Plasmite™ Termite Film HE

Installation Manual
Accreditation Course Manual

Certificate CM40382

Version 2: JULY 2023

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INTRODUCTION

Plasmite™ Termite Film HE

Plasmite™ Termite Film HE is a building product/termite barrier; that when installed into a new building it will provide long term protection to the whole of the house from hidden subterranean termites and also provide protection from moisture movement. Plasmite™ Termite Film HE is made from low density robust polyethylene mechanically impregnated with a synthetic pyrethroid insecticide, Bifenthrin. Bifenthrin is a natural Pyrethrum produced by the chrysanthemum daisy, natures own care for insect problems. It has a low toxicity rate for warm blooded animals but is deadly to termites and insects, not only repelling but also killing termites.

The Plasmite™ Termite Film HE is manufactured using a manufacturing process to make a finished product that is durable and very effective barrier for subterranean termites (when installed correctly).

The Plasmite™ Termite Film HE is supplied in various width and length sizes. The supplied rolls are cut into particular sizes depending on the installation method, either placed vertically or horizontally in structures, to form a continuous barrier for subterranean termites.

How Plasmite™ Termite Film HE Works:

The Plasmite™ Termite Film HE is a low density polyethylene sheet impregnated with bifenthrin, a synthetic insecticide, which repels and kills termites upon contact.

The Plasmite™ Termite Film HE is installed in vertical and horizontal positions in a structure to protect the structure for many years.

The Plasmite™ Termite Film HE is safe as it poses minimal risk to the homeowner, construction site workers and/or the environment. It is ideal for use in sensitive environments and in allergy free housing etc.

The Plasmite™ Termite Film HE is installed under slabs and in between construction materials not exposed to direct sunlight. When installed under slab, Plasmite™ Termite Film HE must be installed: first underneath an approved polyethylene sheet that meets the requirement of A.S2870-1996 – vapour barrier and damp proofing membrane for under slabs.

Plasmite™ Termite Film HE Installation Components:

ROLL SIZES: 100m x 200mm, 100m x 250mm, 100m x 300mm, 50m x 300mm, 100m x 1m, 50m x 4m.

- 3M Performance Plus Duct Tape (for sealing overlaps in termite blanket application)
- Approved Sealant (termite resistant flexible) 410g (to seal blanket on to substraits and overlaps of termite blanket), Termseal sealant, Greenzone sealant, Novithor sealant.
- Plasmite™ Termite Film HE Epoxy Kit (termite resistant - to seal blanket on to substrates and overlaps of termite blanket)
- 3M High tact Multi purpose adhesive (for sealing overlaps and adhesion to substrates, particularly retainer walls to hold in place)
- Panduit Cable ties for collar installations
- Plasmite™ Termite Film HE grip strip for sill till adhesion for doorway installations
- Approved Termite Resistant Membrane Paint/Sealer, Multi-purpose Termseal/Greenzone Paint

Qualified Installers:

Only qualified installers trained by Australasian Institute of Pest management Training are to install the Plasmite™ Termite Film HE. Installers will also require appropriate licensing by state government legislation e.g. QBCC QLD, units 6, 8, 10 and 42A competency for Pest Control licensing.

Site inspection sheets are to be completed upon installation of Plasmite™ Termite Film HE. Please contact Creepy Crawly Pest Control Pty Ltd for a copy of this document. Particular notice should be made on the site inspection sheet of any termite nests within 50m of the proposed construction site of the dwelling or structure.

Warranty:

Plasmite™ Termite Film HE provides a written product warranty to the builder/homeowner for 12 years with conditions applying; termite inspections are to be carried out annually (1 year) to obtain an extended warranty. See sample warranty form attached to this installation manual.

1 Briefing on Habitat, Location & Damage caused by Termites

1.1 Termites and damage they cause

Termites and the damage they cause, is accepted as a normal risk to buildings in Australia.

Termites pose a significant threat throughout mainland Australia. They attack timber in buildings, trees, posts, poles, firewood, bridges and railway sleepers.

In the mid 1980s annual damage caused by termites in Australia was estimated to be in the vicinity of $80-$100 million. Today the figure would be considerably higher.

Termites do have their place in the environment however, as they play an important role in the breakdown and recycling of dead wood and other plant debris. Termites have been around for at least the last 120 million years. They were in Australia millions of years before eucalypt trees evolved. This long period of coexistence means that the Australia bush is adapted to their needs.

Termite damage

1.2 Termites Existence and the Beneficial Aspects

- Their tunnelling in the soil reduced runoff by helping rainwater to soak in more quickly. They also allow more air down to plant roots and help mix the soil layers.
- They have a crucial role in the bush where they eat unwanted woody plant parts, recycle nutrients and create habitat for many animals (birds, possums, lizards, etc.)
- Termite colonies provide a home for fungi, some smaller insects and an incubation chamber for birds and lizards.
- Human food value- winged termites have twice the protein of rump steak.
- As part of the nutrient cycle, termites are a major food source for ants, spiders, birds, reptiles and mammals (eg. Echidna & numbat).

Termites in soil

1.3 Different Types of Termites

Planet Earth has about 2,500 different termite species. In Australia we have about 15% of the total (about 350 species). Fortunately, only a few of these species (approximately 30) damage buildings. Australia termites can be grouped into 4 classes:

- Dampwood termites,
- Grass feeders,
- Drywood termites,
- Subterranean termites.

Dampwood termites, as their name suggests, are restricted to damp timber and are most common in the tall wet forests of the eastern seaboard. They rarely infest houses, except where there is a significant moisture problem, such as from a leaking laundry or bathroom.

Grassfeeding termites do not attack timber structures.

Drywood termites live entirely within timber and are a minor pest, mostly warm and humid costal areas, where the damage they cause is not significant.

Subterranean termites cause nearly all damage to buildings. The vast bulk of this destruction is attributed to termites from a single group, the genus *Coptotermes*. In tropical Australia, *Mastotermes darwinienis* is also capable of causing significant damage. In some regions, otherwise minor genera like *Schedorhinotermes* and *Heterotermes* are prominent.

Subterranean termites take their name from their habits of either nesting below ground level or keeping some contact with the ground. They do this mostly to reach water. Sometimes, where parts of structures are always wet, subterranean termites will live without any ground contact. Such nests without ground contact have been found in docks, boats and in buildings where there is regular water from leaking showers, pipes or guttering.

In the rest of this document, "termite" unless otherwise specified, means "subterranean termite".

1.4 Termite Food and Habitat

Termites are subterranean and live underground. They live on colonies which may grow to contain millions of individuals.

Subterranean termites live in the dark and damp atmosphere of their nests, foraging galleries (mud tunnels) and timber food sources. They cannot survive very long when exposed to sunlight or dry conditions. Their soft, pale skin burns easily and dries quickly.

In general termites prefer loose sandy soil or leaf mulch and humus where tunnelling is easiest. Hard clay, however, is also a suitable habitat.

The majority of termite tunnelling takes place in the top 300mm of the ground (where the wood is plentiful) although they have been known to burrow deeper, (as deep as 70 metres) and can enter buildings well above ground level, especially on sloping sites with retaining walls or cellars.

Termites are common in woodlands and forest areas that often adjoin housing estates. They feed mainly on materials containing cellulose (timber and plant materials). Termite food might include:

- Trees, stumps, garden retaining edges and mulch,
- Timber building materials,
- Furniture,

- Floor coverings
- Packing,
- Printed materials (papers, records, blueprints, books),
- Fabric,
- Clothing,
- Footwear.

Termites can also damage many other non-cellulose materials, components or structures, including the insulation on electrical cables, rigid polystyrene foam insulation and soft decorative renders, as they building galleries to reach food.

1.5 Termite Nests, Colonies and Lifecycles

Within subterranean termite nests there are a number of different castes each of which has its role to play in the operation and expansion of the colony.

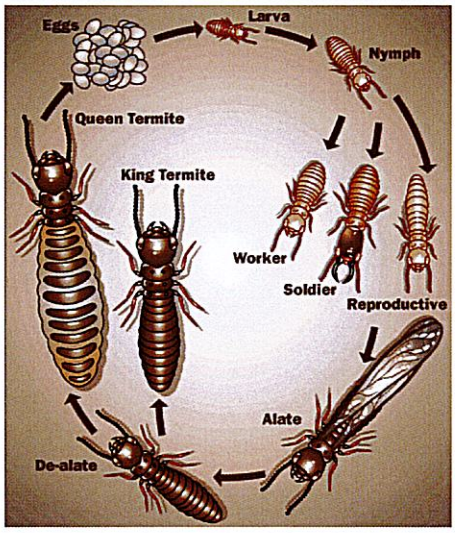
- Reproductive's i.e. Queens and Kings-breeding stock.
- Alates i.e. immature Queens and Kings that have wings and will fly away during the breeding season to mate and establish new colonies.
- Workers i.e. search for food, build galleries, groom other termites, feed the Reproductive's, Alates and Soldiers.
- Soldiers i.e. defend the nest from predators, especially ants.

Termites from a large mature colony may forage for food and attack timber over an area of one hectare.

A typical termite has a maximum life expectancy of about four years and takes about four months to develop from egg to maturity.

As the colony starts with just two individuals (Queen and King), it takes awhile to build up numbers. It is unusual for a new colony to significantly damage a building until at least three to five years have passed.

Some termite colonies have been known to exist for well over 25years, and in species where the Queen and King can be replaced, the colony is essentially immortal (i.e. will not die of old age).



Lifecycle of a termite

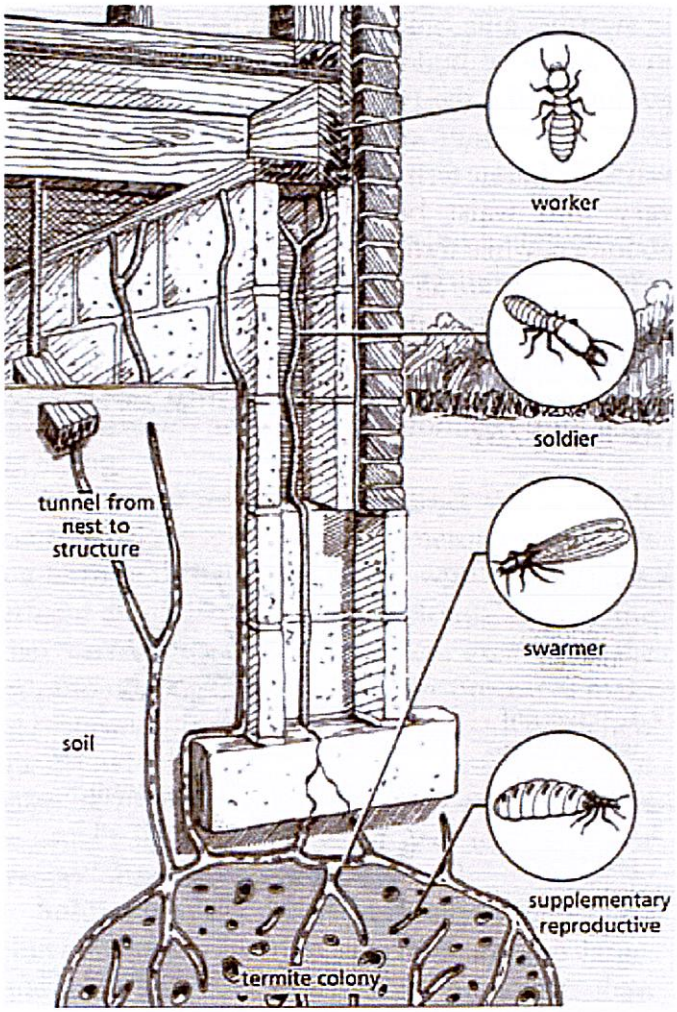
1.6 How Termites Ingress into Structures

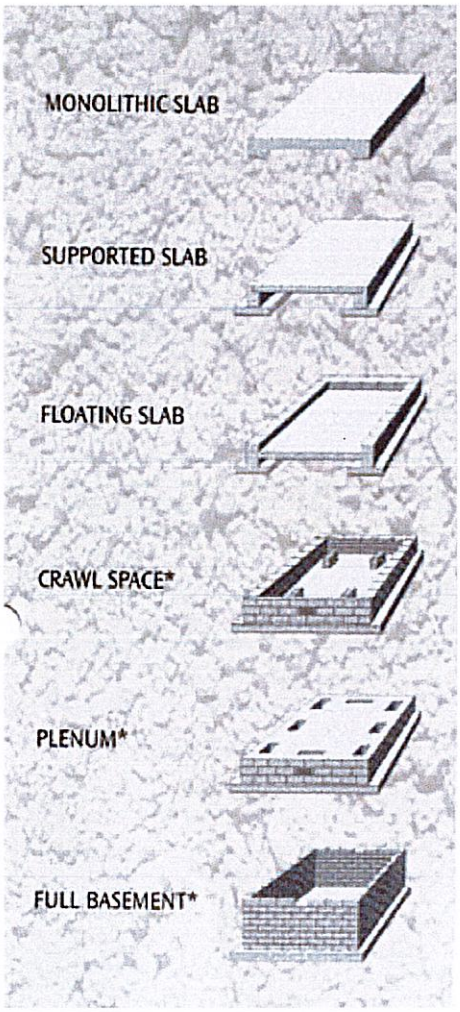
- These tunnels are usually made in the top 300mm of soil but may be deeper, especially in fill and under tree roots.

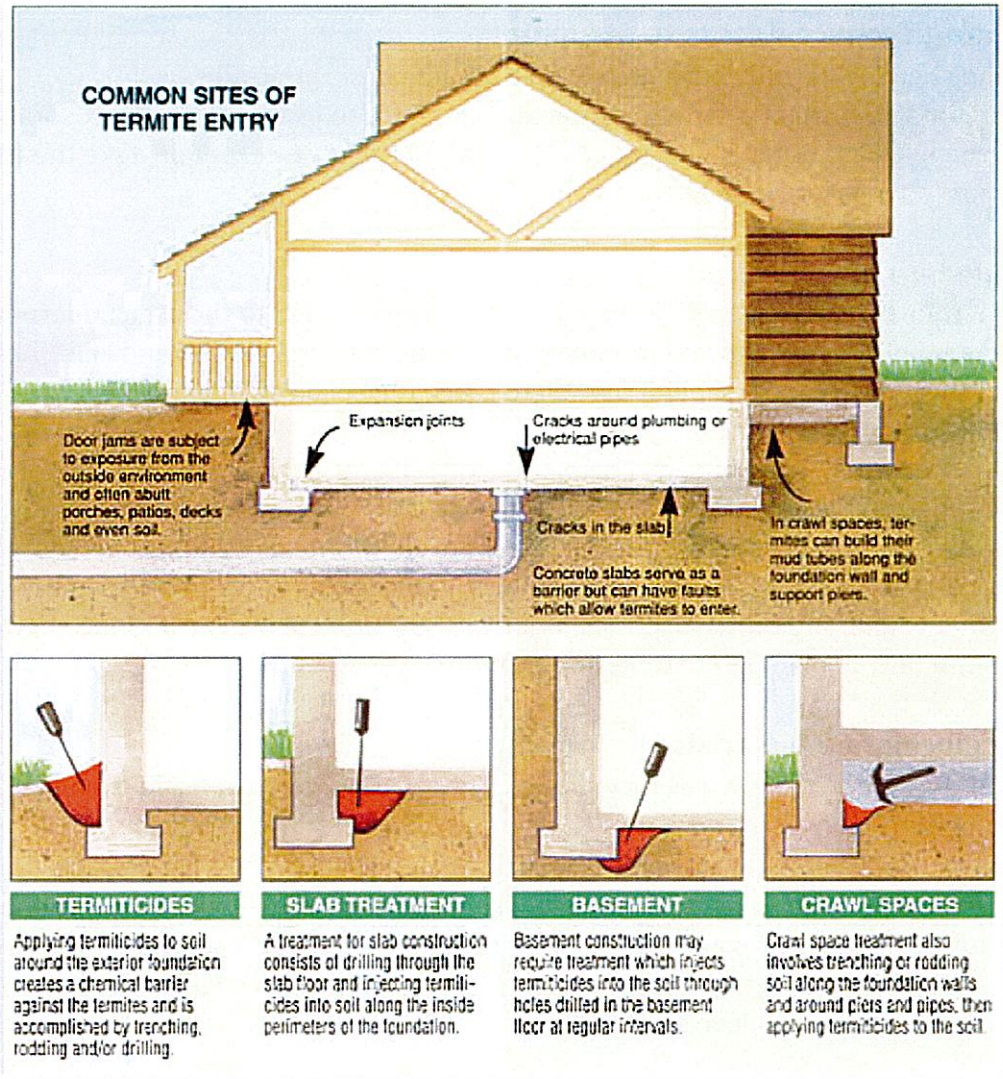
- Termites mostly enter buildings from underground tunnels.
- They can penetrate through expansion joints or uncontrolled cracks in concrete slabs and through shrinkage gaps between slabs and walls.
- They typically enter buildings through footings which are in contact with the ground.
- Other major areas of termite penetration are alongside service connections, such as water and gas pipes which pass through the floor or walls.
- Another favourite entry point is via garden beds or wood heaps that are built up against a buildings walls.
- If termites cannot tunnel directly from the ground to the food they have found, they will build above-ground galleries (mud tubes) to bridge over non-food obstructions. By moving inside these mud tubes they can safely reach their food.

