

THERMOPLASTIC ROOFING

SECTION 4 - VAPOUR RETARDERS

4.1 GENERAL

- .1 ARCA Warranty Ltd. requires the use of a vapour retarder membrane for conventional or combination design thermoplastic roofing assemblies, when a Warranty Certificate is to be issued. When a complete roof system, including the existing insulation is being replaced, a vapour retarder is required for the issuance of the Warranty Certificate.
- .2 The selection of the type and quality of the vapour retarder is a building design function and is the responsibility of the design authority. When selecting the vapour retarder membrane, the design authority should take into consideration a number of factors such as building occupancy, air conditioning, envelope seals and humidity levels during building construction. Concrete pouring and drywall mudding after roof installation may increase humidity design values.
- .3 The vapour retarder specifications recommended in this section are experience based for normal humidity conditions, 40% at 21°C. For higher humidity conditions the application of an additional ply of membrane or the use of a high performance vapour retarder membrane is recommended.

4.2 COMMON ELEMENTS OF APPLICATION

- .1 The vapour retarder membrane shall be joined and sealed to the primary membrane at roof perimeters, vertical roof junctions and at roof penetrations. The vapour retarder membrane, or an extension of the membrane, shall wrap the insulation components and shall extend out over the secondary insulation a minimum distance of 150 mm (6") and be adhered to the surface of the secondary insulation.
- .2 Organic felt vapour retarders must not be left unprotected when inclement weather or exceptional circumstances prevent the complete application of the roof assembly. The top ply of felt shall be protected with a uniform visible coating of bitumen.
- .3 Polyethylene vapour retarder shall be minimum 0.15mm (6mil) thick and shall conform to the CAN/CGSB 51.34 standard.
- .4 For adhered thermoplastic membranes, the primary insulation must be mechanically fastened to the structural deck when polyethylene vapour retarders are specified.

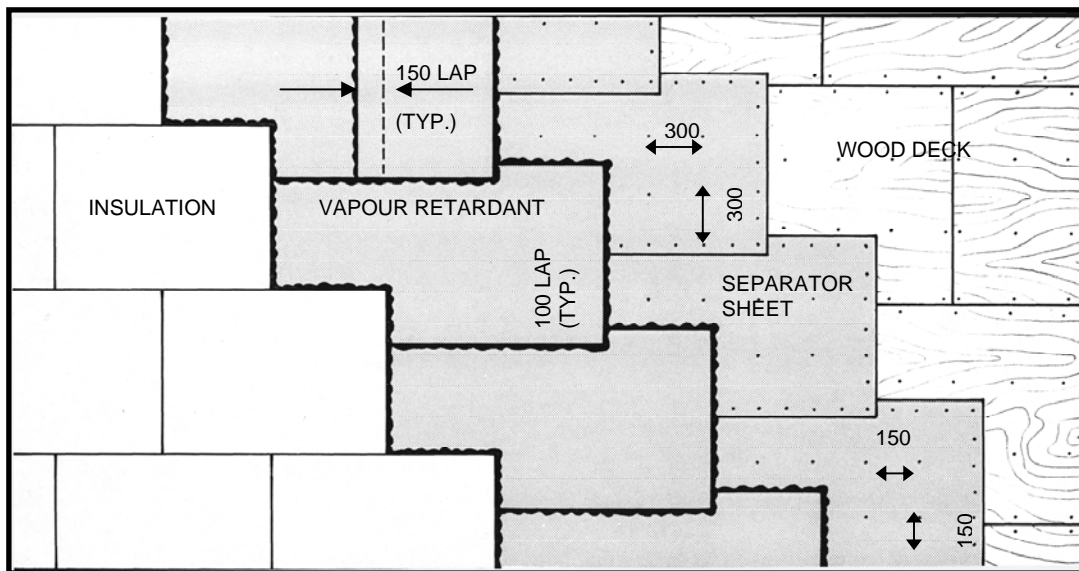
4.3 EXISTING BUR MEMBRANES AS VAPOUR RETARDERS

- .1 The following procedure shall be employed when the primary membrane from an existing BUR protected membrane assembly is to be left in place and serve as the vapour retarder membrane for a replacement conventional or combination design roof assembly. The existing membrane shall be prepared by removing any wet or deteriorated material, dust, dirt and debris. The complete surface, including any exposed substrate, shall be covered with a minimum one ply vapour retarder.

