' x 8' size boards.
8. **DensDeck Cover Board** –gypsum core that incorporates glass-mat facings on the top and bottom side for use as a cover board. Available in 1/4" to 5/8" and 4' x 4' or 4' x 8' size boards.
9. **R-Tech FanFold Recover Board** – Closed-cell lightweight expanded polystyrene (EPS) with polymeric laminated faces which meets ASTM C 578 for use as a recover board. Polymeric facer compatible with PVC membrane, while metallic side used with EPDM. Available in thicknesses of 3/8" to 3/4" with coverage 4' x 50' (2 squares). 4' x 8' units are also available.

10. **HP Protection Mat** – A nominal 6-oz per square yard UV resistant polypropylene needle punched fabric used as an underlayment to the membrane. Available 15' x 30' roll (450 square foot) weighing 0.06 lbs per square foot.

2.03 Related Materials

A. Flashings

1. TPO Related Products:

- a) **WeatherBond TPO Flashing:** WeatherBond TPO **non-reinforced flashing** is available in rolls **12" and 24" wide by 50' long**. Flashing is used for inside/outside corners and field fabricated pipe flashings when the use of pre-molded or pre-fabricated accessories is not feasible. In addition, **45-mil by 6" wide by 100' long and 60-mil by 9" wide by 50' long and 80-mil by 9" wide by 50' long** WeatherBond TPO **reinforced membrane** is available for overlaying fasteners and fastening plates.
- b) **WeatherBond TPO Pressure-Sensitive Cover Strip:** A nominal 40-mil thick non-reinforced TPO membrane laminated to nominal 35-mil thick cured synthetic rubber pressure-sensitive adhesive used in conjunction with TPO Primer or Low VOC TPO Primer to strip in flat metal flanges (i.e., drip edges or rows of fasteners and plates). Available in rolls 6" wide by 100' long in colors of white, gray or tan.
- c) **APEEL Cover Tape:** A 6"-wide, 1,640' long roll of APEEL Protective Film used to protect areas of WeatherBond TPO membrane where APEEL Protective Film has been removed (around details) or was not factory applied (seams). APEEL Cover Tape allows contractors to keep 100 percent of the TPO surface clean during installation and is applied using the APEEL Cover Tape Applicator.
- d) **WeatherBond TPO Pressure-Sensitive RUSS:** A nominal 6" and 10" wide, 45-mil thick reinforced TPO membrane with nominal 3" wide 35-mil thick cured synthetic rubber pressure-sensitive adhesive laminated along one end on 6" wide RUSS and along both ends on 10" wide RUSS. Used in conjunction with TPO Primer or Low VOC TPO Primer. 6" wide RUSS is used as a base membrane securement along walls, curbs, etc.; 10" wide RUSS is used to form perimeter sheets on Mechanically Attached Systems.
- e) **WeatherBond TPO T-Joint Covers:** A 60-mil thick injection molded TPO flashing formed into a 4.5" diameter circle used to seal step-offs at splice intersections. Installation is mandatory on all 60-, 72-, and 80-mil TPO systems and on 45-mil systems where step-offs have not been properly sealed. Packaged in boxes of 100. Available in white, tan or gray.
- f) **Yellow Pressure-Sensitive (PS) Warning Strip:** A nominal 30-mil-thick non-reinforced TPO flashing laminated to a nominal 30-mil-thick, fully cured synthetic rubber Pressure-Sensitive adhesive and is available in 6" wide by 100' long rolls. Yellow Pressure-Sensitive Warning Strip can be applied to EPDM, TPO or Hypalon roofing systems to provide a visual warning of an impending hazard (i.e. roof edge, deep drain sump, skylight).
- g) **WeatherBond TPO Rib Profile:** Used to obtain the appearance of standing seam metal roofing with the performance of a TPO single-ply membrane. TPO Rib Profile measures 1-1/4" tall and 1-3/4" wide, including the welding flanges, while the vertical profile is a substantial 3/8" thick. The profile has a continuous 1/8" diameter alignment hole, for use with fiberglass connecting pins, as well as a 1/8" fiberglass reinforcing cord for added strength. TPO Rib Profile is available in white, gray and tan, as well as Special Colors (Medium Bronze, Rock Brown, terra Cotta, Slate Gray and Patina Green) in 10' lengths and packaged 20 per carton.
- h) **Pre-Molded Accessories:**
 - 1) **Inside Corners:** A pre-molded corner flashing for inside corners. Available in white, gray or tan; 60-mil thick.
 - 2) **Outside Corners:** A one-piece injection molded corner flashing used for flashing outside corners. Available in white, gray or tan; 60-mil thick.
 - 3) **TPO Curb Wrap Corners:** Fabricated flashings are made of 60-mil thick reinforced WeatherBond TPO membrane designed to reduce installation time to flash a curb when compared to conventional methods. Each corner is fabricated with a 6" wide base flange and a 12" overall height. Six sizes are available to fit curbs up to 6' by 6' in size. One curb requires 4 corners for a complete installation. TPO Curb Corners are packaged in boxes containing twelve. Corners. Custom sizes are available as a special order product requiring lead time.
 - 4) **TPO Universal Corners:** a pre-molded flashing for use in a variety of corner details, including inside and outside corners. Available in white, gray and tan and are 60-mil thick.

- 5) **Pipe Flashings:** A pre-molded white, gray or tan pipe flashing used for pipe penetrations. Available for 3/4" –8" diameter pipes with clamping rings included.
- 6) **Split Pipe Seals:** A prefabricated flashing consisting of 60-mil thick reinforced WeatherBond TPO Membrane for pipes 1" – 6" in diameter. A split (cut) and overlapped tab are incorporated to allow the pipe seal to be opened and wrapped around the pipe when it is not possible to pull a standard pipe flashing over a round penetration. Custom sizes are available as a special order product requiring lead time.
- 7) **TPO Square Tubing Wraps:** Fabricated flashings made of 60-mil thick reinforced WeatherBond TPO membrane for square tubing. A split (cut) and overlap tab are incorporated into these parts to allow the seals to be opened and wrapped around a square penetration. Available for 3", 4", 5" and 6" square tubing
- 8) **Molded TPO Sealant Pockets:** A pre-fabricated, interlocking, 2-piece, injection molded, flexible pocket with a rigid polypropylene vertical wall and pre-formed deck flanges. Pockets can be adjusted from 11.5" to 7.5" in length by 6" in width by following the cutting lines molded into the pocket. Used in conjunction with White One-Part Pourable Sealer for waterproofing pipe clusters or other odd shaped penetrations. Available in white, gray or tan
- 9) **Pre-fabricated Sealant Pockets:** A two-piece, pre-fabricated sealant pocket that utilizes reinforced 60-mil TPO membrane and coated metal to form a rigid, oversized sealant pocket with a weldable horizontal deck flange. Available in 12" (total volume of 1.87 gallons). Packaged 2 per carton and available in white only. Refer to the applicable Technical Data Bulletin for dimensions and installation instructions. Custom sizes are available as special order products.
- 10) **Sealant Pocket Extension Legs:** Designed for use with the TPO Molded Sealant Pocket and the Pre-Fabricated Sealant Pocket to extend the length in increments of 10". Fabricated from 45-mil thick reinforced TPO membrane and TPO coated metal. Can be used full length, cut to size for customized lengths or welded to each other for extra-long applications. Packaged 10 legs per carton and available in white only.

2. PVC and KEE HP Related Products

- a. **WeatherBond PVC non-reinforced Flashing** is 80-mil thick and available in rolls **12" and 24" wide by 50' long**. Flashing is used for inside/outside corners and field fabricated pipe flashings when use of pre-molded accessories is not feasible.
- b. **WeatherBond PVC Reinforced Cover Strip:** A 8" wide, nominal 80-mil thick, polyester reinforced PVC membrane. Used for stripping in rows of fasteners and plates and covering the butt joints of WeatherBond PVC membranes. Available in rolls 8" wide by 75' long in colors of white, gray or tan.
- c. **WeatherBond KEE HP Reinforced Cover Strip:** A 8" wide, nominal 80-mil thick, polyester reinforced KEE HP PVC membrane. Used for stripping in rows of fasteners and plates and covering the butt joints of WeatherBond KEE HP PVC membranes. Available in rolls 8" wide by 75' long in colors of white, gray or tan, also available in 60-mil in rolls of 8" wide by 100' long in white only.
- d. **WeatherBond PVC Pressure-Sensitive Cover Strip:** A 6" wide, nominal 35-mil thick non-reinforced KEE HP flashing laminated to a nominal 35-mil, fully cured, pressure-sensitive, synthetic rubber adhesive. Used for stripping in flat metal edgings (i.e. drip edge) of PVC and KEE HP PVC membranes. Available in rolls 6" wide by 100' long in colors of white, gray or tan. Used in conjunction with PVC Step 1 Activator and PVC Step 2 Primer.
- e. **WeatherBond PVC Overlayment Strip:** An 80-mil non-reinforced thermoplastic polyvinyl chloride-based membrane used for stripping in PVC Coated Metal roof edging. WeatherBond PVC Overlayment Strip is available in 6" x 100' rolls with a white top side and gray or tan bottom side to match white and gray WeatherBond PVC membranes.
- f. **WeatherBond PVC "T" Joint Cover:** A 4-1/2" diameter, 60-mil thick (white) or 40-mil (gray or tan), pre-cut non-reinforced PVC flashing used to overlay "T" joints at field splices when 60-mil or 80-mil WeatherBond PVC or WeatherBond KEE HP membrane is used.
- g. **APEEL Cover Tape:** A 6"-wide, 1,640' long roll of APEEL Protective Film used to protect areas of WeatherBond PVC/KEE HP membrane where APEEL Protective Film has been removed (around details) or was not factory applied (seams). APEEL Cover Tape allows contractors to keep 100 percent of the PVC/KEE HP surface clean during installation and is applied using the APEEL Cover Tape Applicator.
- h. **WeatherBond PVC Yellow Pressure-Sensitive Warning Strip:** a nominal 30-mil-thick, non-reinforced membrane flashing laminated to a nominal 30-mil-thick, fully cured, synthetic rubber, pressure-sensitive

adhesive and is available in 6"-wide by 100'-long rolls. Pressure-Sensitive Warning Strip can be applied to WeatherBond PVC or KEE HP systems to provide a visual warning of an impending hazard (e.g., roof edge, deep drain sump, skylight, etc.).

- i. **WeatherBond PVC Rib Profile:** Used to obtain the appearance of standing seam metal roofing with the performance of a PVC single-ply membrane. PVC Rib Profile measures 1-1/4" tall and 2-1/8" wide, including the welding flanges, while the vertical profile is a substantial 3/8" thick. The profile has a continuous 1/8" diameter alignment hole, for use with fiberglass connecting pins, as well as a 1/8" fiberglass reinforcing cord for added strength. PVC Rib Profile is available in white, gray, light gray, slate gray and tan, 10' lengths and packaged 20 per carton.
- j. **Pre-Molded Accessories:**
 - 1) **WeatherBond PVC Inside Corners:** A pre-molded flashing for inside corners. Reversible for use as white or gray; 80-mil thick.
 - 2) **WeatherBond PVC Outside Corners:** A pre-molded flashing for outside corners. Available in white only; 60-mil thick.
 - 3) **WeatherBond PVC Curb Wrap Corners:** Fabricated flashings are made of 60-mil thick reinforced WeatherBond KEE HP PVC Detail membrane designed to reduce installation time to flash a curb when compared to conventional methods. Each corner is fabricated with a 6" wide base flange and a 12" overall height. Three sizes are available to fit curbs up to 3' by 3' in size. One curb requires 4 corners for a complete installation. PVC Curb Wrap Corners are packaged in boxes containing twelve corners. Custom sizes are available as a special order product requiring lead time.
 - 4) **Weatherbond PVC Universal Corners:** a pre-molded flashing for use in a variety of corner details, including inside and outside corners. Available in white and are 60-mil thick.
 - 5) **WeatherBond PVC Pipe Flashings:** A pre-molded white pipe flashing used for pipe penetrations. Available for 3/4" – 8" diameter pipes with clamping rings included.
 - 6) **WeatherBond PVC Split Pipe Seals:** A prefabricated flashing consisting of 60-mil thick reinforced WeatherBond PVC Membrane for pipes 1" – 6" in diameter. A split (cut) and overlapped tab are incorporated to allow the pipe seal to be opened and wrapped around the pipe when it is not possible to pull a standard pipe flashing over a round penetration. Available in white as a standard. Gray or tan can be special ordered and will require a lead time.
 - 7) **WeatherBond PVC Square Tubing Wraps:** Fabricated flashings made of 60-mil thick reinforced WeatherBond PVC membrane for square tubing. A split (cut) and overlap tab are incorporated into these parts to allow the seals to be opened and wrapped around a square penetration. Pockets can be adjusted from 7.5" to 11.5" in length by 6" in width by following the cutting lines molded in the pocket. Available in white as a standard.
 - 8) **WeatherBond PVC Molded Sealant Pockets:** A pre-fabricated, interlocking, 2-piece, injection molded, flexible pocket with a rigid PVC vertical wall and pre-formed deck flanges. Pockets can be adjusted from 11.5" to 7.5" in length by 6" in width by following the cutting lines molded into the pocket. Used in conjunction with White One-Part Pourable Sealer for waterproofing pipe clusters or other odd shaped penetrations. Available in white and gray.

B. Primers, Adhesives, Sealants and Cleaners

Refer to Technical Data Bulletins for material coverage rates and proper usage. Prior to the use of any of the products listed below, consult the Safety Data Sheets for applicable cautions and warnings.

1. General Adhesives, Sealants and Cleaners (For All Membranes)

- a) **Flexible DASH Adhesive:** A two-component (Part A and B), low-rise polyurethane adhesive designed for bonding Fleece membrane and/or insulation to various substrates. Coverage rates can be found in Paragraph 3.05 'Membrane Placement and Securement'. Flexible DASH Adhesive is packaged in 50- and 15-gallon drums, as well as, 5-gallon Jug and Dual Cartridges that can be applied in full spray, extrusion, or splatter application depending on dispensing type.
- b) **Flexible DASH Dual Tank Adhesive:** A two component (Part A and B), low rise adhesive for bonding Fleece membrane and/or insulation to various surfaces. DASH Dual Tanks utilize an HFO blowing agent. HFO (hydrofluoroolefin) blowing agents are widely recognized as the next-generation environmentally friendly blowing agent, replacing their HFC (hydrofluorocarbon) predecessor. Flexible DASH Dual Tank Adhesive can be applied in bead or spatter application. Coverage rates can be found in Paragraph 3.05 'Membrane Placement and Securement'.

- c) **Flexible DASH Dual Cartridge and 5-gallon Jug Adhesive:** A two component (Part A and B), extrusion applied, low rise adhesive for bonding insulation to various surfaces. Flexible DASH Dual Tank Adhesive can be applied in bead or spatter application. Coverage rates can be found in Paragraph 3.05 'Membrane Placement and Securement'.
- d) **Aqua Base 120 Bonding Adhesive:** A semi-pressure-sensitive, water based adhesive used as a one-sided wet lay-in adhesive for Fleece TPO. Coverage rate is 100-120 square feet per gallon finished surface. **Refer to Spec Supplement G-09-22 "Aqua Base 120 Bonding Adhesive"** for further information.
- e) **HydroBond Water-Based Adhesive:** A wet lay-in, one-sided dispersion adhesive. Compatible with all Fleece membranes, this product is ideal for bonding to various porous and non-porous substrates. (The use of Hydrobond with Fleece EPDM is not approved for use with Coated Glass Faced products). Coverage rates vary between 100-133 square foot per gallon using roller or spray applications.
- f) **CAV-GRIP III Low-VOC Aerosol Contact Adhesive/Primer:** a Low-VOC, spray-applied aerosol contact adhesive and primer used for a variety of applications: adhering standard TPO and EPDM membranes to horizontal and vertical surfaces, adhering Fleece membrane to vertical surfaces, as a primer for VapAir Seal 725TR, and as an unexposed asphalt primer for Flexible DASH for insulation attachment.
- g) **Water Cut-Off Mastic:** A one-component, low viscosity, self-wetting, Butyl blend mastic used to prevent moisture migration at drains, compression terminations and beneath certain metal edging (at a coverage rate of approximately 10' per tube or 100' per gallon).
- h) **Universal Single-Ply Sealant:** A 100% solids, solvent free, one-part, polyether sealant that provides a weather tight seal to a variety of building substrates. Can be used as a termination bar sealant or for use in counterflashing, coping, and scupper details. Packaged 24 per carton in 10.3 ounce tubs with a coverage rate of approximately 10' per tube.

2. WeatherBond TPO Adhesives, Sealants and Cleaners

- a) **WeatherBond TPO Bonding Adhesive:** A high-strength, synthetic rubber adhesive used for bonding WeatherBond TPO membrane to various surfaces. The adhesive is applied to both the membrane and the substrate at a coverage rate of approximately 60 square feet per gallon per finished surface (includes coverage on both surfaces).
- b) **Low VOC Bonding Adhesive for TPO:** An alternate, high-strength, adhesive using a blend of VOC exempt and non-exempt solvent which complies with the State of California Clean Air Act of 1988 (updated in 1997).
- c) **TPO Cut-Edge Sealant:** A clear colored sealant used to seal cut edges of reinforced WeatherBond TPO membrane. A coverage rate of approximately 225 - 275 linear feet per squeeze bottle can be achieved when a 1/8" diameter bead is applied.
- d) **White One-Part Pourable Sealer:** A one-part, moisture curing, elastomeric polyether sealant used to fill TPO Molded Pourable Sealer Pockets. Packaged in 4, 2-liter foil pouches inside a reusable plastic bucket. 1 pouch will fill 2 TPO Molded Pourable Sealer Pockets.
- e) **Weathered Membrane Cleaner:** Used to prepare membrane that has been exposed to the elements for approximately 7 days prior to hot air welding at an approximate coverage rate of 600 linear feet per gallon on a 4" wide surface.
- f) **TPO and Low-VOC TPO Primer:** A primer used to prepare the surface of the membrane for the application of the Quick Applied Cover Strip.

3. WeatherBond PVC Adhesives, Sealants and Cleaners

- a) **Low VOC PVC Bonding Adhesive:** A high-strength solvent based adhesive that allows bonding of PVC membrane to various porous and non-porous substrates. The adhesive is applied to both the membrane and the substrate at a coverage rate of approximately 60 square feet per gallon per finished surface (included coverage on both surfaces).
- b) **Hydrobond Adhesive:** A wet lay-in, one-sided dispersion adhesive. Compatible with only PVC smooth-backed and Fleece membranes, this product is ideal for bonding only PVC membranes to various porous and non-porous substrates (cannot be used with any KEE or KEE HP PVC bareback membranes). Coverage rates vary between 100-133 square foot per gallon using roller or spray applications.
- c) **CAV-GRIP PVC Aerosol Contact Adhesive:** a low-VOC, methylene chloride-free adhesive that can be

used for a variety of applications including: adhering PVC bareback membranes to a variety of horizontal substrates and vertical walls (cannot be used with any KEE or KEE HP bareback membranes), as well as adhering Fleece membranes to vertical walls. Coverage rate is approximately 400 sq. ft. per #40 cylinder and 800 sq. ft. per #85 cylinder as an adhesive for vertical walls, in a double-sided application; 750 sq. ft. per #40 cylinder and 1,500 sq. ft. per #85 cylinder as an adhesive, horizontally, for the field of the roof, in a double-sided applications.

- d) **WeatherBond PVC Cut-Edge Sealant:** A clear-colored sealant used to seal cut edges of reinforced WeatherBond PVC membrane. A coverage rate of approximately 225 - 275 linear feet per squeeze bottle can be achieved when a 1/8" diameter bead is applied. Use of Cut-Edge Sealant to seal cut edges of PVC Membranes is not required, however it is recommended.
- e) **White One-Part Pourable Sealer:** A one-part, moisture curing, elastomeric polyether sealant used to fill Molded Sealant Pockets. Packaged in four 1/2 gallon pouches per plastic bucket. One pouch will fill 122 cubic inches of volume within a molded sealant pocket.
- f) **PVC and KEE HP Membrane Cleaner:** Used to prepare membrane that has been exposed to the elements prior to heat welding or to remove general construction dirt at an approximate coverage rate of 400 square feet per gallon (one surface).
- g) **WeatherBond PVC Low-VOC PVC Step 1 Activator:** A high-strength, solvent-based activator that allows PVC Pressure-Sensitive (PS) Cover Strip to be bonded to PVC or KEE HP membranes. Low-VOC PVC Step 1 Activator meets the < 250 gpl VOC content requirements of the OTC Model Rule. It is specially formulated using a blend of VOC-exempt and non-exempt solvents and follows the state of California Clean Air Act of 1988 (updated in 1997) as further regulated by California's Air Quality Control Districts listing VOC limitations.
- h) **WeatherBond PVC Low-VOC PVC Step 2 Primer:** A high-solids-content, polymer based splice primer. This product is applied to KEE HP and PVC membranes to improve the adhesion of PVC Pressure-Sensitive Cover Strip. Low-VOC PVC Step 2 Primer meets the < 250 gpl VOC content requirements of the OTC Model Rule.
- i) **WeatherBond PVC Step 2 Primer:** A high-solids-content, clear (translucent color), polymer-based splice primer used to prepare KEE HP and PVC membranes to be bonded to PVC Pressure-Sensitive Cover Strip.

2.04 Fastening Components

A. Fasteners

The following Table illustrates criteria for fastening of WeatherBond Insulation with the referenced roof deck and includes minimum penetration requirements and pilot hole criteria.

Insulation Fastening Criteria

Deck Type	WeatherBond Fasteners (1)	Min. Penetration	Pilot Hole Depth	Pilot Hole Diameter
Steel or Lightweight Insulating Concrete over Steel	ASAP or InsulTite	3/4"	N/A	N/A
Structural Concrete, rated 3,000 psi or greater	CD-10	1"	Note (2)	7/32"
	MP 14-10	1"	Note (2)	3/16"
Wood Plank, min. 15/32" thick Plywood or min. 7/16" OSB	HPW, ASAP or InsulTite	Min. 1" (3)	N/A	N/A
Cementitious Wood Fiber	Polymer Gyptec	1-1/2"	Note (4)	N/A
Cementitious Wood Fiber	Lite-Deck Fastener	2"	Note (4)	N/A
Gypsum	Polymer Gyptec	1-1/2"	Note (2)	7/16", 1/2" or 9/16" (5)
Gypsum	Lite-Deck Fastener	2"	Note (5)	Note (6)

Notes: N/A = Not Applicable

(1) For Fully Adhered Systems, only 3" diameter insulation fastening plates can be used for insulation attachment.

(2) 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.

(3) For wood planks only, fastener penetration shall not exceed 1-1/2".

(4) 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.

(5) Pilot hole size may be varied to maximize pullout resistance.

(6) Gypsum hardness varies, and the desired pullout may determine pilot hole size. This could range from 1/4" to 5/16.

All Fasteners listed below can be used with WeatherBond TPO or WeatherBond PVC Roofing Systems. Refer to the applicable specification for specific requirements.

1. **HPWX Fastener:** A heavy duty #15 threaded fastener with a #3 Phillips drive used with WeatherBond's HPWX Fastening Plate to secure Mechanically Attached Roofing Systems. It is used on minimum 22 gauge steel decks or minimum 15/32" CDX plywood decks. It is also designed to offer an optimum combination of driving performance, back-out and corrosion resistance with excellent pullout performance.
2. **HPW-XL Fastener:** An oversized diameter #22(.315") steel, threaded fastener used in conjunction with HPW-XL Plates for membrane securement into minimum 22 gauge steel or wood decks on Mechanically Attached Roofing Systems.
3. **HPW Fastener:** A threaded E-coat square head fastener **for insulation attachment only**. Used into steel, wood plank, minimum 15/32" thick plywood or minimum 7/16" thick oriented strand board (OSB).
4. **Pre-Assembled InsulTite ASAP Fastener:** WeatherBond's InsulTite Fastener pre-assembled with a 3" diameter plastic plate used for **insulation attachment only** on Fully Adhered and Mechanically Attached Roofing Systems. Installed using Olympic Fasteners' Fastening Tool.
5. **InsulTite Fastener:** A threaded Phillips drive fastener used with WeatherBond Insulation Plates for **insulation attachment** to steel or wood decks.
6. **CD-10 Fastener:** A hammer-driven, non-threaded E-Coat fastener for use with structural concrete decks rated 3,000 psi or greater.
7. **MP 14-10 Concrete Fastener:** A #14 threaded fastener with a #3 Phillips drive used for minimum 3,000 psi concrete decks.
8. **Polymer Gyptec Fastener:** A glass-filled nylon auger fastener designed for securing insulation and/or membrane to specialty decks such as cement wood fiber or gypsum.
9. **Lite-Deck Fastener:** A deep, coarse threaded fastener used to secure insulation to gypsum and cementitious wood fiber decks in conjunction with Lite-Deck Plates.