1.7 Where Termites Get into the Structure

There are many potential points of entry as indicated in the diagrams here and over the page.







Module 1 Revision

1. **Plasmite Termite Film HE Termite Barrier is effective in blocking which group of termites?**

2. **Why do termites build earthen tunnels?**

3. **List three ways termites can enter a building.**

4. **Will termites damage non-timber materials in a building e.g. concrete?**

5. **Which members of the termite colony do you need to see to allow identification of the termite species? What physical characteristics are important?**

6. **Is Plasmite Termite Film HE Termite Barrier efficient in stopping termite ingress?**

2 Preventing Termite Access to Structures

Physical and chemical termite barriers rely on the same basic principles.
The fundamental feature of a termite protection system is to install or construct some form of barrier through which termites will not pass. This barrier may, for example, take the form of a (chemical) or (physical) termite barrier.

2.1 Termite Barrier (Chemical)

Chemical barrier systems use toxic termiticides which are applied to the area underneath and on/around a buildings footings and foundations. This poisons the ground and kills or repels termites as they try to tunnel though the soil to reach the cellulose food above.

Today there are two major groups of chemical termiticides used for new construction, the organophosphates and synthetic pyrethroids. Newer molecular groups are also being introduced for remedial control of termites. All chemical termiticide formulations have been developed from insecticides originally intended for agricultural use. None is specific to termites and all are active against a wide variety of non-pest species. Prior to 1995 long-life organochlorine chemicals were used. They are now banned in Australia and cannot be used.

2.1.1 Organochlorine Materials

Organochlorines are also known as cyclodienes. The best known termiticide examples are:

- Chlordane
- Heptachlor

Historically these chemicals were the most widely used termiticides. They were cheap. Organochlorine termiticides could be used to form termite barriers because they took a very long time to break down. This lasting residual poison capacity in the soil could be effective even at relatively low concentration levels.

Organochlorines are, however, dangerous chemicals. Because of environmental and health concerns, their use has been banned in most developed countries. The last major use of organochlorins in Australia was as termiticides in the Northern Territory. Organochlorine residues are still commonly found in surveys of human breast milk.

The Australian Pesticides and Veterinary Medicines Authority enquiry recommended, on the advice of National Health and Medical Research Council reports, that organochlorins be completely banned for termite treatment in all parts of Australia, except the Northern Territory, from June 1995.

Other types of organochlorine termiticides, DDT, Dieldrin and Aldrin, have not been in use in the last 2 decades.

2.1.2 Organophosphate Materials

Chlorpyrifos is the only organophosphate currently registered for use against termites in Australia. Dursban™ is the main brand name of DowAgrosciences' chlorpyrifos products and is the best known of the dozens of brands on the Australian market.

Organophosphates are related to nerve gases. They are generally more toxic than organochlorins and are also more expensive. Organophosphates are considered to be safer than organochlorins because they are less persistent in the ground as they break down more rapidly. Breakdown

occurs because the molecular bonds are not as strong as those of the organochlorins. Phosphates are widely sought by plants as nutrients.
In Australian experience, organophosphate termite barriers breakdown has been reported in as little as 3 months. CSIRO tests on organophosphates (in ideal conditions) have indicated an effective working life of between 3 and 15 years.

Organophosphates need a consistent and complete coverage to be effective so operator skill in their use is paramount. The regular re-treatments required with organophosphates also depend on the applicator being able to achieve an even distribution of chemical and gain good access to the building sub-floor and perimeter areas.

Replenishment of degraded organophosphate barriers under concrete slabs can be achieved by drilling through the slab and injecting the chemical under pressure or installing a network of pipes during construction to reticulate the chemical into the ground beneath the slab. It is essential that slab drilling and reticulation systems provide an even and complete chemical distribution in order for the barrier to be effective. The likelihood of achieving such a distribution will vary with differing foundation soil types and densities. Reticulation pipes can also be installed around a building perimeter as a means of distributing chemical directly into the soil.

Where there is adequate access under suspended floors and around building perimeters organophosphates barriers can be replenished by hand-spraying.

2.1.3 Synthetic Pyrethroid Materials

Synthetic pyrethroids include Bifenthrin, Cypermethrin, Deltamethrin, Fenvalerate and Permethrin.
Examples of pyrethroid brand names available in Australia are:

- Dragnet™,
- Demon™,
- Torpedo™,
- Tribute™,
- Plasmite™,
- Biflex™.

In Australia, FMC's Biflex™ (Bifenthrin) has gained registration for barrier sprays on the basis of field trials conducted over a period of many years.
Synthetic pyrethroids are artificial variations of the natural insecticides from *Pyrethrum* daisies and are sometimes used in household fly and flea control.

They are more expensive than chlorpyrifos. The high potency of synthetic pyrethroid termiticides means that they are effective at lower concentrations. Synthetic pyrethroids can sometimes repel rather than kill termites.

Permethrin has been reported as a suspected carcinogen.
Synthetic pyrethroids are used in the USA where they have been found to repel termites better than organochlorins or organophosphates, but their tendency to break down quickly limits their usefulness in building protection. Some chemical manufacturers hope to use reticulation systems to overcome the problem of short life span. The strong binding tendency of some synthetic pyrethroids to soil means that their effectiveness when applied through reticulation systems is likely to be limited by poor chemical distribution. Currently the APVMA labels Bifenthrin for use through reticulation systems.

Recent American studies pointing to permethrin as the most reliably persistent synthetic pyrethroid are not consistent with CSIRO's assessment of permethrin in Australia. Permethrin has not gained registration as a barrier spray in Australia. This highlights the problems with unreliable performance of barrier sprays across differing soil and climatic conditions.

Environmental concerns over the high toxicity of synthetic pyrethroids to freshwater and marine life are significant. Bifenthrin is around forty times more toxic to water life than chlorpyrifos.

Synthetic pyrethroids were originally developed for pest control in crops where a short life span was an important feature, the exact opposite of what is required for a termite barrier. The need to regularly re-apply these chemicals and the difficulty of achieving full and consistent coverage hamper their longterm effectiveness.

2.1.4 Impregnated Chemical Plastics and Geotextiles

A relatively new use of synthetic pyrethroids is the impregnation of plastic building products with termiticides. Two such products are Kordon™ and Plasmite™, is a vapour barrier geotextile impregnated with small quantities of the synthetic pyrethroid deltamethrin. Barrier life of fifty years is claimed, though no mechanism for replenishment is available. Without the deltamethrin, termites can easily penetrate the plastic layers.

2.1.5 Chemical Groups New to the Industry

Products, called Imidacloprid (sold as Premise™ against termites and Termidor™ against termites) has been introduced for remedial and preconstruction termite control. Highly water soluble, it does not bind to the soil like earlier groups and is actively taken up by plants and carried to their sap. Imidacloprid has a double-barrelled effect, lethal at high level, it remains debilitating at quite low concentrations.

A remedial termiticide is the phenyl-urea, Fipronil. Perhaps best known as the active ingredient of Goliath™ cockroach gel, Termidor™ and Fipronil has been used in France and the USA against *Reticulitermes* species and now in Australia for many years.

2.1.6 Measures for Biological Control

Not presently used in new construction, biological control agents are not chemicals, but are whole organisms which attack or repel termites. Bacteria, fungi, nematodes (worms) and viruses have been researched over the last 25years with only nematodes and fungi finding minor use for remedial management of termites. They are not expected to ever find use as new construction barriers.

Plasmite Termite Blanket

2.2 Termiticidal Chemicals and the effects

Environmentalists, health authorities and increasingly the greater community, object to the use of poisonous residual termiticide chemicals because they generally believe their use to be hazardous or unnecessary. In support of this belief the following reason are often given:

The chemicals:

- Can kill non-target organisms,
- Can affect water supplies,
- Can affect water supplies,
- Get into the food chain and can contaminate human food,
- Can affect water supplies,
- Will probably get banned sometime in the future thus making retreatment difficult.

Areas subject to regular reapplications can become heavily contaminated and could, in the future, be regarded as intractable waste sites.

In summary, people do not want to endanger their health and the environment. The new buildings of today and tomorrow must be safer to construct, live in and maintain, than the toxin-laden sites of yesterday.

2.3 Termite Barriers (Physical)

2.3.1 How Physical Termite Barriers Work

The fundamental principle of all physical termite barriers is a simple one: install an impenetrable material wherever termites might enter a building undetected, thereby blocking their access and forcing the insects to either look elsewhere for food or to build a visible mud tunnel through which they will attempt to by-pass the physical barrier.

An effective physical termite barrier forces the termites that threaten our buildings, ingenious engineers that they are, to build mud tunnels where there is no existing soil or timber or other material to allow them free access to their food. By blocking undetected access and forcing the termites to build visible tunnels to gain exterior access, physical termite barriers, combined with thoughtful maintenance and inspections (to check for inspection zone obstructions and signs of tunnel building activity) provide an efficient means of termite protection.

Physical barriers, thus rely on a few 'weaknesses' in the termites' otherwise impressive armour; namely their inability to survive prolonged sunlight or dryness and their unwillingness to move where

they are exposed to predators (ants and birds for example). These weaknesses provide a simple, safe and effective way of managing termites.

There is an added advantage with the physical termite barrier system: the visible mud galleries which the termites build as they try to bridge the barrier provide excellent access points for pest controllers to use the minimum-toxin termite control techniques of dusting and baiting.

2.3.2 Termite Strip Shielding and Ant Capping

As the oldest and most widely used termite barrier system, ant caps on piers and stumps and strip shielding in brick walls provide effective termite protection.

Proper installation, quality materials and regular and thorough inspections are essential with any termite barrier system. This includes ant caps and shielding.

The effective use of ant caps and shielding is, however, very difficult in most slab on ground designs where service penetrations, corrosion and fixing the concrete pose significant problems. Casting the strip shielding into infill slabs overcomes the fixing problem, but the long-term ability of this join to accommodate movement and remain termite-proof is a concern. Completely under laying the slab with strip shielding material to provide a full barrier is impractical, very expensive and unlikely to be completely effective in the long-term.

Effective treatment of slab joints is also awkward, particularly where joints cross or meet perimeter shielding.

Ant caps and shielding in many suspended floor designs are the cheapest way of providing a termite barrier, ant caps and strip shielding do not however provide complete under-floor protection, so good access must be provided for inspections. Good sub-floor ventilation, drainage and natural light are also important when using ant caps and strip shielding to provide termite protection for suspended floors.

Subfloor piers

2.3.3 Stainless Steel Mesh

Woven Stainless steel mesh is a newer version of the traditional strip shielding concept. More flexible and easier to handle than rigid strip shielding, this system is marketed as Woven™ Stainless Steel Mesh and is installed by licensed franchisees and installers.

Being stainless steel the mesh barrier is less likely to corrode than traditional galvanised caps and shielding.

Great care is required to prevent metal on metal electrolysis and ensure that the mesh effectively collars service pipes. Fixing to concrete at slab edges and joints is achieved through the use of special termite resistant adhesives in a process known as *parging*. Parging requires very careful preparation of the surfaces and application of the products if an effective, long-lasting termite resistant bond is to be achieved. While curing, the adhesive cannot be subjected to any movement. The water-based parging material may take more than a day to cure in cool or damp weather. Care is also required on building sites to ensure that the fragile mesh (0.18mm-0.20mm thick) is not damaged or stretched.

The cost of the marine grade (316) stainless steel mesh means that full under-floor treatments with this product are very expensive. Less expensive protection is achieved by using the mesh in conjunction with other barrier systems or the slab itself.

Stainless steel mesh barrier

2.3.4 Termite Barriers (Concrete Slab)

Historically, concrete slabs were not regarded as effective termite barriers. Termites can enter through cracks in slabs caused by any number of factors. It is also thought, although there is no scientific evidence to show, that termites can widen hairline cracks in poor quality concrete to gain access to the timber above. This is considered to be especially likely where the concrete is weakened by added water.

While there is on-going debate as to the ability of slabs to remain free of cracks that run the full depth of the concrete and the ability of termites to widen such cracks, there is little doubt that termites can enter through a crack that is little over 1mm or more wide. Of course a 1mm crack is not

significant in terms of the cracked slab's structural integrity, but it will be very significant if termites enter the building through it and attack the house frame or fittings.
Australian Standard 3660.1 takes the view that the risk of a properly compacted, vibrated and cured slab, designed and reinforced in line with AS 2870 and AS 3600, cracking to more than 1mm is a small enough risk to permit such slabs to be employed to provide a minimum level of termite protection.

Thus in July 1995, when AS 3660.1 was released, concrete slabs could be used as termite barriers and the concepts of *partial* and *integrated composite* termite barriers were formalised.

The good performance record of concrete slabs as termite barriers since 1995 has proven that the view taken by Australian Standards in AS 3660.1 is correct. Since 1995, composite treatments have been very popular.

Partial concrete slab barriers may use termite barrier system to protect those parts of the footings deemed to be higher risk entry points, namely the building perimeter, slab penetrations and construction joints.

Concrete house slab

2.6 Australian Standards Relating to the Control of Termites

There have been several Australian Standards relating to the control of termites.

AS 1694-1974 The Standard for physical barriers used in the protection of new buildings against subterranean termites.

AS 2057-1986 The Standard for chemical soil treatment for protection of new buildings against subterranean termites.

AS 2178-1986 The Standard for detection and treatment of termite infestation in existing buildings.

In October 1993, Standards Australia repealed these three Standards and replaced them with **AS 3660-1993** which deals with protection of new and existing buildings and termite infestation, detection and treatment.

AS 3660-1993 was not called up into the Building Code of Australia. For building Code Purposes another Standard, AS 3660.1, was developed. AS 3660.1 relates only to new buildings.

AS 3660.1 1995 is the Standard that first recognised concrete slabs that comply with AS 2870 or AS 3600 as termite barriers. AS 3660.1 allowed the integration of recognised termite barriers to provide a "partial" or "composite" barrier. This use of these integrated systems is discussed later.

AS 3660-1993 was being updated to become the relevant Standard for treatment of existing buildings and termite infestations. The revised Standard is **AS 3660.2 2017.**

AS 4349.3 relating to timber pest inspections describes minimum requirements for inspection of building to determine the presence and risk to buildings from insects and fungi.

AS 3660.1 2014 is current and reflects the installation techniques described in this manual.

A third part of the Standard suite relating to termites is **AS 3660.3 2014,** which describes the evaluation and testing protocols for the assessment of termite barrier systems.

PROTECTION INSTALLATION METHODS

OPTION 1:

Once all plumbing pipes and PVC/copper conduits have been installed the appropriate method of application of Plasmite™ Termite Film HE must be carried out prior to pouring the concrete slab, if this is the chosen method of installation.

Make sure any support materials up the side of the pipe are removed before installing the Plasmite™ Termite Film HE Termite Blanket.