4.4 MINIMUM RECOMMENDED VAPOUR RETARDERS FOR WOOD DECKS

The following specifications provide minimum composition and application procedure for vapour retarders accepted by ARCA Warranty Ltd. for the use in roofing systems to receive a Warranty Certificate.

4.4.1 Specification W-VR-1 Normal Humidity Conditions



GENERAL

The direct application of hot bitumen to wood decks is not permitted.

The vapour retarder membrane must be uniformly attached to its substrate.

For high humidity conditions add a minimum of one additional ply of No. 15 organic felt fully adhered into an interply mopping of hot bitumen applied at the approximate rate of 1 kg/m² (20 lbs/100 sq. ft).

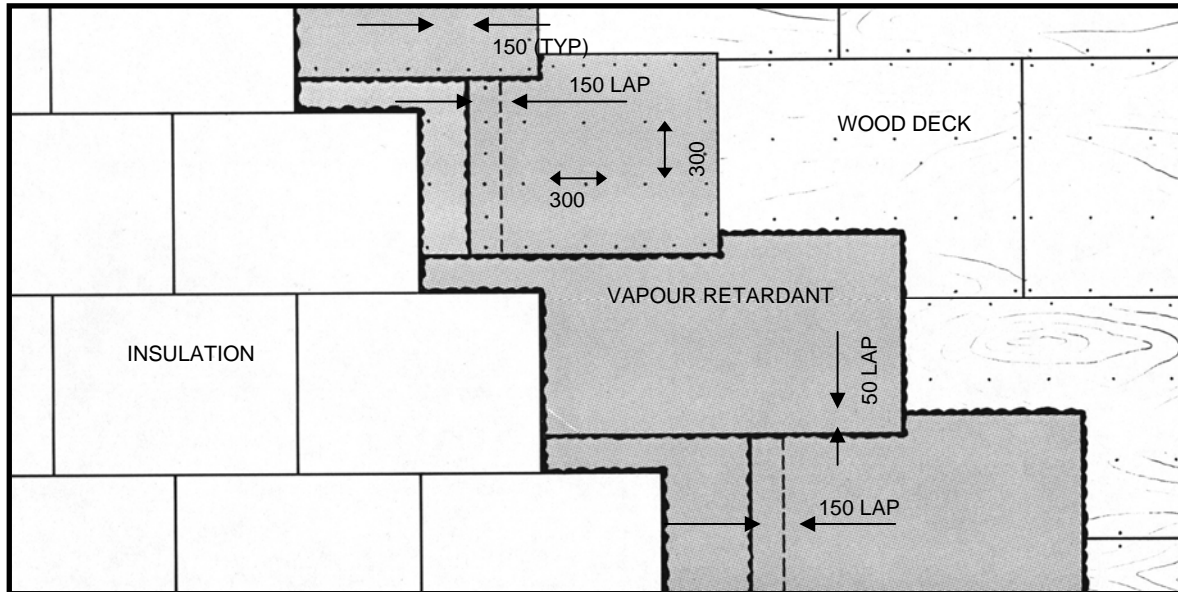
APPLICATION

For the separator sheet, nail one ply No. 15 organic felt to wood deck using large head galvanized roofing nails spaced at approximately 150mm (6") centres for laps and approximately 300mm (12") centers for field of the sheet.

For the vapour retarder, mop one ply No. 15 organic felt fully adhered to nailed separator sheet in hot asphalt applied at the approximate rate of 1 kg/m² (20 lbs/100 sq ft).

Separator sheet/vapour retarder side laps shall be minimum 100mm (4") wide and end laps shall be a minimum 150 mm (6") wide.

4.4.2 SPECIFICATION W-VR-2 Normal Humidity Conditions



GENERAL

The direct application of hot bitumen to wood decks is not permitted.

The vapour retarder membrane must be uniformly attached to its substrate.

