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4131EB EQUUS SOPREMA DEBOFLEX TANKING MEMBRANE SYSTEM

1 GENERAL

NOTE: formally known as *Equus De Boer DeboFlex Special Tanking System*

This section relates to the application of **Equus Industries Ltd** - DeboFlex 3.5 CS/F K180 Special SBS-modified bituminous sheet waterproofing membrane to below ground concrete structures and screed protected areas in construction. The membrane can be pre-applied or post-applied allowing installation flexibility during construction.
It includes membranes which are:

- loose laid on a lean concrete or prepared base and all laps welded by torch
- torched fully bonded at all vertical parts and corners
- self-adhered to vertical walls

1.1 RELATED WORK

Refer to ~ for ~.

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

Equus	Equus Industries Limited
SBS	Styrene-Butadiene-Styrene
~	~

The following definitions apply specifically to this section:

SBS modified bitumen	Modified bitumen (SBS) is an elastomeric additive to bitumen that, when cooled, exhibits rubber-like properties
~	~

Documents

1.3 DOCUMENTS

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

NZBC B1/VM1	Structure
NZBC E2/AS1	External moisture
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber-framed buildings

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Equus - The Waterproofing Manual
DeboFlex 3.5 CS/F K180 Special Technical Data Sheets and specifications
Colphene 3000 Technical Data Sheet
DeboFlex 2.5 T/F C175 Technical Data Sheet
Sheets of polymer modified bitumen, delivered in rolls Safety Data Sheet
BRANZ Appraisal 1037 – DeboFlex 3.5 CS/F K180 Special Tanking and DPM Membrane

Manufacturer/supplier contact details

Company:	Equus Industries Ltd
Web:	https://equus.nz/
Email:	tech.support@equus.co.nz
Telephone:	+64 (0)3 353 2434

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:
20 years

For Equus DeboFlex 3.5 CS/F K180 Special tanking membrane by SOPREMA. It includes an appropriate Maintenance Statement. Refer to ONGOING MAINTENANCE REQUIREMENTS for details.

- Provide this warranty on the Equus Industries Ltd standard form (if unavailable, use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- 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 - INSTALLER/APPLICATOR

Provide an Equus certified applicator warranty:

10 years	For application of Equus DeboFlex 3.5 CS/F K180 Special tanking membrane by SOPREMA.

- Provide this warranty on the applicator standard form (if unavailable, use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of Practical Completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Equus DeboFlex 3.5 CS/F K180 Special tanking membrane by SOPREMA or associated components and products.

1.8 QUALIFICATIONS

Waterproofing work to be carried out by approved applicators certified by Equus Industries Ltd. Refer to the general section 1270 CONSTRUCTION for additional requirements relating to qualifications.
Approved applicators may be found at:

Web:	https://equus.nz/
Telephone:	+64 (0)3 578 0214

1.9 PROJECT NOTIFICATION

Prior to installation of the DeboFlex 3.5 CS/F K180 Special membrane and components, approved applicators to return project notification on the standard Project Notification Form to Equus Industries Limited.

1.10 MAINTENANCE CONTRACT PROPOSAL

Provide a proposed contract for the annual inspection of the tanking membrane by the certified installer, to ensure weather tightness and durability of:

- the top edge of the membrane sheet
- the sheet protection at that top edge
- the subsoil drainage is not blocked and is free draining to an approved outlet
- check all associated building elements that could impact on the durability of the membrane

Compliance information

1.11 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Applicator's approval certificate from the manufacturer / importer / distributor
- Manufacturer's, importer's or distributors warranty
- Applicator’s warranty
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.12 PRE-INSTALLATION MEETING

Convene a meeting between the applicator, contractor, all associated consultants and Equus to ensure all parties know what is required for effective performance of the system.

1.13 SPECIAL DETAILS

Where a standard DeboFlex 3.5 CS/F K180 Special detail does not exist, or if a standard detail cannot be applied, an approved alternative must be obtained from Equus before proceeding with the installation.

1.14 PRESSURE RATING

Obtain a written assurance from Equus that the waterproofing system, comprising membrane and jointing methods, is capable of sustaining the designated water pressure head. Refer to SELECTIONS for the designated water pressure head.

