Standard Specification for the installation of the EQUUS SOPREMA DUOTHERM Warm Roof System to concrete surfaces

Project:
Prepared for:
Specification:
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1.0 PREAMBLE:

This specification is for the installation of the **EQUUS SOPREMA DUOTHERM** warm roof system over a concrete substrate. The system provides a durable, fully insulated, and waterproof roof. As the insulation is continuous over the entire roof structure, thermal bridging is largely eliminated. The energy efficiency of the building is improved as a result, thereby reducing heating and ventilation costs for the building owner.

The **EQUUS SOPREMA DUOTHERM** warm roof system consists of a torch applied or self-adhesive vapour barrier, PIR or mineral wool insulation (adhered or mechanically fixed) to the vapour barrier with a two-layer bitumen membrane system installed over the insulation to provide a fully waterproof and fire retardant covering for the roofing system.

The **EQUUS SOPREMA DUOTHERM** warm roof system has been assessed for use on roofs, decks and gutters installed on metal deck or panel, treated plywood and concrete substrates on buildings within the following scope:

- Buildings where the supporting structure and associated elements are designed and constructed within the scope of New Zealand Building Code E2/AS1 clause 1.1.

- Specifically designed buildings constructed to comply with the New Zealand Building Code.

2.0 SURFACE PREPARATION:

2.1 General - Responsibility:

Unless expressly agreed otherwise at time of contract pricing, all work in this section shall be the responsibility of the main contractor, whether carried out by their own staff, other sub-trades, or the roofing membrane sub-contractor.

2.2 Concrete:

(a) Concrete structures must be specifically engineered to meet the requirements of the New Zealand Building Code.
(b) Allow sufficient drying time after the concrete has been poured which is generally between 14 and 28 days.
(c) Ensure that all traces of curing compound are gone or removed before commencing installation and any holes or voids are patched.
(d) Minimum Falls: Ensure minimum falls for **EQUUS SOPREMA DUOTHERM** warm roof membrane systems are:

- The minimum fall for a roof and deck is not less than 1:80 (0.7°), to CodeMark CMNZ70151
- The minimum fall for a gutter is not less 1:100 (0.57°), to CodeMark CMNZ70151

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(e) Finish concrete to NZS3114:1987 U3, with a light trowel texture. Stone flush all ridges and protrusions. Depressions shall be flushed with Schomburg ASOCRET BIS 5/40 and allowed to cure at least 48 hours before overcoating.
(f) Water blast to remove all detritus and allowed to dry.
(g) Existing substrates and structures must be thoroughly inspected prior to specification.
(h) A maximum relative humidity of 75% is required, measured at the time of membrane application.
(i) Seams should be installed parallel with the fall, minimising ponding, and flow restriction whenever possible. Roof, deck and gutter falls shall be installed in accordance with the New Zealand Building Code.
(j) Shall have leading edges chamfered to 5 mm radius and minimum 20 x 20 cement mortar or H3.2 treated timber fillets or Bitumen Fillets installed in internal corners.

2.3 Outlets:
Roof and deck outlets shall be installed as per clause 8.5.6 of E2 External Moisture of the New Zealand Building Code.
Outlets shall be sized in accordance with E1 Surface Water of the New Zealand Building Code.
Outlets shall be from the Aquaknight Industries range, sourced from Equus Industries, unless otherwise specified.

INSTALLATION:

Note: A prestart meeting should be held onsite with the Main Contractor and the Equus Certified Applicator prior to commencement of warm roof installation.

3.0 VAPOUR BARRIER:

3.1 Primer: (For fully torched membrane)
To the dried and prepared surface apply one (1) full coat of **SOPRADERE QUICK** primer at a spreading rate of 5 to 6 m²/L depending on the porosity of the substrate. Allow to dry for minimum one (1) hour depending upon prevailing weather conditions.

