NURALITE
THE FLAT ROOF EXPERTS

# Nuraply 3PT
# Waterproof Tanking Membrane
# Installation Manual

**Nuralite Waterproofing Limited**
www.nuralite.co.nz

*This manual is designed for waterproof tanking below the ground level of a building.*

*Buildings with deep multi-storey basements and in particular when subject to constant hydrostatic pressure, present specialist design and installation problems which are not covered by this manual.*

**2016 Edition v5**

**August 2016**

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**Document Control**

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|---|---|---|---|
| Issued | John Simmons | Dec 2014 | 2014 Edition V1 |
| Revised | John Simmons | May 2015 | 2015 Edition V2 |
| Revised | John Simmons | October 2015 | 2015 Edition V3 |
| Revised | John Simmons | April 2016 | 2016 Edition V1 |
| Revised | John Simmons | August 2016 | 2016 Edition V2 |
| Revised | John Simmons | August 2016 | 2016 Edition V3 |
| Revised | John Simmons | August 2016 | 2016 Edition V4 |
| Revised | John Simmons | Sept 2016 | 2016 Edition V5 |

The only person authorised to change this plan is the Managing Director, John Simmons. BEAL must be copied into each version.

Nuralite waterproofing systems are intended for application by trained and approved installers. A listing of the current approved applicators are available at www.nuralite.co.nz/Applicators_By_Region/. These notes are a technical guide to the application of the Nuraply 3PT system (which includes Nuraply 3PT, 3PTM & 3PG). The Nuralite organisation also maintains a team of skilled technical representatives who are prepared to demonstrate the correct application of Nuraply 3PT system on site or to discuss any problems which may arise regarding its use.

Please note that Nuraply has a long product defects warranty period and every precaution must be taken to avoid any possible installation faults. Application according to these guidelines must be insisted upon by the Applicator to ensure that full benefits of the warranty period are maintained.

## TECHNICAL ADVICE

For advice on unusual or abnormal conditions or details, please contact Nuralite Waterproofing Ltd,

Phone: 09 579 2046, 0800Nuralite, or
Email: info@nuralite.co.nz

## OTHER REFERENCE DOCUMENTS

This manual forms one part of the full technical documentation for the Nuraply 3PT system.

Technical literature (available at www.nuralite.co.nz)

- Nuraply 3PT system detail drawings
- Material Safety Datasheets
- Technical Datasheets

Specifications

- Generic Nuraply 3PT system specifications
- Project specific specification

# 1. Statement of Use & Limitations

*Use*

Nuraply 3PT torch on membrane system provides a durable waterproofing system for installation by approved installers on below grade walls and beneath floor slabs. The system covers the products Nuraply 3PT (for walls), Nuraply 3PTM (for beneath floor slabs) and Nuraply 3PG (for walls near plants).

*Limitations*

Installation is in accord with this manual Nuralite 3PT Tanking Membrane Installation Manual 2016 Edition 5 available on the Nuralite website and the Nuralite Building Products Quality Plan 2016 v1 assessed by BEAL Certification Services Ltd

Only on a structure complying with the New Zealand Building Code. It may be installed directly onto the following substrates

- concrete substrates complying to NZS 3101 (2006)
- concrete block surfaces NZS 4229 (2013) with mortar joints flush.
- compacted hardfill up to 600mm in depth installed complying with the requirements of NZS 3604 (2011) (for use with Nuraply 3PTM)

The design and construction of the substrate, control joints, junctions and allowances for ventilation, movement, condensation control, and fire safety provisions is specific to each building, and therefore is the responsibility of the building designer and building contractor. These matters are all outside the scope of this Codemark.

Product selection and system design is the responsibility of the specifier. Before making their selection they must consider

- likelihood of hydrostatic pressure and
- natural ground is free of contaminants and
- whether trees or plants may be located adjacent to building where their roots may damage the membrane. In this case Nurapy 3PG should be used as an alternative to Nuraply 3PT.

Any construction details outside those listed in this manual are outside the scope of this Codemark.

The Nuraply 3PT system must be installed with suitable wall drainage and membrane protection in place when used on walls. The underslab substrate must be prepared with compacted sand blinding or site concrete on compacted hard fill.

The Nuraply 3PT system is capable of withstanding 2 head (20m) of water pressure. However in situations of hydrostatic pressure which may not be drained, such as below sea level or the watertable, the products may be used only in conjunction with specific engineering design. In these cases Nuralite must be consulted for specification and design input before work commences.

The membranes must be installed only by Nuralite Waterproofing Ltd approved installers.

Attention must be paid to application temperature ranges, the necessary requirements for storage of products and their use by dates.

The Nuraply 3PT Tanking Membrane System complies with the New Zealand Building Code.

As an explanation of compliance with Building Code criteria under s269 (1) of the Building Act 2004 –

| | |
|---|---|
| Clause B1.3.2 | Compliance has been established by testing to ensure that tensile strength, elongation, compression, and seam strength are adequate. |
| Clauses B1.3.3 (b) and (e) | Compliance has been established with testing to ensure resistance to water absorption, hydrostatic pressure, earth pressure, differential movement over substrate joints are adequate. |
| Clause B2.3.1 (a) | With normal maintenance the Nuraply 3PT membrane system is assessed for at least a 50 year durability period as part of the envelope building elements as it does not degrade when buried. |
| Clause B2.3.2 (a) | The membrane is not installed over elements with lesser durability than 50 years. |
| Clause E2.3.2 | The membrane system prevents the penetration of moisture as it has been tested for water absorption, vapour transmission, hydrostatic pressure and joint seam strength to satisfy this requirement. |
| Clause E2.3.3 | The membrane system does not absorb or transmit moisture so protects the building elements from dampness or damage. |
| Clause F2.3.1 | No gases liquid or particles are emitted by materials that could give rise to harmful concentrations on surfaces or in atmosphere of any space. |

Compliance with other clauses have been considered and found not applicable.

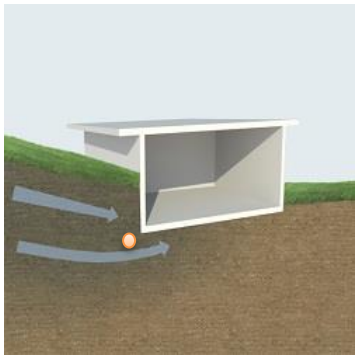
## 2. Product Overview

This manual is designed for waterproof tanking of below grade level of a building which is wholly or partly below ground. Buildings with deep multi-storey basements or constant hydrostatic pressure present specialist design and installation problems which are not covered by this manual.

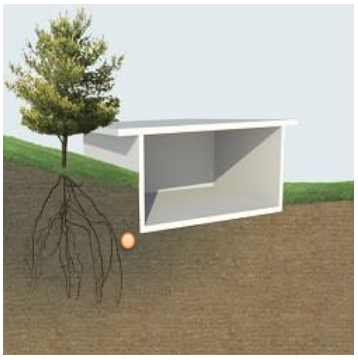
The Nuraply 3PT range is recommended in situations where some below ground waterproofing of walls, foundations and floor slabs is required. This installation manual covers situations where the wall has drainage installed to remove ground water from the area.

The membranes are capable of withstanding 2 head (20m) of water pressure. However in situations of hydrostatic pressure which may not be drained, such as below sea level or the watertable, the products may be used only in conjunction with specific engineering design. In these cases Nuralite must be consulted for specification and design input before work commences.

Alert Nuralite if you have concerns about the environment or localized watertable.



**Waterproof tanking**
3PT on wall /
3PTM underslab



**Waterproof tanking**
3PG on wall /
3PTM underslab

Nuraply 3PT system is used to waterproof vertical surfaces. No plants may be located nearby unless Nuraply 3PG (with an anti-root inhibitor inbuilt) is used instead. Throughout this document where 3PT is mentioned it covers 3PT or 3PG

Nuraply 3PTM is used for underslab and foundation waterproofing. Laid chip side up it keys into the poured concrete slab.

Any failure or deficiency of inaccessible below ground waterproofing of a structure, can be very difficult and expensive to correct.

Nuraply is a positive (rather than passive) waterproofing system that is watertight immediately upon installation.

It is common practice to use polythene vapour barriers under slabs. These barriers are not part of the waterproofing system and cannot be sealed to the Nuraply 3PT system to form a complete waterproofing system. As described in BRANZ Bulletin 397, Nuralite does not recommend the mixing of materials.

Nuraply 3PT external tanking application is designed for permanent waterproofing. Full integrity and benefit in service will be achieved by close supervision of the system application to ensure correct design and good detailing on site. Care must be taken once the membrane is installed to ensure it is not damaged prior to backfilling. Ensure correct placement of protection boards to provide a barrier from later physical or mechanical damage.

The essential elements of basement waterproofing are:

1. The structural wall
2. The waterproofing membrane
3. Protection of the membrane
4. Adequate drainage from behind the wall
5. Surface drainage at or near ground level

# 3. Nuraply 3PT Waterproofing System Components

### Tanking Membranes

*Nuraply 3PT Tanking Membrane*

Nuraply 3PT is a modified bitumen with a 180gm/m² spunbound composite polyester reinforcement, with a thin thermofusible film on one side and sand on the other.

*Nuraply 3PTM Underslab Membrane*

Nuraply 3PTM reinforced fibre asphalt with a mineral chip face to key into slab. A flexible, tough, waterproofing system applied and joined by welding. Nominal thickness of 3mm.

The chip surface on the Nuraply 3PTM makes the membrane suitable for exposure to UV light. It should be used as the tanking membrane on all surface that is exposed to UV.

*Nuraply 3PG Tanking Membrane*

Nuraply 3PT is an modified bitumen with a 180gm/m² spunbound composite polyester reinforcement, with a thin thermofusible film on one side and sand on the other. Incorporated into the membrane is an inbuilt root inhibitor.

*Nuraflux Primer*

A solvent-based, bituminous primer designed to penetrate concrete or ply surfaces and provide a bondable surface. Supplied in 20ltr metal pails.

### Additional Components Supplied by Nuralite

*Nurapatch*
Two pack high strength finishing & repair plaster

*Profili Bitumen Filet*
A 25mm triangle of bitumen that may be installed at internal corners instead of building a mortar filet.

*Nuralite Protection Sheet*
Rot-proof board for use as a protective barrier and drainage medium behind retaining walls.

*Termination Bar*
20mm x 3mm metal strip predrilled to allow mechanical fixation of the Nuraply 3PT membrane.

**Accessories supplied by Others**

*Superswell 47B Waterstop (Supplied by Markham)*

A controlled hydrophillic swellable gasket that expands in a controlled fashion when exposed to moisture, forming a seal in concrete joints. May be used at the junction of a poured concrete wall and a concrete floor slab.

*FixAll 220 MS Sealant (Supplied by Holdfast)*

High performance MS sealant

*Sharkseal (Supplied by Holdfast)*

Bitumen adhesive

*Megaflo Drainage (Supplied by GeoFabrics Ltd)*

Megaflo® panel drain is a high strength high flow panel drain manufactured from HDPE and wrapped in a bidim® A14 geotextile and is available in sizes from 170mm to 450mm each with its own range of drainage fittings.

*Jubilee Clip*

An adjustable steel band secured with a screw.

Store NURALITE waterproofing systems rolls and accessory materials under conditions that ensure no deterioration or damage. Store in shade or cover in hot sun. Protect liquid components from freezing.

# 4. Health and Safety

An applicator's wellbeing is paramount.

