



WETSUIT

LIQUID APPLIED MEMBRANE

SYSTEM

TECHNICAL & INSTALLATION

MANUAL

Product System Descriptions and
Construction Details

July 2015

V1.08

For New Zealand and Australia

Contact:

Web Site: www.neptunenz.co.nz

Contact: +64 9 4154469

Address: PO Box 185 Albany Village, Albany 0755
Auckland New Zealand

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1 GENERAL DESCRIPTION

Neptune Coatings' WetSuit Liquid Applied Membrane system (The WetSuit System) is a pedestrian trafficable waterproofing membrane that is applied over new or existing roof and deck substrates, wet areas in bathrooms and walls. The WetSuit System provides high quality, and highly durable waterproofing solutions perfectly suited to the needs of residential housing and commercial buildings. The performance of the WetSuit membrane system makes it an excellent waterproofing system in the New Zealand and Australian markets.

This technical manual document outlines the typical installation and application of The WetSuit System. If specifiers require additional or modified details please contact Neptune NZ Ltd.

The WetSuit System is a liquid applied membrane that includes the following components:

- WetSuit 2 parts rapid curing liquid applied membrane;
- WetSuit one-part self-leveling membrane;
- WetSuit trowel grade and fibered trowel grade;
- WetSuit Invisilink reinforcement fabric
- WetSuit Undercover
- WetSuit Primer where applicable

The WetSuit System has the following characteristics:

Color:	brown to black
Non-Toxic	No solvents
Minimum cured film thickness	60 mils / 1.5 mm roofing 80 mils / 2 mm vertical waterproofing 100 mils / 2.5 mm horizontal waterproofing 40 mils / 1 mm air/vapor barrier

The distributor for WetSuit System components in New Zealand & Australia is:

Neptune NZ Ltd
PO Box 185 Albany Village
Albany
Auckland 0755
New Zealand
Tel: +64 9 4154469
Website: www.neptunenz.co.nz

WetSuit System components are manufactured by
Neptune Coatings Inc
4260 Wagon Trail Avenue
Las Vegas, Nevada 89118
United States of America

2 COMPLIANCE WITH THE BUILDING CODE

2.1 COMPLIANCE WITH THE NEW ZEALAND CODE

The WetSuit System complies with the following clauses of the New Zealand Building Code:

B1 - Mechanical performance B1.3.2

B2 - Durability B2.3.1 (a) & (c) and B2.3.2 (a)

D1 - Access routes - D1.3.3

E2 - External moisture - E2.3.2

F2 - Hazardous Building Materials- F2.3.1

G12 - Potable water - G12.3.1

2.2 B1 STRUCTURE

The WetSuit System installed as per this manual is able to withstand up to VH wind zone described in NZS 3604.

2.3 B2 DURABILITY

The WetSuit System applied in accordance with this manual will meet the requirements of NZBC Clause B2.3.1(a) & (c) and B2.3.2(a) in terms of cyclic movement over joints over time, trafficability and resistance to hail damage.

2.4 D1 ACCESS ROUTES

The WetSuit System applied in accordance with this manual will meet the requirements of NZBC Clause D1.3.3 in term of safe access as per AS/NZ 3661.1.

2.5 E2 EXTERNAL MOISTURE

The WetSuit System applied in accordance with this manual is compliant to the requirements of NZBC E2.3.2 relating to the resistance of water penetration (hydrostatic water resistance, susceptibility to leakage), provided the integrity of the specified system is maintained.

2.6 F2 HAZARDOUS BUILDING MATERIALS

In reference to NZBC Clause F2.3.1 regarding Hazardous Building Materials, The WetSuit System is non-hazardous. All safety precautions to be adhered to are provided in this technical manual.

2.7 G12 POTABLE WATER

The WetSuit System applied in accordance with this manual will meet the requirements of NZBC Clause G12.3.1 in terms of potable water requirements, as per AS/NZ 4020.

2.8 BUILDING CODE OF AUSTRALIA

The Wetsuit System complies with the following clauses of the Building Code of Australia:

FP1.4 & P2.2.2 - Waterproofing and Dampness

A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause:

- (a) Unhealthy or dangerous conditions, or loss of amenity for occupants; and
- (b) Undue dampness or deterioration of building elements.

Certifier evaluation of relevant clauses and referenced standards NCC 2015.

Product Name	WetSuit Liquid Applied Membrane System
Supplier	Harco Americas Inc Representing Neptune NZ & Neptune Coatings Distributors of Australia
Product intended scope of use	Intended to be used as a trafficable waterproofing membrane over new or existing roof and deck substrates, wet areas in bathrooms and walls for residential housing and commercial buildings. The product may also be used to contain or be in contact with potable water.

Relevant clauses and standard NCC 2015 Volume 1:

Performance Clause	DTS Clause	Relevant standards	Description
N/A	B1.4	AS3600:2009	Concrete construction (e.g. for swimming pools)
FP1.4	F1.4	AS4654.1:2012- Waterproofing membranes for external above-ground use-Materials AS4654.2:2012 – Waterproofing membranes for external above-ground use – Design and Installation	Waterproofing membranes for external above ground use

Performance Clause	DTS Clause	Relevant standards	Description
FP1.7	F1.7	AS3740:2010 – Waterproofing of domestic wet areas Amdt 1	Waterproofing of wet areas in buildings
FP1.7 SA FP1.8	SA F1.7 (South Australia only)	AS3740:2010 - Waterproofing of domestic wet areas Admt 1	Waterproofing of wet areas in buildings.
FP1.5	F1.9	AS/NZS 2904 – Damp proof courses and flashings Amdt 1 & 2	Damp proofing from ground (e.g. DPC).
SA FP1.5	SA F1.9	AS/NZS 2904 – Damp proof courses and flashings Amdt 1 & 2 – clause 7.6, 7.4, 7.5 only	Damp proofing
FP1.5	F1.10	AS2870 – Residential slabs and footings	Damp proofing of floors on the ground / vapour barrier
SA FP1.5	SA F1.10	AS2870 – Residential slabs and footings – Section 5.3.3 only	Damp proofing of floors on the ground / vapour barrier
P2.2.2	3.8.1.3	AS4654.1:2012 – Waterproofing membranes for external above ground use – Materials AS4654.2:2012 – Waterproofing membranes for external above – ground use – Design and Installation	Waterproofing membranes for external above ground use
P2.4.1	3.8.1.2	AS3740:2010 – Waterproofing of domestic wet areas Amdt 1	Waterproofing of wet areas in buildings
P2.4.1	SA 3.8.1.2	AS3740:2010 – Waterproofing of domestic wet areas Amdt 1	Waterproofing of wet areas in buildings

Performance Clause	DTS Clause	Relevant Standards	Description
P2.2.3	3.2.0	AS2870 – Residential slabs and footings	Damp proofing from ground (e.g. DPC)
SA P2.2.3	3.2.0	AS2870 – Residential slabs and footings	Damp proofing
NSW P2.2.3	NSW 3.2.0	AS2870 – Residential slabs and footings – Note: DPM under clause 5.3.3.1 mandatory	Damp proofing

3 LIMITATIONS & CONSIDERATIONS

3.1 LIMITATIONS

The WetSuit System is suitable for use on new and existing roofs, gutters, decks, podiums, floors, patios, garden roof/decks for residential housing and commercial buildings prepared and applied in accordance with this technical manual. If specifiers require additional or modified details please contact Neptune NZ Ltd.

3.2 CONSIDERATIONS

The WetSuit System must be installed by trained installers as per the requirements and details shown in this manual to ensure the quality of the waterproofing system.

The WetSuit System must be used only in areas with adequate ventilation when spraying.

Contact with eyes may cause irritation with tearing, pain, blurring of vision, corneal opacity or clouding of the eye. Ocular protective devices should be used at all time. Prolonged skin contact may cause redness and itching. With long term exposure, blisters may occur. The use of gloves and long sleeves are advised.

Even if ingestion is not a probable route of exposure, the product being alkaline, caustic products have been shown to affect the central nervous system and cause stomach distress.

At normal temperature, low exposure by inhalation will be encountered. The vapor may be irritating to the eyes, nose or throat. At high temperature, above 200F/ 93°C vapors are irritating to the eyes, nose and throat. Exposure shall be avoided.

The WetSuit System components should be stored on site or in the warehouse in a way to protect them from freezing. Shelf life of product is 1 year and expired product shall not be installed.

3.3 FEATURES AND BENEFITS

- WETSUIT has NO solvents in product. WETSUIT therefore has NO VOC'S
- WETSUIT cures within 10 seconds for rain. Needs to fully cure in winter months for 5 days. Therefore, NO leaks – Summer 26/36 hours cure time
- WETSUIT goes directly over most substrates after water blasting clean, i.e. plywood, iron roofing, Butynol, EDPM, torch-on membrane, TPO, concrete block walls, cement board, Hardies board and planks.
- WETSUIT is designed to have constant ponding; therefore if falls are insufficient this is not an issue for the product.
- WETSUIT is seamless. No laps, no joints

- WETSUIT can be patched or repaired and remain seamless. Perfect when alterations are being done or new penetrations, aerial's or air condition units are installed
- WETSUIT is fire resistant
- WETSUIT is UV stable with test indicating 15 years UV durability for New Zealand and Australian conditions
- WETSUIT is able to be elongated to 360% of its' finished size, has a memory, plus withstands sudden impact.
- Metal roof areas require fall of 4 degrees if replacing iron. Timber roof areas require fall of 2 degrees if replacing timber. Using WETSUIT requires no change to the falls.
- WETSUIT is very cost affective. In most cases older roof areas do not meet the code requirements for fall (pitch) as detailed above, and need to be altered accordingly. WETSUIT does not need the fall altered for a full warranty to be issued.
- To create falls to meet code if replacing full roof with a like product that is currently on a roof adds considerable costs. Product suppliers of Iron and other membrane roofing products will not warrant their product if falls do not meet the current code.
- To create falls the roof area would need scaffolding and covered over to protect the building against the elements.
- WETSUIT application once detail work is completed is applied at a minimum rate of 300m2 per day.
- WETSUIT once fully cured can be painted with any colour elastomeric paint for heat reflection.
- WETSUIT can be used as the membrane for a paving system over the top of the membrane.
- WETSUIT can be used as the roofing, deck or podium membrane for Green Roof applications.
- WETSUIT can be used for Warm Roof applications.
- WETSUIT has a product warranty of 5/20 years, depending on the type of application and workmanship warranty by the applicator of 5 years.
- WETSUIT has very strict quality control criteria, including photos and moisture content reading before, during and after application.
- Product durability in ALL weather conditions, with correct maintenance and cleaning completed, the WetSuit membrane will exceed a twenty year life expectancy.

3.4 CHOICE OF COMPONENT

The choice to select WetSuit 2-parts or WetSuit 1-part as the main component of the membrane can be difficult and the following guidelines will help in choosing which component is the correct one for the considered project.

Although either product can be a warrantable membrane, choosing which product is right for the job is sometimes a difficult choice. The following chart shows the basic differences between the two.

WetSuit 2-Part	WetSuit 1-Part
80% Cured in 3 seconds, high build 68% solids	Slow cure, self- leveling, limited build (can be used as an adhesive) 58% solids
Cannot be damaged by immediate rain	Can be damaged by immediate rain
Non–transitional pulls away in 90°angles	Transitional will not pull away in 90°angles
Cannot be reinforced	Can be fully reinforced with fabric
Substrate must be smooth corrugated or ribbed metal only	Substrate can be smooth or rough corrugated, ribbed, standing seam metal

4 PRE APPLICATION APPRAISAL

4.1 Suitable substrates

The WetSuit System may be used throughout the building system in roofing, waterproofing and air/vapor barrier applications. The membrane adheres to a wide variety of substrates including non-porous mediums such as Metal, TPO and EPDM, Butyl and Butynol rubber, and Torch-on membranes. However, cure time and adhesion greatly varies from substrate to substrate, most notably between porous and non-porous materials.

The Wetsuit System can be used on both new and existing substrates and is ideal for existing roof areas where there is limited fall. The WetSuit System takes constant ponding after rain and is therefore ideal for existing roof areas with limited falls.

Substrates shall be defined as “suitable” by the contractor and Neptune NZ Ltd prior to every application by the applicator carrying out a pre-job survey and submitting to Neptune NZ Ltd for pre-approval prior to any quotation being given. Refer to Pre-job survey form. Neptune NZ Ltd highly recommends an in-field peel test be performed prior to the commencement of each project. The list of suitable substrate and specific substrate preparation is given in Chapter 5.

4.2. Inspection

All new and existing substrates shall be carefully inspected. If areas of the system are deemed to be improperly adhered, mechanical fastening will generally be an effective means of correction (the substrate and membrane type will first be evaluated before addressing the problem

4.3 Surface Cleaning

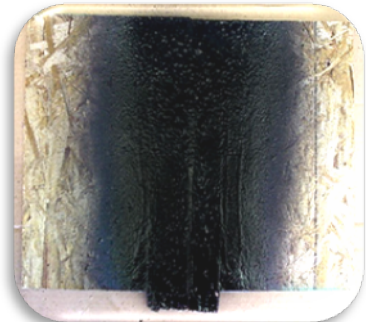
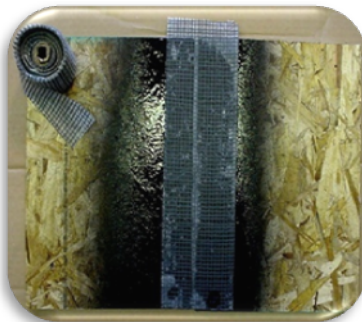
A clean substrate is an essential component to the overall success of the WetSuit system. As seen in the picture below, a ghost layer of dirt is almost always present no matter how “clean” the roof may look. Even the thinnest film of dirt will compromise WetSuits’ adhesion to the substrate. Remove any loose dirt, debris, and sediment on all roof surfaces. All surfaces must be cleaned with an appropriate cleaner prior to application. Any grease, oils, form release agents, etc. must be completely removed from the surface using a solvent or detergent. All debris must be removed from the site by the contractor.



4.4. Repairs

Splits/cracks/joints shall be pre-stripped using UnderCover with Invisilink seam fabric utilizing the 3-course method of repair:

- Apply 30 mil / .750 mm wet thick layer of UnderCover over the specified area, extending past it a minimum of 3" / 8 cm on all sides.
- Embed Invisilink into the UnderCover and brush it to ensure full saturation with no wrinkles or voids.
- Over the Invisilink, apply a final 50 mil / 1.5 mm wet layer of UnderCover. Ensure all of the Invisilink is fully saturated.
- Small cracks and voids may be patched with WetSuit Fiber Trowel.



4.7. Blisters and De-lamination

Blisters and de-lamination during pre-inspection will be identified and addressed in the following manner:

- Interlaminar membrane blisters with a total area of greater than six inches across, shall be cut out, primed, and filled with WetSuit Trowel or UnderCover: *On nailable deck applications the blisters need to be cut and fastened to the deck.*
- Interlaminar membrane de-lamination shall be treated as stated above.
- Major de-lamination of the system or membrane from the substrate shall be repaired as follows:
 1. *Identify areas of poor adhesion.*
 2. *Cut out existing roof membranes that are blistered or delaminated, until you get to firmly fixed membranes to substrate.*

3. *In cases where the blisters extend all the way to the surface of the deck, the 3-course method of repair shall be used with Undercover and Invisilink.*

4.8. Repair - Replace - Tighten – Clean

Repair and/or replace any details, flashing, penetrations or panels found to be suspect. Tighten all loose fasteners, replacing as necessary. Clean all newly installed metal surfaces with a 10% Muriatic acid or vinegar to remove any residual factory oils. New metal is to be primed with WetSuit Primer.

4.9 Pre-detailing with UnderCover

UnderCover is an essential component of the complete WetSuit System. It can be spray applied through the 1-Part machine, the five gallon/ 20 liters pressure tank system, or brush applied. It has similar chemistry and properties as other WetSuit products, but with a slower cure. It is self-leveling and can be used as an adhesive for bonding porous substrates.

Invisilink reinforcement fabric can be embedded into UnderCover adding strength where needed as well as bridging areas with gaps more than ¼" / 3/5 mm wide. UnderCover is used as a treatment for all penetrations and as a secondary membrane. It is frequently used on flashing, drains, cracks, joints, curbs, vents, and especially underneath air conditioning units and ducting where the space is too confined to spray WetSuit 2-Part. In new construction, all board joints are to be pre-stripped in with 60 mil / 1.5 mm dry UnderCover and Invisilink fabric.

UnderCover can be applied in multiple coats of 80 mils / 2 mm vertically without sag. The full cure time at 75°F/23°C and 60% humidity is 2 hours. Allow to completely dry before proceeding further.



4.10 Interior 90° Angles

Interior 90° angles are an area of particular concern when installing the WetSuit System. Due to shrinkage, WetSuit can pull away from the corners, creating a slope. Therefore, cant / fillet strips must be installed at all 90° angles prior to the installation of the WetSuit 2-Part membrane.

For wood or fiber fillets / cants, the steps are as follows (picture sequence shown below):

1. 100 mil / 2.5 mm wet UnderCover adhesive layer.
2. Set cant / fillet strip.
3. Apply 30 mil / .750 mm wet UnderCover.
4. Embed 6" / 15.24 cm Invisilink into the transition. Brush out all wrinkles.
5. Immediately apply an additional 70 mils / 1.50 mm UnderCover wet before first coat can cure. Allow to cure.
6. Apply WetSuit membrane at specified thickness.



To make liquid flashing, an alternate method to installing cant / fillet strips is as follows (picture sequence shown below):

1. Apply WetSuit membrane to horizontal surfaces at specified thickness and allow to fully cure.
2. Apply WetSuit 1-Part to vertical surfaces and extend out onto horizontal surfaces 16 inches / 400 mm.
3. Embed 6" / 15.24 cm Invisilink into all transitions on center. Back brush and spray apply additional mil thickness to minimum 60 mil / 1.5 mm dry.
4. Tape masking or using cardboard spray shields is crucial to controlling overspray and getting a clean termination line on the horizontal surface.

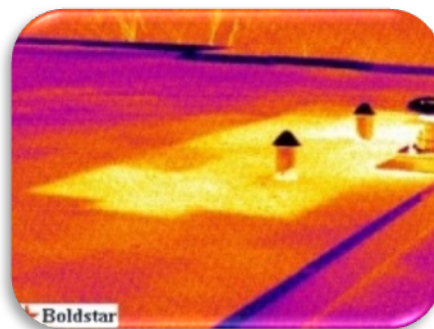


4.11 Venting

All membrane roof areas must be vented. Existing membrane roofs areas should already have vents, and in the pre-job survey this is to be identified. It may be advisable to replace existing vents. All vents are supplied by others.

The standard required for The WetSuit System on new or existing flat roof areas is as follows:

- Under 430 sqf / 40 m2 no vents needed
- 430 - 969 sqf / 40-90 m2 1 vent required
- Over 969 sqf / 90+ m2 1 vent required every 969 sqf / 90 m2



Where you have a wet substrate either concrete or timber and this is unable to be dried, contact Neptune NZ for the correct application procedures.

5 APPROVED SUBSTRATES AND THEIR PREPARATION

5.1 Approved Substrates

The following list of substrates has been approved for the WetSuit® System. Other surfaces require approval from Neptune NZ Ltd prior to any quotation been given.

Modified Bitumen smooth or granulated

- Use WetSuit 2-Part
- Verify that there is no water in the existing roof, either between ply or in the insulation.
- Pre-fill any deep dig outs or crevices with WetSuit UnderCover. All loose granules, dust and dirt shall be removed from the surface of the membrane.

Corrugated metal

- Use WetSuit 1 or 2-Part
- Tighten metal seams
- Fill screw holes with screws one size larger in diameter where needed, or WetSuit trowel grade.
- Use Invisilink® reinforcement fabric over any seams larger than ¼" / 3/5mm
- Strongly consider using reinforcement fabric over long horizontal seams.
- New metal, including flashing, is to be primed with WetSuit Primer.

Ribbed metal

- For Wetsuit 2-parts, valley must be 8" / 150 mm wide between ribs to limit overspray buildup on one side of the ribs. Rib is to rise and fall at no more than 45°, and flat on top. Otherwise, WetSuit 1-Part is to be used.
- Tighten metal seams.
- Fill screw holes with screws one size larger in diameter where needed, or use WetSuit Trowel grade.
- Use Invisilink reinforcement fabric over any seams larger than 1/4" / 3 mm.
- Strongly consider using reinforcement fabric over long horizontal seams.
- New metal, including flashing, is to be primed with WetSuit Primer.

