

0411P FOSROC WATERPROOFING – EXTERNAL AND TANKING**Branded worksection**

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Worksection abstract

This worksection *Template* is applicable to FOSROC waterproofing membrane systems for new construction and remedial waterproofing including roofing, podiums, decks, balconies, concrete slabs over below ground spaces, retaining walls, tunnels, landscape and planter boxes, and tanking. It relies on AS 4654.1 (2012) and AS 4654.2 (2012). It includes concrete mixtures and penetrant sealers but excludes decorative coatings.

How to use this worksection

Customise this worksection *Template* for each project. See A guide to NATSPEC worksections (www.natspec.com.au) for information on *Template* structure, word styles, and completing a worksection.

Related material located elsewhere in NATSPEC

If a listed worksection is not part of your subscription package and you wish to purchase it, contact NATSPEC.

Related material may be found in other worksections. See for example:

- *0193 Building access safety systems.*
- *027 Pavements* subgroup.
- *0314 Concrete in situ.*
- *0315 Concrete finishes.*
- *042 Roofing* subgroup for skylights and hatches.
- *0471 Thermal insulation and pliable membranes* for inverted roof membrane assemblies (IRMAs) or protective membrane roofs (PMRs).
- *0612 Cementitious toppings.*
- *0613 Terrazzo in situ.*
- *0631 Ceramic tiling.*
- *0632 Stone and terrazzo tiling.*
- *0802 Hydraulic design and install.*

Related branded worksections include:

- *0621p FOSROC waterproofing – wet areas.*
- *0657p FOSROC resin based seamless flooring.*

Documenting this and related work

You may document this and related work as follows:

- Show the location, extent and type of membrane including details of junctions with flashings and damp-proof courses on the drawings. BCA (2022) F1D5 and BCA (2022) H2D8 require certain roofs, balconies, podiums or similar horizontal surface parts of buildings to be provided with a waterproofing membrane.
- Plan structural control and expansion joints to avoid critical areas such as low points in slabs, planter boxes, water features and above habitable rooms, and show on the drawings. See BCA (2022) F1D4.

The *Normal* style text of this worksection may refer to items as being documented elsewhere in the contract documentation. Make sure they are documented.

Search acumen.architecture.com.au, the Australian Institute of Architects' practice advisory subscription service, for notes on the following:

- Guarantees and warranties.
- Waterproofing.

Specifying ESD

The following may be specified by including additional text:

- Low VOC emitting liquid membrane systems.
- Recycling of construction scrap materials.

Refer to NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

Fosroc is a world leader in construction solutions. We deliver tailored functional construction solutions for virtually any building or infrastructure project. New or old construction, above or below ground, we combine high quality products, expert technical support, customer service and innovation to give you the best solution for your project. Parchem Construction Supplies is the licensed manufacturer and distributor of Fosroc products in Australia.

1.1 RESPONSIBILITIES

General

Requirement: Provide FOSROC waterproofing membrane systems for roofing, podiums, decks, balconies, concrete slabs over below ground spaces, retaining walls, tunnels, landscape and planter boxes, and tanking, as documented.

Documented is defined in *0171 General requirements* as meaning contained in the contract documents.

Performance

Requirements:

- Graded to falls to dispose of stormwater without ponding above the depth of lapped seams.
- Able to accommodate anticipated building movements.
- Able to accommodate its own shrinkage over the warranty life of the roofing system.
- Able to resist water under hydrostatic pressure.

Consider adding the required service-life of the membrane system (material and installation), 10 to 15 years appears normal.

1.2 COMPANY CONTACTS

FOSROC technical contact

Website: www.fosroc.com.au/specification-services

1.3 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements*.

0171 General requirements contains umbrella requirements for all building and services worksections.

List the worksections cross referenced by this worksection. *0171 General requirements* references the *018 Common requirements* subgroup of worksections. It is not necessary to repeat them here. However, you may also wish to direct the contractor to other worksections where there may be work that is closely associated with this work.

NATSPEC uses generic worksection titles, whether or not there are branded equivalents. If you use a branded worksection, change the cross reference here.

1.4 STANDARDS

External waterproofing

Membrane materials: To AS 4654.1 (2012).

Membrane design and installation: To AS 4654.2 (2012).

AS 4654.1 (2012) and AS 4654.2 (2012) are applicable to waterproof membranes for external and above ground use only. Materials selected for tanking and waterproofing of below ground structures should be designed and selected with the assistance of a specialist waterproofing consultant and with the manufacturer or supplier. The Master Builders Association of NSW *Guide to external waterproofing - Balcony and decks (2017)* and *Guide to planter box waterproofing (2017)* are useful sources of details and advice on good installation practice.

Stormwater drainage

Standard: To AS/NZS 3500.3 (2021).

Slip resistance

Classification: To AS 4586 (2013).

Delete if not required. See NATSPEC TECHnote DES 001 on slip resistance.

1.5 MANUFACTURER'S DOCUMENTS

Technical manuals

Website: www.fosroc.com.au

1.6 INTERPRETATION

Abbreviations

General: For the purposes of this worksection, the following abbreviations apply:

- APP: Atactic polypropylene.
- SBS: Styrene butadiene styrene.

Edit the **Abbreviations** subclause to suit the project or delete if not required. List alphabetically.

Definitions

General: For the purposes of this worksection, the definitions given in AS 4654.1 (2012) and AS 4654.2 (2012) and the following apply:

- Bitumen: A viscous material from the distillation of crude oil comprising complex hydrocarbons, which is soluble in carbon disulfide, softens when it is heated, is waterproof and has good powers of adhesion. It is produced as a refined by-product of oil.
 - . APP bitumen: Bitumen modified with atactic (meaning non-crystalline or amorphous) polypropylene wax to form a plastomeric sheet. The membrane is reinforced with fibreglass or non-woven polyester (NWP).
 - . SBS bitumen: Bitumen modified with styrene-butadiene-styrene, a thermoplastic rubber that undergoes a phase inversion at elevated temperature and converts to an elastomeric material. The membrane is reinforced with fibreglass or non-woven polyester (NWP).
- Bond breaker: A system preventing a membrane bonding to the substrate, bedding or lining.
- Double detail joint: A joint formed by turning up and bonding the horizontal membrane to a vertical substrate and adding an overflashing of membrane material bonded to the vertical substrate and folded over and bonded to the horizontal membrane. In certain situations the double detail can be achieved by bonding an angle profile of membrane material to the junction prior to laying the membrane.
- Liquid applied: A water-based formulation that cures to form an elastomeric membrane.

Urethane modified acrylics have better resistance to ponding. Products include acrylics, modified polyurethanes (water-based), polyurea and modified cementitious systems.

- Polyurea: Two component, rapid curing liquid elastomeric membrane applied with specialised equipment.
- Polyurethane: Water or solvent-based formulations that moisture cure to form an elastic rubber membrane.

They can be made more cheaply with bitumen at the expense of long-term properties.

- PVC membrane: Flexible plastic sheet membrane (vinyl).
- Slip sheet: A sheet used to isolate the membrane system from the supporting substrate or from the topping or mortar bedding. The most common material is polyethylene.
- Substrate: The surface to which a material or product is applied.
- Waterproofing system: Combinations of membranes, flashings, drainage and accessories that form waterproof barriers and that may be:
 - . Loose-laid.
 - . Bonded to substrates.

Edit the **Definitions** subclause to suit the project or delete if not required. List alphabetically.

1.7 SUBMISSIONS

Operation and maintenance manuals

Requirement: Submit manual to **COMPLETION, Operation and maintenance manuals.**

Products and materials

Manufacturer's data: Submit product data sheets.

Type tests: Submit certificates verifying conformance to AS 4654.1 (2012) Section 2, Tables 2.1 to 2.3.

Type tests are carried out off-site. However, submission of evidence of a successful type test may be called up here for requirements specified in SELECTIONS or PRODUCTS, when there are no SELECTIONS.