**Do not enter a worksite, commence work or continue working if:**

1. You have not been adequately trained by your employer
2. You have not been briefed about the workplace hazards by the site manager
3. You do not have proper clothing, footwear, safety & workplace equipment.
4. You witness unsafe practices or you believe the workplace is unsafe.

**Use your commonsense and speak up if anything concerns you**.

A few points of particular relevance to Applicators are:

1. Applicators must wear protective clothing including a hat and suitable footwear. In particular, heat resistant gloves must be worn to reduce the risk of torch flame and heated bitumen coming into contact with skin. Footwear should have soft, non-slip soles.
2. Working with a gas torch is hazardous and requires care both for the Applicator, other associated personnel, and other persons on the work site.
3. Regular checks of all gas equipment to ensure that it is in good working order and safe for use. All personnel who use this equipment should be trained in its proper use and maintenance.
4. As torch-work can create the risk of fires, including smouldering fires, the Applicator must be trained in fire prevention and the proper extinguishing of fires. On every job fire extinguishing equipment must kept close to the Nuraply 3PT installation area and be in good working order.
5. First aid equipment must be provided on site and work personnel trained in first-aid procedures.
6. Tanking work is performed in confined spaces. Before entering a space ensure it is safe to work in and particularly ensure that banks are well formed.

# 5. Project Administration/Supervision

Many poor jobs are found to result from membranes being laid on top of a badly constructed substrate.

Before commencing laying any Nuraply 3PT systems, the installer must be sure that the substrate is ready by receiving a completed Nuraply 3PT Substrate Readiness Checksheet from the head contractor. The installer should contact Nuralite in case of any concerns.

Be sure to store the completed forms and supply them to Nuralite when the Materials Defects Warranty is applied for.

Before commencing work, the Applicator must determine:

- That all the building consents, if required, have been issued and the specifications and detailed drawings are workable and suitable for the project
- That there is nothing that will compromise the Applicator's required responsibility under the NZ Building Code or your ability to follow these instructions and thus issue a warranty on your workmanship
- That no existing conditions at the site prevent the Applicator from performing in a professional and safe manner
- That the product to be installed is as per the building consent documents.
- A substrate readiness checklist has be completed by the head contractor (see section 9) and then a copy must be forwarded to Nuralite's Head Office.

## 6. Nuralite Site Requirements

It is the responsibility of the head contractor to provide a suitable site and correctly prepared substrate for the applicator. Work should not commence until the site requirements are all meet.

DE-WATERING (Responsibility of Head Contractor)

It is important to adequately drain the area where the membrane is being installed.
To drain, dig a hole next to the installation area to position the pump. The hole should be deeper than the area to be drained. Use the pump to remove water from the installation area. In large construction situations a full site dewatering system may be required.

Maintain water level at not less than 300mm below the level of the base concrete during the progress of the tanking work and until waterproofing of the walls is complete.

THE UNDERSLAB SUBSTRATE SHOULD BE:

- Granular fill, sand blinding and compaction to comply with the requirements of NZS 3604.
- Dress off surface of hardfill with a 15mm layer of fine, clean sand rolled to a smooth surface. Alternatively, a screed of site concrete no less than 50mm thick, can be used in place of compacted sand.
- Granular fill in excess of 600mm may require a Geotechnical Engineer to investigate the underlying soil substrate layers for specific design requirements.

THE WALL SUBSTRATE SHOULD BE:

- Clean, dry and cured. Dewater must be complete.
- All surfaces are clean and free from voids, spalled areas, loose particles, and sharp protrusions. No projections of sharp materials exist that will cause damage to tanking. Check that masonry joints are struck off flush.
- Smooth off the surface so as not to allow water to track behind the membrane. Remove any projections, sharp edges, boxing lines, and nail spikes, wire-brush and remove all debris, leaving the surface dust-free, oil-free and clean, with nothing that could diminish the adhesion of primers. Fill tie holes flush and smooth with NURAPATCH. Grind off steps or sharp protrusions caused by formwork joints.
- All gaps between panels or blocks must be filled and flush-pointed, with no bridging points or gaps.
- Form oils or release agents and curing compounds must be completely removed.
- Remove back forms to ensure no vapour pressure develops beneath the membrane.
- Fit a minimum of 20mm mortar or Profili bitumen fillets to all internal junctions.
- On an external corner, first grind the corner to produce a smooth 25mm radius or chamfer.
- Allow concrete and masonry to dry to before applying tanking.

DRAINAGE (Responsibility of Head Contractor)

A drainage system to remove water from foundations must be installed. Ensure drain is protected with geotextile cloth to prevent it clogging with fines, and that it is correctly located below the footing with positive drainage.

The drainage system should be designed to cope effectively with the anticipated volumes of water on the site.

# 7. Installing the Nuraply 3PT tanking membrane system

Apply Nuraply 3PT tanking systems only in fair weather with air temperature above 5°C.

Before commencing work confirm that a Nuraply 3PT Substrate Readiness Checksheet has been completed.

### *a) Underslab Membrane (used on top of compacted hardfill)*

Loose lay Nuraply 3PTM as a damp-proof membrane under a concrete slab. The membrane to be laid with mineral chips face up.

Fully heat weld all sheet joints by gas torch. Ensure all joints are well sealed with a minimum lap of 80mm. This is indicated by the presence of a thin bead of melted bitumen at all sheet joints after torching. Ensure the under slab membrane extends 150mm beyond the building perimeter.

Take care when placing reinforcing steel to avoid puncture or damage to the Nuraply 3PTM membrane.

Possibly the most common cause of system failure is damage caused during construction. This often happens at the point where the under slab section of the membrane is left projecting 150mm for later connection to the vertical section and it is not protected. During construction of the structural wall this unprotected section can be perforated by being trodden on, by reinforcing steel, by shuttering braces and pegs or by falling debris.

Ensure the 150mm flap is protected by sandwiching the 150mm flap between two sheets of plywood which are screwed together.

When it is time to install the flap, remove the plywood and bring this flap portion of membrane up and torch to wall base. Install the wall membrane down over the top to form a sound seal.

### *b) Walls And Foundations*

All surfaces are clean and free from voids, spalled areas, loose particles, and sharp protrusions. Check that masonry joints are struck off flush.

PRIMING

Prime the substrate with NURAFLUX at a rate of 0.2-0.3ltr/m², ensuring good even coverage.

Allow reasonable time for the primer to become touch dry and fumes to dissipate. Failure to do this may result in adhesion problems or flashover from ignited vapours.

You may have to re-prime substrates if there is a delay in installing the membrane which results in the primer losing its tackiness. These delays increase the likelihood of adhesion problems due to contamination.

EXPANSION JOINTS

Expansion joints are required between tilt slabs. Apply a cut 100mm wide reinforcing strip of Nuraply 3PT. Mould the reinforcing strip into the joint so that any flexation pushes inward rather than outward.

REINFORCEMENT STRIPS

Apply a cut 100mm wide reinforcing strip of NURAPLY 3PT over all changes in planes and in risk areas such as the joint between the wall and footing.

TORCHING DOWN MEMBRANE

After relaxing the rolls, position the membrane to be installed and roll back up half way. Roll out this portion of the roll and as you do so, slowly move the torch across the back of the roll.

Using the gas torch burn off the polyethylene and create a small bead of molten bitumen along the front edge of the roll. Once the first half is installed, repeat with the opposite half. When the entire roll is bonded to the substrate seam weld all laps. Ensure a bitumen bleed is evident along the length of the lapjoint.

Ensure rolls are installed straight and that a minimum 80mm side lap is maintained, and that a minimum 150mm end laps are formed.

It is critical to ensure all laps are fully formed and that the system is fully watertight. Once it is covered, it is often impossible to get back to the membrane to undertake repairs.

Ensure there is no bubbling of the wall membrane. It is important that it is fully torched to the substrate.

Bring the under-slab membrane up, torching it to the base of the walls. Install the wall membrane over this portion forming the floor-to-wall junction. Ensure a good seal.

PILE CAPS

Clean the top of the pile cap thoroughly and flush smooth with a high strength mortar. Install a 20mm mortar fillet around the pile cap. Prime the area with NURAFLUX ensuring good even coverage. Install a Nuraply 3PT under-flashing by cutting and dressing the under-flashing around the pile cap perimeter and up over the mortar fillet onto the top of the pile cap. Terminate the under-flashing clear of the rebar. In the same way, install the Nuraply 3PT cap-sheet ensuring all laps are well bonded, and that the base-sheet and capsheet membrane cuts are off-set. Ensure all work is fully bonded and a watertight seal is formed.

PENETRATIONS

Cut a star shape pattern in the membrane to form a collar and slip over the metal pipe protrusion. Torch into place and then wrap 150mm wide strip of membrane around the pipe. Torch seal off all edges. Complete detail with a Jubilee clip to provide mechanical termination

MEMBRANE TERMINATION

Terminate the membrane using a compression flashing and sealant, or terminate into a chase if overflashing.

Use Nuraply 3PTM for tanking any areas exposed to UV or overlay a second layer of Nuraply 3PTM in exposed areas.

As sections of tanking are completed, arrange for inspection of the work before covering with protective sheets, walls, or slabs.

PROTECTION OF THE INSTALLED WALL MEMBRANES

It is vital to protect the membrane from damage, either from workers on site or during the backfilling operation. Equally important is ensuring the area adjacent to the membrane is free flowing to minimize the buildup of hydrostatic pressure.

The Nuralite protection board is designed to prevent damage from the construction process generally as well as possible damage from backfill material.

Spot bond the boards in place using Sharkseal bitumen adhesive.

## 8. Drainage behind the wall (by others)

Subsoil drainage shall be provided to divert groundwater from behind the basement wall to an appropriate outfall beyond the building. The drainage should be able to cope with the anticipated volumes of water likely on site.

- The subsoil drainage system must use a pipe of at least 100 mm diameter, with openings to collect water,
- Have the subsoil pipe at the base of the wall with invert a minimum of 200 mm below floor level and pipe sloped a minimum of 1:200 to the outlet,
- Incorporate a geotextile fabric or other filter material to prevent silting of the pipe,
- Have access for cleaning subsoil pipe, and
- Have, for the height of the buried wall, free draining backfill above the pipe.

In cases where the tanking is of a deep basement where there is the possibility of ground water under pressure, it is wise to incorporate a sump fitted with a float-switched pump to clear water away.

## 9. Drainage of surface water at ground level

All surface level water must be diverted away from the basement wall area – the less water near the wall the better.

Simple design features include:

- Sloping the surrounding area away from the wall with a minimum 1:30 slope
- Sealing the surface adjacent to the wall with a clay cap or concrete mowing strip
- Provide channels or drains to lead water away from the building
- Installing subsoil drainage where the surrounding ground is very wet.