EPDM and PVC, TPO, Butyl, Butynol or any rubber membranes

- Use WetSuit 2-parts
- All to be thoroughly cleaned with appropriate detergents and washing systems.
- All single Ply membranes are to be primed. Contact Neptune NZ Ltd for details of approved primers.
- All “fish mouthed” seams are to be pre-stripped with Invisilink reinforcement fabric and WetSuit UnderCover.
- Turn bars are to be; (1) pre- stripped, (2) coated with WetSuit 2-Part 4” / 100 mm up the wall above the turn bar, and then (3) counter flashed with WetSuit 1-Part, creating a 3 course membrane.

Coatings and liquid applied membranes

- Use WetSuit 1-part or WetSuit 2-parts
- Because of the variety of coatings on the market, an adhesion test must be performed prior to installation. Please refer to the instructions provided in this manual for the adhesion tests.
- Verify that the coating is adhered to the existing substrate.
- When coating over existing liquid applied membranes you must be careful that you have no residual moisture on the surfaces. Check with moisture meter that ALL surfaces are dry and have no residual moisture. If there is residual moisture, blistering may occur later.

Concrete

- Use WetSuit 1-part or WetSuit 2-parts
- Verify that form release agents and curing compounds are not present on the surface that could affect WetSuits' ability to bond to the concrete. If present, they must be removed by sandblasting or other approved methods.
- New concrete must be cured a minimum of 28-days. Concrete must be moisture tested at pre-job inspection and prior to any application of The WetSuit System. Where required, new or existing concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance on a concrete surface. When using mechanical methods to remove existing waterproofing products or surface deterioration, the surface profile is not to exceed 1/8-inch / 3 mm peak to valley.
- A light broom finish is optimal.

- Fill all bug holes larger than 1/4" - 0.6 cm with quick cure concrete, WetSuit Trowel, or caulk.
- Pre-strip all cracks larger than 1/8" - 0.3 cm with WetSuit UnderCover and Invisilink Fabric.
- Knock clean all protrusions and irregular edges.
- Rough concrete with deep valleys, high ridges, and protruding aggregates are to be coated with the self- leveling WetSuit 1-Part ONLY. Irregular surfaces do not accommodate WetSuit 2-Part.
- Depending on the concrete, WetSuit Primer maybe required. Please refer to Neptune NZ Ltd

Plywood and compressed sheets

- New plywood can be green and hold moisture and sap in knotholes. It can gas off causing blisters. Plywood must be a minimum of 17mm thick and must not be cured with LOSP
- Pre-strip all joints with 6" / 150 mm fabric and 60 mil / 1.5 mm dry UnderCover.
- Fill all knot holes and cracks with WetSuit Trowel.
- Verify new plywood is dry, is glued and screwed with gap of 3mm to allow for expansion and contraction.

Polystyrene Surfaces

- Verify foam is dry.
- Smooth finish: WetSuit 2-Part.
- Rough, cratered finish: WetSuit 1-Part, back rolled into porous surface.

Tar / Asphalt Surfaces

- Approved by Neptune Coatings on a job to job basis only.

5.2 Substrate Specific Preparation

When using a fully adhered waterproofing membrane, surface preparation becomes one of the most critical factors in performance of the membrane. Fully adhered membranes will depend on their bond to the substrate for proper performance. Surface preparation problems can be divided into several categories, including:

- Laitance, dust, and chemical contamination on the substrate.
- Moisture emission through the substrate.

- Physical deficiencies in the substrate.

Before the application of any products it is the responsibility of the applicator/contractor to complete a pre-application survey and submit that for pre-approval to Neptune NZ Ltd. Once approved, an application can proceed as approved by Neptune NZ Ltd.

Before the application of any products, the substrate shall be prepared as required for the intended application. All substrates must be clean, dry and free of oil, grease, or contaminants, laitance, curing compounds, release agents, irregularities, loose or foreign material such as moss, dirt, ice, snow, water, dirt, algae or any other condition that would limit the adhesion of The WetSuit System to the substrate. Generally, pressure washing is all that is needed. Some surfaces may require acid etching, scarifying, grinding or sandblasting to prepare an adequate substrate. It is the contractor's responsibility to determine bond strength and substrate moisture content both before work commences and throughout the course of work.

Please refer to the "Quick Guides" for a visual reference. The Quick Guide is found in Appendix 5.

5.3. Accessories supplied by Neptune NZ Ltd

- Invisilink
- Solvent and water based primers
- Compressor
- Pump and hosed and application gun
- Moisture Meter
- Calibrator

Accessories supplied by others

- Jasol Eclipse cleaner
- Polystyrene fillets by Expol to be approved by Neptune NZ Ltd
- Timber fillets, to be approved by Neptune NS Ltd
- All safety gear, as meets the NZ/Australian health and safety requirements
- Vents from approved NZ/Australian suppliers
- Droppers from approved NZ/Australian suppliers
- Scuppers from approved NZ/ Australian suppliers
- Rain heads from approved NZ/Australian suppliers
- Deck waste from approved NZ/ Australian suppliers

All vents, droppers, scuppers and rain heads and deck wastes that are used for either, TPO, butynol, butyl rubber or torch on membranes are suitable for WetSuit application. Any others used must be approved by Neptune NZ Ltd.

6 IN FIELD TESTS

6.1 Adhesion test

6.1.1. General Information - refer to section 5

The WetSuit System can be applied on a variety of substrates including but not limited to, wood, metal, concrete, roof board, S.P.F., existing single-ply membranes, modified bitumen, and coatings. The WetSuit System, like other liquid applied membranes and coatings, need a stable substrate for successful application, adhesion and performance. The substrate shall be clean, dry, and free of oil, grease, contaminants, waterproofing agents, curing compounds, and loose, seams not secure or weak material removed or corrected.

Prior to membrane application, the substrate is to be evaluated to determine:

- Eligibility of surface for either WetSuit 1 or 2-Part
- Degree of surface preparation for proper adhesion of the WetSuit® System

After a proper surface preparation is determined, the membrane can be installed.

6.1.2. Application Over Existing membranes and coatings

The WetSuit System can be applied over existing single-ply membranes, modified bitumen coatings, and acceptable metal roofs, as a custom fit and fully adhered system. Existing membrane adhesion and integrity can limit The WetSuit System for a variety of reasons such as wind uplift performance.

The existing membrane or coating must be sound and bonded to the substrate enough to resist the design uplift pressures and/or dynamic loads required by the relevant building code concerning structure, building components, cladding and new waterproofing system. Priming may be necessary to achieve minimum adhesion. Refer S6.1.4.

6.1.3 Recommended Guidelines

Neptune NZ Ltd recommends the prepared substrate provide membrane adhesion with minimum bond strength of 115 psi / 7.9 Bar on asphalt, metal, and single ply membranes, and 220 psi / 15.2 bar on concrete or wood for traffic bearing systems. For roofing and waterproofing applications the minimum bond strength will vary depending upon the substrate type and material used. Neptune's minimum roofing and waterproofing requirements should resist the design uplift pressures. An onsite adhesion test is to be carried out on each surface as set out in Peel Test below. This test is to confirm adhesion of The WetSuit System to the surface application that it is being applied to.

It is the contractor's responsibility to determine minimum bond strength after proper surface preparation and during membrane application throughout the course of work at intervals as required, assuring the specified adhesion.

As a guide, a minimum of three (3) tests per 5000 SQF / 500 m² should be performed. Once the necessary preparations are complete, a suitable primer is applied where required, followed by application of the WetSuit® System.

6.1.4 Testing Methods for In-field Adhesion

Testing the adhesion of the substrate shall be undertaken prior to application. This testing is to be completed whenever Neptune NZ has been requested for a warranty to be issued or, for application over not new substrates. Pull-off adhesion tests or, peel strips, can be done when application is on new plywood, concrete or going over existing approved membranes by doing the following:

- Spray or roll the product to surface
- Install Invisilink to the WetSuit product leaving a tag out UNCOATED for pulling once fully cured
- Coat over Invisilink
- Leave 24 hours or to full cure
- Pull up slowly at right angle to substrate surface to confirm adhesion

Where there is an existing coating applied over a substrate such as paint or another liquid membrane, a Pulloff Test is to be completed using a Positest Pull-Off Adhesion Tester or another approved Tester confirmed in writing by Neptune NZ Ltd.

It is important that testing be performed after the WetSuit® has reached a full cure (will appear black underneath- NOT brown). WetSuit® has an atmospheric cure; therefore its cure time will vary greatly due to temperature, humidity, shadows, etc.

Perform the tests in the cool of the early morning or evening, not during the heat of the day. 70 degrees F / 21 °C and in the shade is optimal.

The tests will determine surface bond strength in one of two ways:

- Adhesive (Failure occurs as a “clean peel” at the membrane/substrate interface)
- Cohesive (Failure occurs within the membrane or substrate by tearing away from itself)

6.1.5 left intentionally blank

6.1.6 Peel Test

Peel tests are performed by embedding 2” / 5 cm fabric strips into WetSuit® 1-Part in a three course method, roughly 2” / 5 cm wide x 12” / 30.5 cm long. Once cured take the end of the fabric in your hand, and very slowly and consistently pull back at a 180° angle from the substrate.

For WetSuit 2-Part, embedded fabric is not an option due to the rapid cure. Thus, applying a 4" / 10 cm long piece of duct tape to the substrate as a bond breaker prior to applying the membrane will give a "pull tab" after a full cure is achieved. Take the pull tab in your hand and pull back at a 180 angle from the substrate:

- Adhesive (Failure occurs as a "clean peel" at the membrane/substrate interface)
- Cohesive (Failure occurs within the membrane or substrate by tearing away from itself)

Performance is based the degree of difficulty to remove the membrane from the substrate or to the surface of another coating.

6.2 Field Moisture Test

6.2.1. General Information

The mechanism of moisture emission from concrete substrates is a complex one that requires thorough understanding of concrete properties, moisture vapor pressure in concrete and environmental factors. Excessive moisture in the concrete slab or existing roofing systems can lead to problems in the WetSuit® System, as in all types of fluid applied membranes and coatings, including limited adhesion, blistering, delaminating, condensation, and movement. The substrate must be carefully evaluated to determine moisture content, and found to be dry prior to membrane application.

6.2.2. Recommended Guidelines

Neptune NZ Ltd recommends concrete substrates to have a maximum moisture content of 12-15% as per the moisture meter probe. It is the responsibility of the contractor to determine proper surface preparation and moisture content prior to application and during throughout the project. A minimum of three (3) tests per 5000 SqF / 500 m² should be performed, or as may be required by field conditions of the substrate or as directed by Neptune NZ Ltd.

6.2.3 Moisture / Relative Humidity Field Testing Methods

There are a number of ways to determine moisture content in a substrate in the field. Non-destructive methods include hand-held electronic moisture/relative humidity meters, infrared cameras, and black plastic sheet tests.

The black plastic sheet test method for assessment of moisture in concrete involves installing a plastic sheet on the surface and monitoring it for formation of visible moisture below the sheet. Use of Relative Humidity measuring moisture meters are used where more reliability of measurement is required.

Neptune NZ Ltd recommends the use of an electronic hand-held moisture/RH meter designed for concrete and/or wood substrates that has a pin-less meter pad with a minimum 3/4" / 2 cm penetration. Neptune NZ Ltd recommend Protimeter Surveymaster SM or equivalent. Other devices may be used once approved by Neptune NZ Ltd.

6.3 Measure System for finished product

The thickness of the application must be monitored as you apply the product. A calibration gauge is to be used and the probe set for the desired finished thickness specified. The thickness is to be tested at a minimum of every 3/5 m² completed, by inserting the probe into the wet membrane as soon as applied. This can be set from 1 mm through to 10 mm in thickness.

7 MAINTENANCE INSPECTIONS AND WETSUIT SYSTEM WARRANTY

7.1 MAINTENANCE INSPECTIONS

Maintenance of the WetSuit® System is required to be performed at regular intervals to assure that the membrane system will continue to provide services for which it is intended. Suggested maintenance procedure should include a physical inspection. A thorough physical inspection should be conducted at least yearly to determine areas of physical damages to the WetSuit® System. It should include at least the following steps:

- Inspect all sealant joints for proper adhesion to the substrate and for physical damage;
- Inspect drains or scuppers to ensure there is nothing clogging or blocking them;
- Inspect membrane surface to determine if there are any holes, cuts or ruptures;
- Inspect areas that are subject to high abrasion and wear for physical damage.

The contractor is to offer this service to the end user and a fee would be payable for this service. Inspections are required to be undertaken annually as a minimum and depending on the application more frequent inspections maybe necessary.

7.2 WETSUIT SYSTEM WARRANTY

The WetSuit System, when installed as per this manual, is guaranteed for a minimum life period of 5 to 20 years (from date of completion).

To qualify for the WetSuit System Warranty the following are required, **IN SEQUENCE**, for each job:

1. Submit **Pre-Job Survey** form with detailed “before” job photos.
2. **Pre-Job Conference** with Neptune NZ Ltd for job approval.
3. Submit **Completion of Work Form** with detailed “during” and “after job photos.

The WetSuit System Warranty will be issued after all submitted materials are reviewed and approved, as well as all outstanding invoices to Neptune NZ Ltd are paid in full. Failure to provide the above requirements, **IN SEQUENCE**, voids the ability to qualify for warranty. No warranty will be considered if required materials are submitted after the start, or finish of a job. *Please see warranty section in this manual for full details.

All materials shall be installed by a knowledgeable, licensed Applicator / contractor:

1. The applicator / contractor must have completed a Neptune NZ Ltd training course and also have been certified as an applicator by Neptune NZ Ltd prior to any applications being completed.
2. The applicator / contractor must have current public liability insurance coverage. The insurance cover must remain in force for the duration of the project.
3. All Neptune NZ Ltd products shall be installed by a applicator / contractor or a company approved by Neptune NZ Ltd and only by individuals who have completed required training and been issued a Neptune NZ Ltd certificate of completion of same .
4. All details relating to the installation of the WetSuit System shall be approved by the contractor and Neptune NZ Ltd and properly installed in order to qualify for the manufacturer's warranty. Neptune NZ Ltd must be supplied with a pre-job report along with detailed photos before the project begins.
5. Neptune NZ Ltd shall certify that products have been applied correctly and that the applicator / contractor are authorized and approved for the application of our materials before installation.

WARRANTY REQUIREMENTS

To qualify for the WetSuit® Warranty the following are required, **IN SEQUENCE**, for each job:

1. Submit completed Warranty Request/Pre-Job Survey form with required “before” job photos
2. Pre-Job conference with the WetSuit Distributor before product application
3. Submit Completion of Work form with required “during” and “after” job photos
4. Payment to Distributor for all materials in full, before warranty is issued.

WetSuit Membrane Warranty may be issued after all submitted materials are reviewed. Failure to provide the above requirements, **IN SEQUENCE**, voids the ability to obtain a warranty.

PHOTO REQUIREMENTS

BEFORE: Overview – 3 minimum, at least of the following each:

- From the Ground
- Overview
- Access points

DETAIL: 6 minimum. Include the following:

- | | | |
|-------------------|-----------------|------------------------|
| - Wall Transition | - Seams Detail | - Scuppers |
| - Drains | - Parapet walls | - Vertical projections |
| - Roof edge | - AC Units | - Skylights |

AREAS OF CONCERN: 2 minimum of each area of concern

DURING APPLICATION: 1 each

- Spray
- Roll or Trowel
- Detail

AFTER: Duplicate photos from same areas in Overview, Detail, and Areas of Concern, **AFTER** installation of WetSuit, **BEFORE** top coat, if applicable (or **BEFORE** covered in any way) **AND** after top coat (covered) in its' final state of completion.

IMPORTANT

- Each job must be individually reviewed by the Distributors' Technical Representative **PRIOR** to quoting.
- Any pre-job materials submitted after the start of a job will not be accepted. ("Start" of a job implies any and all work applying to a job to be warrantied, including surface preparation.)
- The Distributor does not guarantee a warranty will be issued for every submitted request. Warranty eligibility will be determined after the review of all required submitted materials.
- All invoices due to the Distributor must be paid in full before a warranty will be issued.

WARRANTY REQUEST/PRE-JOB SURVEY FORM
GENERAL PROJECT INFORMATION

PLEASE PRINT ALL INFORMATION LEDGIBLY

AUTHORIZED APPLICATOR

Company name: _____ Contact: _____

Contact name: _____ Contact Ph: _____

Street Address: _____

Email: _____

Company Phone: _____

PROJECT ID & LOCATION **BUILDING CONSENT NO:** _____

Building Name: _____

Street Address: _____

City: _____

Building Use: _____

BUILDING OWNER:

Owner Name: _____ Contact: _____

Street Address: _____

Contact Ph: _____

City: _____

Fax: _____

Owner Phone: _____

Email: _____

WARRANTY REQUEST / PRE-JOB SURVEY FORM

ARCHITECT / ENGINEER

Name: _____

Phone: _____

MAIN CONTRACTOR

Name: _____

Contact: _____

Street Address: _____

Contact Ph: _____

City: _____

Email: _____

OTHER DETAILS:

WARRANTY REQUEST / PRE – JOB SURVEY FORM

Roof hatch or other permanent access? ☐ Yes ☐ No

Height(s) of Roof(s): _____

Total M2 to warrant: _____ Job start date: _____

MEMBRANE WARRANTY DESIRED

☐ 5 YR ☐ 10 YR ☐ 15 YR ☐ 20 YR

Proposed mm thickness: _____ * Membrane must be at least 60+ dry mm

PRODUCTS TO BE USED

☐ WETSUIT ☐ WETSUIT 1-PART ☐ WETSUIT TROWEL ☐ INVISILINK

☐ UNDERCOVER ☐ PRIME MATE

SUBSTRATE INFORMATION

Construction Type: ☐ Roof ☐ Deck ☐ Walls

☐ New Construction ☐ Timber ☐ Concrete ☐ Iron

EXISTING ROOF TYPE

<input type="checkbox"/> Concrete- PreCast	<input type="checkbox"/> EPDM	<input type="checkbox"/> Deck
<input type="checkbox"/> Concrete-Cast in Place	<input type="checkbox"/> Butynol/Butyl	<input type="checkbox"/> Below Grade
<input type="checkbox"/> Metal-Corrugated	<input type="checkbox"/> Torch On - Mineral Chip	<input type="checkbox"/> Green Roof
<input type="checkbox"/> Metal-Tray Deck	<input type="checkbox"/> Torch On – Paint	<input type="checkbox"/> Fountain/Water Tanks
<input type="checkbox"/> Metal-Ribbed	<input type="checkbox"/> Between Slab	<input type="checkbox"/> TPO
<input type="checkbox"/> Walls	<input type="checkbox"/> Other – Specify _____	

ROOF / DECK / WALLS INFORMATION

☐ Metal Deck _____ Gauge ☐ Plywood _____ Thick ☐ Concrete _____ Thick

☐ Compressed Sheet _____ Thick ☐ Other _____

☐ Vents ☐ Control Vents ☐ Nail / Screw Fixings ☐ Change in Surface Materials

WARRANTY REQUEST / PRE – JOB SURVEY FORM

Waterproofing:

☐ Below Grade ☐ Between Slab ☐ Deck ☐ Paver System

☐ Green Roof ☐ Fountain / Water Tanks ☐ Other_____

Moisture Detection Method:

☐ Core Samples ☐ Moisture Meter ☐ Black Plastic Sheet Test
☐ Infrared Thermography (attach)

Drains / Scuppers:

☐ No ☐ Yes – specify number_____

Please note: All above substrates may require moisture survey and/or flood tests.

NOTES:

COMPLETION OF WORK FORM

Project:

Project

Name: _____

Address: _____

City: _____

Date Completed: _____

INSTALLER

Installer Name: _____ Registration No: _____

Certified Spray Tech(s): _____

Phone: _____ Email: _____

SYSTEM INSTALLED

☐ WETSUIT 2-PART ☐ WETSUIT 1-PART ☐ FULLY REINFORCED

Wet mm of WetSuit: _____ Dry mm of WetSuit: _____

TOPCOAT ☐ No ☐ Yes – specify dry mm of topcoat _____

SURFACE PREPARATION

☐ Waterblast ☐ Prime ☐ Other

Materials Information	Primer	Undercover	WetSuit	Top Coat	Other
Product Name					
Quantity					

COMPLETION OF WORK FORM

By submitting this form, we verify the WetSuit® roofing / waterproofing membrane was installed on the stated project in compliance with the current Neptune Coatings Specifications, literature details or approved changes as discussed in the preliminary job conference with the Distributor, any changes are attached.