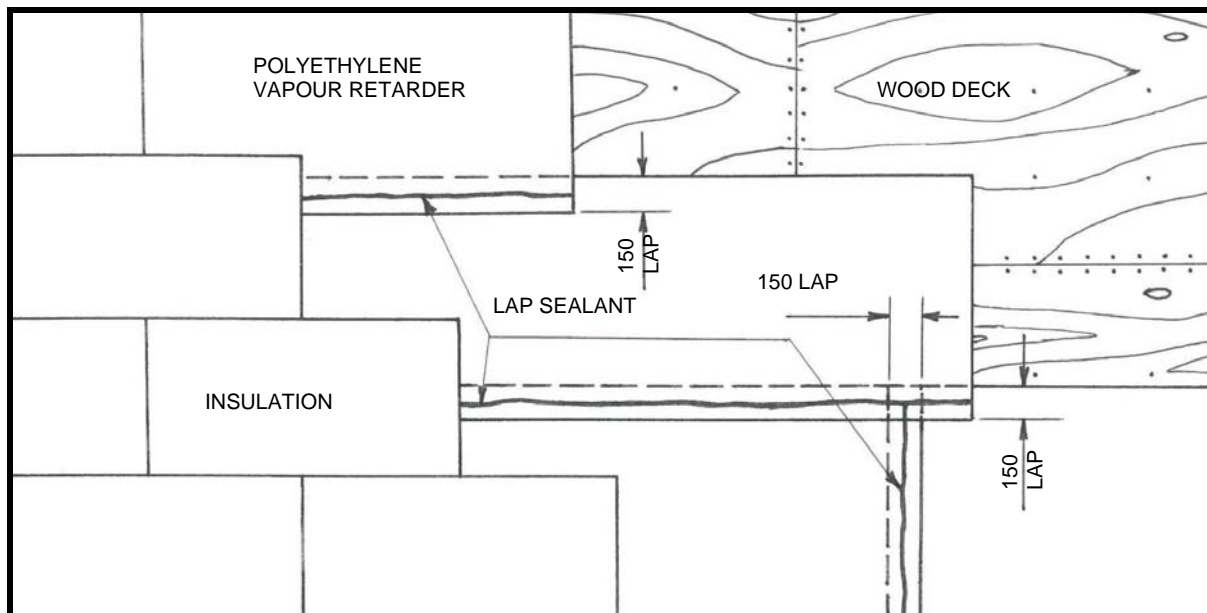
For high humidity conditions add a minimum of one additional ply of No. 15 organic felt fully adhered into an interply application of hot bitumen applied at the approximate rate of 1 kg/m².
(20 lbs/100 sq ft).

APPLICATION

For the vapour retarder, nail one ply kraft laminate sheet to wood deck using large head galvanized roofing nails spaced at approximately 150mm (6") centers for laps and approximately 300mm (12") centers for the field of the sheet. Alternatively a one (1) ply kraft laminate sheet may be adhered in a full roller coating or in continuous ribbons of vapour retarder adhesive applied to surface of wood deck. Vapour retarder adhesive application rates shall be in accordance with adhesive manufacturer's recommended application rates.

Kraft laminate side laps shall be minimum 50 mm (2") wide and end laps shall be minimum 150 mm (6") wide. Laps shall be fully sealed with a continuous coating of vapour retarder adhesive or be fully sealed in hot bitumen prior to nailing.

4.4.4 SPECIFICATION W-VR-4 Normal Humidity Conditions



GENERAL

Polyethylene film shall be minimum 0.15mm (6 mil) thick conforming to CAN/CGSB 51.34

Polyfilm vapour retarder is not recommended for high humidity locations.

For adhered thermoplastic systems, the primary insulation must be mechanical fastened to the structural deck over polyethylene film.

APPLICATION

Cover the structural decking with a minimum of one ply of 6 mil polyethylene film.

