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| Please find below our current Masterspec Specification for Viking Warm Roof.Our focus is to ensure that you have the right information and technical support required to make specifying our roofing and waterproofing solutions easy.If you require any of our CAD details you can find them on our website [www.vikingroofspec.co.nz](http://www.vikingroofspec.co.nz)For any further support please do not hesitate to contact us on 0800 729 799.Kind Regards,The team at Viking RoofspecVK_ROFS_4C_SL_TCD T: 0800 729 799 F: 0800 729 788info@vikingroofspec.co.nz[www.vikingroofspec.co.nz](http://www.vikingroofspec.co.nz) |

**4422VW VIKING WARM ROOF SYSTEM**

1. **GENERAL**

This section relates to the Viking Warm Roof System, comprising rigid insulation roof panels installed with a single ply external waterproof covering.

 It includes;

- a single or double layer of Viking Polyiso rigid insulation roof panels installed on top of the roof substrate

 - with a single ply layer of Viking Epiclad or Viking Enviroclad fully adhered over the top.

1.1 RELATED WORK

 Refer to ~ for ~

 **Documents**

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

 NZBC E2/AS1 External moisture

 NZBC H1/AS1 Energy Efficiency

 AS/NZS 2269.0 Plywood - Structural - Specifications

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

 Manufacturer's and supplier's documents relating to this part of the work:

 Viking Waterproofing Membrane Systems manual

 Viking Roofspec contact details

 Web: [www.vikingroofspec.co.nz](http://www.vikingroofspec.co.nz/)

 Email: info@vikingroofspec.co.nz

 Telephone: 0800 729 799

 Facsimile: 0800 729 788

 Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

 Provide a material manufacturer/supplier warranty:

 20 years: For **Viking Warm Roof System**

 - Provide this warranty on the **Viking Warm Roof Product Warranty** standard form.

 - Commence the warranty from the date of practical completion of the contract works.

 Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

 Provide an installer/applicator warranty:

 5 years: For **Viking Warm Roof System**

 - Provide this warranty on the installer/applicator standard form.

 - Commence the warranty from the date of practical completion of the contract works.

 Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - VIKING FULL SYSTEM WARRANTY

 Provide a Viking Full System Warranty for materials and installation:

 20 years: For **Viking Warm Roof System**

 - Apply for when the project consists of over 300m² of materials and the Approved Applicator holds Stage 3 of his Viking Roofspec Licence.

 - Provide this warranty on the Viking Full System Warranty job completion form.

 - Commence the warranty from the date of completion of fixing.

 Refer to the section 1237 WARRANTIES for additional requirements.

 **Requirements**

1.7 QUALIFICATIONS

 Installation of the membrane to be carried out by Viking Approved Applicators approved by Viking Roofspec. Installation of substrates must be completed by tradespersons with an understanding of roof, deck and balcony construction and in accordance with instructions given in Manufacturers Technical Literature.

1.8 NO SUBSTITUTIONS

 Substitutions are not permitted to any specified Viking membrane waterproofing materials, or associated products, components or accessories.

 **Performance**

1.9 TEST

 Flood test horizontal applications with a minimum 50mm depth of water for 24 hours. Make good any lack of watertightness when the surface is completely dry.

1.10 PERFORMANCE

 Accept responsibility for the weather-tight performance of the completed roofing system, including all penetrations through the roof and junctions with walls and parapets. All penetrations to comply with NZBC E2/AS1 and Viking Roofspec recommendations.

2. PRODUCTS

 Materials

2.1 POLYISO INSULATION

 **Viking Polyiso**, polyisocyanurate insulation panels. Refer to SELECTIONS for size options.

2.2 TAPERED POLYISO INSULATION

 **Viking Tapered Polyiso**, tapered polyisocyanurate insulation panels. Refer to SELECTIONS for size options.

2.3 WATERPROOFING MEMBRANE

 **Viking Enviroclad**, a scrim-reinforced thermoplastic polyolefin (TPO) membrane. Refer to SELECTIONS for size and colour options.

2.4 WATERPROOFING MEMBRANE

 **Viking Epiclad**, single ply, flexible synthetic EPDM rubber membrane. Refer to SELECTIONS for size and colour options.

 Components - Polyiso insulation

2.5 CONTACT ADHESIVE - INSULATION TO SUBSTRATE

 **Fast Adhesive Dual Cartridge**, a polyurethane 2-pack solvent based contact adhesive system. To adhere the insulation to substrate.