Evidence of delivery: Submit delivery docket as evidence of delivery of [complete/delete]

If evidence of delivery to site is required for particular products, consider including this *Optional* style text by changing to *Normal* style.

Prototypes

General: Apply waterproofing to 10 m² of substrate to demonstrate surface preparation, crack and joint treatment, corner treatment, and execution quality. Install final surface finish to demonstrate aesthetic affects, physical properties, and quality of materials and execution as applicable.

Nominate an approval process and indicate if the prototype is to be retained, Indicate location, size, and other details of prototypes on drawings. Delete if not required.

Records

General: Submit photographic records of application to EXECUTION, **GENERAL, Reporting**.

Flood tests: Submit photographic records to **TESTING, Flood tests**.

Samples

Requirement: Submit 300 x 300 mm samples of each type of membrane including the finish of the visible surface.

Shop drawings

Requirement: Submit shop drawings showing the following:

- Junctions with vertical surfaces and upstands.
- Junctions at perimeters.
- Drainage details.
- Control joints.
- Flashings.
- Penetrations.
- Corners.
- Terminations and connections.
- Membrane layers.
- Insulation and protection.

An alternative is to prepare these details in consultation with the membrane supplier. Delete as appropriate.

Subcontractors

General: Submit names and contact details of proposed suppliers and installers as recommended by FOSROC.

Evidence of experience: [complete/delete]

Delete if supplier/installer details are not required.

Substrate acceptance: Submit evidence of installer's acceptance of the flooring substrate before starting installation.

Tests

Detail the tests required in PRODUCTS or EXECUTION, as appropriate, and list the submissions required here.

Site tests: Submit results, as follows:

- Substrate moisture content to **TESTING, Substrate moisture tests**.
- Flood test, including results of retesting after rectification, to **TESTING, Flood tests**.
- Electronic leak detection to **TESTING, Electronic leak detection tests**.

If electronic leak detection testing is used, consider including this *Optional* style text by changing to *Normal* style.

- Slip resistance of completed installation to **TESTING, Slip resistance tests**.

Warranties

Requirement: Submit warranties to **COMPLETION, Warranties**.

1.8 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Substrates prepared and ready for installation of the waterproofing and tanking systems.
- Secondary layers prepared and ready for subsequent layers.

- Membranes after installation and before concealment.
- Underflashings after installation and before installation of overflashings.
- After flood testing, if applicable.

Amend to suit the project adding critical stage or mandatory inspections required by legislation or regulation.

Hold points, if required, should be inserted here.

2 PRODUCTS

2.1 GENERAL

Product substitution

Other products: Conform to **SUBSTITUTIONS** in 0171 *General requirements*.

SUBSTITUTIONS in 0171 *General requirements* sets out the submissions required if the contractor proposes alternative products. Refer also to NATSPEC TECHnote GEN 006 for more information on proprietary specification.

Product identification

General: Marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern.

Edit the list to suit the project or delete if not required.

2.2 LIQUID MEMBRANE SYSTEMS

Fosroc Nitoproof 210

Description: High performance, water-based, rubberised bitumen, liquid waterproofing membrane with plant root inhibitors.

Typical application: Waterproofing of retaining walls, building foundation walls, below ground tanking structures, waterproofing/damp proofing sandwich membrane, key joints and dowel bars. Planter boxes, garden beds, retaining walls, underground waterproofing, general areas in contact with soil and plants, protective coating over bituminous sheet membranes in underground areas.

Fosroc Nitoproof 310

Description: Water-based latex, fibre enhanced, single component, waterproofing membrane.

Typical application: Wet areas and shower alcoves, under tile balcony areas, sandwich seal between existing and new substrates, e.g. old to new concrete, cement screeds over concrete and CFC surfaces.

Fosroc Nitoproof 410

Description: Fast drying, flexible, polymer/cementitious, two part liquid waterproofing membrane.

Typical application: Podium terraces, balconies and deck areas under toppings, tiles and other protected environments, wet areas and showers.

Fosroc Nitoproof 610

Description: Flexible, polyurethane liquid waterproofing membrane.

Typical application: Foundations, basements, tunnels, ground floors, suspended floors, roof terraces, balconies, patios and bridges.

Fosroc Nitoproof 750

Description: Highly flexible, polyurethane liquid waterproofing membrane.

Typical application: Foundations, basements, tunnels, ground floors, suspended floors, roof terraces, balconies, patios and bridges.

Fosroc Nitoproof 810

Description: Highly flexible, water-based polyurethane liquid waterproofing membrane.

Typical application: Wet areas and shower alcoves, podium terraces, balconies and deck areas, foot trafficable exposed roof top membrane (when over coated), foot trafficable exposed balcony decks (when over coated), foot trafficable exposed walkways subject to regular foot traffic (when over coated), sandwich seal between existing and new substrates, e.g. old to new concrete, cement screeds over concrete and CFC surfaces.

Fosroc Nitoband

Description: Flexible bond breaking tape of acrylonitrile butadiene rubber, and detailing accessories for sealing critical movement zones, including the following:

- Nitoband Elastic Joint Band Tape for floor to wall and wall to wall applications.
- Nitoband Elastic Joint Band Corners: 270° external, 90° internal and adjustable internal corners.
- Nitoband Elastic Joint Band Pipe Penetration Detailing Squares: For pipes up to 50 mm, 110 and 150 mm.
- Nitoband Butyl Square Floor Waste Detailing Collars of various sizes.

Typical application: Internal, external, underground and fully immersed applications used with liquid applied membranes.

Fosroc Nitoproof Top Coat UV

Description: Water-based, acrylic hybrid membrane top coat for UV exposed applications.

Typical application: Roof areas, exposed walk ways subject to regular foot traffic, maintenance walkways subject to foot traffic, deck and balcony areas, exposed roof surfaces for maintenance and access areas and general horizontal surfaces exposed to weather.

Fosroc Nitoproof Top Coat EW

Description: Solvent free, aliphatic polyurethane clear sealer.

Typical application: Sealing over Nitoproof Top Coat membrane coating to improve stain resistance, durability and weathering properties.

Fosroc Nitoprime 120

Description: Water-based, single component, fast drying primer.

Typical application: Provides high bonding and penetrating properties into concrete and masonry surfaces.

Fosroc Nitoprime 115

Description: Water-based, solvent-free primer for non-porous substrates.

Fosroc Polyurea WHE110

Description: Fast setting, hybrid polyurea-polyurethane elastomeric waterproof membrane.

Typical application: Roof areas, exposed walk ways subject to regular foot traffic, maintenance walkways subject to foot traffic, deck and balcony areas, exposed roof surfaces for maintenance and access areas and general horizontal surfaces exposed to weather.

2.3 SELF-ADHESIVE MEMBRANE SYSTEMS

Fosroc Proofex 6100

Description: Woven polypropylene surfaced, bituminous self-adhesive membrane, to waterproof bridge decks, ramps, car parks and road pavements where the membrane will be overlaid with hot asphalt.

Fosroc Proofex 3100

Description: Self-adhesive bituminous membrane incorporating a cross laminated HDPE film that provides excellent physical and application properties.

Fosroc Primer 24

Description: Bituminous primer for Proofex 6100 and Proofex 3100.

2.4 BITUMINOUS SHEET MEMBRANE SYSTEMS - TORCH APPLIED MEMBRANES

Waterproofing sheet membrane systems and individual products, suitable for either UV protected or UV exposed applications in general new construction and remedial construction.

Fosroc Proofex Torchseal A400

Description: Perforated reinforced base sheet to relieve water vapour pressure from under multi-layer torch-on membrane systems.

Fosroc Proofex Torchseal A600

Description: Torch applied 3 mm thick, reinforced polymer – bitumen waterproofing membrane.