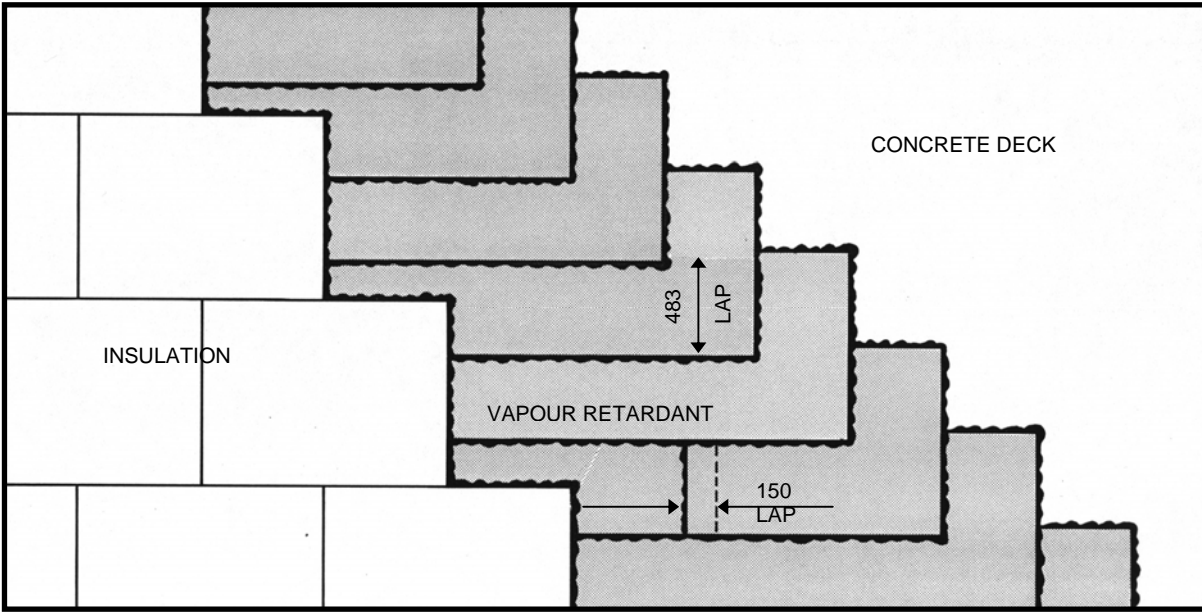
Side and end laps shall be minimum 150mm (6") wide.

Seal laps with a minimum of a single continuous bead of an approved acoustical sealant.

4.5 MINIMUM RECOMMENDED VAPOUR RETARDERS FOR CONCRETE DECKS

The following specifications provide minimum composition and application procedure for vapour retarders accepted by ARCA Warranty Ltd. for the use in roofing systems to receive a Warranty Certificate.

4.5.1 SPECIFICATION C-VR-1 Normal Humidity Conditions



GENERAL

The vapour retarder membrane must be uniformly adhered to its substrate.

For adhered roofing systems priming of the concrete deck is recommended by ARCA to improve adhesion, but is not a minimum requirement.

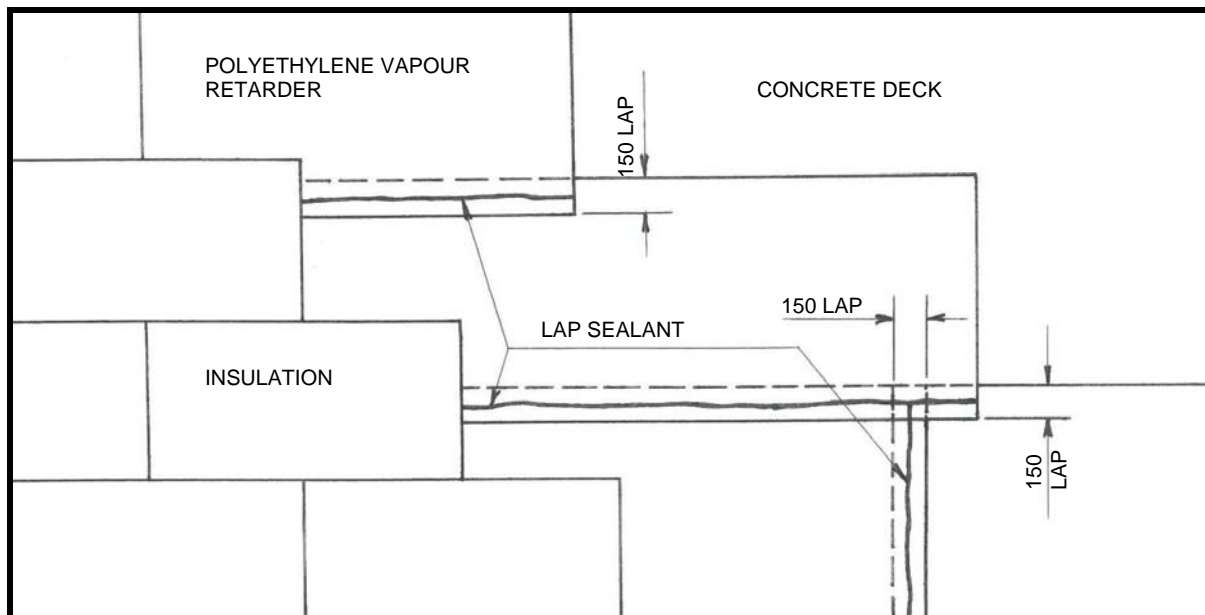
For high humidity conditions add a minimum of one (1) additional ply of No. 15 organic felt fully adhered into an application of hot bitumen applied at the approximate rate of 1kg/m² (20 lbs/100 sq. ft.).

