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This Manual details many of the methods by which TRITHOR can be installed.

It is NOT an exhaustive list of methods of installation. Other applications are approved to deal with more complex building designs, and Ensystex reserves the right to continually update the methods of installation.

Key Benefits



GreenSmart was established by the Housing Industry of Australia (HIA) as a voluntary, practical approach to building that focuses on educating builders, designers, product manufacturers and consumers about the benefits of environmentally responsible housing.

GreenSmart is an industry-driven initiative that aims to encourage a mainstream application of its principles to today's housing. As a voluntary initiative, it provides appropriate market recognition for environmental endeavours in the residential construction industry.



Ecospecifier is the leading global source of sustainable development & life-cycle assessed green product information. Ecospecifier helps clients reduce the time and costs of implementing Best Practice Green Buildings & Developments.



CodeMark is a building product certification scheme administered by the **Australian Building Codes Board**. Thirdparty CodeMark certification bodies evaluate and certify products to ensure they meet specified requirements of the Building Code.

CodeMark gives users the confidence that their building products comply and relevant legislation requires building control authorities to accept CodeMark certified products. For further information visit www.abcb.gov.au.

A Termite Protection System that Kills and Repels!

- Tough. TRITHOR is exceptionally tough and will not be damaged by normal building work practices.
- Self-sealing. TRITHOR's unique ability to self-seal small holes gives you added protection in the event of an accidental penetration. (This also means that TRITHOR can be more easily pinned to the slab on install and, unlike other systems, labour and material costs are saved as there is no need to use washers.)
- Registered with the Australian Pesticides and Veterinary Medicines Authority (APVMA); Registration # 59139.
 TRITHOR contains a registered termiticide - deltamethrin, arguably the most active and repellent of all the pyrethroids, to give you total security.
- Durable for 50 years.
- BCA Compliant. TRITHOR complies with the relevant requirements of the Building Code of Australia.
- Environmentally friendly.
- **User-friendly** and flexible to install, and doesn't impinge on any other trades.
- · Suits all building designs.
- · Moisture-proof membrane.
- · Can be installed as a damp-proof course.
- Manufacturer's Warranty from a global company.
- TRITHOR can be installed at a single site visit.

General

TRITHOR Termite Protection and TRITHOR Termite

Protection PLUS offer you the three-way protection of

- 1. a physical defence system,
- 2. a moisture defence system, and
- 3. a powerful, long-lasting termite killing/repelling system.

TRITHOR always gives you long-term termite protection, TRITHOR PLUS also provides you with a moisture vapour barrier since it is applied as a full under slab treatment.

TRITHOR has been fully researched and developed in Australia. It can be cut and moulded so it can suit any type of building design, no matter how complex. It is backed by the global resources of Ensystex.

When correctly installed by a TRITHOR Authorised Operator, TRITHOR comes with a conditional \$100,000 Termite Damage Warranty, subject to Annual Inspections.

This Manual details many of the methods by which TRITHOR can be installed, it is not exhaustive and other applications are approved to deal with more complex building designs.



Unique Three-Way Termite Protection

TRITHOR Termite Protection from Ensystex provides you with a unique Three-way Termite Defence System.

- 1. TRITHOR is a **PHYSICAL TERMITE PROTECTION SYSTEM** that protects your property by stopping the entry of termites. This is because termites can't get through the unique weave of the fibrous blanket incorporated in TRITHOR...
- Plus, since TRITHOR also contains crystals of the highly potent termite control agent, deltamethrin, it REPELS termites, so termites are less likely to approach the system, let alone pass through it.
- And, since the deltamethrin in TRITHOR also KILLS termites
 fast, any particularly tough termite that might actually
 penetrate into the TRITHOR is quickly eliminated before it
 has any chance of entering your property.

What is TRITHOR?

TRITHOR is a fibre blanket, impregnated with deltamethrin and then laminated top and bottom with a rugged plastic membrane. In the Australian Standard AS 3660 Termite management Part 1: New building work TRITHOR is referred to as a chemical barrier in a non-soil matrix.

How TRITHOR Works

The active ingredient in TRITHOR is deltamethrin, a powerful long-lasting pyrethroid termiticide/ insecticide registered with the Australian Pesticides and Veterinary Medicines Authority (APVMA). This is impregnated into the patented, unique, fibrous blanket in a controlled manufacturing environment.

This ensures even distribution and a uniform concentration throughout the blanket. TRITHOR Termite Protection is registered with the APVMA.

Deltamethrin is the ideal termiticide in this situation as it is far more repellent than other termiticides. This means more secure protection for you as it helps drive the termites away.

Deltamethrin is modelled on the natural pyrethrins produced by the chrysanthemum daisy, nature's own cure for insect problems. Consequently it is low toxic to warm-blooded animals, though deadly to termites. Better still, deltamethrin both kills and repels termites.

The fibre blanket within TRITHOR is a unique fibre punch that adds to the durability and effectiveness. It has undergone extensive CSIRO evaluation. The unique non-woven punch of fibres within TRITHOR, in addition to holding the deltamethrin crystals so they remain ever ready to kill and repel termites, is also structured to prevent termites penetrating.

The top blue layer is thicker, 200 microns, and provides an additional benefit by serving as a moisture vapour barrier. This upper layer also ensures the deltamethrin is protected against chemical degradation from the alkaline effects of concrete.

The bottom yellow layer is 50 microns thick. This protects from alkaline soils and concrete, stops soil and grit getting into the fibres of the blanket, and prevents the deltamethrin from leaching into the environment; thus ensuring it remains locked safely away from any soil organisms.

Thus TRITHOR gives you superior three-way termite protection, unmatched by any other system.

Scientific trials have shown that when termites approach TRITHOR they can sense the presence of the deltamethrin. Since deltamethrin works as a repellent, it pushes the termites away. So, whereas with traditional physical or chemical system systems, the termites will try and find a way through, or probe around looking for any gaps in the system; with TRITHOR they are more likely to move away.

In the event that termites penetrate through the bottom plastic layer, they become quickly trapped in the unique fibre mesh of the TRITHOR blanket. Once trapped in the fibres of the TRITHOR blanket they find it almost impossible to proceed further. And their struggles to escape only serve to bring them into closer contact with the deadly (to termites) crystals of deltamethrin which rapidly kill them.

The unique non-woven punch traps the tiny crystals of deltamethrin ensuring they remain effective for longer.

The exclusive TRITHOR blanket fibre has a greater density, making it more effective. This allows us to use lower levels of deltamethrin whilst retaining long-term efficacy.

The tough fibres of the TRITHOR blanket use a unique non-woven punch. This design cushions the system and minimises it being squashed, even under building loads, or if it gets wet. This gives you maximum effectiveness at all times.

The polymers used in the formation of the blanket are inedible to termites and do not act as a possible food source.

Since TRITHOR also acts as a moisture barrier, it further reduces the attractiveness of the property to termites.



Compliance

TRITHOR Termite Protection is approved as an alternative solution in accord with the Building Code of Australia (BCA). The approved Assessment Method is that independent scientific evidence has been produced to prove that TRITHOR Termite Protection meets the Performance Requirements and/or the Deemed-to-Satisfy Provisions of the Australian Standards AS 3600 Series - Termite management.

Evidence of this is contained within reports provided to the Australian Pesticides and Veterinary Medicines Authority for Termiticide Registration, the University of New South Wales' New South Global Consulting who have provided an Independent Building Appraisal, and through the Australian Building Codes Board Codemark Accreditation.

These evaluations included documentary evidence produced by CSIRO Entomology. These reports prove conclusively that TRITHOR Termite Protection may be used in accord with, and meets, the requirements of:

AS 3660.1 Termite Management - Part 1: New building work;

AS 3660.2 Termite Management - Part 2: In and around existing building and structures;

AS 2870 Residential slabs and footings - Construction and

AS 3600 Concrete structures.

AS/NZS 4347 - Damp-proof courses and flashings

Independent trials, conducted in accordance with the requirements of the Australian Standard AS 3660.3 *Termite management Part 3 Assessment criteria for termite management systems*; and other tests show that TRITHOR should remain as an effective termite measure for 50 years.

TRITHOR Termite Protection meets the performance criteria of section 1 Clause 1.3, of AS 3660 Termite management Part 1, New building work in accordance to AS 3660 Termite management Part 3 Assessment criteria for termite management systems.

TRITHOR Termite Protection also meets the performance requirements BP1.1, BP1.2, BP2.1.1 and QLD P2.1.3 as an alternate solution under BCA 2013, Part 3.1.3: Termite Risk Management.

Why You Should Consider TRITHOR Consistency

Each square metre of TRITHOR contains an accurate dose of at least 1 g of pure deltamethrin. TRITHOR is manufactured to strict Codemark quality guidelines in an ISO 9000 production facility and, unlike using liquid chemical systems, it is impossible for installers to under-treat.

Authorised Operators

TRITHOR is only installed by Authorised Operators who have been trained and licensed by Ensystex. Correct installation, in accordance with the Ensystex Standards is a condition of the Termite Damage Warranty available with all TRITHOR installations.

TRITHOR Quality Review System

The TRITHOR Quality Review System includes the collection of data by all authorised installers. This assures you of compliance and security for all your installations.

Flexible

TRITHOR is a flexible system that may be installed in many difficult and complicated situations including multiple penetrations, step downs, etc. TRITHOR can even be moulded around unusual building designs and is easily cut and joined. TRITHOR is quickly installed and has no sharp edges to affect other tradespeople.

Tough

TRITHOR is exceptionally tough. A sharp cutting blade is required to cut the TRITHOR fabric. Blunt objects, workmen's boots, etc. have little chance of penetrating TRITHOR. If a hole is accidentally produced it is easily repaired.

Long Lasting

TRITHOR will remain in place protecting your property for its economic life without the need to repeatedly 'pump-it-up' with additional chemical.



Environmentally Sound

Since the deltamethrin remains safely locked up within the blanket fibres, it cannot get into the environment. In turn, the unique fibres, together with the outer plastic seal, protect the deltamethrin from environmental degradation.

Australian Designed

TRITHOR is designed and tested in Australia to suit local conditions and protect against our native termites.

Technical Support

TRITHOR is supported technically by a team of professionals working in the professional pest management industry.

TRITHOR is made by Ensystex, a privately owned, international company with many years of specialisation in termite management solutions.

Australia is the regional headquarters for Australia and SE Asia, and is also the location for one of the company's global research and development facilities. Ensystex Australia's Head Office is located in Sydney with laboratory and manufacturing facilities located in Melbourne. Specialist Technical Support personnel are located in all States.

About Termites

No property in mainland Australia is safe from termites. Termites are the cause of the greatest economic losses of timber in service in Australia. Independent data compiled by State Forests indicates that 1 in every 5 Australian homes is attacked by termites at some stage in its life. Australia's subterranean termite species (white ants) are the most destructive timber pests in the world. In fact it can take "as little as 3 months for a termite colony to severely damage the timber in a home".