3.2 DEBOPLAST 2.5 T/F C175, SOPRASUN PLUS 3 OR DEBOFLEX 2.5 T/F C175: (Fully torched)
Decide the most suitable direction to follow. Unroll the roll and discard packaging. Align and cut to length as required. Re-roll both ends to the middle, then torch evenly overall to both base sheet and primer as the membrane is unrolled. Ensure even heat application. Repeat in sequence with all rolls, maintaining laps of minimum 80 mm. The lap automatically closes during the torching process. Offset end laps in adjacent runs. Over upstands, the vapour barrier shall be taken up 50 mm past the top of the insulation board. This ensures a suitable connection to create a complete waterproof envelope of the insulation.

3.3 Primer: (For self-adhered membrane)
To the dried and prepared surface apply one (1) full coat of **EQUUS PEEL AND STICK** primer at a spreading rate of 6 to 8 m²/L depending on the porosity of the substrate. Allow to dry for minimum one (1) hour depending upon prevailing weather conditions.

3.4 SOPRASTICK *(previously known as DEBOTACK 2.5 T/F C175)***: (Self- adhesive)**
Self-adhesive membrane for use as a vapour barrier when the PIR insulation is to be fully adhered by PU Foam.
Decide the most suitable direction to follow. Unroll and discard packaging. Align the first roll and cut to length as required. Remove the siliconized film and press the membrane into place on the surface. The self-adhesive properties are automatically activated during installation. Light heating is recommended at the edges to ensure all laps are fully closed. Repeat in sequence with all rolls, maintaining minimum laps of 100 mm. Offset end laps in adjacent runs.

Over upstands, the vapour barrier shall be taken up 50 mm past the top of the insulation board. This ensures a suitable connection to create a complete waterproof envelope of the insulation.

3.5 COLPHENE 3000: (Self- adhesive)
Self-adhesive membrane for use as a vapour barrier when the insulation is to be mechanically fastened.
Decide the most suitable direction to follow. Unroll and discard packaging. Align the first roll and cut to length as required. Remove the siliconized film and press the membrane into place on the surface. The self-adhesive properties are automatically activated during installation. Repeat in sequence with all rolls, maintaining minimum laps of 100 mm. Offset end laps in adjacent runs. Over upstands, the vapour barrier shall be taken up 50 mm past the top of the insulation board. This ensures a suitable connection to create a complete waterproof envelope of the insulation.

4.0 INSULATION:

4.1 General:
On site cutting of boards is permitted and should be done using a fine-toothed saw or by scoring with a knife and snapping the board over a straight edge. Ensure accurate trimming to achieve a close tight butt finish. Any gaps between boards can be filled with Equus PU Foam.

Refer to Equus project specific data for fixing patterns and full installation instructions.

4.2 Mechanically fastened:
Where the base sheet is also mechanically fastened.
Install Equus PIR or mineral wool insulation in a brick bond pattern using full boards where possible. Use one fastener per board to tack in place before loose laying the base sheet also in place. Insulation is fully fastened with the base sheet installation as per section 6.1.

4.3 Mechanically fastened:
Where the base sheet is self-adhered.
Install the specified **EQUUS SOPREMA** fixings through the PIR or mineral wood insulation boards into the concrete substrate following the project specific **SOPREMA** wind uplift report fixing layout plan. Ensure the fixings are securely fastened but not overly tightened to crush the insulation boards. Add pre-formed angle fillets in internal corners.

Note: In areas where mineral wool insulation is used, roofboard must also be installed.

4.4 Fully adhered:
Install Equus PIR insulation in a brick pattern using full boards where possible. Boards shall be fixed in place using **EASYFOAM** or **COLTACK EVOLUTION 750** adhesive applied in accordance with the fixing pattern in the project specific **SOPREMA** wind uplift report fixing layout plan. Multiple layers of board shall be glued with adhesive between each board.

5.0 ROOFBOARD: (where required)

5.1 Install **PERMABASE DEK** roofboard in a brick bond pattern over insulation, using full boards where possible. Boards shall be fixed in place using **EQUUS SOPREMA** fixings installed in accordance with the fixing pattern in the project specific **SOPREMA** wind uplift report.