APPLICATION

For new construction apply two (2) plies of No. 15 organic felt adhered in a full application of hot asphalt applied at the approximate rate of 1kg/m² (20lbs/100 sq ft). For two (2) ply applications, the felt side laps shall be minimum 483mm (19") wide and end laps shall be minimum 150mm (6") wide.

When re-roofing, apply one (1) ply No. 15 organic felt in a full application of hot bitumen applied at the rate of 1 kg/m² (20 lbs/100 sq. ft.). Side laps shall be minimum 100mm (4") wide and end laps shall be minimum 150 mm (6") wide. Laps shall be fully sealed in an application of hot bitumen.

4.5.2 SPECIFICATION C-VR-2 Normal Humidity Conditions



GENERAL

Polyethylene film shall be minimum 0.15mm (6 mil) thick conforming to CAN/CGSB 51.34

Polyfilm vapour retarder is not recommended for high humidity locations.

For adhered thermoplastic systems, the primary insulation must be mechanical fastened to the structural deck over polyethylene film.

APPLICATION

Cover the structural decking with a minimum of one ply of 6 mil polyethylene film.

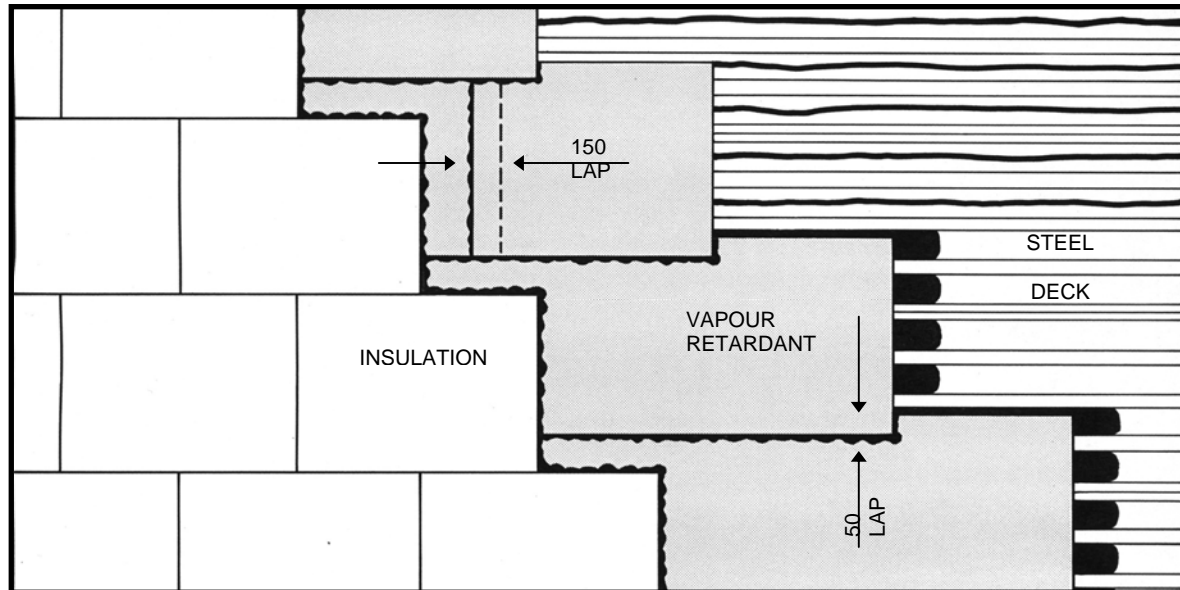
Side and end laps shall be minimum 150mm (6") wide.