1.15 INSPECTIONS AND QUALITY ASSURANCE

Maintain quality control necessary to ensure that work is performed in accordance with this specification and the qualifying requirements of Equus.

2 PRODUCTS

Materials

2.1 WATERPROOFING TANKING MEMBRANE

DeboFlex 3.5 CS/F K180 Special, a flexible waterproofing membrane made of SBS modified bitumen with a layer of 180g/m² non-woven polyester fabric. Total thickness of membrane is 3.5mm. Upper surface is finished with 1mm to 2mm treated aggregate that adheres to concrete, the under surface is finished with 12 micron polyethylene foil.

2.2 WATERPROOFING TANKING MEMBRANE - SELF ADHERED

Colphene 3000 a self-adhesive waterproofing membrane composed of SBS modified bitumen and a trilaminated woven polyethylene facer. The underface is covered with silicone release film.

2.3 PRIMER

Sopradere Quick bitumen primer or other Equus system approved primer for DeboFlex 3.5 CS/F K180 Special, used in accordance with Equus technical literature.

2.4 PRIMER - SELF ADHERED

Equus Peel and Stick Primer for Colphene 3000 used in accordance with Equus technical literature.

2.5 SEALANT

Alsan Mastic 2200bitumen sealant.

2.6 REINFORCING STRIP

DeboFlex 2.5 T/F C175 SBS-modified bitumen membrane with a layer of 175g/m² composite reinforcement.

2.7 REINFORCING STRIP - ADHERED

Colphene 3000 SBS-modified bitumen membrane with a trilaminated woven polyethylene facer and a silicone release film.

2.8 DETAIL - WATERPROOFING COATING

Aquafin - 2K/M Plus is a two component, flexible, cementitious mineral based waterproofing slurry.

2.9 DETAIL - ELASTOMERIC LIQUID WATERPROOFING MEMBRANE AND COATING

Matacryl® Thix is a viscous, urethane-modified, pre-reacted 100% solid membrane system based on acrylic monomers.

2.10 DETAIL - EQUUS BITUMEN ANGLE FILLETS

Triangular angle fillet of rubber modified bitumen.

2.11 FIBRE CEMENT PROTECTION SHEET

Treated cellulose fibre in a matrix of cement and sand autoclaved sheet.

2.12 LIGHTWEIGHT PROTECTION AND DRAINAGE LAYER

Where fibre cement protection sheet is not necessary and a lightweight protection sheet is adequate, DANODREN H15 PLUS or Equus protection layer is to be used.

3 EXECUTION

3.1 EQUUS TERMINATION PROFILE

The waterproofing membrane and drainage layer shall be terminated by the mechanically fastened Equus Termination profile.

Conditions

3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to the general section 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products. Take delivery of rolls undamaged and include for site handling facilities where required. Store membranes and accessory materials under conditions that ensure no deterioration or damage.

3.3 ROUTINE MATTERS

Refer to the general section 1250 TEMPORARY WORKS & SERVICES for protection requirements. Refer to the general section 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.4 WEATHER CONDITIONS

Install Equus Soprema DeboFlex 3.5 CS/F K180 Special membranes only in fair weather with air temperature above 7°C. Install Colphene 3000 membranes only in fair weather with air temperature above 10°C.

3.5 DE-WATERING

Maintain water level at not less than 300mm below the level of the base concrete during the progress of the tanking work.

3.6 DRAINAGE

Install approved drainage system to remove water from foundations. Ensure drain is protected with geotextile cloth to prevent it clogging with fines, and that it is correctly located, 150mm from the membrane and below the footing.

3.7 CHECK SUBSTRATE

Check that the substrate will allow work of the required standard. Carry out such additional preparatory work as required bringing the substrate to suitable condition. Complete any substrate remedial work identified before commencing any membrane work. Substrate to comply with performance requirements of the NZBC E2/AS1.

3.8 CURING OF NEW CONCRETE

Allow concrete and masonry to dry to Equus requirements before torch-adhering membranes. Minimum curing of new concrete: 28 days. This is not applicable for site lean concrete.