# 10. Nuraply 3PT Substrate Readiness Checksheet

Project Name: _____

Form Completed by: _____ Company: _____
Area ready: _____ Applicator: _____

**Worksite**

Work area created with sufficent space to perform job safely. ☐

Water level more than 300mm below the level of the base concrete. ☐

**Underslab**

Compacted hardfill up to 600mm in depth installed complying with the requirements of NZS 3604 (2011). ☐

Reinforcing steel has been installed with care to avoid unnecessary puncture or damage. ☐

Protection in place for 150mm overlap of the Nuraply 3PTM ☐

**Concrete Walls**

Structure complies to the New Zealand Building Code and concrete complies with NZS 3101 (2006), blocks complies with NZS 4229 (2013) ☐

Concrete cured with curing membranes removed. Concrete substrate contains less than 5% moisture content. ☐

Cavities and cracks filled with repair mortar, flushed off and cured. ☐

Waterstops installed to construction joints as per specification - located 50mm from rebar. ☐

Concrete surface firm with any soft concrete or laitance removed. ☐

All protrusions removed. Surface free from foreign matter ☐

Mortar or Profili bitumen fillets to all upstands and smooth 5mm radius to all external edges ☐

If terminating into a chase, pre-form the chase and ensure it is straight and 20mm deep. ☐

Substrate clean, firm and suitable condition for laying the Nuralite system. ☐

Confirmation that Nuraply 3PT or Nuraply 3PG (if plants will be nearby) to be installed. ☐

Signed by head contractor Date:

# 11. Nuraply 3PT Installed Product Checksheet

Project Name: _____

Form Completed by: _____ Company: _____
Area ready: _____ Applicator: _____

| | |
|---|---|
| Concrete Substrate checklist completed before work commenced. | ☐ |
| Any movement joints installed to approved specification/detail. | ☐ |
| Mortar/concrete fillets fitted to all internal junctions and corners chamfered at a 45° radius. | ☐ |
| All corners and upstands incorporate reinforcing or underflashing | ☐ |
| Under-slab membrane extends beyond footing and carefully protected until vertical membrane installed. | ☐ |
| Side laps 80mm and end laps 150mm fully torched and seamed. Bleed visible on all joints. | ☐ |
| All penetrations installed to specification including under/over flashings. | ☐ |
| Junction of the floor and wall membranes installed to specification fully bonded and watertight. | ☐ |
| All non-standard details installed as per pre-approved specification (attach approved drawings). | ☐ |
| Any membrane punctures or mechanical damage to membrane repaired to specification. | ☐ |
| Membrane termination completed to approved detail. | ☐ |
| Specified drainage system installed below footing as per specification. | ☐ |
| Membrane protection boards installed correctly. | ☐ |
| Membrane fully adhered to substrate with no bridging, bubbling, or delaminating. | ☐ |
| Overall installation free of wrinkles, bubbles, creases and splits. | ☐ |

Signed by head contractor Date:

# 12. Data Sheets

## NURAFLUX PRIMER –
### TECHNICAL DATA SHEET

### DESCRIPTION AND AREAS OF USE

Nuraflux Primer is a bitumen based adhesive solvent solution which is specifically formulated to provide excellent adhesion for Nuralite Waterproofing Membranes under many kinds of surface conditions. Nuraflux Primer is an integral part of the Nuralite Waterproofing System and sufficient primer must be used on dry surfaces to condition them to be dust free so that the substrate is suitable for the application of Nuralite Waterproofing Membranes.

Used to prime all structural concrete, masonry, or wood surfaces on which waterproofing membranes will be used.

Designed to be used on applications down to –4°C.

May be used on horizontal surfaces, but remains tacky, and precautions must be used in this application to prevent contamination of the Primer surface prior to installation of the membrane.

May be used on all concrete block and brick wall conditions.

### APPLICATION

Nuraflux Primer may be applied with roller, brush or spray. A roller with a heavy nap should be used to carry sufficient material to the area being primed.

Apply all Nuraflux Primer to a clean, dry, dust free and frost free surface at a coverage of approximately 5 sqm/litre. The primer should be spread sufficiently to avoid areas of excess material. Areas of excess material will lengthen the drying time on the application of the primer.

Nuraflux Primer will dry in a minimum of one hour - may dry quicker due to drying conditions, such as wind and warmth.

This product is black in colour and will remain tacky when dry.

The application of primer should be limited to what can be covered with waterproofing membrane in one working day. Any areas not covered with membrane during the day must be reprimed - be sure to cover all open containers when not applying primer, as the primer is volatile.

### SAFETY, STORAGE & HANDLING INFORMATION

Nuraflux Primer vapours are flammable. User should review Material Safety Data Sheet (MSDS) for this product and follow safety instructions listed therein.

### TRANSPORT CLASSIFICATION

IMDG Class 3.1
UN No. 1294

# NURAPLY 3PG
## TECHNICAL DATA SHEET

### DESCRIPTION AND AREAS OF USE

Waterproofing root-resistant membrane, consisting of a non-woven polyester reinforcement, coated with plastomer bitumen. Root resistant top layer for waterproofing systems under green roofs with selected plants or in areas where there is the risk of membrane attack from plant roots.

### FINISHING

- Top finished with sand
- Underside with a thermofusible film

### APPLICATION

Lay the second Nuraply 3PG layer by heat fusing over the cleaned repaired and NURAFLUX primed (if necessary) surface of the first layer. Joints in the second layer must not correspond with joints in the first layer. Second layer joints to be welded lap-joints, minimum 80mm wide down roll edges and minimum 100mm wide across roll ends, to the Nuraply 3PG supplier's requirements. Roll junctions must be staggered to avoid 4 layer lap-weld build-up of Nuraply 3P at corners. Ensure unobstructed drainage flow at outlets.

### COMPOSITION

- carrier: non-woven polyester 180 g/m²
- plastomer bitumen, consisting of + 70% bitumen and + 30 % atactic polypropylene (APP), with addition of a root-rejecting element.

### TECHNICAL SPECIFICATIONS (average values)

- Tensile strength: (UEAtc)
  - longitudinal: 700 N
  - transversal: 450 N
- Elongation at break (UEAtc)
  - longitudinal: 30 %
  - transversal: 40 %
- Low temperature flexibility: -8°C
- Heat resistance (EN 1110): 140 °C
- Dimensional stability (EN 1107-1): < 0,4%
- 4 year period FLL German root-test accomplished

## DIMENSIONS

- Thickness : 4 mm
- Length : 7.5 m
- Width : 1 m
- Weight : 36.1 kg

## SAFETY, STORAGE & HANDLING INFORMATION

- Do not pile pallets and keep rolls upright
- Store indoors

## TRANSPORT CLASSIFICATION

N/A

# NURAPLY 3PT
## TECHNICAL DATA SHEET

### DESCRIPTION AND AREAS OF USE

Waterproofing membrane consisting of straight run bitumen heavily modified with polymers (APP = Atactic Polypropylene) and reinforced with a non-woven polyester.

### FINISHING

- Top surfaced finished with white calibrated sand
- Underside finished with a smooth thermofusible film

### APPLICATIONS

- waterproofing of underground walls

### COMPOSITION

- Reinforcement : non-woven polyester 180 g/m²
- Coating mass : plastomer bitumen, consisting of ±70 % bitumen and ±30% atactic polypropylene (APP).

### TECHNICAL SPECIFICATIONS (average values)

- Tensile strength (U.E.A.t.c.)
  - longitudinal : 600 N
  - transversal : 550 N
- Elongation at break (U.E.A.t.c.)
  - longitudinal : 40 %
  - transversal : 40 %
- Resistance to heat (U.E.A.t.c.) : > 140°C
- Low temperature flexibility (U.E.A.t.c.) : -5°C
- Dimensional stability : ≤ 0,5%
- Tear resistance (U.E.A.t.c.)
  - longitudinal : 160 N
  - transversal : 160 N

## DIMENSIONS

- Thickness : 3 mm
- Length : 10 m
- Width : 1 m
- Surface : 10 m²
- Average weight : 41 kg

.

## SAFETY, STORAGE & HANDLING INFORMATION

- Do not pile pallets
- Store indoors

## TRANSPORT CLASSIFICATION

N/A

# NURAPLY 3PTM
## TECHNICAL DATA SHEET

### DESCRIPTION AND AREAS OF USE

Waterproofing membrane consisting of straight run bitumen heavily modified with polymers (APP = Atactic Polypropylene) and reinforced with a non-woven polyester.

### FINISHING

- Top surfaced finished with a mechanically rolled slate layer offering excellent bonding with PP film on the 8 cm overlap.
- Underside finished with a thermofusible film

### APPLICATIONS

- Waterproofing underneath poured floor slabs

### COMPOSITION

- Reinforcement : non-woven polyester
- Coating mass : plastomer bitumen, consisting of ±70 % bitumen and ±30% atactic polypropylene (APP).

### TECHNICAL SPECIFICATIONS (average values)

- Tensile strength (U.E.A.t.c.)
  - longitudinal : 600 N
  - transversal : 550 N
- Elongation at break (U.E.A.t.c.)
  - longitudinal : 40 %
  - transversal : 40 %
- Resistance to heat (U.E.A.t.c.) : > 140°C
- Low temperature flexibility (U.E.A.t.c.) : -5°C
- Dimensional stability : <0,5%
- Tear resistance (U.E.A.t.c.)
  - longitudinal : 160 N
  - transversal : 160 N

## DIMENSIONS

- Thickness : 3 mm
- Length : 10 m
- Width : 1 m
- Surface : 10 m²
- Average weight : 41 kg

.

## SAFETY, STORAGE & HANDLING INFORMATION

- Do not pile pallets
- Store indoors

## TRANSPORT CLASSIFICATION

N/A

# NURAPATCH
## TECHNICAL DATA SHEET

DESCRIPTION

A highly polymer modified, high specification cement render that features strong adhesion and tensile strength development combined with a rapid yet practical through-cure in thicker render sections, with outstanding cured strength, resilence and low shrinkage. The polymer modification used is pure acrylic and not PVA or cellulosic as is common with simpler single pack materials, with resultant far improved alkaline durability, resilience and long-term cracking resistance.

A particular benefit has been careful attention to application mix rheology to give excellent trowel “feel” and build capability allowing ready attainment of specification thickness with reduced application effort. This product can be applied from a feather edge to 20mm thickness and work can often then be completed in a single application, with major labour cost savings achieved.

Major areas of use include finishing and fairing of concrete repair work, flushing of blockwork, and plaster render repairs.

- Water based for ease of use and cleanup.
- Simple, controlled mix on site combining a pre-measured bottle liquid and bagged solids blend. Mix working time “pot-life” – 1 hour plus.
- Ease of trowelling and single pas build capability from feather edge to 20mm.
- Virtually no cure shrinkage, allowing ready attainment of specification thickness and forming of details and corners in a single application.
- Labour saving, and extremely cost effective.
- Low temperatures cure, down to O°C. Fast through cure minimises weather delays and ensures timely job completion.

TYPICAL PROPERTIES

| | |
|---|---|
| Specific Gravity (Mix Packaging) | 30kg pack, combining 5 litre emulsion bottle and 25 kg bagged powder blend |
| Shelf life (Unopened) | Minimum 12 months |
| Working time/"pot-life" | Minimum 1 hour @ 25° C. |
| Building and usage | For fairing work, between a feather edge and 20mm |
| Appearance | Highly thixotropic wet mix, low gloss grey mass when cured.<br><br>Non-flammable. Wet material is alkaline - Avoid eye and skin contact. |

APPLICATION

Apply to clean surfaces free of loose or friable material. Ideally concrete surface to be patched, should be damp, (but not wet), rather than totally dry to avoid undue suction and cracking. Alternatively, the emulsion component may be "slurred" with an equal amount of Portland cement and this mix used as a thin priming coat. Avoid application in direct sun or in hot windy conditions where this is unavoidable, then keep the new plaster dampened by mist water spray during the first day of cure. This material is cement based and will show efflorescence but because of the high polymer content this is "fixed" and providing a good quality acrylic sealer is used, may be overcoated at three days after application.

Stir or shake the liquid bottle and decant contents into an appropriate mixing container, for example a clean 20 litre pail.

- Add a full bag of the powder blend, slowly, while stirring continuously with a heavy duty drill to avoid lumping. A 30kg packaged unit will yield about 14 litres of mixed material. When all powder has been added continue to mix briefly to a uniform consistency.

- The mixed material has a usable working life in excess of 1 hour.