Seal laps with a minimum of a single continuous bead of an approved acoustical sealant.

4.6 MINIMUM RECOMMENDED VAPOUR RETARDERS FOR STEEL DECKS

The following specifications provide minimum composition and application procedure for vapour retarders accepted by ARCA Warranty Ltd. for the use in roofing systems to receive a Warranty Certificate.

4.6.1 SPECIFICATION S-VR-1 Normal Humidity Conditions



GENERAL

The direct application of hot bitumen to steel decks is not permitted.

The vapour retarder membrane must be uniformly adhered to its substrate.

ARCA recommends that prior to vapour retarder application that a continuous leveling surface be adhered to the steel deck such as gypsum board. The leveling surface provides support for the vapour retarder membrane, reduces deck deflection and reduces damage to the vapour retarder membrane; see Specification SG-VR-1.

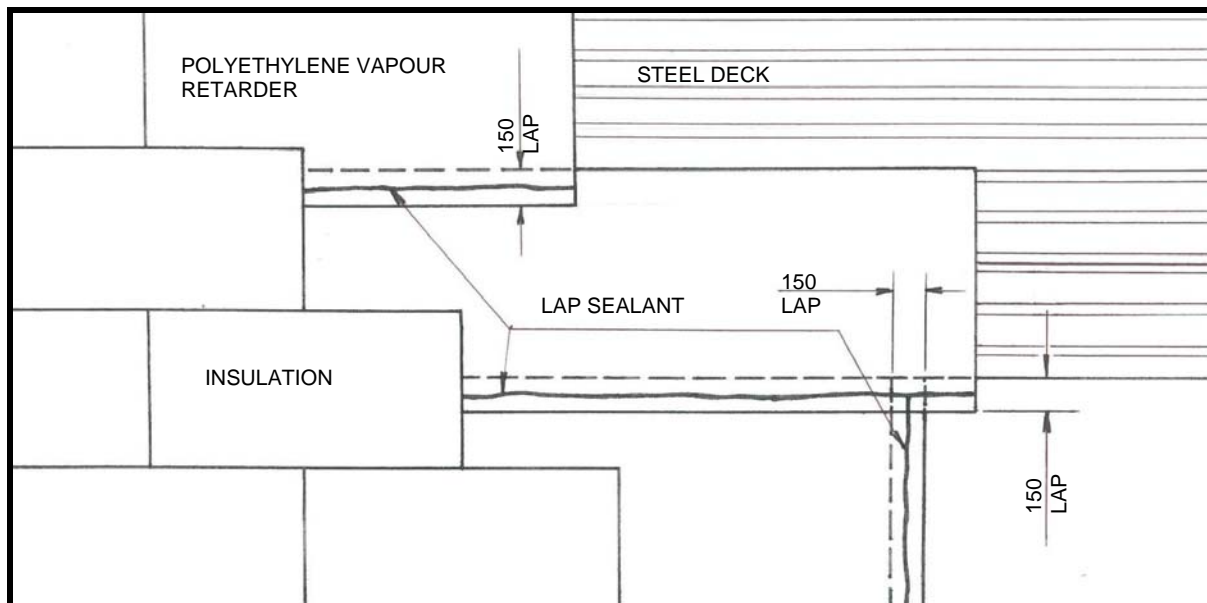
For high humidity conditions add a minimum of one additional ply of No. 15 organic felt fully adhered into an interply application of hot bitumen applied at the approximate rate of 1 kg/m² (20 lbs/100 sq. ft). For two ply applications, the felt side laps shall be minimum 483mm (19") wide and end laps shall be minimum 150mm (6") wide.

APPLICATION

For the vapour retarder, apply one ply kraft laminate sheet adhered in a full roller coating or in continuous ribbons of vapour retarder adhesive applied parallel to the top flanges of the steel decking. Adhesive application rates shall be in accordance with adhesive manufacturer's recommended application rates. Vapour retarder adhesive is produced in both winter and summer grades, consult adhesive manufacturer for appropriate grade and application rates required.