How Termites Attack Homes. The most destructive species live in large underground nests containing more than a million timber destroying insects. The problem arises when a nest matures near a home. Homes tend to provide natural shelter and food for the termites. The gallery system of a single colony may exploit food sources over as much as one hectare, with individual galleries extending up to 75 metres to enter homes, where there is a smorgasbord of timber to feast upon.

Even concrete slabs do not act as a barrier; termites can penetrate through cracks in the slab to gain access. They also build mud tubes around the slab to gain access to above ground timbers.

Termite Damage. Once in contact with timber, termites excavate it, often leaving only a thin veneer on the outside. If left undiscovered, the economically important species can cause many thousands of dollars damage and cost two to five thousand dollars (or more) to treat.

Subterranean Termite Ecology. Termites are social insects usually living in large underground nests. Nests may be in trees or in rare instances they may be in above ground areas within the property. They tunnel underground to enter the building and then remain hidden within the timber making it difficult to locate their presence. Where timbers are concealed, as in most modern homes, it makes it more difficult to locate their presence. Especially if gardens have been built up around the home and termite systems are either not in place or poorly maintained.

There are about 3,000 species of termites found in the world with about 300 species native to Australia. All termites eat some form of plant cellulose. Most termites simply eat humus in the soil, or grass and leaves. Very few eat wood, and only a small number of these eat sound wood (i.e. wood that has not been decayed by fungus). Some 20 or more species cause serious economic loss to Australian homes.

Termite Biology. Termites or "white ants" are social insects that work and live together in groups called colonies. Each colony contains several castes which differ in body shape, behaviour and tasks performed.

The **king and queen** mate and control the entire colony. In most species that cause economic loss to Australian homes, the queen becomes physogastric. This means she has a grossly enlarged abdomen for the purpose of laying millions of eggs. She essentially becomes an egg laying machine.

These eggs hatch into the nymphal stage and through a series of moults develop into one of the adult castes.



The worker caste has the largest number of individuals within the colony and is responsible for building the nest, tending eggs and young termites, gathering food and feeding those castes that are unable to feed themselves. Worker termites are wingless, blind and do not reproduce. Workers perform almost all the tasks in the colony except for defence and reproduction.



The **soldier** caste can be distinguished from other the castes by the head. The head of the soldier caste is large, dark and has either mandibles or a 'nasute' (pointed) protuberance. Soldier termites defend the colony against predators such as ants and are also unable to reproduce.

The winged reproductive caste are the potential future kings and queens of new colonies. This caste has eyes and wings, and usually leaves the parent colony in large swarms. They do not fly very far before shedding their wings.



TRITHOR Termite Protection PLUS

This is a complete under-slab treatment providing protection from both termites and moisture. The TRITHOR System is installed on top of the bedding sand before the steel reinforcing mesh is laid. All pipes and penetrations are individually protected by TRITHOR as part of this treatment. The concrete is then poured on top of the TRITHOR. When installed as a complete under-slab system, TRITHOR provides you with total termite protection.

TRITHOR Termite Protection PLUS is our recommended method of installation. It provides total defence against termites for the whole property. This means that termites are unlikely to stay in the area, reducing significantly the potential for termite problems.

TRITHOR Termite Protection PLUS should be your first choice in any areas of high termite risk.

TRITHOR Termite Protection PLUS comes in 1500 mm wide sheets which are overlapped by 200 mm and sealed before being taped with a quality tape. This holds the TRITHOR firmly in place until the concrete pour.

Termites can't penetrate these sealed joints since TRITHOR is highly repellent to termites. And, at the joints, the repellence is doubled due to the double layer of TRITHOR.

TRITHOR Termite Protection PLUS serves as both termite protection for your property as well as providing the required Moisture Vapour Membrane.

TRITHOR Termite Protection

TRITHOR Termite Protection is a flexible termite protection system which can be used as part of a complete termite system in association with other approved systems.

It is particularly used with a concrete slab, poured and cured in accord with the requirements of AS 2870: *Residential slabs and footings - Construction* and AS 3600: *Concrete structures*.

The slab in this case forms part of the termite system with TRITHOR Termite Protection protecting the high risk termite penetration areas. It is applied in a range of widths (strips) to suit the particular building design.

It is also used for bearer and joist constructions and piers.

Which System?

Price is frequently the parameter used to decide which TRITHOR System to use, though this is rarely the best criteria to use

Health and Safety

TRITHOR poses little risk to the homeowner, construction workers or the environment. It is ideal for use in sensitive environments and in allergy-free housing.

Termite Protection Warranty

Ensystex provides a \$100,000 Termite Damage Warranty to the homeowner/property owner which protects the builder and the homeowner following an approved installation. The TRITHOR Warranty covers replacement of both structural and internal (decorative) timbers. Conditions apply and you should read the separate Warranty documentation for full details.

Annual Inspections

All termite management systems require at least an annual inspection by a professional timber pest inspector in accord with the requirements of the Australian Standard Series AS 3660 *Termite management*. These inspections are integral to good termite management.

Authorised Operators

TRITHOR Termite Protection may only be installed by TRITHOR Authorised Operators who have been trained and Quality Guaranteed by Ensystex to ensure that installations are done correctly and that systems comply with the requirements of the Australian Standard Series AS 3600 *Termite management*.

TRITHOR Authorised Operators must demonstrate their understanding of, and compliance with, the procedures and requirements of this Installation Manual. Any breach of, or deviation from, the required procedures may result in the termination of their Authorisation. Only appropriately trained and licensed pest management professionals can qualify as TRITHOR Authorised Operators. The TRITHOR Authorised Operator must nominate trained installers who will be operating under their Licence.

Licenses may be cancelled and supply stopped to any company that acts fraudulently or demonstrates consistently poor quality workmanship.

Installing TRITHOR Termite Protection PLUS

TRITHOR Termite Protection PLUS is installed as a full under slab installation. It provides termite protection plus a moisture membrane. See Figure 1 and Figures 3 – 8.

Installation is simple. TRITHOR Termite Protection PLUS uses the 1500 mm wide TRITHOR sheets which are laid prior to the slab in the exact same fashion as if laying a standard moisture membrane. The sheets must be overlapped by 200 mm, sealed with adhesive and taped and glued with a quality cloth tape.

Since TRITHOR Termite Protection PLUS is repellent to termites, and the overlapped joints have a double layer of the highly potent TRITHOR, they actually have extra protection against termite entry.

TRITHOR Termite Protection PLUS is always installed in accordance with the instructions and diagrams contained in this Manual and the requirements of the Australian Standard AS 3660 *Termite management Part 1: New building work*.

When installed in this manner, TRITHOR Termite Protection PLUS is both a termite system and a moisture membrane.

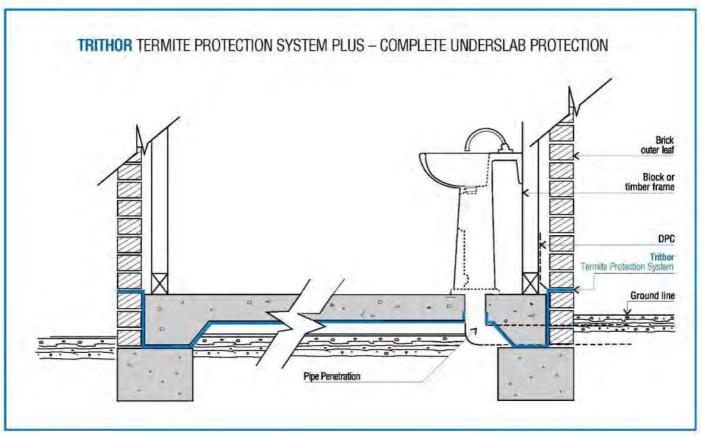


Figure 1

Installation

It is the responsibility of the TRITHOR Authorised Operator to liaise with the Builder and ensure that the installation procedures are correctly performed so that the completed TRITHOR Termite Protection PLUS can be certified by the TRITHOR Authorised Operator to comply with the Ensystex Warranty Program.

Builder's Responsibility

The builder must ensure that:

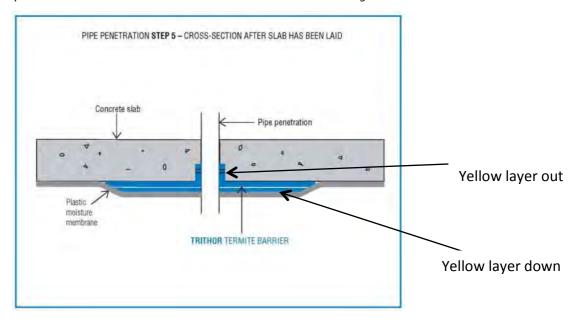
- 1. The under-slab soil substrate is levelled.
- All service pipe penetrations are installed in their final position.
- 3. They are aware of the placement requirements for TRITHOR Termite Protection.
- 4. Once laid, TRITHOR Termite Protection must not be moved without consulting with the TRITHOR Authorised Operator.
- 5. They inform the TRITHOR Authorised Operator of any damage to, disturbance of, or misalignment of the TRITHOR Termite Protection prior to the pouring of the concrete slab.

Installation Procedures

- Ensure that the site has been levelled and all pipe penetrations are installed in their final positions.
- 2. If the tops of the service pipes to be protected are sealed with tape, the tape must be removed prior to installing and then replaced on completion.
- TRITHOR Termite Protection PLUS is laid out in accord with the diagrams in this Manual and as per the normal requirements for the moisture membrane. Take great care to ensure that the system formed by TRITHOR Termite Protection is complete and continuous.
- 4. Care should be taken to ensure that the system is not affected by formwork pegs.
- 5. Many slabs are designed with internal structural beams as part of the concrete footing. When TRITHOR is laid under these beams more material is required than the original site footprint. Where these beams are deeper than 150 mm, there is no requirement to lay the TRITHOR. These thickened beams have extra reinforcing and are considered a termite system by the Australian Standard. (They still require protection against moisture with a normal moisture membrane.) This applies to both internal and external beams.
- 6. Refer also to the Australian Standard AS 3660 Termite management Part 1: New building work.
- 7. Give the Builder a copy of this Installation Manual and advise him of his obligations.

Pipe / Service Penetrations

Pipe penetrations can be protected with either TRITHOR Collars or TRITHOR Tubes. See Figure 2 below.















Figures 3-8 TRITHOR Termite Protection Plus NB Collars should not be taped as shown in Figures 3 and 4.

Photos 5 – 8 courtesy of Rentokil Termite Barriers

Installing TRITHOR Termite Protection

TRITHOR Termite Protection uses strips of TRITHOR in association with a concrete slab poured and cured in accord with the requirements of AS 2870: Residential slabs and footings - Construction and AS 3600: Concrete structures. The slab in this case forms part of the termite system with TRITHOR Termite Protection protecting the possible termite penetration areas.

