AS 3660.1:2014

Termite management, Part 1: New building work

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CHOICE
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Housing Industry Association
Institute of Building Consultants
Local Government and Shires Associations of New South Wales
Master Builders Australia
Timber Preservers Association of Australia
Total Environment Centre

Preface

This Standard was prepared by the Standards Australia Committee BD-074, Termite Management, to supersede AS 3660.1—2000 .

This Standard incorporates Amendment No. 1 (September 2017). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Standard is to provide builders, building designers, regulatory authorities, termite management system manufacturers and installers, and those people requiring termite management systems, with methods of termite management for implementation during construction of new building work.

The objective of this revision is to update the Standard to reflect current needs and practices for termite management in new buildings and new building work.

This Standard is part of a series on termite management, as follows:

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This Standard is part of a series on termite management, as follows:

AS 3660.1 , Termite management, Part 1: New building work (this Standard)

AS 3660.2 , Termite management, Part 2: In and around existing buildings and structures—Guidelines

AS 3660.3 , Termite management, Part 3: Assessment criteria for termite management systems

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

Foreword

This Standard is primarily concerned with providing measures to reduce the risks of undetected subterranean termite attack on buildings. Improving the design and construction of buildings to minimize termite damage is one of several risk reduction measures available to building owners and occupiers.

This Standard describes measures to deter termite attack arising from concealed entry into a building. The system options provided rely on a combination of partial measures to termite passage combined with perimeter inspection zones so that when termites attack, evidence of their workings is in the open where it may be detected more readily during regular inspections. The measures contained in this Standard cannot guarantee that a building will never be entered by termites nor will ever suffer some form of termite attack.

The requirements for an effective termite management system depend on design, location, site conditions and building characteristics.

More than 350 species of termites have been recorded in Australia, about 30 of which achieve economic importance as pests of timber-in-service. With the exception of drywood termites, all species of economic importance are soil dwelling (subterranean) and have similar habits.

Subterranean termites may eat timber and timber products, plant fibre, or any material containing cellulose (their principal food); this could include building contents, e.g. cabinetry, furniture, books and papers, fabrics, clothing, footwear, packing cases and tools. Termites can also damage some non-cellulose materials, e.g. mortar, soft metals, soft plastics such as cable insulation, building sealants and rigid foam insulation.

Typically, termites form their nests in the soil, near ground level in a stump, in the trunk of a living tree or other suitably large pieces of wood. Sometimes the nest takes the form of a conical or dome-shaped mound. A colony may exist for many years and, as it matures, can have a population well in excess of one million termites. Attack by subterranean termites originates from the nest. Wood or timber lying on or buried in the ground may be reached by underground foraging galleries but attack may occur well above ground level, either inside the wood or by way of mud-walled shelter-tubes ‘plastered’ to exposed surfaces. Timber resting on an impenetrable substructure may be reached by means of these shelter tubes or through independent, freestanding columns built by the termites. In some cases, where a source of permanent moisture, e.g. leaking plumbing, is available to subterranean termites within a building, they can form a nest inside the building, without soil contact. Where such a colony arises within a building, it may be several years before the termites are sufficiently numerous to be detected.

‘Drywood termites’ are economically important only in restricted coastal, tropical, subtropical and adjacent tableland areas of Australia. This Standard does not cover measures to manage the risk of drywood termite attacks. Unlike subterranean termites they do not construct galleries or tunnels connecting the infested timber with the soil, but form their nest inside the wood upon which they feed and so may attack any piece of susceptible timber, regardless of its position in a building. The evidence of infestation by these species is the presence of dry, granular faecal pellets that may be stored in disused galleries or ejected through small openings in the surface of the wood.

1 Scope and application

1.1 Scope

This Standard sets out requirements for the design and construction of subterranean termite management systems for new buildings and new building work. It includes solutions for both physical and chemical termite management systems. Options are provided so that various approaches may be used either singly, or in combination, to provide an integrated termite management system.

This Standard includes methods to deter concealed entry by termites from the soil to the building above the termite management system inspection zone.

This Standard does not cover procedures or details on maintenance and inspection.

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This Standard does not cover procedures or details on maintenance and inspection.

This Standard does not apply to the following:

(a) The provision of termite management systems to existing buildings (see Note 3).

(b) Drywood termite infestations, as the systems described herein will not be effective against access by drywood termites or termite nests established without soil contact.

(c) Durability, maintenance and inspection procedures or details.

NOTE 1 The treatment of existing buildings is covered in AS 3660.2 . For the interface between new and existing structures, see Paragraph A1, Appendix A.

NOTE 2 For testing of systems and materials, refer to AS 3660.3 .

NOTE 3 A termite management system constructed in accordance with this Standard cannot prevent termite attack as systems may be bridged or breached. Termite-bridged or termite-breached systems may be detected during inspections.

NOTE 4 The diagrams used in this Standard are indicative only and are deemed to meet the design requirements outlined in Section 2. The diagrams apply to domestic construction techniques. Some diagrams may have construction details (e.g. damp-proof courses, vapour barriers, and the like) omitted for clarity.