- If the material should begin to set up earlier, it may be readily re-stirred to return consistency, otherwise do not add water and attempt to use material that will not restir.

# Markham SUPERSWELL 47B WATERSTOP

**TECHNICAL DATA SHEET**

High expansion butyl bentonite based hydrophilic waterstop

Uses

SUPERSWELL 47B WATERSTOP is butyl hydrophilic polymar based gasket, which has a built-in delay system that activates after approximately 5-10 days of constant exposure to water.

SUPERSWELL 47 B WATERSTOP is manufactured utilising a specialized mixing process which encapsulates hydrophilic materials into a rubber base creating a controlled, moisture-activated gasket. This gasket has the structural integrity of a rubber-based sealant, the features of a butyl sealant, as well as the ability to expand to create a self-healing joint material.

Advantages

- Requires no site welding
- Easy to handle
- Conforms easily to irregular surfaces
- Does not require split-forming or splicing
- Superswell 47B is non-toxic and requires no special handling instructions

Description

Superswell 47B is a high expansion Butyl Bentonite based hydrophilic waterstop suitable for non-movement construction joints where it is fully contained within the joint. Its volumetric expansion (1.6 times) occurs in all directions and therefore containment is critical. When fully immersed in water, swelling commences within 2 days and reaches full expansion in approximately 10 days, thus placement and concrete cover time is critical in inclement weather conditions.

Design Criteria

For the best results it is recommended that a relatively smooth surface be provided along the line of the Superswell 47B strip however a moderate amount of irregularity can be accommodated. Always ensure that there is a minimum of 50 mm cover from the edge of the concrete to the face of the Superswell 47B.

PRECAUTIONS

Due to expansion forces, SUPERSWELL 47B WATERSTOP should be both detailed and installed with a minimum 50mm clear cover to the face of concrete.

Expansion rate can vary in salt and contaminated water. Increase cover when using light weight, low strength concrete. Ensure the SWELLSTOP 47B gasket is securely fixed to

the surface, prior to concrete being poured, as any gap between gasket and surface will result in the waterstop performance being compromised.

## INSTALLATION INSTRUCTIONS

1. Ensure the surface that SWELLSTOP 47B gasket is to be installed is smooth, to ensure a complete contact for gasket.

2. SWELLSTOP 47B gasket is to be placed on the positive water ingress side of any reinforcing, to ensure structural reinforcing is protected from moisture ingress long-term.

3. Unroll required length of SWELLSTOP 47B gasket, apply adhesive to the exposed side, and then apply adhesive to the concrete surface to have the gasket installed. Allow to tack-off.

4. Install SWELLSTOP 47B gasket on to concrete, apply pressure to ensure complete contact with surface.

5. Utilise “concrete nails” every 200mm to hold SWELLSTOP 47B gasket in place, until adhesive is cured.

6. Join lengths of SWELLSTOP 47B gasket, by 45° splice and knead together to form continuous gasket.

7. Ensure the SWELLSTOP 47B gasket is securely fixed to the surface, prior to concrete being being, as any gap between gasket and surface will result in the waterstop performance being compromised.

## TECHNICAL DATA

| | |
|---|---|
| Colour | Black |
| Size | 25x19mm |
| Specific Gravity ASTM D-71 | 1.40/1.45 |
| Hydrocarbon Content ASTM D-297 | 47% min |
| Volatile Matter ASTM D-6 | 1% max |
| Head Pressure | Tested to 40m |
| Application Temperature | -22° to 52°C |
| Service Temperature | -34° to 82°C |

# 13. Installation Details

**THIS DRAWING IS INDICATIVE ONLY AND BY NO MEANS COMPREHENSIVE**

**NOTES:-**
All sharp edges/corners to be arrised
**Preparations**
All surfaces must be smooth, clean and dry. Loose material and sharp protrusions should be removed mechanically. All areas receiving torch applied membrane should be primed with Nuralite Nuraflux Primer. Allow to dry completely. The newly applied primer should be protected from contamination.
**Angles and Corners**
These should be reinforced with a 330mm wide piece of Nuraply 3PT (Reinforcing Strip) equidistant across the previously primed area. Internal and external corners should be waterproofed with Nuraply 3PT Membrane.

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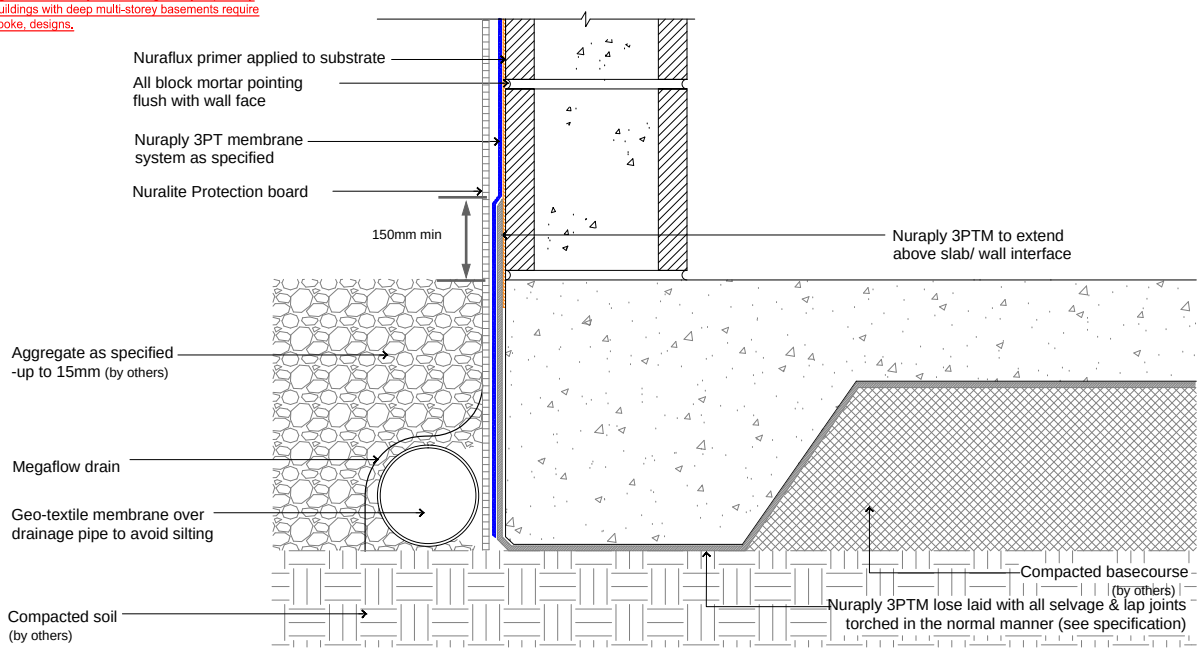
BCS 143316 CMNZ

For waterproofing the lower storey of a building wholly or partially below ground. Buildings with deep multi-storey basements require specialized, bespoke, designs.




NURALITE
THE FLAT ROOF EXPERTS


**Nuralite Waterproofing Ltd.**
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email: info@nuralite.co.nz
web: www.nuralite.co.nz




| | | | |
|---|---|---|---|
| PRODUCT: | **NURAPLY 3PT** | | |
| DESCRIPTION: | TANKING AROUND BASEMENT FOOTING | | |
| SCALE: NTS | PREVIOUS DWG No: New | DWG No: | **TCP-.B1** |
| REVISION: Rev F | DATE: APR 14 | | |

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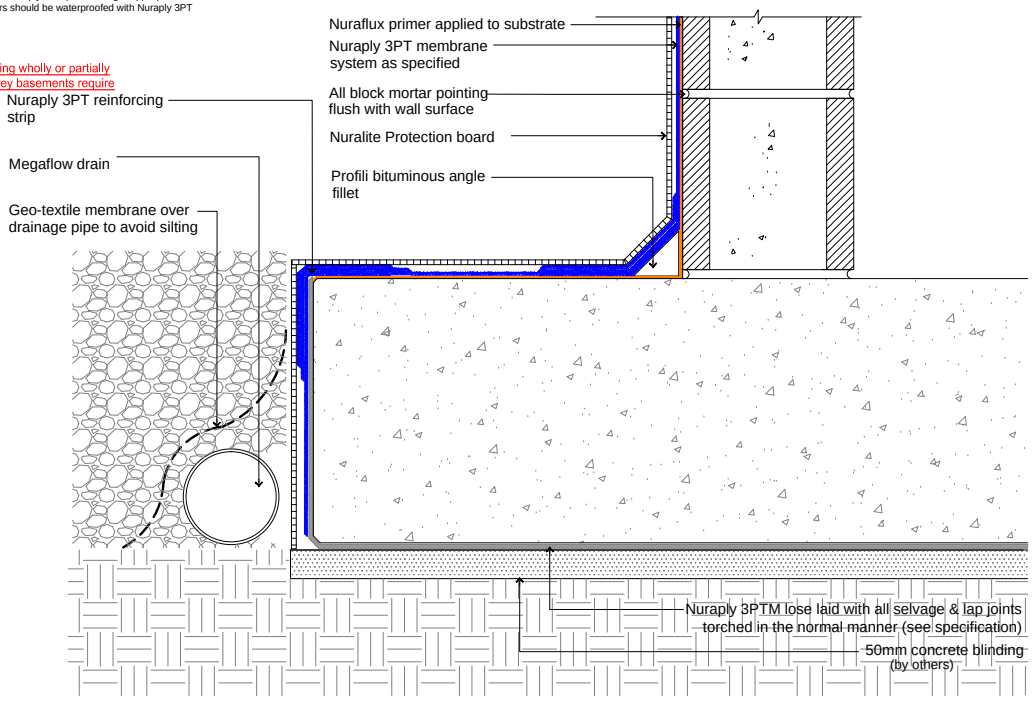


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| | | | |
|---|---|---|---|
| PRODUCT: | **NURAPLY 3PT** | | |
| DESCRIPTION: | TANKING AROUND TOE DETAIL | | |
| SCALE: NTS | PREVIOUS DWG No: New | DWG No: | **TCP-.A1** |
| REVISION: Rev F | DATE: APR 14 | | |

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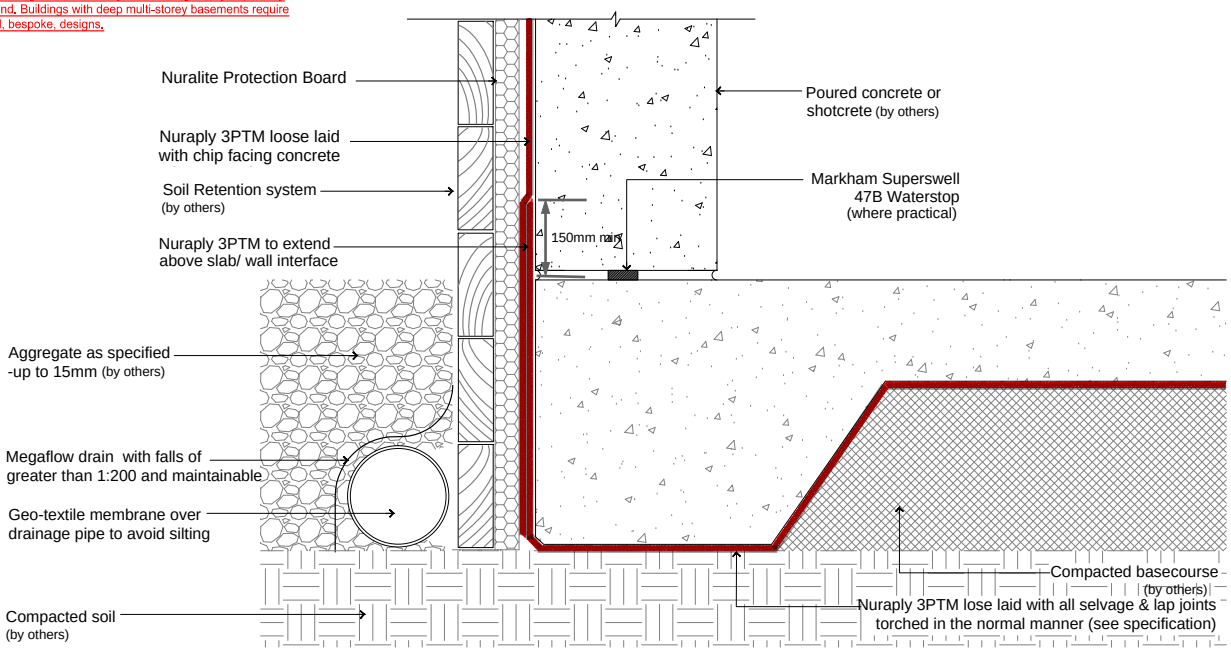