TRITHOR Termite Protection should be installed in accordance with the instructions contained in this Manual and the Australian Standard AS 3660 Termite management Part 1: *New building work*.

When installed in accordance with this Manual, TRITHOR Termite Protection should provide protection against the

This Manual is not a comprehensive directory of all possible installations. TRITHOR Termite Protection can be adapted for use in a wide range of complex building designs.

entry of subterranean termites provided all other aspects of the total system are approved and correctly installed.

An essential aspect of installation is to recognise that it will be the structural elements that are placed after the TRITHOR system that hold the system in place.

Before installing TRITHOR always clean off all excess mortar from areas that TRITHOR will be placed over.

When joining TRITHOR Strips overlap by 100 mm and seal with adhesive and a quality Cloth Tape or, industrial staples.

Limitations

Where the concrete slab it to form part of the termite system, it must constructed in accordance with AS 2870 and AS 3600.

Installation

It is the responsibility of the TRITHOR Authorised Operator to liaise with the Builder and ensure that the installation procedures are correctly performed so that the completed TRITHOR Termite Protection can be certified by the TRITHOR Authorised Operator.

The TRITHOR Installer must provide advice to the bricklayers on how to install the brickwork once the TRITHOR is in place. The handout Site Guidelines for Bricklayers MUST be provided.

Builder's Responsibility

The Builder must ensure that:

- 1. The under-slab soil is levelled and the vapour barrier membrane installed no higher than 25mm around pipes.
- 2. All pipe penetrations are installed in final position.
- 3. The slab reinforcement mesh is placed within the slab area and fixed on suitable 'chairs' at intended height.
- 4. They are aware of the limitations of TRITHOR Termite Protection and its placement requirements.
- They inform the TRITHOR Authorised Operator of any damage to, disturbance of, or misalignment of TRITHOR Termite Protection prior to the pouring of the slab. (The TRITHOR Authorised Operator will then rectify.)

Basic Installation Procedures - Perimeters

- 1. Determine the width of TRITHOR required by liaising with the builder and/or bricklayers and determine how many bricks are to be installed down to the footing for the DPC level. This may vary due to step downs so plan ahead.
- 2. Install the TRITHOR to a maximum width of 70 mm on the top of the slab, fixing it to the slab with Ramset nails (preferred), concrete nails approximately every 350 400 mm; or an approved glue system. Ensure any corner overlaps are nailed to minimise movement of the TRITHOR when the timber frames are erected. Ensure enough overlap is allowed for areas such as bay windows and nail these too.

TRITHOR can also be effectively adhered to concrete slabs or brick and block work with a generous application of spray adhesive on the masonry surface before positioning. The TRITHOR is then firmly pressed into position.

Concrete nails are used near all corners to assist with fixing and allow tensioning between corners. Pre-made corners should be installed prior to gluing longer perimeter sections, or the corners may be folded after gluing, as part of the installation. The approved adhesive is TRITHOR Foam Adhesive Spray.

- 3. When nailing ensure the nail heads finish flush with the slab and protect against gaps or undulations when the frames are stood.
- 4. The system is now in place and the bricklayer can lay the bricks to the footing to the height of the DPC/ Flashing. The TRITHOR then needs to be laid on to the brickwork paying careful attention to corners. Corners, including bay windows, are fixed with approved adhesive, and a quality cloth tape; or, industrial staples.
- 5. Prior to completion, remove any off-cuts and note if you will be required to make further site visits; e.g. to install across driveway, wheel chair access, patios, columns, etc.
- 6. The meter box sticker is placed once installation is complete.

Alternate Method - Glue

The use of T **TRITHOR Foam Adhesive Spray** is approved as an alternative installation method. This may be used in one of two ways.

Adhered to the Slab Edge

The TRITHOR is installed after the first layer of bricks is placed. This enables the TRITHOR to be glued to the face of the slab and laid over the top brick. This gives a professional installation and allows the installer to position the TRITHOR correctly to the face of the bricks. The film is nailed at 150 mm centres to the face of the slab in addition to the glue to ensure a secure grip.



Figure 8A



Figure 8B



Figure 8C



Figure 8D



Figure 8E



Figure 8E

The TRITHOR may alternatively be glued to the top of the slab instead of nailed. In this case it MUST be an aged slab that is totally free of all dust, debris, etc. and that will not cumble or powder.

Figure 8G





Figure 8F

Figure 8H



In the event of a ripple occurring when using the glue, this can be corrected as shown in the following photos.



Figure 81



Figure 8J



Figure 8K



Figure 8L



Figure 8M



Slab Edge Rebate - Detail

One Brick Rebate

Any extra TRITHOR is placed into the wall cavity. If the finished brickwork is comprised of face bricks, TRITHOR Termite Protection should be set inside of the external brick wall.

When the strip is to be laid before the first layer of bricks, then the TRITHOR will need to be nailed to the framing timbers to protect it until the bricks are laid. Any excess is pushed into the wall cavity.

Secure it to the slab with clout nails or Ramset nails. Extend the TRITHOR strip to the slab edge and leave flush with the first brick or step down. Make sure the TRITHOR extends to the slab edge. The damp-proof course is laid above the TRITHOR at the weephole.

Where the installation may be compromised by a build-up of soil to the weephole level or rendering of the bricks, it is recommended that a pavement / mowing strip is installed with the TRITHOR System under the mowing strip as in the diagram below. See Figures 9-10.

Two Brick Rebate

The perimeter strip of TRITHOR Termite Protection is secured to the top of the slab after the concrete is cured with nails at 350 - 400 mm intervals. If for any reason the brick course cannot be laid at this stage, TRITHOR Termite Protection is attached to the timber frame.

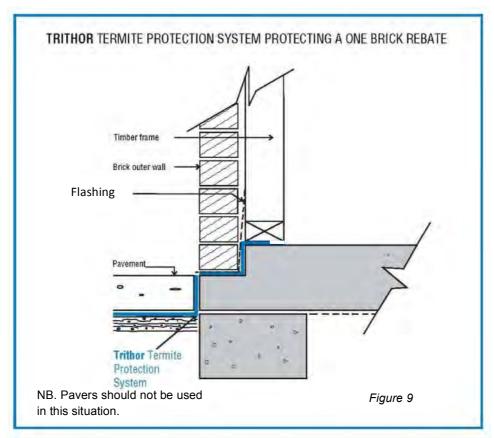
Alternatively, if the TRITHOR is to be laid prior to the frame secure it to the slab with clout nails or Ramset nails. Extend the TRITHOR strip to the slab edge and nail down to the slab edge. Leave the leading edge flush with the first brick or step down. Make sure the TRITHOR extends to the slab edge. The damp-proof course is laid above the TRITHOR at the weephole. See Figures 11-12, 14-33, and 48-50. Figure 51 shows various rebates and Figures 34-40 show single brick to two brick transitions. Figures 41-47 show corner transitions.

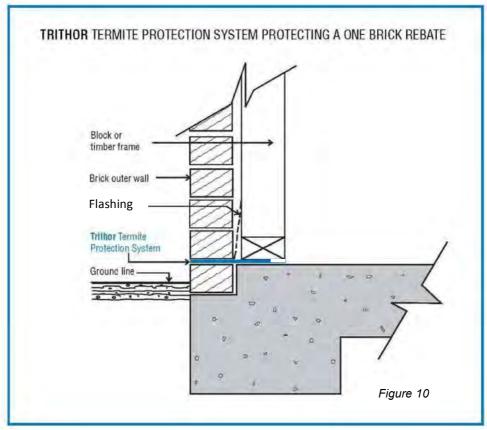
Important

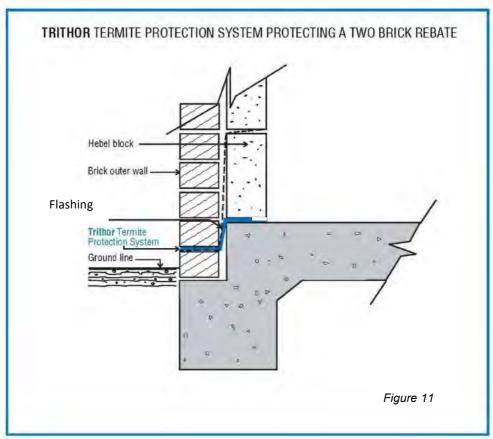
When joining the TRITHOR Strips, a *minimum* 100 mm overlap should be allowed for. This applies equally to joins along a wall, at a corner or where a repair patch is required.

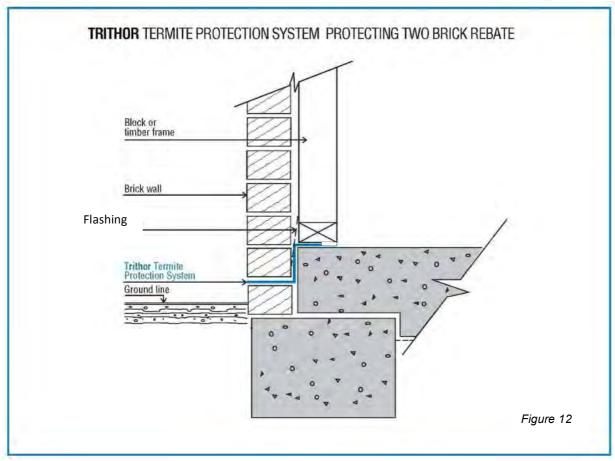
Always ensure TRITHOR Termite Protection will be laid above the proposed level of any future landscaping etc., and prior to the laying of concrete mowing strips and pavements if the latter are required or planned.

Where external walls are face brick and the mortar is pointed, the TRITHOR strip is laid 3 - 5mm off the edge of the brick.









Inspection Zones

The Australian Standard AS 3660.1 Termite management – New building work, refers to a 75mm inspection zone between the exposed edge of a termite system in the outer wall of a building and the grade level beneath it.

The purpose of this inspection zone is to ensure that sufficient un-occluded surface exists to allow easy identification of termite mud-tubes up the outer wall structure during a termite inspection. It was decided at the time by the Standards Committee that a distance of 75mm (the depth of one standard building brick) would allow for changing grade levels due to gardening activities in adjacent soil, the depth of growing grass and so on, while still leaving sufficient unoccluded surface to allow for efficient inspection.

Where the grade is fixed and unchanging against the wall surface, such as in the case of concrete or paved pathways, patios, and driveways, this inspection zone may be reduced. This is particularly important where step-downs in doorways and windows occur.