NOTE 5 Issues such as the detection of termite infestation, and the necessity and accessibility for regular, competent inspections can be found in AS 3660.2 . It is recommended that access for inspection, maintenance and durability issues be considered part of the design process.

NOTE 6 It is stressed that the installation of a termite management system does not negate the need for regular competent inspections after installation.

NOTE 7 Activities such as turfing, paving and landscaping adjacent to the building might compromise the inspection zone clearances required by this Standard. Where it is known that these activities will be undertaken, the design should ensure that sufficient dimensions are provided so that the required minimum inspection zones are not compromised.

NOTE 8 Where construction is at or close to the property boundary, it may not be possible to apply the solutions of this Standard. See Paragraph A2, Appendix A.

NOTE 9 Termite management systems may not be effective where a nest is established inside the building above inspection zones. Such nests typically require significant plumbing or drainage faults for their water supply.

1.2 Application

This Standard is intended for use where subterranean termites pose an economic risk to buildings.

This Standard is intended to be read in conjunction with the requirements of the pesticides registrar and the National Construction Code (NCC).

1.3 Normative references

The following are the normative documents referenced in this Standard:

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 1604.1, *Specification for preservative treatment, Part 1: Sawn and round timber*

AS 2870, *Residential slabs and footings*

AS 3600, *Concrete structures*

AS 3660.3, *Termite management, Part 3: Assessment criteria for termite management systems*

AS/NZS 1604, *Specification for preservative treatment (series)*

AS/NZS 4680, *Hot-dip galvanized (zinc) coatings on fabricated ferrous articles*

ABCB NCC National Construction Code

1.4 Definitions and abbreviations

1.4.1 Definitions

1.4.1.1
breaching

the passing of termites through a hole or gap in a termite management system.

Note 1 to entry: Examples of breaches include the removal of a section of treated soil from a chemical soil termite management system, or a perforation or a disjunction in a physical management system.

1.4.1.2
bridging

termites gaining access to a structure by passing over a termite management system or inspection zone

Note 1 to entry: Termites bridging a termite management system will often construct a shelter tube, which reveals their passage.

1.4.1.3
chemical

a substance or substances, required to be registered by the pesticides registrar, for use in a termite management system in accordance with the pesticides registrar's approved label

1.4.1.4
chemically treated sheet

a pesticides registrar registered sheet material treated with a chemical

1.4.1.5
granular material

termite-resistant particles, placed to form a termite management system, which includes physical termite management system of mineral granules and pesticides registrar registered chemical termite management systems made of impregnated materials

1.4.1.6
inspection zone

an unobstructed space over which termites have to cross or pass in order to gain access to a building or structure and, as a consequence, reveal their presence during visual inspection

1.4.1.7
non-shrink grout

a gap-filling concrete grout formulated to be as strong as the surrounding concrete and not to shrink as it cures

1.4.1.8
perimeter termite management system

a termite management system placed either external to, or within, the structure or cavity of an external wall

Note 1 to entry: A perimeter termite management system can also include a 75 mm exposed slab edge.

1.4.1.9
pesticides registrar

the government body responsible for the registration of pesticides

Note 1 to entry: Currently, the Australian Pesticides and Veterinary Medicines Authority (APVMA) coordinates the registration scheme.

1.4.1.10
product label

a chemical product registered by the pesticides registrar, which carries a label with specific approved information detailing the use of the chemical

1.4.1.11
registered testing authority

an organization providing testing services, which is either—

(a) an organization accredited by an accreditation body that is a signatory to the ILAC
Note); or

(b) an organization recognized as being a registered testing authority under legislatio
undertaken.

Note 1 to entry: In Australia, an ILAC MRA signatory is the National Association of Testing Authorit

1.4.1.12
sheet material

termite-resistant planar product that is used in a termite management system

1.4.1.13
termite management system

a product or a coordinated system designed to mitigate the risk of concealed access b
significant damage to a structure

Note 1 to entry: Termite management systems are typically comprised of integrated components,

1.4.1.14
termite resistant

the ability of materials or components to withstand the effects of termites to such an
components are not functionally impaired

1.4.1.15

1.4.1.11
registered testing authority

an organization providing testing services, which is either—

(a) an organization accredited by an accreditation body that is a signatory to the ILAC MRA to test in the relevant field (see Note); or

(b) an organization recognized as being a registered testing authority under legislation at the time the test was undertaken.

Note 1 to entry: In Australia, an ILAC MRA signatory is the National Association of Testing Authorities (NATA).

1.4.1.12
sheet material

termite-resistant planar product that is used in a termite management system

1.4.1.13
termite management system

a product or a coordinated system designed to mitigate the risk of concealed access by subterranean termites causing significant damage to a structure

Note 1 to entry: Termite management systems are typically comprised of integrated components, inspection zones and inspection regime.