Application - preparation

3.9 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements

3.10 HORIZONTAL SUBSTRATE CONDITION

Ensure that the substrate is in a suitable condition to allow work of the required standard. Ensure all surfaces are smooth, clean, dry and free from dust and dirt with no projections of sharp materials that will cause damage to the membrane or allow water to track behind the membrane. On concrete masonry check that masonry mortar joints are pointed flush with the front face of the substrate. Ensure form oils or release agents and curing compounds are completely removed.

3.11 VERTICAL SUBSTRATE PREPARATION

Wire brush to remove projections. Remove all debris, leaving the surface dust-free, oil-free and clean, with nothing that could diminish the adhesion of primers. Fill tie holes flush and smooth with mortar. Grind off steps or sharp protrusions caused by formwork joints.

3.12 TURN UPS

Where tanking is turned up against hardened concrete, ensure the surface is smooth and free of all sharp projections. Fill internal corners with an Equus bituminous fillet or modified cement mortar or epoxy mortar.

3.13 TURN DOWNS

Where tanking is turned over an external corner, first grind the corner to produce a smooth 5mm radius or chamfer.

3.14 CLEAN SURFACES

Clean surfaces with a broom or oil-free compressed air to remove dust, loose particles and material that could affect bonding.

3.15 DRESS OFF HARD-FILL SURFACE

Dress off surface of hard-fill with a 15mm layer of fine, clean sand roll-compacted to a smooth surface. Ensure concrete surface is a smooth steel trowel U3 surface to NZS 3114 'Specification for concrete surface finishes'. Grind off any steps or sharp protrusions.

3.16 REMOVE OTHER FORMWORK

Ensure that formwork has been removed or partially removed from the other face(s) to the membrane face, to the extent that it allows moisture to escape from the concrete to ensure no vapour pressure develops beneath the membrane.

Application - torched on or self-adhered tanking membranes

3.17 CONCRETE SUBSTRATE

Confirm concrete structures are specifically engineered to meet the requirements of the NZBC B1/VM1, 3.0 'Concrete'.

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 to NZBC E2/AS1, 10.0 'Construction moisture'. Take a measurement using a hygrometer to verify concrete has sufficiently dried when necessary. This process is essential when DeboFlex 3.5 CS/F K180 Special is torch applied.
The above criteria do not apply if DeboFlex 3.5 CS/F K180 Special is loose-laid on lean site concrete.

Equus do not recommend the use of curing compounds; however, when used ensure all traces of compound are gone or removed. Concrete to be finished to NZS 3114 'Specification for concrete surface finishes', U3 with a light trowel texture. The concrete to have all ridges and protrusions ground flush.

3.18 SUBSTRATE

Thoroughly inspect existing substrates and structures before tanking application, to ensure that they will not affect the performance of the membrane when applied.
Clean the lean concrete by brush or air compressor. Finish pile edges with a non-shrink mortar.

3.19 PRIMER APPLICATION – TORCHED AREAS

Prime all surfaces to which either DeboFlex 2.5 T/F C175 detailing sections, or DeboFlex 3.5 CS/F K180 Special is to be directly torched, with Sopradere Quick or another Equus system approved bitumen primer. Such surfaces include outside walls, vertical areas and corners of beams, piles and pillar-caps. Ensure they are sufficiently cured and dry to permit the intended performance of the Sopradere Quick or Equus system approved primer. Apply Sopradere Quick or Equus approved bitumen primer ensuring a good even coverage and penetration, at a spreading rate of 5m²/litre, as recommended by Equus. Allow to dry for 4 - 24 hours depending upon prevailing weather conditions.

3.20 PRIMER APPLICATION – SELF-ADHERED AREAS

Prime all vertical wall surfaces to which Colphene 3000 is to be adhered to, with Equus Peel and Stick Primer. Ensure the walls are sufficiently cured and dry to permit the intended performance of the Equus Peel and Stick Primer. Apply Equus Peel and Stick Primer ensuring a good even coverage and penetration, at a spreading rate of 6 to 8 m²/litre, as recommended by Equus. Allow to dry for minimum 1 hour depending upon prevailing weather conditions.

3.21 REINFORCE CORNERS – TORCH APPLIED

Reinforce corners (internal and external) to vertical areas with a fully-adhered strip of DeboFlex 2.5 T/F C175 sand finished membrane.