- *Take 1 piece of Plasmite™ Termite Film HE 300mm x 300mm square and place over the top of the pipe diameter and cut out a X then squeeze over the pipe down to the plastic.*

- *Wrap a piece of Plasmite™ Termite Film HE 100mm wide around the pipe and zip tie to the pipe and seal around the top of the Plasmite™ Termite Film HE with duct tape to moisture seal the pipe.*

NOTE: *Multiple penetrations can be done in the manner with all pipes coming through the square of Plasmite™ Termite Film HE.*

OPTION 1 Photo

OPTION 2 (wrap collar, suitable for plumbing / electrical pipes and steel columns):

- *Place Plasmite™ Termite Film HE against pipe penetration 100mm then turn up at the bottom.*

- *Zip tie Plasmite™ Termite Film HE to the pipe penetration and also duct tape at the top as per picture below. Refer to The Bug Shop for any further clarification and details.*

OPTION 2 Photo

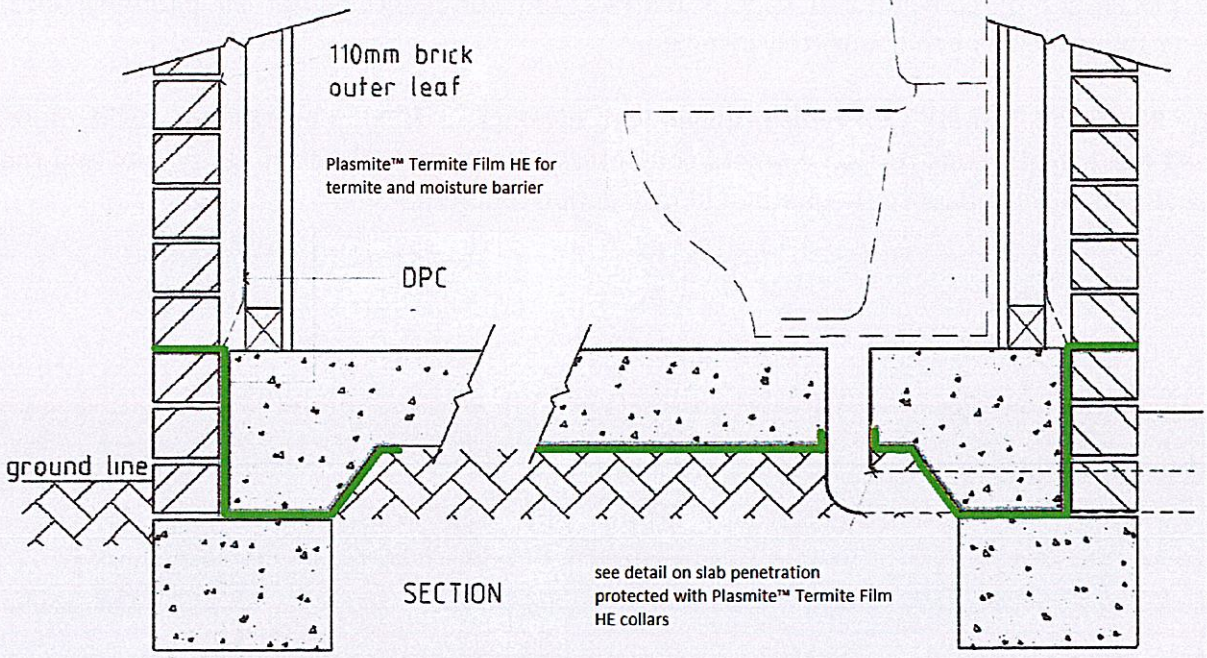
Plasmite™ Termite Film HE has been designed as a conventional vapour barrier for under concrete slabs as well as a termite barrier. The Plasmite™ Termite Film HE is installed to the building site prior to placement of conventional vapour barriers and commences after all plumbing and service penetrations have been completely installed.

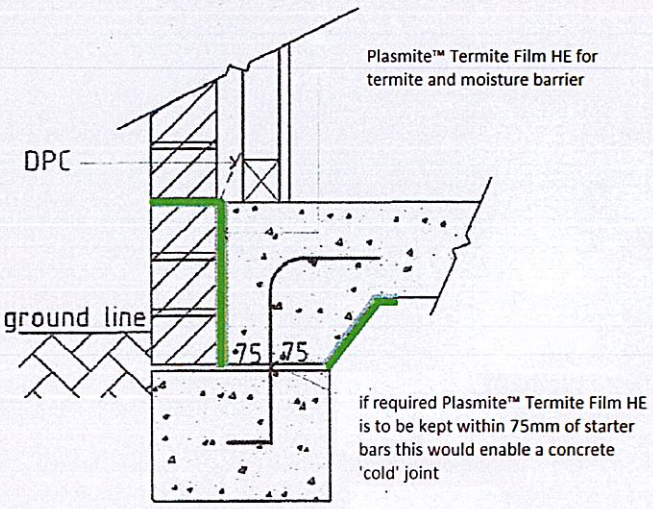
The Plasmite™ Termite Film HE is installed with overlaps of 200mm using good quality duct tape as used normally by construction workers/concreters. The type of the footings system and method of construction will influence the method of installation required.

note green colour is superseeded product for illustration purposes only

LEGEND

Plasmite™ Termite Film HE





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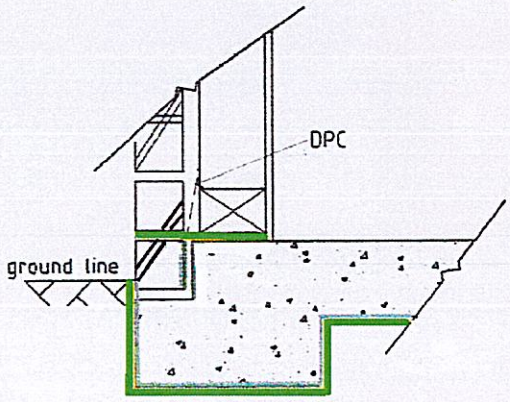

SECTION DETAIL 2

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DRAYTON NORTH
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CLIENT: THE BUG SHOP

DESIGNER: S. Davies

DESIGNER REVIEW: / /

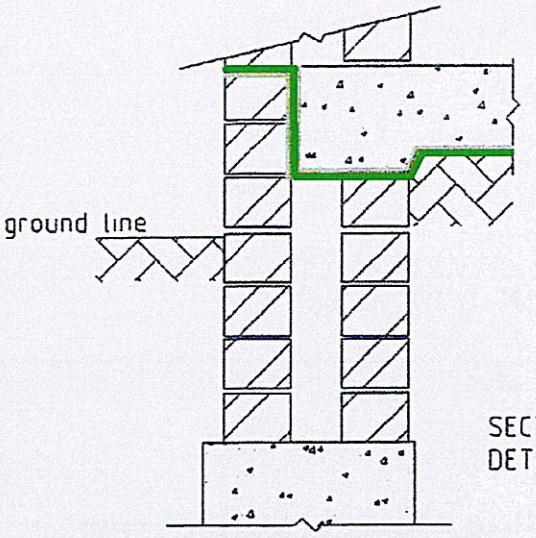
Q.B.S.A. Lic. No.75619

TITLE: STANDARD INSTALLATION DRAWINGS FOR Plasmite™ Termite Film HE FULL UNDER SLAB

SCALE: NTS | DRAWING No: 04-1146.13 | No IN SET: 13 | ISSUE: 1

LEGEND

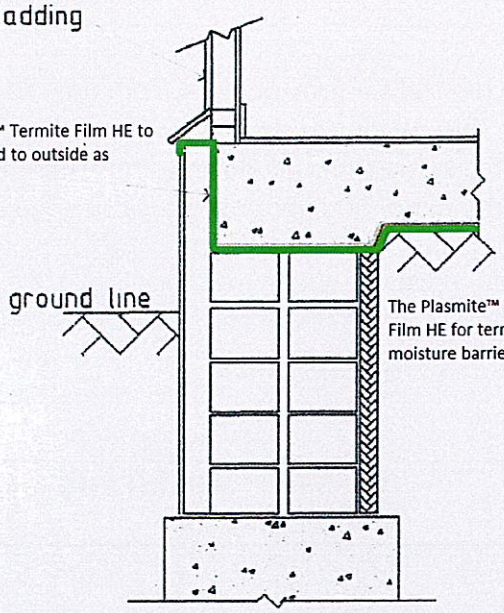
The Plasmite™ Termite Film HE



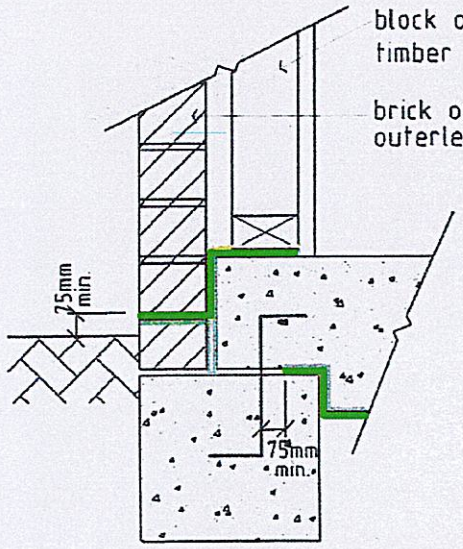
SECTION DETAIL 3

FC sheet/weatherboard cladding

The Plasmite™ Termite Film HE to wrap & extend to outside as shown

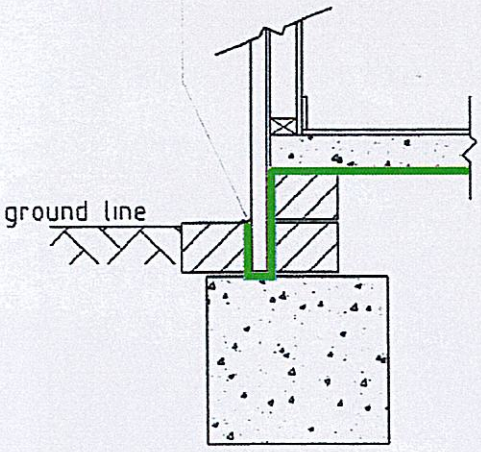


SECTION DETAIL 4
insulating material used



SECTION DETAIL 5
non-monolithic slab

concrete kerb providing protection at fround level to The Plasmite™ Termite Film HE
The Plasmite™ Termite Film HE to be "fixed" to external cladding with 3M "super 77" adhesive or similar approved product



SECTION DETAIL 6
insulation type cladding

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DRAFTSMAN: S. Davies
DESIGNER REVIEW: / /

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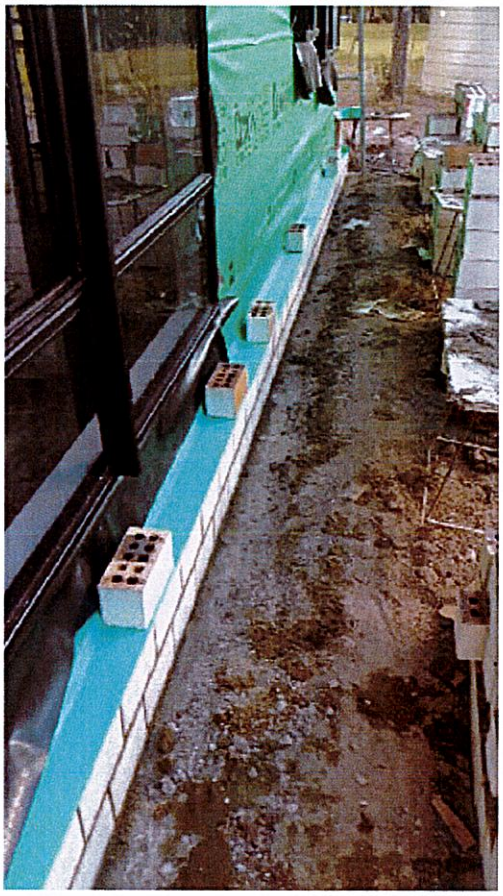
TITLE: **STANDARD INSTILLATION DRAWINGS FOR The Plasmite™ Termite Film HE FULL UNDER SLAB**

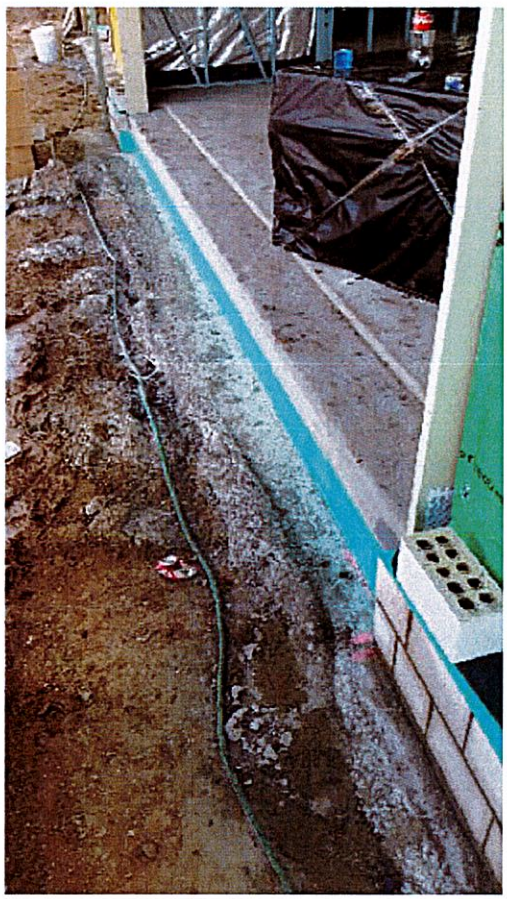
SCALE: NTS | DRAWING No: 04-1146.12 | No. IN SET: 12 | ISSUE: 1

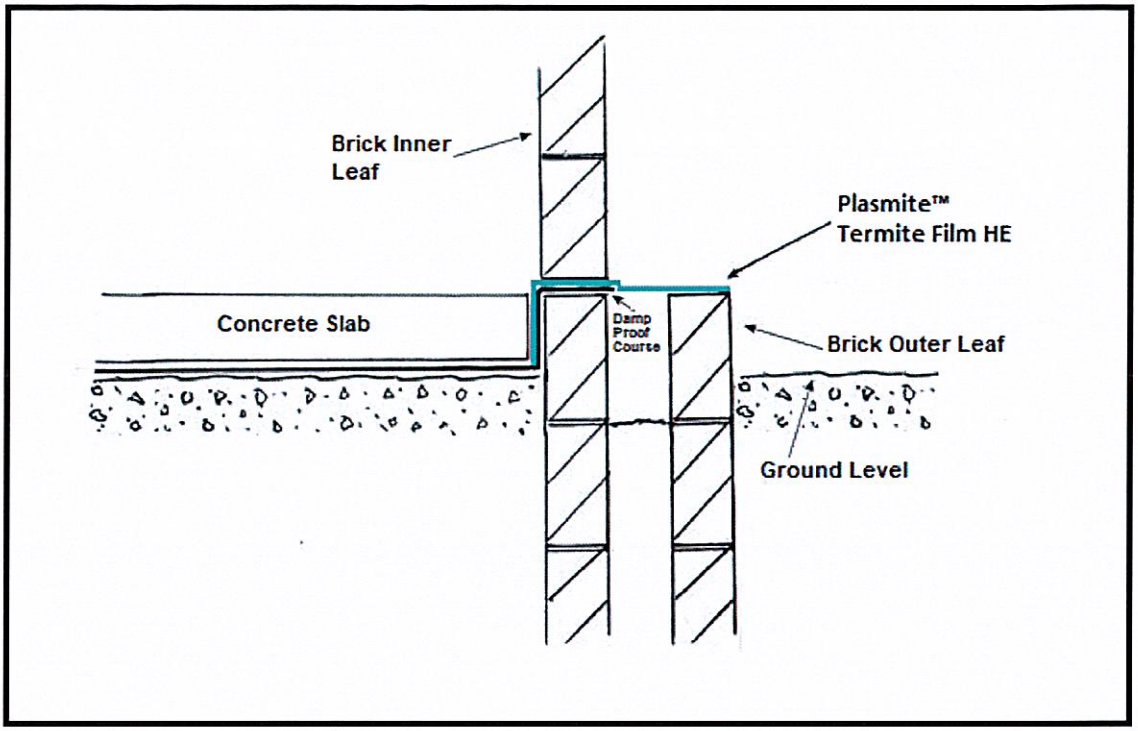
003	PLASMITE™ TERMITE FILM HE SLAB CUT OUTS

Cut outs in slabs are carried out from time to time because of defects in concrete or plumbing service pipes. This cut out in the slab will need protection to control joints between new and old/existing concrete. A full sheet of Plasmite™ Termite Film HE is to be applied to the entire area and extension at a minimum of 50 mm up the cut-out edge between new and old slab joints.