B. Fastening Plates

1. **Insulation Fastening Plate:** A nominal 3-inch metal plate used for insulation attachment in conjunction with the appropriate WeatherBond Fastener.
2. **SecurFast Insulation Fastening Plates:** A nominal 2-7/8" hexagon metal plate used for insulation attachment in conjunction with the appropriate WeatherBond Fastener.
3. **Accutrac Insulation Plates:** A nominal 3" square, recessed or flat bottomed, metal plate used for insulation attachment in conjunction with the appropriate WeatherBond Fastener. Flat bottom plate is used with manufactured Philips Head fasteners only.

2.05 Insulation Securement Adhesive

1. **Flexible DASH Adhesive:** A two-component (Part A and B), low-rise polyurethane adhesive designed for bonding Fleece membrane and/or insulation to various substrates. Flexible DASH Adhesive is packaged in 50- and 15-gallon drums, as well as, 5-gallon Jug and Dual Cartridges that can be applied in full spray or extrusion, depending on dispensing type.
2. **Flexible DASH Dual Tank:** A two component (Part A and B), extrusion applied, low rise adhesive for bonding insulation to various surfaces. Flexible DASH Dual Tanks utilize an HFO blowing agent. HFO (hydrofluoroolefin) blowing agents are widely recognized as the next-generation environmentally friendly blowing agent, replacing their HFC (hydrofluorocarbon) predecessor. When extruded at 12" on center the coverage rate is 3,500 to 3,700 sq.ft. per set of Dual Tanks.
3. **Flexible DASH Dual Cartridge and 5-gallon Jug Adhesive:** A two component (Part A and B), extrusion applied, low rise adhesive for bonding insulation to various surfaces. When extruded at 12" on center the coverage rate is 400-600 sq.ft. per carton of Dual Cartridges or 2,000-2,500 sq.ft. per set of 5-gallon Jug Adhesive.

4. **OlyBond 500 BA** – A two-component, polyurethane, low-rise expanding adhesive used to bond insulation to various substrates. Packaged in 5-gallon pails of Part A and Part B formulations that are applied using a mechanical dispenser system. Applied in 1/2" to 3/4" beads or ribbons at the rate of 1 gallon per 150-250 square feet for 12" o.c. bead spacing. Perimeter bead spacing patterns and acceptable insulation and deck types are listed in the applicable Technical Data Bulletin.
5. **OlyBond Spot Shot** - A two-component, polyurethane construction grade, low-rising expanding adhesive designed for bonding insulation to various substrates. Applied in 1/2" to 3/4" beads or ribbons using a portable 1:1 applicator (oversized, dual-cartridge caulking gun). Refer to the Technical Data Bulletin for bead spacing with reference to building height.

2.06 Vapor / Air Barrier

1. General

If insulation is to be fully adhered to the vapor retarder with Flexible DASH Adhesive, the vapor retarder must be compatible and shall be fully adhered to the substrate. Available products include WeatherBond supplied "peel and stick" rubberized asphalt membrane with compatible film coating (725 Air and Vapor Barrier), and spray or roller applied butyl coatings. Installation requirements for 725 Air and Vapor Barrier are identified in Spec Supplement G-07-22 "Application Procedures for 725 TR Air and Vapor Barrier".

2. **VapAir Seal 725TR Air and Vapor Barrier** - A 40-mil thick composite consisting of 35-mil self-adhering rubberized asphalt membrane laminated to a 5-mil UV resistant poly film with an anti-skid surface which is fully compatible with Flexible DASH Adhesive. 725TR can also function as a temporary roof for up to 120 days. Available in rolls 39" wide by 100' long (325 square feet).
3. **VapAir Seal MD Air and Vapor Barrier** – a reinforced composite aluminum foil with self-adhesive SBS backing and removable poly release film. Used for direct application over metal decks. Used for direct application over metal decks. Available in rolls 42.5" wide by 131.23" long (460 square feet).
4. **CCW-702 Primer and 702LV Primer (Low-VOC)** - A single component, solvent based, high-tack primer used to provide maximum adhesion between WeatherBond 725TR Air and Vapor Barrier and an approved substrate. Applied by spray or long nap roller with a coverage rating ranging from approximately 300 to 350 square feet per gallon on smooth finishes (i.e., concrete) to 75 square feet per gallon on porous surfaces (i.e., DensDeck Prime gypsum board). Available in 5-gallon containers. CCW-702LV Primer contains less than 250g/L VOCs and meets South Coast Air Quality Management District (SCAQMD) and Leadership in Energy and Environmental Design (LEED) Requirements for Volatile Organic Compounds.
5. **CAV-GRIP III Low-VOC Aerosol Contact Adhesive/Primer:** a low-VOC, methylene chloride-free adhesive that can be used for a variety of applications including: enhancing the bond between WeatherBond's VapAir Seal 725TR and various substrates. Coverage rate is approximately 2,000-2,500 sq. ft. per 40 lb cylinder and 4,000-5,000 sq. ft. per 85 lb cylinder as a primer, in a single-sided application.

2.07 Metal Accessories, Edgings, Coping and Terminations

A. General

Products listed below can be used with any of the available WeatherBond Roofing Systems. Refer to the applicable WeatherBond details and installation instruction manuals for specific installation criteria.

B. Products

1. **WeatherBond TPO Coated Metal:** A 24 gauge, galvanized steel sheet coated with a layer of 40-mil non-reinforced WeatherBond TPO Flashing. The sheet is cut to the appropriate width and used to fabricate metal drip edges or other roof perimeter edging profiles. WeatherBond TPO Membrane may be heat welded directly to the coated metal. Coated metal is available in sheets 4' x 10' and comes packaged 25 sheets per pallet (also available packaged 10 sheets per pallet on a direct ship basis). Available in white, gray or tan. Also available in TPO Special Colors (Medium Bronze, Rock Brown, Terra Cotta, Slate Gray and Patina Green) and comes packaged 5 sheets per pallet on a direct ship basis.
2. **WeatherBond PVC Coated Metal:** A 24 gauge, galvanized steel sheet coated with a layer of 40-mil non-reinforced WeatherBond PVC Flashing. The sheet is cut to the appropriate width and used to fabricate metal drip edges or other roof perimeter edging profiles. WeatherBond PVC Membrane may be heat welded directly to the coated metal. Coated metal is available in sheets 4' x 10' and comes packaged 10 sheets per pallet. Available in white, gray, light gray, slate gray and tan.

4. **Termination Bar:** A 1" wide and 98-mil thick extruded aluminum bar pre-punched 6" on center which incorporates a sealant ledge to support Lap Sealant and provide increased stability for membrane terminations.
5. **VersiTrim Term Bar Fascia:** A 1.75" wide formed aluminum termination bar with pre-slotted fastening holes for ease of locating and installing. The decorative cover is available in 0.040" aluminum or 24-gauge galvanized steel. VersiTrim Term Bar Fascia is manufactured in 12' lengths for fewer joints/seams, fewer sections to handle and faster installation.
6. Refer to Spec Supplement P-01-22 "Related Products" for other edgings and coping materials.

2.08 Roof Walkways

Walkways are to be specified at all traffic concentration points (i.e., roof hatches, access doors, rooftop ladders, etc.), and if regular maintenance (once a month or more) is necessary to service rooftop equipment.

1. Walkway Types

- a) **WeatherBond TPO Heat Weldable Walkway Rolls:** Designed to protect WeatherBond TPO membrane in those areas exposed to repetitive foot traffic or other hazards. Walkway material may be heat welded to WeatherBond TPO membrane using an automated heat welder or hand held heat welder. The diamond plate tread pattern offers superior slip resistance. The walk edges are trimmed in safety yellow to better define the designated traffic flow. Walkway Rolls are 34" wide by 50' long and are nominal 180 mils thick. Available in white, tan or gray with safety yellow welding tabs along both edges.

NOTE: As an option, walkway rolls may be fully adhered to the membrane surface with P&S Seam Tape/TPO Primer.

- b) **WeatherBond PVC Heat Weldable Walkway Rolls:** Manufactured from specially compounded PVC, offering superior tear, puncture and weather resistance. Designed to protect WeatherBond PVC membrane in those areas exposed to repetitive foot traffic or other hazards. Walkway material may be heat welded to WeatherBond PVC membrane using an automated heat welder or hand held heat welder. Walkway Rolls are 36" wide by 60' long and are nominal 80-mils thick. Available in gray only.
- c) **TPO Crossgrip Walkway Rolls:** Manufactured from TPO and may be used in lieu of standard TPO Walkway Rolls when a walkway is to be loose-laid and not secured to the membrane. Loose-laid Crossgrip TPO Walkway Rolls are effective for winds up to 55 mph. Rolls are 36" wide by 33' long, available in white, gray and yellow.
- d) **PVC Crossgrip Walkway Rolls:** Manufactured from PVC and may be used in lieu of standard PVC Walkway Rolls when a walkway is to be loose-laid and not secured to the membrane. Loose-laid Crossgrip PVC Walkway Rolls are effective for winds up to 55 mph. Rolls are 36" wide by 33' long, available in white, gray and yellow.
- e) **Interlocking Rubber Pavers, 24" X 24" X 2",** weighing approximately 6 pounds per square foot, may be specified loose-laid directly over the membrane.
- f) **Smooth Concrete Pavers,** when specified in conjunction with insulation that is mechanically attached, must be loose laid over a slip sheet of membrane or 2 layers of HP Protective Mat. When insulation is attached with Flexible DASH Adhesive, concrete pavers may be placed over one layer of WeatherBond Protective Mat. Pavers cannot weigh more than 80 pounds per paper for ease of removal.

2.09 Other WeatherBond Accessories

Refer to Spec Supplement P-01-22 "Related Products" for additional accessories.

Part III – Execution

3.01 General

- A. Safety Data Sheets (SDS) must be on location at all times during transportation, storage and application of materials. The contractor shall follow all safety regulations as recommended by OSHA and other agencies having jurisdiction.
- B. 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.
- C. A proper substrate shall be provided by the building owner. The structure shall be sufficient to withstand normal construction loads and live loads.

3.02 Roof Deck /Substrate Criteria

- A. Proper decking shall be provided by the building owner. The building owner or its designated representative must ensure that the building structure is investigated by a registered engineer to assure its ability to withstand the total weight of the specified roofing system, as well as construction loads and live loads, in accordance with all applicable codes. The specifier must also designate the maximum allowable weight and location for material loading and storage on the roof.
- B. Withdrawal resistance tests are strongly suggested to determine the suitability of a roof deck. Refer to Design Reference DR-06-22 "Withdrawal Resistance Criteria" for proper procedures for conducting pullout tests.
- C. Defects in the substrate 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.
- D. On structural concrete decks, when a vapor retarder is not used, gaps in the deck along the perimeter and around penetrations must be sealed along with vertical joints between tilt-up panels, if present, to prevent infiltration of hot humid air and possible moisture contamination resulting from condensation. This is specifically important when adhesive is used to attach the roof insulation. (Migrating warm air through gaps left unsealed can result in condensation and weakening of the insulation bottom facer leading to possible board dislodgement.)
- E. **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.
- F. 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.
- G. For direct application over an acceptable roof deck/substrate or when HP Protective Mat is specified and approved by WeatherBond as the membrane underlayment in accordance with the Roof Deck and Substrate Criteria Table, the substrate must be smooth, steel trowel finished (structural concrete), free of debris, protrusions, sharp edges and loose and foreign material. Cracks or voids in the substrate, greater than 1/4", must be filled with an appropriate material.
- H. The following chart identifies the acceptable roof decks/substrates and the minimum underlayment requirements:

Roof Deck & Substrate Criteria for Fully Adhered Roofing Systems

Acceptable Roof Deck/Substrate	Fleece TPO Membrane	Fleece PVC Membrane	Fleece KEE HP Membrane
NEW CONSTRUCTION			
Steel (min. 22 gauge)(1)	Insulation	Insulation	Insulation
Structural Concrete (min. 3000 psi) or Gypsum	Direct Application	Direct Application	Direct Application
Plywood (min. 15/32" thick) or Oriented Strand Board (min. 7/16" thick)	Direct Application	Direct Application	Direct Application
Wood Planks (minimum 3/4" thick)	Direct Application	Direct Application	Direct Application
Fibrous Cement	Insulation	Insulation	Insulation
Lightweight Insulating Concrete	Direct Application (2)	Direct Application (2)	Direct Application (2)
RETROFIT / NO TEAR-OFF			
Existing Smooth Surface BUR (7) or Mineral Surface Cap Sheet	Direct Application (8)	Direct Application (8)	Direct Application (8)
Gravel Surfaced BUR (3)(4)	Insulation	Insulation	Insulation
Coal Tar Pitch (4)	Insulation	Insulation	Insulation
Modified Bitumen (6)	Direct Application (6)(8)	Direct Application (6)(8)	Direct Application (6)(8)
Existing Single-Ply(5)	Insulation	Insulation	Insulation
RETROFIT / TEAR-OFF			
Existing roof material removed (regardless of deck type)	Insulation	Insulation	Insulation

Notes:

1. Local codes must be consulted regarding thermal barrier requirements.
2. Fleece Fully Adhered Roofing System may be specified directly over a new approved cellular or perlite lightweight insulating concrete substrate, refer to Attachment I for additional information.
3. Loose gravel must be removed to avoid moisture entrapment.
4. Existing coal tar could drip back into the building, especially when new insulation does not provide sufficient thermal value to prevent the surface of the coal tar from softening.
5. An approved mechanically attached insulation/underlayment is required over existing ballasted single-ply systems. For Direct Application WeatherBond may be contacted for required substrate preparation.
6. Direct application permitted over smooth or granular surfaced modified bitumen. Membrane shall be positioned with length of sheets parallel to modified bitumen field seams. Efforts should be made to ensure seams of the Fleece system are parallel to existing seams, when new splices run perpendicular, the field seam must be carefully inspected especially at intersections.
7. Existing Type III or IV smooth asphalt BUR Only
8. Possible staining/discoloration of the white membrane may result when installing this system directly over existing smooth surfaced BUR or modified bitumen, especially along the salvage edge where fleece backing is not present. If aesthetics are critical, an approved insulation should be specified beneath the membrane

- I. **On retrofit - recover projects**, cut and remove wet insulation, as identified by the specifier, and fill all voids with new insulation of type specified so it is relatively flush (+/- 1/4") with the existing surface.

1. Entrapment of water between the old and new membrane can damage and deteriorate new insulation/underlayment between the two membranes. **If a vapor retarder or air barrier is not specified**, WeatherBond recommends the existing membrane be perforated to avoid potential moisture accumulation and to allow the detection of moisture to enable the building owner to take corrective action. This can be accomplished by drilling approximately 3/4" diameter holes every 100 square feet in the existing built-up roof or single-ply membrane (excluding non-reinforced PVC membrane).
2. If total removal of existing PVC membrane is not specified, existing non-reinforced membrane may be cut into maximum 10' x 10' sections, when the new insulation or membrane underlayment is to be mechanically attached.
3. Regardless of the type of membrane or assembly selected, any loose flashings at the perimeter, roof drains and roof penetrations must be removed.
4. 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.
4. On retrofit projects, all existing phenolic insulation must be removed.
5. Refer to table above for other Recover/Retro-fit considerations.

J. **Vapor Retarder Installation**

Refer to Spec Supplement G-07-22 "Application Procedures for 725TR Air and Vapor Barrier". Follow the respective vapor retarder manufacturer's recommended installation procedures and the specifier's instructions for the installation of the product specified. When insulation is to be set in adhesive, verify compatibility with WeatherBond when Vapor Retarder by others is specified.

K. **Wood Nailers**

1. Install wood nailers in locations that have been designated by the specifier and as approved by WeatherBond. Refer to Design Reference DR-08-22 "Wood Nailers and Securement Criteria" for Wood Nailer Criteria.

3.03 Insulation/Underlayment

A. **General**

1. Roof insulation thickness must be determined by the thermal value required for each project and may be subject to code approval limitations. On projects where a vapor retarder is used, the specifier must calculate insulation thickness to ensure the temperature at the vapor retarder will not fall below the dew point.
2. New construction projects in cold climate regions, the use of vapor retarders or air barriers is strongly recommended to protect insulation from moisture generated during construction.

3. Multiple layers of insulation are recommended with all joints staggered between layers.
4. Do not install more insulation/underlayment than can be covered by membrane in the same day.
5. All insulation boards must be butted together with no gaps greater than 1/4". Gaps greater than 1/4" are not acceptable.
6. Restrictions:
 - a) WeatherBond Roofing Systems cannot be specified in conjunction with Phenolic Insulation.
 - b) Fiberglass insulation cannot be specified even if overlaid with additional insulation or membrane underlayment.
 - c) The direct application of WeatherBond PVC Membrane over expanded or extruded polystyrene insulation is not permitted.

3.04 Insulation Attachment

A. General

1. Prior to proceeding with insulation securement refer to Tables, Paragraph 1.05, for attachment method and appropriate fastening density.

A. Mechanical Attachment

Insulation fastening density will vary based on insulation type, thickness, and required warranty. Warranty Tables in Paragraph 1.05 should be referenced for fastening density and the appropriate WeatherBond detail may be consulted to identify acceptable fastening pattern.

1. For code compliance, increased fastening density may be required depending upon project wind speed and wind uplift requirement. Refer to Design Reference DR-05-22 "Insulation Fastening Patterns" for fastening pattern reference.
2. When insulation securement is to comply with Factory Mutual (FM) approvals, follow the requirements of the specifier concerning additional securement at the roof perimeter and corners. Also refer to Design Reference DR-05-22 "Insulation Fastening Patterns" for various fastening patterns.
3. On Reroof/No Tear off projects with a maximum roof height of 40', any WeatherBond Insulation (i.e., 1/2" SecurShield HD, 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).
4. When Oriented strand board (OSB) is specified for membrane underlayment, utilize XP-NB OSB/Polyiso Composite, mechanically fastened to the deck at the rate 17 fasteners for 4 x 8 board in accordance with WeatherBond Details. When positioning OSB, butt edges and stagger joints of adjacent panels.

C. Adhesive Attachment

WeatherBond Urethane Adhesive Full Spray (Flexible DASH) or Bead applied (Flexible DASH or OlyBond) or Splatter (Flexible DASH) may be used. When bead adhesive is specified bead spacing will vary based on Warranty coverage, refer to Warranty Tables, Paragraph 1.05 and appropriate WeatherBond Details. **CAUTION:** Ensure the bead of adhesive is 2" from edge of board for 4" o.c. bead spacing and 3" from edge of board for 6" and 12" o.c. bead spacing. Refer to Detail A-27.7 in Spec Supplement G-08-22.

CAUTION: Apply adhesive bead so that the distance from the edge of the board does not exceed half the bead spacing (i.e. within 6" of bead spacing of 12" O.C.).

CAUTION: Do not apply urethane adhesives directly to un-weathered asphalt, (new or residual) refer to Spec Supplement G-02-22 "Fleece and Insulation Attachment and Coverage Rates with Flexible DASH Adhesive".

CAUTION: Gaps between horizontal and vertical surfaces of the roof area as well as gaps around penetrations must be sealed to prevent interior warm air from infiltrating and condensing within the roofing assembly. Condensing moisture could weaken bottom insulation facer and eventually result in dislodgement or loose boards when adhesive is used.

1. Flexible DASH may be used in a splatter application method, in lieu of, full spray or bead attachment for adhering Insulation or Fleece Membranes to a smooth, flat surface. Flexible DASH may be dispensed by using Dual Tanks

or either a HULK Spray Rig with a HULK Dispensing Gun or Patriot Spray Rig with a VEE-AIR Spray Gun to achieve 50% coverage of the substrate at a rate of 1/2 gallon per 100 square feet. To achieve proper coverage, spray in a horizontal, sweeping motion, from a minimum of 24" height, overlapping each new pass with the previous pass by 50%.

2. Refer to Spec Supplement G-15-22 "Flexible DASH Adhesive Equipment and Set-Up Requirements for Full Spray, Bead and Splatter Applications" and G-02-22 "Fleece and Insulation Attachment and Coverage Rates with Flexible DASH Adhesive" for equipment settings, application procedures and coverage rates.
3. On FM Global insured projects, consult FM Global's local representative concerning the use of adhesive to attach insulation to steel decks.
4. Check to ensure the substrate is dry. Adhesive cannot be applied to a wet or damp surface.
5. Apply Adhesive over the dry substrate area at the coverage rates indicated in Spec Supplement G-02-22 "Fleece and Insulation Attachment and Coverage Rates with Flexible DASH Adhesive".
6. Allow the adhesive to rise up approximately 1/8" to 3/4", depending on dispensing method, 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 Flexible DASH Adhesive, string time is generally around 1-1/2 – 2 minutes after application at room temperature.

7. **Walk the boards into the adhesive and roll using the 30" wide, 150 pound weighted segmented steel roller** to ensure full embedment. Optimal set up time should be approximately 5 to 7 minutes.

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

CAUTION: If the boards easily slide, string time has not been achieved.

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 and roll in all boards. Relief cuts may be necessary to allow lifted board to lay flat, or constant weight (a minimum 10 lbs for 5-15 minutes per lifted area) may be necessary to achieve adequate adhesion.

8. Refer to Spec Supplement G-02-22 "Fleece and Insulation Attachment and Coverage Rates with Flexible DASH Adhesive" for application procedures and coverage rates.

NOTE: Projects utilizing WeatherBond's "Peel and Stick" Vapor Barrier must comply with WeatherBond's installation requirement outlined in Spec Supplement G-07-22 "Application Procedures for VapAir Seal 725 Air and Vapor Barrier". Applicable Details should also be referenced for Vapor Retarder terminations along angle changes.

3.05 Membrane Placement and Securement

General

1. Do not apply Flexible DASH Adhesive when surface and/or ambient temperatures are below 25° F (-4°C). The temperature of Flexible DASH Adhesive must be between 70° F (21°C) and 90°F (32°C), at the time of use. Use blanket heaters and/or hot boxes when necessary.
2. Flexible DASH Adhesive may be applied when surface and/or ambient temperatures are below 25° F (-4°C) when heated equipment is used that includes the following: heated blankets, preheater, and heated hose.
3. When using Flexible DASH Adhesive in non-heated spray equipment, substrate and/or ambient temperatures must be between 25°F (-4°C) and 120°F (49°C).
4. The coverage rate of Flexible DASH Adhesive used to adhere the membrane are in the table below:

Flexible Dash Adhesive Coverage Rates					
Approximate Coverage Rate (Sq. Ft.)					
Package Type	Full Spray	Splatter	4" o.c.	6" o.c.	12" o.c.
Dual Cartridges	N/A	N/A	100-200	200-300	400-600
Dual Tanks	N/A	2,600-2,800	1,100-1,300	1,700-1,900	3,500-3,700
5-Gallon Jugs	1,000	1,800-2,000	670-900	1,000-1,250	2,000-2,500
15-Gallon Jugs	1,800-3,000	5,400-6,000	2,110-2,700	3,000-3,750	6,000-7,500
50-Gallon Jugs	5,000-10,000	18,000-20,000	6,700-9,000	10,000-12,500	20,000-25,000

5. **Sweep** all loose debris from the substrate.
6. **Verify** all sections are dry prior to proceeding with the application of Flexible DASH Adhesive/Fleece membrane.

CAUTION: 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 work day.