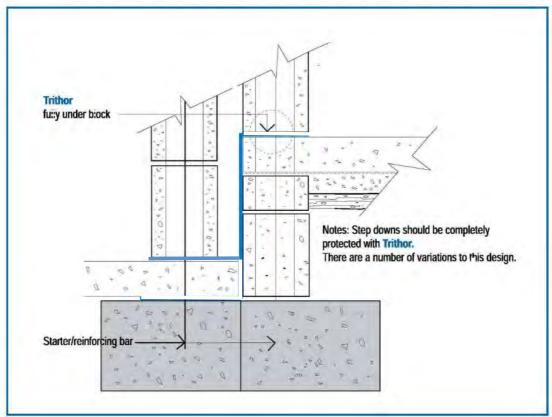
With installations of TRITHOR Termite Protection, where hard surfaces such as concrete or paving exist, a minimum distance of 25mm should exist between the outer exposed edge of the termite system and the top surface of the concrete or paving. This distance is considered adequate to allow for identification of termite mud-tubes by those trained to do so, or by observant property owners.

Step Downs

Steps downs need to be completely protected with TRITHOR.

Before installing TRITHOR you need to clean off any excess mortar from the top layer of bricks and continue down the vertical face of the internal brickwork. This better allows for TRITHOR to be fitted between the edge of the concrete slab and the bricks. A 400 mm length of TRITHOR is used on

internal corners and is secured to the brickwork with clout nails. The perimeter TRITHOR is then cut to shape and secured over this. Pre-formed corners are available to make this process simpler, quicker and more effective. See Figures 13 and 53 -54.















Figures 14 – 19 Brick Rebates



Installation courtesy of Rentokil Termite Barriers

Figures 20 – 25 Two brick rebate showing pipe protection.

Guidelines Showing How Bricks are Placed.

Two Brick Rebate

TRITHOR Termite Protection is laid over the slab edge and needs to be brought level with the face of the bricks.



TRITHOR in position, nailed to slab.



Lay first layer of bricks is laid on rebate under TRITHOR.



TRITHOR is pulled flush with face of bricks with surplus TRITHOR pushed into cavity.



Second layer of bricks is laid ensuring TRITHOR remains flush with face of bricks.

Figures 26 - 29.

Corners



TRITHOR corners are nailed in position.



Lay first layer of bricks is laid on rebate.



First layer of bricks is laid under TRITHOR with TRITHOR pulled level with face of bricks.



Second layer of bricks is laid ensuring TRITHOR edge remains flush with face of bricks.

Figures 30 - 33

Single to Double Brick Transition



TRITHOR is positioned as shown above.



Lay first layer of bricks on rebate.



First layer of bricks are laid on rebate under TRITHOR.



Lower strip of TRITHOR is pulled flush with face of bricks.



Second layer of bricks is laid over first strip of TRITHOR ensure TRITHOR edge remains flush with face of bricks.



Top strip of TRITHOR is laid over second layer of bricks.



Next layer of bricks is laid.

Figures 36 - 40.

Corner Transition



TRITHOR is left overlapped at corner



First layer of bricks is laid under TRITHOR.



Lower strip of TRITHOR is pulled level with face of bricks with surplus pulled into cavity.



Second layer of bricks is laid over lower strip of TRITHOR and under upper strip of TRITHOR.



 $\label{lower strip of TRITHOR} \ \ is \ pulled \ \ over \ first \ brick \ on \ single \ brick \ transition.$



Upper strip of TRITHOR is laid over bricks on single brick transition and pulled flush to face of bricks on corner.

Figures 41 - 46.



Figure 47

Remaining bricks are laid.



Figure 48 Two step rebate showing pipe penetration after frame erected.



Figure 49 two brick rebate.

Alternative Method for Internal Corners





Figure 49 A Internal Corner

Figure 49 B Internal Corner with TRITHOR placed

This method allows for nailing not only on top of the corner but also into the face of the rebate. It then brings the material completely into the centre of the corner. With this install we have multiple points of contact with the concrete slab and therefore the repellency is working well.

The above, and below external, corner designs provide for a minimum overlap of 150 mm which will meet the proposed requirements of the Australian Standard AS 3660.1 as it is currently being revised.



Preferred method for External Corners



Figure 49 C External Corner

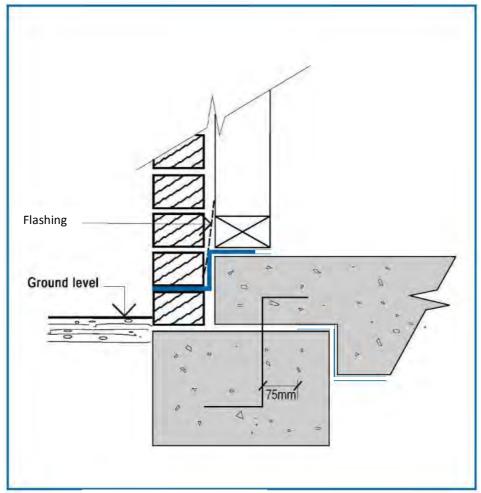


Figure 50 Two brick rebate.

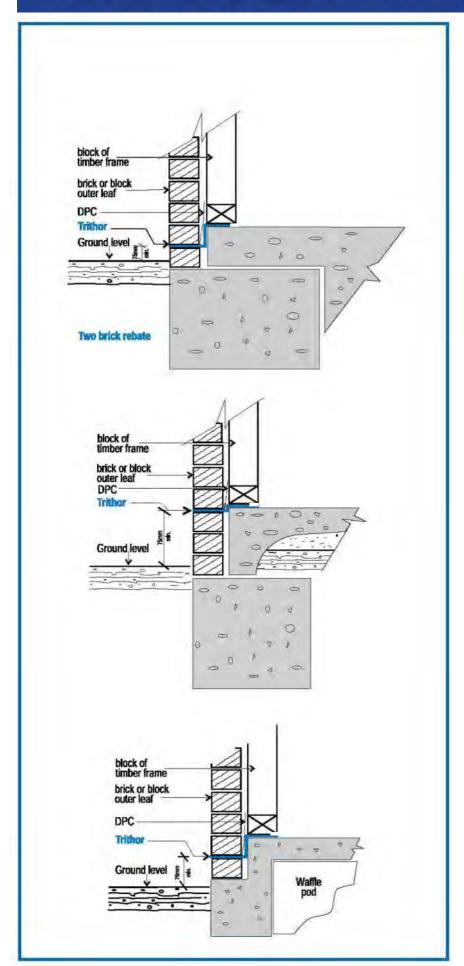
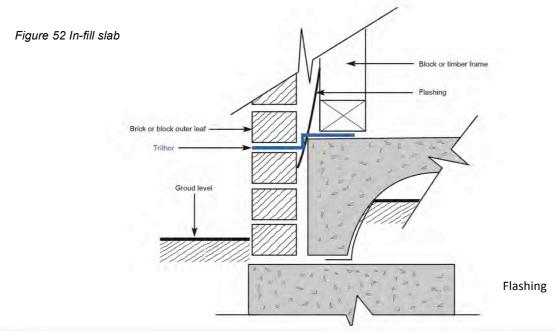
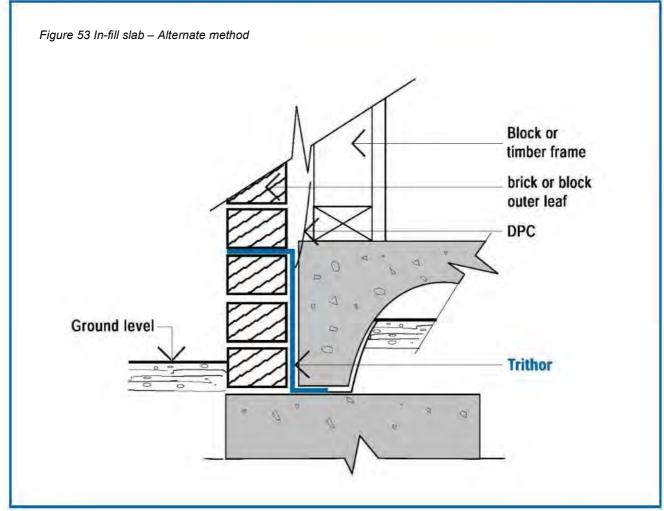


Figure 51 Different rebates.

In-fill Slab





Step-downs





Figures 54 – 55 Step-downs.

In-fill Slab

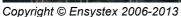


Figures 56 – 57 In-fill.

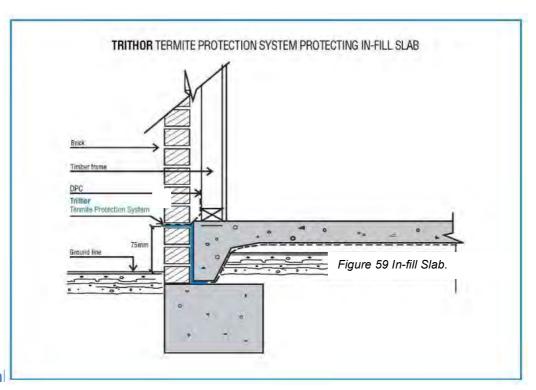


Installation courtesy of Rentokil Termite Barriers

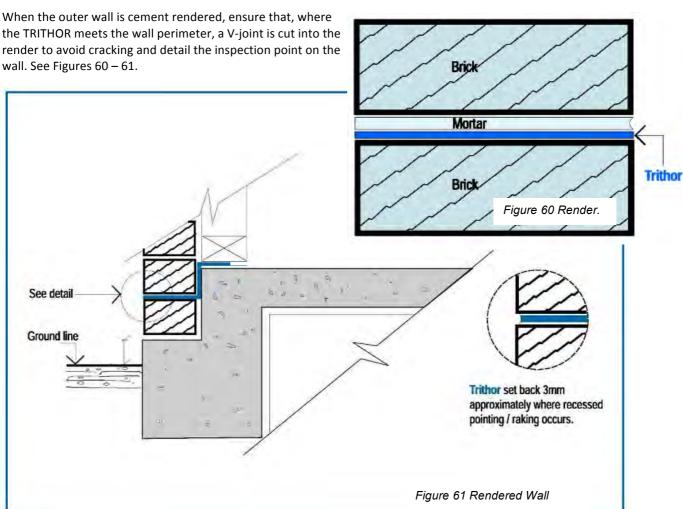








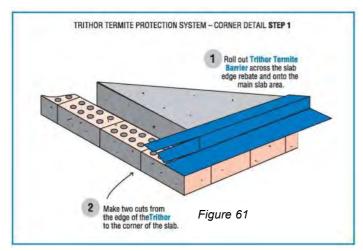
Rendered Wal



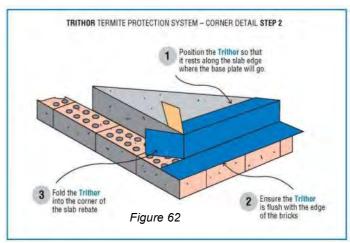
Corner Details

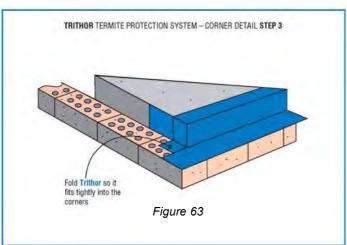
Pre-formed corners are supplied for both internal and external corners of standard slabs. Pre-formed corners should ALWAYS be used as they make this process simpler, quicker and more effective. See Figure 66.