Signature: _____

Print Name: _____

Approved Applicator Number: _____

Title: _____ Date: _____

Required Submissions:

1. Pre-Job Survey Form with detailed “before photos”, and/or specifications and/or drawings.
2. Pre-Job Conference with the Neptune NZ Ltd Distributor Technician.
3. Submit this Completion of Work form with the required “during” and “after” photographs as well as any infrared thermography reports and/or roof sketches.
4. Completion of Work Form.
5. All material and invoices must be paid in full.

8 APPLICATION GUIDANCE AND DETAIL DRAWINGS

8.1 General Guidance

8.1.1 Weather impact

Although WetSuit 2 parts is 80% cured within the first three seconds, full curing to 100% is dependant on a few variables described below.

For example, the cure time will vary greatly for an application of 60 mils / 1.5 mm WetSuit in full sun at 55°F / 12°C, versus the same application in full shadow at 40°F/ 4°C. This concept applies for the same application on an 85°F/ 29°C day with 95% humidity. If applied in high humidity and/or followed by rains, the WetSuit System will not get adhesion until fully cured by means of total evaporation of the entrained moisture in the coating. A thicker mm / mil application will also lengthen cure time.

S.H.A.F.T.

Shadows:



Decrease temperature, delaying water evaporation in membrane

Humidity:



Ambient moisture delays water evaporation in membrane

And

Forecast:



Important factor in determining suitability for application

Temperature



Affects speed of cure as well as suitability for application

8.1.2 Start up

After determining strategic parking and/or positioning of the cart, as well as roof access, the first step is proper unwinding of the hose. This is a two man job. One person frees it from the cart while the other walks the hose out extending its full length, working together to flip out the coils and kinks.

Do not allow the hoses to kink!!

8.1.3 Stirring

When using WetSuit 2 parts, proper mixing is essential to successful end results. Although there is no pigment settling, after 10 minutes the material in the drum begins to separate. By pumping unmixed material, the liquid membrane will lose critical attributes such as adhesion properties. **Unmixed material is not WetSuit.** It is important that the pump, compressor and product are monitored during application. The WetSuit must be stirred **every five minutes** (with supplied paddle), pump pressures must be monitored, and changing drums when low is critical. **Do not (at any time) allow the drum to empty, doing so will allow air to pump through the system causing maintenance issues and possible downtime. Do not mechanically agitate WetSuit 2-parts.**

WetSuit 1-Part does not require stirring.

8.1.4 Field Approach and Spraying Techniques

Since every job is unique, its details will require a game plan to be created during the Pre- Job Conference with Neptune NZ Ltd.

The following are some very general approaches to the application of the WetSuit System:

- Always work from low points to high points due to excessive accelerator runoff.
- Create a grid on the rooftop prior to application, marking off 800 square foot / 80 m² sections at a time and allocating 1 drum of material to each section. These sections can then be increased gradually as the applicators gain experience. In the beginning, it is better to spray a thicker membrane once, then a thin membrane that has to be re-sprayed later.
- Keep the spray gun perpendicular to the substrate and the gun head about two feet / 1.5 m from the surface.
- Release the trigger after each pass.
- Overlap the spray pattern approximately 25% at a consistent speed to achieve a uniform membrane thickness.
- A pulse can be felt in the hose and heard from the pump which can be used as a metronome in setting a spray rhythm. Depending on overlap and desired thickness, this pulse may be 3 to 6 beats per pass.

- Keep the right and left border of your pattern even, about three feet apart. An inconsistent border creates an inconsistent membrane, often using more material than necessary.
- Watch the material “build” with your eyes. If you are just watching it turn the substrate black, then you are painting. If you are seeing it build, then you are creating a membrane.

Due to material shrinkage during the curing process, the Accelerator is squeezed out of the WetSuit minutes after application. This creates a substantial amount of water that can run down the slopes of a substrate and pool in the low areas. When the Accelerator dries, a layer of salts will be left behind. If re-coated, these dried salts will re-activate and cause loss of inter-coat adhesion.

Never re-coat dried Accelerator without washing off first.



8.1.5 Membrane Thickness

If a thicker application or spot repair is necessary, re-coat only after the first coat has completely cured and all dried Accelerator has been washed off the surface.

All re-coats should be a minimum 60 dry mils / 1.5 mm in thickness.

Spray a uniform film thickness in a single pass.

The thickness of the membrane should be tested during the job:

- Cut outs are taken every 100 square feet / 10 m² with a razor knife
- If cut out sample is not the specified thickness for roofing, 60 mils / 1.5mm dry or 78 mils / 2mm wet, then immediately re-spray with WetSuit.
- If less than 60 mils – 1.5mm / 78 mils – 2mm wet, patch and re-coat with WetSuit to a total of 60 dry mils – 1.5mm
- WetSuit 1-Part can be measured wet by simply dipping a mil gauge into the material, similar to measuring wet paint.

8.1.6 Hose management

We advise that there be a “hose man” to handle the hose for the applicator, keeping it out of his way, avoiding kinks, taking out slack and feeding more length as needed. This allows the applicator to focus on the task at hand and greatly increases the rate of application. Having the hose man trained as a Certified WetSuit Applicator allows for a switch when the sprayer becomes tired and also provides a different observer to view the installation.

8.1.7 Accelerator Variable Ratio

Unlike SPF or other spray applied membranes, there are no “off ratio” failures with the WetSuit System. The Accelerator can be dialed down to create a more liquid, self-leveling, slower cure membrane. In addition, WetSuit can be accelerated at different ratios for a faster cure enabling any mil / mm thickness in one coat. The ideal setting is to supply enough Accelerator to get an instant set, but the material is not immediately “dry” to the touch but leaves a slight brown wet residue on ones’ fingertip when rubbed.

WetSuit 1-Part can be accelerated in case of emergencies with a Hudson pump sprayer to form an immediate “skin” and speed up the curing process by up to 50%.

8.1.8 Shrinkage

Because WetSuit has a solids content of 68% means that WetSuit will shrink 30% as it eliminates its excess water.

The table below gives a guideline of correspondence between dry and wet thickness

Application	Wet Mil / mm	Dry Mil / mm
Roofing	78 / 2	60 / 1.5
Vertical Waterproofing	100 / 2.5	80 / 2
Horizontal Waterproofing	125 / 3.12	100 / 2.5
Air Barrier	60 / 1.5	40 / 1
Optional Thick Mil Application	160 / 4	120 / 3

WetSuit 1-Part has a slightly different solids content at 58%, so it will shrink more than the 2-Part.

Application	Wet Mil / mm	Dry Mil / mm
Roofing	100 / 2.5	60 / 1.5
Vertical Waterproofing	135 / 3.4	80 / 2
Horizontal Waterproofing	170 / 4.25	100 / 2.5
Air Barrier	65 / 1.6	40 / 1

8.1.9 Overspray

Overspray is a common element during WetSuit application. The amount of overspray depends upon a few different variables. With thoughtful application, overspray can be easily minimized and contained.

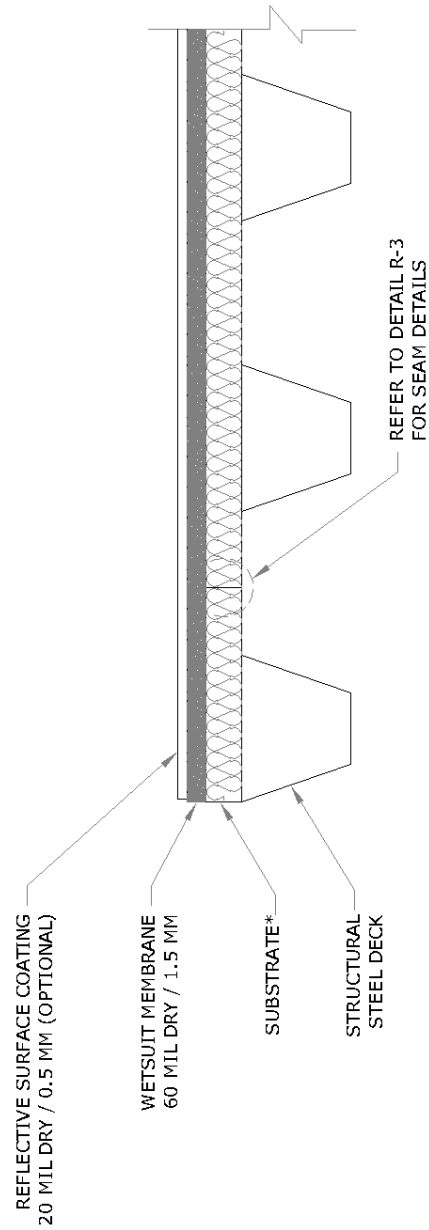
Always wear respirators, or dust masks to catch small rubber airborne particles.

- **Spray pattern overspray** strays about 6 inches / 15 cm from the edges of the pattern. Caution must be taken when spraying in windy conditions as the overspray is likely to land on most surfaces as small rubber particles. The 2-Part particles are easily removed by brush or pressure washing, but the 1-Part material is more aggressive.
- **System pressure** can create excessive overspray when Wetsuit is applied in tight and confined areas, such as below grade walls. 300 lbs. / 20 bars of pressure can force the surrounding, contained air to swirl, carrying overspray particles up onto the walls where they can create a “popcorn” texture. Always wear a mask when spraying WetSuit.
- **Shoes:** Avoid excessive buildup of overspray by using shoe covers and changing them on a regular basis. Frequent cleaning is a must. Overspray buildup, if left unchecked, can result in bits of cured particles coming off, landing on the surface and creating voids in the WetSuit membrane.

When in tight, poorly ventilated areas, a respirator should be worn due to excess Accelerator “clouding”.

8.2 Roofing detailed drawings

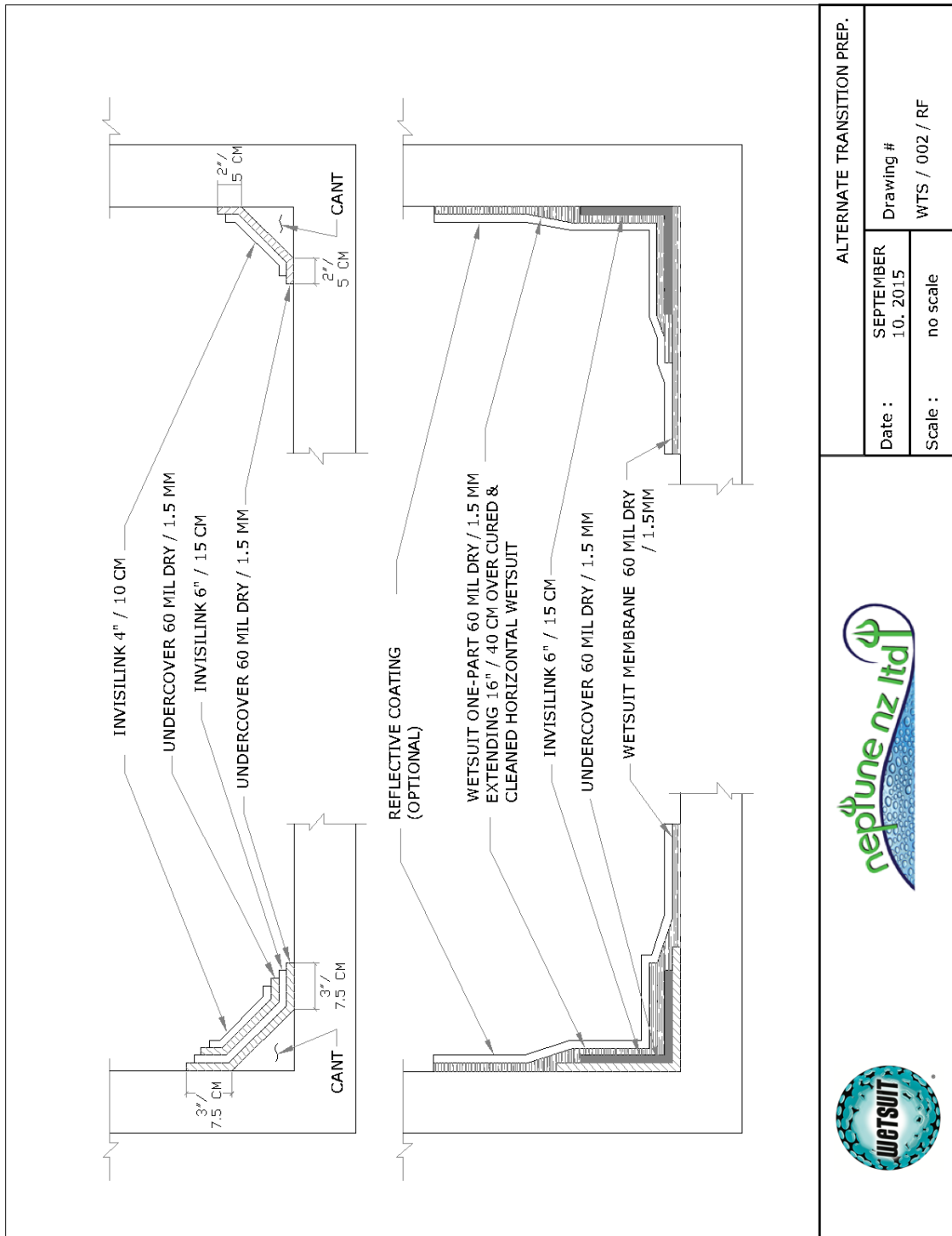
The following detailed drawings indicate the way of using WetSuit product in various situations that can be encountered for a roofing application.

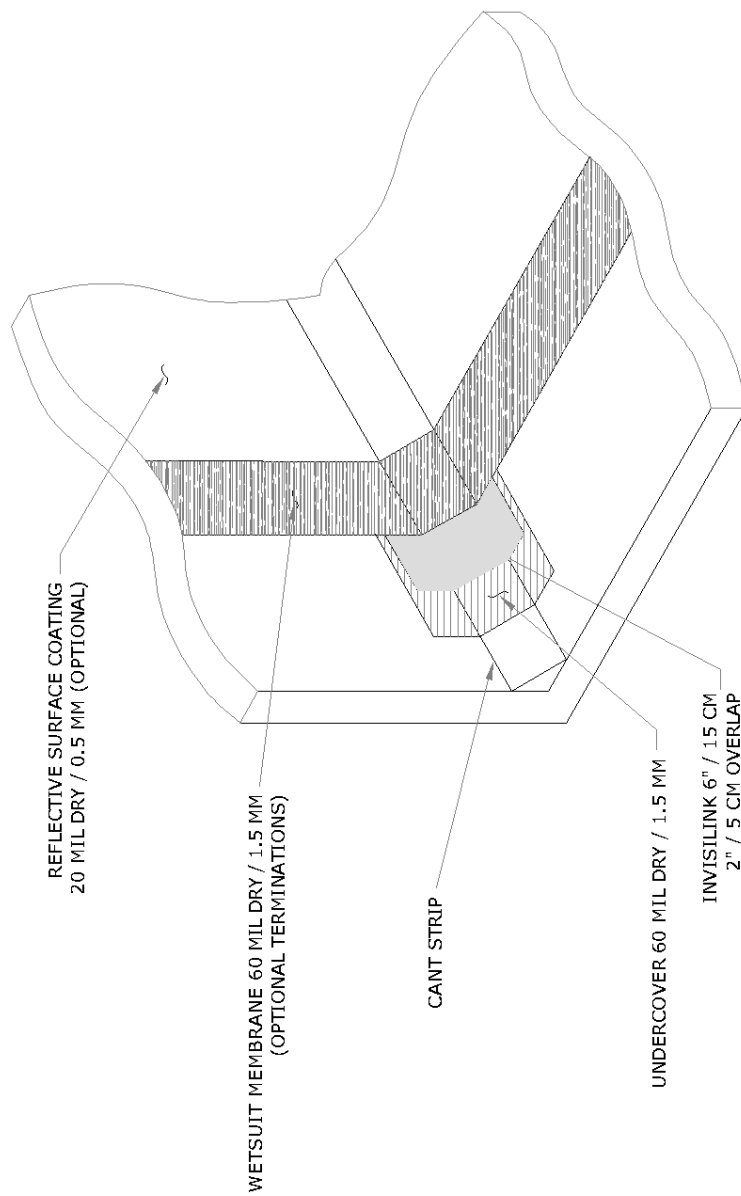


*SUBSTRATE APPROVED PRIOR TO INSTALLATION.
ISO BOARD MUST BE COVERED BY GYPSUM BOARD OR WOOD.

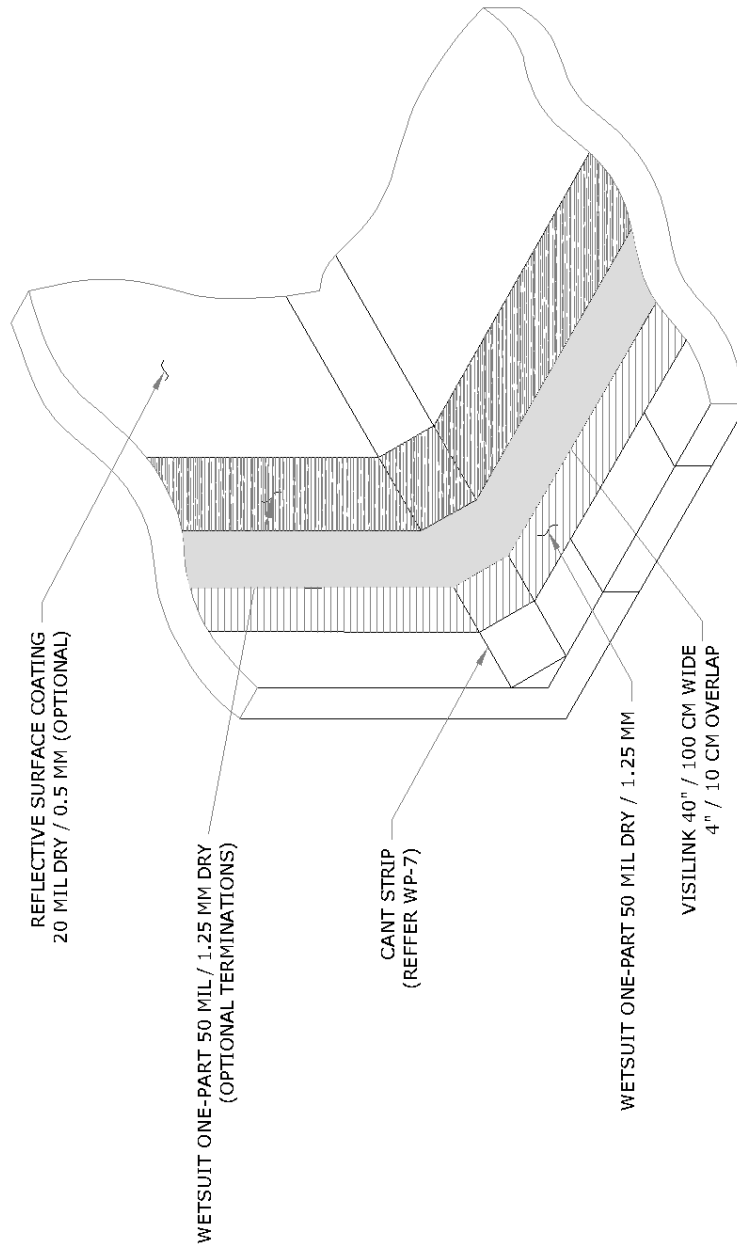


TYPICAL ROOF FIELD		
Date :	SEPTEMBER 10. 2015	Drawing #
Scale :	no scale	WTS / 001 / RF





TYPICAL TRANSITION WITH CANT			
Date :	SEPTEMBER 10, 2015	Drawing #	
		WTS / 003 / RF	
Scale :	no scale		