B. TPO/PVC/KEE HP Membrane Placement/Bonding –Option #1

1. Position and unroll successive sheets and align to provide a minimum 2" overlap (use pre-marked overlap line) along the selvage edge. At end laps (along the width of the sheet), membrane shall be butted together and to be overlaid with minimum 6" wide TPO/PVC/KEE HP Reinforced Membrane hot air welded on all edges.
2. Fold adjacent sheets in half lengthwise (end to end) to expose approximately 10' wide (width of the sheet) by half the length of the sheet substrate area.

Notes: Fold selvage sheet edges (along the length of the sheets) under the membrane to prevent overspray onto the splice area.

Membrane which has the adjacent sheet spliced over it should be adhered to the substrate first. This will prevent the selvage edge splice area from being contaminated by setting splice edge into urethane adhesive.

3. **Apply Flexible DASH Adhesive** onto the substrate and allow to rise approximately 1/8" to 3/4", depending on dispensing method, and develop strings when touched with a Splice Wipe. Roll the membrane with a 30" wide, 150 lb weighted segmented steel roller. **For extruded applications, apply adhesive at 4", 6" or 12" on center with a minimum 1/2" wet bead. Refer to Tables IV & V in Paragraph 1.05 for Bead Spacing.**
4. **HydroBond Adhesive** can be applied directly to the substrate using an airless spray machine or a medium nap roller. Do not apply HydroBond to splice areas to be hot-air welded. When applying HydroBond, ensure that the adhesive has not dried before the membrane is laid in place. This is a wet lay-in adhesive; drying occurs rapidly during high temperatures, and care must be taken to ensure the membrane is laid into wet adhesive. To ensure a wet lay-in, adjust the application technique according to weather conditions. Avoid heavy or thin application of adhesive. Roll the membrane into the wet, adhesive coated substrate while avoiding wrinkles. Immediately brush down the bonded portion of the membrane with a soft-bristle push broom or a clean, dry roller applicator to achieve maximum contact and to work out any air bubbles. Immediately after brooming out from the center, roll the membrane in all directions with a minimum 100–150-lb (45–68 kg) weighted roller to achieve maximum contact.
5. Apply **Flexible DASH or HydroBond Adhesive** to the substrate and continue process described above until all sheets are fully bonded, allowing for the necessary splice overlaps. At end laps (along the width of the sheet), membrane shall be butted together and to be overlaid with minimum 6" wide TPO/PVC/KEE HP Reinforced Membrane hot air welded on all edges.

C. TPO/PVC/KEE HP Membrane Placement/Bonding – Option #2

1. **Position** first roll of Fleece membrane at the designated starting point on the roof.
2. **Chalk** a line to ensure proper positioning of the Fleece membrane.
3. **Unroll** 10' to 15' of membrane to ensure it is properly aligned and fold unrolled section back over roll.
4. **Apply Flexible DASH Adhesive** over the substrate area to be covered by the membrane that is folded back. **For extruded applications, apply adhesive at 4", 6" or 12" on center with a minimum 1/2" wet bead.**
5. Once the Flexible DASH Adhesive is applied in place and has begun to rise approximately 1/8" in height and **develop strings when touched with a Splice Wipe**, slide the membrane back into the adhesive.

6. **Roll** the membrane using a 30" wide, 150 pound weighted segmented steel roller, to set the membrane into the adhesive.
 7. **HydroBond Adhesive** can be applied directly to the substrate using an airless spray machine or a medium nap roller. Do not apply HydroBond to splice areas to be hot-air welded. When applying HydroBond, ensure that the adhesive has not dried before the membrane is laid in place. This is a wet lay-in adhesive; drying occurs rapidly during high temperatures, and care must be taken to ensure the membrane is laid into wet adhesive. To ensure a wet lay-in, adjust the application technique according to weather conditions. Avoid heavy or thin application of adhesive. Roll the membrane into the wet, adhesive coated substrate while avoiding wrinkles. Immediately brush down the bonded portion of the membrane with a soft-bristle push broom or a clean, dry roller applicator to achieve maximum contact and to work out any air bubbles. Immediately after brooming out from the center, roll the membrane in all directions with a minimum 100–150-lb (45–68 kg) weighted roller to achieve maximum contact.
 8. Proceed to the front of the roll and continue to apply **Flexible DASH or HydroBond Adhesive** and roll the Fleece membrane into the adhesive. At the end of the roll, leave approximately 18" unadhered (to be folded back to prevent overspraying when installing the adjoining sheet).
 9. Once the first sheet is positioned, measure to allow for a minimum (Refer to Option #1) overlap along the length of the sheet. At end laps, membrane shall be butted together and overlaid with a minimum 6" wide TPO/PVC/KEE HP Reinforced Membrane hot air welded on all edges. (Cut edges of TPO membrane shall be sealed with TPO Cut Edge Sealant.)
 10. Position the next roll and repeat the process as described above.
- D. **Do not apply Flexible DASH or HydroBond Adhesive to splice areas.** If Flexible DASH or HydroBond Adhesive should contaminate the splice area, immediately (while Flexible DASH adhesive is still in liquid form) clean with Weathered Membrane Cleaner for TPO membranes or PVC and KEE HP Membrane Cleaner for PVC and KEE HP membranes. Cured Adhesive which has dried may be removed with paint remover as referenced in Paragraph 3.06 B.3.

3.06 Heat Welding Procedures

A. General

1. Hot air weld the Fleece membrane sheets using the Automatic Hot Air Welding Machine or Hot Air Hand Welder and silicone roller. For description of heat welding equipment and generator/electrical requirements, refer to Spec Supplement T-01-22 "Heat Welding Equipment".
2. When roof slope exceeds 5 inches per horizontal foot, use of the Automatic Hot Air Welding Machine may become more difficult working parallel with the slope it may be necessary to run the sheets perpendicular to avoid the use of Hand Held Hot Air Welder.
3. Membrane has a selvage edge (fleece-backing is discontinued) along the length of the sheet for membrane welding.

Selvage edges are not provided along the width of the membrane. Adjoining membrane sheets shall be butted together, overlaid with a minimum 6" wide TPO/PVC/KEE HP Reinforced Membrane and hot air welded on all edges. Seal all TPO/PVC/KEE HP membrane edges (where scrim reinforcement is exposed) with Cut-Edge Sealant.

Note: When using Fleece TPO 115- or 135-mil membrane or Fleece PVC 135-mil membrane, a surface splice of non-reinforced flashing or "T-Joint" Cover must be applied over all "T" joint splice intersections.

B. Check the surfaces of the membrane to be hot air welded to ensure they are properly prepared as outlined below:

1. **Membrane Cleaning** - The surfaces to be hot air welded must be clean. Membrane overlaps that become contaminated with field dirt must be cleaned with Weathered Membrane Cleaner (TPO) or PVC and KEE HP PVC Membrane Cleaner (PVC/KEE HP) and wiped dry with a clean Splice Wipe. No residual dirt or contaminants should be evident.
2. **Exposed Membrane Seam Preparation** - Surface oxidation of membrane will occur upon exposure to heat and sunlight. After exposure to the elements, membrane must be cleaned with Weathered or PVC and KEE HP Membrane Cleaner prior to hot air welding as follows:
 - a) Apply Weathered Membrane Cleaner (TPO) or PVC and KEE HP Membrane Cleaner (PVC/KEE HP) to the surface of the membrane which has been exposed using a clean Splice Wipe or other white natural fiber

(cotton) rag or ScotchBrite type pad and wipe along the direction of the seam.

If natural fiber rags are used, they must be white to prevent fabric dye from discoloring the membrane.

Prior to hot air welding, wipe the surface where Weathered Membrane Cleaner (TPO) or PVC and KEE HP Membrane Cleaner (PVC/KEE HP) has been applied with a clean, dry Splice Wipe or other white rag to remove cleaner residue.

- b) Weathered Membrane Cleaner (TPO) will achieve approximately 600 linear feet (one surface) of coverage per gallon for a standard hot air welded splice area. PVC and KEE HP Membrane Cleaner (PVC/KEE HP) will achieve approximately 400 square feet (one surface) of coverage per gallon for a standard heat welded splice area.
 - c) The membrane can typically be repaired up to 6 months to a year with the standard cleaning method referenced above. In cases where the standard cleaning method is not sufficient, additional scrubbing and cleaning will be required. Refer to Paragraph 3.07-B.
3. Check surfaces of the Fleece TPO/PVC/KEE HP membrane around details (i.e., walls, curbs, vents, etc.) for evidence of Flexible DASH Adhesive overspray since proper heat welding of flashing will not be accomplished if overspray is present. Overspray shall be removed as follow:
- a) Apply a paint remover such as Tal-Strip® Extra Strength manufactured by Mar-Hyde® Corporation (can be purchased at most automotive centers) to the overspray area and allow to remain on the membrane surface approximately 5 minutes.
 - b) Remove residue with a Splice Wipe or clean cloth. Wipe cleaned area with Weathered Membrane Cleaner (TPO) or PVC and KEE HP Membrane Cleaner (PVC or KEE HP Only) prior to heat welding (Acetone may be used in lieu of PVC and KEE HP Membrane Cleaner where VOC requirements are in effect).

C. Automatic and/or Hand Held Hot Air Welder Equipment

1. Refer to Spec Supplement T-01-22 – “Heat Welding Equipment” for:
- a. Temperature Settings
 - b. Equipment Set-up
 - c. Additional Information

D. Membrane Welding

- 1. Prepare the Automatic Hot Air Welding Machine and allow it to warm for approximately 5 to 10 minutes to reach operating temperature.
- 2. Perform test trials before welding to ensure proper welding is achieved.
- 3. Position the Automatic Hot Air Welding Machine properly prior to seaming with the guide handle pointing in the same direction the machine will move along the seam.
- 4. Lift the overlapping membrane sheet and insert the blower nozzle of the Automatic Hot Air Welding Machine between the overlap. Immediately begin moving the machine along the seam to prevent burning the membrane.
- 5. Weight plates provided on Automatic Welders must be utilized.
- 6. Proceed along the seam ensuring that the small guide wheel in front of the machine aligns with the edge of the top membrane sheet. Guide the machine from the front only.

CAUTION: Ensure the power cord has plenty of slack to prevent dragging the machine off course (which could result from a tightly stretched cord).

7. At all splice intersections, roll the seam with a silicone roller to ensure a continuous hot air welded seam (the membrane should be creased into any membrane step-off with the edge of the silicone roller). A false weld may result due to surface irregularities created by multiple thicknesses of Fleece membrane sheets.

Note: When using Fleece TPO 115- or 135-mil membrane or Fleece PVC/KEE HP 135-mil membrane, a surface splice of TPO/PVC/KEE HP Non-Reinforced Flashing or T-Joint Cover must be applied over all “T” joint splice intersections. T-joint covers are also required along the end-lap overlays regardless of membrane thickness.

8. To remove the Automatic Hot Air Welding Machine from the finished splice, stop the movement of the machine and immediately remove the nozzle from the seam area. Mark the end of the hot air welded seam with a water-

soluble marker for easy identification. A Hand Held Welder will be necessary to complete the weld in the area between where the Automatic Hot Air Welding Machine is stopped and restarted.

9. All membranes, at end laps, a minimum 6" wide, reinforced coverstrip must be used in conjunction with applicable primer.

E. Preventing Membrane Creeping During Welding

The operator of automatic welding equipment must apply foot pressure to the membrane, keeping the membrane tight under the welder. Refer to Spec Supplement T-01-22 – "Heat Welding Equipment" for additional information.

F. Test Cuts

Perform a test weld at least at the start of work each morning and afternoon. Refer to Spec Supplement T-01-22 – "Heat Welding Equipment" for additional information.

G. Seam Probing

A blunt or dull cotter pin puller is recommended to probe all heat-welded seams. Probing seams must be done once heat welds have thoroughly cooled. Refer to Spec Supplement T-01-22 – "Heat Welding Equipment" for additional information.

3.07 Welding Problems / Repairs

- A. A Handheld Hot Air Welder and a 2" wide silicone roller must be used when repairing the WeatherBond TPO/WeatherBond PVC membrane. When the **entire** heat welded **seam** is to be **overlaid**, an **Automatic Heat Welder** may be used.
- B. Prior to proceeding with any repair procedure, the area to be repaired must be cleaned with Weathered Membrane Cleaner (TPO) or PVC and KEE HP Membrane Cleaner (Weathered Membrane Cleaner should not be used to clean WeatherBond PVC Membrane). The membrane can typically be repaired with standard cleaning methods. In cases where the standard cleaning method is not sufficient, the following procedures must be used.
 1. Scrub the area to be welded with a "Scotch Brite" Pad and Weathered Membrane Cleaner (TPO) or PVC and KEE HP Membrane Cleaner (PVC/KEE HP).
 2. Clean all residue from the area to be welded with a Splice Wipe or a clean natural fiber (cotton) rag.
 3. Weld the new membrane to the cleaned area using standard welding procedures.
- C. Voids in welded seams can be repaired using a Hand Held Hot Air Welder and a silicone roller. Depending on conditions, a splice overlay may be required.
- D. Position the hand held welder facing into void so hot air is forced between overlapping membranes. Roll the top membrane surface using positive pressure toward the outer edge until the heated membrane surfaces are fused.
- E. Exposed scrim-reinforcement (resulting from scorching surface of membrane) and test weld areas must be repaired by overlaying the damaged area with a separate piece of WeatherBond TPO/WeatherBond PVC/KEE HP reinforced membrane with rounded corners. The overlay must extend a minimum of 2 inches past the area to be repaired.
- F. **Probe** all edges of the overlay once cooled to ensure a proper weld has been achieved.
- G. **Seal** all cut edges of WeatherBond TPO reinforced membrane with Cut-Edge Sealant. Cut-Edge Sealant is not required on cut edges of WeatherBond PVC/KEE HP Membranes, however, it is recommended.

Note: The same overlay repair procedures may be used for puncture in the WeatherBond TPO/WeatherBond PVC/KEE HP membrane.

3.08 Flashings

General Considerations

1. All existing loose flashing must be removed prior to the application of new flashing. New membrane flashing must extend above all existing intact flashing but must not conceal weep holes or cover existing through wall counter flashing.
2. Deck to wall joints, vertical joints between tilt up panels, and any gaps in metal walls must be sealed to prevent any infiltration and possible condensations beneath the membrane. Refer to appropriate WeatherBond Details for recommendation.

3. Install surface mounted reglets and compression bar terminations directly to the wall surface.
4. In areas where metal counterflashing is used as the vertical termination, the counterflashing must be sealed with a rubber grade caulking to prevent moisture migration behind the new wall flashing.
5. **At roof drains and compression seal terminations** such as terminations bars and coping stones, the **fleece-backing must be removed** from the back of the membrane so Water Cut-Off Mastic can be applied directly to the Fleece membrane surface.
 - a. To remove fleece-backing utilize a Hand Held Hot Air Welder and apply heat in a back and forth motion over the area of where the fleece is to be removed. Fleece will melt and the bottom of the membrane will be exposed.
6. Cut-edges of Fleece TPO membrane, where scrim reinforcement is exposed, must be sealed with TPO Cut-Edge Sealant (not required on vertical surfaces). The use of PVC Cut-Edge Sealant on cut edges of Fleece PVC/KEE HP membrane is not required, but it is recommended, regardless of warranty duration.
7. Care must be taken when setting the flashing to avoid bridging greater than 3/4 inch at angle changes (i.e., where a parapet or roof penetration meets the roof deck). This can be accomplished by creasing the membrane into the angle change.
8. Terminate the edges of the installed membrane in accordance with WeatherBond's applicable Termination Details.
9. On all Total System Warranty projects, WeatherBond's Termination Bar, in conjunction with Water Cut-Off Mastic, must be installed under all metal counter flashings used for vertical wall terminations.
10. The height of the new wall flashing and termination must extend above the anticipated water level (due to heavy rain) or slush line (due to water under accumulated snow).
11. The Specifier must examine structural supports for rooftop equipment to determine if reasonable access to the membrane beneath the equipment is provided.
12. Bitumen based roof cement must be removed or concealed with an acceptable underlayment.
13. When sleepers are used for mounting rooftop equipment, they must be designed to provide adequate support. An appropriate detail must be selected to prevent depression of the insulation and possible damage to the membrane.

NOTE: When sleeper mounted pipe and gas lines running perpendicular to roof slope should be elevated to reduce forces caused by melting/sliding snow. Designer may consider the utilization of a support system secured to roof structure and properly flashed.
14. Existing Roof Tie-Ins
 - a. Depending on the type of the existing roofing system, the tie-in method will vary. Total isolation between the two roofing systems or weep holes may be required to address moisture migration from one roofing system to the other. Refer to appropriate TPC-13 Detail, contact WeatherBond for further information. If constant compression is required, ensure fleece is removed from the bottom of the membrane.
15. Flashing of Difficult Penetrations, refer to Spec Supplement G-11-22 for "LIQUISEAL Liquid Flashing" for additional information and specific requirements.

B. Walls, Parapets, Curbs, Skylights, etc.

1. Use continuous deck membrane where feasible as outlined in appropriate WeatherBond Detail.
2. When the use of continuous deck membrane for wall flashing is not feasible, a separate piece of Non-Fleece Cured Membrane may be used in accordance with appropriate WeatherBond Detail.

When a separate piece of Non-Fleece Cured membrane is used, adhere membrane to the wall or curb with appropriate Bonding Adhesive. Terminate in accordance to the applicable WeatherBond Termination Details.
3. When using a separate piece of Non-Fleece membrane for wall flashing should comply with minimum membrane thickness as outlined in Warranty Tables in the appropriate Thermoplastic specifications.
4. As an alternative to the use of a separate piece of Non-Fleece Cured Membrane, a separate piece of Fleece membrane can be used for wall/curb flashings if a selvedge edge is provided.

5. Adhere **Fleece** membrane to the wall with **Flexible DASH Adhesive with full spray**. Allow extra time for Flexible DASH Adhesive to gain green strength prior to setting membrane in vertical surface.

NOTE: Splatter Application is not approved for vertical wall attachment.

- a. Fleece membrane may be fully adhered with appropriate Bonding Adhesive, however, a coat of bonding adhesive must be first applied to the fleece backing and allowed to dry. Then apply a standard coat of Bonding Adhesive on the wall a second layer over the dried coat of Bonding Adhesive on the fleece membrane, then and allow to properly dry.
- b. Fleece membrane may be adhered to vertical surfaces with CAV-GRIP III Low-VOC aerosol adhesive. Spray wall and back of the membrane utilizing 50% overlap and 100% coverage.
6. When Fleece membrane is used as wall/curb flashing, the **fleece-backing must be removed along the top edge of the membrane prior to completing compression seal terminations** so Water Cut-Off Mastic can be applied directly to the membrane surface. This can be accomplished by applying heat to the fleece until the bottom of the membrane is exposed.
7. For **corner flashing** requirements, refer to the applicable WeatherBond Details included at the end of this section.
8. For re-roofing projects where residual asphalt may be present separation must be provided between the asphalt and White Membranes to avoid possible discoloration and permanent staining. Refer to applicable WeatherBond Detail or WeatherBond may be contacted for other recommendations.

C. **Metal Edge Terminations**

1. The width of the perimeter wood nailer to which the metal edge is to be secured must extend beyond the width of the metal edge deck flange.
2. All shop fabricated metal must incorporate a continuous cleat (min. 22 ga.) and must be secured at least 6 inches on center. Or as approved by the Specifier, whichever is greater.
3. Pre-Manufactured metal edging must be secured to the wood nailer as specified by the respective manufacturer.
4. Refer to the appropriate WeatherBond Detail for flashing options and requirements and Design Reference DR-12-22 "Metal Edgings" for applicable wind uplift achieved using the various WeatherBond supplied metal.

D. **Expansion Joints**

At expansion joints, a separate section of Fleece membrane installed with the fleece-backing side facing up beneath the field membrane may be required. Refer to the applicable WeatherBond Details for installation requirements.

E. **Roof Drains**

When the Fleece membrane extends into the drain sump/clamping ring, **Fleece-backing must be removed** from the underside of the membrane so Water Cut-Off Mastic can be applied directly to the membrane surface. Apply heat to fleece material until the bottom of the membrane is exposed. As an option, a separate section of Non-Fleece Membrane can be extended into the drain sump. Refer to applicable WeatherBond Details for various flashing options.

Only drain strainers that have been approved by the specifier in accordance with all applicable codes may be used.

F. **TPO/PVC Rib Profiles**

1. The Rib Profile is recommended for use with Fleece TPO and PVC/KEE HP adhered roofing systems.
2. The TPO/PVC/KEE HP Rib Profiles should be positioned parallel to the laps of the installed TPO/PVC/KEE HP roofing system and parallel with the roof slope where possible.
3. Ensure that all welding surfaces are clean and dry. Inspect all seam areas for proper weld prior to installing TPO/PVC/KEE HP Rib Profile.
4. Rib Profile spacing can be individually determined to achieve the desired appearance.

5. Connecting multiple ribs is achieved by using fiberglass pins. Insert a pin half-way into the end of one profile. Connect the adjoining rib by inserting the exposed end of the pin into the alignment hole. Repeat previous steps for additional TPO/PVC/KEE HP Rib profiles.
6. Consult the TPO/PVC/KEE HP Rib Profile installation guides for instructions on proper installation techniques.

G. Other Penetrations

1. All Projects shall incorporate WeatherBond supplied pre-fabricated accessories to seal pipes, corners, sealant pockets, etc., when feasible. When field fabrication is required, the flashing material shall not be less than 60-mils thick.
2. For wall and curb flashing, the required thickness shall equal the deck membrane thickness.
3. For all membranes, Flexible Penetrations (braided cables, conduits, wires, etc.) must be enclosed in a stable "goose neck".

Apply a field fabricated pipe flashing using TPO/PVC/KEE HP non-reinforced flashing to flash the goose neck.

4. For pipe clusters or unusually shaped penetrations, a Molded Sealant Pocket must be utilized.
5. Hot pipes which exceed 140°F (60°C) (PVC/KEE HP) or 160°F (71°C) (TPO) must be insulated with metal collars and rain hoods and flashed in accordance with appropriate WeatherBond Detail.
6. Applicable WeatherBond details shall be utilized. For Fleece Fully Adhered Roofing Systems, additional membrane securement around pipes or pourable sealer pockets is not required regardless of size.

3.09 Roof Walkways

Walkways are to be specified at all traffic concentration points (i.e., roof hatches, access doors, rooftop ladders, etc.), and if regular maintenance (once a month or more) is necessary to service rooftop equipment. **Refer to Spec Supplement G-05-22 "Roof Walkway Installation"**.

3.10 Daily Seal

On phased roofing, when the completion of flashings and terminations is not possible by the end of each workday, provisions must be taken to temporarily close the membrane to prevent water infiltration. **Refer to Spec Supplement G-06-22 "Daily Seal & Clean Up"**.