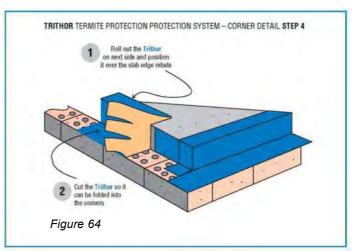
Corners require special care and attention to detail.



In some cases it may be necessary to form corners on the site, in which case they MUST be formed as detailed below in Figures 61 – 65. Sometimes, using this method, a slab edge rebate will require a course of bricks is laid before you can commence the perimeter installation. Of course for in-fill slabs the reverse procedure to that illustrated below will apply.







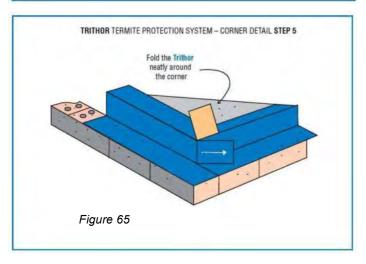




Figure 66 Pre-formed External Corner

Joining TRITHOR

For joining TRITHOR strips to each other or to pre-formed corners three options are available.

Staple. This offers fast and effective joining of TRITHOR.

It is the structural elements of the building that hold the TRITHOR in place. Thus it doesn't matter that the staple will eventually corrode since it is only intended to hold it together long enough for the structural elements to be placed. See Figures 68 – 72.

Tape. The TRITHOR is overlapped by a minimum of 100 mm and taped and glued at the join. The tape and glue used must comply with the specifications provided in ESSENTIAL EQUIPMENT at page 75.

This space has been deliberately left blank pending the placement of a suitable photograph to show overlapped joins.

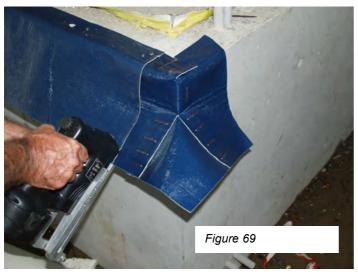
Glue. The TRITHOR is overlapped by a minimum of 100 mm and glued at the join. The glue used must comply with the specifications provided in ESSENTIAL EQUIPMENT at page 75.

Overlapping. When using TRITHOR Pre-formed Corners, the corners must be placed first. The TRITHOR Strips can then be run right to the edge of the corner of the slab so they fully overlap the Pre-formed Corner. The Strips are then nailed on to the top of the slab, and two more nails are placed into the face of the slab to hold firmly in position. With this method there is no requirement for either glue or tape to be used.

If using this method for joining strips along the edge of the slab, then the strips must be overlapped by a minimum of 100 mm, and two nails must be placed on top of the join on the slab, together with two nails to secure them to the face of the slab



Figure 67









Pipe / Service Penetrations

Pipe penetrations can be protected with either TRITHOR Collars or TRITHOR Tubes. See Figures 73 – 78.

TRITHOR Collars are available in two sizes, 120 mm for pipes up to 100 mm diameter, and 60 mm for pipes up to 50 mm diameter. For larger pipes, two 120 mm Collars can be cut at the seam and joined together. These MUST be secured in place using two cable ties.

TRITHOR Collars

When Installing TRITHOR Collars, TAKE CARE not to stretch or place unnecessary pressure on the joint seals. TRITHOR Collars are secured to the pipe with a strong cable tie, positioned near the base of the Collar tube, and tightened with a set of pliers. The TRITHOR Collars must be installed so that there are no gaps between pipe and Collar.

Where TRITHOR Collars are used in whole of slab installations, i.e. **TRITHOR Termite Protection PLUS System**, the TRITHOR Collars should be taped horizontally to the full under slab TRITHOR Sheet to complete the moisture membrane.



TRITHOR Collars should NEVER be taped at the top.

Electrical Conduits

Use **TRITHOR Tubes** around all electrical conduits penetrating the slab for a length of about 100 mm. The TRITHOR should remain visible after the concrete pour on any conduit.

Two cable ties are used to secure the TRITHOR Tube at the start <u>and</u> finish of the pipe. Where conduits are in clusters, each must be wrapped individually. When wrapping conduits the yellow side of the TRITHOR must be facing outwards.

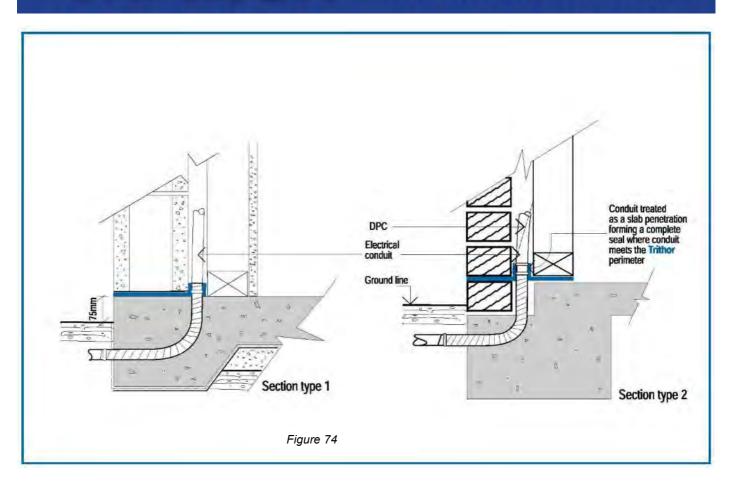
Horizontal Penetrations

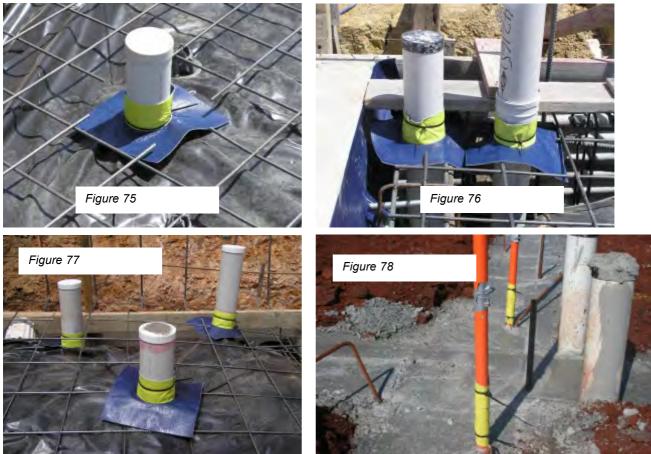
A horizontal penetration is a right-angle insertion into the slab. It usually occurs where a service penetration goes through an edge beam or structural beam. This may allow concealed termite entry through any hollow building materials holding the service penetrations in place (e.g. copper or PVC pipe). All such hollow structures must be replaced or removed before installing TRITHOR Termite Protection.

Multiple Penetrations

This is where there are several service penetrations that are close to each other. Often these consist of different pipe sizes. TRITHOR Collars or Tubes are ideal in these cases. Treat each penetration separately.

Figure 73 Pipe penetrations in waffle-pod slab.







Pipe Pentrations for AS 3660.1 – Revised 2013

The above methods remain the preferred and accepted methods for the installation of TRITHOR to protect pipe penetrations. With the proposed revisions to the Australian Standard AS 3660.1 proposed for issue in 2013 / 14; it may be considered that these protections do not comply with the requirements of the Standard.

Where it is required to show direct compliance with both the revised Standard AS 3660.1 and the BCA, the modified **TRITHOR Annular Collar**, should be used.

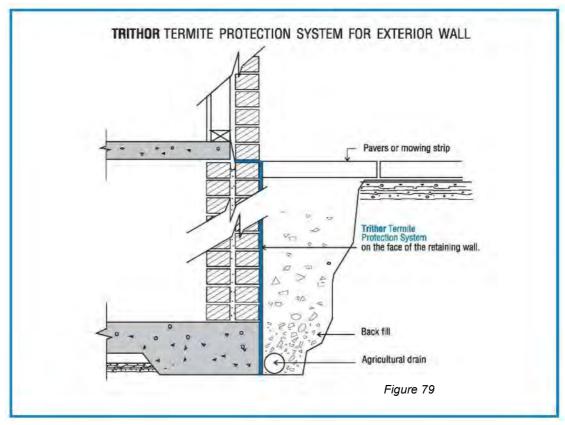
The TRITHOR Annular Collar has a 200 mm square base plate, compared to the original Collar's 300 mm square base plate. The pipe ring on the TRITHOR Annular Collar is 75 mm high (as opposed to 100 mm high on the original Collar).

This means the TRITHOR Annular Collar can be set into the concrete in accord with the requirements of the draft Australian Standard AS 3660.1 2013.

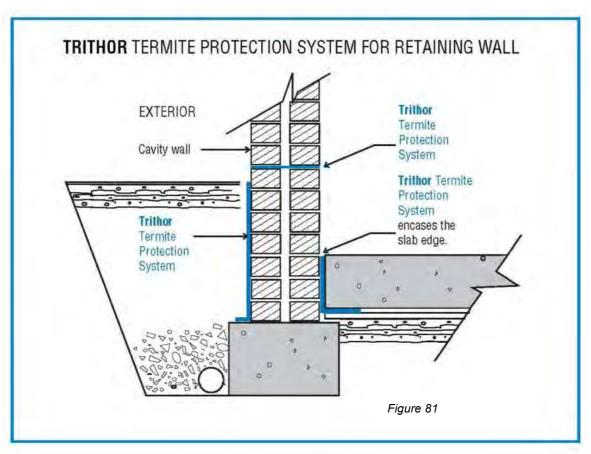
Retaining Walls

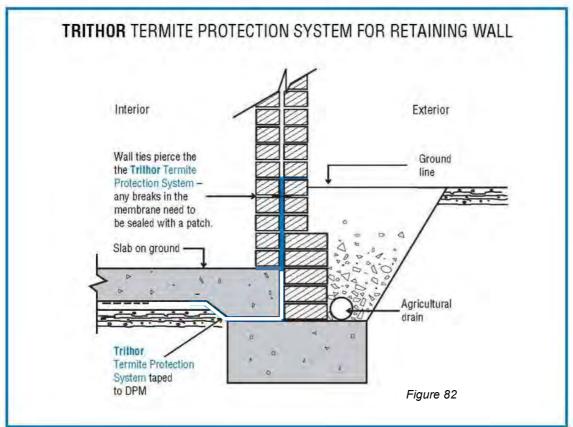
Where a retaining wall forms part of the structure, TRITHOR Termite Protection should be installed down to, or preferably below the level of the rubble. TRITHOR Termite Protection should ideally be secured to the external concrete / brickwork either by a concrete mowing strip or a concrete pathway. See Figures 79-115.