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| | | | |
|---|---|---|---|
| PRODUCT: | **NURAPLY 3PTM** | | |
| DESCRIPTION: | BLINDSIDE WALL TO SLAB TIE IN | | |
| SCALE: NTS | PREVIOUS DWG No: New | DWG No: | **TCP-.B3** |
| REVISION: Rev F | DATE: APR 14 | | |

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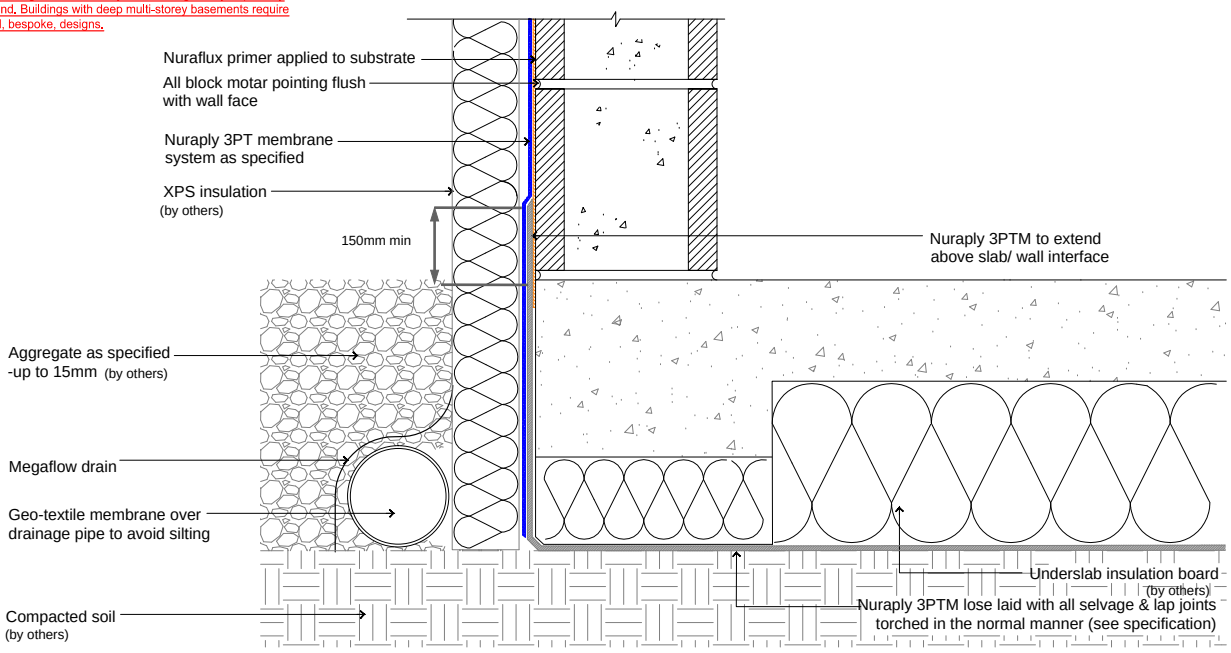



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| | | | |
|---|---|---|---|
| PRODUCT: | **NURAPLY 3PT** | | |
| DESCRIPTION: | TANKING AROUND BASEMENT FOOTING WITH FULL INSULATION | | |
| SCALE: NTS | PREVIOUS DWG No: New | DWG No: | **TCP-.B2** |
| REVISION: Rev F | DATE: APR 14 | | |

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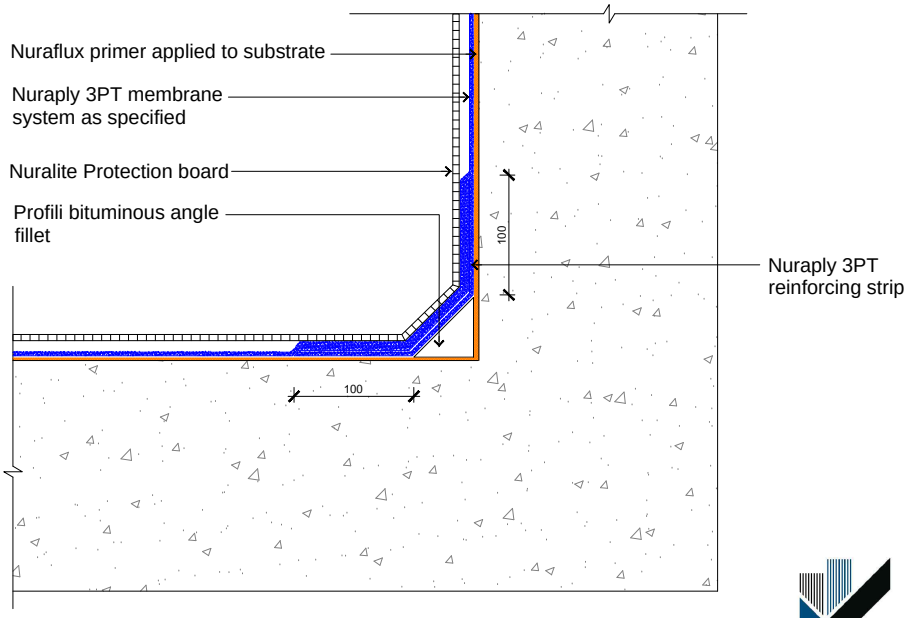
## PLAN VIEW

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| | | | |
|---|---|---|---|
| PRODUCT: | **NURAPLY 3PT** | | |
| DESCRIPTION: | INTERNAL CORNER | | |
| SCALE: NTS | PREVIOUS DWG No: New | DWG No: | **TCP-.C1** |
| REVISION: Rev F | DATE: APR 14 | | |

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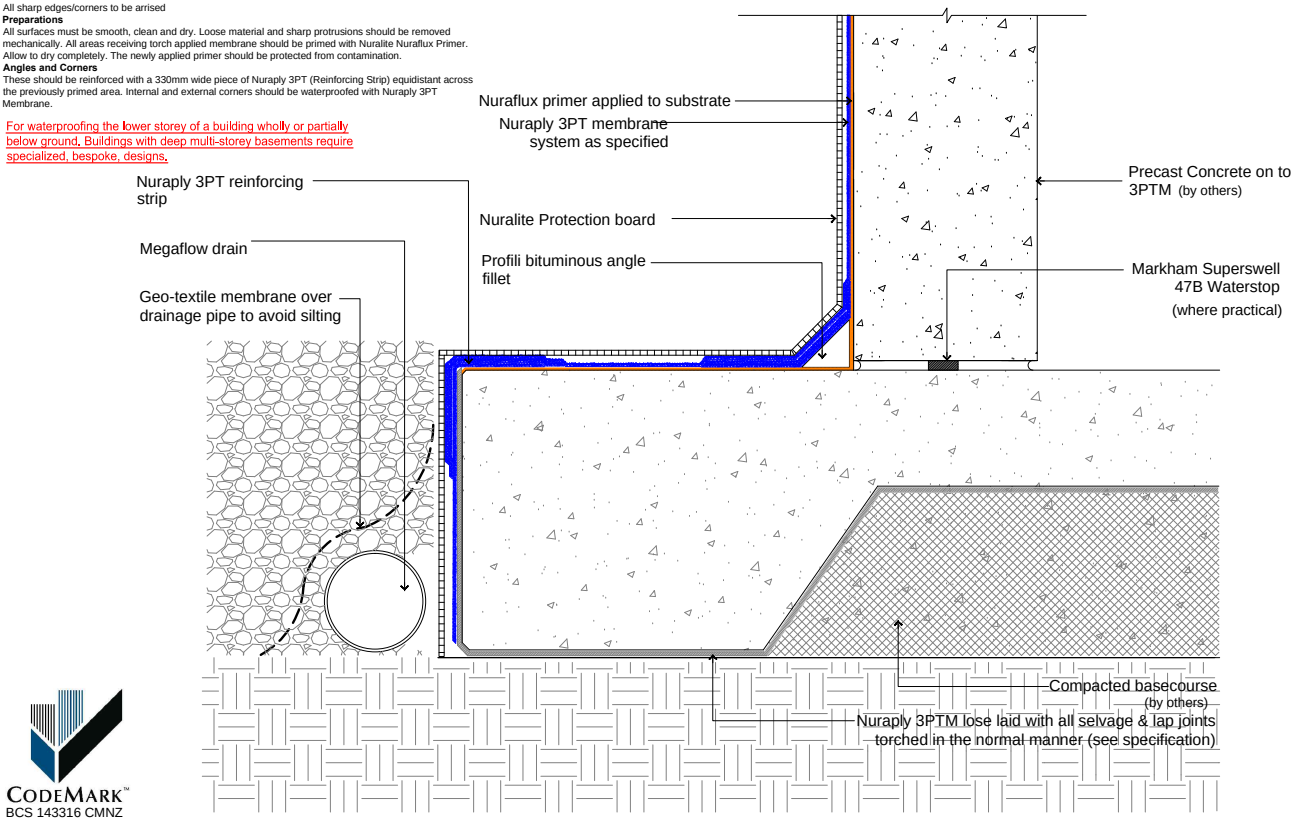


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|---|---|---|---|
| PRODUCT: | **NURAPLY 3PT** | | |
| DESCRIPTION: | PRECAST TO TOE DETAIL | | |
| SCALE: NTS | PREVIOUS DWG No: New | DWG No: | **TCP-.B5** |
| REVISION: Rev F | DATE: APR 14 | | |