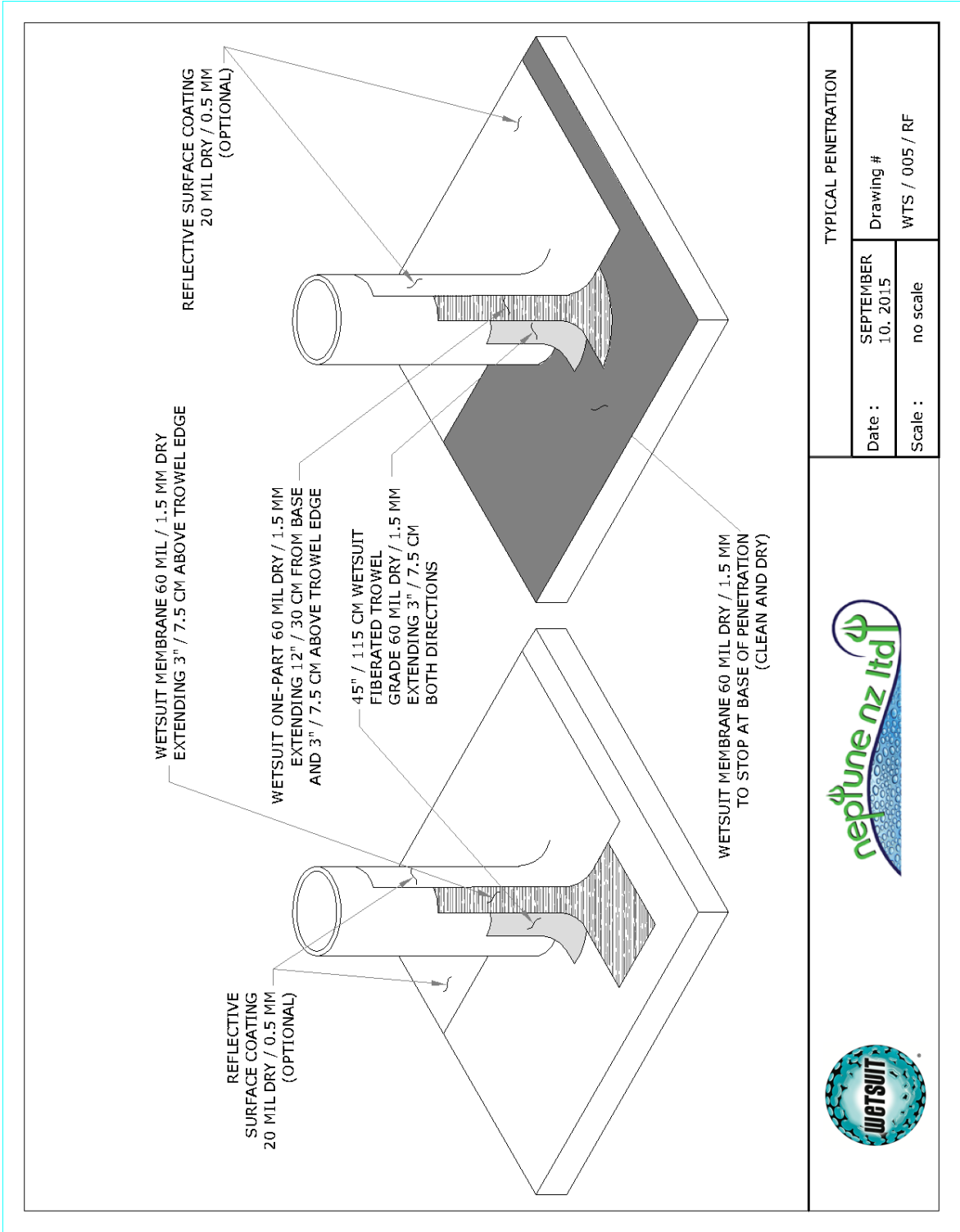


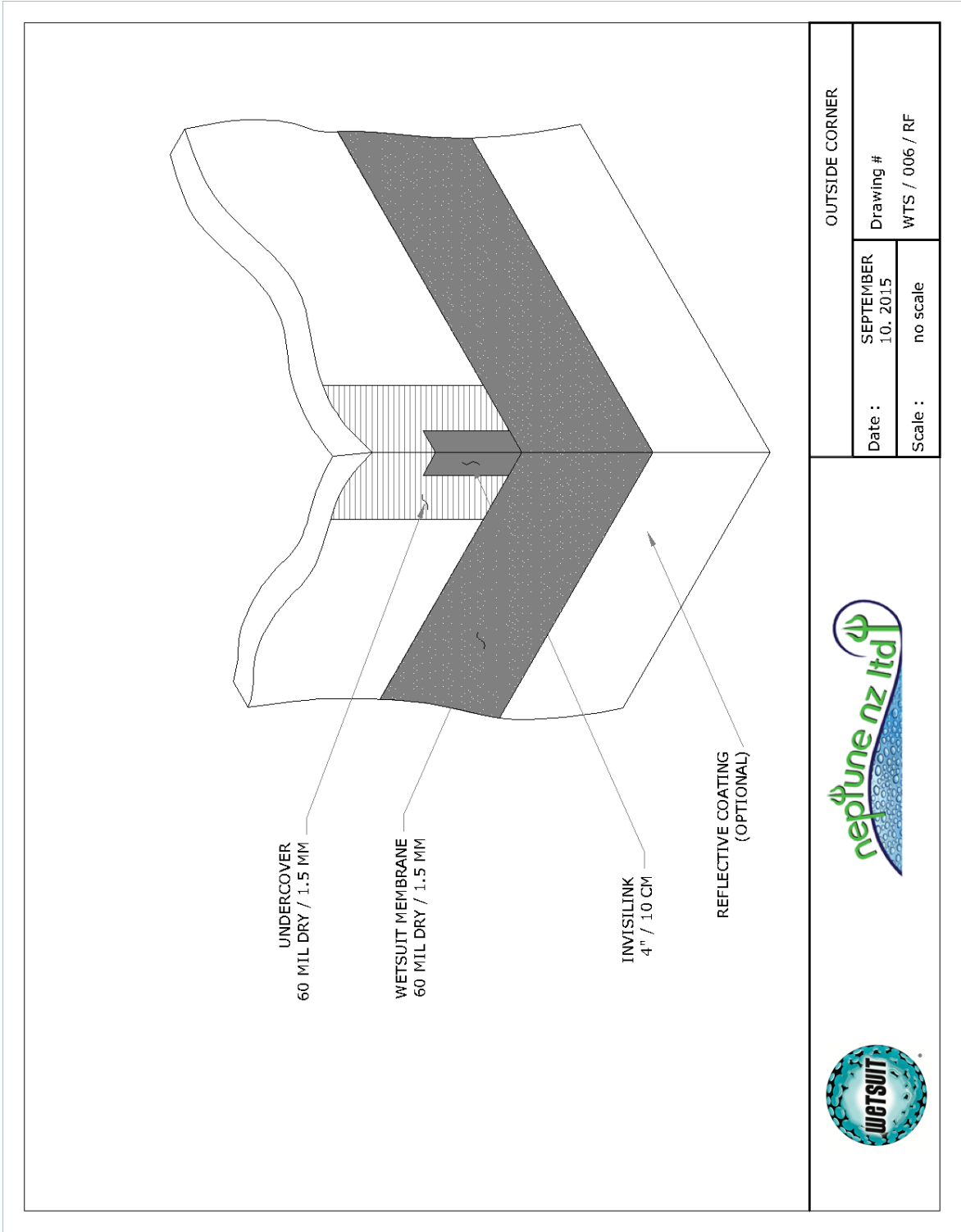
NOTE:
TOTAL THICKNESS OF WETSUIT
MEMBRANE TO BE 100 MIL DRY / 2.5 MM

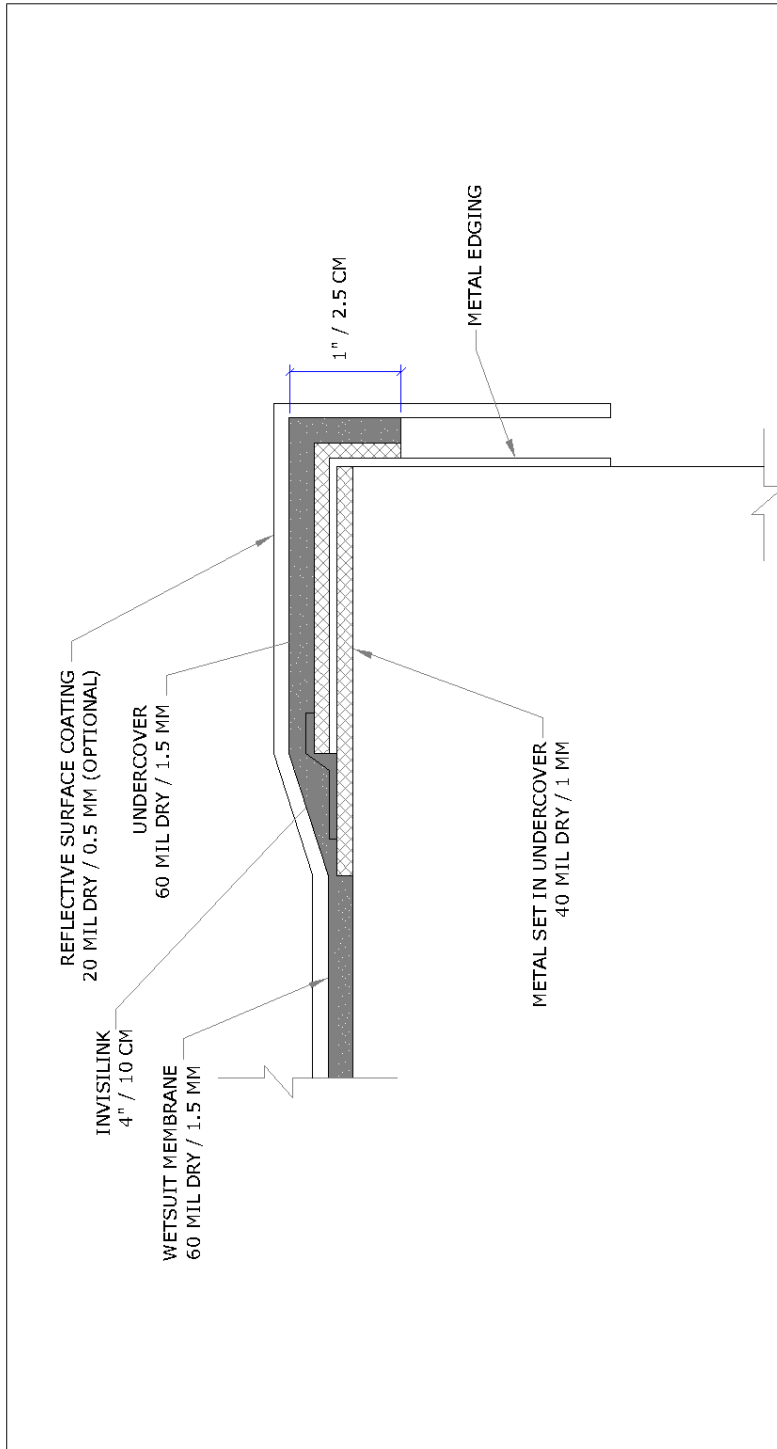


FULLY REINFORCED SYSTEM

Date :	SEPTEMBER 10, 2015	Drawing #
Scale :	no scale	WTS / 004 / RF





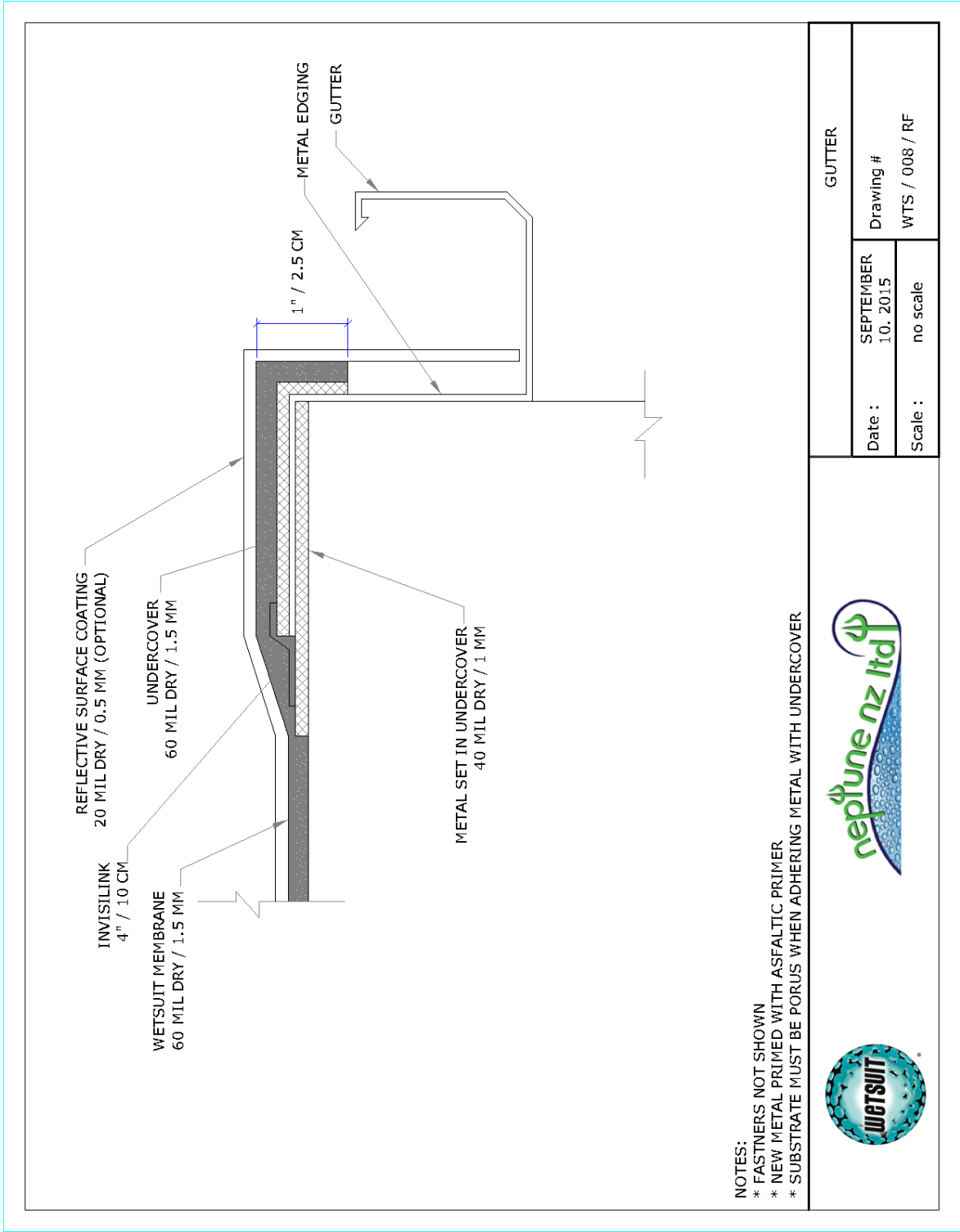


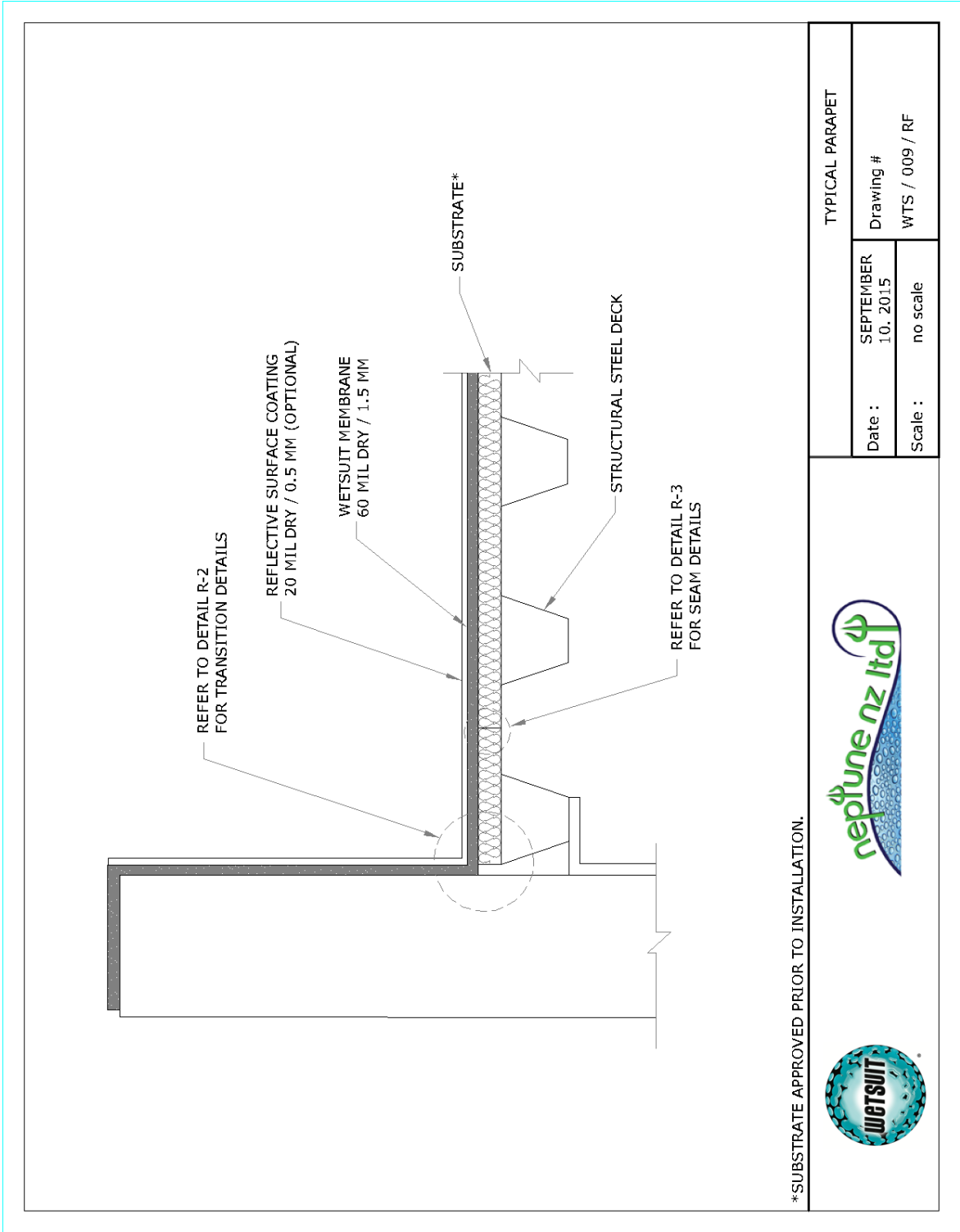
NOTES:

- * FASTNERS NOT SHOWN
- * NEW METAL PRIMED WITH ASFALTIC PRIMER
- * SUBSTRATE MUST BE PORUS WHEN ADHERING METAL WITH UNDERCOVER



METAL EDGE TERMINATION		
Date :	SEPTEMBER 10, 2015	Drawing #
Scale :	no scale	WTS / 007 / RF