Kraft laminate side laps shall be minimum 50mm (2") wide and end laps shall be minimum 150mm (6") wide. Laps shall be fully sealed with vapour retarder adhesive.

4.6.2 SPECIFICATION S-VR-2 Normal Humidity Conditions



GENERAL

Polyethylene film shall be minimum 0.15mm (6 mil) thick conforming to CAN/CGSB 51.34

Polyfilm vapour retarder is not recommended for high humidity locations.

For adhered thermoplastic systems, the primary insulation must be mechanical fastened to the structural deck over polyethylene film.

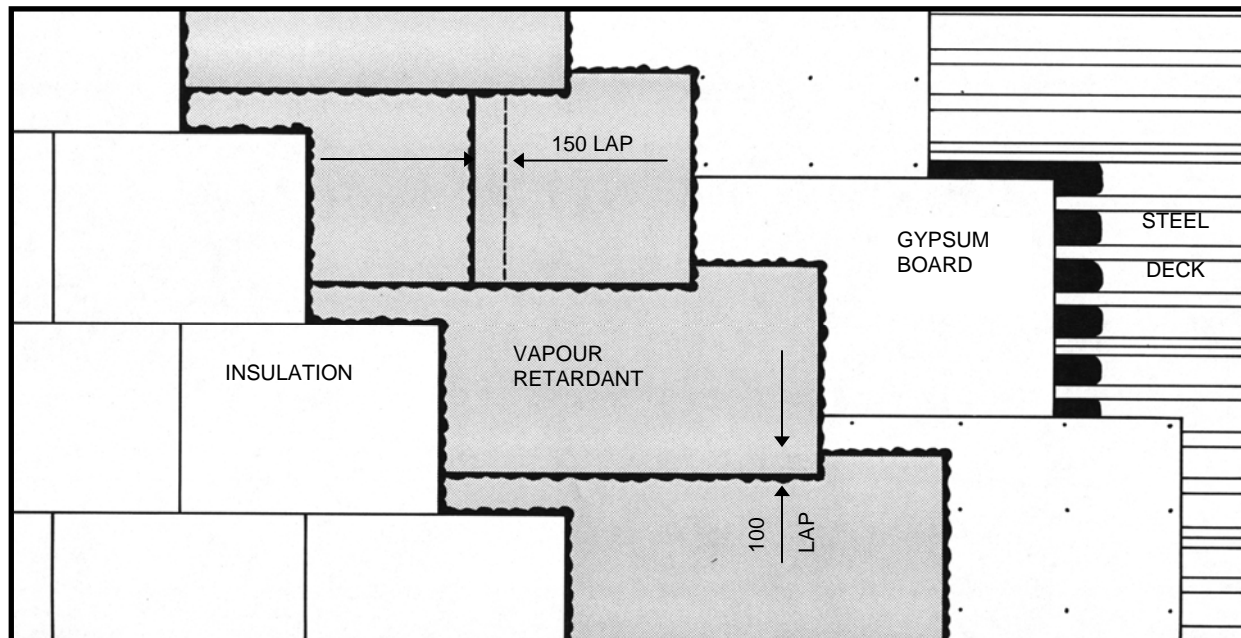
APPLICATION

Cover the structural decking with a minimum of one ply of 6 mil polyethylene film.

Side and end laps shall be minimum 150mm (6") wide.

Seal laps with a minimum of a single continuous bead of an approved acoustical sealant.

4.6.3 SPECIFICATION SG-VR-1 Normal Humidity Conditions



GENERAL

The direct application of hot bitumen to steel decks is not permitted.

The vapour retarder membrane must be uniformly attached to its substrate.

For high humidity conditions add a minimum of one additional ply of No. 15 organic felt fully adhered in an interply application of hot bitumen applied at the approximate rate of 1 kg/m² (20 lbs/100 sq ft). For two ply applications, the felt side laps shall be minimum 483mm (19") wide and end laps shall be minimum 150mm (6") wide.

When using drywall screws for attaching the gypsum board auxiliary leveling surface, use a minimum of twenty (20) screws per 1200 x 2400mm (4 x 8') sheet or a minimum of six (6) screws for a 600 x 1200mm (2 x 4') sheet. Follow Factory Mutual (FM) requirements when using screws with plates.