2.6 VAPOUR BARRIER - FOR COLD CLIMATE AREAS ONLY

 **Viking Vapour Barrier Membrane** a rubberised asphalt membrane laminated with a heavy polyethylene film on one face and a siliconised, removable release sheet on the adhesive side.

 **Components - Enviroclad installed over Polyiso**

2.7 CONTACT ADHESIVE - ENVIROCLAD TO INSULATION

 **Sure Weld Bonding Adhesive**, proprietary solvent based contact adhesive. To adhere **Viking Enviroclad** to insulation.

2.8 CUT EDGE SEALANT (CLEAR)

 **Enviroclad** Cut Edge Sealant, proprietary sealant for sealing exposed scrim on cut edges.

2.9 MEMBRANE CLEANER

 **Enviroclad** proprietary membrane cleaner.

2.10 WELDABLE UNREINFORCED PROPRIETARY MEMBRANE

 **Enviroclad** proprietary unreinforced moulded TPO membrane that can be used to waterproof difficult areas.

2.11 T-JOINT COVERS

 **Enviroclad** proprietary unreinforced moulded TPO disks that can be welded for sealing T-joint lap intersections.

2.12 PIPE FLASHINGS

 **Enviroclad** proprietary unreinforced moulded TPO flashings that can be welded for flashing pipe penetrations.

2.13 POURABLE POCKETS

 **Enviroclad** proprietary unreinforced moulded TPO surrounds that can be welded for encasing groups of pipe penetrations.

2.14 THERMOPLASTIC POURABLE SEALER

 **Enviroclad** proprietary thermoplastic pourable sealer for infilling of pourable pocket.

2.15 SPLICE WIPES

 **Enviroclad** proprietary HP splice wipes for cleaning and drying membrane prior to welding.

 **Components - Epiclad installed over Polyiso**

2.16 CONTACT ADHESIVE - EPICLAD TO INSULATION

 **Viking Epiclad EPDM** contact adhesive.

2.17 LAP PRIMER

 **Viking** HP 250 lap primer.

2.18 LAP TAPE

 **Viking Superseal Self Adhesive Lap** Tape, 76mm.

2.19 LAP SEALANT

 **Viking Lap Sealant.**

2.20 FLASHING TAPE

 **Viking Flashing Tape,** 150mm.

 **Accessories**

2.21 WALKWAY MATS

 **Viking walkway mat/roll.**

2.22 SCUPPER OUTLETS

 **Viking Scupper** roof drainage outlets, 200mm x 75mm to NZBC E2/AS1.

2.23 LEAF AND GRAVEL GRATES

 **Viking Gravel/Leaf Grates.**

2.24 ROOF OUTLETS

 **Surefix Roof Outlets**, roof drainage outlets.

2.25 DRYLIGHT SKYLIGHT

 1220mm x 1220mm single piece skylight with white monolithic plastic frame.

2.26 DRYLIGHT FLASHING SLEEVE

 TPO flashing sleeve for waterproofing skylight to the membrane.

 **Finishes**

2.27 ALUMINIUM PAINT

 **Viking** compatible aluminium paint system. Refer to SELECTIONS for option.

2.28 PAINT

 **Viking** compatible paint system. Refer to SELECTIONS for option.

3. **EXECUTION**

 **Conditions**

3.1 GENERALLY

 All work and materials to comply with Viking Membrane Waterproofing Systems manual, and NZBC E2/AS1.

3.2 STORAGE

 Take delivery of **Viking Polyiso** sheets and **Viking membrane** rolls undamaged and include for site handling facilities where required. Provide dry storage. Store membrane rolls horizontally only. Stack off the ground on a level surface and with accessories.

3.3 WEATHER

 Lay membrane in fair weather, with ambient air temperature no less than 7°C.

3.4 EQUIPMENT

 Viking Roofspec recommend the approved applicator use the following equipment:

 - Techspan automatic welding machine

 - Techspan hand held welding machine

 - Silicone roller

 - Battery or pneumatically powered caulking guns

 **Application - preparation**

3.5 PRELIMINARY WORK

 Ensure that preliminary work, including formation of falls, flashing rebates, grooves, ducts, is complete and properly constructed to enable the system to work as intended. This work and the substrate to be smooth, clean, dry and stable.

3.6 ACCEPTANCE OF SUBSTRATE

 Confirm that the substrate, including sumps, outlets and projections, will ensure work of the required standard. Ensure the fall complies with NZBC E2/AS1 8.5 Membrane roofs and decks including correct fall to rainwater outlets to avoid ponding.