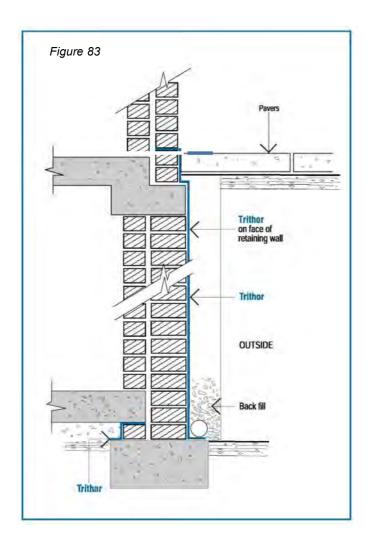
NB When TRITHOR is installed in this manner it is providing a Termite System <u>only</u>. It does not form part of the tanking membrane

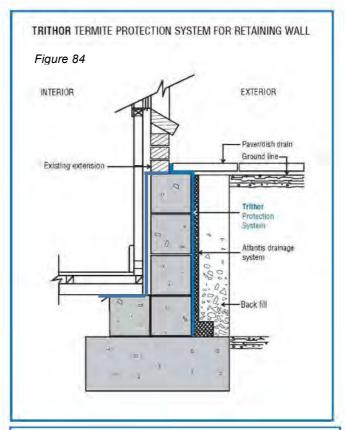




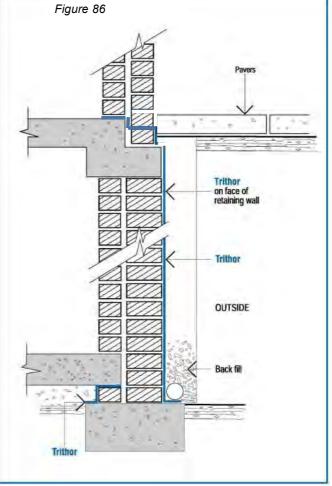












Figures 87 - 92





Secure with Ramset nails



Install and overlap all sheets



Hang TRITHOR in place



Overlap sheets by 100 mm



Use spray glue to secure in place

Figures 93 - 97



Ensure TRITHOR is well attached to next sheet



Apply tape to complete seal



Retaining wall protected by TRITHOR



Apply further glue layer to outside



Attach to bottom of wall with Ramset nails or clouts

Installation courtesy of Rentokil Termite Barriers

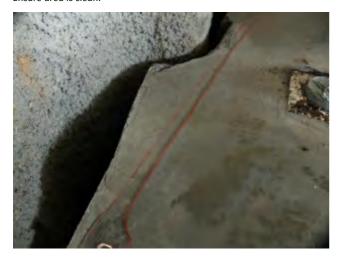
Commercial Retaining Wall







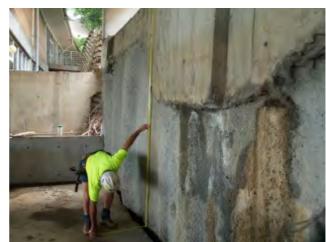
Ensure area is clean.







Use flick line to mark face of wall.



Figures 104 - 109













Ensure there is U shape to the lower edge of the TRITHOR to prevent future moisture wicking.

Figures 110 - 115



U shape ensures moisture behind the TRITHOR will run off and not 'wick' into the building in the future.



Apply glue to underside of top layer and attach to lower.



Apply glue to upper layer to give extra bond to tape.



Apply tape over glue and press firmly to seal.





NB Shot Crete walls and backfilled walls are not deemed to be monolithic slabs in accord with AS 2870 and therefore require protecting with TRITHOR Sheets as above.

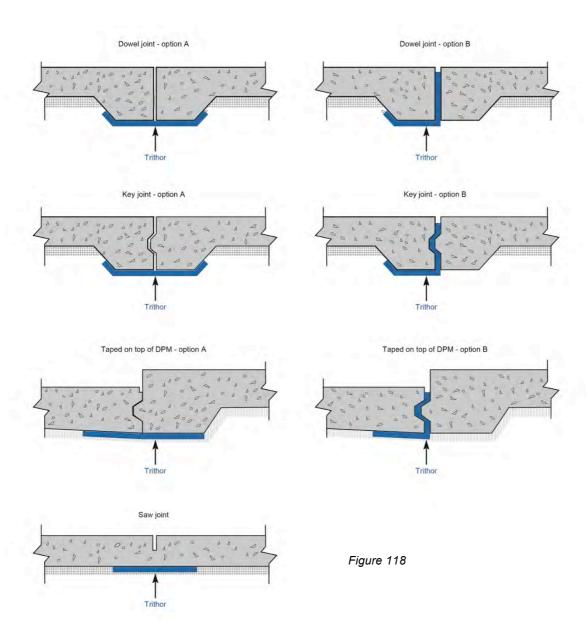
Construction Joints

TRITHOR Termite Protection protects all types of construction joints. A minimum 250 mm wide strip of TRITHOR Termite Protection is installed under the joint and taped to the plastic

moisture membrane with an approved cloth tape prior to pouring the concrete. See Figures 116 – 130.







Figures 119 - 124





Installation courtesy of Rentokil Termite Barriers





Figures 125 - 130







Installation courtesy of Rentokil Termite Barriers







Tilt Panels

See Figures 131 - 133

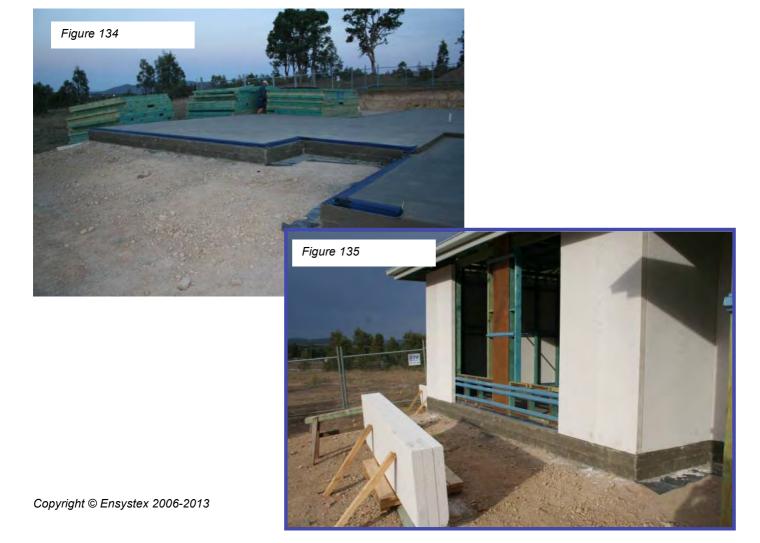






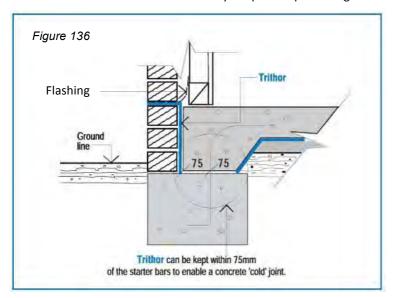
Hebel Power Panels

See Figures 134 - 135



Existing Concrete / New Concrete Joints

Where for example an extension is adjoining an existing concrete slab, it creates a clear area for potential termite entry. See Figure 136. TRITHOR Termite Protection is easily adapted to protect against concealed termite entry in these situations.



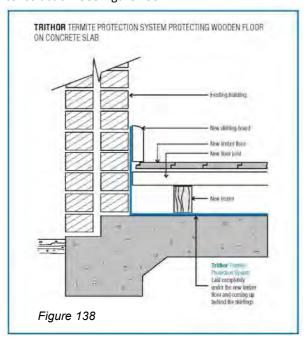
Access Ramps

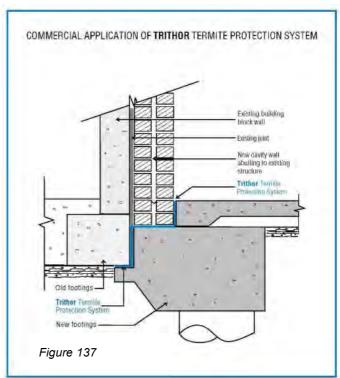
For access ramps the TRITHOR is applied to the vertical face of the concrete slab prior to pouring the cement for the ramp.

A minimum strip of 250 mm wide TRITHOR is attached to the height of the slab and extended down to the footing and then taken horizontally under the ramp.

Timber Flooring

The TRITHOR system is also used to protect timber floors when placed on concrete as illustrated below or for pier construction. See Figure 138.

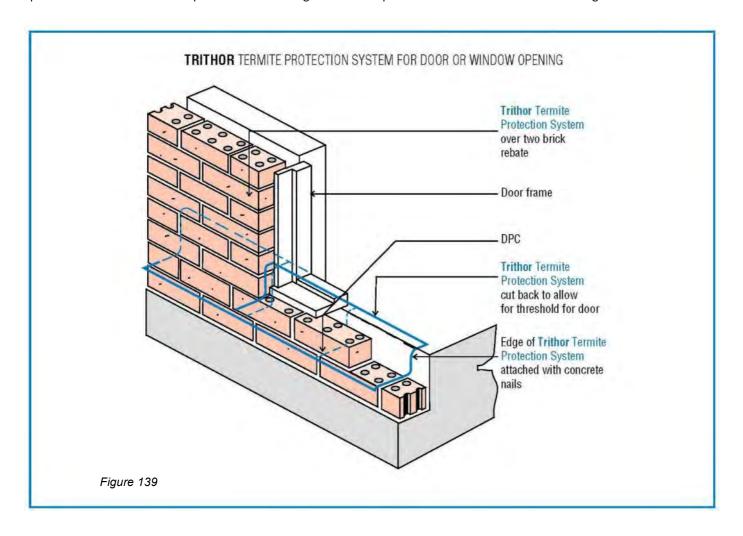






Doors and Windows

Special attention to detail is required when installing TRITHOR for placement of doors or windows. See Figure 139.