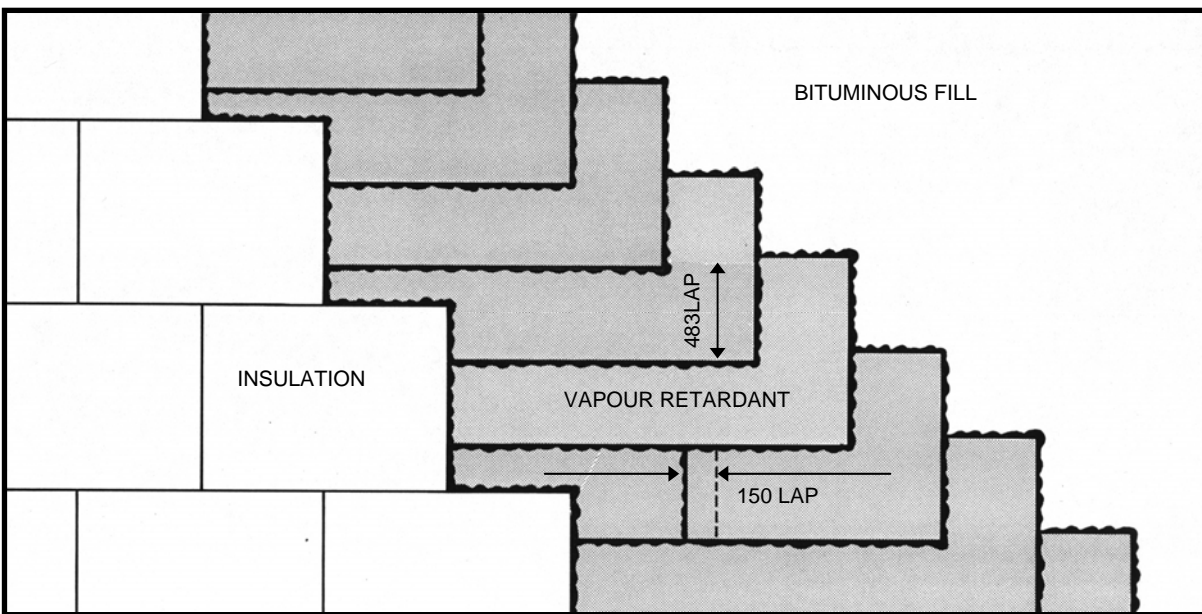
APPLICATION

For the vapour retarder, apply one ply No. 15 felt fully adhered to the gypsum board in a full application of hot bitumen applied at the approximate rate of 1 kg/m² (20 lbs/100 sq ft).

No. 15 felt side laps shall be minimum 100mm (4") wide and end laps shall be minimum 150mm (6") wide. Laps shall be fully sealed with hot bitumen.

4.7 MINIMUM RECOMMENDED VAPOUR RETARDERS FOR BITUMINOUS FILLS

4.7.1 SPECIFICATION BF-VR-1 Normal Humidity Conditions



GENERAL

The vapour retarder membrane must be uniformly adhered to its substrate.

For adhered roofing systems priming of the bituminous fill is recommended by ARCA to improve adhesion, but is not a minimum requirement.

For high humidity conditions add a minimum one (1) additional ply of No. 15 felt fully adhered into an application of hot bitumen applied at the approximate rate of 1 kg/m² (200 lbs/100 sq. ft.). For two (2) ply applications, the felt side laps shall be minimum 483mm (19") wide and end laps shall be minimum 150mm (6") wide.

APPLICATION

For new construction, apply two (2) plies of No. 15 organic felt in a full application of hot bitumen applied at the approximate rate of 1 kg/m² (20 lbs./100 sq. ft.).

For two (2) ply applications the felt side laps shall be minimum 483 mm (19") wide and end laps minimum 150 mm (6") wide. Laps shall be sealed in an application of hot asphalt.

When re-roofing, apply one (1) ply of No. 15 organic felt adhered in a full application of hot asphalt applied at the approximate rate of 1kg/m² (20 lbs/100 sq. ft.) per mopping.

Side laps shall be minimum 100mm (4") wide and end laps shall be minimum 150mm (6") wide. Laps shall be fully sealed in an application of hot bitumen.