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WeatherBond TPO Fleece / WeatherBond PVC Fleece / WeatherBond KEE HP Fleece Mechanically Attached and Fully Adhered Roofing Systems

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Parapet Flashing

Parapet / Curb with Water Based Adhesive	WBF-12.3
Parapet/Curb-Water Based Adhesives w/Bead Applied Flexible Dash at Perimeters – Directly over Concrete.....	WBF-12.4
Parapet/Curb with WeatherBond's Dash DC Adhesive – Full Coverage.....	WBF-12A.1A
Parapet/Curb with Separate membrane – Bond Applied.....	WBF-12A.1B
Parapet/Curb with Continuous Membrane – Full Coverage	WBF-12B.2A
Parapet/Curb with Continuous Membrane – Bead Applied	WBF-12B.2B

Inside / Outside Corners

Thermoplastic Pre-Molded Inside Corner.....	WBF-15.3A
Thermoplastic Pre-Molded Outside Corner	WBF-15.4A

Sealant Pocket

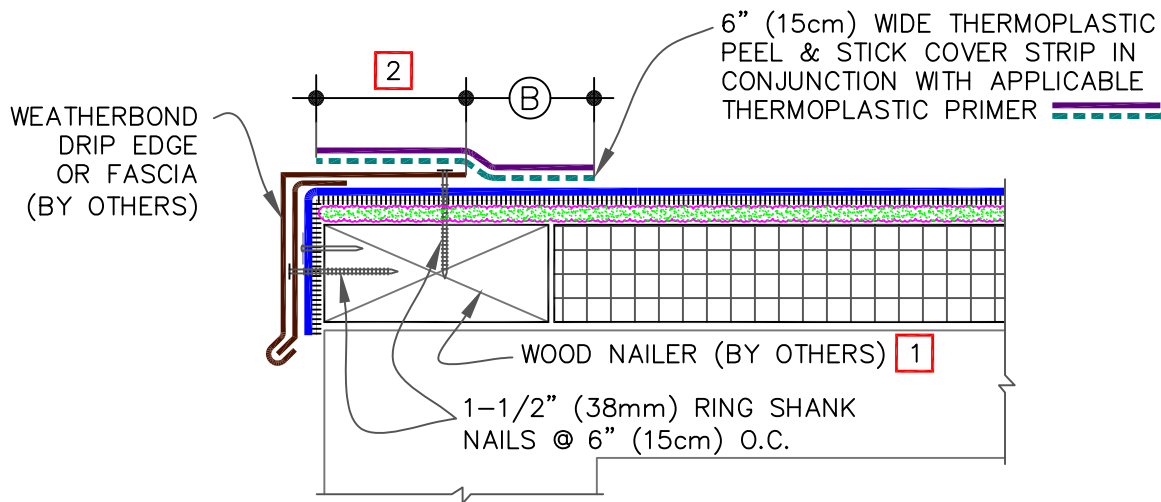
Thermoplastic Molded Sealant Pocket.....	WBF-16.2A
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Through-Wall Scupper

Through-Wall Scupper with Thermoplastic Coated Metal	WBF-18.2A
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Accessories

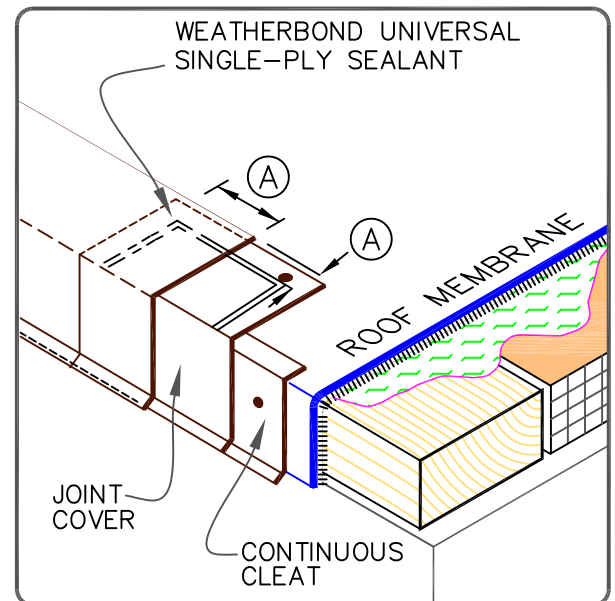
Simulation of Metal Roof in Thermoplastic Membranes	WBF-25.1A
WeatherBond Fleece Membrane Attachment Using Bead Adhesive	WBF-27

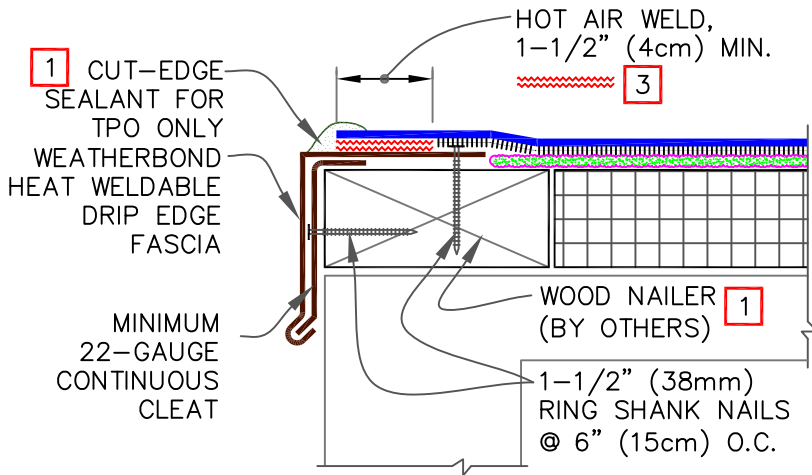


DIMENSIONS		cm	
(A)	1/2"	1.5	TO
	1"	2.5	
(B)	2"	5	MIN.

NOTES:

1. WOOD NAILER MUST EXTEND PAST TOTAL WIDTH OF METAL FASCIA DECK FLANGE.
2. METAL FASCIA DECK FLANGE MUST BE TOTALLY COVERED BY PEEL & STICK COVER STRIP WITH MINIMUM 2" (5cm) COVERAGE PAST NAIL HEADS.
3. TO REMOVE FINISHING OILS, SCRUB METAL FLANGE WITH WEATHERED MEMBRANE CLEANER; ALLOW TO DRY PRIOR TO APPLYING PRIMER.
4. APPLY APPLICABLE THERMOPLASTIC PRIMER TO METAL FLANGE AND MEMBRANE SURFACE PRIOR TO INSTALLING PEEL & STICK FLASHING.
5. WHEN METAL FASCIA BY OTHERS IS USED, FASTENER TYPE AND FASTENING FREQUENCY SHALL BE RECOMMENDED BY METAL EDGE MANUFACTURER.

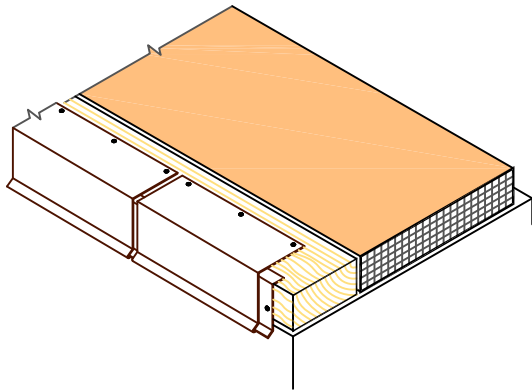




NOTES:

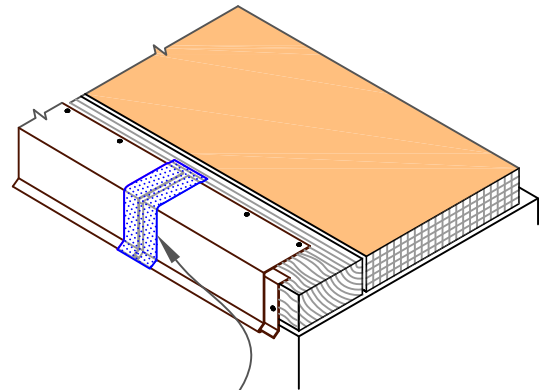
1. APPROXIMATELY 1/8" (0.5cm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE.
2. WOOD NAILER MUST EXTEND PAST TOTAL WIDTH OF METAL FASCIA DECK FLANGE.
3. POSITION MEMBRANE WITH SELVAGE EDGE TO AVOID REMOVAL OF FLEECE BACKING.

1



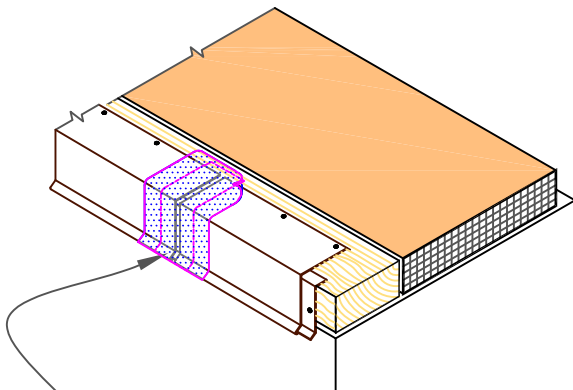
INSTALL CONTINUOUS CLEAT AND COATED METAL WITH 1/8"–1/4" (0.5–1cm) JOINTS BETWEEN ADJOINING SECTIONS.

2



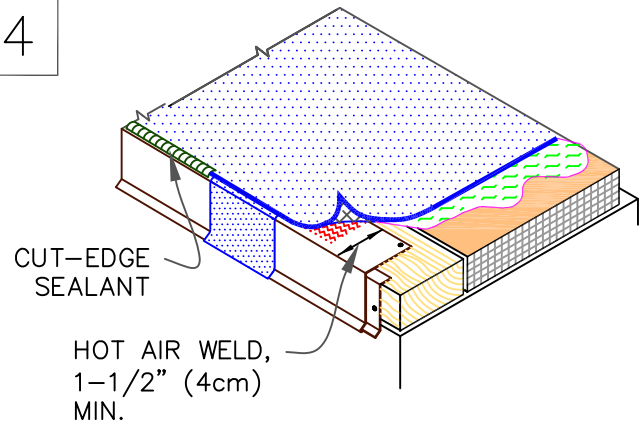
HEAT WELD 3" (7.5cm) WIDE PIECE OF NON-REINFORCED THERMOPLASTIC MEMBRANE OVER JOINT

3

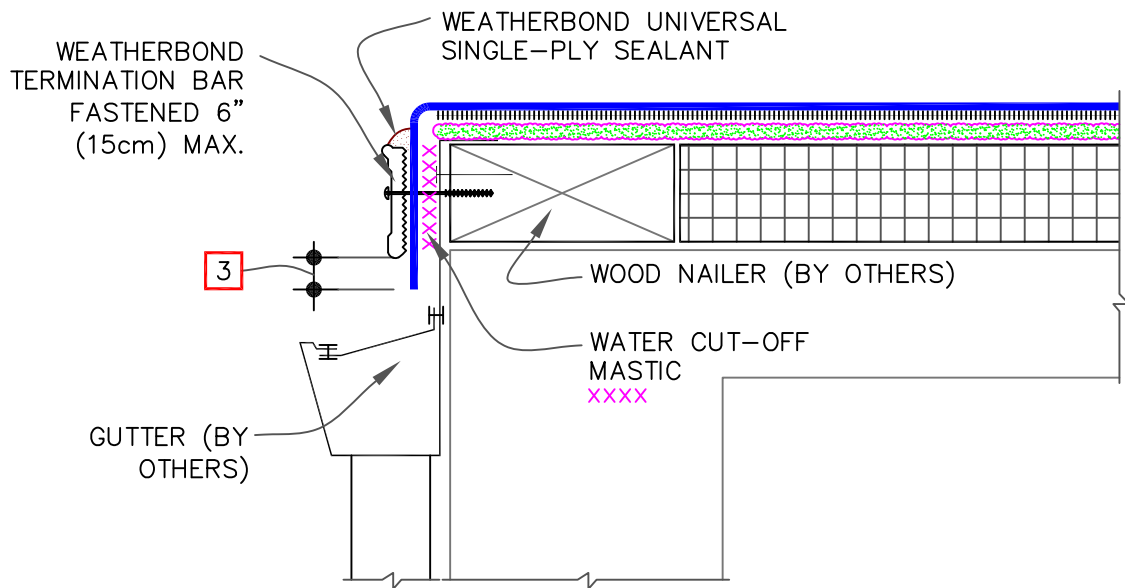


HEAT WELD 6" (15cm) WIDE PIECE OF NON-REINFORCED MEMBRANE OVER JOINT

4

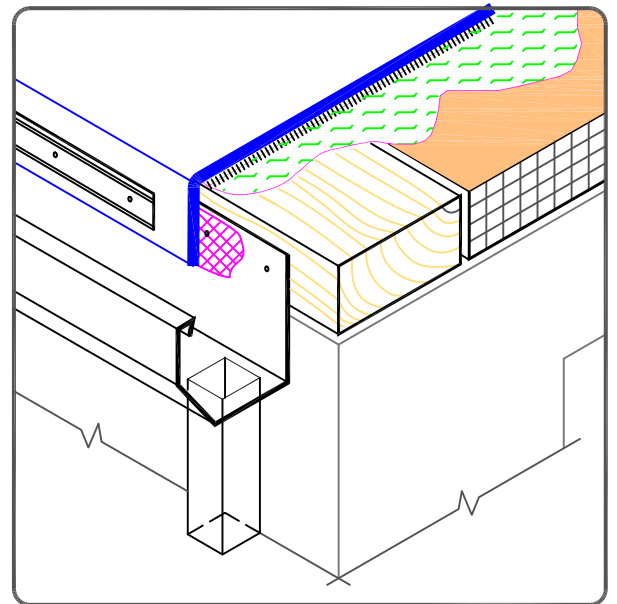


POSITION FIELD MEMBRANE AND HEAT WELD COATED METAL A MINIMUM OF 1-1/2" (4cm) AS SHOWN.

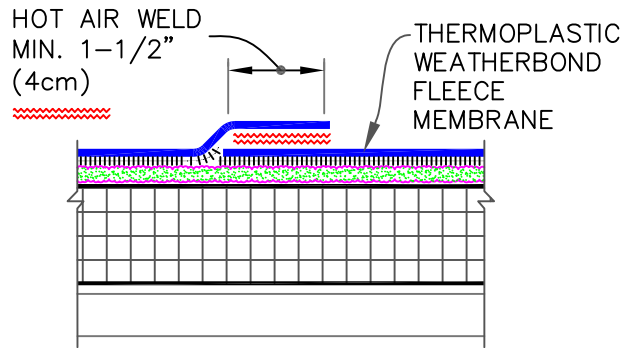


NOTES:

1. POSITION MEMBRANE WITH SELVAGE EDGE AT TERMINATION BAR LOCATION TO AVOID REMOVAL OF FLEECE BACKING.
2. FASTENING OF METAL TERMINATION BAR MUST PROVIDE CONSTANT COMPRESSION ON WATER CUT-OFF MASTIC.
3. ALLOW MEMBRANE SHEET TO EXTEND 1/2" (1.5cm) MINIMUM BELOW THE METAL TERMINATION BAR.

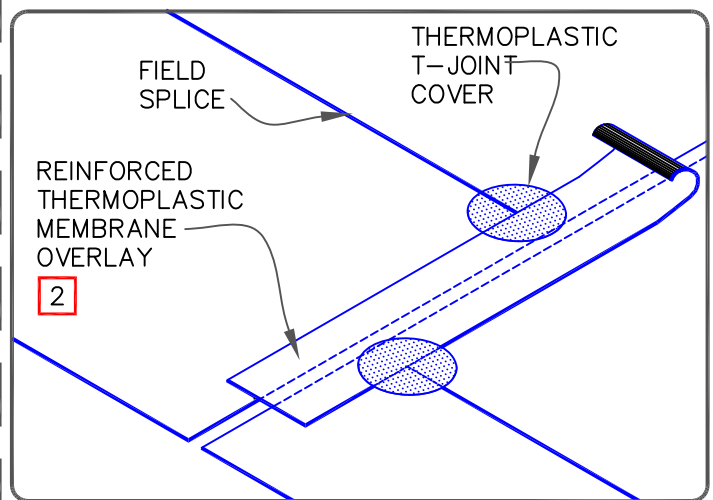
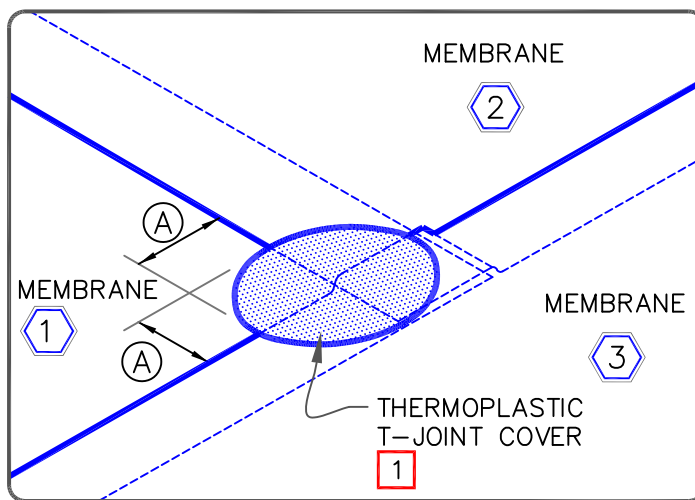
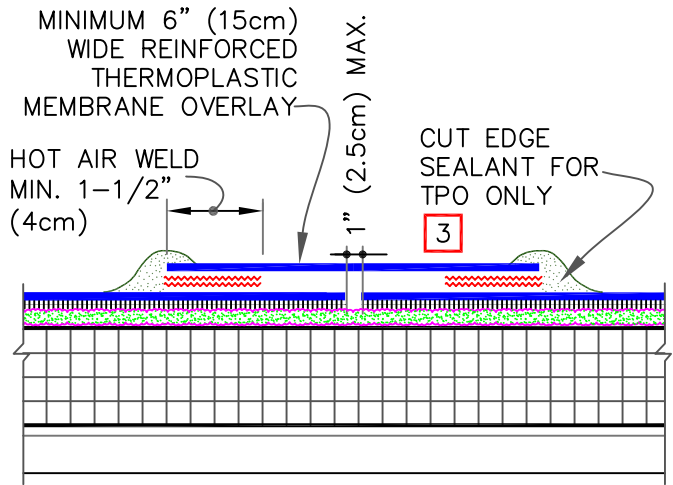


MEMBRANE SPLICE



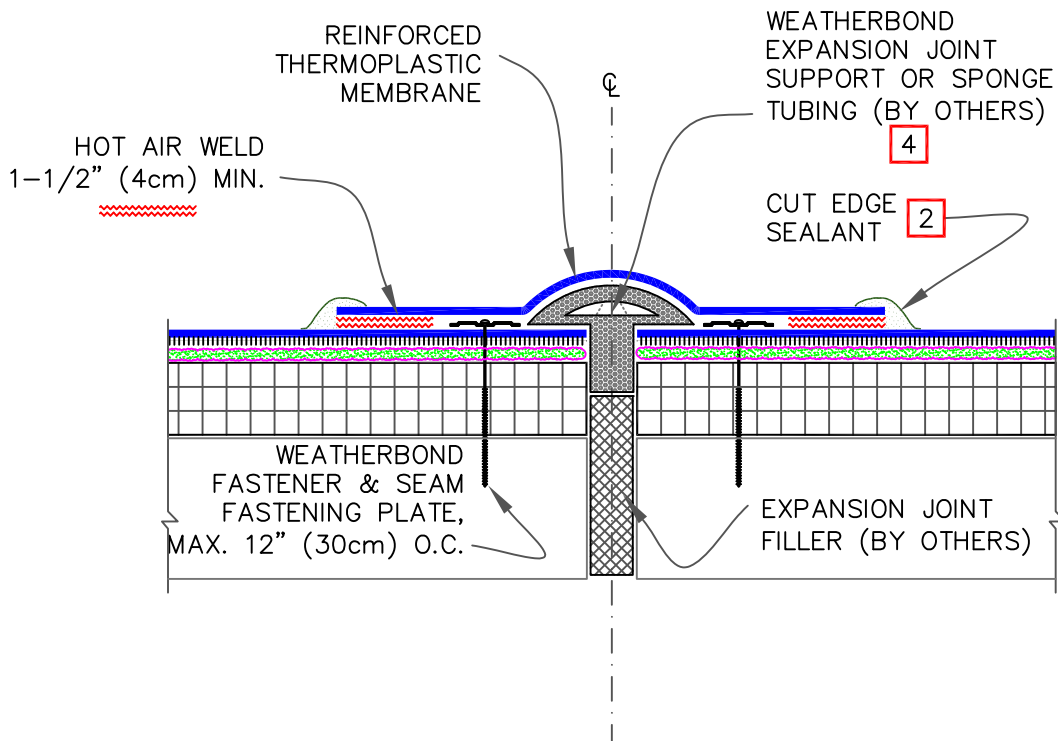
DIMENSION	cm	
(A)	2-1/4"	6

END LAP SPLICE



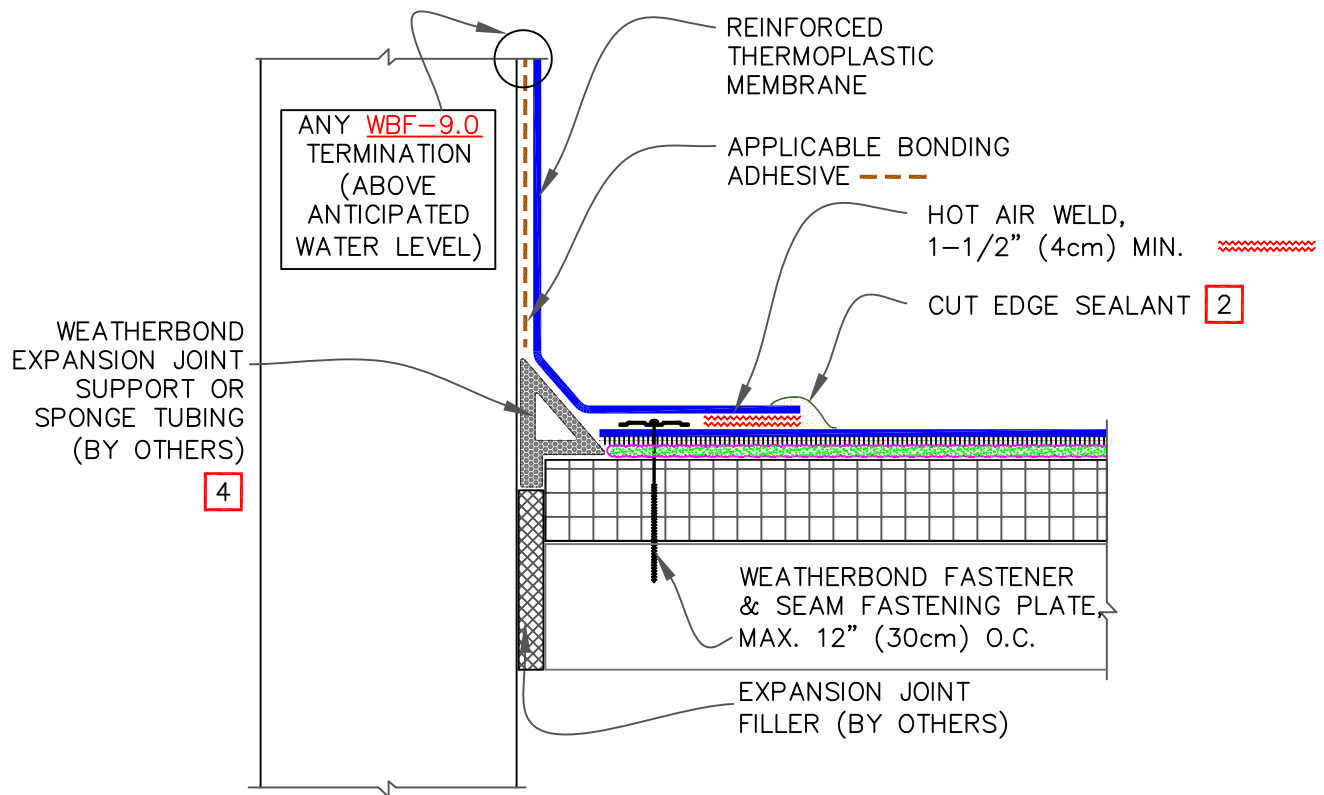
NOTES:

1. WHEN USING 115 OR 135-MIL TPO WEATHERBOND FLEECE OR 115 OR 135 PVC WEATHERBOND FLEECE MEMBRANE, APPLY A 4-1/2" (11cm) DIAMETER THERMOPLASTIC "T-JOINT" COVER AT ALL FIELD SPLICE INTERSECTIONS.
2. WHEN USING 60 OR 80 MIL THERMOPLASTIC REINFORCED MEMBRANE OVERLAY, INTERSECTIONS BETWEEN SPLICES MUST BE OVERLAID WITH A 4-1/2" (11cm) DIAMETER THERMOPLASTIC "T-JOINT" COVER.
3. APPROXIMATELY 1/8" (0.5cm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE.