Fosroc Proofex Torchseal A625

Description: Torch applied 4.5 mm thick, mineral finish, reinforced polymer-bitumen waterproofing membrane.

Fosroc Proofex Torchseal A700

Description: Torch applied 4.5 mm thick, 'plant root repellent' membrane, reinforced with rot-proof single strand non-woven polyester fabric.

Fosroc Proofex Torchseal A800

Description: Torch applied 4 mm thick, reinforced elastoplastomeric polymer – bitumen waterproofing membrane.

Fosroc Proofex Torchseal A825

Description: Torch applied, 4.5 kg/m², mineral finish, reinforced polymer – bitumen waterproofing membrane

Fosroc Proofex Torchseal A900

Description: Torch applied 5 mm thick, reinforced elastoplastomeric polymer – bitumen bridge deck waterproofing membrane.

Torchseal A900 is specifically designed for bridge and/or car park decks with an asphalt covering.

Fosroc Primer 24

Description: Bitumen primer for use with Proofex Torchseal membranes.

2.5 SHEET MEMBRANE SYSTEMS**Proofex Engage**

Description: Membrane system comprising a cell mesh bonded to a blended polyethylene/polypropylene membrane, which allows poured concrete to interlock, forming a tenacious mechanical bond.

Proofex PGP

Description: Flexible PVC synthetic membrane for the waterproofing of tunnels and below ground structures.

2.6 CEMENTITIOUS MEMBRANE SYSTEMS**Vandex BB75E-Z**

Description: High performance, crack accommodating, cement based render, waterproofing barrier for positive and negative water pressure applications.

Vandex Cemelast

Description: Flexible, surface applied, cement based render, waterproofing barrier, for positive and negative water pressure applications.

Vandex Concrete Grey

Description: Concrete capillary penetrating, crystal growth sealing, cement based, waterproofing system, for positive and negative water pressure applications.

Vandex Plug

Description: Fast setting, cement based mortar to plug running water leaks.

2.7 ACCESSORIES**Torch on One Way Vents**

Description: Vapour relief roof vents for bituminous membranes.

The use of One Way Vents when used with the torch on bituminous sheet systems allows water vapour to escape the roof deck system without allowing moisture to enter through the vent. These can also be used for systems incorporating insulated panels.

Pressure seal flashing

Description: Aluminium strips for sealing and flashing the edge of bituminous sheet membranes.

Flashing

Description: Aluminium strips for sealing and flashing the edge of bituminous sheet membranes.

Proprietary item or as detailed with an aluminium angle.

Sealants

Requirement: Waterproof, flexible, mould-resistant and compatible with the waterproofing system.

Refer to NATSPEC TECHnote DES 017 on the selection of sealants.

Internal Bituminous Corner

Description: Prefabricated corners made of polymeric bituminous membrane.

External Bituminous Corner

Description: Prefabricated corners made of polymeric bituminous membrane.

Torch on Bituminous Fillet

Description: Prefabricated bond breaker made of polymeric bituminous membrane.

Roof Drain

Description: Prefabricated dropper made of thermoplastic elastomer with a 170 mm spigot.

Parapet Drain Outlet – Boy Type

Description: Prefabricated angular drain spitter made of thermoplastic elastomer.

Torch on Pipe Sealing

Description: Prefabricated collar made of thermoplastic elastomer.

Torch on Domed Grate

Description: Leaf guard for drainage outlets 60 to 120 mm diameter.

For torch on bituminous sheet applications, the use of Internal and External Bituminous Corners and Bituminous Fillets provide risk reduction in higher risk areas such as corners and junctions by the total melting of the bituminous waterproofing sheet.

2.8 THERMAL INSULATION**Insulation boards**

Description: [complete/delete]

e.g. 25 mm thick 32 kg/m³ density extruded polystyrene sheets. Use polyisocyanurate insulated foil faced board for fully adhered systems.

2.9 PROTECTION**Fosroc Proofex Protection Board PP**

Description: Lightweight polypropylene, impact protection sheet for membranes.

2.10 SLIP SHEETS**Sheet material**

Description: [complete/delete]

e.g. 1 layer of 300 µm thick polyethylene sheet or 1 layer of 130 g/m² geotextile sheet.

Function: Isolates the movement of overlaying finishes such as screeds from the membrane.

2.11 DRAINAGE CELL SHEETS**Fosroc Sheetdrain 81**

Description: Dimpled protection and drainage membrane in high-density, extruded polyethylene with continuous filament yarn.

Walls

Material: [complete/delete]

Product and thickness.

Cell panel protection: [complete/delete]

If required, the product recommended by the cell panel supplier.

Filter: [complete/delete]

Geotextile product of the recommended grade to suit the fill material. Delete if filter is integral with the drainage cell panels specified.

Location: [complete/delete]

Refer to **SUBSOIL DRAINS** in 0802 Hydraulic design and install for groundwater disposal.

Planter bases

Material: [complete/delete]

Product and thickness.

Protection: [complete/delete]

The product recommended by the membrane supplier.

Filter: [complete/delete]

Geotextile product of the recommended grade to suit the soil.

3 EXECUTION

3.1 GENERAL

Reporting

General: Make progressive photographic records of the waterproofing installation. Label photographs with the date, location and weather.

Timing: Record at the following stages:

- After substrate preparation.
- After primer application.
- After membrane installation.
- After protection from traffic provided.

Liquid applied membranes:

- Record wet film thickness once every 10 m² and compare to the manufacturer's requirements.
- On completion of every 100 m² of each coat, compare the amount of membrane used with the manufacturer's application rate and record the result.

Personnel: Employ an appropriately qualified person to monitor the application and protection of the membranes and prepare a daily report.

For large or complex projects, consider including this *Optional* style text by changing to *Normal* style text.

3.2 PREPARATION

Substrates

General: Prepare substrates as follows:

- Clean and remove any deposit or finish that may impair adhesion of membranes.
- Remove excessive projections.
- Fill voids and hollows in concrete substrates with a concrete mix not stronger than the substrate.
- Fill cracks in substrates wider than 1.5 mm with a filler compatible with the membrane system.
- Remove all traces of a concrete curing compound if used.

Delete the reference to the curing compound if it is demonstrated to be compatible with the membrane.

Concrete substrates: Cure for more than 28 days.

Refer to the manufacturer's substrate curing time requirements for the membrane system being used.

Moisture content

Requirement: Verify that the moisture content of the substrate is compatible with the water vapour transmission rate of the membrane system by testing to **TESTING, Substrate moisture tests**.

Refer to NATSPEC TECHnote DES 008 for the preparation of concrete substrates. Refer also to *CCAA Data Sheet on Moisture in concrete and moisture-sensitive finishes and coatings (2007)*.

Falls

Requirement: Verify that falls in substrates are greater than 1:100.

Consult the membrane supplier to determine a fall that minimises ponding at lapped seams.

Joints and fillets

Internal corners:

- Liquid applied membranes: Provide 15 x 15 mm 45° fillets.
- Sheet membranes: Provide 40 x 40 mm 45° fillets.

Alternatively, provide a double detail joint for sheet membranes.

See AS 4654.2 (2012) clause 2.7.

Fillet material: Cement or plastic.

External corners: Round or arris edges.

Control joints: Prepare all substrate joints to suit the membrane system.

Priming

Compatibility: If required, prime the substrates with compatible primers for adhesion of the membrane system.

3.3 INSTALLATION**Ambient conditions**

Requirement: Do not install in conditions outside the manufacturer's recommendations.

Protection

Damage: Protect membrane from damage during installation and for the period after installation until the membrane achieves its service characteristics that resist damage to FOSROC's recommendation.

This includes making sure liquid applied membranes have fully cured.

Drains

General: Prevent moisture from tracking under the membranes at drainage locations.

Drains and cages: Provide removable grates or cages to prevent blockage from debris. If the finished surface is above the level of the membrane, provide a slotted extension piece to bring the grate up to the level of the finished surface.

