Oak Ridge™
Foam & Coating Systems, Inc.

GENERAL GUIDELINES FOR DETAILING WORK PREPARATIONS FOR ROOFING APPLICATIONS

FALL
Adequate drainage fall should be specified at no less than the industry minimum requirement or at least 1.5% without ponding. Internal box and valley gutters require (at least) the same fall as roofs.

GUTTERING
Box/Valley Gutters can be waterproofed or over-flashed using a continuation of the roof membrane. However, because gutters are such a critical waterproofing area, an additional reinforced layer of membrane is recommended.
Full bonding of the membrane to the gutter is recommended, but slip jointing should be incorporated at movement joints and at substrate junctions. Optimum drainage falls to Code sized outlet pipes should be maintained, and consideration should be given to maintenance and filtration systems to safeguard against build blockages from hailstones, vegetation and other waste accumulation. Overflow drainage should be allowed, and drip lips installed at all potential back tracking locations.
The design of gutters should permit differential thermal movement separation from the deck. A drip edge flashing should be formed and installed to support the membrane turndown, and to permit maintenance of gutters without disturbing the deck membrane.

MEMBRANE ENCAPSULATED OUTLETS
Drain outlets must be special flanged outlets that are specifically designed for membrane systems, and incorporate mechanical sealing against back pressure. Ideally, the outlets should be located at no greater than 7.5 meter / 25 feet centers and be of size/capacity to adequately evacuate the maximum expected water drainage load and to meet Local Government and National Standards. The outlet design shall allow for evacuation of water entrapped by the membrane as well as any requirement to drain the overlaid surface cladding.

FLASHINGS AND CAPPINGS
Cover flashings, masonry capping and damp courses play an equally important role in keeping a building waterproof, and are

PARTS OF THE APPLICATOR'S RESPONSIBILITY. Consideration should be given to the selection of materials and their placement in the structure. Poor flashing detailing can permit moisture entrapment within the masonry or plaster adjoining the roof membrane. As a general rule, flashings and capping heights should continue at least 150 mm / 6 inches above the highest water table level. All flashings and damp courses must extend to overlap the membrane.
Metal flashings should be fixed and lapped to allow for thermal expansion. Different types of metals may catholically react and corrode. Similarly, metal may be broken down by some chemicals present in common building materials such as chloride salts, sulphides and alkalis. Careful consideration should be give to the possibility of these reactions when specifying.

PENETRATIONS
With time and exposure, vents, skylights, and other roof fixture penetrations can become loose. This movement may be transmitted directly to the membrane. Separate sleeves or plinths, fixed to the deck, but free of the penetrations are recommended for independence of the membrane. The associated membrane turn-ups should be collar-over-flashed off the penetrating fixture. Commercial Silicone Rubber collars are an acceptable alternative. High point placements are advisable.

TURN-UPS
Turn-ups are some of the most vulnerable points on a roof. They are susceptible to degradation from ultra violet radiation and possible mechanical damage. An additional layer of high performance membrane at these points is a wise precaution. The Membrane should be solidly bonded to vertical surfaces and to the deck. Bridge the actual junction with an angled fillet. Cover flashings should extend to the deck or surface finish level to provide additional protection. Where adjoining walls are independent of the roof, slip sheeted or formed separation is recommended to allow for movement (for example, movement could be caused by natural settlement or the weight of additional claddings).

ANGLE FILLETS
Perimeter coved or angled fillets (minimum 20 mm / 3/4 inch face) shall be placed to walls and up-stands that are integral with the roof deck (or other substrate). The fillets help to distribute the forces of any concentrated movement and permit a smooth transition of the membrane from deck to wall.

IRMA (Inverted Roofing Membrane Applications)
Insulation boards, if installed, should be of premium quality high density, closed cell foam, to avoid water saturation of the insulation material.

EXPANSION AND CONTROL JOINTS
A design-graded roof should have movement joints planned and sited at the highest points throughout the deck area to be sprayed. Slip-sheets shall be placed both under and over the membrane bridging such joints. The bridging membrane shall be fabric reinforced with elastic material suited and sized to accommodate the distribution of stresses from the expected movement of the joint or moving plane junction, and shall generally extend a minimum of 100 mm / 4 inches either side of the joint or junction. Engineering confirmation should be sought as to the magnitude of expected movement.

It is essential that in-situ movement joints be of their **DESIGN INTENDED SEPARATION DISTANCE THROUGHOUT THEIR SEPARATION** to avoid stresses to the membrane and structure that can cause physical damage. Neglecting this design detail may result in magnified movement(s) being transferred to the next operable joint or change of structural plane. Such magnified and unplanned movement(s) can abrade a sandwiched membrane or place excessive compression and de-lamination stresses at related up-stands. The inspection and acceptance of movement joints should be included as a hold point in the Applicator's Preliminary Inspection and Test Plan.

SLIP SHEETS
Slip sheeting is a laminate of flexible material that should be used where dissimilar movement is anticipated between the substrate and the surface cladding over the membrane. Slip sheeting may be placed between the membrane and the substrate, or the membrane and the overlay (if any). Slip sheeting protects the membrane from frictional and tensile causes of de-lamination, and rending. Slip sheeting is also employed where the membrane is required to bridge movement joints (as above), thus elastically distributing the movement stresses that would otherwise be concentrated on a small section of the membrane.

EXPANSION JOINT CAPS

Membranes should not be subject to movement from high magnitude repetitive thermal cycling or other significant substrate movement. Such joints should be formed with non-flexural, non-contacting, non-corrosive metal or stable plastic profiles to form a fixed two-part wall and cap over the joint. Design should include fixings, allowance for lineal movement, assembly, required sealant to substrate, and protective measures from over-cladding movement damage.

MEMBRANE MAINTENANCE

All flat roofs and associated flashings and capping should be inspected at least every two years. Any signs of possible defects (possibly caused by mechanical damage or structural movement) should be immediately repaired.

VENTED MEMBRANES

The use of vented membranes is only required where water vapour emitted from the substrate is likely to cause probable blistering and uplifting of the overlaid membrane. The specified use of a vented membrane will be determined by the intended use of the structure and the Water Vapour Transmission permeability of the substrate.

Vented membranes have the disadvantage of permitting water interface of the substrate and membrane, but offer the benefit membrane that permits the unrestricted escape of moisture and tracking at the of a breathing related vapors.

It is important to address all detailing work prior to beginning the spray application, as this will reduce wastage of material and man-hours.

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