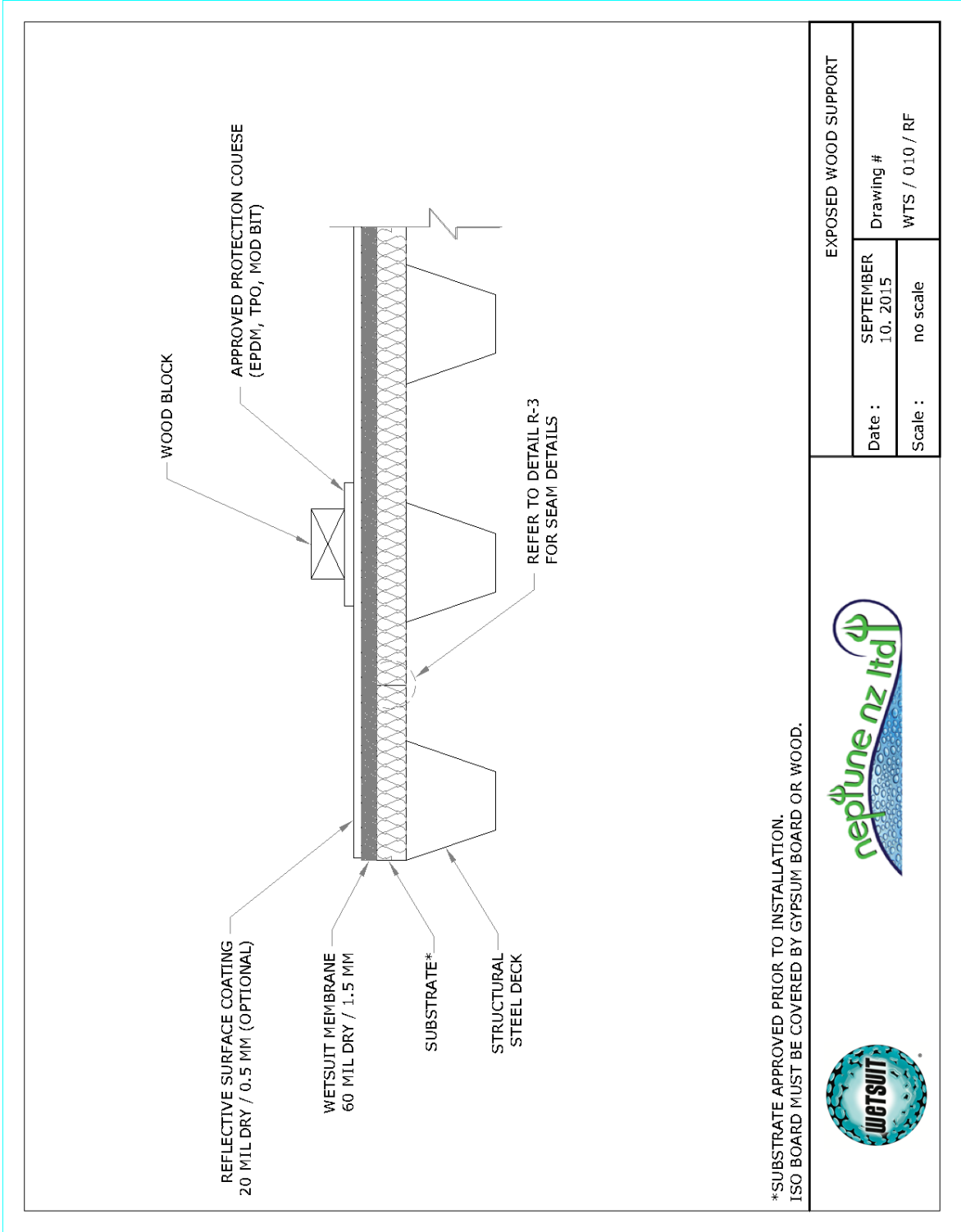
TYPICAL PARAPET

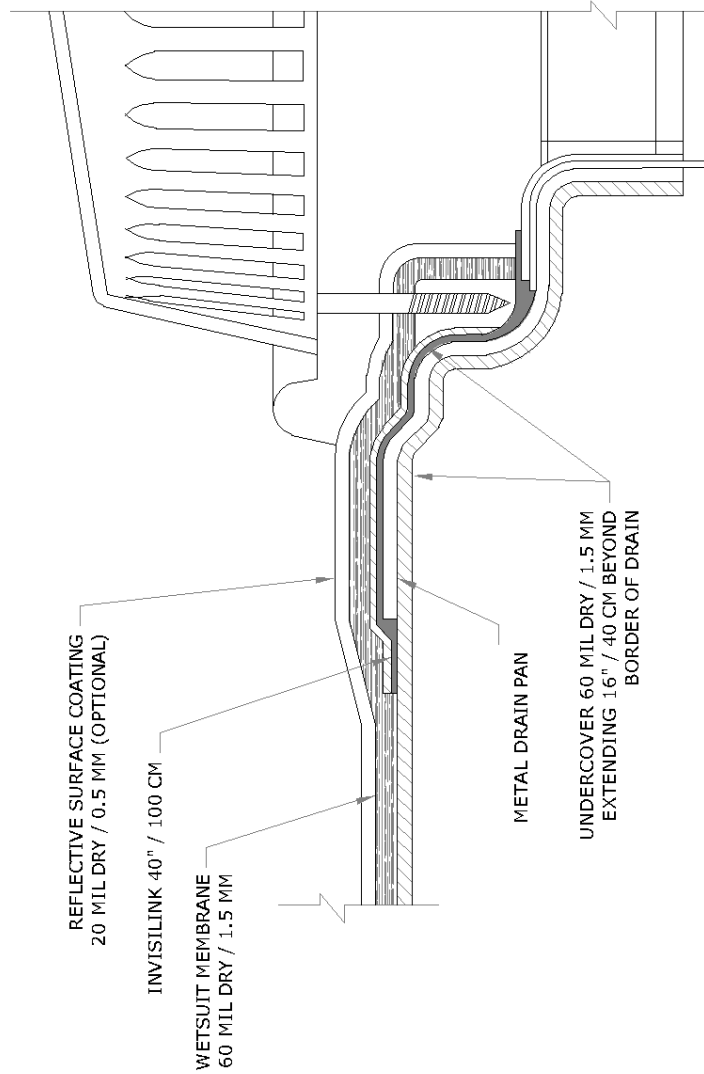
Date : SEPTEMBER
10, 2015

Drawing #

Scale : no scale

WTS / 009 / RF





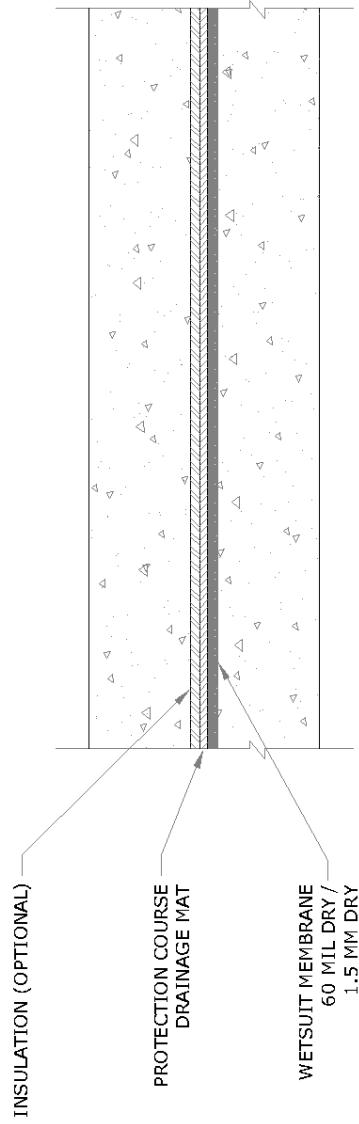
* UNDERCOVER USED AS ADHESIVE LAYER ONLY WHEN ONE SUBSTRATE IS POROUS.
 * OMIT ADHESIVE LAYER IN RE-ROOFING APPLICATIONS



DRAIN		
Date :	SEPTEMBER 10, 2015	Drawing # WTS / 011 / RF
Scale :	no scale	

8.3 Waterproofing detailed drawings

The following detailed drawings indicate the way of using WetSuit product in various situations that can be encountered for a waterproofing application.