004	PLASMITE™ TERMITE FILM HE PERIMETER – BRICK WORK BRICKED UP BASE

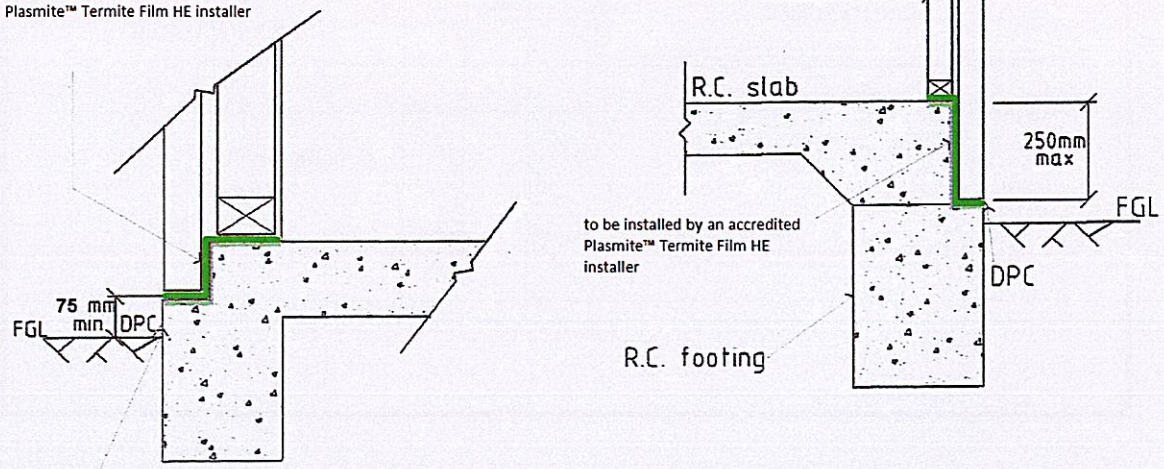


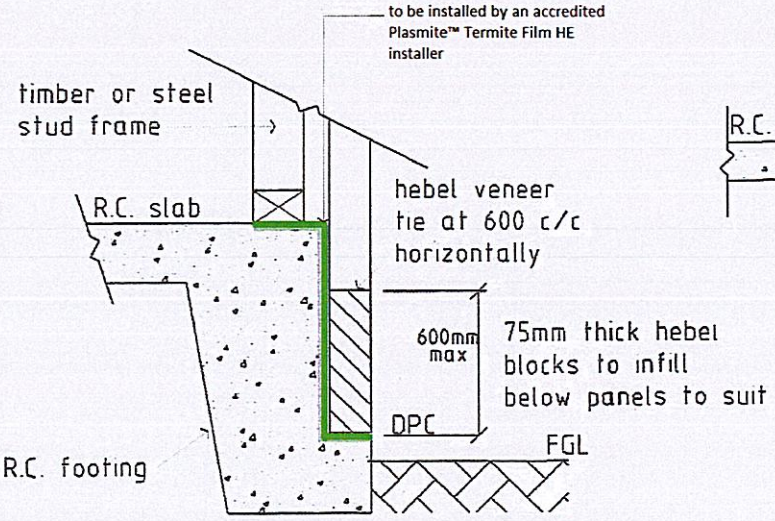


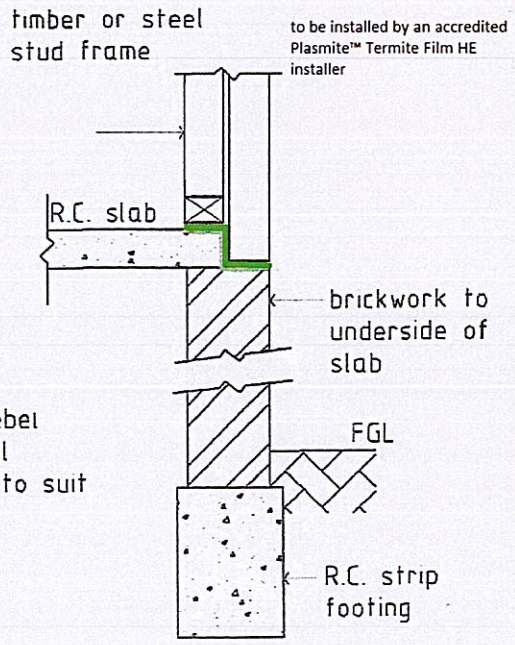

Brick Inner Leaf
Plasmite™ Termite Film HE
Concrete Slab
Damp Proof Course
Brick Outer Leaf
Ground Level

LEGEND

The Plasmite™ Termite Film HE







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DESIGNER REVIEW: / /

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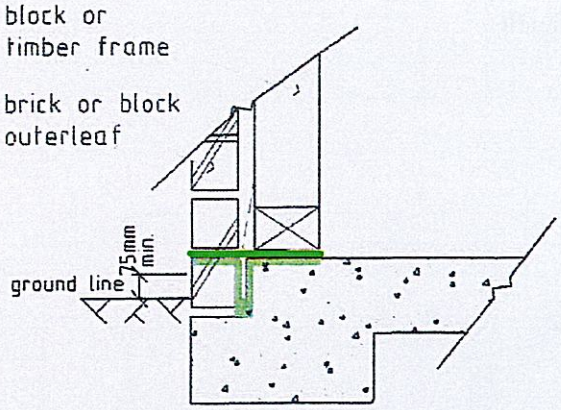
TITLE: STANDARD INSTALLATION DRAWINGS FOR The Plasmite™ Termite Film HE HEBEL

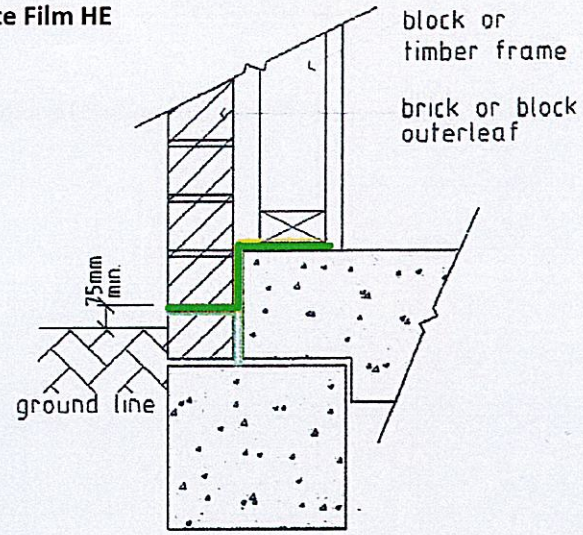
SCALE: NTS | DRAWING No: 04-1146.14 | No IN SET: 14 | AMDT: 1

LEGEND

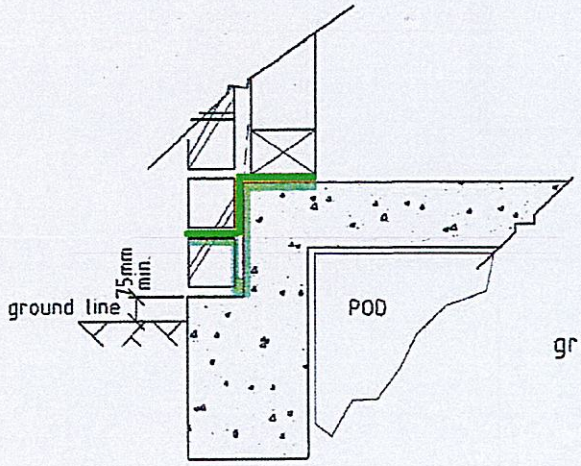
The Plasmite™ Termite Film HE



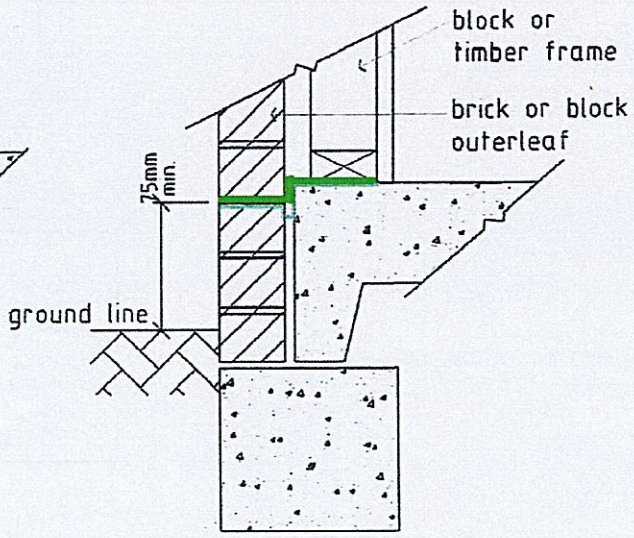
SECTION DETAIL 1
1 brick rebate



SECTION DETAIL 2
2 brick rebate



SECTION DETAIL 3
waffle pod



SECTION DETAIL 4
infill slab

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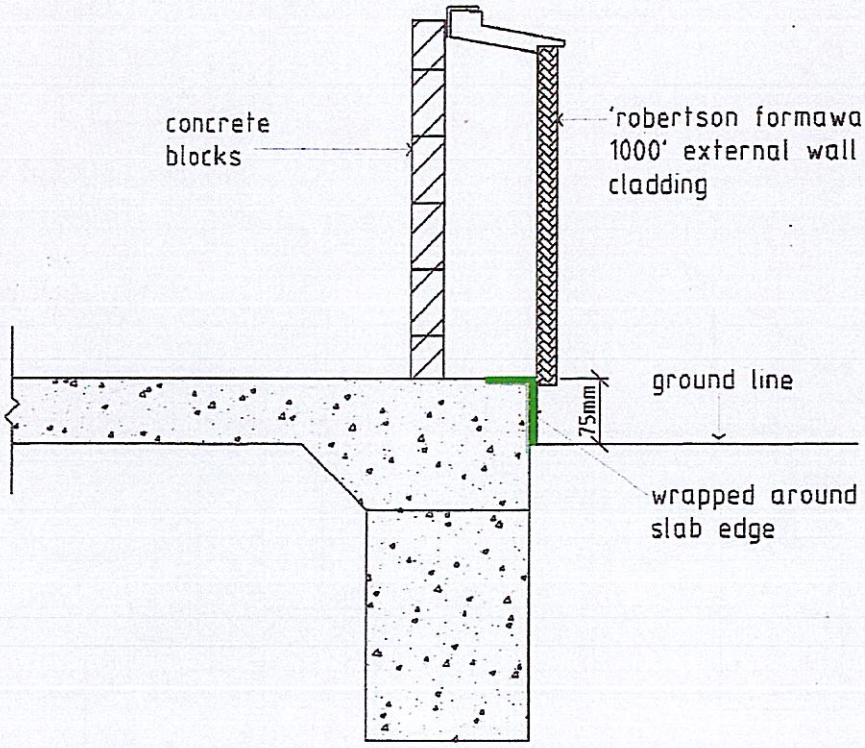
TITLE: STANDARD INSTALLATION DRAWINGS FOR The Plasmite™ Termite Film HE PERIMETER SLAB

SCALE: NTS | DRAWING No: 04-1146.11 | No IN SET: 11 | ISSUE: 1

LEGEND

The Plasmite™ Termite Film HE



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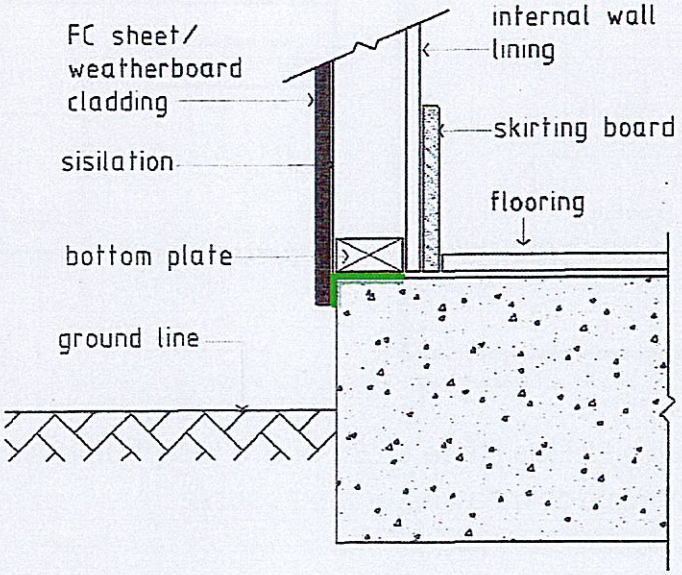
TITLE: STANDARD INSTALLATION DRAWINGS FOR The Plasmite™ Termite Film HE COMMERCIAL 2

SCALE: NTS
DRAWING No: 04-1142.06
No IN SET: 6
ISSUE: 1

LEGEND

The Plasmite™ Termite Film HE



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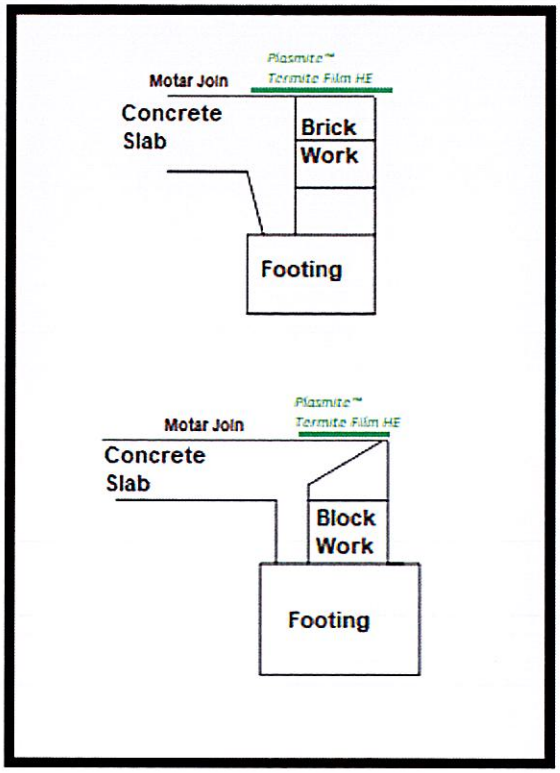
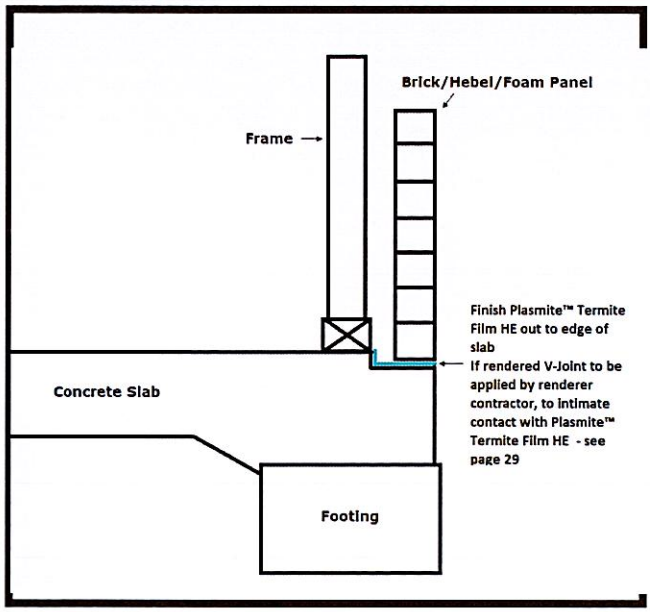
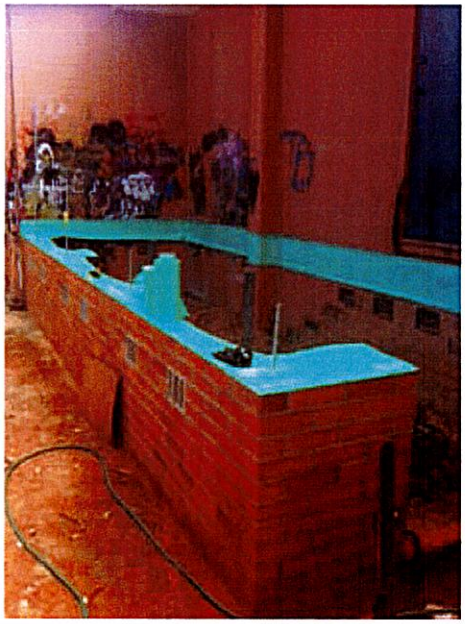
TITLE: STANDARD INSTALLATION DRAWINGS FOR The Plasmite™ Termite Film HE SLAB EDGE DETAIL

SCALE: NTS | DRAWING No: 04-1142.08 | No IN SET: 8 | ISSUE: 1



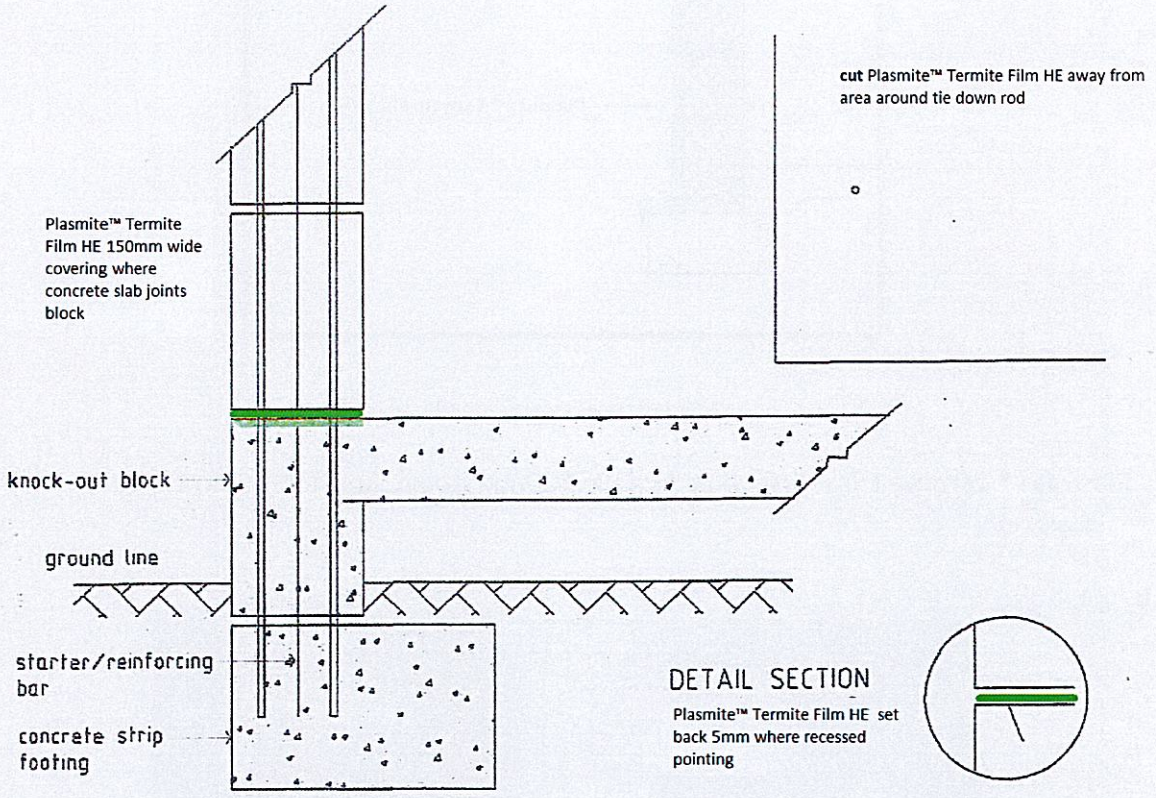


Apply Plasmite™ Termite Film HE to cover entire top of block work to extend to exterior of mortar joint. Apply prior to laying of next course.