3.22 REINFORCE CORNERS – SELF ADHERED

Reinforce corners (internal and external) to vertical areas with a self-adhered strip of **Colphene 3000** membrane.

3.23 INSTALL DEBOFLEX SPECIAL

Torch the DeboFlex 3.5 CS/F K180 Special granular finished membrane at the connection between horizontal tanking and external wall. Torch the DeboFlex 3.5 CS/F K180 Special membrane fully bonded to the wall for vertical and external applications. Fully heat weld all sheet joints by gas torch. Ensure all joints are well sealed with a minimum lap of 130mm.

3.24 INSTALL COLPHENE 3000

At the connection between the vertical Colphene 3000 and the horizontal DeboFlex 3.5 C S/F K180 Special, a torch-applied reinforcement strip of DeboFlex 2.5 T/F C175. The top of the strip is heated and the Colphene 3000 pressed and rolled inside.

Remove the back covering of the Colphene 3000 and self-adhere evenly and vertically aligned across the vertical area. Heat weld all sheet joints by hot air gun, and ensure all joints are well sealed with a minimum side lap of 100mm and a minimum end lap of 150mm.

Application - loose laid under slab waterproofing membrane

3.25 GENERAL

Concrete curing times are not applicable, where Equus Soprema DeboFlex 3.5 CS/F K180 Special membrane is installed as a loose laid membrane under a concrete floor slab.

3.26 LOOSE LAY DEBOFLEX SPECIAL

Loose lay Equus Soprema DeboFlex 3.5 CS/F K180 Special as a damp-proof and waterproofing membrane under a concrete slab. When installed on compacted hardfill, ensure that the maximum non-specific design of hard-fill is up to 600mm in depth. Ensure granular fill, sand blinding and compaction to comply with the requirements of NZS 3604.

Take care when placing reinforcing steel to avoid puncture or damage to the Equus Soprema DeboFlex 3.5 CS/F K180 Special membrane.

Application- loose-laid tanking waterproofing membrane for tilt-slab/pre-cast

3.27 GENERAL

DeboFlex 3.5 CS/F K180 Special membrane to be installed inside tilt slabs or other types of pre-cast formwork prior to the concrete pour, to become part of the reinforced concrete slab.

3.28 LOOSE LAY DEBOFLEX SPECIAL

Loose lay DeboFlex 3.5 CS/F K180 Special membrane to fit inside the formwork with the granular surface facing upwards. Fully heat weld all sheet joints by gas torch. Ensure all joints are well sealed with a side lap of 130mm. This is indicated by the presence of a thin bead of melted bitumen at all sheet joints after torching.

The tilt-slabs or pre-cast concrete must be left to cure for a minimum 4 day period before lifting takes place, to enable the chemical bond between the surface of the membrane and concrete to occur and allow correct curing of concrete. This is critical to the success of the waterproofing membrane.

Application - tanking waterproofing membrane – general installation

3.29 SHEET JOINTS

Decide the most suitable direction to follow. Discard all packaging prior to installation. Unroll DeboFlex 3.5 CS/F K180 Special membrane and align the first roll. Loose lay the membrane on top of the substrate and cut to length. Make sure the membrane is flat and laps are correctly aligned. Torch all side and end laps by ensuring even heat application. Offset end laps in adjacent runs.

3.30 REPAIRS TO DAMAGED AREAS

Heat weld a piece of DeboFlex 3.5 CS/F K180 SPECIAL of suitable size to cover the damaged area with a minimum overlap of 130mm on all sides on the exterior surface.
NOTE: Contractor to notify the waterproofing applicator if any damage occurs.

3.31 BACKFILLING

Provide a drain coil with a minimum diameter of 100mm (incorporating a filter material) to the base of the foundation. The outlet must discharge to an approved outlet. Install to NZBC E2/AS1, 'External moisture'.

Free draining granular backfill is required behind the tanked wall and around the drain coil. An impervious top coating is required above the free draining granular backfill to manage the surface water away from the building with a minimum fall of 1:30.