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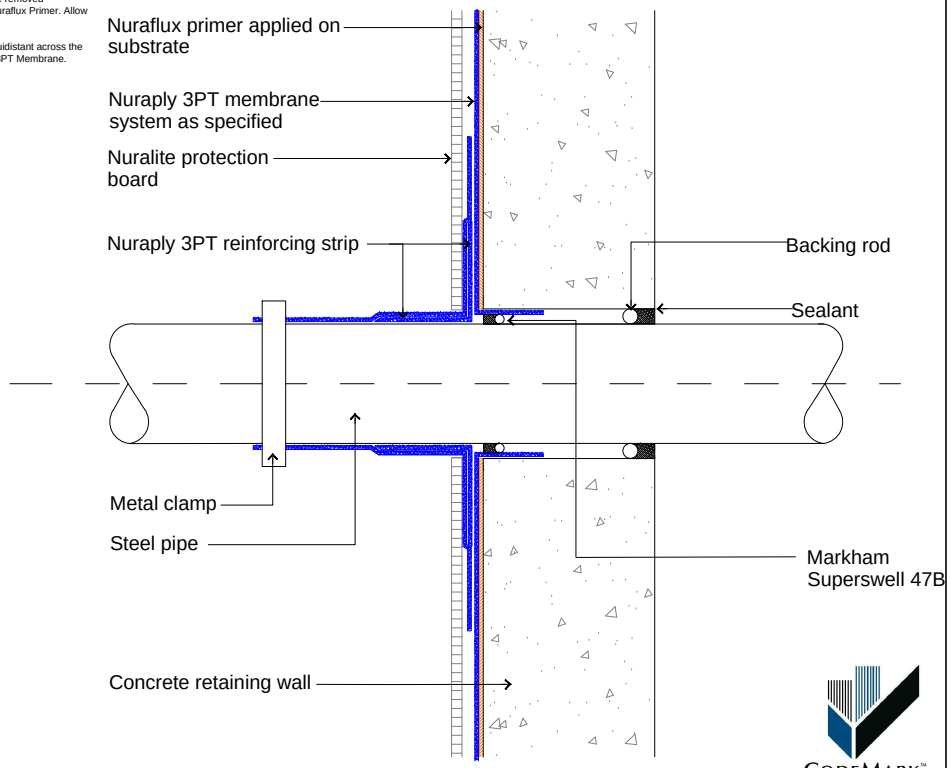


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| | | | |
|---|---|---|---|
| PRODUCT: | **NURAPLY 3PT** | | |
| DESCRIPTION: | CONCRETE WALL PENETRATION | | |
| SCALE: NTS | PREVIOUS DWG No: New | DWG No: | **TCP-.E1** |
| REVISION: Rev E | DATE: APR 14 | | |

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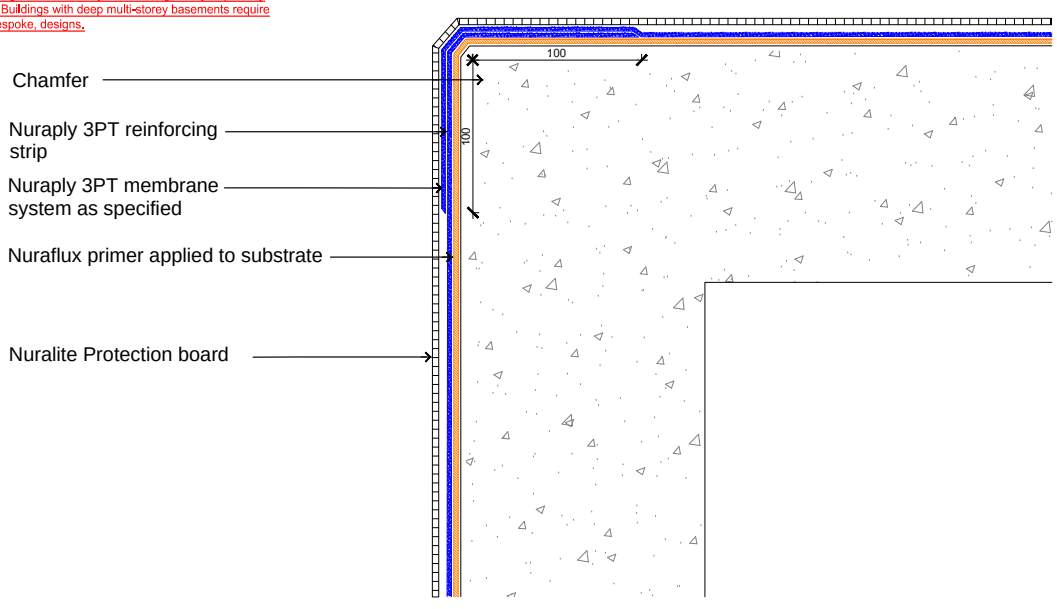
## PLAN VIEW

For waterproofing the lower storey of a building wholly or partially below ground, Buildings with deep multi-storey basements require specialized, bespoke, designs.

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| | | | |
|---|---|---|---|
| PRODUCT: | **NURAPLY 3PT** | | |
| DESCRIPTION: | EXTERNAL CORNER | | |
| SCALE: NTS | PREVIOUS DWG No: New | DWG No: | **TCP-.D1** |
| REVISION: Rev F | DATE: APR 14 | | |

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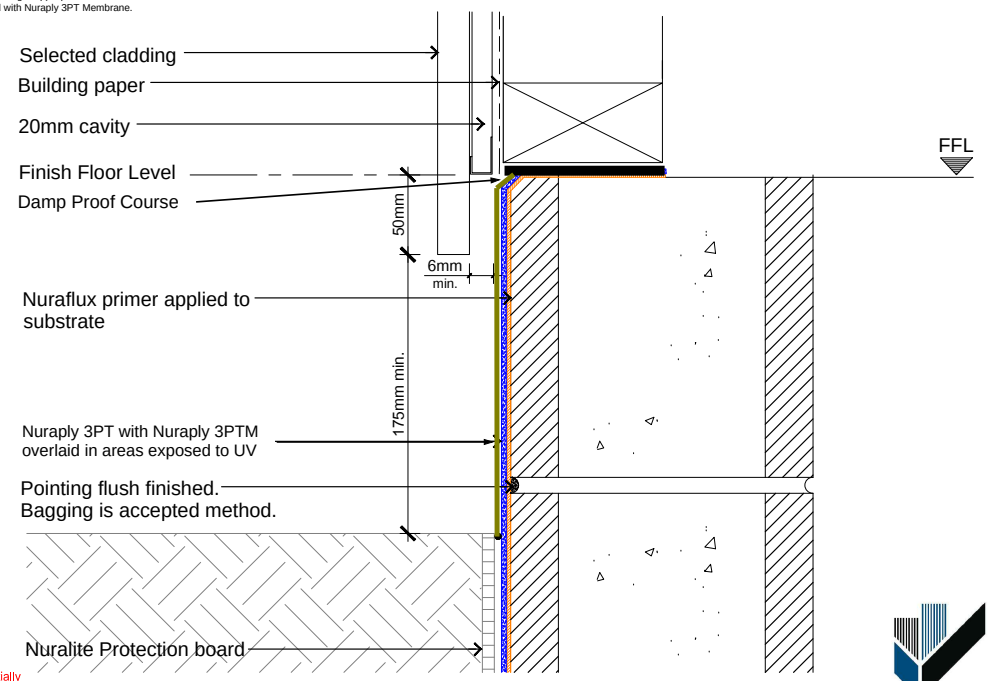


For waterproofing the lower storey of a building wholly or partially below ground. Buildings with deep multi-storey basements require specialized, bespoke, designs.

CODEMARK™
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web: www.nuralite.co.nz




| | | | |
|---|---|---|---|
| PRODUCT: | **NURAPLY 3PT** | | |
| DESCRIPTION: | TERMINATION UNDER BOTTOM PLATE | | |
| SCALE: NTS | PREVIOUS DWG No: New | DWG No: | **TCP-.F1** |
| REVISION: Rev F | DATE: APR 14 | | |

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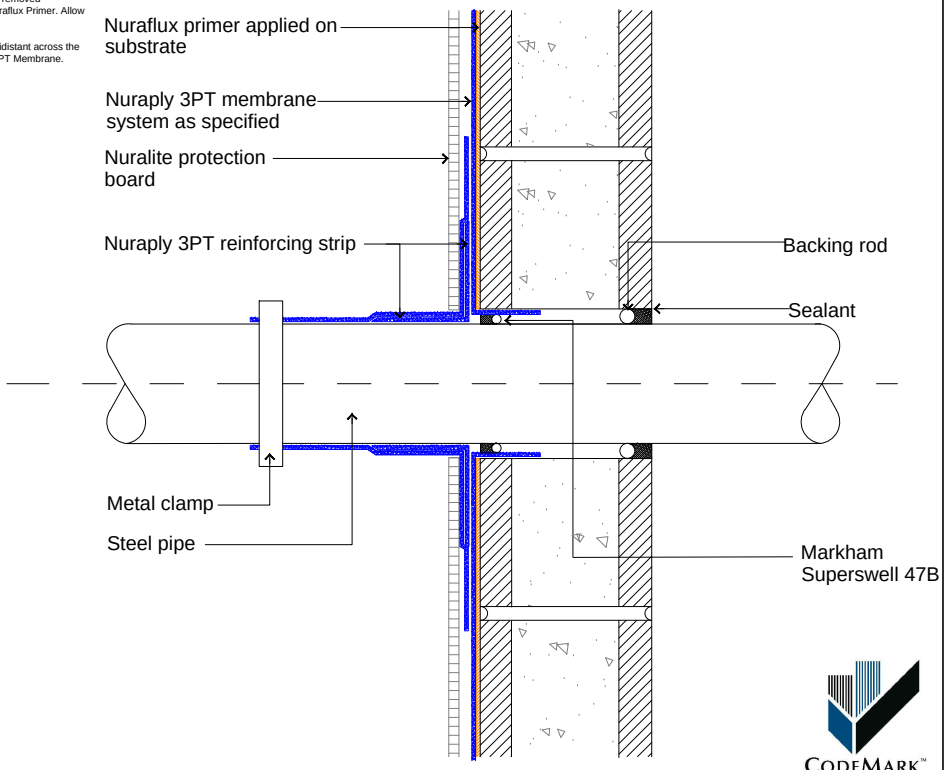


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| | | | |
|---|---|---|---|
| PRODUCT: | **NURAPLY 3PT** | | |
| DESCRIPTION: | BLOCK WALL PENETRATION | | |
| SCALE: NTS | PREVIOUS DWG No: New | DWG No: | **TCP-.E2** |
| REVISION: Rev E | DATE: APR 14 | | |

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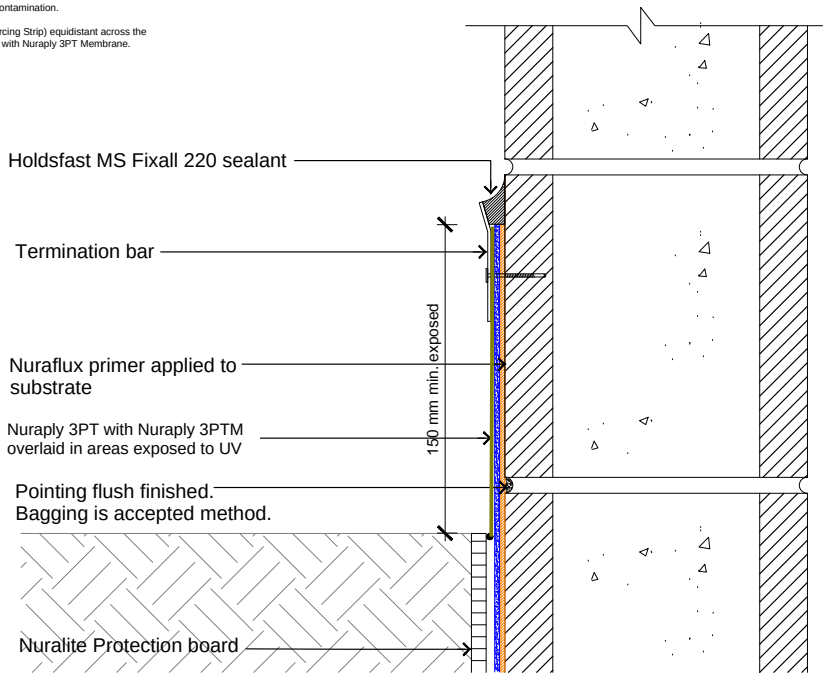



For waterproofing the lower storey of a building wholly or partially below ground. Buildings with deep multi-storey basements require specialized, bespoke, designs.