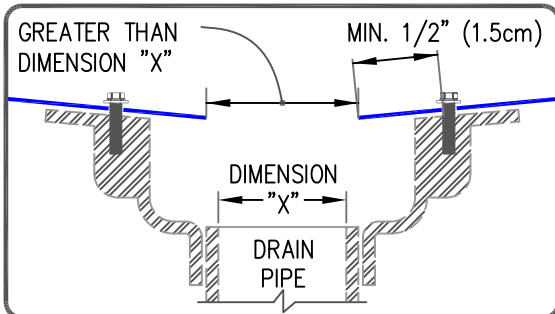
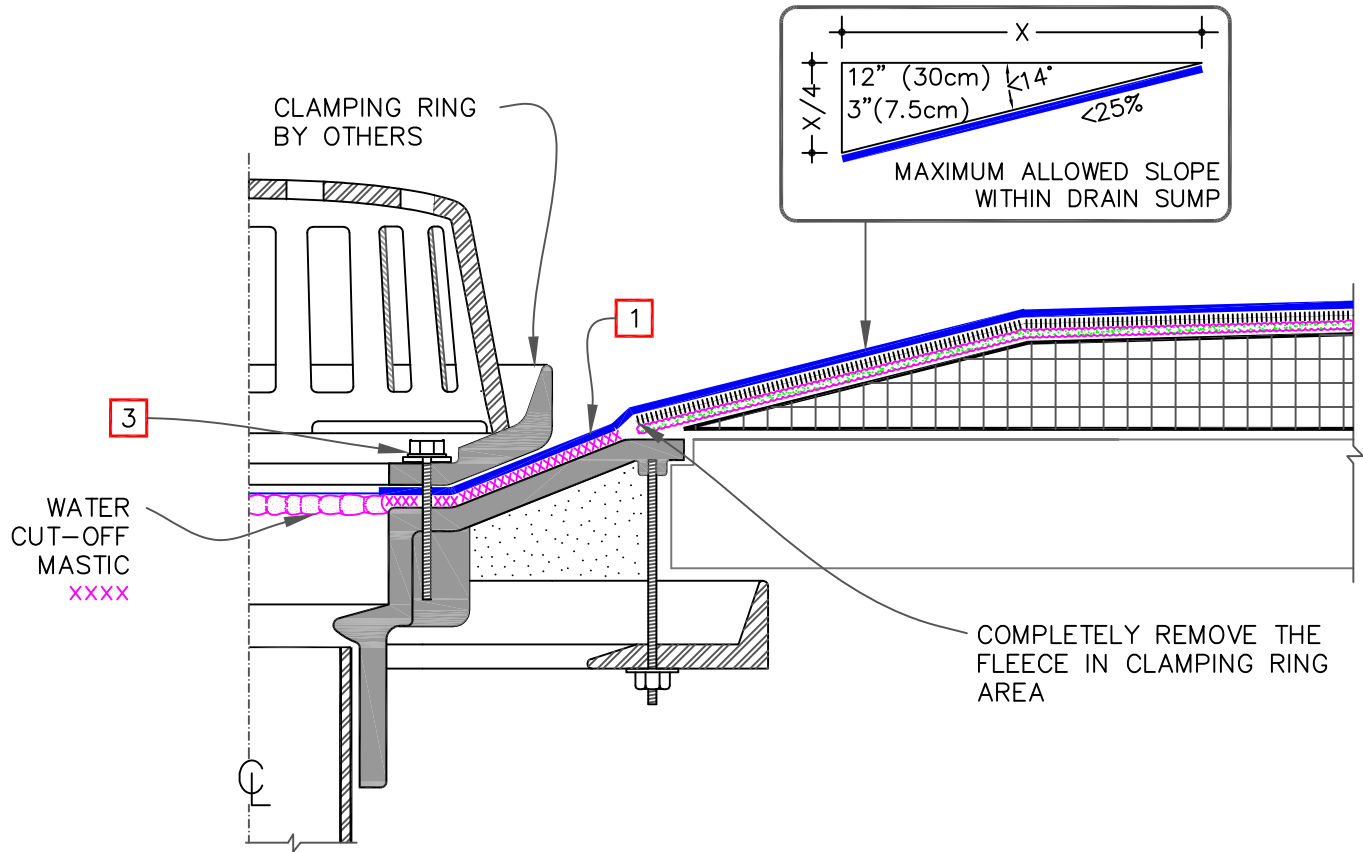
NOTES:

1. WHEN WEATHERBOND EXPANSION JOINT SUPPORT IS USED, WIDTH OF JOINT SHALL BE A MINIMUM OF 3/4" (2cm) AND SHALL NOT EXCEED 3" (7.5cm).
2. APPROXIMATELY 1/8" (0.5cm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE.
3. WHEN USING 60 OR 80 MIL REINFORCED THERMOPLASTIC MEMBRANE, APPLY A 4-1/2" (11cm) DIAMETER THERMOPLASTIC "T-JOINT" COVER AT ALL FIELD SPLICE INTERSECTIONS.
4. ROOF MEMBRANE SHALL NOT BE ADHERED OVER THE EXPANSION JOINT SUPPORT OR SPONGE TUBING.



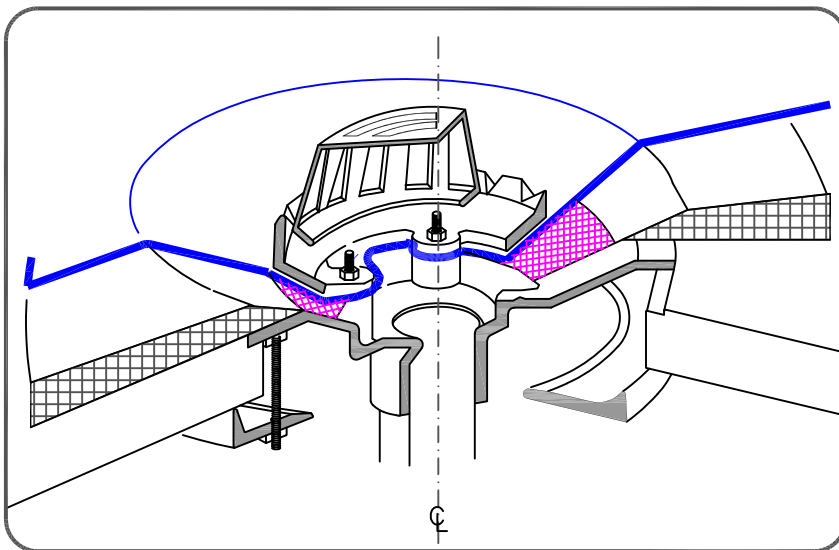
NOTES:

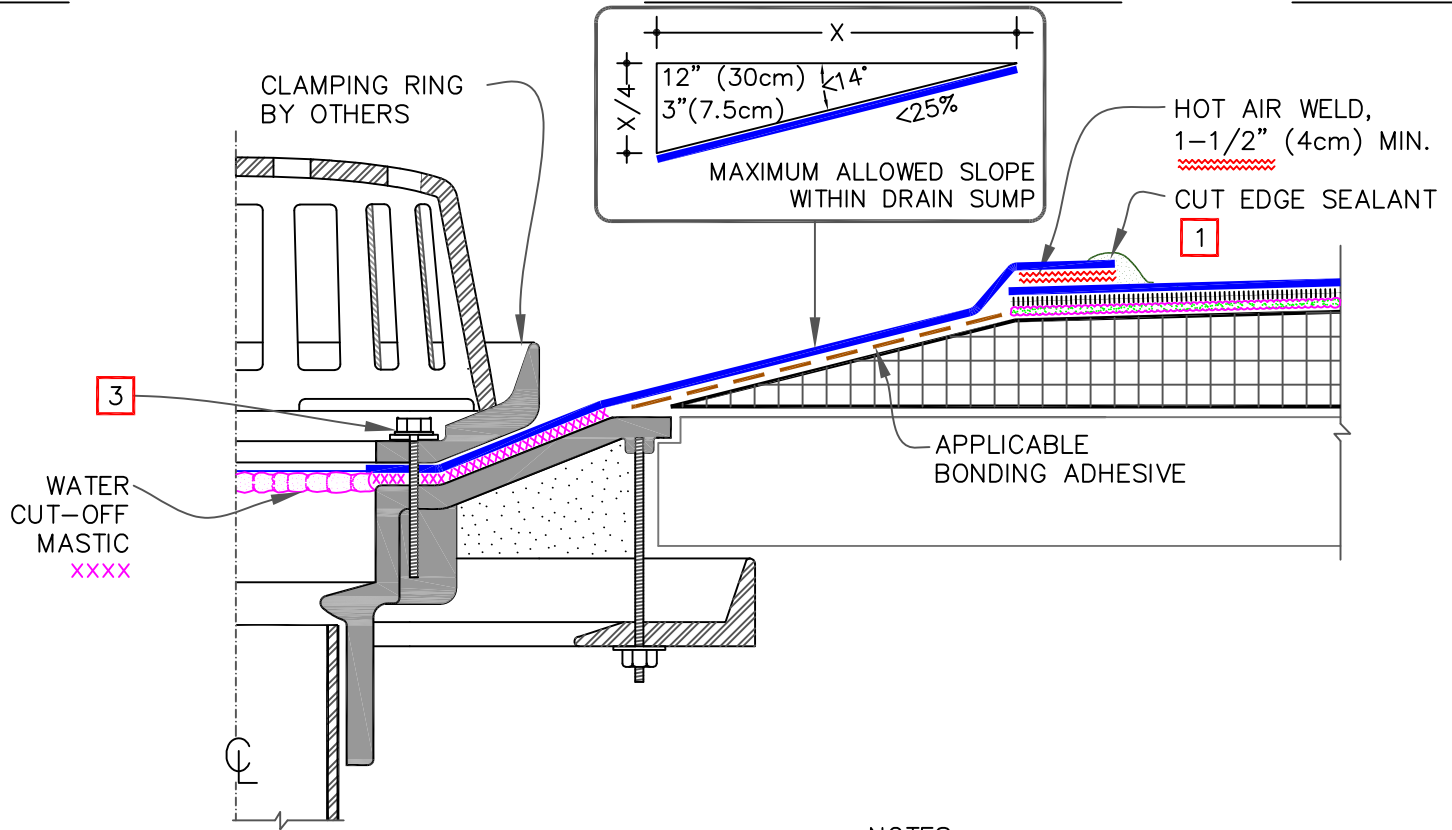
1. WHEN WEATHERBOND EXPANSION JOINT SUPPORT IS USED, WIDTH OF JOINT SHALL BE A MINIMUM OF 3/4" (2cm) AND SHALL NOT EXCEED 2" (5cm).
2. APPROXIMATELY 1/8" (0.5cm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE.
3. WHEN USING 60 OR 80 MIL REINFORCED THERMOPLASTIC MEMBRANE, APPLY A 4-1/2" (11cm) DIAMETER THERMOPLASTIC "T-JOINT" COVER AT ALL FIELD SPLICE INTERSECTIONS.
4. ROOF MEMBRANE SHALL NOT BE ADHERED OVER THE EXPANSION JOINT SUPPORT OR SPONGE TUBING.



NOTES:

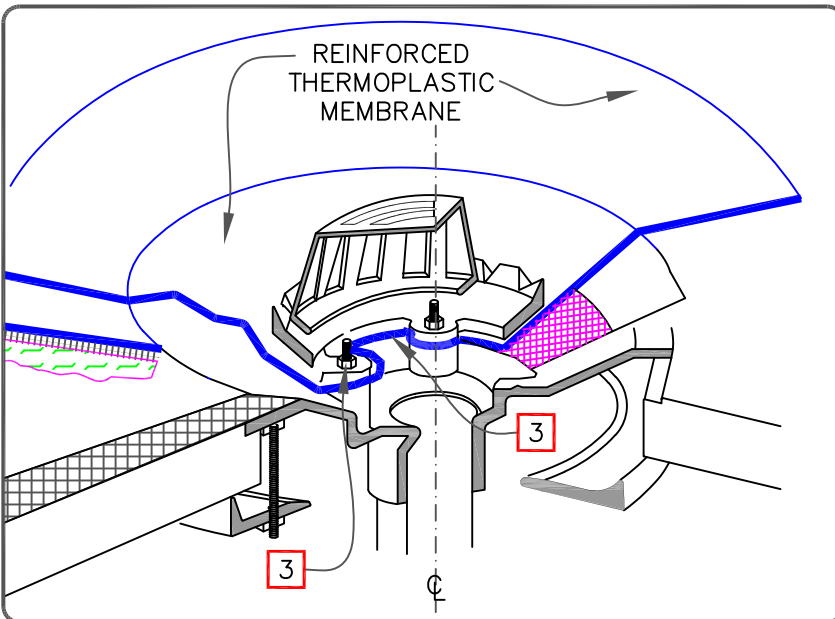
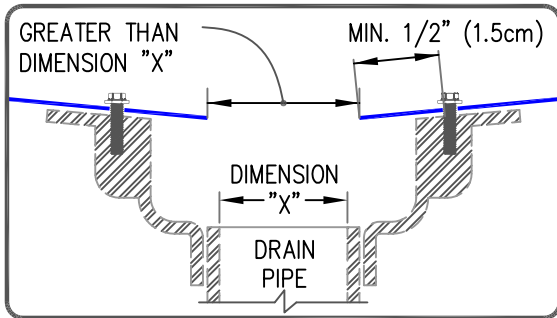
1. REMOVE EXISTING LEAD, FLASHING MATERIAL & ENSURE THE DRAIN RING IS COMPLETELY CLEAN DOWN TO BARE METAL.
2. FLEECE-BACKING MUST BE REMOVED FROM THE MEMBRANE SO THAT WATER CUT-OFF MASTIC IS IN DIRECT CONTACT.
3. ALL BOLTS OR CLAMPS MUST BE IN PLACE TO PROVIDE CONSTANT COMPRESSION ON WATER CUT-OFF MASTIC.
4. ROOF DRAIN SIZE AND NUMBER OF DRAINS SHALL BE IN ACCORDANCE WITH THE LOCAL CODES.
5. REMOVE EXISTING LEAD, FLASHING MATERIAL & ENSURE THE DRAIN RING IS COMPLETELY CLEAN DOWN TO BARE METAL.

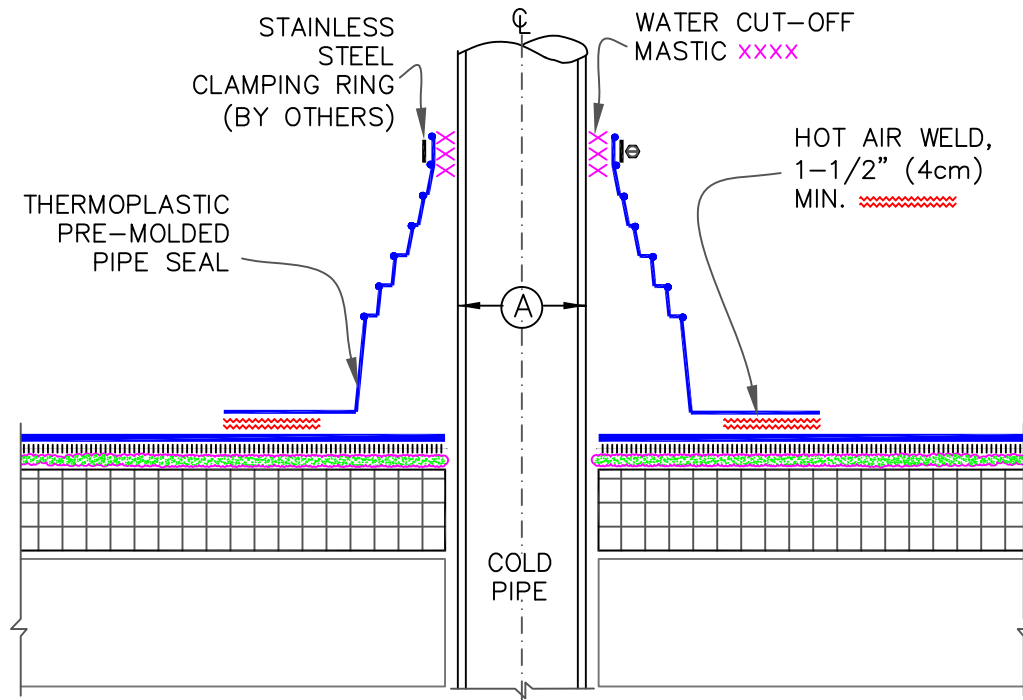




NOTES:

1. REMOVE EXISTING LEAD, FLASHING MATERIAL & ENSURE THE DRAIN RING IS COMPLETELY CLEAN DOWN TO BARE METAL.
2. APPROXIMATELY 1/8" (0.5cm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE.
3. ALL BOLTS OR CLAMPS MUST BE IN PLACE TO PROVIDE CONSTANT COMPRESSION ON WATER CUT-OFF MASTIC.
4. ROOF DRAIN SIZE AND NUMBER OF DRAINS SHALL BE IN ACCORDANCE WITH THE LOCAL CODES.
5. FIELD SPLICES MUST BE LOCATED AT LEAST 6" (15cm) OUTSIDE OF THE DRAIN SUMP.
6. THE HOLE IN THE MEMBRANE SHALL EXCEED THE DIAMETER OF THE DRAIN PIPE, BUT SHALL BE NO LESS THAN 1/2" (1.5cm) FROM THE ATTACHMENT POINTS OF THE DRAIN CLAMPING RING

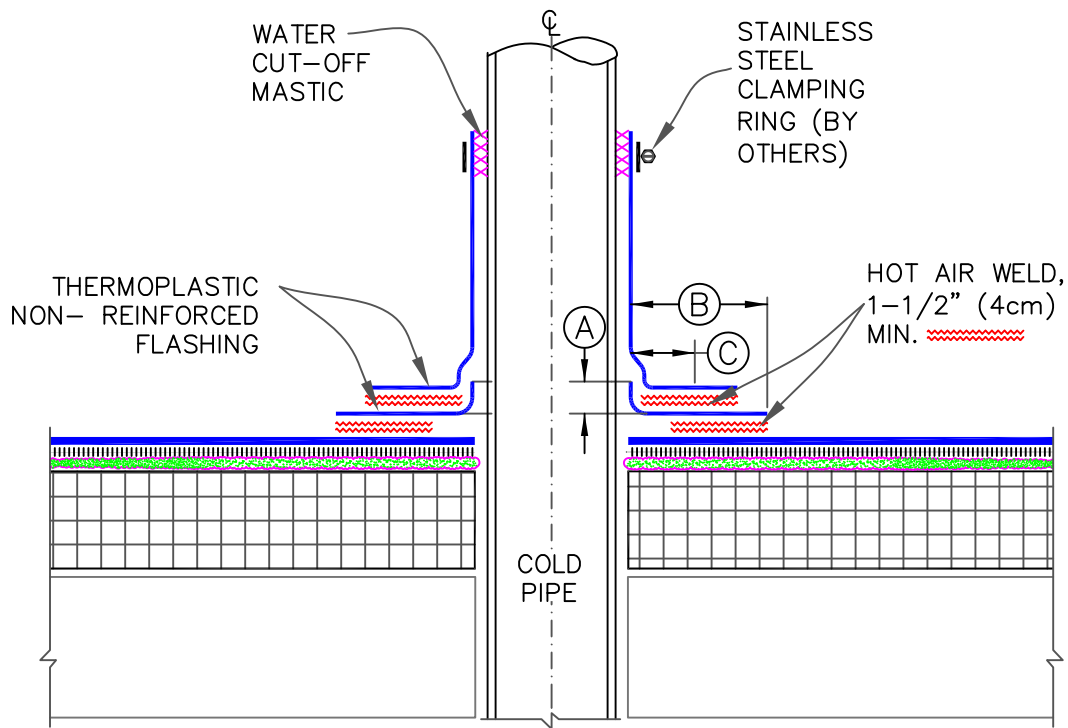




DIMENSIONS		cm	
(A)	3/4"	2	TO
	8"	20	

NOTES:

1. REMOVE ALL LEAD AND OTHER FLASHING BEFORE INSTALLING PRE-MOLDED PIPE SEAL.
2. TEMPERATURE OF THE PIPE PENETRATION MUST NOT EXCEED 140°F (60°C) WHEN USING PVC AND 160°F (71°C) WHEN USING TPO FLASHING.
3. PRE-MOLDED PIPE SEAL MUST HAVE INTACT RIB AT TOP EDGE, REGARDLESS OF PIPE DIAMETER.
4. DECK FLANGES OF THE PRE-MOLDED PIPE SEAL SHALL NOT BE OVERLAPPED, CUT OR APPLIED OVER ANY ANGLE CHANGE.



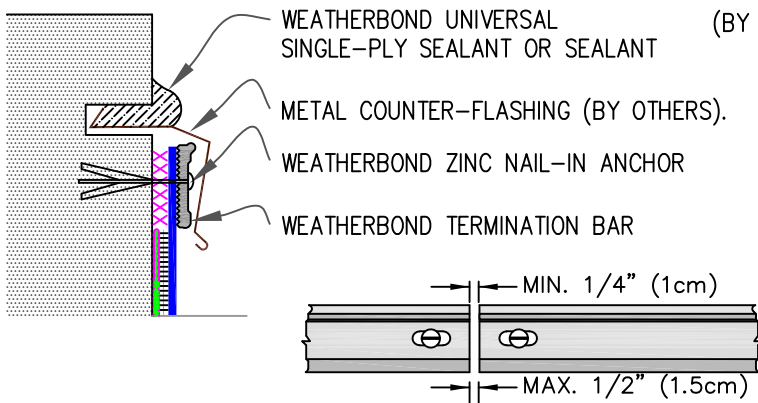
DIMENSIONS		cm	
(A)	1/2"	1.5	MIN.
(B)	1-1/2"	4	TO
	2"	5	
(C)	1"	2.5	MIN.

NOTES:

1. REMOVE ALL LEAD AND OTHER FLASHING BEFORE INSTALLING FIELD FABRICATED PIPE SEAL.
2. TEMPERATURE OF THE PIPE PENETRATION MUST NOT EXCEED 140°F (60°C) WHEN USING PVC AND 160°F (71°C) WHEN USING TPO FLASHING.
3. APPLY HEAT TO FLASHING AND FORM BY HAND PRIOR TO HOT AIR WELDING
4. MECHANICAL SECUREMENT IS REQUIRED AROUND ALL PIPES GREATER THAN 18" (46cm) IN DIAMETER.
5. REFER TO THERMOPLASTIC COMMON DETAILS FOR HOT STACK, STEEL TUBING & FLEXIBLE PENETRATIONS.

9.1

MECHANICAL TERMINATION WITH COUNTER FLASHING



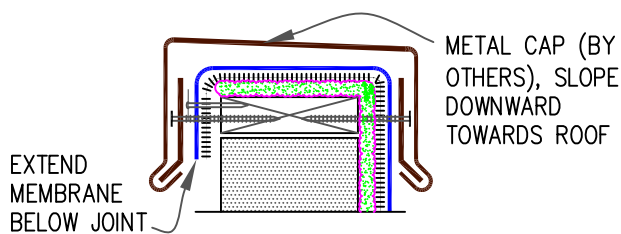
NOTES:

(BY OTHERS)

1. APPLY ON HARD SMOOTH SURFACE ONLY; NOT FOR USE ON EXPOSED WOOD.
2. DO NOT WRAP COMPRESSION TERMINATION BAR AROUND CORNERS.
3. FLEECE-BACKING MUST BE REMOVED FROM THE MEMBRANE SO THAT WATER CUT-OFF MASTIC IS IN DIRECT CONTACT.
4. DETAIL 9.5 MUST BE USED AT VERTICAL JOINTS IN PANEL WALLS.

9.2

SHEET METAL COPING

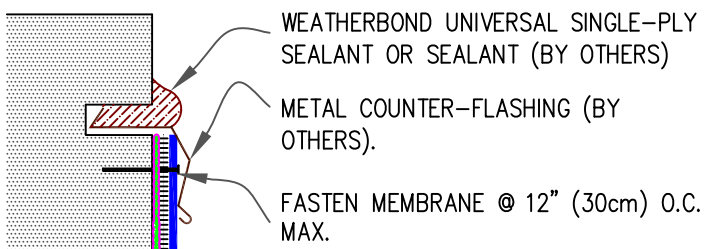


NOTES:

1. FOR WEATHERBOND COPING, REFER TO INSTALLATION INSTRUCTIONS PUBLISHED SEPARATELY.
2. MEMBRANE MUST BE EXTENDED TO CORNERS TO PROVIDE COMPLETE COVERAGE OF THE TOP WALL SURFACE.