See AS 4654.2 (2012) clause 2.10 and Figure 2.15.

Overflows: Apply a bond breaker to the perimeter of the overflow outlet at its junction with the surface to which the membrane will be fixed. Turn the membranes into the overflow to prevent moisture from tracking behind the membrane.

Alternatively, fit a preformed overflow outlet fitting with a face mounted flange and bond membrane to flange.

See AS 4654.2 (2012) clause 2.11 and Figure 2.16.

Sheet joints – Self-adhesive membranes

Longitudinal laps: 50 to 60 mm.

Transverse laps: 70 to 80 mm.

Sheet joints – Pre-applied sheet membranes

Selvage: 75 mm.

Over-seal: 75 mm.

Sheet joints – Bituminous sheet membranes

Side laps: 80 to 100 mm.

Refer to product data sheets.

End laps: 120 to 150 mm.

Refer to product data sheets.

Movement and control joints

General: Install membranes to accommodate control joints in the substructure.

Bond breakers: Size to allow the membrane to accommodate movement.

Joint backing gutter: Fix a formed metal gutter to one side of the soffit directly below the joint and fall to a suitable disposal or drainage point.

Consider for joints in critical locations or delete if not required.

Control joint covers: Install after fixing hobs and membranes.

See AS 4654.2 (2012) clause 2.9 and Figures 2.13 and 2.14 on major control joints. See also BCA (2022) F1D4. Consult the membrane supplier for the preparation of details and selection of products for their ability to withstand the expected long-term movements of joints and the substrate.

Membrane terminations

Membrane upturns: Provide upturns above the maximum water level expected from the exposure conditions of rainfall intensity and wind, as follows:

- Height: To AS 4654.2 (2012) Table A1.

See AS 4654.2 (2012) clause 2.8.1 and Appendix A for termination heights ranging from 40 to 180 mm.

- Anchoring: Secure sheet membranes along the top edge.
- Edge protection: Protect edges of the membrane.

Waterproofing above vertical upward terminations: Waterproof the structure above the termination to prevent moisture entry behind the membrane using cavity flashings, capping, waterproof membranes or waterproof coatings.

Vertical upward terminations:

- Liquid applied membranes: Terminate under an overflashing, or provide an overflashing of liquid applied membrane.
- Sheet membranes: Terminate under an overflashing, or provide a pressure seal overflashing or an overflashing fixed into a cast-in reglet.

See AS 4654.2 (2012) clause 2.8.1 and Figures 2.2 and 2.3.

Membrane downturns: Provide downturns for sheet membrane systems as follows:

- Roofs or similar structures: Extend minimum 100 mm from the junction of the structure.
- Balconies with a fully bonded membrane: Terminate at the drip groove.

Vertical downward terminations:

- Liquid applied membranes: Extend membrane to the underside of a horizontal return.
- Sheet membranes: Provide a pressure seal overflashing.

See AS 4654.2 (2012) clause 2.8.2 and Figure 2.4.

Horizontal terminations: Do not provide. Use vertical terminations.

Membrane penetrations

Vertical penetrations: Provide separate sleeves fixed to the substrate using Fosroc Nitoband Elastic Joint Band System Pipe Penetration Detailing Squares for vertical penetrations including pipes, ducts and vents.

See AS 4654.2 (2012) clause 2.8.4 and Figure 2.10.

Horizontal penetrations: Install Fosroc Nitoband Elastic Joint Band System Pipe Penetration Detailing Squares for all vertical penetrations to FOSROC's recommendation.

See AS 4654.2 (2012) clause 2.8.4 and Figure 2.11.

Adhesion to HDPE and PP is very poor, and flexible PVC conduit has low temperature resistance. Specify copper if seeking to minimise PVC.

Membrane at balcony doors and windows

Requirement: Install membrane before fixing door or window frames.

Upturn height above external finished floor level: To AS 4654.2 (2012) Table A1.

See AS 4654.2 (2012) Appendix A for termination heights ranging from 40 to 180 mm.

Hobless and flush thresholds: Install membrane before fixing door or window frames. Provide a continuous grated drain abutting the external face of the door or window sill.

See AS 4654.2 (2012) clause 2.8.3 and Figures 2.8 and 2.9.

Membrane around skylights and hatches

Requirement: Install membranes to upstands before the installation of the skylight or hatch.

Upturn height above roof surface: To AS 4654.2 (2012) Table A1.

See AS 4654.2 (2012) clause 2.8.5 and Appendix A for termination heights ranging from 40 to 180 mm.

Membrane at parapets

Requirement: Terminate membrane upturns under parapet flashing or capping with at least 75 mm overlap. Do not top fix parapet cappings. Seal heads of fasteners against capping.

See AS 4654.2 (2012) clause 2.8.2.2 and Figures 2.5 and 2.6.

Membrane at gutters

Requirement: Terminate membrane over a corrosion-resistant metal angle fixed to the gutter support substrate with the vertical leg of the angle turned down into the gutter at least 35 mm.

See AS 4654.2 (2012) clause 2.8.2.3 and Figure 2.7.

Membrane at post supports

Post supports fixed before membrane:

- Fix post support to substrate with countersunk fasteners and seal the perimeter of the base plate to the substrate.

- Lay out membrane sheets to minimise cuts around the post support vertical member.
- Dress the membrane closely around the post support and seal the edge of the penetration to the vertical member.
- Fix an overflashing so that any joint is staggered as much as possible relative to joints in the base membrane, and overlap at least 150 mm beyond the perimeter of the base plate.

Post supports fixed after membrane:

- Fix post support to substrate with countersunk fasteners over a waterproof resilient gasket cut to match the shape of the base plate, and seal the perimeter of the base plate to the membrane.
- Dress the overflashing closely around the post support and seal the edge of the penetration to the vertical member.
- Fix an overflashing and overlap at least 150 mm beyond the perimeter of the base plate.

See AS 4654.2 (2012) clause 2.8.4 and Figure 2.12.

Membrane to planter boxes

Membrane: Extend root-resistant membrane at least 100 mm vertically above the soil or fill level and secure.

For aggressive root systems and trees, the selected membrane system should be tested and certified for root resistance by the manufacturer. Root resistance may be built into waterproofing membranes either by the addition of root-inhibiting chemical treatments, or because the composition of the membrane provides an impenetrable barrier to root growth.

Drainage: Grade the base of the planter to adequately sized drainage outlets and terminate the membrane in the outlets.

Drainage riser: Install a riser with drainage slots that extend from the membrane level to the top of the drainage cell. Extend the riser above the soil fill level and finish with a screw cap to provide access for drain clearing.

Protection board: Provide protection board to the full extent of the membrane including areas between soil level and the underside of flashings and cappings.

Drainage cell: Provide geo-filter fabric wrapped drainage cell to the base of the planter and turn geo-filter fabric up drainage riser at least 100 mm above drainage slots.

Cappings and flashings: Provide capping to the tops of planter walls to protect the membrane. Extend the capping to overlap the top of the protection board on the inside face of the planter wall. Where planter walls abut other walls, provide a flashing over the top of the membrane.

See AS 4654.2 (2012) clause 2.13 and Figure 2.17.

Membrane to below ground structures

Membrane: Externally apply membrane to all walls and return to horizontal surfaces to prevent water tracking around structure at joints and corners.

Reinforcement: Provide reinforcement to the membrane at junctions, corners and over joints to the manufacturer's recommendations.

Protection board: Provide protection board to the full extent of the membrane.

Protection boards can be self-adhesive to make sure they remain in situ before backfilling. Make sure there are no materials used requiring mechanical fixing to the membrane. Where backfilling and using hard edged drainage cell, protect the membrane with a 6 mm thick layer of reconstituted rubber mat protection sheet.