CODEMARK™
BCS 143316 CMNZ

NURALITE
THE FLAT ROOF EXPERTS

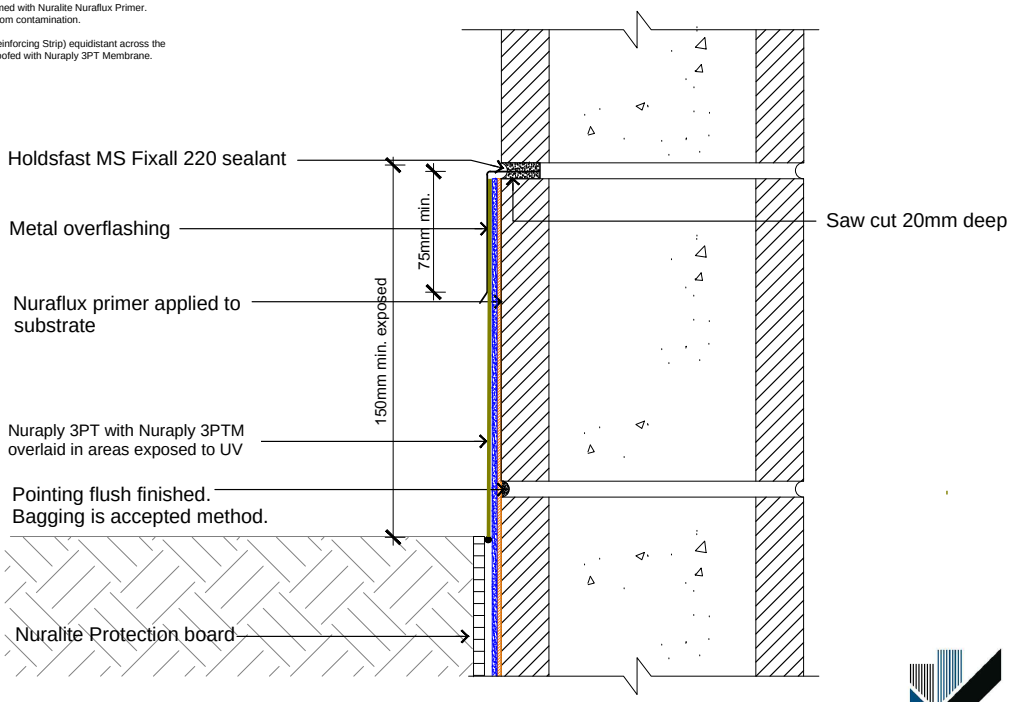

**Nuralite Waterproofing Ltd.**
*53A Victoria Street, Onehunga, Auckland 1061, New Zealand*
TEL: (64) (9) 579-2046
FAX: (64) (9) 579-5136
email: info@nuralite.co.nz
web: www.nuralite.co.nz




| | | | |
|---|---|---|---|
| PRODUCT: | **NURAPLY 3PT** | | |
| DESCRIPTION: | TERMINATION USING TERMINATION BAR | | |
| SCALE: NTS | PREVIOUS DWG No: New | DWG No: | **TCP-.F3** |
| REVISION: Rev F | DATE: APR 14 | | |

**THIS DRAWING IS INDICATIVE ONLY AND BY NO MEANS COMPREHENSIVE**

**NOTES:-**
All sharp edges/corners to be arrised
**Preparations**
All surfaces must be smooth, clean and dry. Loose material and sharp protrusions should be removed mechanically. All areas receiving torch applied membrane should be primed with Nuralite Nuraflux Primer. Allow to dry completely. The newly applied primer should be protected from contamination.
**Angles and Corners**
These should be reinforced with a 330mm wide piece of Nuraply 3PT(Reinforcing Strip) equidistant across the previously primed area. Internal and external corners should be waterproofed with Nuraply 3PT Membrane.




TANKING UNDER THE SLAB MUST BE CONSIDERED WHEN SLAB FFL (finished floor level) IS 300mm BELOW OUTSIDE FFL

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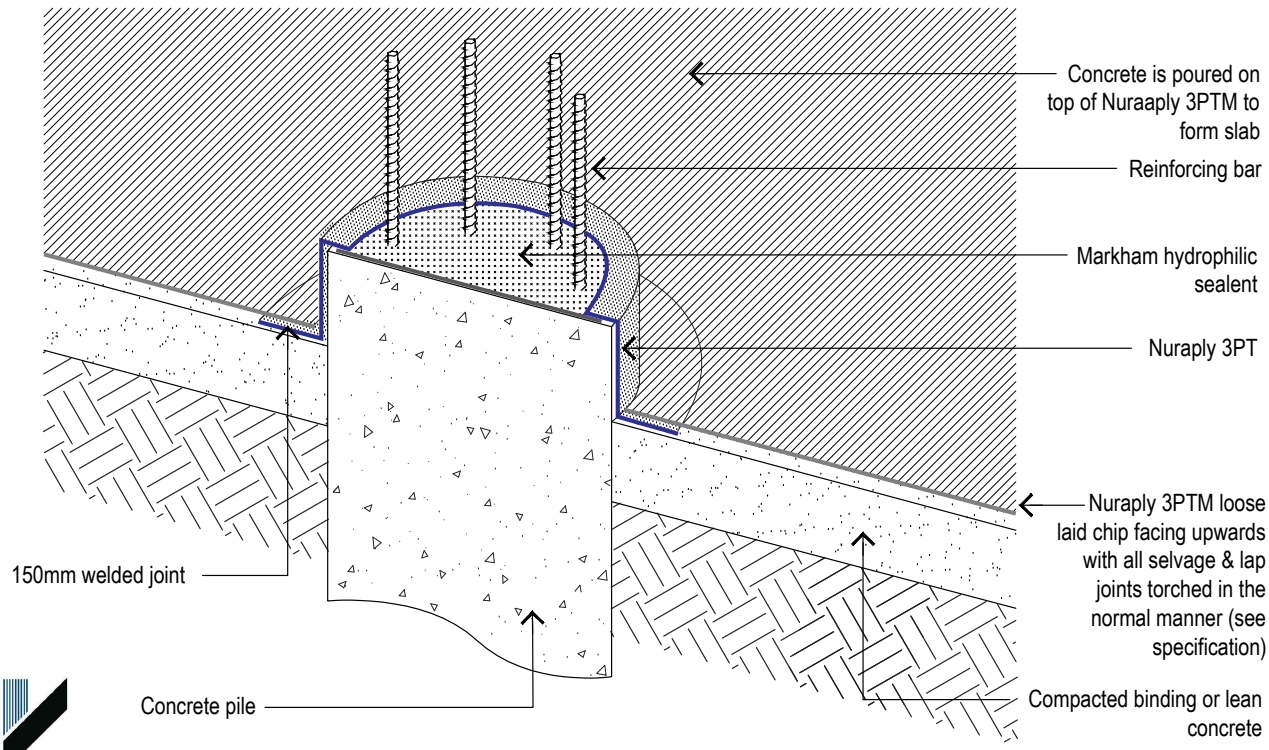
| | | | |
|---|---|---|---|
| PRODUCT: | **NURAPLY 3PT** | | |
| DESCRIPTION: | TERMINATION INTO CHASE | | |
| SCALE: NTS | PREVIOUS DWG No: New | DWG No: | **TCP-.F2** |
| REVISION: Rev F | DATE: APR 14 | | |

THIS DRAWING IS INDICATIVE ONLY AND BY NO MEANS COMPREHENSIVE




ISOMETRIC VIEW

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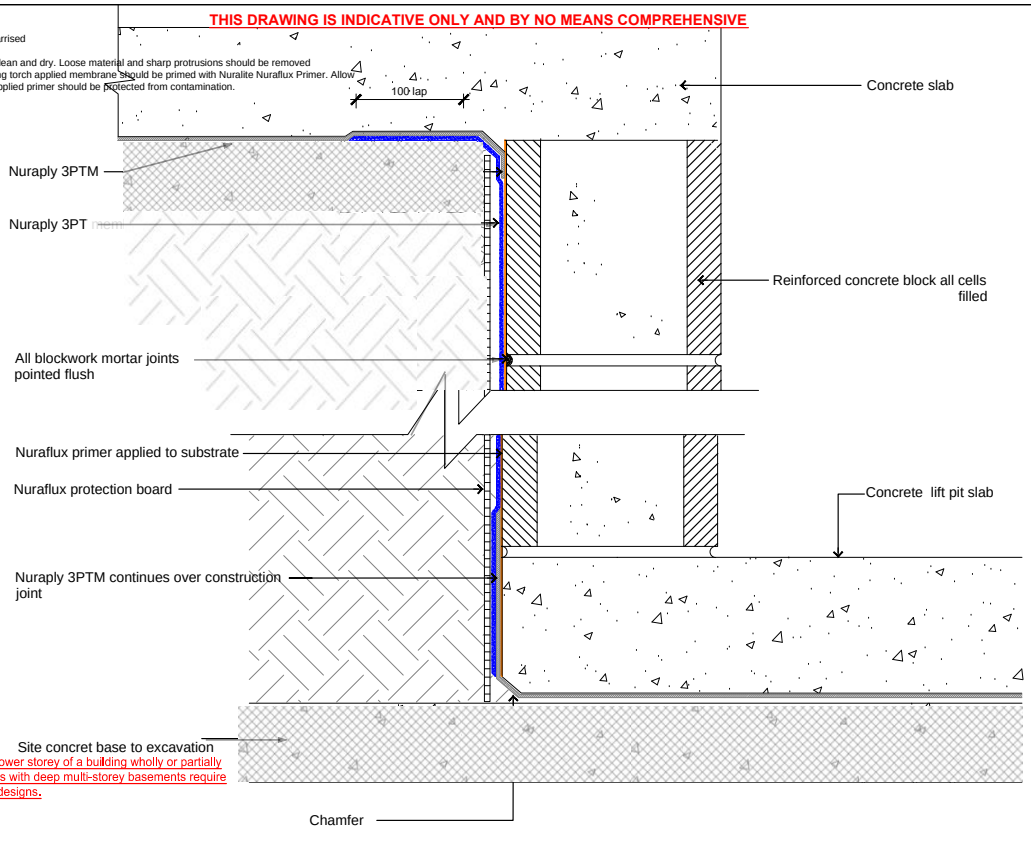
| | |
|---|---|
| PRODUCT: | NURAPLY 3PT |
| DESCRIPTION: | PILE HEAD DETAIL |
| SCALE: NTS | PREVIOUS DWG No: New |
| REVISION: Rev D | DATE: APR 14 |
| DWG No: | TCP. H1 iso |

THIS DRAWING IS INDICATIVE ONLY AND BY NO MEANS COMPREHENSIVE

**NOTES:-**
All sharp edges/corners to be arrised
**Preparations**
All surfaces must be smooth, clean and dry. Loose material and sharp protrusions should be removed mechanically. All areas receiving torch applied membrane should be primed with Nuralite Nuraflux Primer. Allow to dry completely. The newly applied primer should be protected from contamination.
**Angles and Corners**




For waterproofing the lower storey of a building wholly or partially below ground. Buildings with deep multi-storey basements require specialized, bespoke, designs.