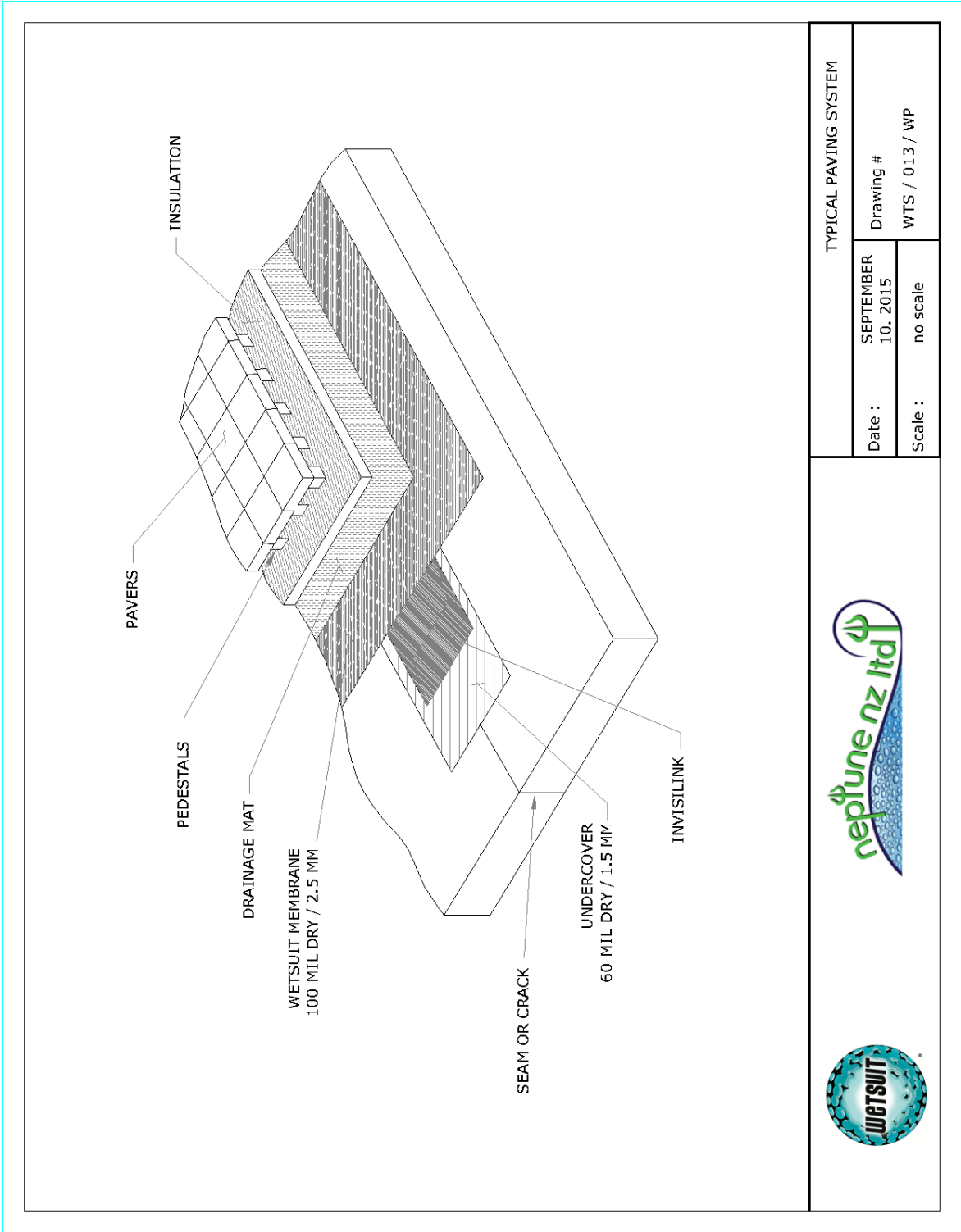
BETWEEN SLAB

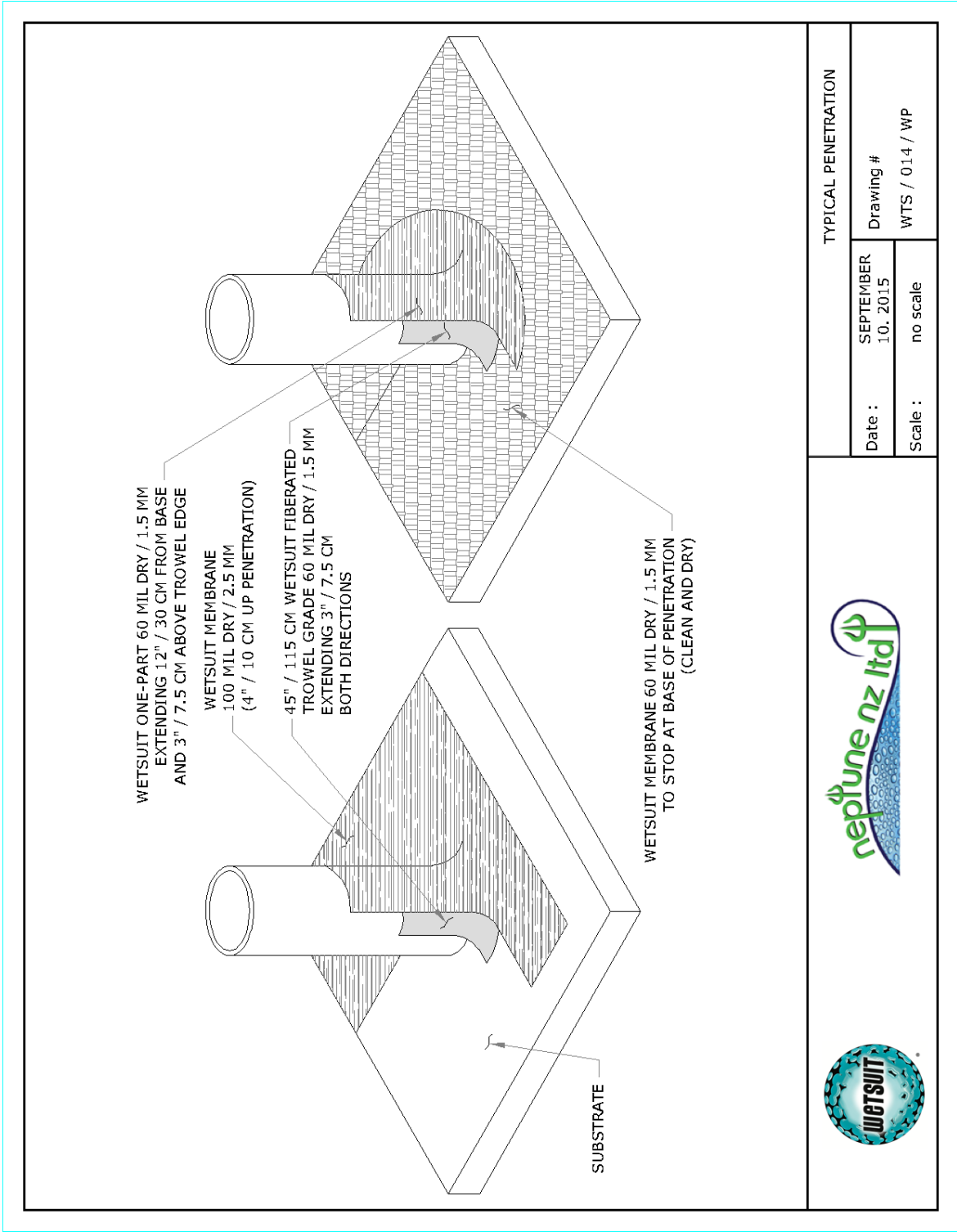
Date : SEPTEMBER 10, 2015

Drawing #

Scale : no scale

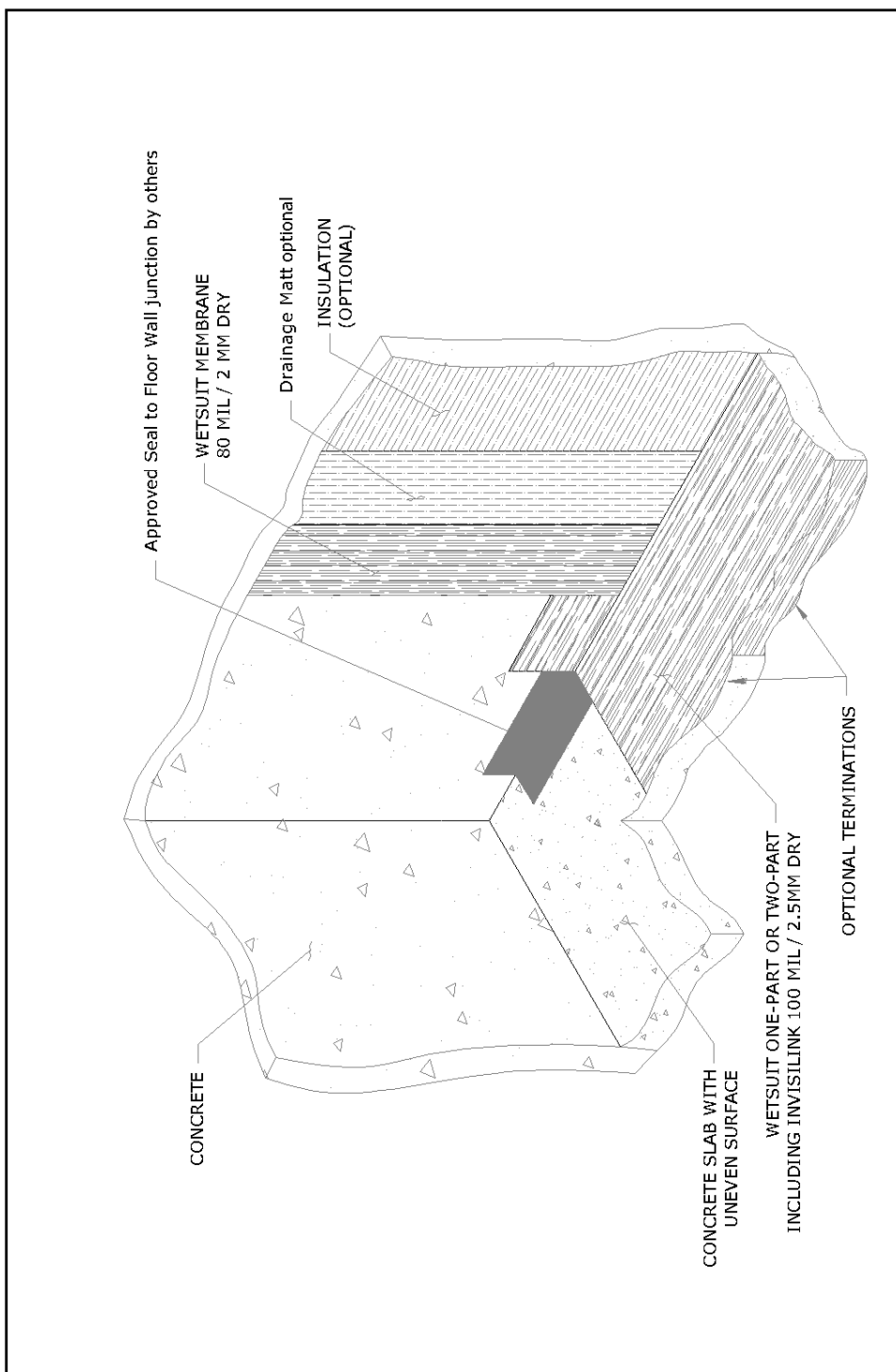
WTS / 012 / WP





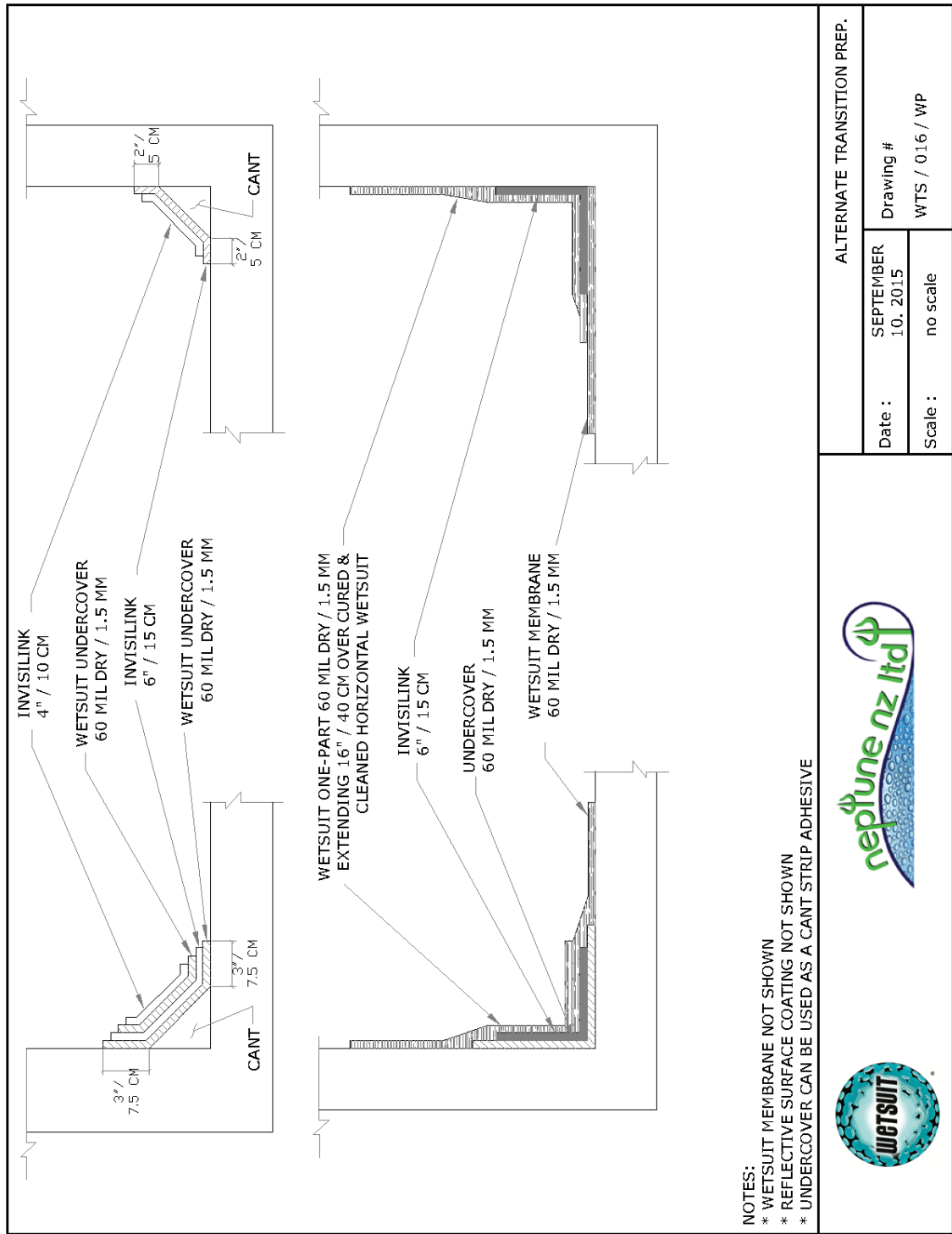
TYPICAL PENETRATION

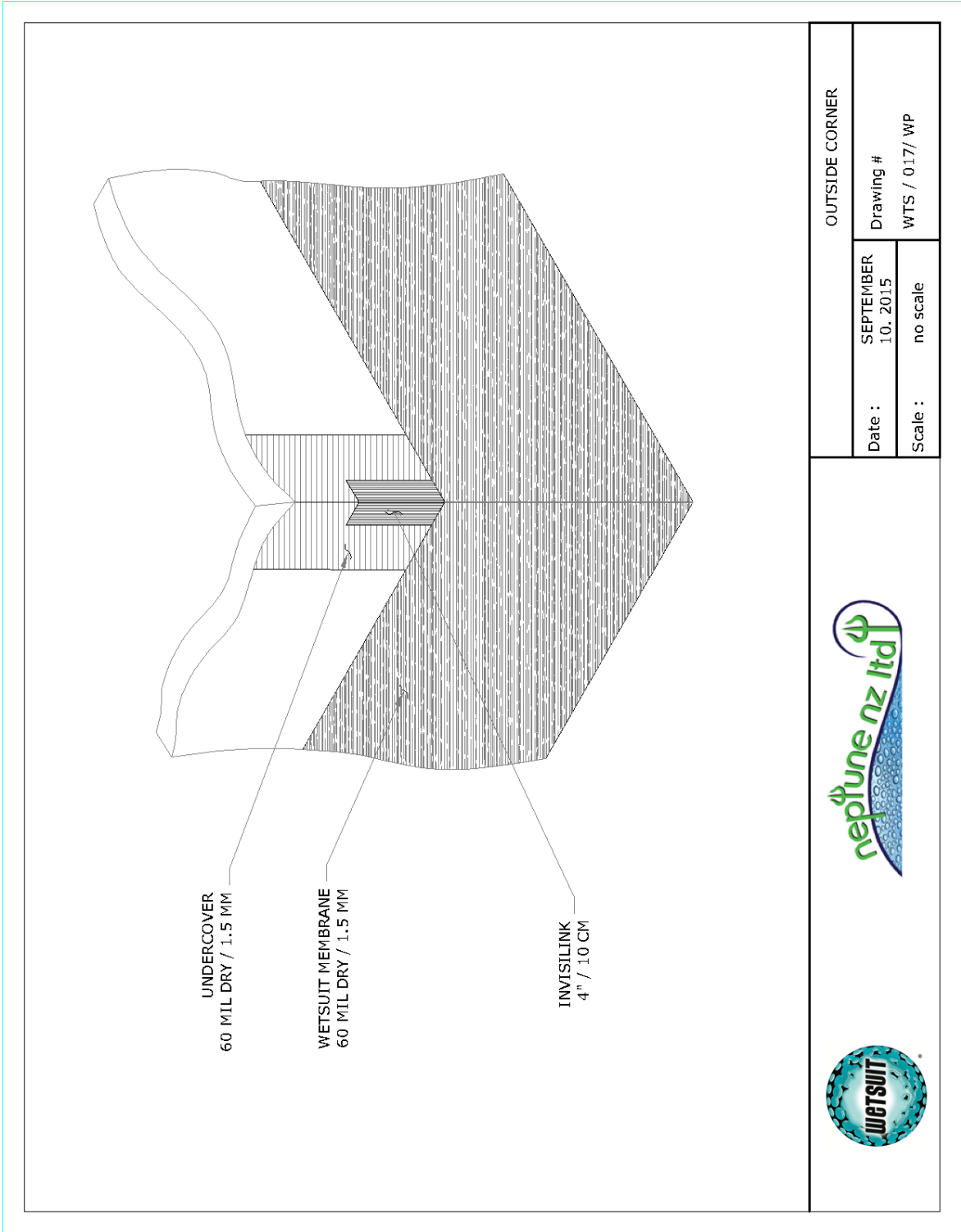
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Scale :	no scale		

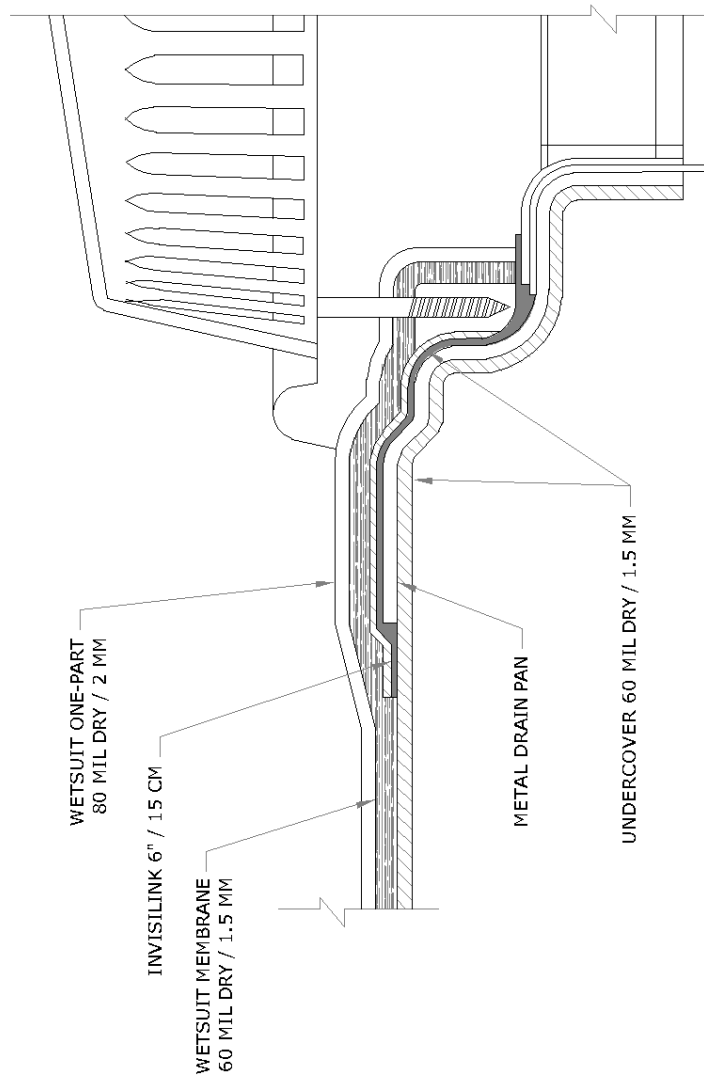


CONCRETE FOOTING

Date :	SEPTEMBER 10. 2015	Drawing # WTS / 015 / WP
	Scale :	no scale





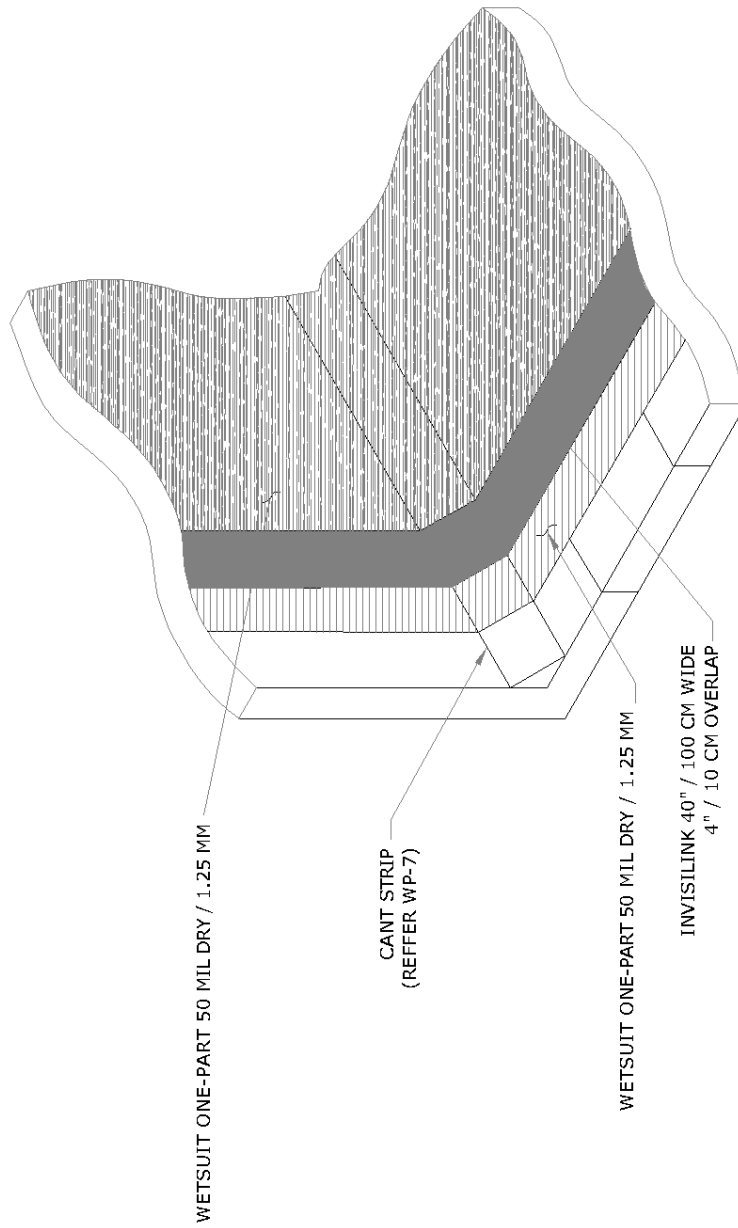


*UNDERCOVER USED AS ADHESIVE LAYER ONLY WHEN ONE SUBSTRATE IS POROUS.
* OMIT ADHESIVE LAYER IN RE-ROOFING APPLICATIONS



DRAIN

Date :	SEPTEMBER 10, 2015	Drawing #
Scale :	no scale	WTS / 018/ WP

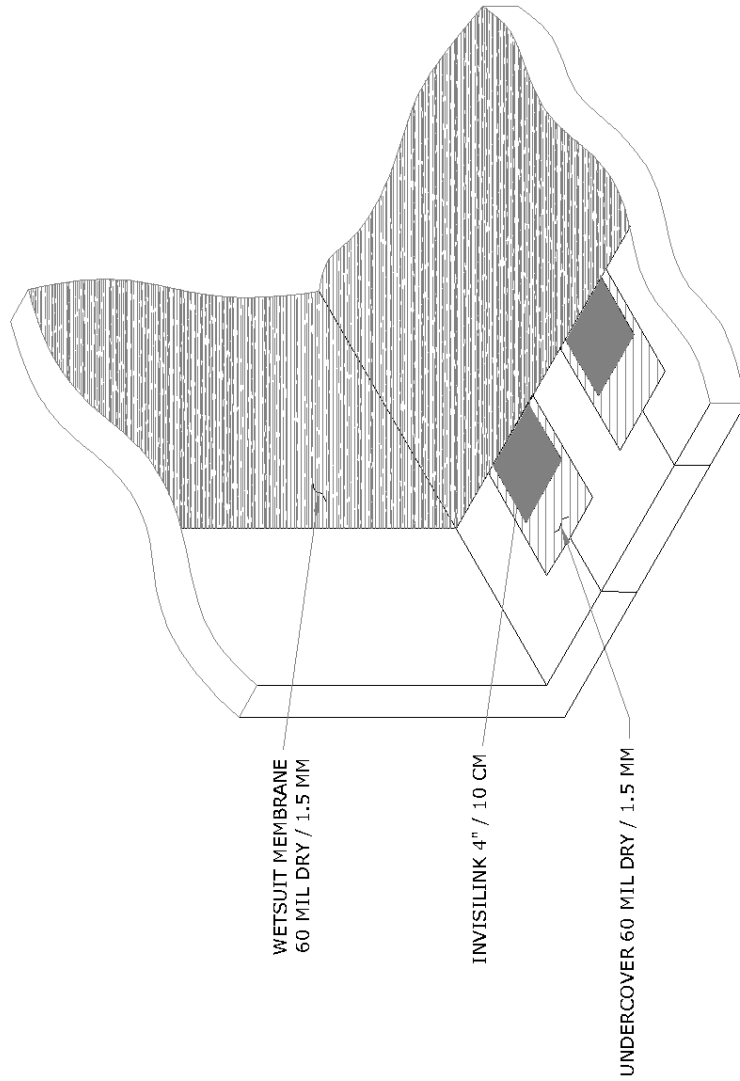


NOTE :
TOTAL THICKNESS OF WETSUIT MEMBRANE TO BE 100 MIL DRY / 2.5 MM



FULLY REINFORCED SYSTEM

Date :	SEPTEMBER 10, 2015	Drawing #
Scale :	no scale	WTS / 019/ WP

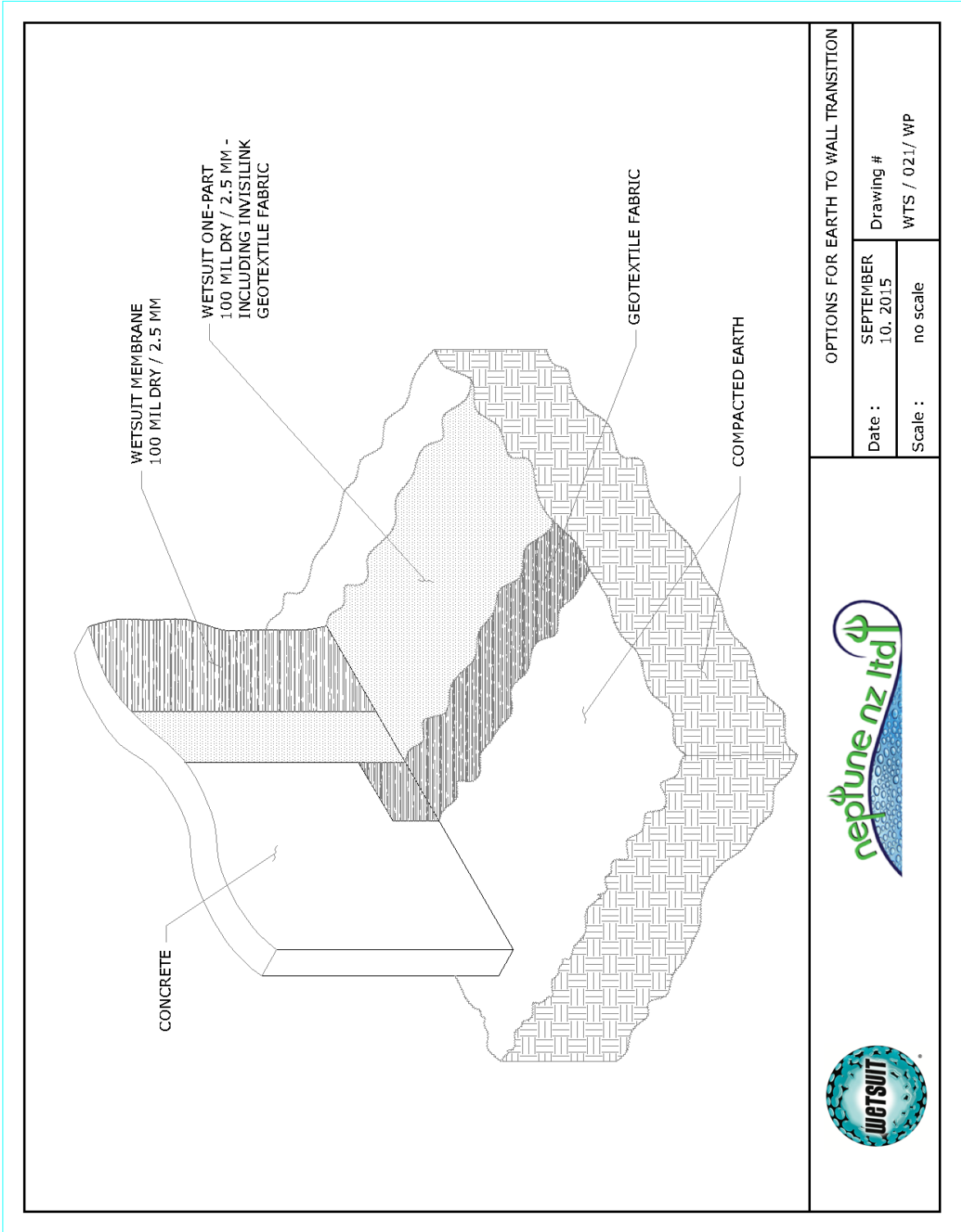


FABRIC REINFORCED SYSTEM FOR ALL SEAMED SUBSTRATES
(PLYWOOD, METAL DECKS, GYPSUM BOARD, ETC)