5.2 Primer: (For fully torched base sheet)
The **PERMABASE DEK** roofboard shall be primed with **SOPRADERE QUICK** mixed and diluted 50/50 with white spirit. Apply one (1) coat of mixed material at a spreading rate of 6 to

8 m²/L by brush and/or roller. Allow to dry thoroughly before the selected base sheet is applied to the roofboard.

5.3 Primer: (For self-adhered base sheet)
The **PERMABASE DEK** roofboard shall be primed with one (1) full coat of **EQUUS PEEL AND STICK** primer at a spreading rate of 6 to 8 m²/L depending on the porosity of the substrate. Allow to dry for minimum one (1) hour depending upon prevailing weather conditions.

6.0 MEMBRANE APPLICATION:

6.1 Base Sheet: DEBOPLAST 2.5 T/F C175 or SOPRASUN PLUS 3 (Mechanically fixed)
Mechanically fixed, APP bitumen membrane base sheet option
Decide the most suitable direction to follow. Unroll the roll and discard packaging. Align and cut to length as required. Laps at each sheet edge shall be 80 mm.
Install specified fixings through the edges of the sheets approx. 20 mm in from the edge into the substrate following the **EQUUS SOPREMA** project specific fixing layout plan. Ensure the fixings are securely fastened but not overly tightened to deform and/or cut the base sheet. Repeat in sequence with all rolls. Torch this lap closed. Offset end laps in adjacent runs if possible.

Note: The **DEBOPLAST 2.5 T/F C175 or SOPRASUN PLUS 3** base sheet may be fully torched to the **PERMABASE DEK** roofboard where included in the warm roof system. (See Section 5.)

6.2 Base sheet: DEBOFLEX 2.5 T/F C175 (Mechanically fixed)
Torch-applied, SBS bitumen membrane base sheet option
Decide the most suitable direction to follow. Unroll the roll and discard packaging. Align and cut to length as required. Laps at each sheet edge shall be 80 mm.
Install specified fixings through the edges of the sheets approx. 20 mm in from the edge into the substrate following the **EQUUS SOPREMA** project specific fixing layout plan. Ensure the fixings are securely fastened but not overly tightened to deform and/or cut the base sheet.

Repeat in sequence with all rolls. Torch this lap closed. Offset end laps in adjacent runs if possible.

Note: The **DEBOFLEX 2.5 T/F C175** base sheet may be fully torched to the **PERMABASE DEK** roofboard where included in the warm roof system. (See Section 5.)

6.3 Base Sheet: SOPRASTICK VENTI TACK PLUS *(previously known as DEBOTACK 2.5 T/F C175 AERO)* **(Self-adhesive)**
Decide the most suitable direction to follow. Unroll and align the first roll. Discard packaging. Cut to length as required. Remove the siliconized film and press the membrane into place onto the surface of the insulation. The self-adhesive properties are automatically activated during installation. Light heating is recommended at the edges to ensure all laps are fully closed. Full adhesion is advanced when the **DUO HT 4 SLATES/F C180 FC** cap sheet is finally torched over it. Repeat in sequence with all rolls, maintaining minimum laps of 100 mm. Offset end laps in adjacent runs.

6.4 Cap Sheet: DUO HT 4 SLATES/F C180 FC (or variant)
Decide the most suitable direction to follow. Unroll the roll and discard packaging. Align and cut to length as required. Re-roll both ends to the middle, then torch evenly to the base sheet as the membrane is unrolled. Ensure even heat application. Repeat in sequence with all rolls, maintaining laps of minimum 80 mm. The lap automatically closes during the torching process. All laps shall be offset to prevent coincidence with the base sheet laps. Following application

of the cap sheet, all joints are back-sealed separately to ensure they are neatly and correctly closed.

If required, during the back-sealing operation, **DUO MINERAL CHIP** may be carefully scattered over the joint to provide a uniform appearance. This may also be carried out on areas of detailing to provide protection and uniformity of finish.