LEGEND

Plasmite™ Termite Film HE



SECTION

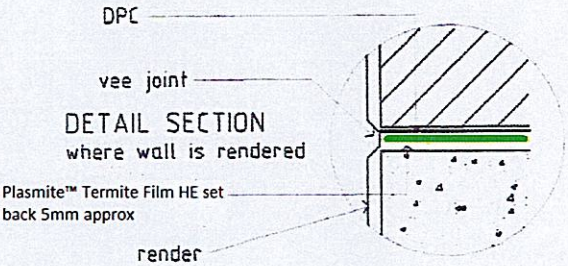
cut Plasmite™ Termite Film HE away from area around tie down rod

DETAIL SECTION

Plasmite™ Termite Film HE set back 5mm where recessed pointing

NOTE:
where rendering occurs Plasmite™ Termite Film HE a 'vee joint' is recommended

render may vary according to geographic locations eg. rective soil sites



DETAIL SECTION
where wall is rendered

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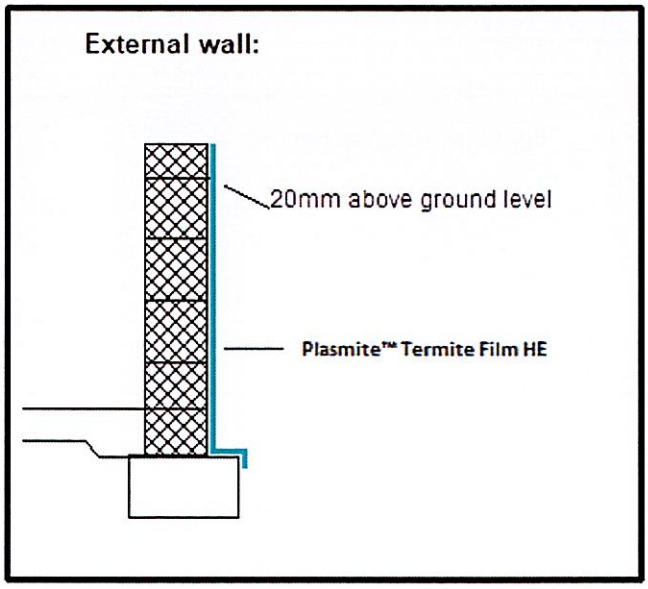
CLIENT: **THE BUG SHOP**

DESIGNER: S. Davies
DESIGNER REVIEW: / /

Q.B.S.A. Lic. No.75619

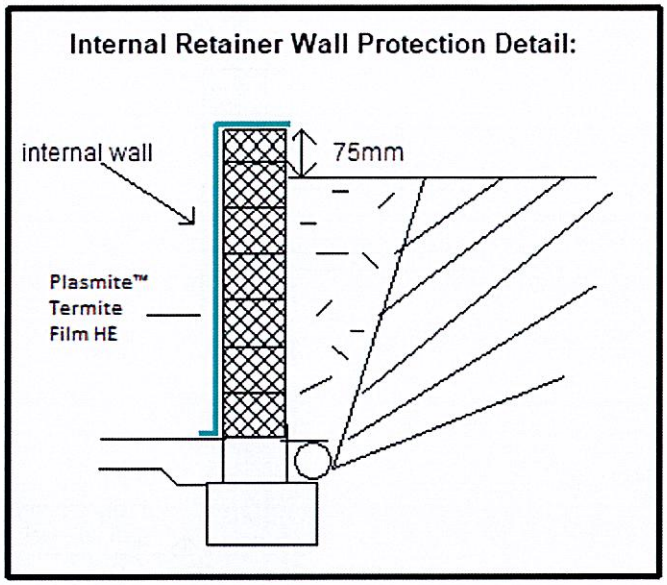
TITLE: **STANDARD INSTALLATION DRAWINGS FOR Plasmite™ Termite Film HE KNOCK-OUT BLOCK**

SCALE: NTS | DRAWING No: 04-1146.01 | No in SET: 1 | AMDT: 1

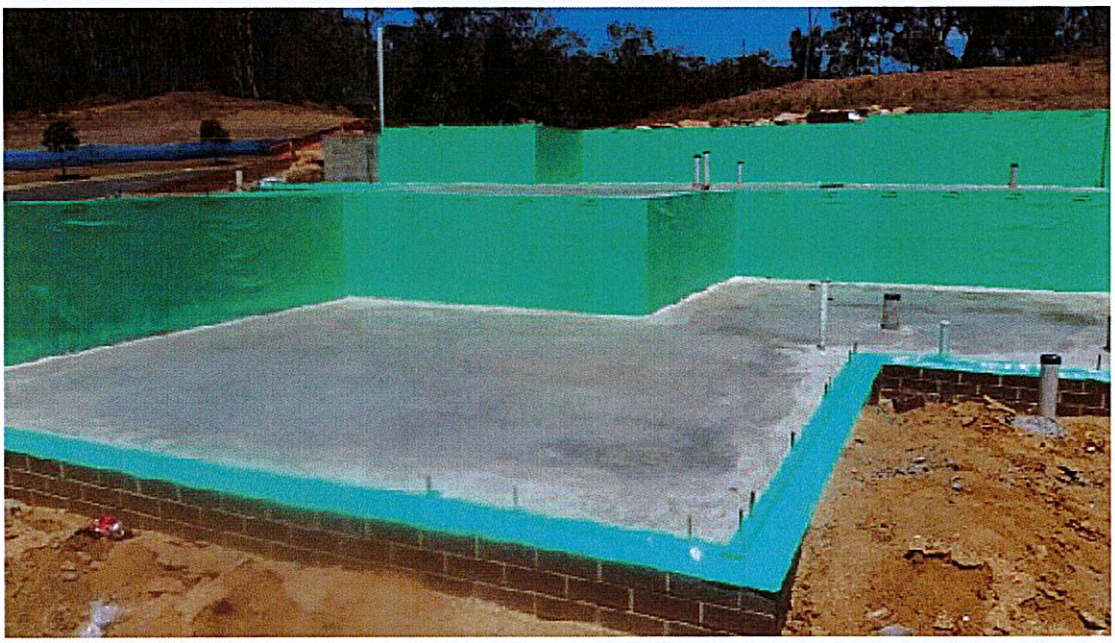


NOTE: Plasmite™ Termite Film HE is to be installed 20mm above finished ground level

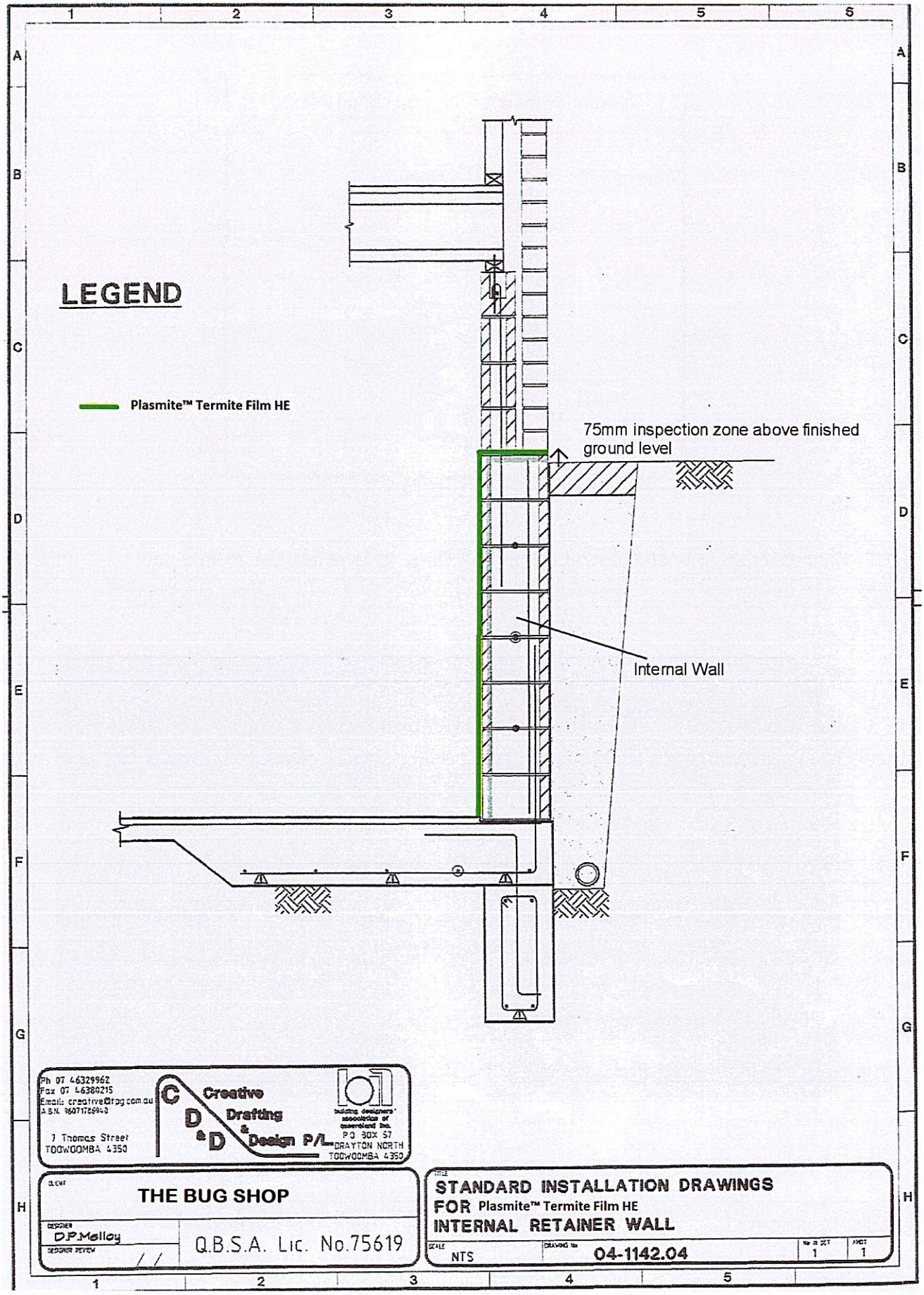
NOTE: Please refer to next page (Page 18) for technical drawing representing above photo



NOTE: An inspection zone of 75mm above finished ground level must be maintained



NOTE: Please refer to next page (Page 20) for technical drawing representing above photo


LEGEND
Plasmite™ Termite Film HE
75mm inspection zone above finished ground level
Internal Wall
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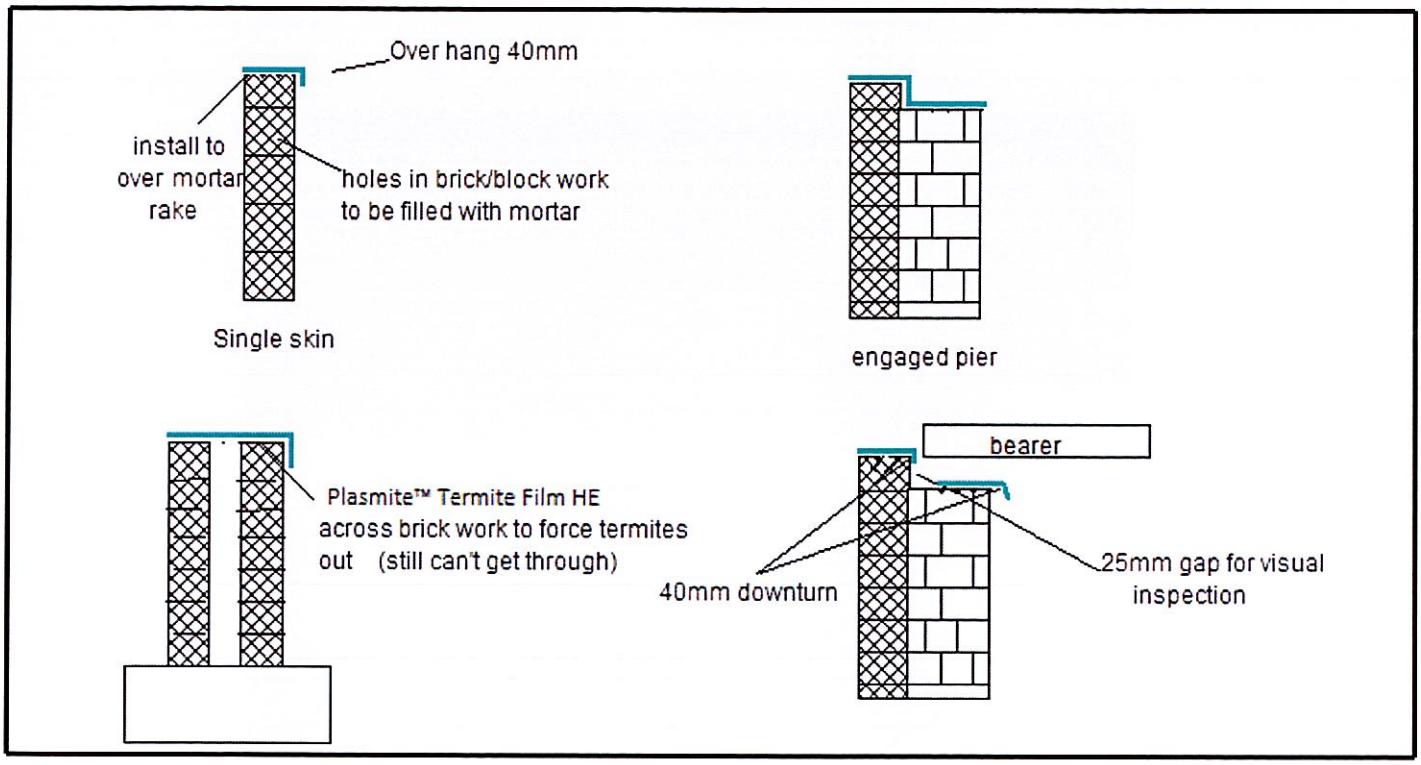
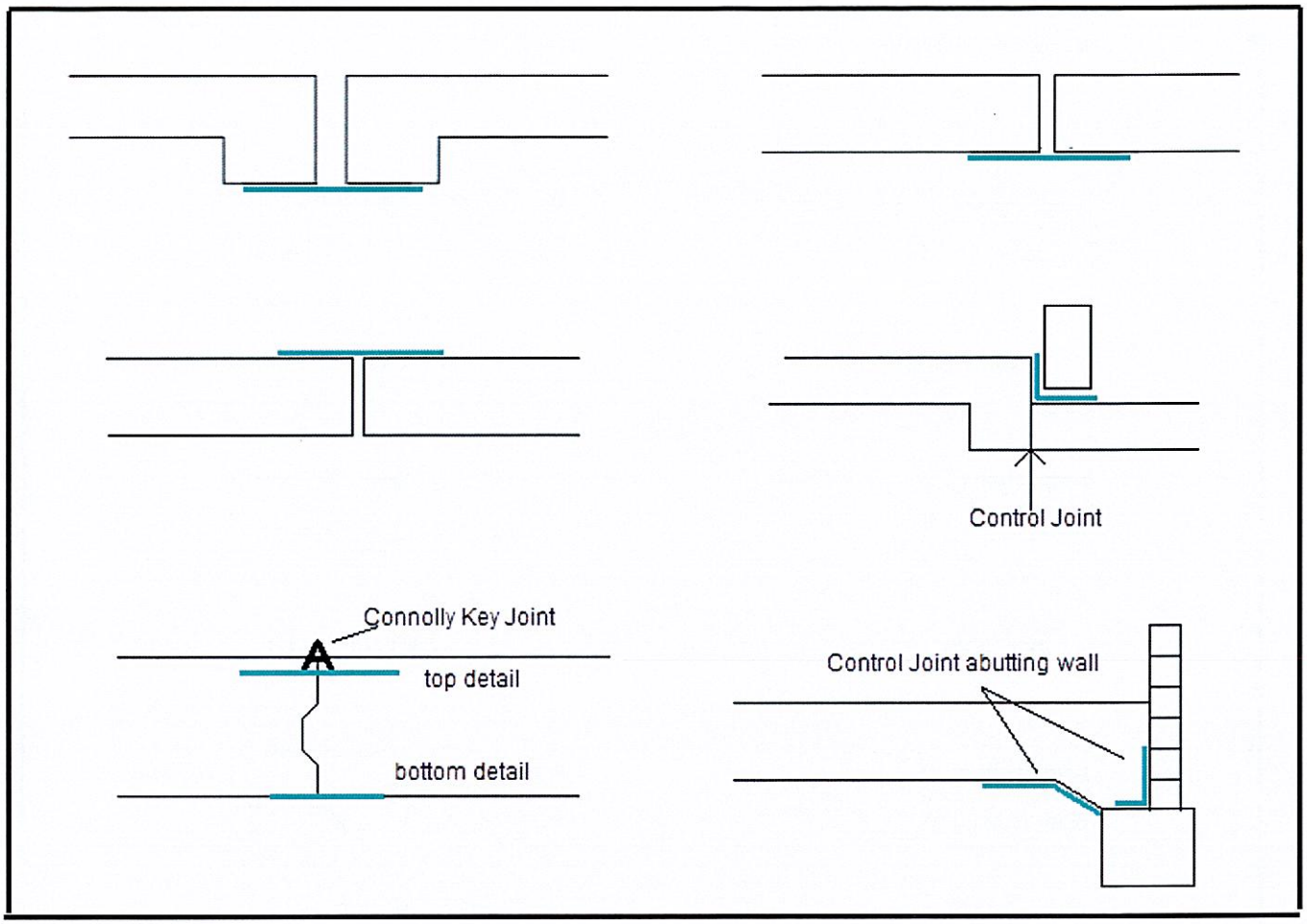
DESIGNER D.P.Melloy
DESIGNER REVIEW / /
Q.B.S.A. Lic. No.75619
STANDARD INSTALLATION DRAWINGS
FOR Plasmite™ Termite Film HE
INTERNAL RETAINER WALL
SCALE NTS
DRAWING No 04-1142.04
No. OF SHT 1
SHEET 1