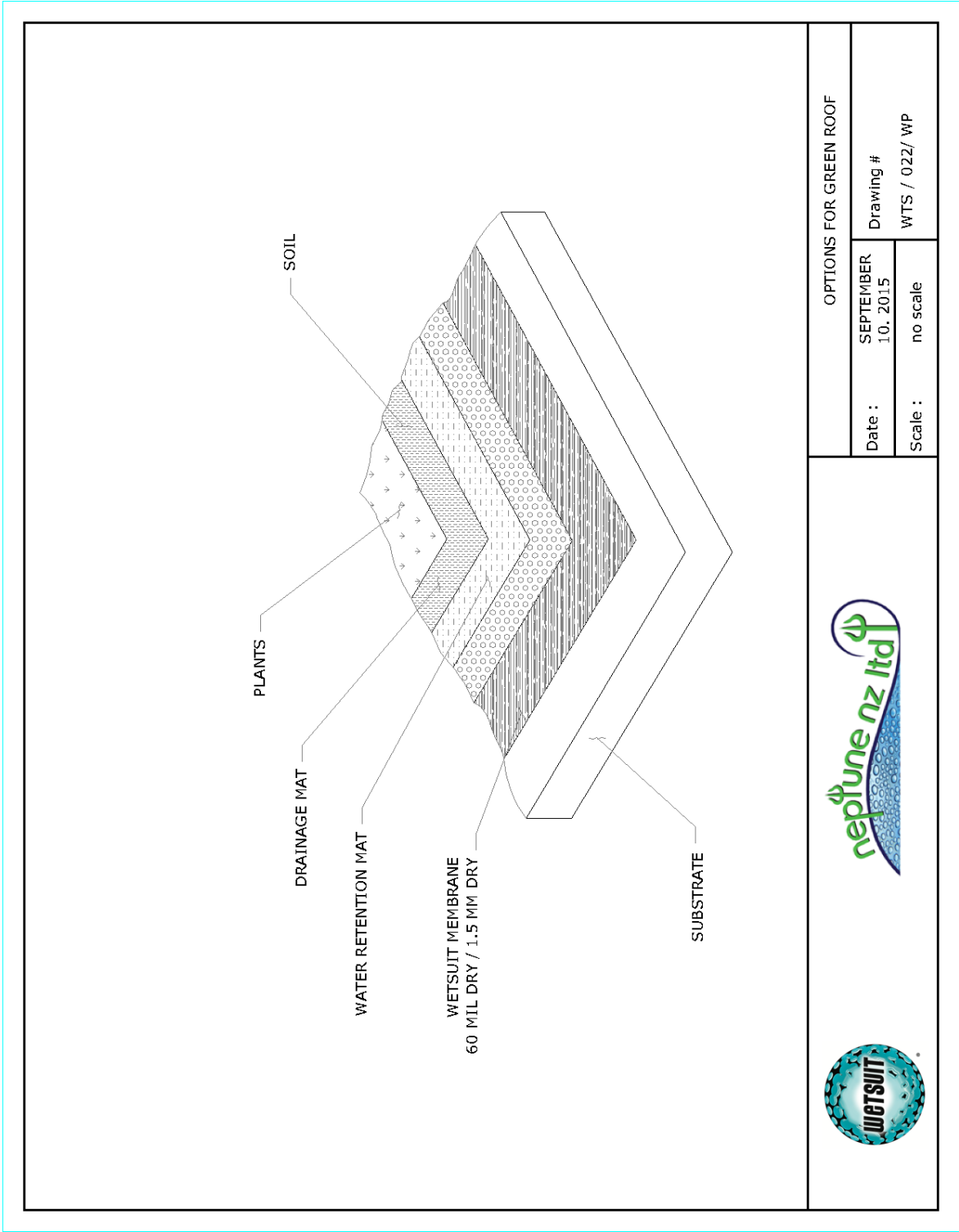


TYPICAL JOINT FIELD

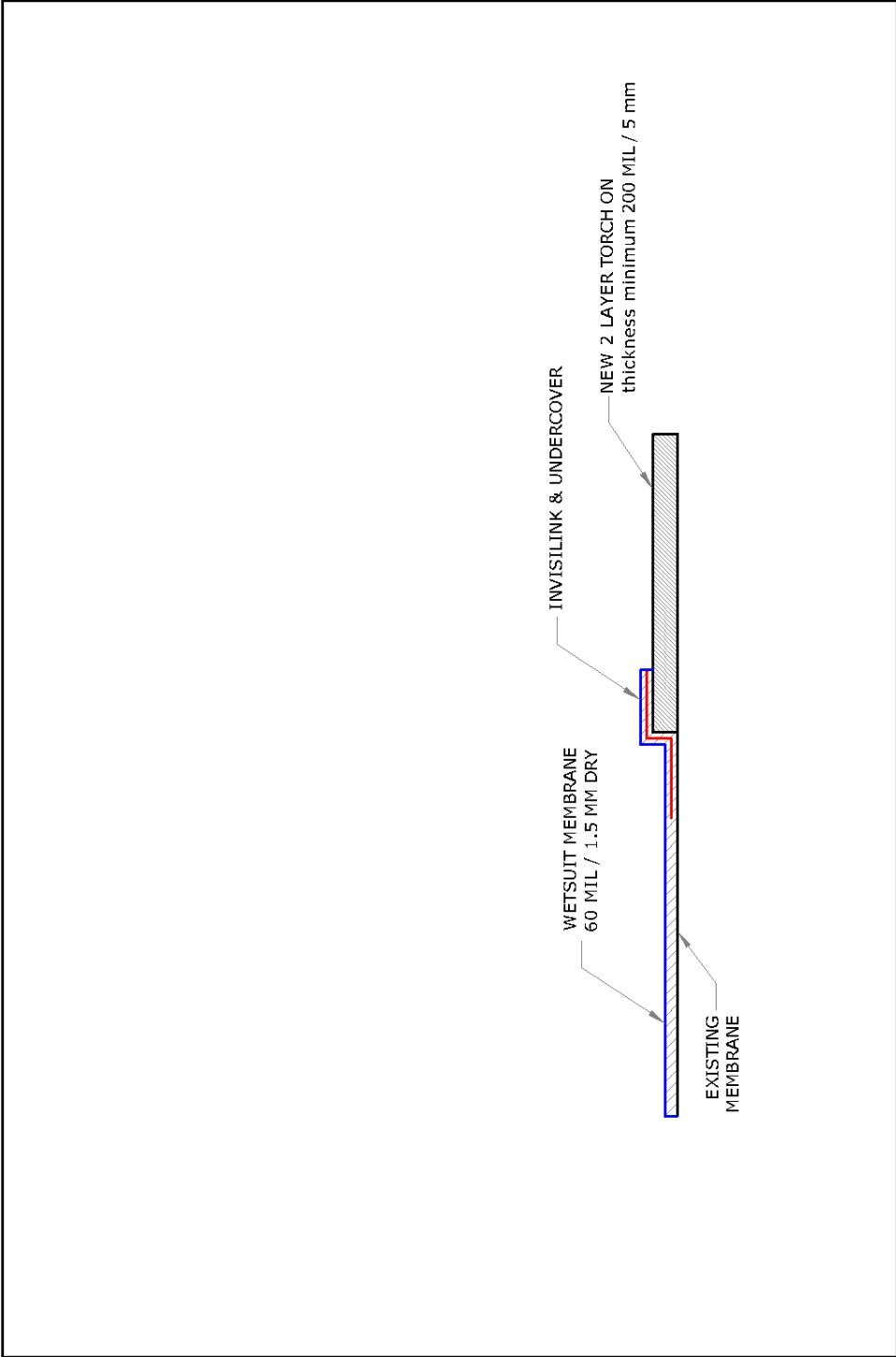
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OPTIONS FOR EARTH TO WALL TRANSITION		
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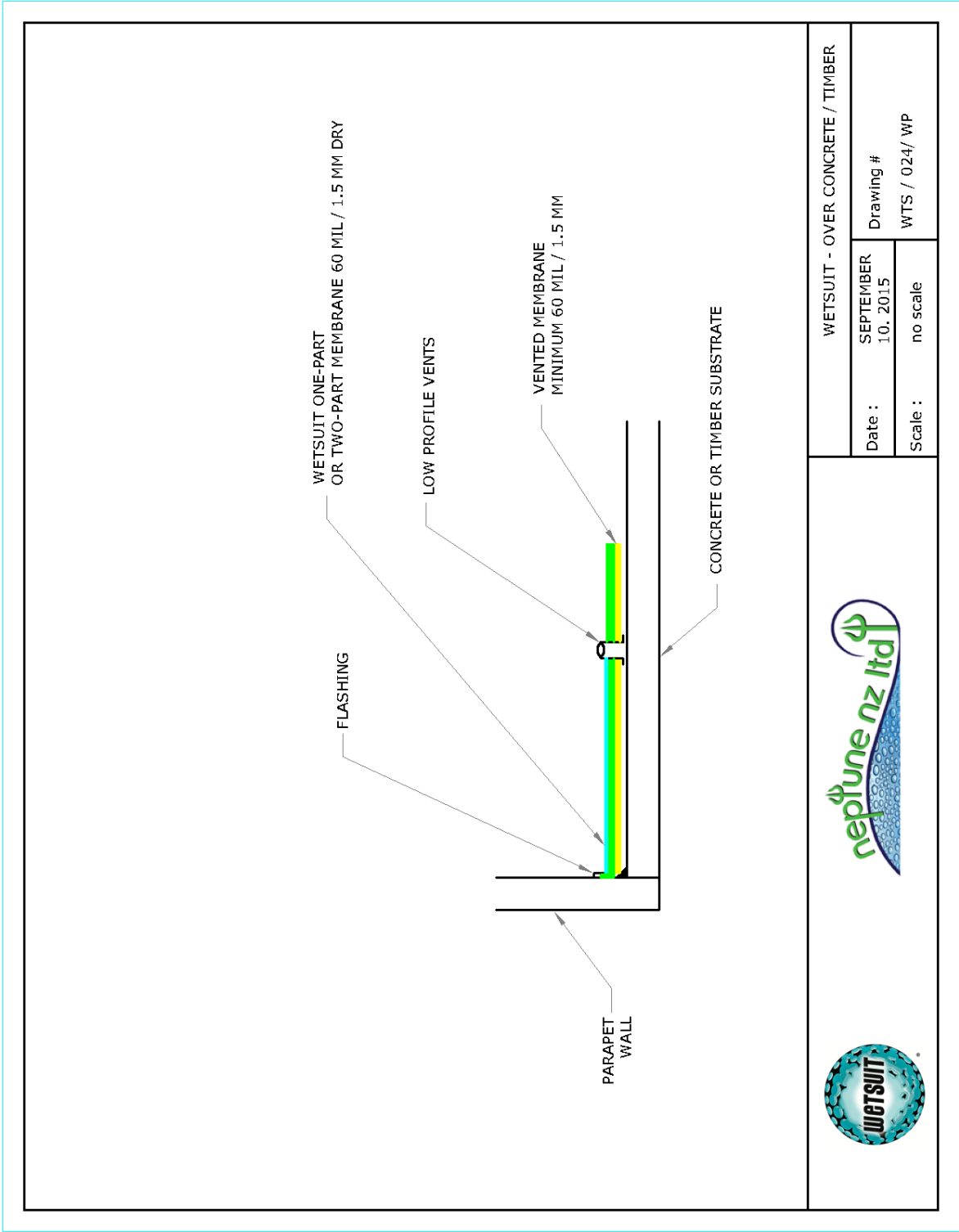


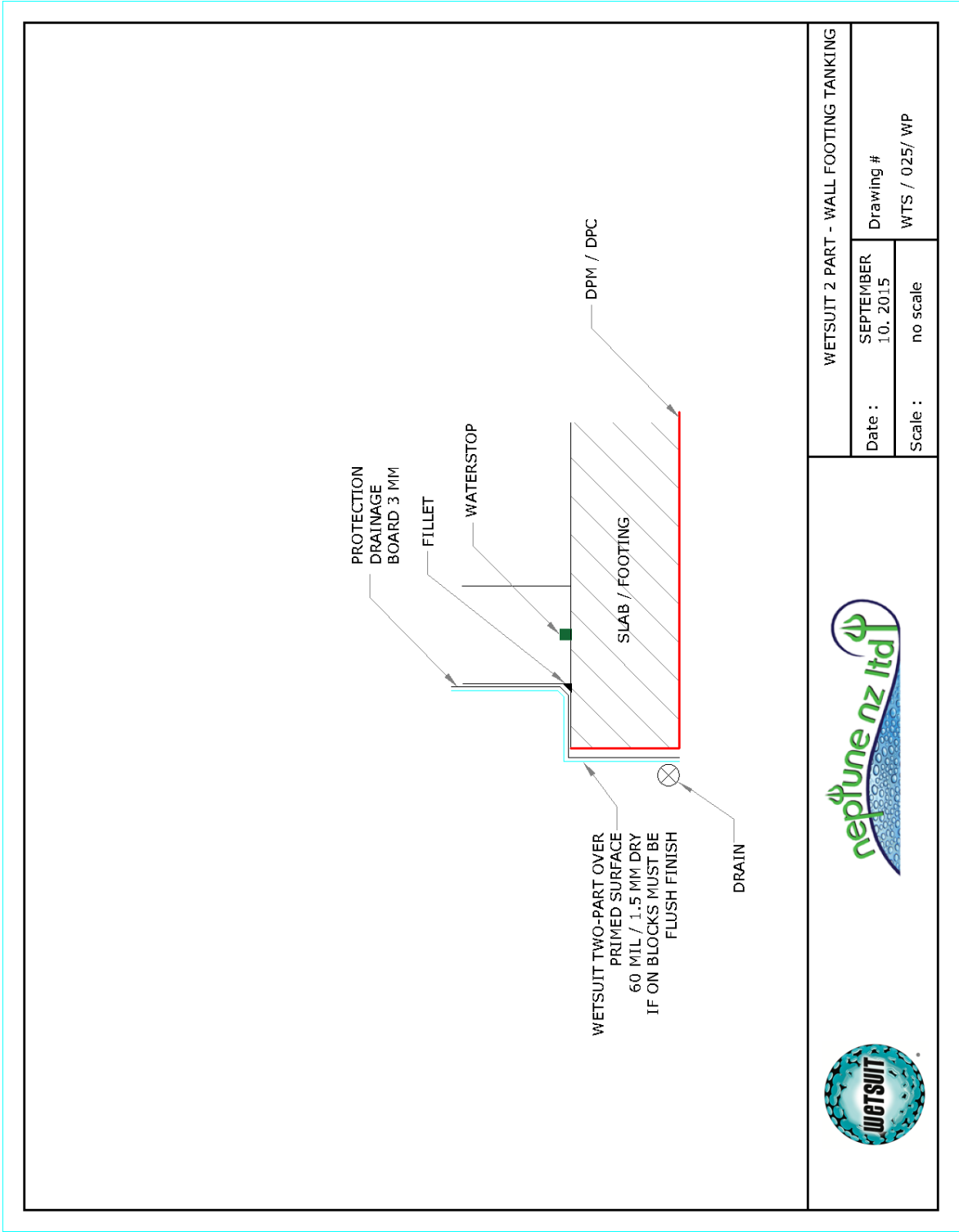
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TERMINATION of WETSUIT TO NEW 2 LAYER TORCH ON / TPO / RUBBER

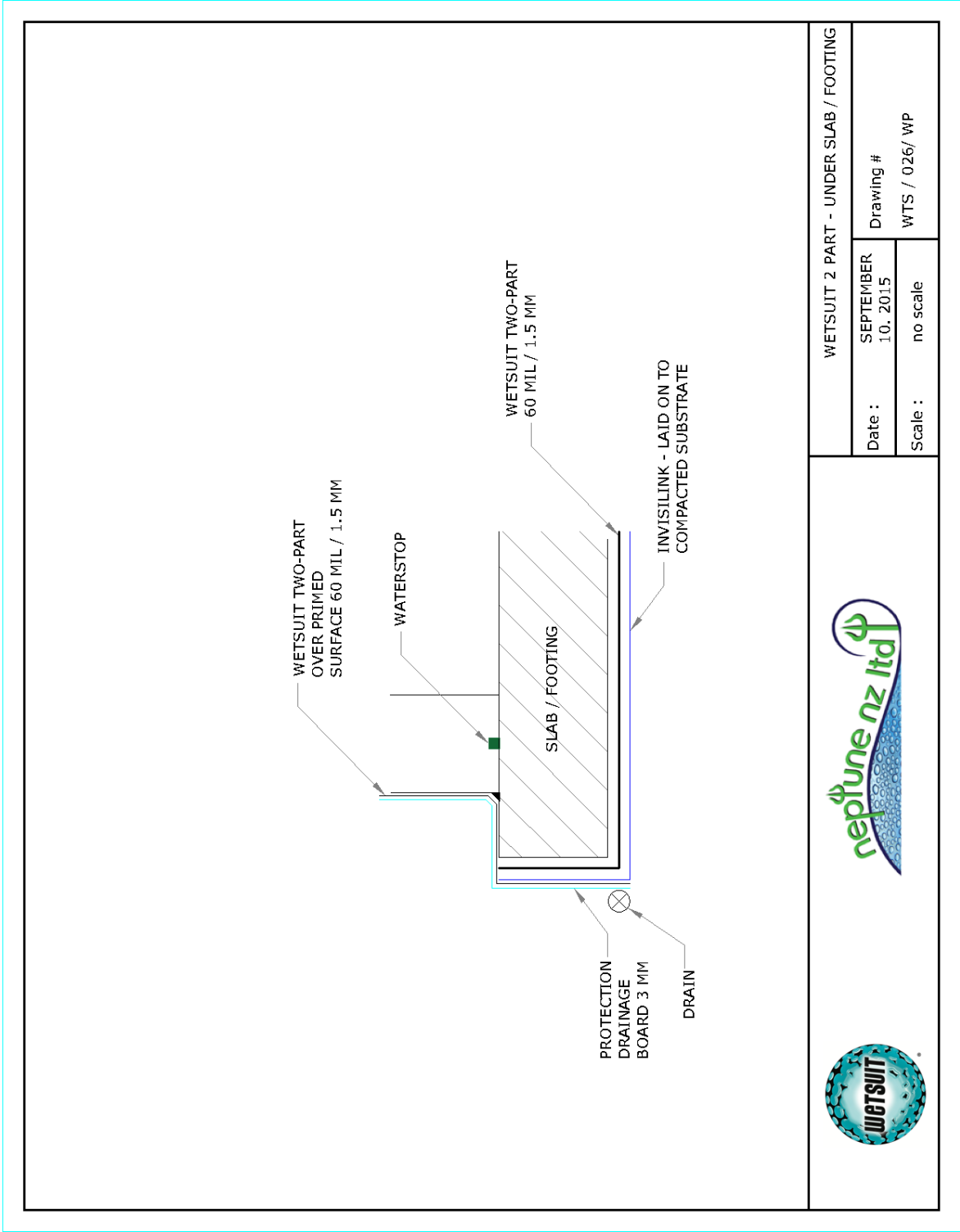
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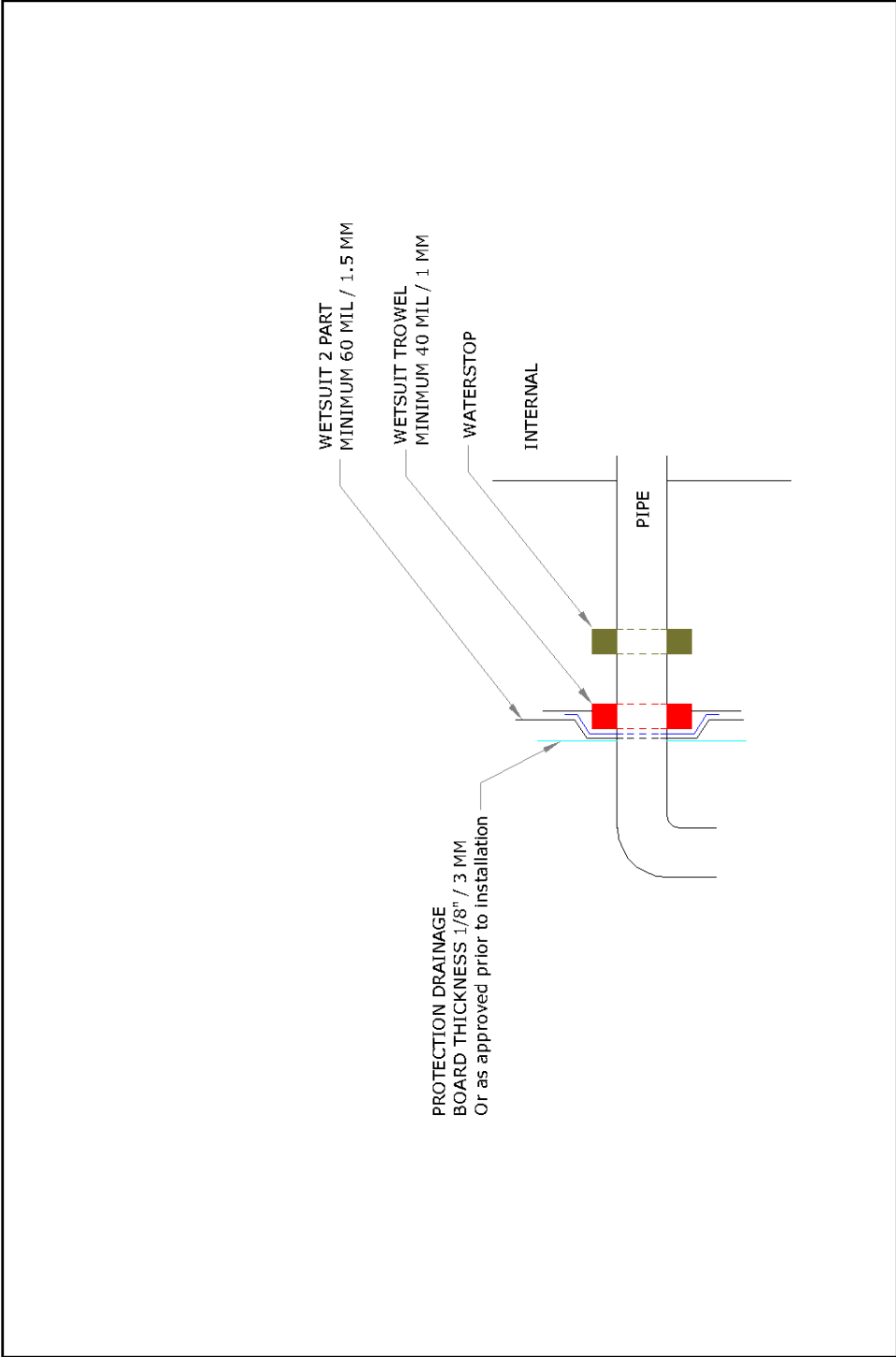