3.7 CONCRETE SUBSTRATE

 Ensure concrete substrate has been allowed to cure for at least 28 days before commencing application. The relative humidity of concrete substrates must be 75% or less before membrane application. Prepare the surface, including vacuum cleaning and acid etching as necessary to leave smooth, clean, dry and free of debris. Fill hollows or holes with a cement plaster

3.8 PLYWOOD SUBSTRATE

 Plywood to be a minimum of 17mm thick and complying with AS/NZS 2269.0, minimum CD structural grade with the sanded C side upwards. Treated H3 with waterborne CCA treatment and kiln dried after treatment. Lay with staggered joints (brick bond) with all edges of the sheets fully supported. Chamfer all external edges with a minimum radius of 5mm where the membrane is to be wrapped over. Fix with 10 gauge x 50mm stainless steel countersunk head screws, with a 3mm gap between all sheets. Fix at 150mm centres on edges and 200mm centres on intermediate supports.

 Provide whichever is the greater falls:

 - as shown on the drawings

 - to the membrane manufacturer's requirements

 - minimum to NZBC E2/AS1, 8.5.1, - 1:30 for roofs, 1:40 for decks and 1:100 for gutters

 Plywood and the timber substructure to have a maximum moisture content of 20% when the membrane is adhered.

**Application - insulation**

3.9 GENERAL

 Substrate to be clean and dry before application of the insulation.

3.10 VAPOUR BARRIER OVER SUBSTRATE - FOR COLD CLIMATE AREAS ONLY

 Ensure **Viking Vapour Barrier Membrane** is installed over the substrate before installing the **Viking Polyiso** panels, to **Viking Warm Roof System** requirements, for Cold Climate areas according to NZBC H1/AS1.

3.11 R-VALUE/ THICKNESS

 Refer to SELECTIONS for thickness.

3.12 PREPARATION

 Carry out an adhesive test using a half sheet of **Viking Polyiso** on the substrate and wait 24 hours. For proper adhesion ensure the facer material delaminates after the pull-off-test. Consult a Viking Roofspec representative for advice when the facer material does not delaminate.

3.13 APPLY ADHESIVE

 Adhere **Viking Polyiso** sheets in a brick bond pattern using **Fast Adhesive** system, approximately 15mm diameter bead, in sweeping ribbons 300mm apart.

 NOTE: Where there are no parapets, install a timber batten around the perimeter as a protective frame. Timber to have an arrised edge for the membrane to be installed over. Ribbons must be a maximum 150mm apart for an entire 1200mm perimeter from the roof edge.

3.14 TEST ADHESIVE BEFORE LAYING

 Test adhesive using the string test before laying the **Polyiso** panels.

3.15 LAY INSULATION

 Roll the entire insulated roof area with a minimum 70 kg roller immediately after each sheet is laid. Viking Roofspec recommends one person is designated to do this. On completion use a sander or other appropriate levelling tool to smooth over uneven edges.

3.16 LAY SECOND LAYER INSULATION - WHEN REQUIRED

 Ensure the top layer has sheets positioned in staggered half-drops both length and width ways to eliminate points where sheet joints are vertically concurrent.

3.17 LAY TAPERED INSULATION

 Where possible lay tapered **Polyiso** panels to promote watershed to desired drainage points.

 **Application - Enviroclad installed over Polyiso**

3.18 POSITION

 Position membrane over insulation and fold membrane back to expose half of the underside.

3.19 APPLY ADHESIVE

 Apply **Sure Weld Bonding Adhesive** to the exposed underside of the membrane and to the corresponding insulation substrate. Apply using a plastic core medium nap paint roller at a coverage rate of 2m² per litre per finished surface (includes coverage on both membrane and insulation).

3.20 INSTALL MEMBRANE SHEETS

 Allow adhesive to dry tacky and roll the coated membrane onto the coated insulation substrate. Brush down the bonded section of **Enviroclad** membrane immediately with a soft bristle broom. Fold back the unbonded half of the sheet and repeat procedure.

3.21 LAP JOINTS

 Install adjoining **Enviroclad** membrane sheets in the same manner, overlapping edges a minimum of 50mm to provide for a minimum 40mm hot air weld.

3.22 HOT AIR WELD

 Hot air weld the adjoining **Enviroclad** membrane sheets to a minimum of 40mm with an automatic hot air welding machine with nominal settings of 4 metres per minute at 470°C variable to conditions. Refer to Viking Roofspec for more information on use of automatic hot air welding machine.

3.23 MEMBRANE CLEANER

 Ensure membrane that has been exposed to the elements for approximately 7 days is prepared with membrane cleaner. Wipe the surface where the membrane cleaner has been applied with a clean, dry HP Splice Wipe to remove cleaner residue prior to hot-air welding.

