

# THERMOPLASTIC ROOFING

## SECTION 2 - CONTROL JOINTS, PERIMETERS & PENETRATIONS

### 2.1 CONTROL JOINTS

#### 2.1.1 General

- .1 Roofing control joints may be required to prevent structural movement or stresses within the roofing system from damaging thermoplastic membranes.
- .2 For new construction, for building additions and for re-roofing, control joints shall be installed between the new and existing roofing systems. The Warranty Certificate will only be issued on self-contained roof areas/sections.
- .3 Two types of control joints may be used for roofing, construction expansion joints and roof area dividers.

#### 2.1.2 Construction Expansion Joints

- .1 The building construction expansion joint is incorporated by the design authority when differential structural movement is anticipated.
- .2 Roofing expansion joints typically are of double curb/plate construction, fastened on opposite sides of the structural separation, or as otherwise approved by the membrane manufacturer and ARCA Warranty Ltd.
- .3 For conventional roofing designs, the top of the expansion joint shall extend a minimum distance of 200 mm (8") above the finished roof surface.
- .4 Drainage openings are not permitted through roof expansion joints.

#### 2.1.3 Roof Area Dividers

- .1 A roof area divider is incorporated to divide the roofing system into manageable sections and to protect the membrane from stress related damage.
- .2 For thermoplastic roofing membranes, roof area dividers may be required where membrane stress points are likely to occur, such as at changes in roof deck direction or deck construction type. Please consult with the membrane manufacturer for their roof area divider requirements.
- .3 For conventional design thermoplastic roofing systems, the top of the roof area divider shall extend a minimum distance of 200 mm (8") above the finished roof surface.
- .4 Minimum roof area divider height may be reduced where the roofing system drainage slopes away from the divider.
- .5 Roof area dividers may be of single or multi-plate construction and shall be fastened to the roof decking to prevent displacement.

- .6 Membrane level drainage openings are not permitted through roof area dividers. Where drainage is required through area dividers, drainage openings shall be installed no lower than 75 mm (3") above the primary membrane.

## **2.2 PERIMETERS**

- .1 For conventional design thermoplastic membranes, a metal thermoplastic coated drip edge flashing may be used to finish the perimeter edge of the roofing system.
- .2 Where parapets are used they shall extend a minimum height of 75 mm (3") above the finished roof surface.
- .3 The top surface of the parapet wall shall be sloped towards the roof when the width of the parapet is greater than 100 mm (4"). The top of the parapet wall must have wood blocking installed which is capable of providing holding power for nails and/or screws used to secure the metal flashing.
- .4 Gypsum board is not an acceptable substrate for the interior (roof side) vertical surface of a perimeter parapet wall.

## **2.3 ROOF PENETRATIONS**

### **2.3.1 General**

- .1 Where permitted and when installed in accordance with the application standards, thermoplastic roofing system penetrations may be waterproofed with thermoplastic coated metal gum boxes and flashings, pre-molded pipe boot or field fabricated flashings, curbs or specialty devices designed for this purpose by the membrane manufacturer.
- .2 For sheet metal flashing penetrations, the thermoplastic coated horizontal metal flange shall have rounded corners and shall be secured to and be completely supported by wood blocking matching the insulation thickness.
- .3 The wood blocking length shall exceed the metal flange width and shall be secured to the structural decking.
- .4 Pre-molded pipe boot flashings by the membrane manufacturer may be used to seal, where practical, circular roof penetrations and to seal waterproof flexible service lines when they are supported or secured to prevent collapse of the pre-molded pipe boot flashing.

### **2.3.2 Curbs**

- .1 Curb tops shall extend a minimum distance of 200 mm (8") above the finished primary membrane surface.
- .2 Curbs may be of wood or metal construction and shall be mechanically fastened to the structural decking. Curbs shall be insulated.

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- .3 Metal curb tops shall be designed to provide a minimum 50 mm (2") counter flashing overlap.
- .4 Exposed penetrations through curbs shall be placed no lower than 200 mm (8") above the finished roof surface.

### 2.3.3 Plumbing Vent Flashings

- .1 Plumbing vents penetrating the roofing system, that are not curbed, may be waterproofed with a conical one piece aluminum flashing, pre-molded pipe boot or field fabricated flashing or a pre-approved specialty device designed for this purpose.
- .2 Spun aluminum vent flashings, when not curb mounted, shall extend a minimum distance of 200 mm (8") above the primary membrane surface, and shall have a minimum of 100 mm (4") wide thermoplastic coated flange. The top surface shall be cleaned to ensure proper adhesion of the membrane flashing.
- .3 When curb mounted, the curb shall be sized so the base flange overlaps and extends down the membrane flashing a minimum distance of 50 mm (2") on all sides. The plumbing vent flashing shall be mechanically fastened to the curb on each side. Do not place fasteners through the horizontal surface.
- .4 Where vent extension pipes are required, the base of the extension pipe shall be sealed into the vent stack hub, and the extension pipe shall be sealed to the neoprene collar with a compatible sealant. The interior of the plumbing vent flashing shall be insulated to reduce condensation.