6.5 Detailing:
Detailing shall be carried out using **DUO HT 4 SLATES/F C180 FC** cap sheet and/or in combination with **ALSAN FLASHING QUADRO** liquid detail coating or **MATACRYL THIX** liquid membrane (where **MATACRYL THIX** is used, all metal elements shall be primed with **MATACRYL 107 CM PRIMER**), finished with **CHEVALINE DEXX TOPCOAT** or **MINERAL CHIP**. This shall include all outlets, pipe penetrations, gutter stop ends, parapet upstands, machinery plinths and anything above or below the roof surface. This is carried out before, during or, in some cases, after laying of the membrane, depending on the type of detail. All detailing shall be done in accordance with the manufacturer's technical literature current at the time of design, use, installation and/or maintenance.

6.6 Sealant:
ALSAN MASTIC 2200 shall be used where required.

6.7 Membrane Termination:
The membrane will be terminated with **C-PROFILE** and **ALSAN MASTIC 2200** on upstands and parapets as per the manufacturer's termination details.

6.8 Completion:
Upon completion of the system, it shall be inspected and left for a short period (up to 2-3 weeks) to stabilize. At this time the entire installation shall be rechecked prior to any warranties being issued. Where possible, particularly on the deck areas, a pond-test (24 hours) should be carried out.

Note*:* Damage caused to the completed installation by other trades working over the membrane after the initial inspection shall be the responsibility of the Main Contractor, who shall arrange appropriate protection for the finished membrane system as required.

6.9 Trafficability:
The **EQUUS SOPREMA DUOTHERM** warm roof system is suitable for foot traffic after the installation of compatible **EQUUS FIXPLUS** tile supports, duckboards and roofwalk, or **KRAITEC STEP** rubber tiles.

PERMABASE DEK roofboard shall be installed if additional compressive strength for the roof system is required in areas of high traffic, around plantrooms, air conditioning units and other such roof mounted equipment. This will resist crushing from machinery or plant that may be temporarily placed on the roofing system during maintenance.

The **EQUUS SOPREMA DUOTHERM** warm roof system shall be protected using a temporary protection board before objects are placed on the roof to prevent damage to the waterproofing membrane.

6.10 Photovoltaic Panel Supports (if required):
Where photovoltaic panels are to be installed, **SOPRASOLAR FIX EVO TILT** for bitumen roofs are to be installed as per the installation sheet provided by Equus Industries.

7.0 SPECIFICATION NOTES:

7.1 Quality Assurance (QA):

The Equus Certified Applicator is responsible for onsite QA. The Equus project checklists detailing the required processes shall be completed and signed as each stage of installation is completed. Photographs of each stage shall be taken and submitted as part of the overall QA documentation. A Warranty will not be issued unless a copy has been filed with Equus Industries Ltd. Third party QA documentation is acceptable provided it is in accordance with the Equus issued project QA.

8.0 MAINTENANCE AND WARRANTY:

8.1 Maintenance:

As normal maintenance, Equus Industries Limited recommends that the finished roof areas are inspected every six months for cleaning, and annually, by an Equus Certified Applicator, to ensure weathertightness and durability.

Ensure all outlets are free of blockages and clear of unwanted debris and that all associated flashings and membrane cap flashings are sound. Check the general condition of the membrane and ensure it is free from surface moss, mould, or lichen.
Check all associated building elements that can impact on the durability of the membrane.

Higher risk areas such as sheet joints, substrate movement, edging, gutters, penetrations, corners, upstands, outlets, and overflows require a thorough inspection for weathertightness on an annual basis.

8.2 Warranty:

The **EQUUS SOPREMA DUOTHEM** warm roof system described in this specification may be warranted to be waterproof for a period of up to twenty-five (25) years providing that:

(a) All work is carried out by an Equus Certified Applicator.

(b) The system is installed in accordance with the manufacturers' technical literature and the **DUOTHERM** Application Manual at the time of design, use, installation and maintenance.

(c) The warranty is issued in conjunction with the appropriate maintenance statement.

The warranty period shall be determined for any contract in consultation with the Manufacturer or their representative prior to application.

The warranty is provided to the client by the Equus Certified Applicator carrying out the work and is backed by the Manufacturer as to the fitness for the purpose of the materials supplied for the contract.

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