Timber pole plates may need protection to itself as a food service to subterranean termites or provide hidden access to termites to the structure above.

012	PLASMITE™ TERMITE FILM HE ANT CAPPING

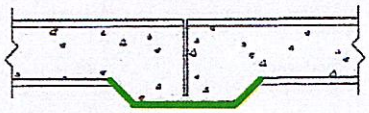


013	PLASMITE™ TERMITE FILM HE TO CONTROL JOINTS CJ, DJ, EJ and Connolly Key Joints

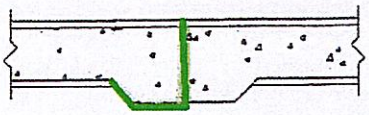


LEGEND

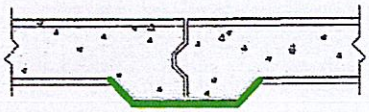
Plasmite™ Termite Film HE



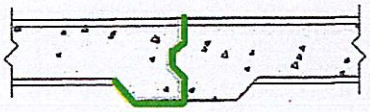
DOWEL JOINT-OPTION A



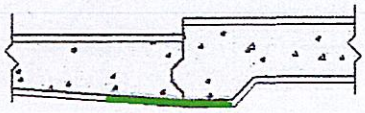
DOWEL JOINT-OPTION B



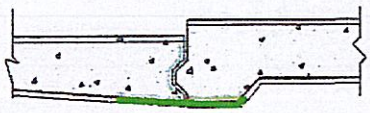
KEY JOINT-OPTION A



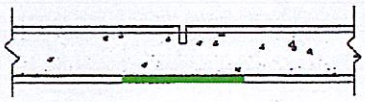
KEY JOINT-OPTION B



TAPED ON TOP
OF DPM-OPTION A



TAPED ON TOP
OF DPM-OPTION B



SAW JOINT

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CLIENT: **THE BUG SHOP**

DESIGNER: S. Davies
DESIGNER REVIEW: / /

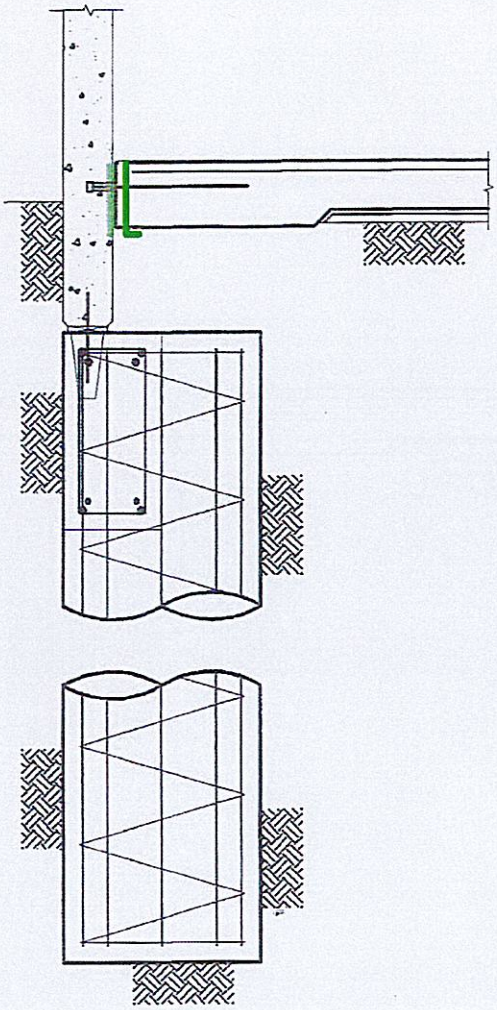
Q.B.S.A. Lic. No.75619

TITLE: **STANDARD INSTALLATION DRAWINGS FOR Plasmite™ Termite Film HE**
C5/05/KEY JOINTS

SCALE: NTS
DRAWING No: 04-1142.03
NO IN SET: 3
SHEET: 1

LEGEND

Plasmite™ Termite Film HE



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DESIGNER: D.P.Molloy

DESIGNER REVIEW: //

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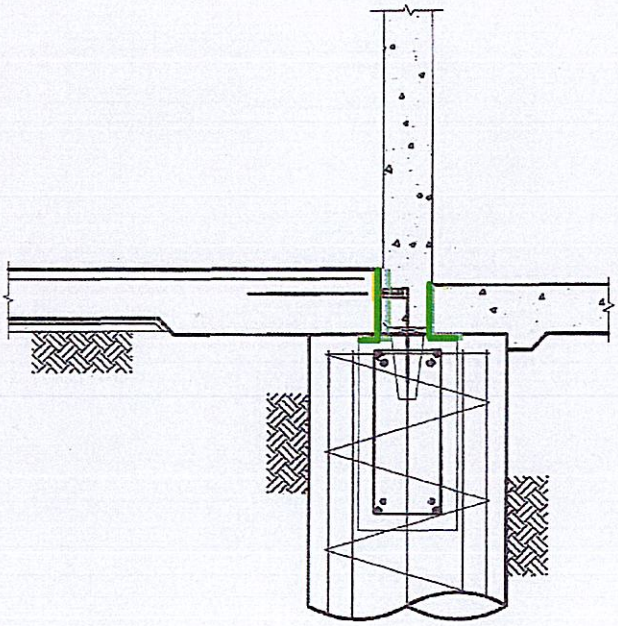
TITLE: STANDARD INSTALLATION DRAWINGS FOR Plasmite™ Termite Film HE TILT PANEL/ADJOINING DETAILS

SCALE: NTS | DRAWING No: 04-1142.07 | No IN SET: 1 | AMDT: 1

LEGEND

Plasmite™ Termite Film HE



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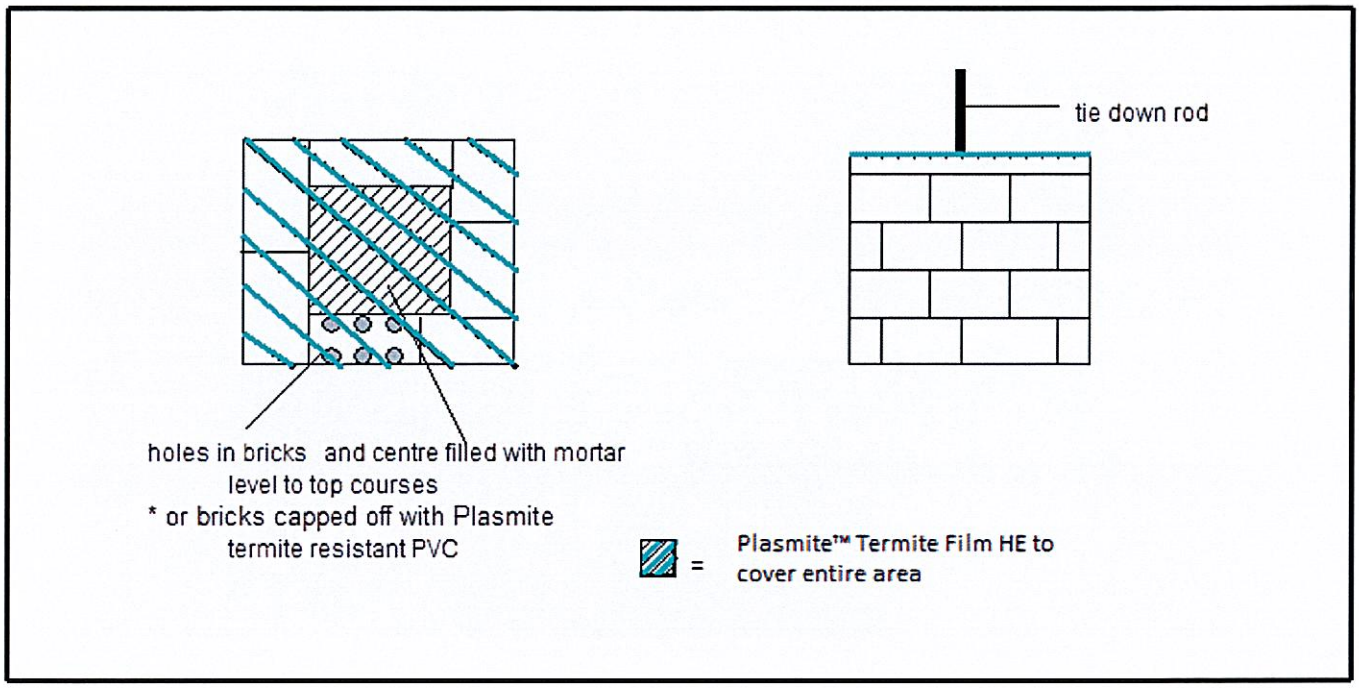
DESIGNER: D.P.Melloy

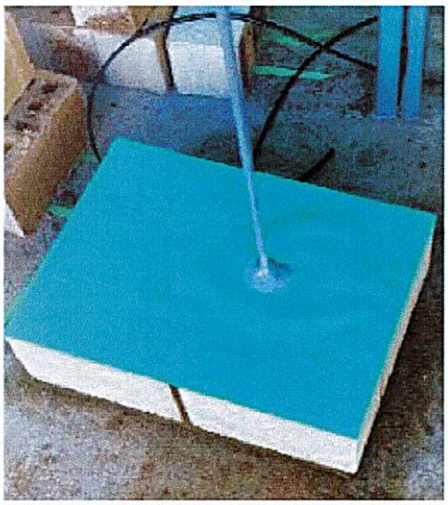
DESIGNER REVIEW: / /

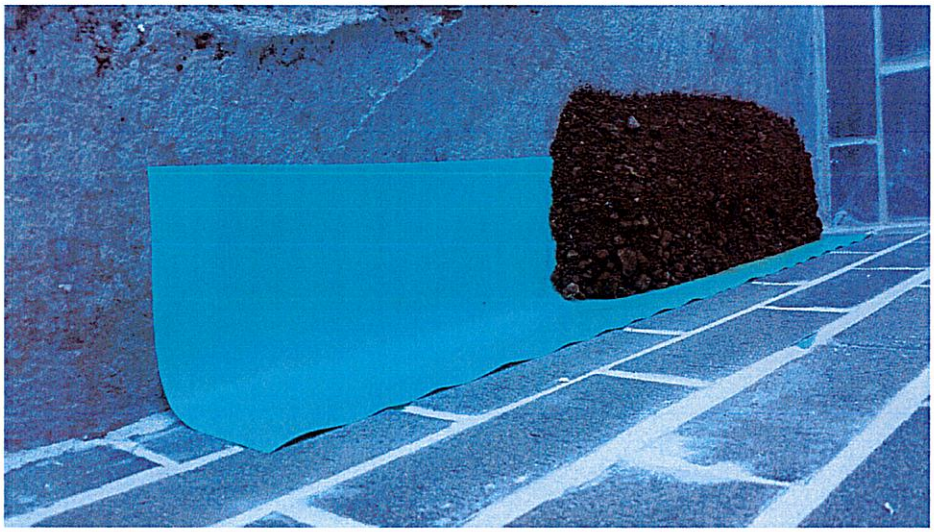
Q.B.S.A. Lic. No.75619

TITLE: STANDARD INSTALLATION DRAWINGS FOR Plasmite™ Termite Film HE TILT PANEL/INTERN.-EXTERN. ADJ. SLAB DETAILS

SCALE	DRAWING No.	No in SET	ISSUE
NTS	04-1142.06	1	1


tie down rod
holes in bricks and centre filled with mortar
level to top courses
* or bricks capped off with Plasmite
termite resistant PVC
=
Plasmite™ Termite Film HE to
cover entire area

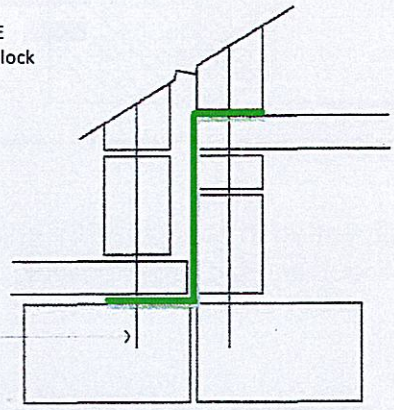




LEGEND

Plasmite™ Termite Film HE

Plasmite™ Termite Film HE
200mm wide fully under block



NOTE:
-step downs should be completely protected with Plasmite™ Termite Film HE

sketch shows a particular type of 'step down' installation.
there are a number of variations which also follow the basic design critea of Plasmite™ Termite Film HE

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building designers association of queensland inc.
P.O. BOX 57
DRAYTON NORTH
TOOWOOMBA 4350