WETSUIT 2 PART - WALL FOOTING TANKING

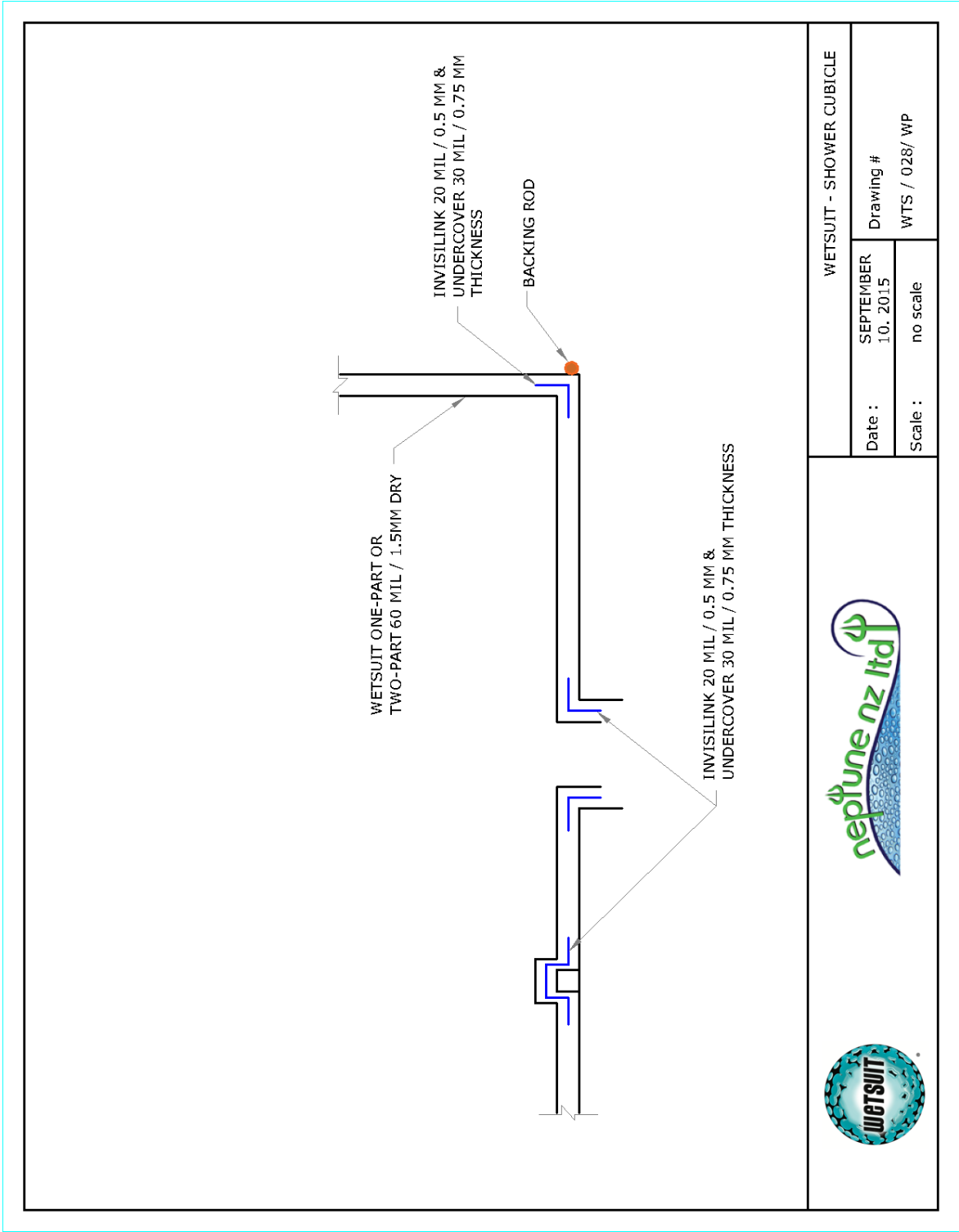
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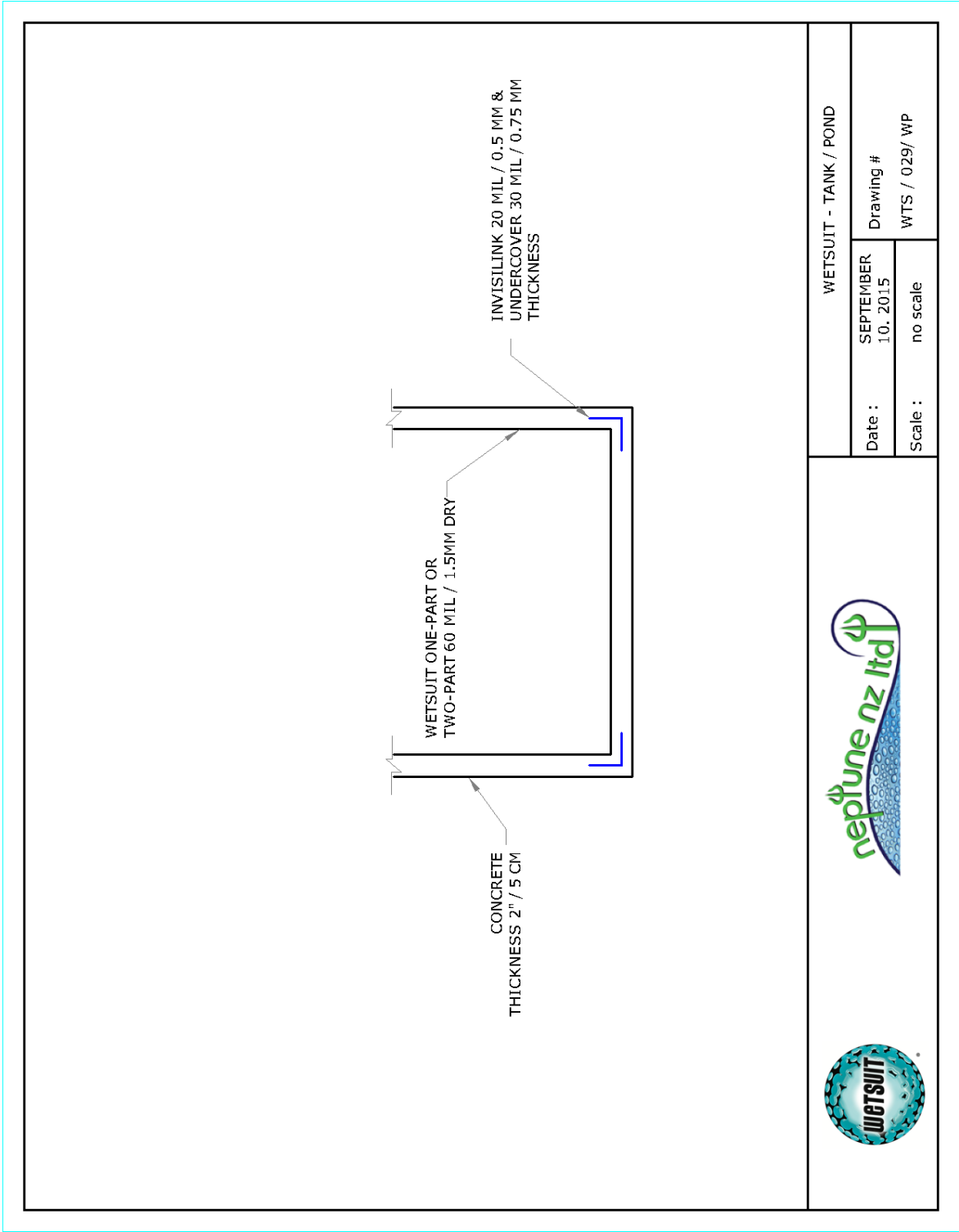
WETSUIT 2 PART - UNDER SLAB / FOOTING		
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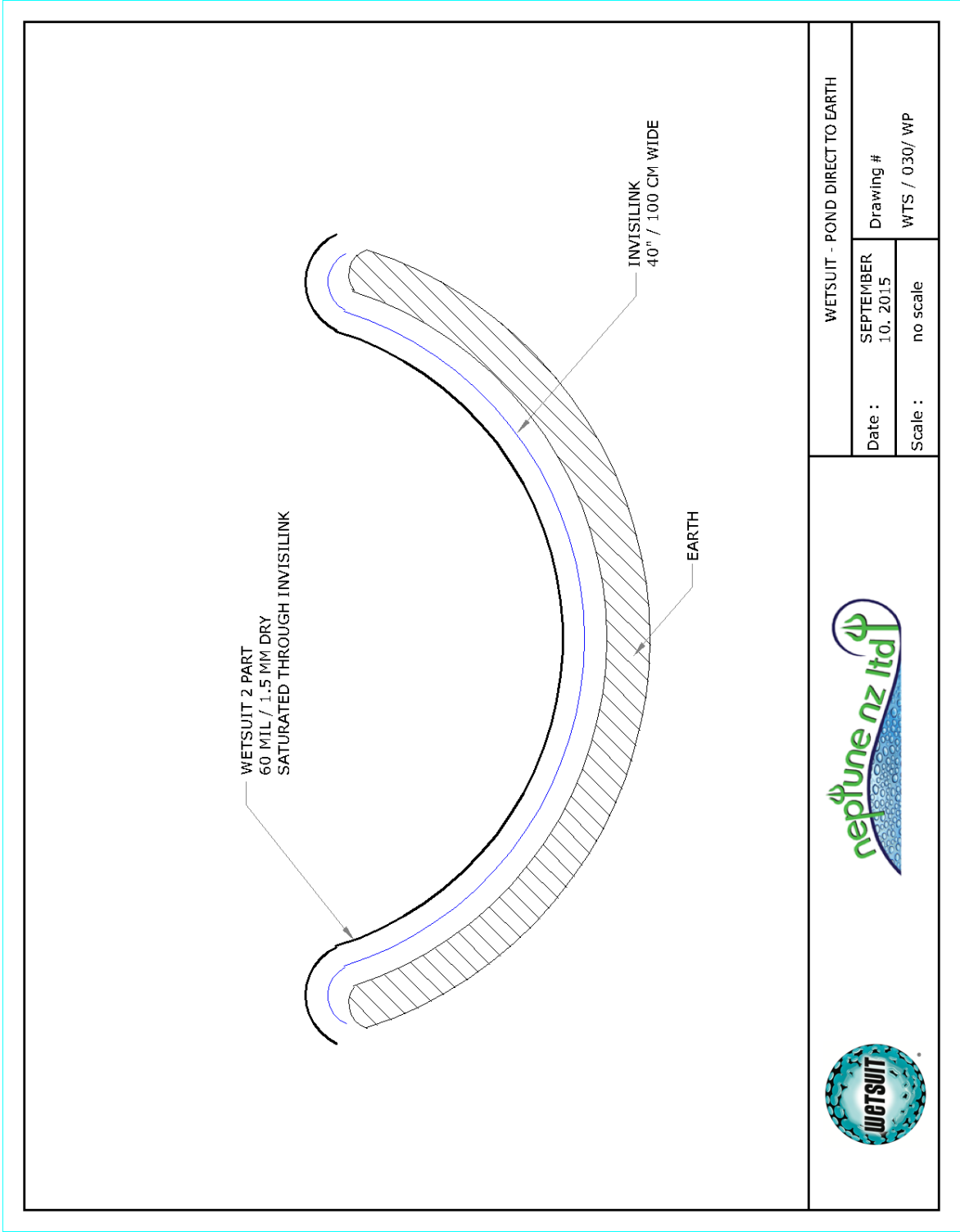


WETSUIT 2 PART - WALL PENETRATION			
Date :	SEPTEMBER 10, 2015	Drawing #	
		WTS / 027/ WP	
Scale :	no scale		



WETSUIT - SHOWER CUBICLE		
Date :	SEPTEMBER 10, 2015	Drawing #
Scale :	no scale	WTS / 028/ WP





Appendix 1: WetSuit 2 – Parts Technical Specifications and MSDS

GENERAL DESCRIPTION

WetSuit® is a water-based, cold spray applied, plural component, quick cure, seamless, rubber roofing, waterproofing, and air vapor barrier membrane.

TYPICAL USE

WetSuit® is designed as a roofing, waterproofing and air/vapor barrier membrane applicable to vertical, horizontal, and overhead applications. Typical uses include roofing and re-roofing, between slab, below grade walls, tunnels, planters, air/vapor barriers, plaza decks and ponds. The WetSuit System may be applied to many niche applications.

PACKAGING

WetSuit® is available in kits of 55 gallon/ 208 liters drums and 5 gallon / 19 liters pails of accelerator weighing approx. 550lbs / 249.5 kg.

Physical Properties	FM & ASTM Test	Result
Color		Brown to Black
Non-Toxic		No Solvents
Shelf Life		1 Year
Minimum Cured Film Thickness		60 mils/1.5mm roofing, 80 mils/2mm vert 100 mils/2.5mm horiz. waterproofing 40mils/1mm air/vapor barrier
Ponding		No effects after 1 year
Hail Resistance	FM 4470	Severe Hail Pass
UV Exposure	FM 4470	Pass
Fire	FM 4470/ASTM E108	Class A on 2"/5 cm slope
Wind	FM 4470	Class 1-990 Over Structural Concrete Class 1-4200 Over Modified
Water Leakage	FM 4470	Pass
Foot Traffic	FM 4470	Pass
Accelerated Weathering / Xenon Exposure (1000 hours / 7 years)	ASTM G26 / ASTM G155	No adverse effects
Impact Resistance	ASTM D-3746	No effect

Water Vapor Transmission @ 35 mils /0.9mm	ASTM E96	.0382 WVT / .0554 Perms
Air Permeance @ 40 mils/1mm	ASTM 2178-03	1.57lbs/ft ² / 115kg/m ² .0018cfm/ft ² / 5.5 10 ⁻⁴ m ³ .min/m ²
Air Leakage @35 mils /0.9 mm	ASTM E283	0.001 (Below detectable limits of test equip. used)

Appendix 2: Wetsuit 1 -Part Technical specifications & MSDS

DESCRIPTION

WetSuit® 1-Part is a water-based, seamless, rubber roofing, waterproofing and air/vapor barrier membrane which is spray or roll applied. It cures to a monolithic, highly flexible membrane.

TYPICAL USE

The membrane can be applied to concrete, wood, metal, foam, single ply membranes, coatings and asphalt. Ideal for a variety of applications including roofing, foundations, between slab waterproofing, retaining walls, decks, balconies, patios, shower pans, planters and fountains.

ADVANTAGES

- Performs as a waterproof and air/vapor barrier
- Creates a seamless and monolithic membrane
- Water-based
- Class A self-extinguishing fire rated
- Cold applied
- No VOC's
- No odors or fumes
- Excellent thermal cycling
- 1582% Elongation and full recovery
- UV stable

PACKAGING

WetSuit® 1-Part is available in 5 gallon / 19 Liters pails, 55 gallon / 208 liters drums or 220, 275 and 330 gallon / totes

TECHNICAL DATA

Physical Properties	ASTM Test	Result
Color		Black
Non-Toxic		No Solvents
Shelf Life		1 Year
Cured Film Thickness		60 mils /1.5mm
Ponding		No effects after 1 year
Elongation	ASTM D-412	1582%
Flame Spread	ASTM E-108	Class A
Flame Exposure	ASTM E-108	Class A
Water Vapor Permeability	ASTM E-96	0.26 Perms
Water Vapor Transmission	ASTM E-96	0.182 grains

Physical Properties	ASTM Test	Result
Accelerated Weathering (1000 hours / 7 years)	ASTM G26	No adverse effects
Impact Resistance	ASTM D-3746	No effect
Surface Burning Characteristics	ASTM E84-05	Flame spread index: 20 – Class A Smoke developed index: 200 – Class A

Appendix 3: Wetsuit Trowel Technical specifications & MSDS

WetSuit® Trowel is a high viscosity, water-based coating specifically designed as a roofing and waterproofing patch. Applied by trowel or brush, it is ideal for sealing leaky roof penetrations, ducting, flashings, cracks, joints and tears. WetSuit Trowel is ideal on single ply, asphalt, wood, metal, concrete and foam. Additionally, WetSuit Trowel can be used as a waterproofing adhesive for setting tile and stone.

GENERAL APPLICATION

All surfaces must be free of dirt and any loosely adhered coatings. Clean the substrate with soap & water and allow to fully dry. Priming is not required.

Application: Use trowel, brush or roller at a minimum thickness of 150 wet mils / 4mm. WetSuit will shrink about 30% when dry.

Cure time: 4 +/- hours, varies depending on porosity of the substrate, humidity, and temperature. DO NOT EXPOSE TO FREEZING TEMPERATURES BEFORE A FULL CURE IS ACHIEVED.

Application temperature: 40°F / 4° C and rising to 100°F / 38° C

Coverage: 10 sq. ft. per gallon yields 125 dry mils or 1 m² per 4 litres yields 3mm

Shelf life: 1 year @ 50°F / 10° C to 105°F / 38° C

Clean up: Liquid state- Use a liquid detergent in water. / Solid state- Use a citrus based cleaner or mineral spirits. Do not thin. Do not freeze.

FIRST AID

EXTERNAL: Flush with water.

Wash contaminated clothing before reuse.

EYES: Immediately flush with plenty of cool running water for at least 15 minutes, holding eyelids apart.

Get medical attention if irritation persists.

HAZARD RATING

Health	1
Flammability	0
VOC	0
Reactivity	0
Protection	0

STORAGE & DISPOSAL

Keep container closed when not in use. Empty container completely and dispose of in accordance with applicable regulations.

FOR INDUSTRIAL USE ONLY • KEEP OUT OF THE REACH OF CHILDREN

VISCOSITY	140 KU+
SOLIDS CONTENT	68% by Weight
COVERAGE	10 sq. ft. / 1 sqm per gallon / 3.78 litre yields 125 dry mils / 3.12 mm
APPLICATION TEMPERATURE	34°F / 1° C to 110°F / 43° C, Do not allow to freeze
FLAMMABILITY	Class A fire rated, ASTM 108 Flame Spread & Exposure
COLOR	Black
ELONGATION	1550%
CURE TIME	2 hours @ 75°F / 24° C and 60% humidity
ACCELERATED CURE TIME	Instant skinning
PACKAGING	1 and 5 gallon / 3.78 and 18.92 litres plastic containers
SHELF LIFE	1 year @ 50°F / 10° C to 105°F / 40° C
CLEAN UP	Liquid state: Use detergent and water Solid state: Use a citrus based cleaner or mineral spirits

Appendix 4: Invisilink Technical specifications & MSDS

Invisilink® Seam Fabric is a lightweight, yet super durable, tear resistant seam fabric. Invisilink® features stitch bonded polyester which is one of the strongest materials available to the roofing industry for use as reinforcement in cold process roofing. Invisilink®'s characteristics provide an unusual combination of high strength properties with good elongation for excellent thermal stress force accommodations. The soft polyesters will readily conform to various roof surfaces such as embedded gravel and standing seam metal roof decks. It is also much easier to handle and apply properly than other soft polyester sheets. Invisilink® is used with UnderCover, WetSuit® 1-Part or WetSuit® Trowel on new construction with seams and gaps more than 1/4" / .6 cm wide and during the rehabilitation of existing roofs.

Technical Data

PHYSICAL PROPERTIES	ASTM TEST	RESULT
Weight		3 oz. / sq. yd./ 0.95 kg/m2
Color		White
Tensile	ASTM D1682	57.1 lbs. / 25.900 kg
Elongation	ASTM D1682	61.65%
Mullen Burst	ASTM D3786	176.8 lbs. / 80.19 kg
Trapezoid	ASTM D117	16.1 lbs. / 7.30 kg

AVAILABLE SIZES
4" X 300' / 10cm x 91 m
6" X 300' / 15 cm x 91 m
40" X 324' / 1 m x 99 m

Appendix 5: WetSuit UnderCover Technical specifications & MSDS

UnderCover is a water-based, medium viscosity, self-levelling membrane that can be sprayed, brushed, or roll applied up to 80 mils / 2mm wet vertically. UnderCover is used exclusively under, or between, the WetSuit® products.

UnderCover exhibits a tenacious adhesion to most substrates and is meant to be used in conjunction with Invisilink® fabric to detail penetrations, pre-strip in joints, edging, or cant /fillets strips, or self- level areas.

Technical Data

Viscosity	95 to 100 KU
Solids Content	65% by weight
Coverage	18 sq. ft. / 1.6 m2 per gallon / 3.78 litres yields 60 dry mils / 1.5 mm dry
Application Temperature	34° F to 100° F / 1° C to 43° C Do not allow to freeze
Colour	Black
Elongation	1550%
Cure Time	2 hours @ 75° F /24° C and 60% humidity
Accelerated Cure Time	Instant skin
Packaging	5 and 55 gallon / 18.92 litre and 208 litre containers
Shelf Life	1 year @ 50°F to 105°F / 10°C to 40°C
Clean up	Liquid state: Use detergent and water, Solid state: Use a citrus based cleaner or mineral spirits