Drainage cell: Provide geo-filter fabric wrapped drainage cell to vertical surfaces of the structure.

Curing of liquid membrane systems

General: To the manufacturer's recommendations.

To prevent failure of the membrane, finishes are not applied until the membrane has fully cured.

Overlaying finishes on membranes

Compatibility: If a membrane is to be overlaid with another system such as tiles, pavers, ballast, insulation or soil, provide an overlaying system that is compatible with and will not cause damage to the membrane.

Bonded or partially bonded membranes: If the topping or bedding mortar is to be bonded to the membrane, provide sufficient control joints in the topping or bedding mortar to reduce the movement over the membrane.

Slip sheet: If the topping or bedding mortar is structurally sufficient to not require bonding to the substrate, lay a double slip sheet over the membrane to separate it from the topping or bedding mortar.

Paint coatings: If maintenance pathways are indicated by a paving paint, use a paving paint that is compatible with the membrane.

Membrane protection boards:

- Installation: [complete/delete]

If flood testing is specified: Immediately after the conclusion of a successful flood test. Otherwise: Immediately after the installation of the membrane.

- Location: [complete/delete]
- Fixing: [complete/delete]

Multi-layer APP modified bitumen systems: Adhere to the membrane with a solvent-free or low melt bitumen adhesive. Provide a gap no greater than 6 mm at joints between extruded polystyrene foam (XPS) boards.

Single layer SBS modified bitumen systems: Adhere to the membrane by spot torching the membrane to the XPS board (i.e. by applying the torch to the membrane, not the board). Polypropylene board provides very poor adhesion, so it may be necessary to use mechanical fixings, taking care not to affect waterproofing.

Liquid applied membranes: Tape joints and fix with an adhesive compatible with the membrane.

3.4 TESTING

0171 *General requirements* defines different tests in **INTERPRETATION**, **Definitions** and calls for an inspection and testing plan in **TESTING - GENERALLY**, **Inspection and testing plan**.

Substrate moisture tests

Moisture content of concrete substrate: Test substrate in-slab relative humidity to ASTM F2170 (2019). Perform three tests for the first 100 m² of subfloor area and an additional test for each additional 100 m².

Alternative moisture content tests other than in-slab relative humidity may be accepted, particularly if the slab has post-tensioning or in-floor heating systems.

AS 1884 (2021) suggests the alternative testing method of ASTM F1869 (2022), only if testing to ASTM F2170 (2019) is not possible. Edit testing requirement above to suit if alternatives to in-slab relative humidity testing are acceptable.

Moisture content of timber, plywood and particleboard substrate: Test substrate to AS/NZS 2098.1 (2006) for plywood substrates or to AS/NZS 1080.1 (2012) for timber and particleboard substrates.

Flood tests

A flood test may be required where the waterproofed area is over a habitable space particularly that of another occupant. However it should be noted that membrane system failures may occur due to damage caused on site after the flood test is conducted. Delete if not required.

Requirement: Perform a flood test before the installation of surface finishes.

Moisture content measurement method: To **Substrate moisture tests**.

Set-up:

- Measure the wall/floor junction of adjacent spaces and of the slab soffit below for dryness.
- Record the result for each area.
- Dam the access openings and seal drainage outlets.
- Provide temporary overflows of the same capacity as the outlets.

The aim is to prevent damage if it rains overnight. If the building is occupied consider calling for the flood test to be conducted during supervised working hours.

- Fill space with clean water as follows:
 - . Minimum water level: 25 mm.
 - . Maximum water level: 100 mm.
 - . Minimum dimension below perimeter flashings: 25 mm.
- Test duration: Minimum 24 hours and maximum 72 hours.

Records:

- Make photographic records of the flooded areas and adjacent areas.

- Label photographs with the date and location.

Delete if photographic records for flood testing are not required.

Evaluation:

- Visual test: Drain the water. After 2 hours, visually inspect the wall/floor junction of adjacent spaces and of the slab soffit below for water or moisture.
- Moisture meter test: If there is no visual evidence of water, test the same areas for dryness using a moisture meter, and compare the results to the measurements taken before flooding.

Conformance:

- Evidence of water from the visual test: Failure.
- Test results indicating an increase in moisture after flooding: Failure.
- Failure: If required, remedy defects and retest.

Specify here the approval criteria set up for the project. If necessary, nominate a **Hold point**.

Electronic leak detection tests

Standard: To ASTM D8231 (2019).

AS 4654.2 (2012) clause 2.16 notes a visual inspection and/or either a dry film thickness test or a controlled water test (flood test) should be conducted on completion of the membrane system installation. Electronic leak detection is an alternative testing method involving locating membrane breaches using electronic conductance. It is not intended to replace visual or other methods of inspection.

If electronic leak detection testing is required, consider including this *Optional* style text by changing to *Normal* style.

Slip resistance tests

Slip resistance of completed installation: To AS 4663 (2013).

Site testing is expensive. Delete if not required. See NATSPEC TECHnote DES 001 on slip resistance.

3.5 COMPLETION

Reinstatement

Extent: Repair or replace faulty or damaged work. If the work cannot be repaired satisfactorily, replace the whole area affected.

Operation and maintenance manuals

Requirement: Prepare a manual that includes the manufacturer's maintenance recommendations, including the following:

- Preventative maintenance procedures.
- Instructions and procedures for the repair of the membrane.

Compliance with this clause targets the Operations and Maintenance requirement within the Minimum Expectation level of the Verification and Handover credit in Green Star Buildings (2021).

Warranties

Requirement: Cover materials and workmanship in the terms of the warranty in the form of interlocking warranties from the supplier and the applicator.

- Form: Against failure of materials and execution under normal environment and use conditions.
- Period: [complete/delete]

Parchem offers 10 to 20 years warranty depending on system selection.

4 SELECTIONS

Schedules are a tool to specify properties required for products or systems. If the principal permits documentation of the product or system by proprietary name, some of the properties may be unnecessary and can be deleted. Document the product or system's location or application here and/or on the drawings with a matching project code. Refer to NATSPEC TECHnote GEN 024 for guidance on using and editing schedules.

4.1 EXTERNAL WATERPROOFING

Requirements schedule

	A	B	C
Abrasion resistance			

	A	B	C
Traffic			
Slip resistance classification			
Overlying finish			
Root resistance and bioresistance			
Reflectivity (%)			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Abrasion resistance: Select Trafficable or Non-trafficable.

Traffic: For trafficable surfaces only. Delete for non-trafficable surfaces. Nominate maintenance, pedestrian or vehicular as defined in AS 4654.1 (2012) clause 1.3.7 and AS 4654.2 (2012) clause 1.3.14.

Slip resistance classification: For trafficable surfaces where membranes are used as surface finishes only. Delete for non-trafficable surfaces. Select the slip resistance classification to AS 4586 (2013). See NATSPEC TECHnote DES 001, SA HB 197 (1999) and SA HB 198 (2014).

Overlying finish: Nominate the finish by cross referencing the appropriate worksection or put none. Roofing membranes are generally not trafficable.

Root resistance and bioresistance: Required or Not required. Nominate for planters, roof gardens and tanking where resistance to roots, fungus, mould and rot is required. See AS 4654.1 (2012) clauses 2.8 and 2.9.

Reflectivity (%): For exposed surfaces only. Delete for non-exposed surfaces or where the reflectivity of the membrane does not need to be specified.