3.24 INSPECT

 Inspect, test joints and welded details on completion (with seam-probe tool). Flood test with a minimum 50mm depth of water for 24 hours.

3.25 PENETRATIONS

 Form and finish upstands, downturns, penetrations, sumps and vents to conform with the Viking Roofspec required details.

3.26 PENETRATIONS AND JUNCTIONS

 Check that adjoining walls and parapets are prepared ready for the installation of the membrane. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof. Required work includes the following:

 - roofing installation neatly finished to all sides of openings and to wall and parapet junctions

 - installation of flashings (those required to be installed prior to installation of penetrating elements and/or wall linings).

 **Application - Epiclad installed over Polyiso**

3.27 POSITION

 Position the first length of sheet running across the fall of insulation starting from the lowest side of the substrate. Cut oversize to ensure adequate material is allowed for edge details, and for vertical terminations to finish at least 50mm above any adjacent internal floor levels. Block down the sheet securely along the edge side.

3.28 APPLY ADHESIVE

 Apply adhesive to both the exposed membrane and the exposed substrate, one half at a time. Do not thin adhesive with solvent.

3.29 LAY SHEETS

 When the adhesive is tack dry roll the sheet onto the insulation substrate, taking note of the time limits set by the manufacturer. Unfold the sheet and adhere to substrate working progressively from the centre towards the edge of the sheet. Do not position the membrane with any tension. Smooth out wrinkles with a soft bristle broom. Repeat the process for the other half of the sheet. Mark lap width on adhered sheet, 76mm. Lay the next sheet with leading edge over the adhered sheet up to the marked line and repeat process.

3.30 LAP JOINTS

 Apply 76mm lap tape to lap Epiclad. Solvent wipe lap area with HP 250 lap primer using primer pad. Following application of lap tape, pressure roll the tape with roller and do the same with subsequent top layer of lap.

3.31 INSPECT

 Inspect and test joints on completion.

3.32 PENETRATIONS

 Form and finish upstands, downturns, penetrations, sumps and vents to conform with the Viking Roofspec required details.

3.33 PENETRATIONS AND JUNCTIONS

 Check that adjoining walls and parapets are prepared ready for the installation of the roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof. Required work includes the following:

 - roofing installation neatly finished to all sides of openings and to all wall and parapet junctions

 - installation of flashings (those required to be installed prior to installation of penetrating elements and/or wall linings).

 **Finishing**

3.34 ACCEPTANCE

 Arrange for an inspection of the completed work. Protect and maintain roofing until completion of the contract works.

3.35 SUBSEQUENT WORK

 Make good any covering cut or deformed by later work. Making good to take the form of inserting a new whole or part infill sheet to maintain the appearance of the covering as originally laid.

 **Completion**

3.36 CLEAN UP

 Clean up as the work proceeds.

3.37 LEAVE

 Leave work to the standard required by following procedures.

3.38 REMOVE

 Remove debris, unused materials and elements from the site.

4. SELECTIONS

 Where there is a NO SUBSTITUTIONS clause in GENERAL, no substitutions are permitted to any of the specified systems, components and associated products listed in the following SELECTIONS.

 Where in SELECTIONS, a material, component or accessory is named by brand, manufacturer or model number; substitutions are not permitted unless otherwise agreed.

 Materials

4.1 VAPOUR BARRIER OVER SUBSTRATE - FOR ZONE 3 ONLY

 Location: ~

 Brand/type: **Viking Vapour Barrier Membrane** (VWR725)

 Thickness: 1.5mm

 Size: 1.0 metres wide x 22.5 metres long

 Colour: black

4.2 POLYISO INSULATION

 Location: ~

 Type/Brand: **Viking Polyiso**

 Thickness: ~mm

 Size: 1220mm x 2290mm (2.75m²)

4.3 TAPERED POLYISO INSULATION

 Location: ~

 Type/Brand: **Viking Tapered Polyiso**

 Thickness: ~mm

 Size: 1220mm x 1220mm (1.44m²)

4.4 ENVIROCLAD MEMBRANE

 Location: ~

 Brand/type: **Viking Enviroclad**

 Thickness: ~mm

 Size: 3.0 metres wide x 30.4 metres long

 Colour: ~

 Finish: smooth

4.5 EPICLAD RUBBER MEMBRANE

 Location: ~

 Brand/type: **Viking Epiclad**

 Thickness: ~mm

 Size: ~ metres wide x ~ metres long

 Colour: black

4.6 ACCESSORIES

 Location: ~

 Type: ~