9.3

COUNTER FLASHING TERMINATION

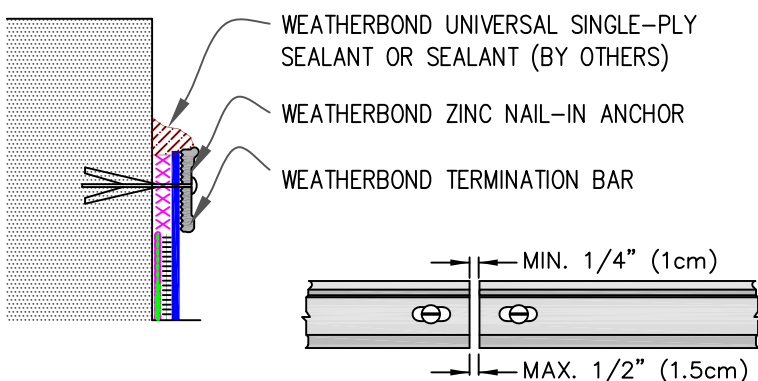


NOTE:

1. WHEN MECHANICAL FASTENERS ARE USED TO PENETRATE THE METAL COUNTER-FLASHING, USE EPDM WASHERS, APPLY WATER CUT-OFF MASTIC UNDER THE COUNTER-FLASHING OR CAULK THE FASTENER HEADS.

9.4

MECHANICAL TERMINATION



NOTES:

1. APPLY ON HARD SMOOTH SURFACE ONLY; NOT FOR USE ON EXPOSED WOOD.
2. DO NOT WRAP COMPRESSION TERMINATION BAR AROUND CORNERS.
3. FLEECE-BACKING MUST BE REMOVED FROM THE MEMBRANE SO THAT WATER CUT-OFF MASTIC IS IN DIRECT CONTACT.
4. DETAIL 9.5 MUST BE USED AT VERTICAL JOINTS IN PANEL WALLS.

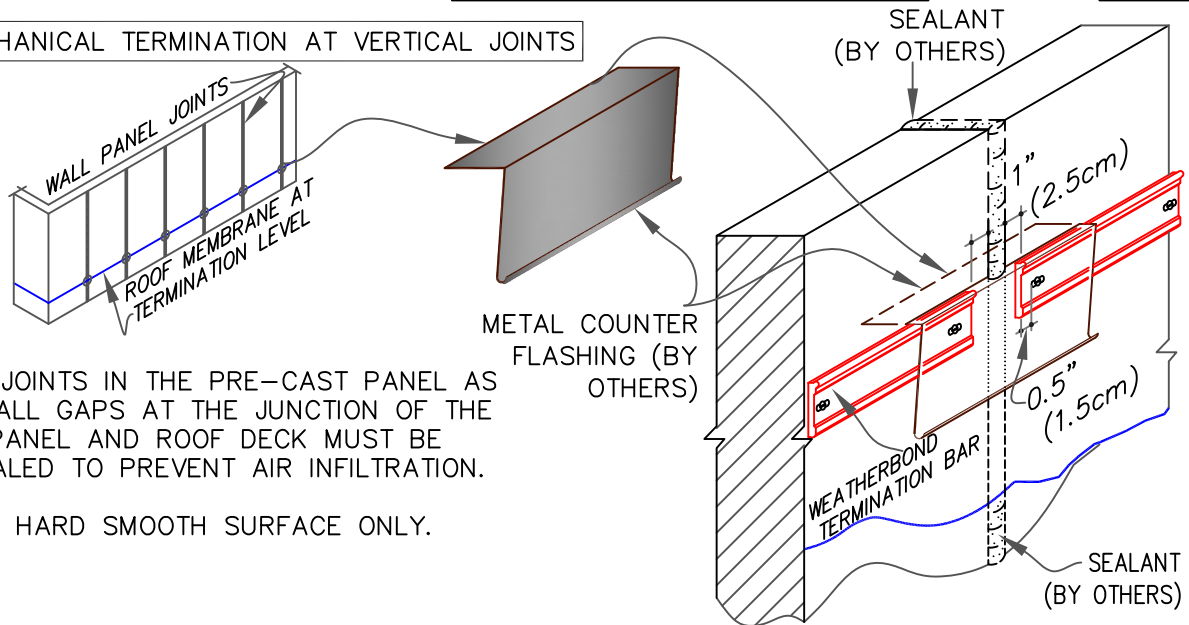
XXXXXXX

WEATHERBOND WATER CUT-OFF MASTIC
MUST BE UNDER COMPRESSION

9.5 MECHANICAL TERMINATION AT VERTICAL JOINTS

NOTES:

1. VERTICAL JOINTS IN THE PRE-CAST PANEL AS WELL AS ALL GAPS AT THE JUNCTION OF THE TILT-UP PANEL AND ROOF DECK MUST BE FULLY SEALED TO PREVENT AIR INFILTRATION.
2. APPLY ON HARD SMOOTH SURFACE ONLY.



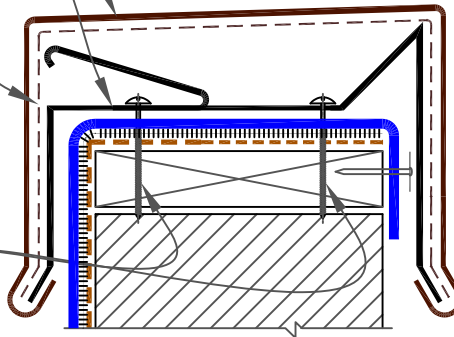
9.6 WEATHERBOND COPING

WEATHERBOND 200 & 300

COPING

20 GA. GALVANIZED ANCHOR
CLIPS @ 6 FEET (183cm) O.C.CONCEALED SPLICE PLATE AT
EACH JOINT OF COPING

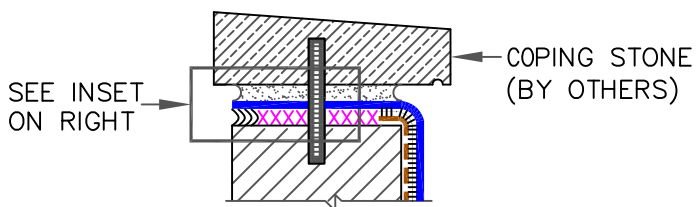
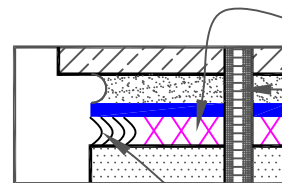
HEX-HEAD FASTENERS



NOTES:

1. MEMBRANE MUST BE EXTENDED AT CORNERS TO PROVIDE COMPLETE COVERAGE OF THE TOP WALL SURFACE. REFER TO [DETAIL WBF-9.2](#).
2. REFER TO [WEATHERBOND COPING INSTALLATION INSTRUCTION](#) MANUAL FOR STEP-BY-STEP INSTRUCTION PROCEDURES.

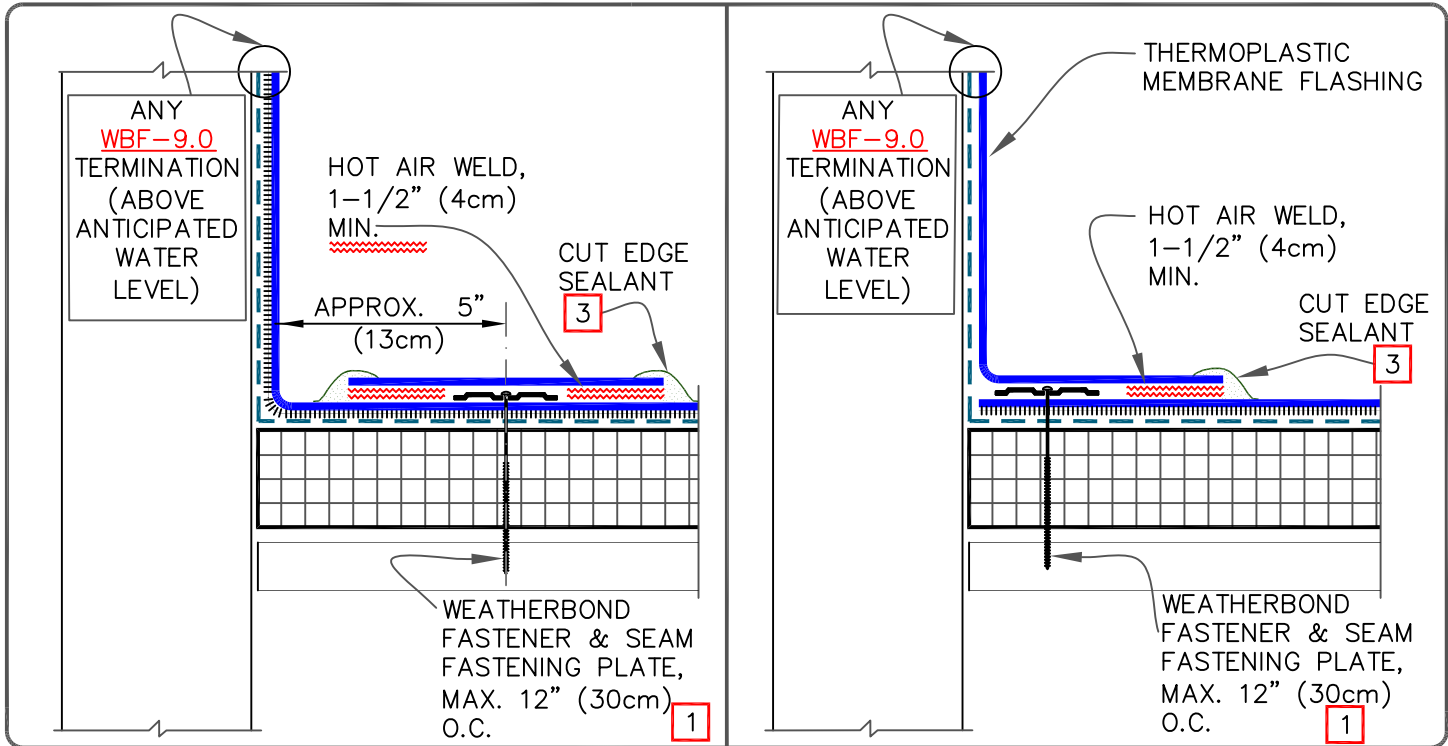
9.7 COPING STONE TERMINATION

SEE INSET
ON RIGHTCOPING STONE
(BY OTHERS)

WATER CUT-OFF
MASTIC AROUND
DOWEL OR ANCHOR
(BY OTHERS)
DOWEL OR ANCHOR
(BY OTHERS)
SEALANT UNDER
THE MEMBRANE LIP
(BY OTHERS)

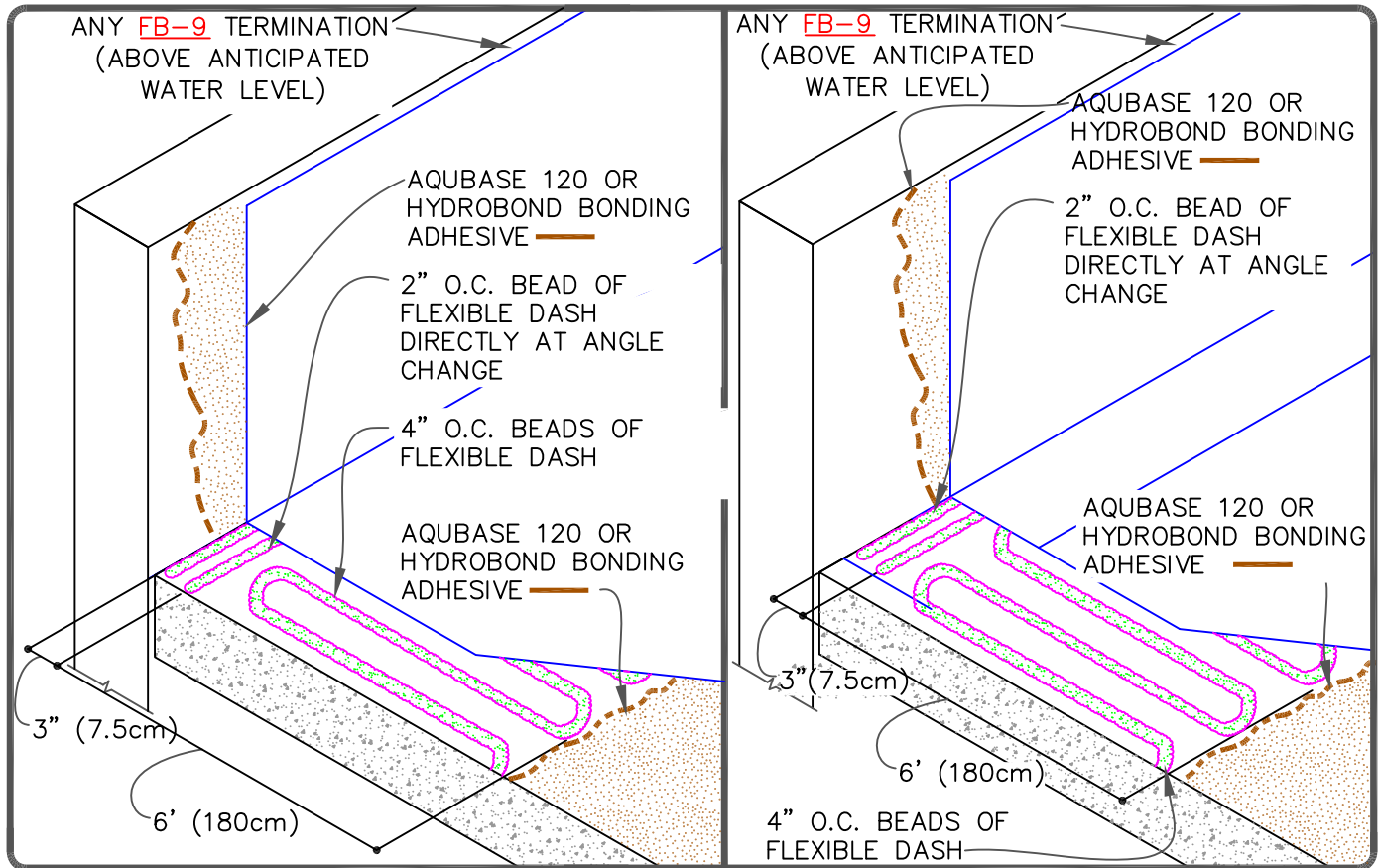
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WEATHERBOND WATER CUT-OFF MASTIC
MUST BE UNDER COMPRESSION



NOTES:

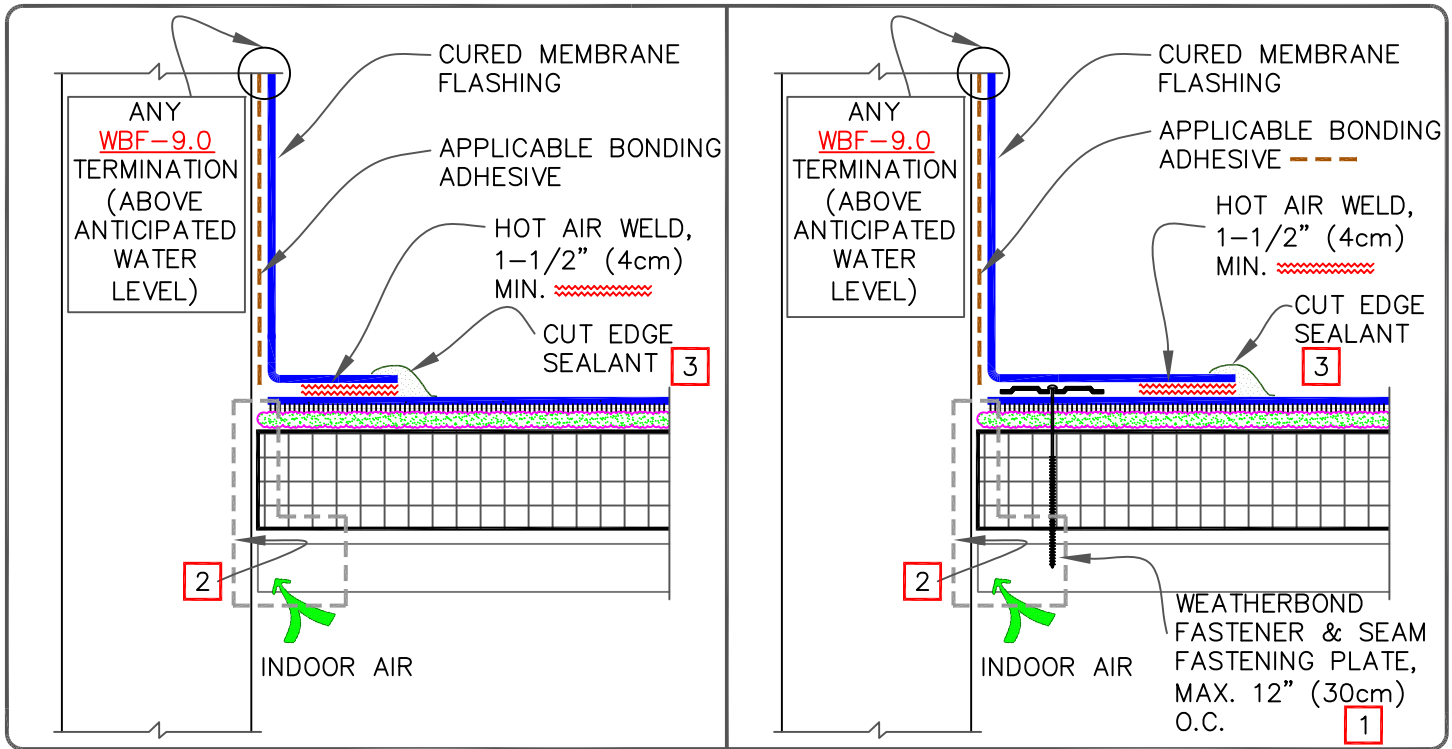
1. MECHANICAL SECUREMENT MUST BE PROVIDED AT THE PERIMETER OF EACH ROOF LEVEL, ROOF SECTION, EXPANSION JOINT, CURB FLASHING, SKYLIGHT, INTERIOR WALL, PENTHOUSE, ETC., AT ANY INSIDE ANGLE CHANGE WHERE SLOPE EXCEEDS 2" IN ONE HORIZONTAL FOOT.
2. SPLICES SHALL BE COMPLETED USING MINIMUM 1-1/2" (4cm) HOT AIR WELD WITH TPO/PVC.
3. APPROXIMATELY 1/8" (0.5cm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE.
4. WHEN APPLYING AQUA BASE 120 BONDING ADHESIVE TO WEATHERBOND FLEECE MEMBRANE ON THE VERTICAL WALL SUBSTRATE, APPLY A COAT OF AQUA BASE 120 ADHESIVE TO THE FLEECE SIDE OF THE MEMBRANE AND ALLOW TO DRY. ONCE THE ADHESIVE ON THE FLEECE IS DRY, APPLY BONDING ADHESIVE AT THE COVERAGE RATE OF 60 SQUARE FEET PER GALLON TO THE WALL SUBSTRATE AND A SECOND COAT TO THE WEATHERBOND FLEECE MEMBRANE.
5. WHEN USING TPO OR PVC FLEECEBACK MEMBRANE, MINIMUM 6" (15cm) WIDE REINFORCED THERMOPLASTIC MEMBRANE FLASHING SHALL BE CENTERED OVER THE MECHANICAL FASTENERS AND PLATES AND HEAT WELDED ON ALL SIDES AND TPO CAN USE WEATHERBOND WHITE PAS EPDM.



NOTES:

1. REGARDLESS OF WIND SPEEDS, SECUREMENT MUST BE PROVIDED AT THE PERIMETER OF EACH ROOF LEVEL, ROOF SECTION, EXPANSION JOINT, CURB FLASHING, SKYLIGHT, INTERIOR WALL, PENTHOUSE, ETC., AT ANY INSIDE ANGLE CHANGE WHERE SLOPE EXCEEDS 2" IN ONE HORIZONTAL FOOT.
2. SPLICES SHALL BE COMPLETED USING MINIMUM 1-1/2" (4cm) HOT AIR WELD WITH TPO/PVC.
3. APPROXIMATELY 1/8" (0.5cm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE.
4. WHEN APPLYING AQUA BASE 120 BONDING ADHESIVE TO WEATHERBOND FLEECE MEMBRANE ON THE VERTICAL WALL SUBSTRATE, APPLY A COAT OF AQUA BASE 120 ADHESIVE OR HYDROBOND TO THE FLEECE SIDE OF THE MEMBRANE AND ALLOW TO DRY. ONCE THE ADHESIVE ON THE FLEECE IS DRY, APPLY BONDING ADHESIVE AT THE COVERAGE RATE OF 60 S.F./GALLON FOR AQUA BASE 120 AND 100 S.F./GALLON FOR HYDROBOND TO THE WALL SUBSTRATE AND A SECOND COAT TO THE WEATHERBOND FLEECE MEMBRANE.

CAUTION

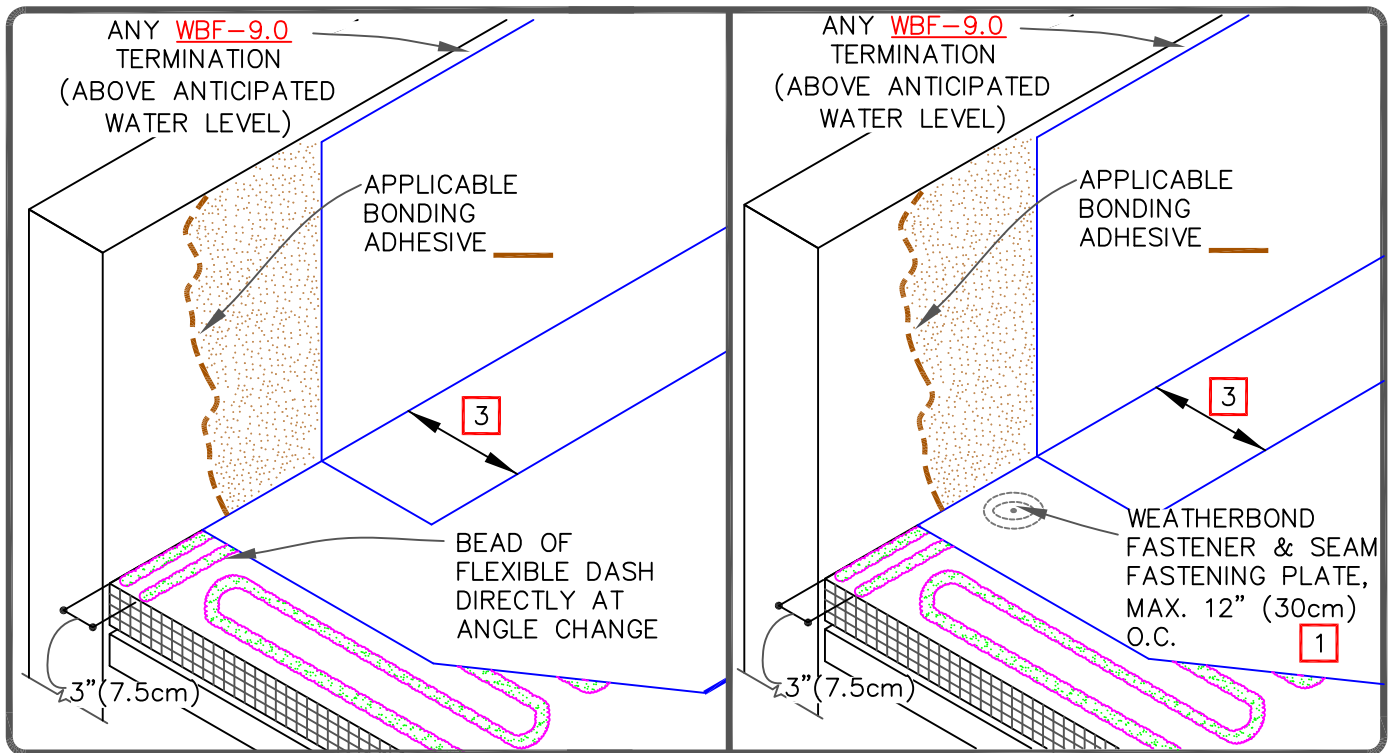
REFER TO [DETAIL WBF-12.3](#) WHEN USING AQUA BASE 120 ADHESIVE.