4.2 ROOF/PODIUM/DECK WATERPROOFING - NEW CONSTRUCTION

Maintenance traffic areas schedule (UV exposed membrane)

	1A	1B	1C	1D	1E
Proprietary system	FOSROC	FOSROC	FOSROC	FOSROC	FOSROC
Material type	Two-layer, torch on mineral finish sheet membrane system	Two-layer, torch on mineral finish sheet membrane system	Water-based Polyurethane liquid applied membrane	Water-based, Polymer/Cementitious, liquid applied membrane	Fast setting, hybrid polyurea-polyurethane elastomeric waterproof membrane
Primer: Porous substrates	Fosroc Primer 24	Fosroc Primer 24	Nitoprime 120	Nitoprime 120	Fosroc Nitoprime 320PU
Primer: Non-porous substrates	Fosroc Primer 24	Fosroc Primer 24	Nitoprime 115	Nitoprime 115	Fosroc Nitomortar 903
Joint bond breaker	Sand/cement fillet	Sand/cement fillet	Nitoband Elastic Joint Band System	Nitoband Elastic Joint Band System	Sand/cement fillet
Base membrane	Fosroc Proofex Torchseal A800	Fosroc Proofex Torchseal A600	-	-	-
Top membrane	Fosroc Proofex Torchseal A825	Fosroc Proofex Torchseal A625	Fosroc Nitoproof 810	Fosroc Nitoproof 810	Fosroc Poyurea WHE110
UV wear coat	-	-	Fosroc Nitoproof Top Coat UV	Fosroc Nitoproof Top Coat UV	Fosroc Nitoflor PA
Optional*	-	-	Fosroc Nitoproof Top	Fosroc Nitoproof Top Coat EW*	-

	1A	1B	1C	1D	1E
			Coat EW*		

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

System 1A: Torch applied, 2 layer, high tensile strengths, elongation, cold flexibility, standard warranty 10 to 20 years.

System 1B: Torch applied, 2 layer, economical, strong performance properties, standard warranty 10 to 20 years.

System 1C: Liquid applied, high tensile strength, fast curing, flood test after 48 hours, standard warranty 10 to 15* years.

System 1D: Liquid applied, low VOC: low water vapour transmission, standard warranty 10 to 15* years.

System 1E: Liquid spray applied, very fast setting, low VOC, standard warranty 10 years.

Contact Parchem to discuss the most appropriate waterproofing design option for your project. Delete redundant options.

Optional*: Surface protection/finish.

Pedestrian traffic areas – tiled /paved schedule (UV protected)

	2A	2B	2C	2D	2E
Proprietary system	FOSROC	FOSROC	FOSROC	FOSROC	FOSROC
Material type	Two-layer, torch on sheet membrane with screed, tile/paver over	Two-layer, torch on sheet membrane with screed, tile/paver over	Water-based Polyurethane, liquid applied membrane with screed, tile/paver over	Water-based, Polymer/Cementitious, liquid applied membrane with screed, tile/paver over	Fast setting, hybrid polyurea-polyurethane elastomeric waterproof membrane with screed, tile/paver over
Screed	Concrete screed over	Concrete screed over	Concrete screed over	Concrete screed over	Concrete screed over
Primer: Porous substrates	Fosroc Primer 24	Fosroc Primer 24	Fosroc Nitoprime 115	Fosroc Nitoprime 115	Fosroc Nitoprime 320PU
Primer: Non-porous substrates	Fosroc Primer 24	Fosroc Primer 24	Fosroc Nitoprime 120	Fosroc Nitoprime 120	Fosroc Nitomortar 903
Joint bond breaker	Sand/cement fillet	Sand/cement fillet	Nitoband Elastic Joint Band system	Nitoband Elastic Joint Band system	Sand/cement fillet
Base membrane	Fosroc Proofex Torchseal A600	Fosroc Proofex Torchseal A600	-	-	-
Top membrane	Fosroc Proofex Torchseal A825	Fosroc Proofex Torchseal A625	Fosroc Nitoproof 810	Fosroc Nitoproof 410	Fosroc Polyurea WHE110

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

System 2A: Torch applied, 2 layer, 7 mm thickness, high tensile strengths, elongation, cold flexibility, standard warranty 10 to 20 years.

System 2B: Torch applied, 2 layer, 6 mm thickness, economical, strong performance properties, standard warranty 10 to 20 years.

System 2C: Liquid applied, high tensile strength, fast curing, flood test after 48 hours, standard warranty 10 to 15 years.

System 2D: Liquid applied, low VOC: low water vapour transmission, standard warranty 10 to 15 years.

System 2E: Liquid spray applied, very fast setting, low VOC, standard warranty 10 years.

Contact Parchem to discuss the appropriate waterproofing design option for your project. Delete redundant options.

Car park/vehicle traffic areas schedule (UV protected membrane)

	3A	3B	3C	3D
Proprietary system	FOSROC	FOSROC	FOSROC	FOSROC
Material type	Two-layer, torch on sheet membrane	Single layer, torch on sheet membrane	Single layer, self-adhesive, sheet membrane	Water-based Polyurethane, liquid applied membrane
Overlay	Concrete topping slab	Concrete topping slab or asphalt overlay	Concrete topping slab or asphalt	Concrete topping slab
Primer: Porous substrates	Fosroc Primer 24	Fosroc Primer 24	Fosroc Primer 24	Fosroc Nitoprime 120
Primer: Non-porous substrates	Fosroc Primer 24	Fosroc Primer 24	Fosroc Primer 24	Fosroc Nitoprime 115
Joint bond breaker	Sand/cement fillet	Sand/cement fillet	Sand/cement fillet	Fosroc Nitoband Elastic Joint Band System
Base membrane	Fosroc Proofex Torchseal A600	-	-	-
Top membrane	Fosroc Proofex Torchseal A800	Fosroc Proofex Torchseal A900	Fosroc Proofex 3100 (concrete topping) or Fosroc Proofex 6100 (asphalt topping)	Fosroc Nitoproof 810

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

System 3A: Torch applied, 2 layer, 7 mm thickness, suitable for concrete topping over, standard warranty 10 to 20 years.

System 3B: Torch applied, single layer, 5 mm thickness, suitable for asphalt or concrete topping over, standard warranty 5 to 10 years.

System 3C(i): Self-adhesive, single layer, 1.6 mm thickness, suitable for concrete topping over, standard warranty 5 to 10 years.

System 3C(ii): Self-adhesive, single layer, 1.6 mm thickness, suitable for asphalt topping over, standard warranty 5 to 10 years.

System 3D: Liquid applied, high strength, fast curing, suitable for concrete topping over, standard warranty 5 to 10 years.

Contact Parchem to discuss the appropriate waterproofing design option for your project. Delete redundant options.

4.3 BALCONY AREAS – NEW CONSTRUCTION

Balcony/terrace areas – tiled/paved schedule (UV protected membrane)

	5A	5B	5C	5D
Proprietary system	FOSROC	FOSROC	FOSROC	FOSROC
Material type	Two layer torch-on, sheet membrane system with screed, tile/paver over	Two layer torch-on, sheet membrane system with screed, tile/paver over	Water-based polyurethane liquid applied membrane with screed, tile/paver over	Water-based, polymer/cementitious, two part, liquid applied membrane with screed, tile/paver over
Screed	Screed layer over	Screed layer over	Screed layer over	Screed layer over
Primer: Porous substrates	Fosroc Primer 24	Fosroc Primer 24	Fosroc Nitoprime 120	Fosroc Nitoprime 120
Primer: Non-porous	Fosroc Primer 24	Fosroc Primer 24	Fosroc Nitoprime 115	Fosroc Nitoprime 115

	5A	5B	5C	5D
substrates				
Joint bond breaker	Sand/cement fillet	Sand/cement fillet	Fosroc Nitoband Elastic Joint Band System	Fosroc Nitoband Elastic Joint Band System
Base membrane	Fosroc Proofex Torchseal A600	Fosroc Proofex Torchseal A600	-	-
Top membrane	Fosroc Proofex Torchseal A800	Fosroc Proofex Torchseal A600	Fosroc Nitoprime 810	Fosroc Nitoprime 410

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

System 5A: Torch applied, 2 layer, 7 mm thickness, high tensile strengths, elongation, cold flexibility, standard warranty 10 to 20 years.