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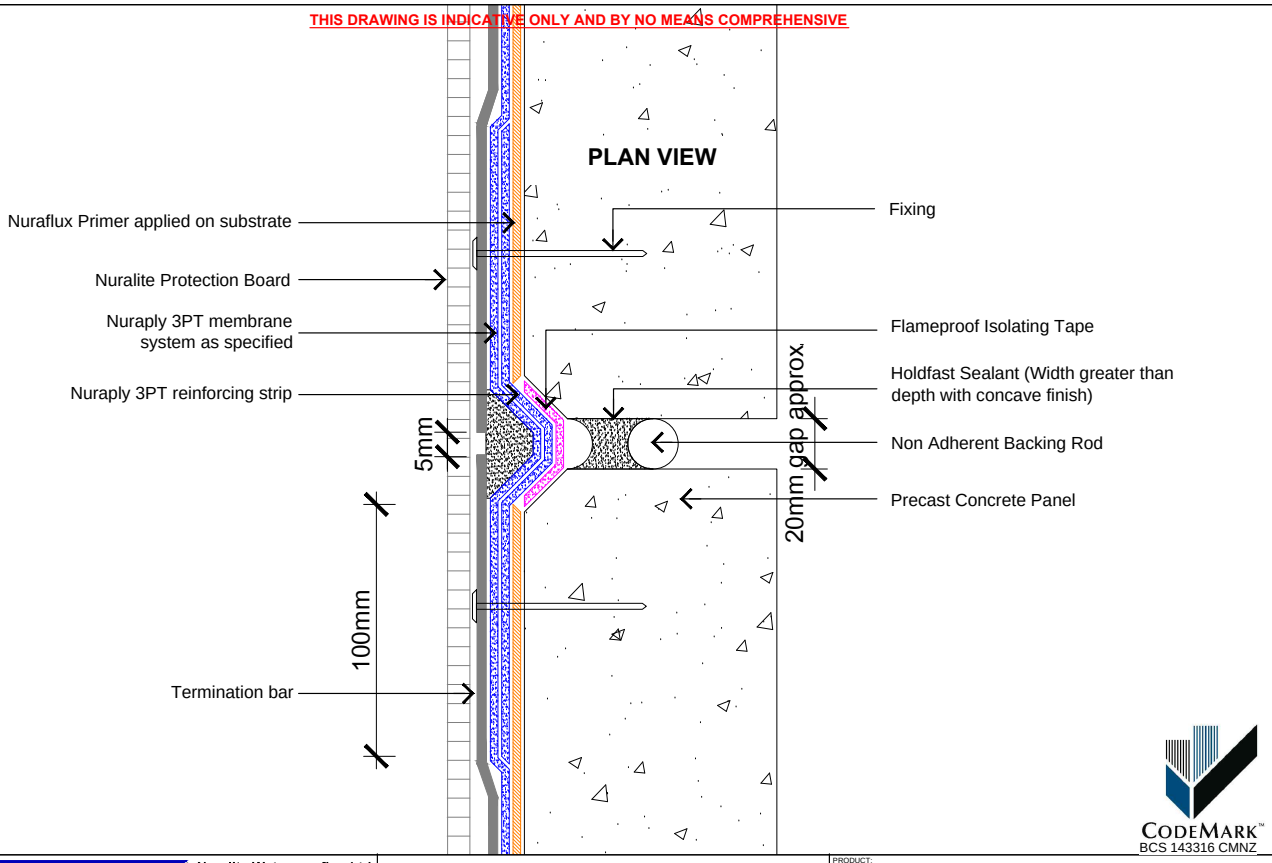
web: www.nuralite.co.nz




| | |
|---|---|
| PRODUCT: | NURAPLY 3PT |
| DESCRIPTION: | LIFT PIT |
| SCALE: NTS | PREVIOUS DWG No: New |
| REVISION: Rev E | DATE: APR 14 |
| DWG No: | TCP-.G1 |

THIS DRAWING IS INDICATIVE ONLY AND BY NO MEANS COMPREHENSIVE

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| | |
|---|---|
| PRODUCT: | NURAPLY 3PT |
| DESCRIPTION: | PRECAST PANEL - MINOR EXPANSION JOINT/TANKING |
| SCALE: NTS | PREVIOUS DWG No: New |
| REVISION: Rev A | DATE: APR 14 |
| | DWG No: TCP-.I1 |

THIS DRAWING IS INDICATIVE ONLY AND BY NO MEANS COMPREHENSIVE

**NOTES:-**
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**Preparations**
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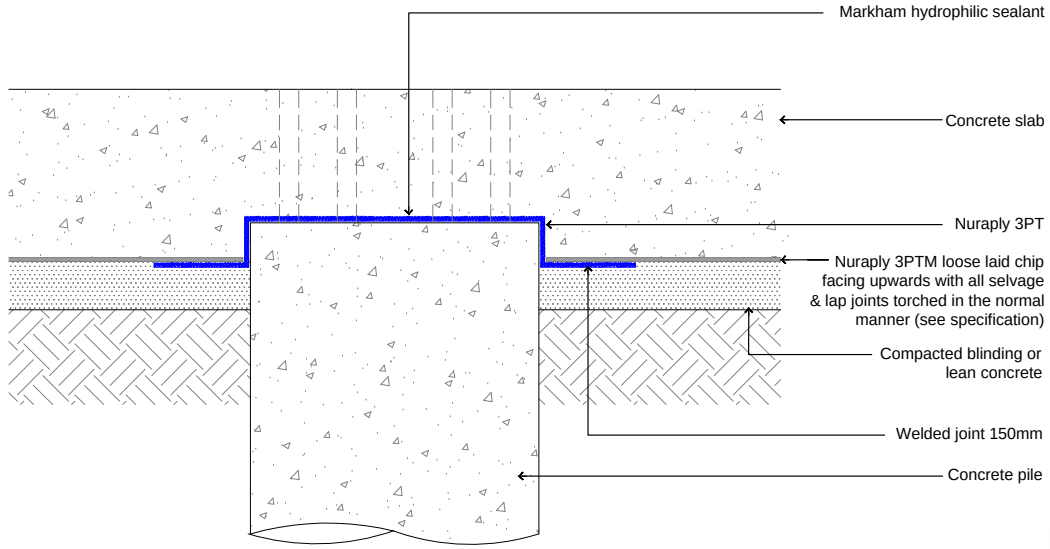
**Angles and Corners**
These should be reinforced with a 330mm wide piece of Nuraply 3PT (Reinforcing Strip) equidistant across the previously primed area. Internal and external corners should be waterproofed with Nuraply 3PT Membrane.

TANKING UNDER THE SLAB MUST BE CONSIDERED WHEN SLAB FFL (finished floor level) IS 300mm BELOW OUTSIDE FFL

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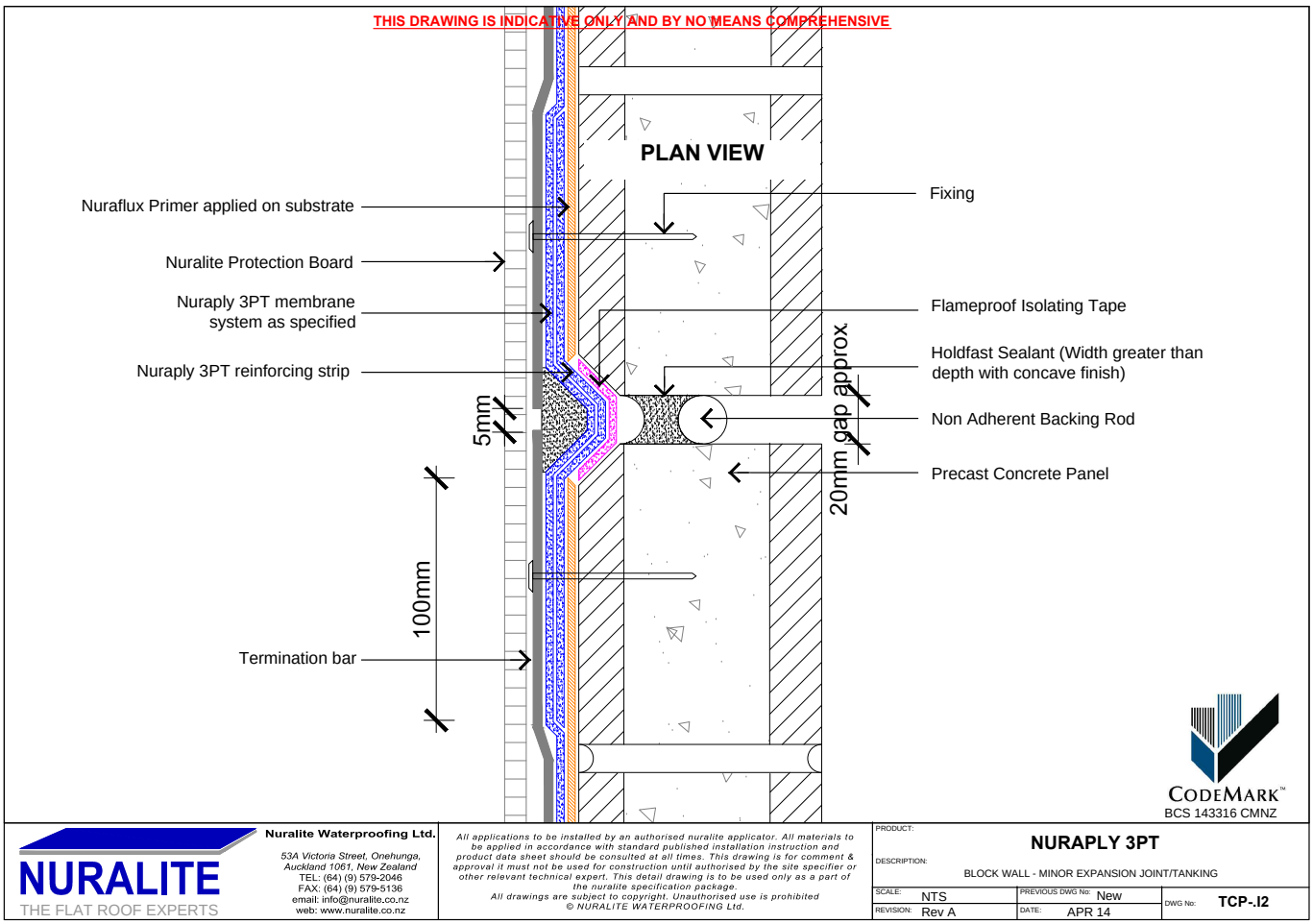
| | |
|---|---|
| PRODUCT: | NURAPLY 3PT |
| DESCRIPTION: | PILE HEAD |
| SCALE: NTS | PREVIOUS DWG No: New |
| REVISION: Rev F | DATE: APR 14 |
| | DWG No: TCP-.H1 |


THIS DRAWING IS INDICATIVE ONLY AND BY NO MEANS COMPREHENSIVE
PLAN VIEW
Nuraflux Primer applied on substrate
Nuralite Protection Board
Nuraply 3PT membrane system as specified
Nuraply 3PT reinforcing strip
Termination bar
Fixing
Flameproof Isolating Tape
Holdfast Sealant (Width greater than depth with concave finish)
Non Adherent Backing Rod
Precast Concrete Panel
5mm
20mm gap approx.
100mm
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All applications to be installed by an authorised nuralite applicator. All materials to be applied in accordance with standard published installation instruction and product data sheet should be consulted at all times. This drawing is for comment & approval it must not be used for construction until authorised by the site specifier or other relevant technical expert. This detail drawing is to be used only as a part of the nuralite specification package.
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PRODUCT:
NURAPLY 3PT
DESCRIPTION:
BLOCK WALL - MINOR EXPANSION JOINT/TANKING
SCALE: NTS
PREVIOUS DWG No: New
REVISION: Rev A
DATE: APR 14
DWG No: TCP-.I2