NOTES:

1. MECHANICALLY ATTACHED BASE SECUREMENT IS REQUIRED WHEN ANY ONE OF THE FOLLOWING MAY OCCUR:
 - 1.1. PROJECTS WITH CONTROL OR EXPANSION JOINTS OR ANTICIPATED BUILDING MOVEMENT.
 - 1.2. WHEN WEATHERBOND FLEECE MEMBRANE IS INSTALLED DIRECTLY OVER AN EXISTING SINGLE-PLY ROOF.
2. SPLICES SHALL BE COMPLETED USING MINIMUM 1-1/2" (4cm) HOT AIR WELD WITH TPO/PVC/KEE HP.
3. APPROXIMATELY 1/8" (0.5cm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE.
4. WHEN USING 60 OR 80-MIL REINFORCED THERMOPLASTIC MEMBRANE, APPLY A 4-1/2" (11cm) DIAMETER THERMOPLASTIC "T-JOINT" COVER AT ALL FIELD SPICE INTERSECTIONS.

CAUTION

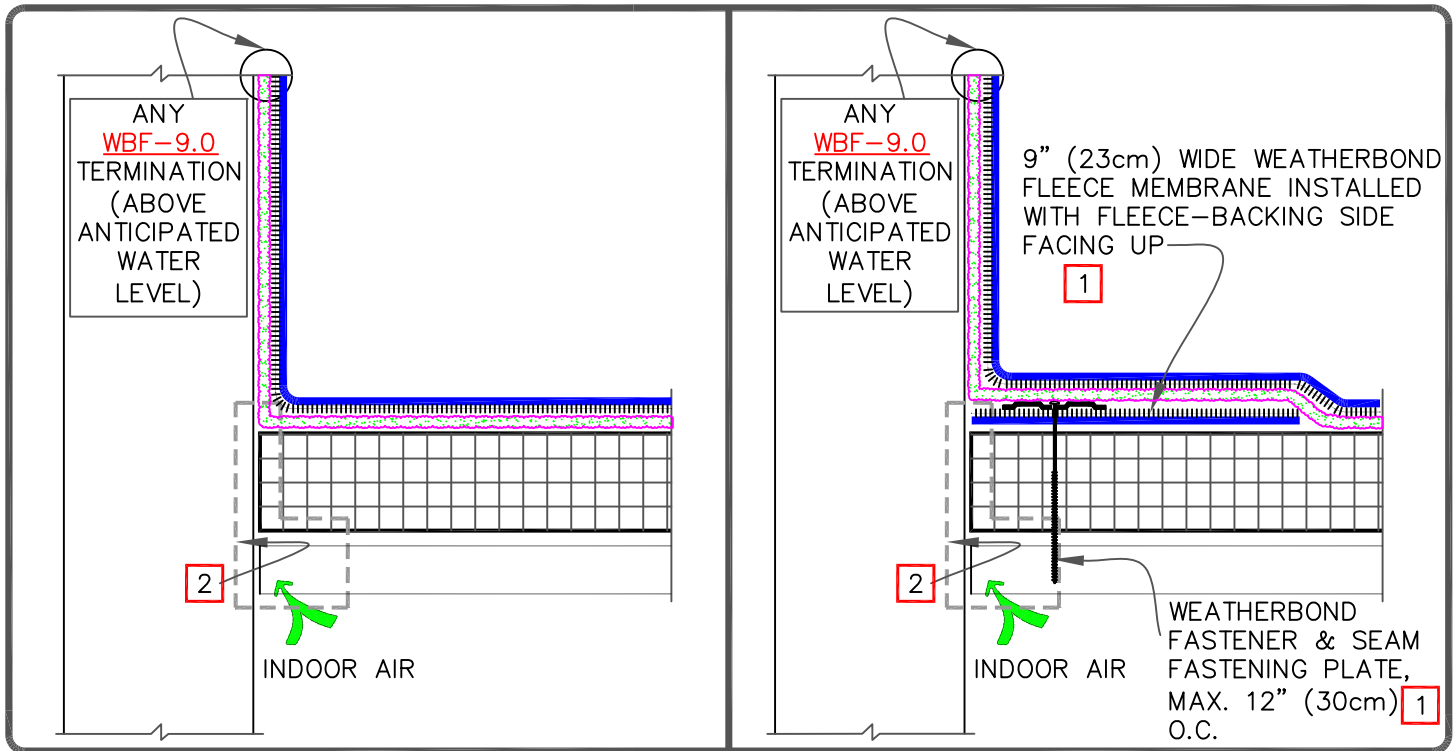
- REFER TO [DETAIL WBF-12.3](#) WHEN USING AQUA BASE 120 ADHESIVE OR HYDROBOND.



NOTES:

- MECHANICALLY FASTENED BASE SECUREMENT IS REQUIRED WHEN ANY ONE OF THE FOLLOWING MAY OCCUR:
 - PROJECTS WITH CONTROL OR EXPANSION JOINTS OR ANTICIPATED BUILDING MOVEMENT.
 - WHEN WEATHERBOND FLEECE MEMBRANE IS INSTALLED DIRECTLY OVER AN EXISTING SINGLE-PLY ROOF.
- SPLICES SHALL BE COMPLETED USING MINIMUM 1-1/2" (4cm) HOT AIR WELD WITH TPO/PVC/KEE HP.
- APPROXIMATELY 1/8" (0.5cm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE.
- WHEN USING 60 OR 80-MIL REINFORCED THERMOPLASTIC MEMBRANE FLASHING, APPLY A 4-1/2" (11cm) DIAMETER THERMOPLASTIC "T-JOINT" COVER AT ALL FIELD SPLICE INTERSECTIONS.

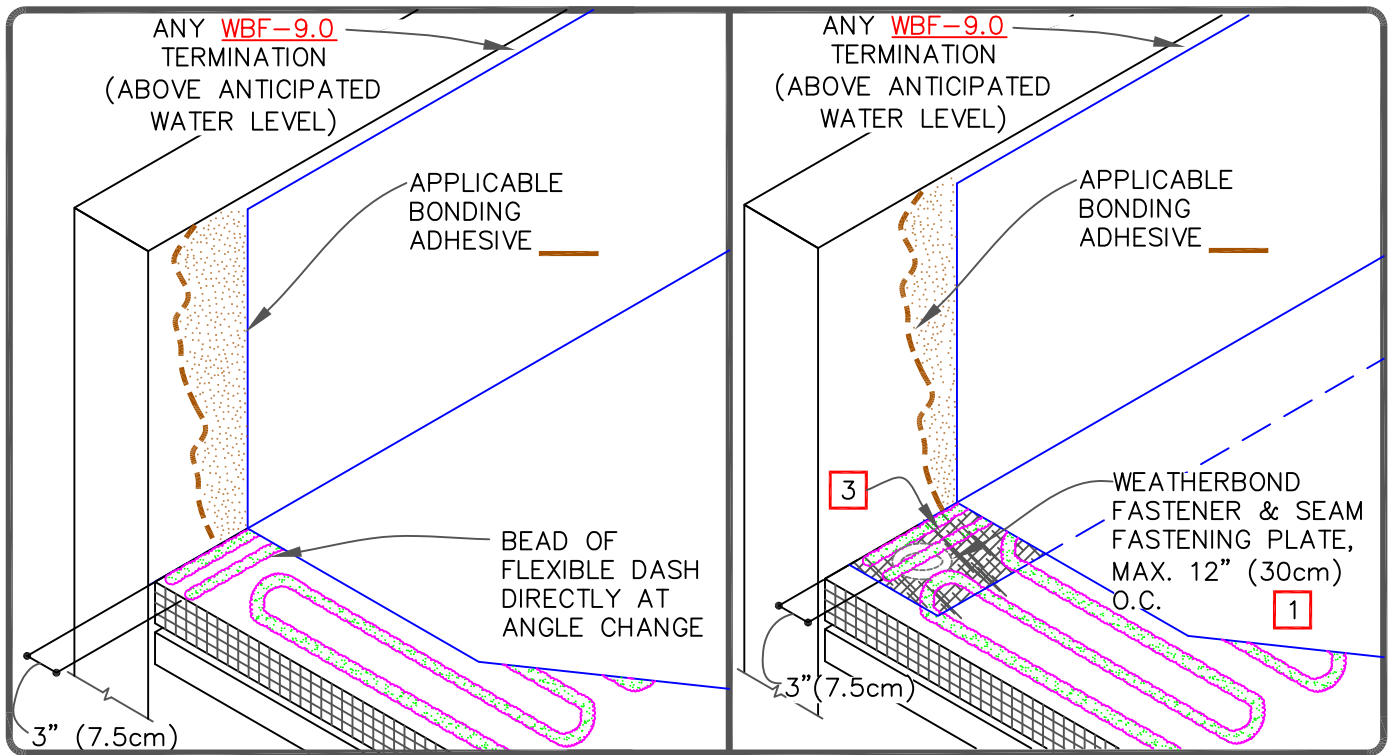
CAUTION

REFER TO [DETAIL WBF-12C](#) WHEN USING AQUA BASE 120 ADHESIVE OR HYDROBOND.

NOTES:

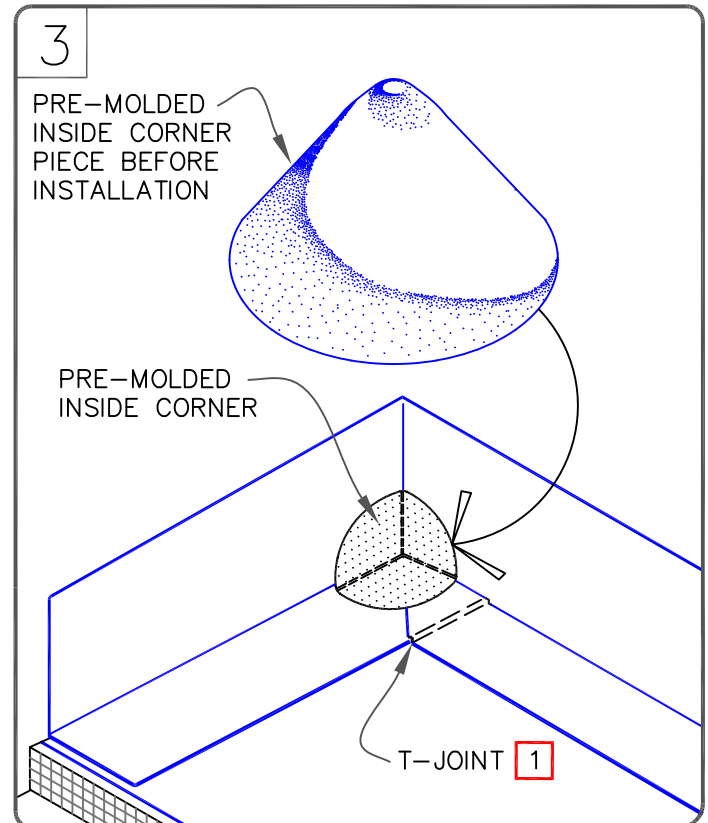
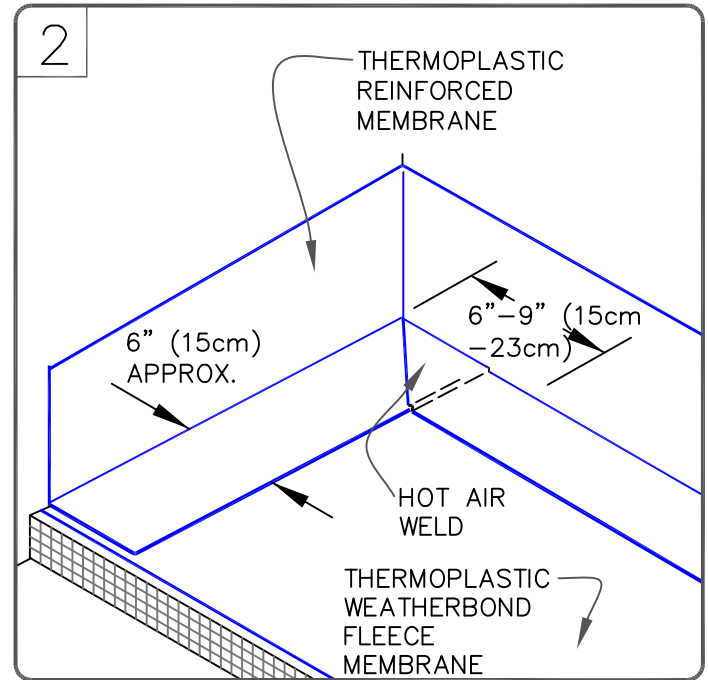
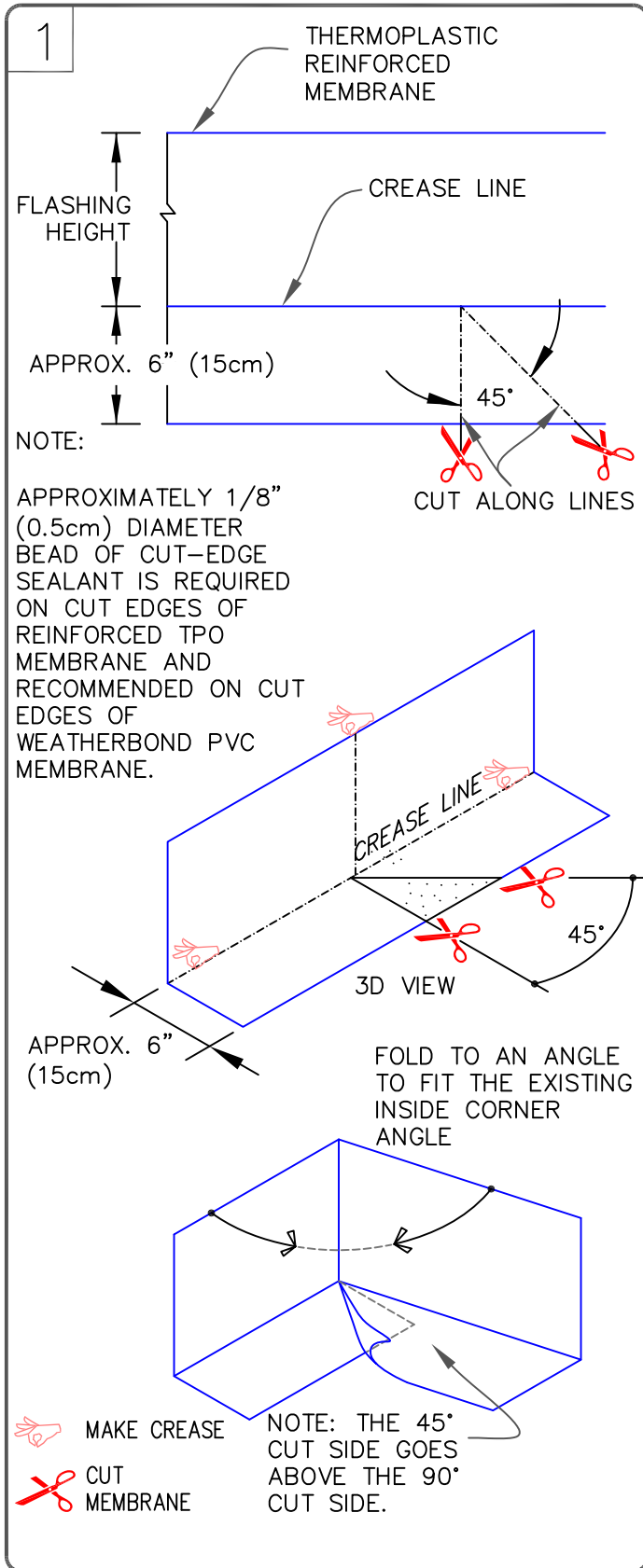
1. MECHANICALLY FASTENED BASE SECUREMENT IS REQUIRED WHEN ANY ONE OF THE FOLLOWING MAY OCCUR:
 - 1.1. PROJECTS WITH CONTROL OR EXPANSION JOINTS OR ANTICIPATED BUILDING MOVEMENT.
 - 1.2. WHEN WEATHERBOND FLEECE MEMBRANE IS INSTALLED DIRECTLY OVER AN EXISTING SINGLE-PLY ROOF.
2. WHEN THE USE OF FLEXIBLE DASH (FULL SPRAY) IS NOT FEASIBLE ON THE VERTICAL SUBSTRATE, SEE APPROPRIATE TDB FOR INSTALLATION INSTRUCTIONS FOR BONDING ADHESIVE.

CAUTION

REFER TO [DETAIL WBF-12.3](#) WHEN USING AQUA BASE 120 ADHESIVE OR HYDROBOND.

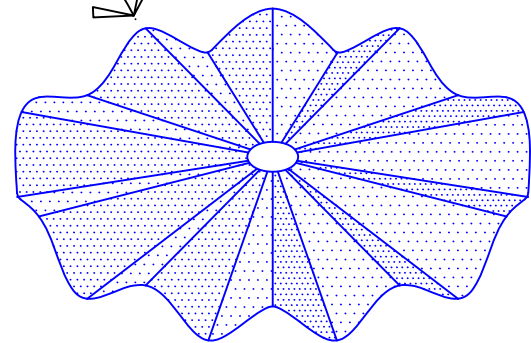
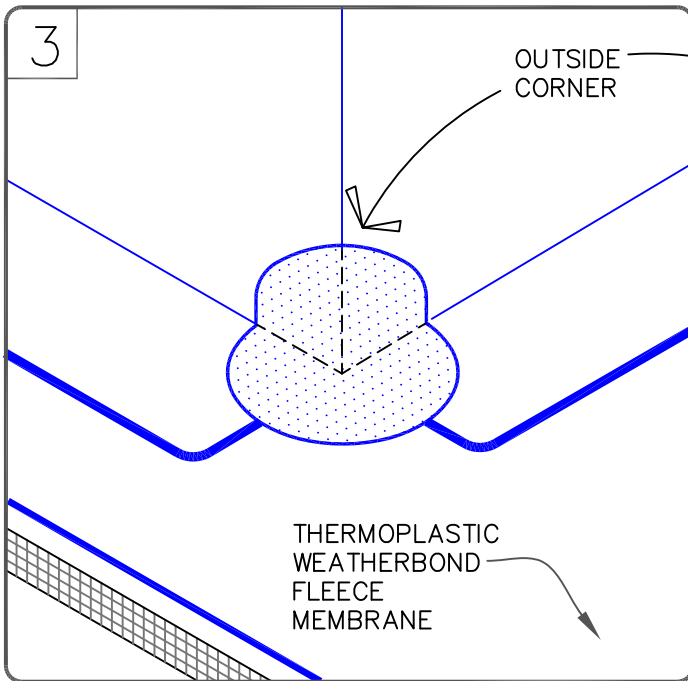
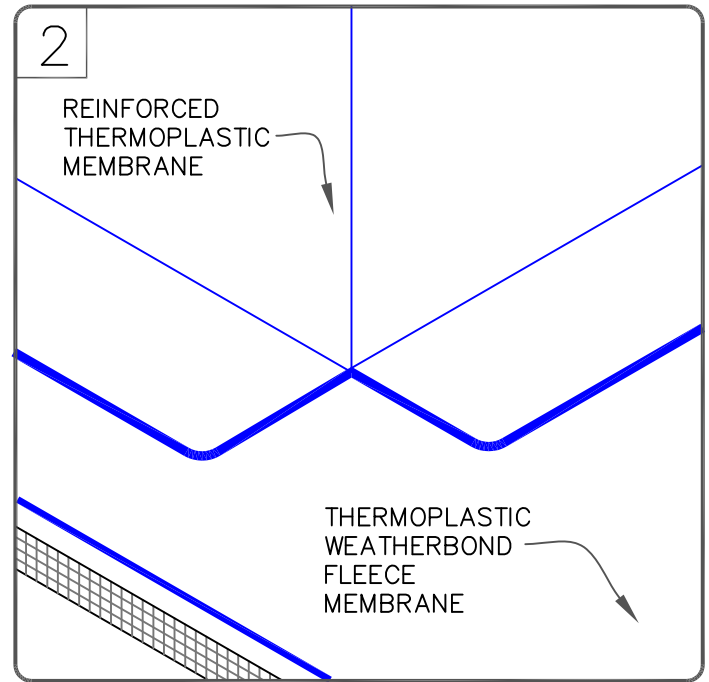
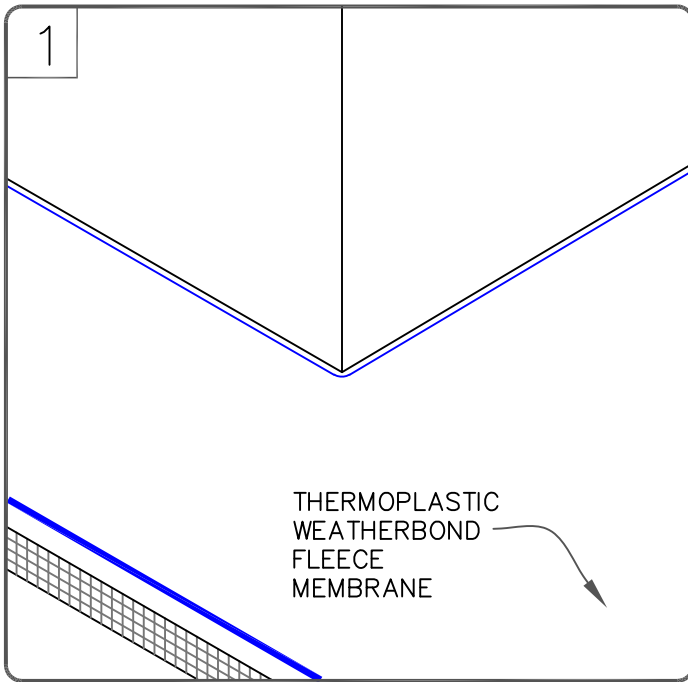
NOTES:

1. MECHANICALLY FASTENED BASE SECUREMENT IS REQUIRED WHEN ANY ONE OF THE FOLLOWING MAY OCCUR:
 - 1.1. PROJECTS WITH CONTROL OR EXPANSION JOINTS OR ANTICIPATED BUILDING MOVEMENT.
 - 1.2. WHEN WEATHERBOND FLEECE MEMBRANE IS INSTALLED DIRECTLY OVER AN EXISTING SINGLE-PLY ROOF.
2. 9" (23cm) WIDE WEATHERBOND FLEECE MEMBRANE INSTALLED WITH FLEECE-BACKING SIDE FACING UP.
3. WHEN USING 60 OR 80-MIL REINFORCED THERMOPLASTIC MEMBRANE FLASHING, APPLY A 4-1/2" (11cm) DIAMETER THERMOPLASTIC "T-JOINT" COVER AT ALL FIELD SPLICE INTERSECTIONS.