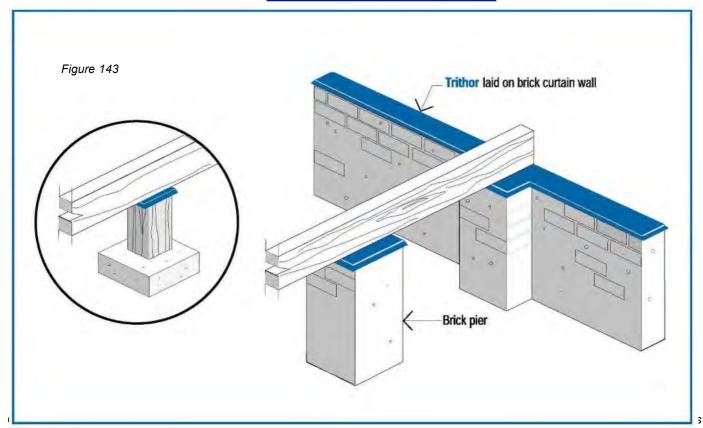
TRITHOR for Suspended Floors

TRITHOR Termite Protection is installed along the curtain walls. See Figure 143.

For piers it may optionally be glued beneath a metal ant cap and then placed on the pier. See Figures 140 - 142. **N.B.** Metal ant caps are not required, this is simply an optional fitting method. The TRITHOR may be simply installed directly on the piers as in figure 143.

TRITHOR must be cut to fully overlap the walls, piers, engaged piers and/or supports, so that it overhangs by 40 mm. TRITHOR should be nailed and glued in place as appropriate. Position exactly as an ant cap / shield in Section 5 of AS 3660.1. See also Figures 144 - 149.





Figures 144 - 149













Installation courtesy of Rentokil Termite Barriers

Other Situations

TRITHOR should not normally be installed prior to the erection of the timber frame. In instances where this has occurred and you need to help a builder out of a difficult situation, the following method may be employed, subject to approval by the Certifier. Nails are placed at 100 mm intervals in this situation, not 350 - 400 mm as usually done. See Figures 150 – 157.













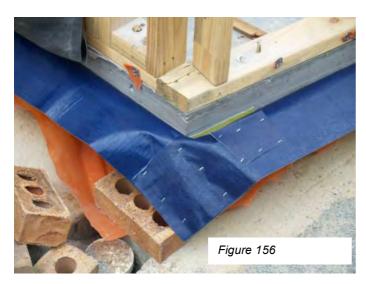
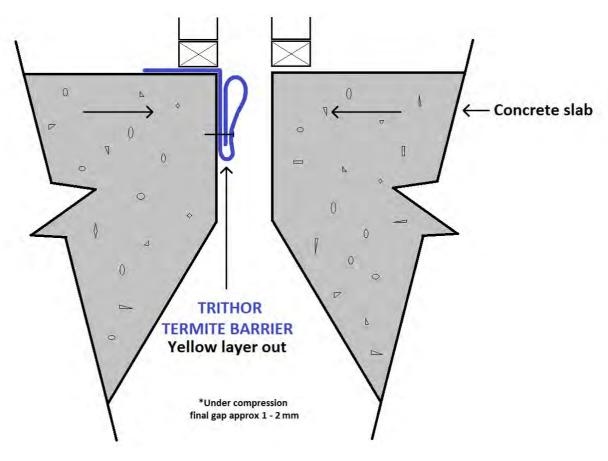




Fig 158:

TRITHOR for Demountable Mining Houses

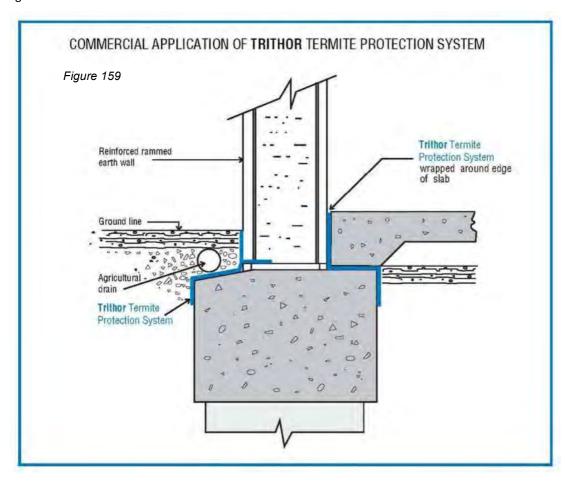
These houses are pre-constructed on the concrete slabs and transported to the mining towns. This occurs most commonly in WA. The houses are then assembled on site and the two slabs are pushed as close together as it possible. The below design covers this subkect to any overlaps being a minimum of 100 mm and nail centres being placed at 150 mm. The TRITHOR is also glued to the slab.





Commercial Applications

Figure 159.



Other Applications

Figure 160

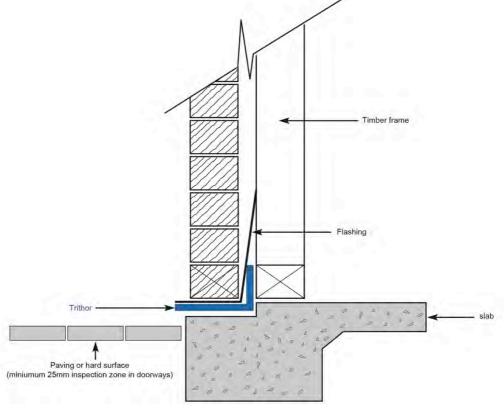
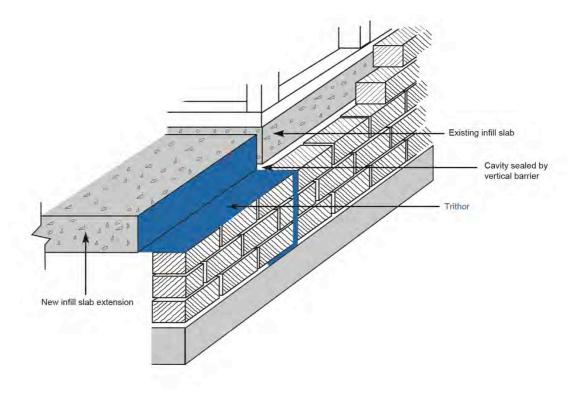


Figure 161



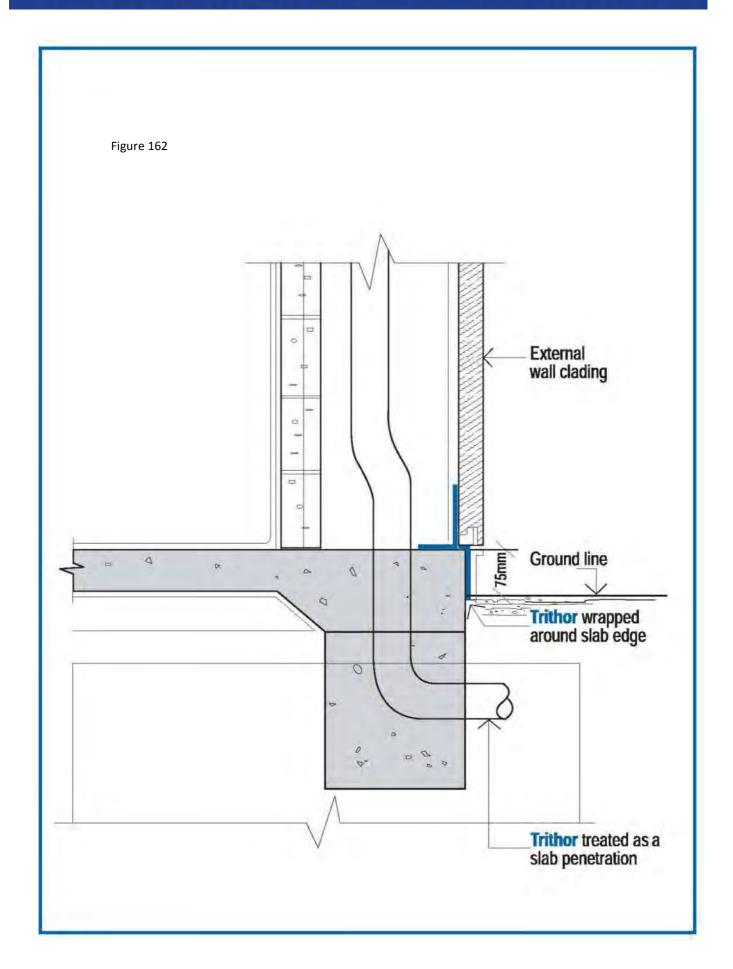


Figure 163

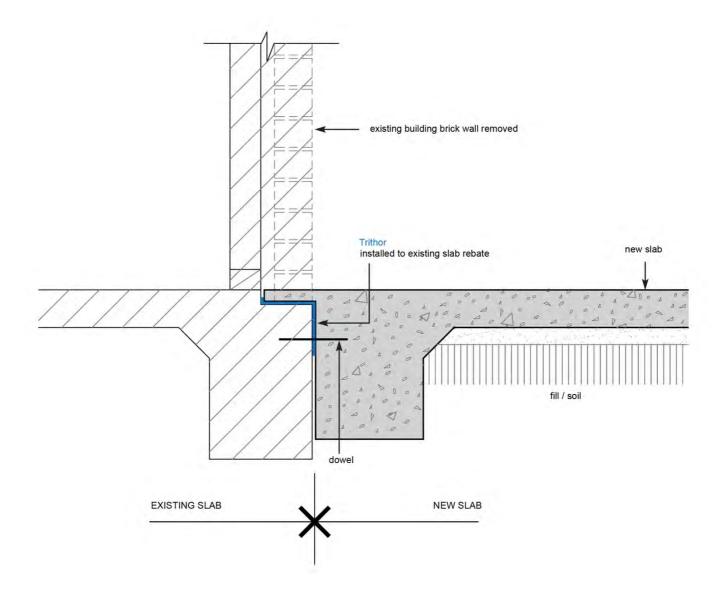


Figure 164

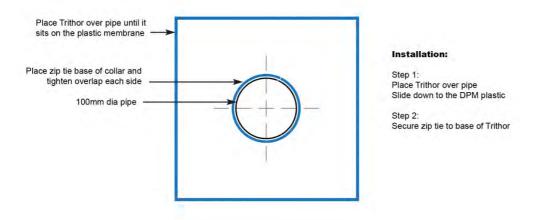
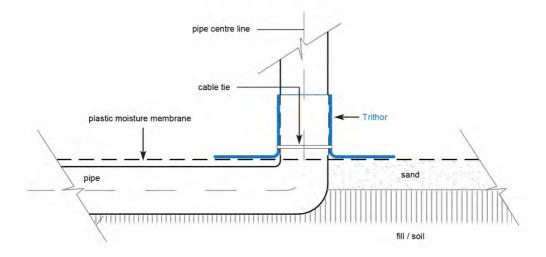