System 5B: Torch applied, 2 layer, 6 mm thickness, economical, strong performance properties, standard warranty 10 to 20 years.

System 5C: Liquid applied, high tensile strength, fast curing, flood test after 48 hours, standard warranty 10 to 15 years.

System 5D: Liquid applied, low VOC: low water vapour transmission, standard warranty 10 to 15 years.

Contact Parchem to discuss the appropriate waterproofing design option for your project. Delete redundant options.

4.4 LANDSCAPED GARDEN – NEW CONSTRUCTION

Landscaped garden areas schedule (UV protected membrane)

	6
Proprietary system	FOSROC
Material type	Two layer torch-on, root resistant, sheet membrane system with drainage sheet
Primer	Fosroc Primer 24
Base membrane	Fosroc Proofex Torchseal A600
Top membrane	Fosroc Proofex Torchseal A700
Drainage sheet layer	Fosroc Proofex Sheetdrain 81

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

System 6: Torch-on, 2 layer, 7 mm thick, root resistant sheet membrane, with drainage sheet, landscaping over, standard warranty 10 to 20 years.

Contact Parchem to discuss the appropriate waterproofing design option for your project. Delete redundant options.

Planter box gardens schedule (UV protected membrane)

	7A	7B
Proprietary system	FOSROC	FOSROC
Material type	Two layer torch-on, root resistant, sheet membrane system with drainage sheet	Polymer modified bituminous, liquid applied membrane, containing root inhibitors, with drainage sheet
Primer: Porous substrates	Fosroc Primer 24	Diluted Fosroc Nitoproof 210
Primer: Non-porous substrates	Fosroc Primer 24	Fosroc Nitoprime 115
Joint bond breaker	Sand/cement fillet	Fosroc Nitoband Elastic Joint Band System
Base membrane	Fosroc Proofex Torchseal A600	-
Top membrane	Fosroc Proofex Torchseal A700	Fosroc Nitoproof 210 with Fosroc Nitoband Elastic Joint Band System
Drainage sheet	Fosroc Proofex Sheetdrain 81	Fosroc Proofex Sheetdrain 81

	7A	7B
Protection board	Fosroc Proofex Protection Board PP	Fosroc Proofex Protection Board PP

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

System 7A: Torch-on, 2 layer, 7 mm thick, root resistant sheet membrane, with drainage sheet, protection board, landscaping over, standard warranty 10 to 20 years.

System 7B: Liquid applied, root resistant membrane, with drainage sheet, protection board, landscaping over, standard warranty 5 to 10 years.

Contact Parchem to discuss the appropriate waterproofing design option for your project. Delete redundant options.

4.5 BELOW GROUND BASEMENT WATERPROOFING/TANKING – NEW CONSTRUCTION

Below ground basement waterproofing and drainage/tanking schedule (UV protected membrane)

	8A	8B	8C	8D
Proprietary system	FOSROC	FOSROC	FOSROC	FOSROC
Material type	Single layer, pre-applied, sheet waterproofing & tanking membrane system	Two layer torch-on, sheet membrane system with drainage sheet	Single layer, self-adhesive, sheet membrane with drainage sheet	Water-based, rubberised bitumen, liquid applied membrane with drainage sheet
Primer: Porous substrates	-	Fosroc Primer 24	Fosroc Primer 24	Diluted Fosroc Nitoproof 210
Primer: Non-porous substrates	-	Fosroc Primer 24	-	Fosroc Nitoprime 115
Joint bond breaker	Sand/cement fillet	Sand/cement fillet	Sand/cement fillet	Fosroc Nitoband Elastic Joint Band System
Base membrane	-	Fosroc Proofex Torchseal A600	-	-
Top membrane	-	Fosroc Proofex Torchseal A800	Fosroc Proofex 3100	Fosroc Nitoproof 210
Waterproofing	Fosroc Proofex Engage	-	-	-
Drainage	Fosroc Proofex Sheetdrain 81	Fosroc Proofex Sheetdrain 81	Fosroc Proofex Sheetdrain 81	Fosroc Proofex Sheetdrain 81

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

System 8A: Pre-applied to mechanically bond to poured concrete, water vapour and gas protection, single layer, standard warranty 5 to 20 years.

System 8B: Torch applied, 2 layer, 7 mm thickness, high tensile strengths, elongation, cold flexibility, standard warranty 10 to 20 years.

System 8C: Self-adhesive, single layer, 1.6 mm thickness sheet membrane, standard warranty 5 to 10 years.

System 8D: Liquid applied membrane, with drainage sheet, protection board, standard warranty 5 to 10 years.

Contact Parchem to discuss the appropriate waterproofing design option for your project. Delete redundant options.

Retaining wall waterproofing and drainage schedule (UV protected membrane)

	9A	9B	9C	9D
Proprietary system	FOSROC	FOSROC	FOSROC	FOSROC
Material type	Two layer torch-on,	Single layer torch-	Single layer, self-	Polymer modified

	9A	9B	9C	9D
	sheet membrane system with drainage sheet	on, sheet membrane with drainage sheet	adhesive, sheet membrane with drainage sheet	bituminous, liquid applied membrane, incorporating plant root inhibitors, with drainage sheet
Primer: Porous substrates	Fosroc Primer 24	Fosroc Primer 24	Fosroc Primer 24	Diluted Fosroc Nitoproof 210
Primer: Non-porous substrates	Fosroc Primer 24	Fosroc Primer 24	Fosroc Primer 24	Fosroc Nitoprime 115
Joint bond breaker	Sand/cement fillet	Sand/cement fillet	Sand/cement fillet	Fosroc Nitoband
Base membrane	Fosroc Proofex Torchseal A600	-	-	-
Top membrane	Fosroc Proofex Torchseal A600	Fosroc Proofex Torchseal A600	Fosroc Proofex 3100	Fosroc Nitoproof 210
Drainage	Fosroc Proofex Sheetdrain 81	Fosroc Proofex Sheetdrain 81	Fosroc Proofex Sheetdrain 81	Fosroc Proofex Sheetdrain 81

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

System 9A: Torch applied, 2 layer, bitumen sheet membrane, 6 mm thickness, high tensile strengths, elongation, cold flexibility, economical, standard warranty 10 to 20 years.

System 9B: Torch applied, single layer, bitumen sheet membrane, 3 mm thickness, high tensile strengths, elongation, cold flexibility, economical standard warranty 5 to 10 years.

System 9C: Self-adhesive HDPE sheet membrane, single layer, 1.6 mm thickness, standard warranty 5 to 10 years.

System 9D: Liquid applied, polymer modified bituminous membrane, root resistant, standard warranty 5 to 10 years.

Contact Parchem to discuss the appropriate waterproofing design option for your project. Delete redundant options.

4.6 OTHER WATERPROOFING APPLICATIONS – NEW CONSTRUCTION

Water storage retaining tanks/vessels schedule (UV protected/UV exposed membranes)

	10A	10B
Proprietary system	Parchem	Parchem
Material type	Flexible, dynamic crack accommodating, cement based render waterproofing barrier for new or old concrete/masonry structures, drinking water approved to AS/NZS 4020 (2018)	In-depth concrete capillary penetrating, crystal growth sealing, cement based waterproofing barrier for high positive/negative water pressures
Primer: Porous substrates	-	-
Primer: Non-porous substrates	-	-
Joint bond breaker	-	-
Membrane (UV Protected or Exposed)	Vandex Cemelast	Vandex Concrete Grey

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

System 10A: Flexible, dynamic crack accommodating, cement based render waterproofing barrier, for new or old concrete/masonry structures, standard warranty 5 to 10 years.

System 10B: In-depth concrete capillary penetrating, crystal growth sealing, cement based waterproofing barrier for high positive/negative water pressures, standard warranty 5 to 10 years.

Material type: Contact Parchem to discuss the appropriate waterproofing design option for your project. Delete redundant options.