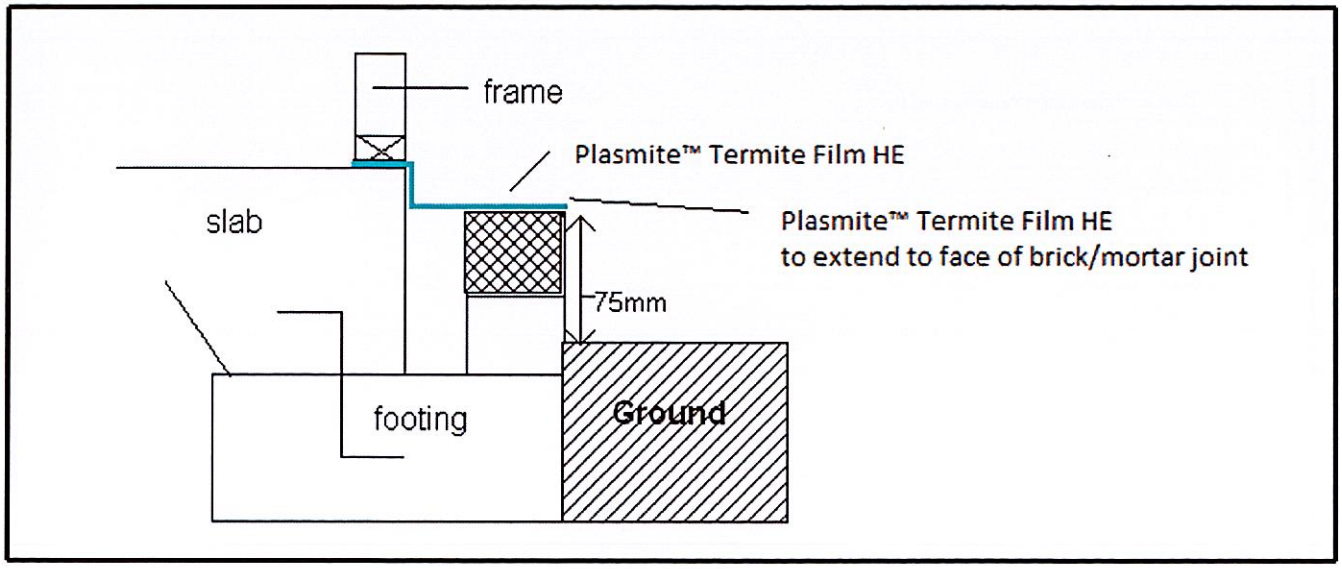
CLIENT: THE BUG SHOP

DESIGNER: S. Davies
DESIGNER REVIEW: / /

Q.B.S.A. Lic. No.75619

TITLE: STANDARD INSTALLATION DRAWINGS FOR Plasmite™ Termite Film HE 2 SLAB LEVELS

SCALE: NTS | DRAWING No: 04-1146.09 | No IN SET: 9 | AMDT: 1

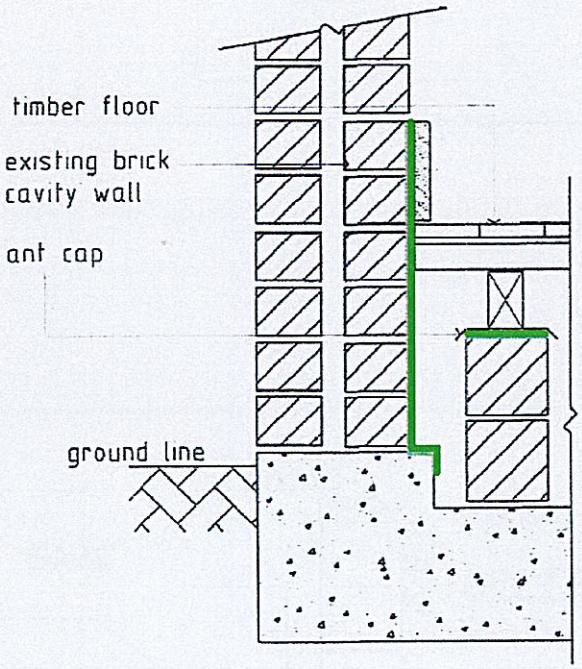


Prior to laying sill tiles it is recommended to apply the PCV grip strip or mesh to allow for adhesion of tiles to brick work (optional protection and tile adhesion aid).

LEGEND

Plasmite™ Termite Film HE

NOTE:
before any new work commences
it is a condition of Australian
building standards to have completed
a termite inspection of the esisting structure



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DESIGNER: S. Davies
DESIGNER REVIEW: / /

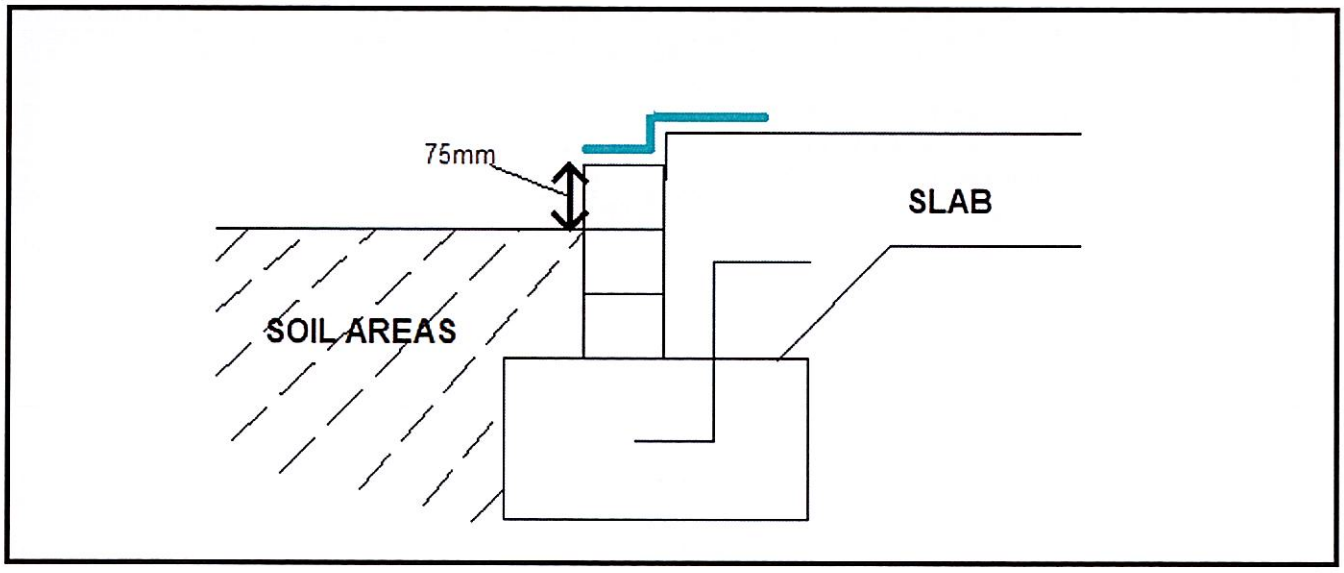
Q.B.S.A. Lic. No.75619

TITLE: STANDARD INSTALLATION DRAWINGS FOR Plasmite™ Termite Film HE RENOVATION

SCALE: NTS | DRAWING No: 04-1146.17 | No. in SET: 17 | SHEET: 1

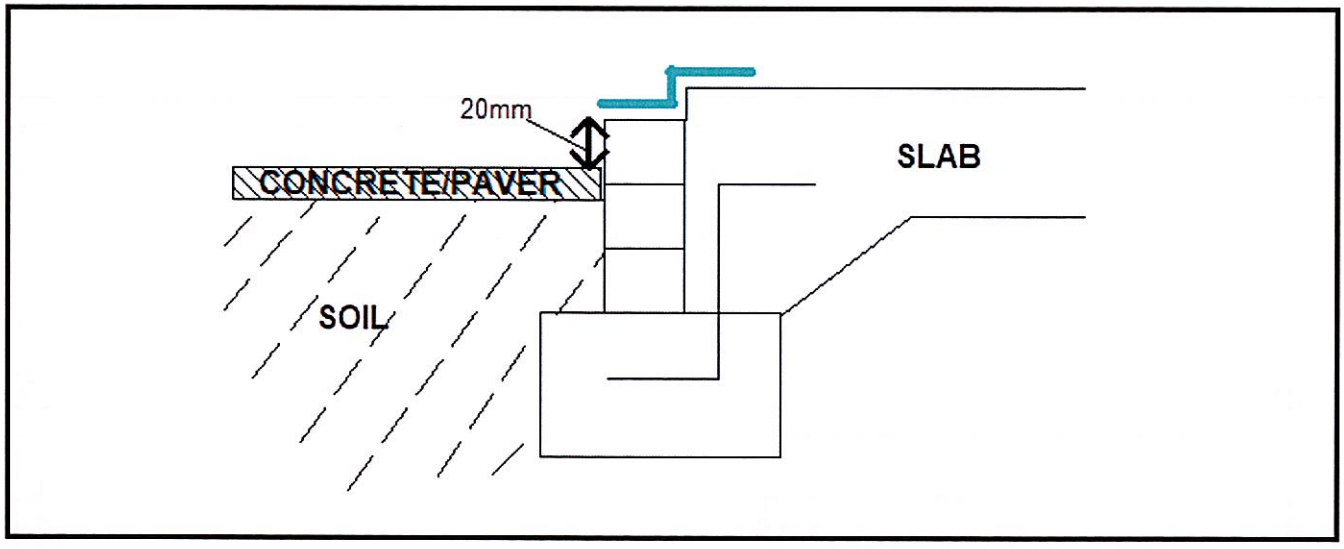
Exterior soil, concrete and/or pavers:

DETAIL 1 (SOIL):



Plasmite™ Termite Film HE must be 75mm above finished soil/ground level (unless placed externally).

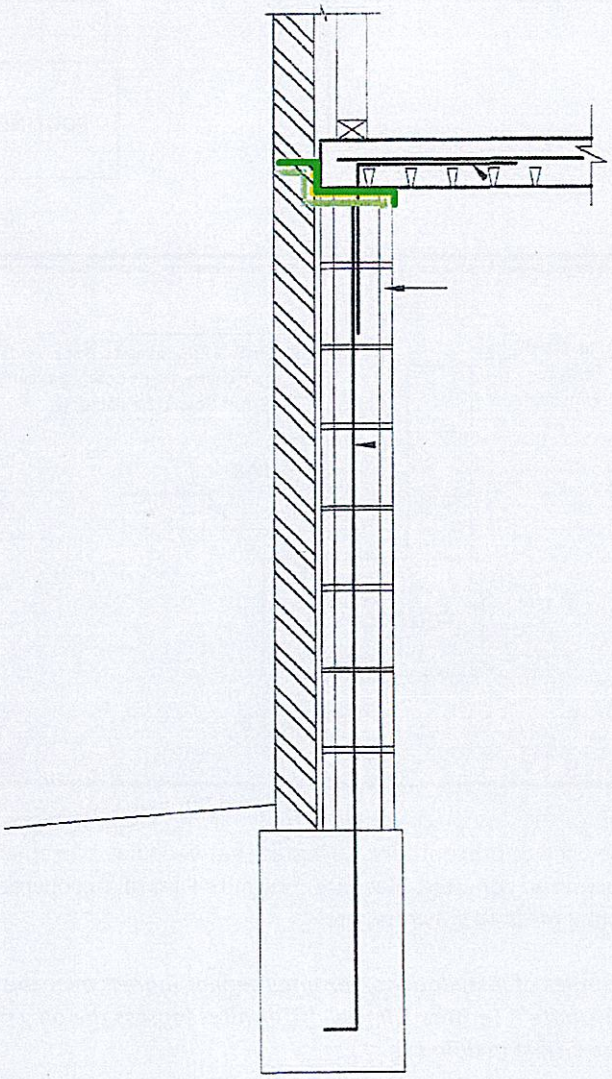
DETAIL 2 (CONCRETE/PAVERS):



Plasmite™ Termite Film HE must be 20mm above finished concrete/paver areas (unless placed externally).

LEGEND

Plasmite™ Termite Film HE



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DESIGNER: D.P.Melloy

DESIGN REVIEW: / /

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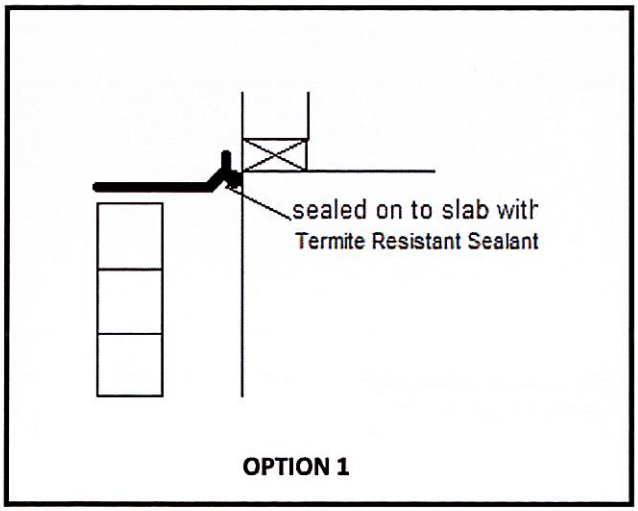
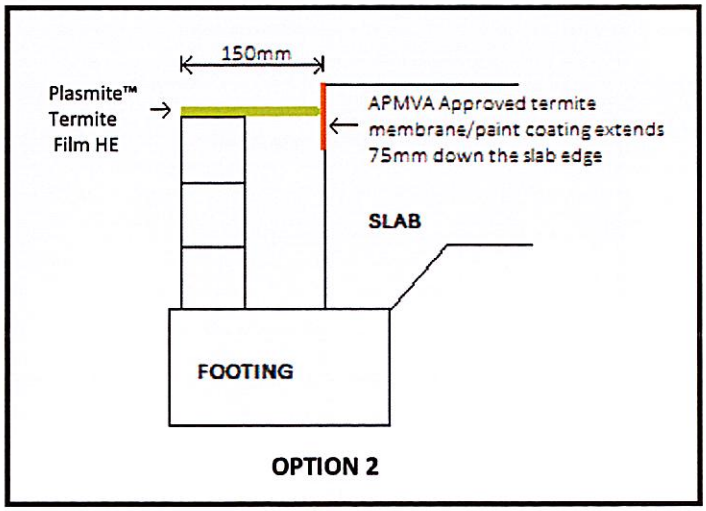
TITLE: STANDARD INSTALLATION DRAWINGS FOR Plasmite™ Termite Film HE SUSPENDED SLAB/BRICK/BLOCK HOME BASE

SCALE: NTS | DRAWING No: 04-1142.08 | No IN SET: 1 | AMDT: 1

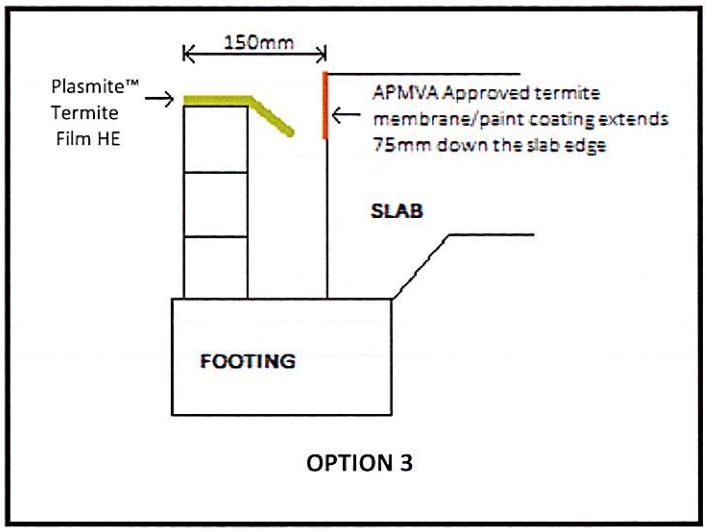
022 APPROVED TERMITE RESISTANT SEALANT TO SLAB EDGE DETAIL



OPTION 1



OPTION 2



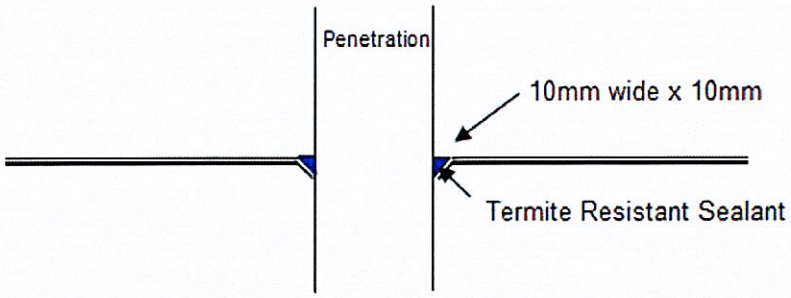
OPTION 3

Termite Resistant Sealant can be used to prevent termite ingress between any two adjacent termite resistant materials in any combination, including: concrete to concrete, Plasmite™ Termite Film HE to concrete, concrete to PVC/Dshore80, plasmite PVC, woven stainless steel mesh to concrete, etc

NOTE: Option 2 & Option 3 examples of installations, termites cannot ingress over the Termite Resistant Membrane on the slab edge nor around the Plasmite™ Termite Film HE. If Termites ingress the only path is up the outside brick/block work and this will make them be visible in doing so.