NOTE:

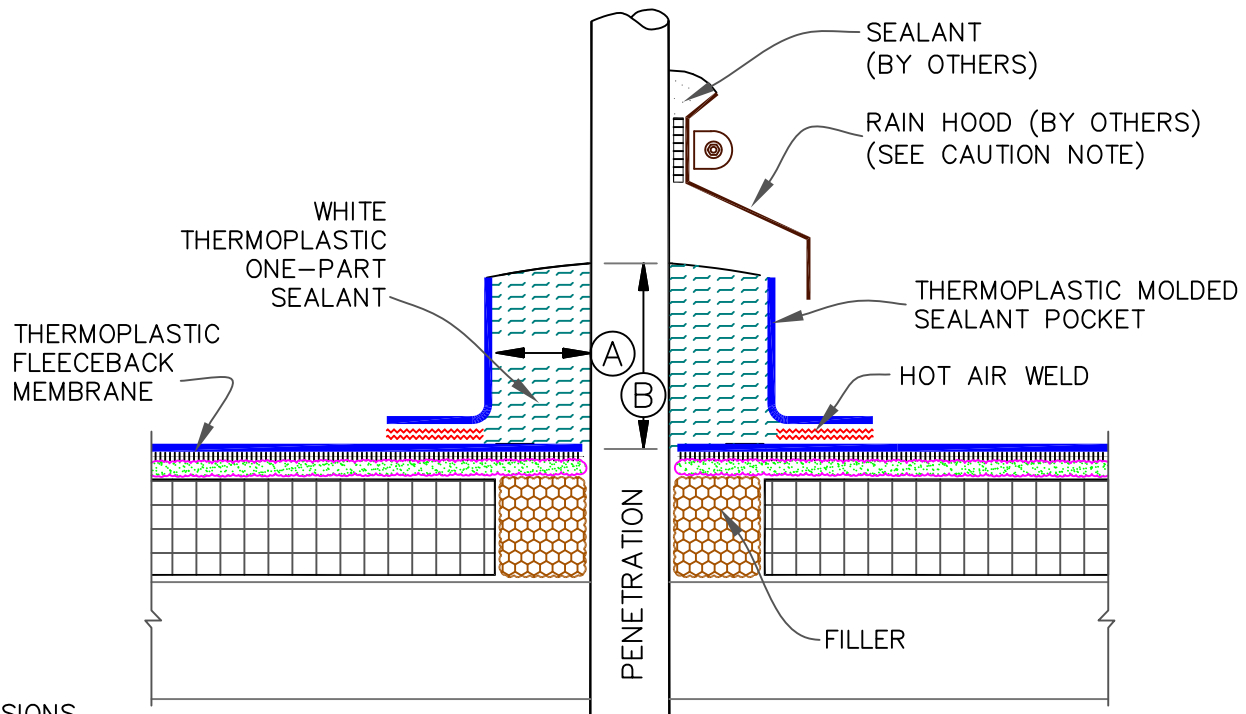
1. WHEN USING 60 OR 80-MIL MEMBRANE, APPLY A 4-1/2" (11cm) DIAMETER "T-JOINT" COVER AT ALL FIELD SPLICE INTERSECTIONS.



OUTSIDE CORNER
BEFORE INSTALLATION

NOTE:

APPROXIMATELY 1/8" (0.5cm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE.



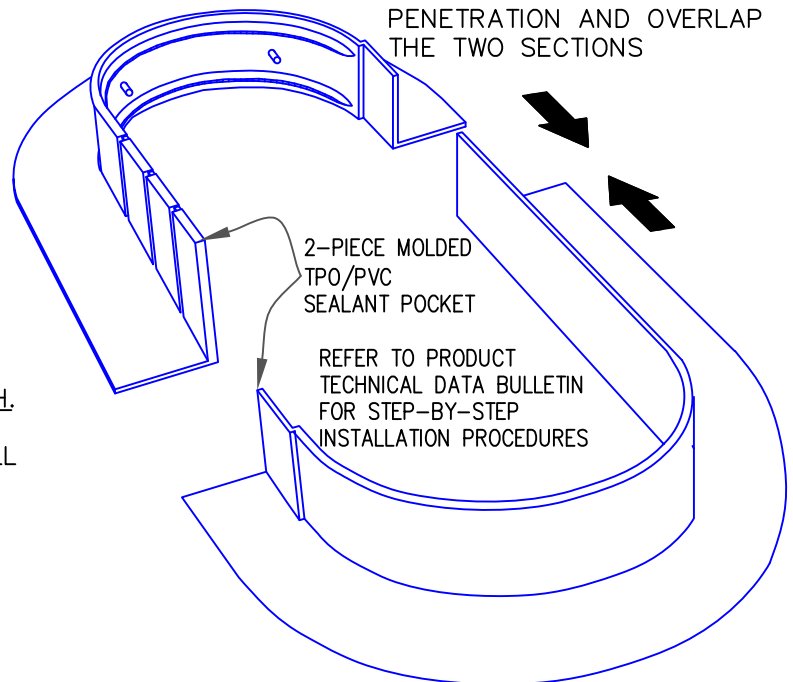
DIMENSIONS

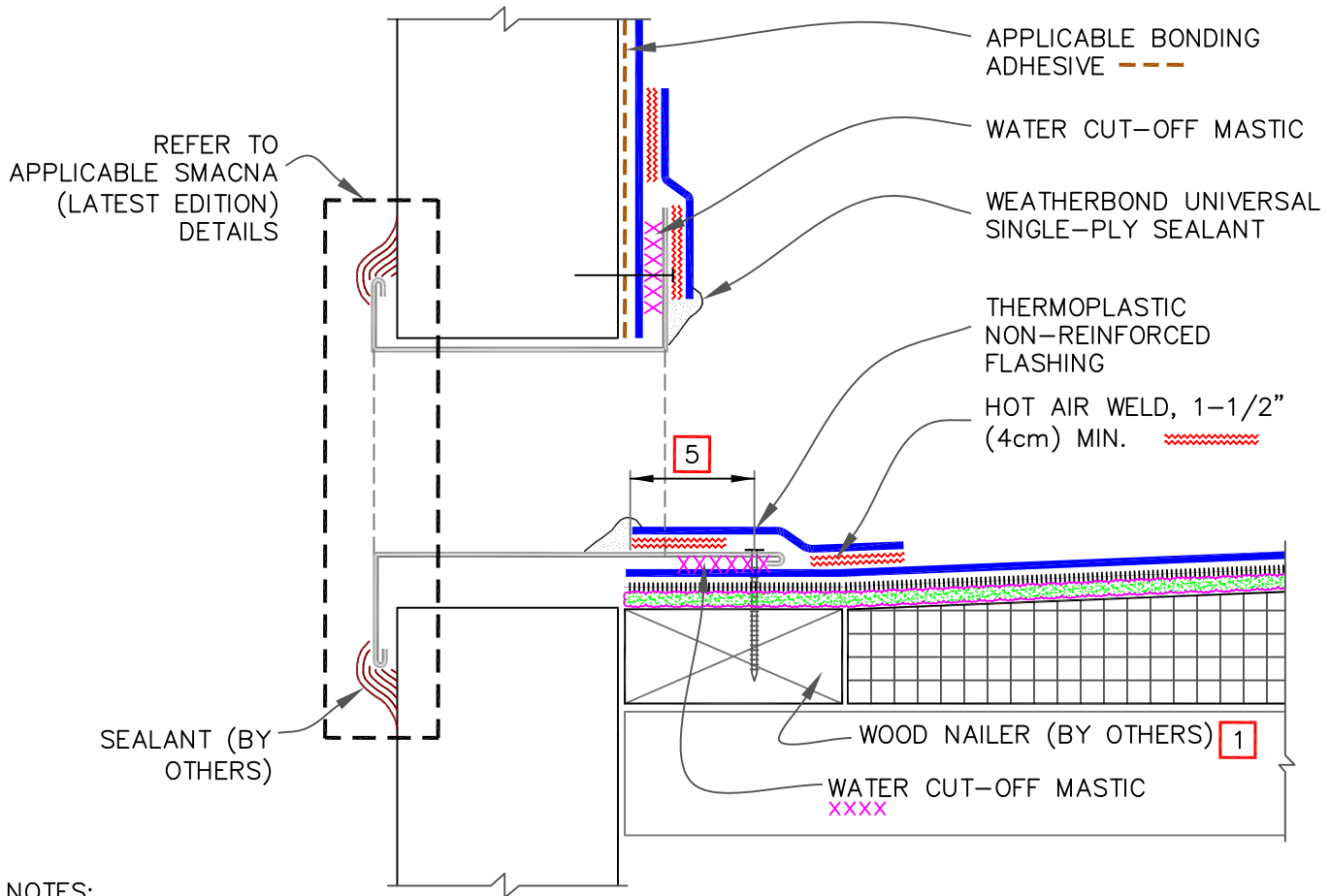
		cm			cm	
(A)	1"	2.5	MIN.	(B)	2"	5
						MIN.

NOTES:

1. TEMPERATURE OF THE PIPE PENETRATION MUST NOT EXCEED 160°F (71°C).
2. WHEN USING THERMOPLASTIC MEMBRANE/MOLDED SEALANT POCKET, APPLY A THIN COAT OF TPO/PVC PRIMER TO THE INSIDE AND AROUND THE TOP RIM OF THE POCKET, TO THE DECK MEMBRANE ENCLOSED BY THE POCKET AND TO THE PENETRATION USING A SMALL PAINT BRUSH.
3. ONE-PART SEALANT MUST COMPLETELY FILL MOLDED SEALANT POCKET TO PREVENT PONDING OF WATER.
4. PIPE CLUSTERS MUST HAVE MINIMUM 1" (2.5cm) CLEARANCE BETWEEN PENETRATIONS.

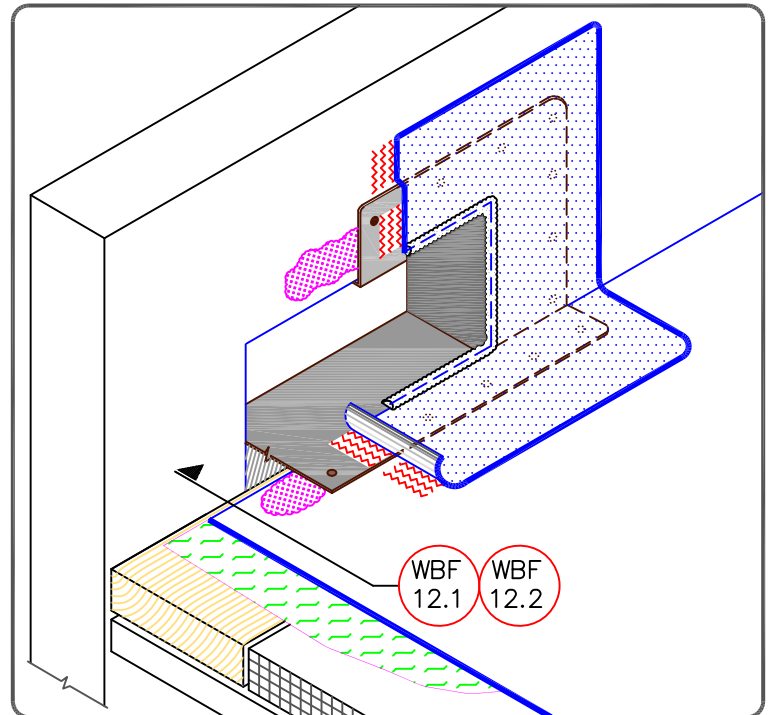
PLACE MOLDED TPO/PVC SEALANT POCKET AROUND PENETRATION AND OVERLAP THE TWO SECTIONS

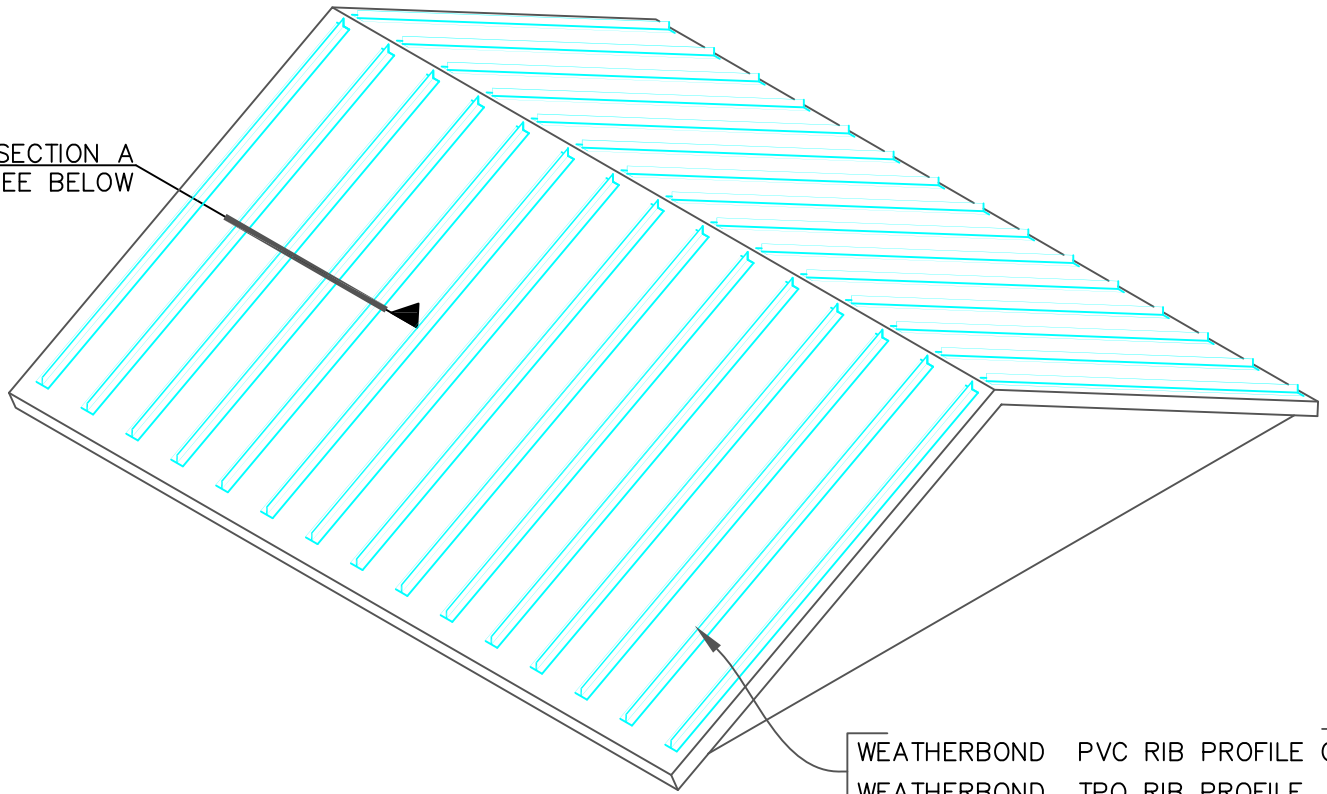
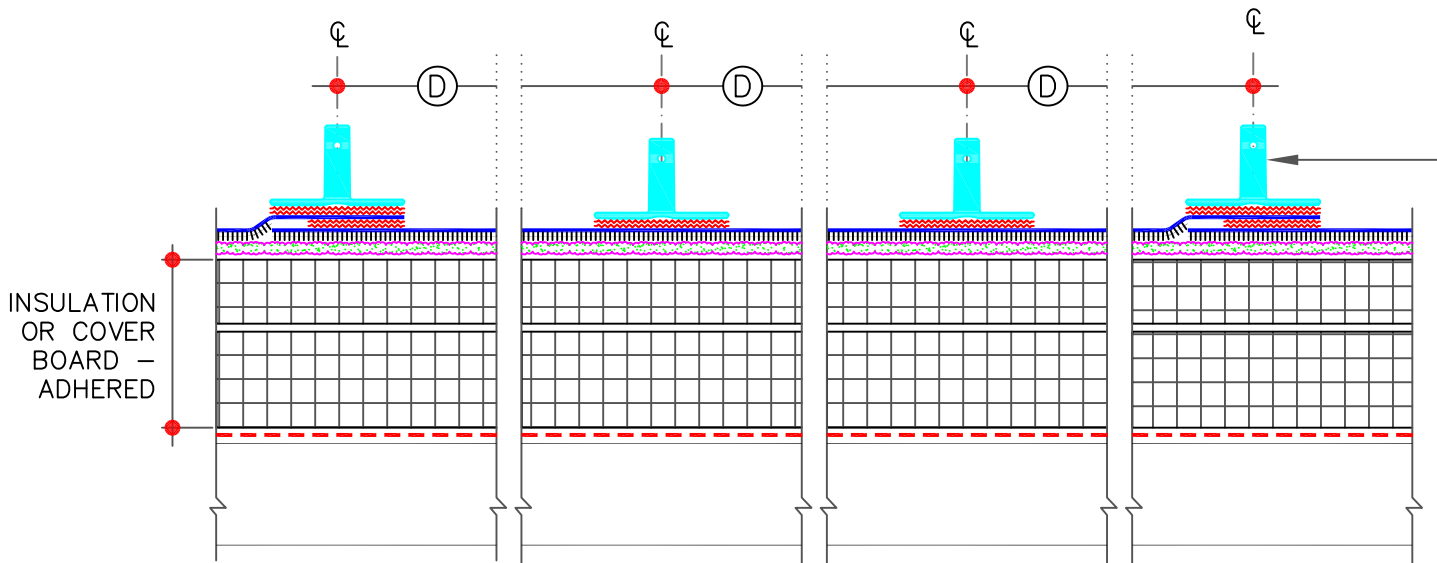




NOTES:

1. WOOD NAILERS ARE INSTALLED ONLY AT SCUPPERS TO SECURE METAL SLEEVE AND MUST EXTEND PAST THE WIDTH OF METAL SLEEVE FLANGE.
2. INSTALL WALL FLASHING PRIOR TO SCUPPER INSTALLATION.
3. METAL SCUPPER BOX MUST HAVE CONTINUOUS FLANGES WITH ROUNDED CORNERS. SOLDER ALL SCUPPER SEAMS WATER-TIGHT.
4. WATER CUT-OFF MASTIC UNDER SCUPPER FLANGE MUST BE UNDER CONSTANT COMPRESSION.
5. SCUPPER FLANGES MUST BE TOTALLY COVERED BY THERMOPLASTIC NON-REINFORCED FLASHING WITH MINIMUM 2" (5cm) COVERAGE PAST NAIL HEADS.
6. UNIVERSAL SINGLE-PLY SEALANT IS REQUIRED AT FLASHING EDGES ON SCUPPER EDGE. WHEN USING THERMOPLASTIC FLASHING, THERMOPLASTIC PRIMER MUST BE USED TO PREPARE SURFACES PRIOR TO THE APPLICATION OF SEALANT.



SECTION A
SEE BELOWWEATHERBOND PVC RIB PROFILE OR
WEATHERBOND TPO RIB PROFILE

SECTION A: PVC/TPO RIB PROFILE

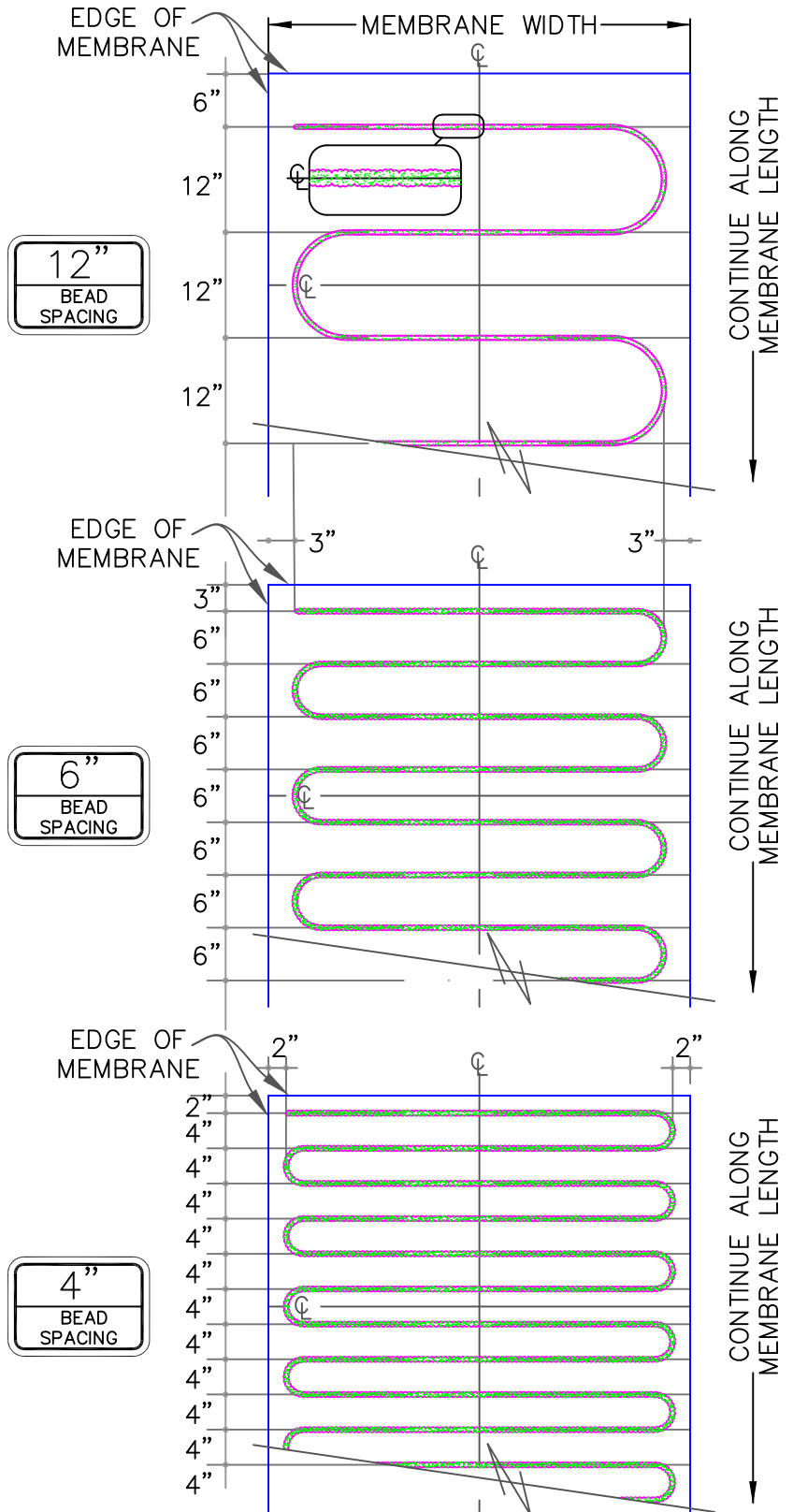
HOT AIR WELD
(REFER TO SPECS)
 AIR/VAPOR BARRIER
(WHERE REQUIRED)

RIB PROFILE DIMENSIONS

	INCH	mm	
(A)	1-3/4"	4.5	
(B)	1-1/4"	3	
(C)	1/2"	1	
(D)	VARIES		

NOTES:

1. REFER TO VERSICO SPECIFICATIONS FOR PRODUCT DATA SHEETS FOR APPROPRIATE BEAD SPACING BASED UPON THE BUILDING HEIGHT, WARRANTY TERM AND ACCEPTABLE SUBSTRATE.
2. THE SURFACE TO WHICH ADHESIVE IS TO BE APPLIED SHALL BE DRY, FREE OF FINS, PROTRUSIONS, SHARP EDGES, LOOSE AND FOREIGN MATERIALS, OIL AND GREASE. AREA SHOULD BE CLEANED WITH AN AIR BLOWER.
3. PREVIOUSLY UNEXPOSED ASPHALT OR RESIDUE MUST BE PRIMED WITH VERSICO CAVGRIP 3V, 702 OR 702LV PRIMER.
4. SEAL ALL GAPS IN THE CONCRETE DECK WITH VERSICO 725TR OR OTHER SUITABLE MATERIAL TO AVOID CONDENSATION ISSUES OR FILL WITH VERSICO INSULATION ADHESIVE.
5. UNROLL 10' TO 15' OF MEMBRANE TO ENSURE IT IS PROPERLY ALIGNED AND FOLD UNROLLED SECTION BACK OVER ROLL.
6. APPLY FLEXIBLE DASH ADHESIVE OVER THE SUBSTRATE AREA TO BE COVERED BY THE MEMBRANE THAT IS FOLDED BACK.
7. ONCE THE FLEXIBLE DASH ADHESIVE IS APPLIED IN PLACE AND HAS BEGUN TO RISE 1/8" APPROXIMATELY IN HEIGHT AND DEVELOPS STRINGS WHEN TOUCHED WITH A HP SPLICE WIPE, SLIDE THE MEMBRANE INTO THE ADHESIVE.
8. ROLL THE MEMBRANE USING A 30" WIDE, 150 POUND WEIGHTED SEGMENTED STEEL ROLLER, TO SET THE MEMBRANE BACK INTO THE ADHESIVE.



FEET TO CENTIMETERS	
4'	8'
122	244

	INCHES TO CENTIMETERS																
inch	1/4"	1/2"	3/4"	1"	1.5"	2"	2.5"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"
cm	1	1.5	2	2.5	4	5	6.5	7.5	10	13	15	18	20	23	25	28	30