Application - Protection

3.32 PROTECT VERTICAL SURFACES

Protect the vertical tanking from damage by abrasive materials, expansive soils and during back filling by installing DANODREN H15 PLUS or Equus protection and drainage layer. The drainage layer shall be kept in place by the Equus termination profile.
Place the backfill once the vertical membrane is in place and adequately protected and the drainage system has been installed at the footing. Ensure the backfill is free of sharp objects that could damage the membrane.

3.33 PROTECT HORIZONTAL SURFACES

After laying is complete the membrane can be protected until the floor slab is poured by covering the tanking with a 50mm layer of 15MPa blinding concrete or compressed cement fibre sheets or similar protective boards suitable for the intended purpose or weight of traffic. This situation arises when there is an extended delay between the membrane installation and the placement of the floor slab or where vehicles and other construction machinery are being taken over the membrane.

3.34 INSTALL RIGID XPS or EPS PROTECTION SHEETS

Neatly fit sheets, spot fixing with adhesive to vertical tanking to Equus requirements.

Completion

3.35 SECTIONAL COMPLETION - TESTS & CERTIFICATION

As sections of the tanking are completed, arrange for inspection of the work before covering with protective sheets, walls, slabs or back-fill. Refer to the general section 1270 CONSTRUCTION for completion requirements and if required commissioning requirements

3.36 ACCEPTANCE

- Arrange for an inspection of the completed work.
- Protect the membrane until completion of the contract works.

3.37 CLEAN UP

Clean up as the work proceeds.

3.38 LEAVE

Leave this work in a sound condition, free of any defect.

3.39 REMOVE

Remove debris, unused materials and elements from the site. Discard all packaging prior to membrane installation.

4 SELECTIONS

For further details on selections go to www.equus.co.nz.
Substitutions are not permitted to the following **Equus** product, unless stated otherwise.

4.1 PRESSURE RATING

Designated water pressure head: ~ metres

4.2 DEBOFLEX SPECIAL TANKING MEMBRANE – TORCH-ON APPLICATIONS

Location:	~
Supplier:	Equus
Brand:	DeboFlex 3.5 CS/F K180 Special by SOPREMA
Thickness:	3.5mm
Primer:	Sopradere Quick by SOPREMA
Reinforcement strip:	DeboFlex 2.5 T/F C175 by SOPREMA
Protection Board:	DANODREN H15 PLUS or Equus protection layer

4.3 COLPHENE 3000 – SELF-ADHERED APPLICATIONS

Location:	~
Supplier:	Equus

Brand: Colphene 3000 by SOPREMA
Thickness: 1.5mm
Primer: Equus Peel and Stick Primer
Reinforcement strip: Colphene 3000 by SOPREMA
Protection Board: DANODREN H15 PLUS or Equus protection layer

4.4
DEBOFLEX SPECIAL WATERPROOF MEMBRANE - LOOSE-LAID APPLICATION, UNDER FLOOR SLAB

Location: ~
Supplier: Equus
Brand: DeboFlex 3.5 CS/F K180 Special by SOPREMA
Thickness: 3.5mm

4.5
DEBOFLEX SPECIAL TANKING MEMBRANE - LOOSE-LAID APPLICATION FOR TILT SLAB / PRECAST CONCRETE

Location: ~
Supplier: Equus
Brand: DeboFlex 3.5 CS/F K180 Special by SOPREMA
Thickness: 3.5mm
Protection Board: DANODREN H15 PLUS or Equus protection layer

Protection

4.6 EQUUS AQUAFIN - 2K/M PLUS

Manufacturer: Schomburg
Supplier: Equus
Location: ~

4.7 EQUUS MATACRYL THIX

Manufacturer: RPM Belgium Vandex
Supplier: Equus
Location: ~

4.8 EQUUS BITUMEN ANGLE FILLETS

Manufacturer: SOPREMA
Supplier: Equus
Location: ~

4.9 TERMINATION PROFILE - EQUUS TERMINATION PROFILE

Manufacturer: Equus
Supplier: Equus
Brand: Termination profile by Equus
Type: ~
Thickness: 2mm minimum

4.10 PROTECTIVE LAYER - DANODREN H15 PLUS

Manufacturer: DANOSA
Supplier: Equus
Brand: DANODREN H15 PLUS
Type: ~
Thickness: 7.5mm