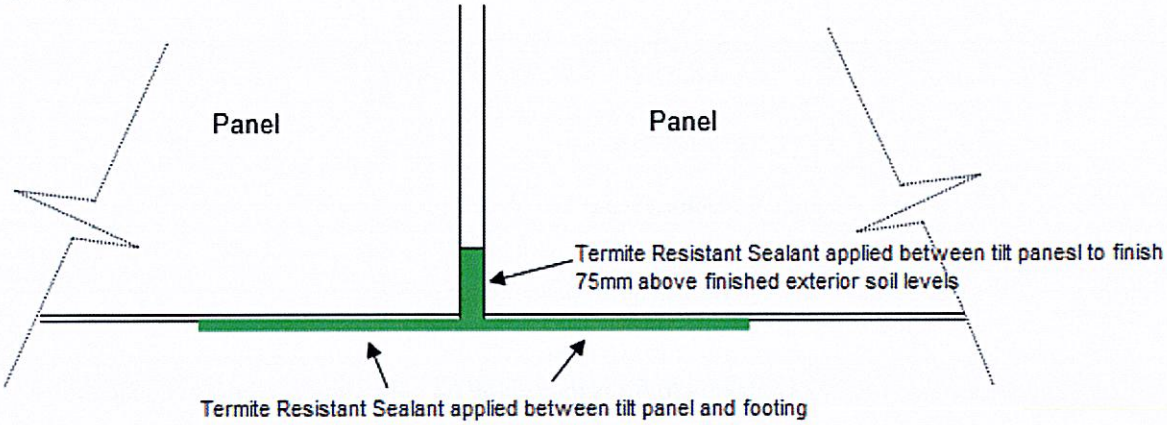
Installation Details as Below:

PIPE PENETRATION



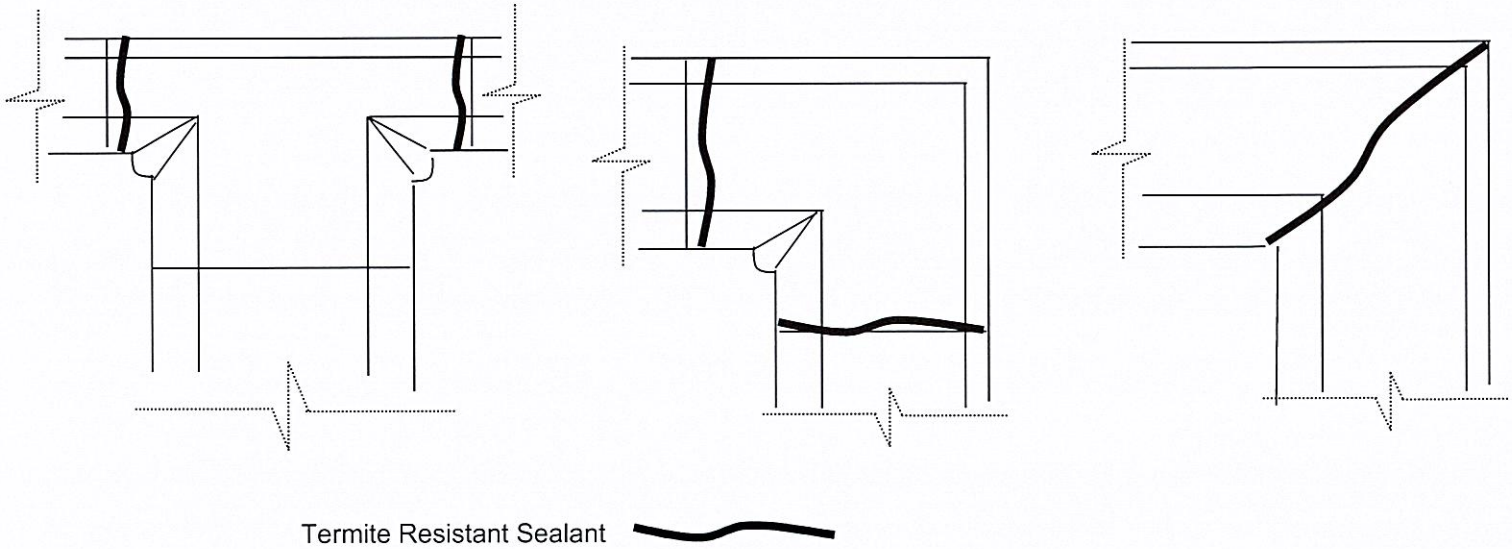
NOTE: Once pipe is chipped out no dust is to be present at time of applying termite resistant sealant

TILT UP PANEL



NOTE: Applying a backing foam rod and provide sealant depth of 6-10mm making sure no air bubbles are formed as applied

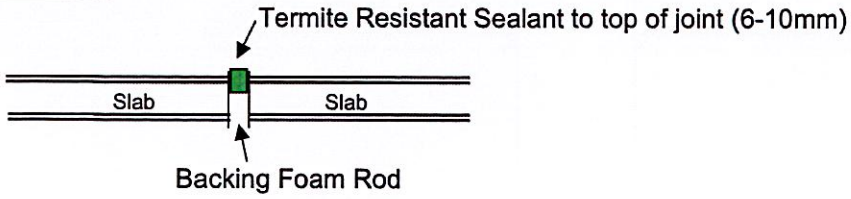
ANTCAPPING/ PLASMITE™ TERMITE FILM HE OVER LAPS AND JOINTS

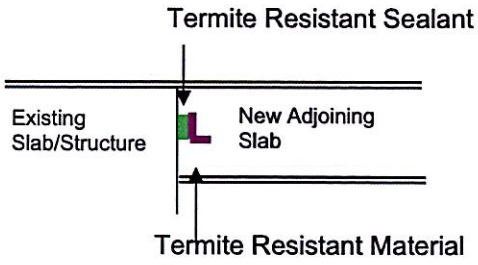


The above detail can be conventional antcapping or any termite resistant materials.

NOTE: All areas to where sealant is to be placed must be clean and dry. There must be a bead if termite resistant sealant a minimum of 6-10mm and termite resistant material over lapped a minimum of 35mm.
When capping piers with termite barriers the tie down rod can be sealed with plumb sealant prior to screwing the nut down tight.

CONTROL JOINTS



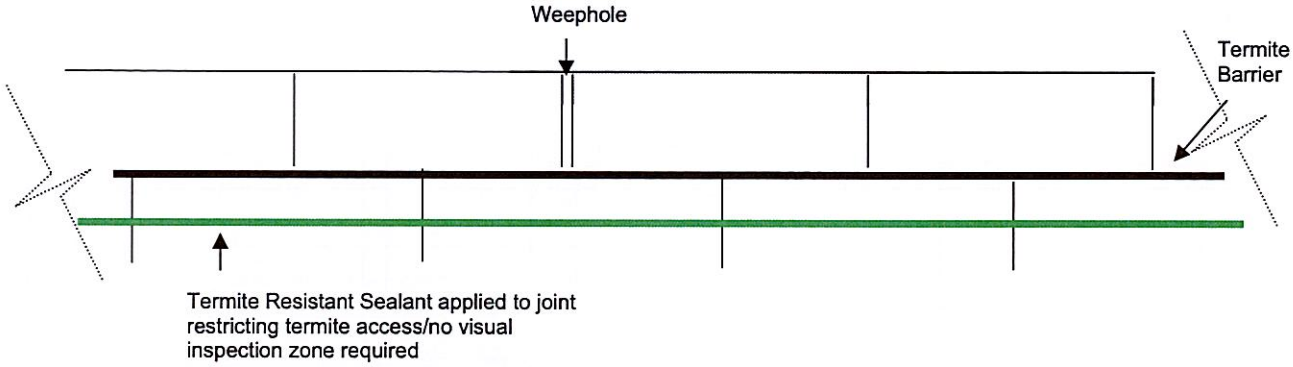


Connelly key joints, dowel joints, saw cut joints can all be sealed up using Termite Resistant sealant

NOTE: All areas to where sealant is to be placed must be clean and dry before application

INSPECTION ZONES

By using a termite resistant sealant between concrete paths, driveway slabs and brickwork, it can reduce the need for required inspection zones as termites can not travel through the termite resistant sealant at any given height of application



NOTE: Termite Resistant Sealant can be applied at any given height upto and including the height of the termite barrier

NOTES:

1. All overlaps of Plasmite™ Termite Film HE are to be a minimum of 200mm and can also be sealed with Termite Resistant Epoxy or Sealant. Overlaps on full under-slab applications are to be 200mm and should be sealed with good quality duct tape (3M Performance Plus is recommended).

2. Plasmite™ Termite Film HE is to be attached to structure by nailing or gluing into place.

3. Do not nail Plasmite™ Termite Film HE to the water proofing (tanking to retaining walls and basement walls). Only nail to top of retainer wall if necessary.

4. Plasmite™ Termite Film HE is to be attached to the slab/brick face By Termite Resistant Sealant or Epoxy or 3M High Tact Multipurpose adhesive.

5. If an Installation detail is not covered in this Manual it is not to Hinder an installation method to be carried out to a structure in any given structure. It will be up to the Qualified Installer to explain his method of protection with Plasmite™ Termite Film HE and how the Installation method will restrict hidden access for Termites into the structure.

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

PRODUCT NAME: PLASMITE™ TERMITE FILM HE

Other Names: Bifenthrin

Use: Termite Management System for pre-construction use in buildings and other structures.

Company: Raydiate Pty Ltd

Address: 41 Wilkinson Street, Harlaxton, QLD, 4350

Phone No: (07) 4633 7200

Emergency: 1800 814 199 (Australia Wide)

SECTION 2 HAZARDS INDENTIFICATION

Not Classified as hazardous according to criteria of NOHSC Australia.

Not Classified as a Dangerous Good according to the ADG Code.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

CHEMICAL	*CAS NUMBER*	*PROPORTION*
Bifenthrin	82657-04-3	1G/KG
Other ingredients determined not to be hazardous mixture		To 100%

SECTION 4 FIRST AID MEASURES

First Aid

Swallowed: If Poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia (13 11 26).

Eye: Particulars may scratch eye surface and/or cause mechanical irradiation. Remove from eye as for any foreign object. If irritation persists, obtain medical attention

Skin: After handling, and before eating, drinking, smoking or going to the toilet wash with soap and water.

Inhaled: In case of adverse exposure to vapours that may be formed at elevated temperatures, remove patient to fresh air. If breathing discomfort occurs, obtain medical attention.

Advice to Doctors: Concern should be taken of the physical damage that the sheeting may cause if ingested. The plastic sheeting is polymer, which is considered non-toxic. Bifenthrin, the active ingredient in the product, is a pyrethroid insecticide. The level of bifenthrin in the sheeting (0.01%) is considered to be so low as to not be toxic, and text have shown that the bifenthrin is not available for release from the sheeting. Treatment is otherwise symptomatic and supportive.

SECTION 5 FIRE FIGHTING MEASURES

Specific Hazard: Thermal decomposition and burning may produce toxic by-products.

Extinguishing media: Foam, Co2 or dry chemical. Soft stream water fog if no alternatives. Contain all runoff.

Hazards from combustion products: On burning, will emit toxic fumes of carbon monoxide, carbon dioxide, hydrogen chloride, fluorine and hydrogen fluoride etc.

Precautions for fire-fighters and special protective equipment: Isolate fire area. Evacuate downwind. Wear full protective clothing and self-contained breathing apparatus. Do not breath or contact smoke, gases or vapours generated.

SECTION 6	ACCIDENTAL RELEASE MEASURES

Emergency procedures: Pick up spilled sheeting. If able to use as directed on the label, seal sheeting in a plastic bag. Wash hands and arms with soap and water after handling sheeting.

Material and methods for containments and clean-up procedures: Not applicable to this product.

DO NOT allow product to enter sewers, drains, dams, creeks or any other waterways.

SECTION 7	HANDLING & STORAGE

Precautions for safe handling: Generally, no special precautions are required. Wash hands after use.

Conditions for safe storage: Store in closed original packaging, in a cool, well ventilated area away from children, animals, food and feedstuffs. Do not store for prolonged periods in direct sunlight. Do not use or store near heat, open flame or hot surfaces. DO NOT allow product to enter sewers, drains, dams, creeks or any other waterways.

SECTION 8	EXPOSURE CONTROL/PERSONAL PROTECTION

National Exposure Standards: No Exposure standard for bifenthrin has been established by NOHSC Australia.

Biological Limit Values: No Biological limit allocated.

Engineering Controls: Use in ventilated areas.

Personal Protective Equipment (PPE):

Work clothing: No special protective clothing is required. As a good work practice, wear clothing that minimises skin contact with the sheeting.

Personal hygiene: Wash hands and arms before eating, drinking or smoking.

SECTION 9	PHYSICAL & CHEMICAL PROPERTIES

Appearance:	Sheeting.
Odour:	No Odour.
Boiling Point:	Not relevant – solid at ambient temperatures.
Freezing Point:	Not relevant – solid at ambient temperatures.
Bulk density:	0.93g/m3.
PH:	Not available.
Solubility in water:	Not soluble. Provides a barrier to water.
Flammability:	This material may support combustion at elevated temperatures.
Corrosive hazard:	Non-corrosive; compatible with stainless steel, polyethylene etc.
Flashpoint:	>215°C (estimated).
Flammability limits:	Not estimated.
Poisons schedule:	Product is not a scheduled poison.

SECTION 10	STABILITY & REACTIVITY

Product is considered stable in ambient conditions.

SECTION 11	TOXICOLOGICAL INFORMATION

Potential Health Effects: This product is expected to have low toxicity, and if swallowed the mechanical effects are expected to be of greater concern. Bifenthrin, the active ingredient in this product is present at 0.1%. Ingestion of large doses of bifenthrin by laboratory animals produced signs of toxicity which included colonic convulsions, tremors and

bloody nasal discharge. But it is not likely to be physically possible to consume large quantities of bifenthrin by ingesting the plastic sheet.

Acute

Swallowed: Not expected to be toxic.

Eye: may produce mechanical irritation to the eye.

Skin: This product has low dermal toxicity.

Inhaled: Unlikely to cause inhalation toxicity unless the product is at elevated temperatures or is burned. Vapours and gases released under thermal decomposition may be toxic.

Chronic: No data available on this product. Bifenthrin the active ingredient in the product is present at 0.1%. In studies with laboratory animals, Bifenthrin did not cause teratogenicity or reproductive toxicity. Tremors were associated with repeated exposure of dogs, rats, rabbits and mice to Bifenthrin. The overall results from a battery of genotoxicity studies indicate that Bifenthrin is not considered to be genotoxic. Ames test results were negative.

SECTION 12	ECOLOGICAL INFORMATION

Environmental Toxicity: The active ingredient, Bifenthrin, is highly toxic to fish and aquatic arthropods with LC50 values ranging from 0.0038 µg/L. In general, the aquatic arthropods are the most sensitive species. Care should be taken to avoid contamination of the aquatic environment. Bifenthrin had no effect on mollusc at its limit of water solubility. Bifenthrin is only slightly toxic to both waterfowl and upland game birds with LC50 values range from 1800 mg/kg to > 2,150 mg/kg. Do not contaminate sewers, drains, dams, creeks or any other waterways with product.

Environmental Properties: The active ingredient, Bifenthrin, degrades at a moderate rate in agricultural soils (t ½ = 50 to 205 days), and more rapidly on the surface of bare soils (t ½ = 7 to 62 days). Bifenthrin is tightly bound in most soils and has extremely low water solubility.

SECTION 13	DISPOSAL CONSIDERATIONS

Spills & disposal: In the case of spillage, pick up the spilled material and place in sealed plastic bag and dispose of waste as indicated below. Keep material out of streams and sewers. Dispose of wastes in accordance with the requirements of Local or State Waste Management Authorities via an approved industrial waste disposal site.

When installing Plasmite™ Termite Film HE it is likely there will be some off-cut material. Wherever possible use these off-cuts for patches, repairs, collars etc. If pieces cannot be used they may be placed under the slab prior to pouring or within the cavity. If this is not possible, Plasmite™ Termite Film HE off-cuts should be placed in a sealed plastic bag and disposed of via an approved industrial waste disposal site.