Tunnel waterproofing and drainage/tanking schedule (UV protected membrane)

	11A	11B	11C	11D	11E
Proprietary system	FOSROC	FOSROC	FOSROC	FOSROC	FOSROC
Material type	Two layer torch-on, sheet membrane system with drainage sheet	Single layer torch-on, sheet membrane with drainage sheet	Single layer, pre-applied, sheet waterproofing & tanking membrane	Single layer, self-adhesive, sheet membrane with drainage sheet	Single layer flexible PVC synthetic membrane
Primer	Fosroc Primer 24	Fosroc Primer 24	-	Fosroc Primer 24	-
Base membrane	Fosroc Proofex Torchseal A600	-	-	-	-
Top membrane	Fosroc Proofex Torchseal A800	Fosroc Proofex Torchseal A600	Fosroc Proofex Engage	Fosroc Proofex 3100	Fosroc Proofex PGP
Drainage	Fosroc Proofex Sheetdrain 81	Fosroc Proofex Sheetdrain 81	Fosroc Proofex Sheetdrain 81	Fosroc Proofex Sheetdrain 81	Fosroc Proofex Sheetdrain 81

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

System 11A: Torch applied, 2 layer, bitumen sheet membrane, 7 mm thickness, high tensile strengths, elongation, cold flexibility, dimpled polypropylene drainage sheet with geotextile fabric, standard warranty 10 to 20 years.

System 11B: Torch applied, single layer, bitumen sheet membrane, 3 mm thickness, dimpled polypropylene drainage sheet with geotextile fabric, standard warranty 5 to 10 years.

System 11C: Pre-applied polyethylene sheet membrane to mechanically bond to poured concrete, water vapour and gas protection, single layer, standard warranty 5 to 10 years.

System 11D: Self-adhesive HDPE sheet membrane, single layer, 1.6 mm thickness, standard warranty 5 to 10 years.

System 11E: Loose laid or fully bonded 2 mm thick PVC membrane, standard warranty 5 to 10 years.

Contact Parchem to discuss the appropriate waterproofing design option for your project. Delete redundant options.

4.7 ROOF / PODIUM / DECK AREAS – REMEDIAL CONSTRUCTION

Vented waterproofing systems for failed membranes, or heat sensitive substrates schedule (UV exposed membrane)

	12A	12B	12C
Proprietary system	FOSROC	FOSROC	FOSROC
Material type	Multi-layer torch-on, vented, mineral finish membrane system	Two layer torch-on, vented, mineral finish, sheet membrane system	Multi-layer heat adhered/torch-on, mineral finish, sheet membrane system over failed membranes, or heat sensitive substrates
Primer	Fosroc Primer 24	Fosroc Primer 24	-
Adhesives	-	-	Adhesive or mechanically fixed
Preparation/Vent Sheet	Fosroc Proofex Torchseal A400	Fosroc Proofex Torchseal A400	Fosroc Proofex Torchseal A300
Middle Membrane	Fosroc Proofex Torchseal A600	-	Fosroc Proofex Torchseal A400
Top Membrane	Fosroc Proofex Torchseal A825	Fosroc Proofex Torchseal A825	Fosroc Proofex Torchseal A825

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

System 12A: Torch applied, 2 layer (plus vent sheet), bitumen sheet membrane system, vent layer with base and top layer exhibiting high tensile strengths, elongation, cold flexibility, suitable for damp new and existing substrates, mineral finish, standard warranty 10 to 20 years.

System 12B: Torch applied, single layer (plus vent sheet), bitumen sheet membrane system, vent layer with top layer exhibiting high tensile strengths, elongation, cold flexibility, suitable for damp new and existing substrates, mineral finish, standard warranty 10 to 15 years.

System 12C: Heat adhered/torch applied, multi-layer, bitumen sheet membrane system, preparation layer mechanically fixed or adhered over failed membranes or heat sensitive substrates, base and top layer exhibiting high tensile strengths, elongation, cold flexibility, mineral finish, standard warranty 10 to 20 years.

Contact Parchem to discuss the appropriate waterproofing design option for your project. Delete redundant options.

4.8 OTHER NEW AND REMEDIAL WATERPROOFING SOLUTIONS – REMEDIAL CONSTRUCTION

Waterproofing new or old, concrete/masonry and leaking structures schedule (UV protected membrane/UV exposed membrane)

	13A	13B	13C	13D
Proprietary system	Parchem	Parchem	Parchem	Parchem
Material type	Cement based render waterproofing barrier, for new or old concrete/masonry structures with high positive/negative water pressures	Flexible, dynamic crack accommodating, cement based render waterproofing barrier, for new or old concrete/masonry structures	In-depth concrete capillary penetrating, crystal growth sealing, cement based waterproofing barrier for high positive/negative water pressures	Fast setting, cement based mortar, to plug running water leaks
Membrane	Vandex BB75E-Z	Vandex Cemelast	Vandex Concrete Grey	Vandex Plug

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

System 13A: Cement based render waterproofing barrier, for new or old concrete/masonry structures with high positive/negative water pressures, standard warranty 5 to 10 years.

System 13B: Flexible, dynamic crack accommodating, cement based render waterproofing barrier, for new or old concrete / masonry structures, standard warranty 5 to 10 years.

System 13C: In-depth concrete capillary penetrating, crystal growth sealing, cement based waterproofing barrier for high positive/negative water pressures, standard warranty 5 to 10 years.

System 13D: Fast setting, cement based mortar, to plug running water leaks. Warranty not available.

REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS/NZS 1080		Timber - Methods of test
AS/NZS 1080.1	2012	Moisture content
AS/NZS 2098		Methods of test for veneer and plywood
AS/NZS 2098.1	2006	Moisture content of veneer and plywood
AS/NZS 3500		Plumbing and drainage
AS/NZS 3500.3	2021	Stormwater drainage
AS/NZS 4020	2018	Testing of products for use in contact with drinking water
AS 4586	2013	Slip resistance classification of new pedestrian surface materials
AS 4654		Waterproofing membranes for external above-ground use
AS 4654.1	2012	Materials
AS 4654.2	2012	Design and installation
AS 4663	2013	Slip resistance measurement of existing pedestrian surfaces
ASTM D8231	2019	Standard practice for the use of a low voltage electronic scanning system for detecting and locating breaches in roofing and waterproofing membranes
ASTM F2170	2019	Standard test method for determining relative humidity in concrete floor slabs using in situ probes

The following documents are mentioned only in the *Guidance* text:

AS 1884	2021	Floor coverings - Resilient sheet and tiles - Installation practices
SA HB 197	1999	An introductory guide to the slip resistance of pedestrian surface materials
SA HB 198	2014	Guide to the specification and testing of slip resistance of pedestrian surfaces
BCA F1D4	2022	Health and amenity - Surface water management, rising damp and external waterproofing - Exposed joints
BCA F1D5	2022	Health and amenity - Surface water management, rising damp and external waterproofing - External waterproofing membranes
BCA H2D8	2022	Class 1 and 10 buildings - Damp and weatherproofing - External waterproofing
CCAA Data Sheet MC	2007	Moisture in concrete and moisture-sensitive finishes and coatings
GBCA Buildings	2021	Green Star Buildings
MBA (NSW) Book 2	2017	Guide to external waterproofing - Balcony and decks (Book 2)
MBA (NSW) Book 3	2017	Guide to planter box waterproofing (Book 3)
NATSPEC DES 001		Slip resistance performance
NATSPEC DES 008		Preparation of concrete substrates
NATSPEC DES 017		Selection of sealants
NATSPEC GEN 006		Product specifying and substitution
NATSPEC GEN 024		Using NATSPEC selections schedules
NATSPEC TR 01		Specifying ESD
ASTM F1869	2022	Standard test method for measuring moisture vapor emission rate of concrete subfloor using anhydrous calcium chloride