Figure 165

1 before concrete pour



Section after concrete pour

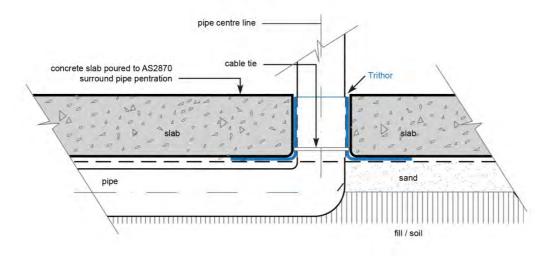


Figure 166

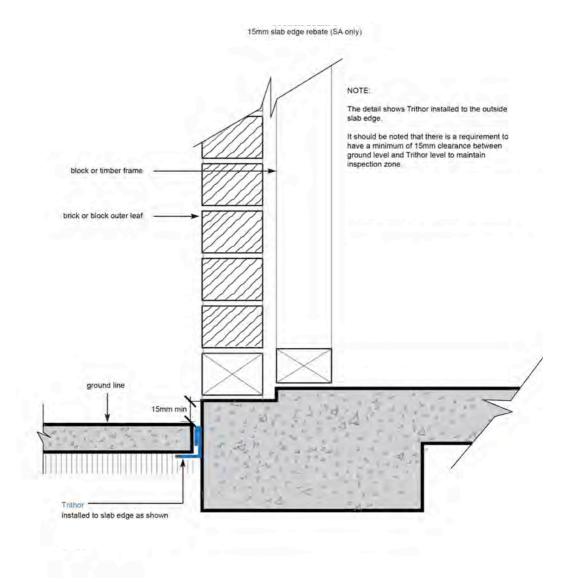
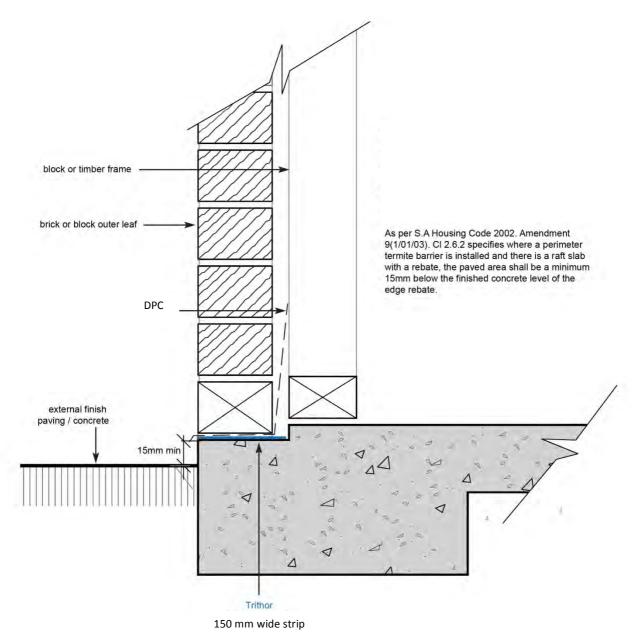
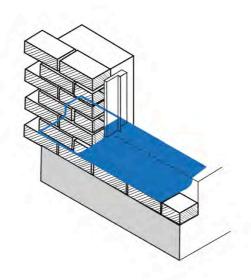


Figure 167 Typical for South Australia. Also for commercial constructions.





Door/full height windows 'slab on ground'

Figure 168 Typical for South Australia.

Figure 169 THIS IS DELIBERATELY BLANK.

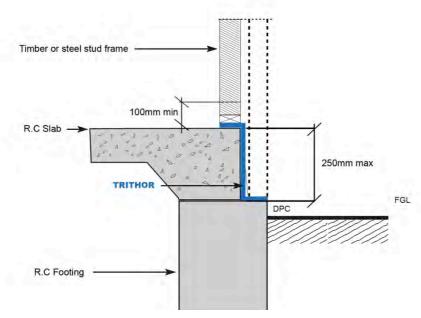


Figure 170 Typical for South Australia. Also for commercial constructions.

Lightweight concrete panel detail

Figure 172 Typical for South Australia. Also for commercial constructions.

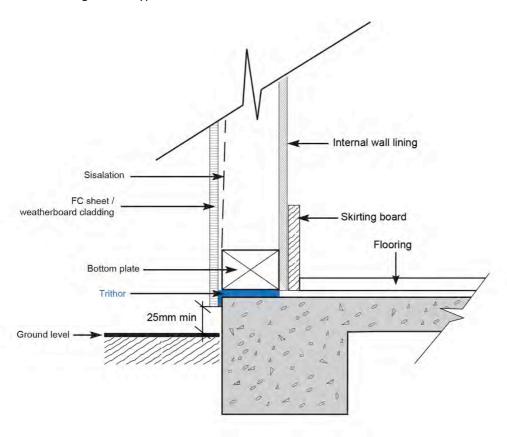
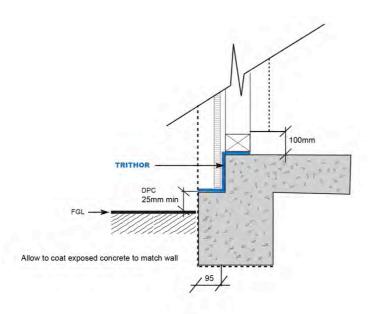


Figure 173 Typical for South Australia. Also for commercial constructions.



Lightweight concrete panel detail

R.C Slab

TRITHOR

TRITHOR

R.C Slab

TRITHOR

R.C Footing

TRITHOR

TRITHO

Figure 174 Typical for South Australia. Also for commercial constructions.

Lightweight concrete panel detail

Figure 175

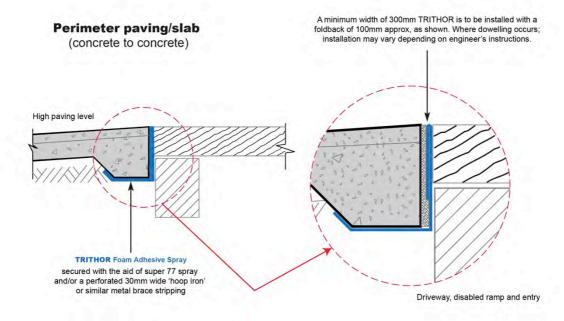
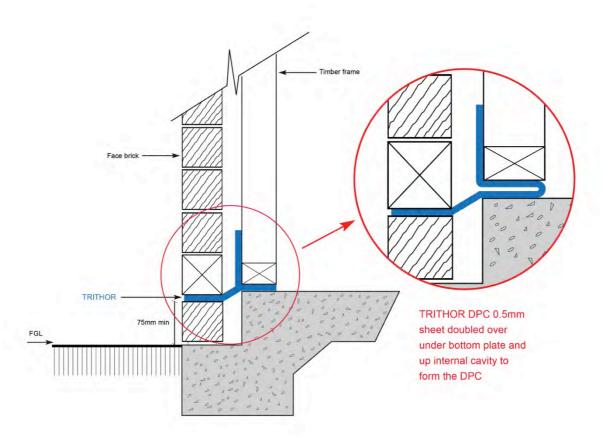


Figure 176 Close-up of 175

Figure 177 TRITHOR when used as a DPC.



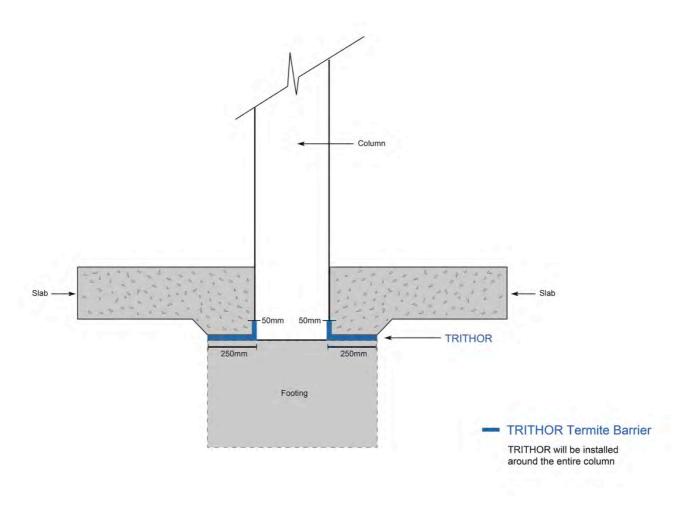


Figure 178 TRITHOR for two slabs on a common footing.

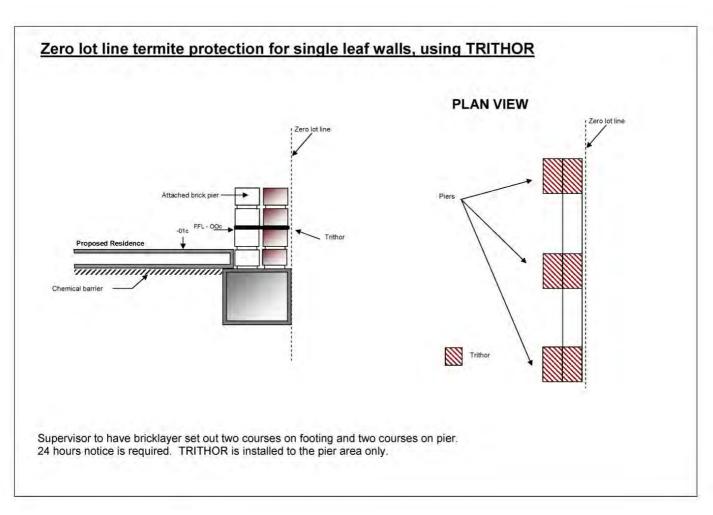


Figure 179



Essential Equipment

- TRITHOR Cutting Tool, for cutting TRITHOR.
- Wiltshire Stay-Sharp Scissors (or similar).
- 3M 8979 Performance Plus Duct Tape (preferred) or Tessa 4688 Black Cloth Tape for joins.
- TRITHOR Foam Adhesive Spray (strongly recommended),
 - o **3M Scotch-Weld Non-Flammable FoamFast 74 NF Spray Adhesive** or 3M Super 77 Multipurpose Spray Adhesive; accepted only when TRITHOR Foam Adhesive Spray is not available.
- Cable Ties (approx. 400 mm) for sealing penetrations.
- Hammer and concrete clout nails (30 mm).
- Nail Gun (recommended) with 16-20 mm nails.
- Tape Measure for accurate measurements.
- Measure Wheel.
- · Staple Gun with industrial staples. 8mm staples are used in the gun, e.g. Rapid (Brand Name).

Paperwork / Warranty Process

The TRITHOR Authorised Operator:

- 1. Installs TRITHOR Termite Protection.
- 2. Arranges for placement of 'AS 3660 Stickers' in Electrical Meter Box and/or inside cupboard door in kitchen.
- 3. Completes the Site Installation Report, with site diagram.
- 4. Completes the Certificate of Compliance.
- 5. Completes the Warranty documentation.
- 6. Provides the builder/property owner with Warranty Information Pack consisting of a TRITHOR Folder containing:
 - Homeowner Termite Information Brochure.
 - Certificate of Installation.
 - o Certificate of Compliance.
 - o TRITHOR Warranty Activation form.
 - TRITHOR Termite Protection Warranty.