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### 2.3.4 Jack, Ventilator and Gooseneck Flashings

- .1 When installed at membrane level, the flashing may not exceed 350 mm (14") in diameter or on a side. Each flashing shall incorporate a one piece base flange not less than 100 mm (4") nor more than 200 mm (8") in width. A flashing sleeve/cone shall extend not less than 200 mm (8") nor more than 300 mm (12") above the base flange. For gooseneck flashings, the minimum flashing height shall be measured to the throat of the bend. The sleeve connection with the base flange shall be soldered. All other seams, including gooseneck segments, shall be soldered/welded water tight.
- .2 The top surface of the thermoplastic coated flange shall be cleaned to ensure the proper adhesion of the membrane flashing.
- .3 When curb mounted, the metal base flange shall be sized to over lap and extend down over the curb base flashing a minimum distance of 50 mm (2") on all sides. The metal flashing shall be mechanically fastened to the curb on each side. Do not place fasteners through the horizontal flange surface.

### 2.3.5 Gum Boxes

- .1 Only rigid service lines, when used, shall be waterproofed using gum boxes.
- .2 Flexible service lines, when not waterproofed with a pre-molded pipe boot flashing, shall be contained within a curbed enclosure.
- .3 For new construction, thermoplastic coated sheet metal gum boxes shall be of one-piece construction incorporating a minimum 100 mm (4") wide continuous deck flange. Gum box sides shall extend a minimum distance of 100 mm (4") above the primary membrane surface.
- .4 The gum box shall be packed with oakum or other material to contain the sealer. The gum box shall be filled with a minimum 50 mm (2") thick layer of a compatible pourable sealer.
- .5 When re-roofing, gum boxes may be of a two piece construction provided there are no openings when installed and the pourable sealer is contained.
- .6 When more than one service line occupies a gum box, a minimum separation distance of 50 mm (2") shall be maintained between each service line and the gum box sides.

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### 2.3.6 Pre-Molded Pipe Boot Flashings

- .1 Pre-molded pipe boot flashing may be used, where practical, to seal circular roof penetrations and to seal waterproof flexible service lines.
- .2 Waterproof flexible service lines, such as Teck 90 P.V.C. jacketed electrical cable, shall be supported or secured to prevent collapse of the pre-molded pipe boot flashing.
- .3 Pre-molded pipe boots may be cut to a height no lower than 100 mm (4") above the primary membrane.
- .4 The pipe boot flange shall be adhered to the primary membrane in accordance with the manufacturer's application requirements.
- .5 Do not overlap or trim pipe boot membrane flashing flanges.
- .6 The upper pipe boot termination shall be sealed to the circular roof penetration/waterproof flexible service line with a continuous band of sealant and a properly tightened stainless steel pressure clamp.

### **2.3.7 Fall Arrest Anchors**

- .1 ARCA Warranty Ltd. assumes no liability relative to the supply and installation of fall arrest anchors.
- .2 The Warranty Certificate does not include warranty of the fall arrest anchor system or its performance except as it relates to the watertight integrity of the roof membrane flashing seal around the anchor flashing.
- .3 ARCA Warranty Ltd. recommends that a professional structural engineer, licensed in Alberta, design the fall arrest anchor system. Installation, drawings, specifications and conformance to current building and safety codes shall be included in the professional engineer's scope of work.

## **2.4 ROOF DRAINS**

### **2.4.1 General**

- .1 The Warranty Certificate does not include warranty of the roof drainage system except as it relates to the watertight integrity of the roof membrane flashing seal around the drain assembly.
- .2 Provisions for emergency drainage is recommended in all instances and is a requirement when control flow drains are incorporated into the roof drainage system.
- .3 All roof drain assemblies, except scuppers, shall incorporate a clamping ring.

### **2.4.2 Cast Drains**

- .1 A heavy bead of the membrane manufacturer's approved water cut-off mastic shall be used to seal all cast drain assemblies.
- .2 The top hopper flange of the roof drain must be approximately 12.7 mm (½") below the surface of the primary membrane.

### **2.4.3 Retrofit Drains**

- .1 Retrofit drains may be used for roof replacements (re-roofing) when cast drains are not practical. Retrofit drains shall be of thermoplastic coated spun aluminum or copper construction, with a minimum flange width of 100 mm (4"). The flange shall be set in a bed of a compatible sealant and the top surface shall be to ensure proper adhesion of the membrane flashing. The drain size shall match that of the existing drain line. The retrofit drain sleeve shall incorporate a seal to prevent back flow from the existing drain line.
- .2 Sheet metal drop drains shall only be used for exterior drainage locations, such as through an overhang. A minimum 100 mm (4") wide thermoplastic coated flange shall be soldered to the pipe sleeve and shall be set in a bed of a compatible sealant. The drain flange shall be continuously supported by wood blocking matching the insulation thickness. The top surface of the flange shall be cleaned to ensure proper adhesion of the membrane flashing.

#### 2.4.4 Scupper Drains

- .1 Scupper drains permit roof drainage through the perimeter building elements, such as parapets. Scupper drains may also serve as emergency over flow outlets. Scuppers may be open or through-wall type fabricated with or without an exterior hopper. When serving as primary drainage, the scupper shall be set so that the scupper apron is at or below primary membrane level.
- .2 Scuppers shall be fabricated from minimum 26 gauge thermoplastic coated galvanized sheet metal. Scupper flanges must extend a minimum distance of 100 mm (4") over the primary membrane and wall opening. Sheet metal flanges shall be set in a bed of a compatible sealant. The tops of the flanges shall be cleaned to ensure proper adhesion of the membrane flashing. The horizontal scupper flange shall be continuously supported by wood blocking matching the insulation thickness.
- .3 Through wall scuppers shall be four (4) sided to cover the upper scupper opening with sheet metal. The scupper opening shall be waterproofed in accordance with good roofing practice.
- .4 Where control of drainage is required, the scupper assembly may include an exterior hopper and an attached downpipe.

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