1.4.1.14
termite resistant

the ability of materials or components to withstand the effects of termites to such an extent that the materials and components are not functionally impaired

1.4.1.15
termite-resistant adhesive

an adhesive/sealant of low build that is used to bond components or to bond the termite management system to structural components acting as a termite management system

1.4.1.16
termite-resistant filler

an adhesive/sealant of higher build than a termite-resistant adhesive, which functions as part of a termite management system, and is used to fill spaces that might otherwise be traversed by termites

Note 1 to entry: The termite-resistant filler is applied between the termite management system components or system components and structural components acting as a termite management system.

1.4.1.17
termite sheet

SEE:

1.5 Termite management systems and their components

Proprietary systems are not detailed in this Standard. Criteria for the assessment of termite management systems and components are detailed in AS 3660.3 .

Systems and components of systems not detailed in this Standard shall be assessed in accordance with AS 3660.3 .

2 Design requirements

2.1 Scope of section

This Section sets out the design requirements for termite management systems for new building work.

2.2 Attachments and items adjacent to buildings

Attachments to buildings such as downpipes and service pipes shall have a nominal gap, to allow clear and uninterrupted visual inspection across the inspection zone.

Attachments and items adjacent to buildings such as steps, verandas, porches, access ramps, carports, trellises, decks, hot-water systems, air conditioners, downpipes, service pipes, or similar attachments, shall be separated from the building by a gap of at least 25 mm, to allow clear and uninterrupted visual inspection across the inspection zone.

NOTE Sufficient clearance and access should be provided between any building and adjacent items to allow for inspection and maintenance.

Where attachments or structures abut a building and there is no clear gap, the system shall be provided or extended to the attachment so that a continuous inspection zone is preserved. Where a plate or grid is used to cover the gap (e.g. for providing wheelchair access), it shall be detachable.

2.3 Elements that bridge or breach termite management systems

Structures, fixtures or fittings attached to a building shall not bridge or breach a termite management system unless that attachment is also provided with a termite management system.

2.4 Potential entry points for termites

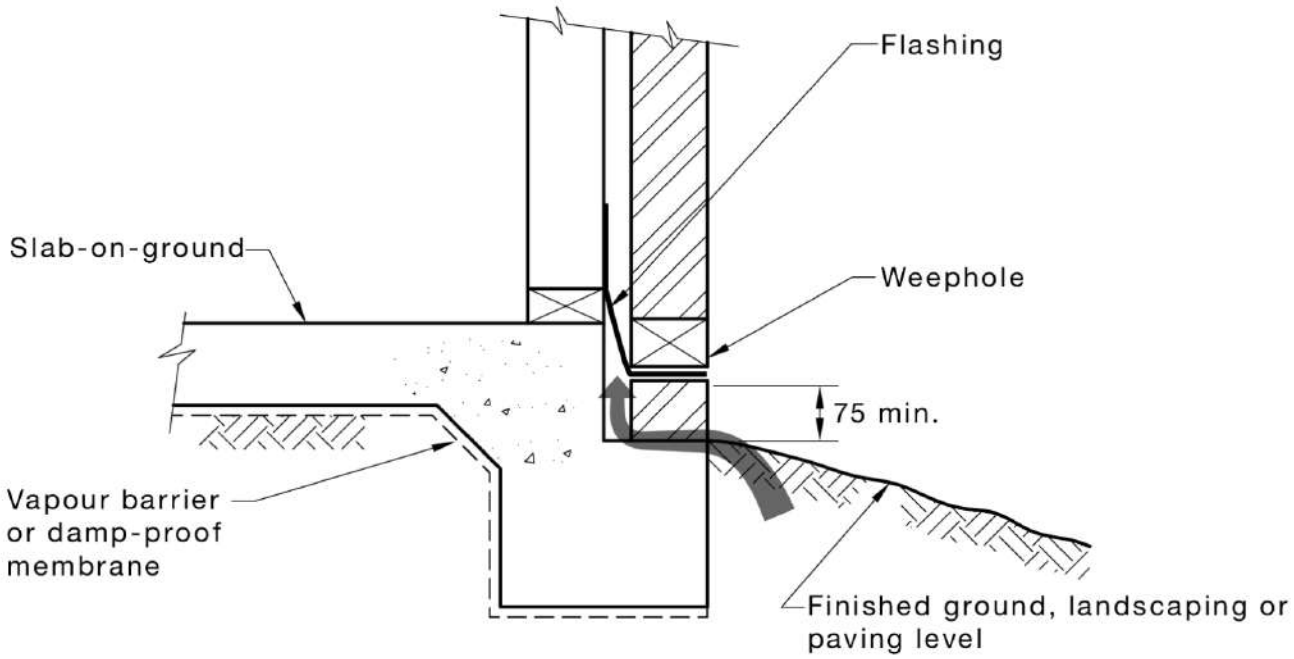
Where a suspended floor has less than a 400 mm clearance, an underfloor termite management system shall be installed to the whole of the underfloor area of reduced clearance except as permitted by Clause 3.3.2(b).

NOTE 1 Where a floor is suspended, areas too low for easy access [less than 400 mm clearance, see Figure 3.1(A)] that have reduced airflow are favourable to termite activity and termites may build shelter tubes between the ground and bearers. These, and a selection of other vulnerable points, are depicted in Figure 2.1.

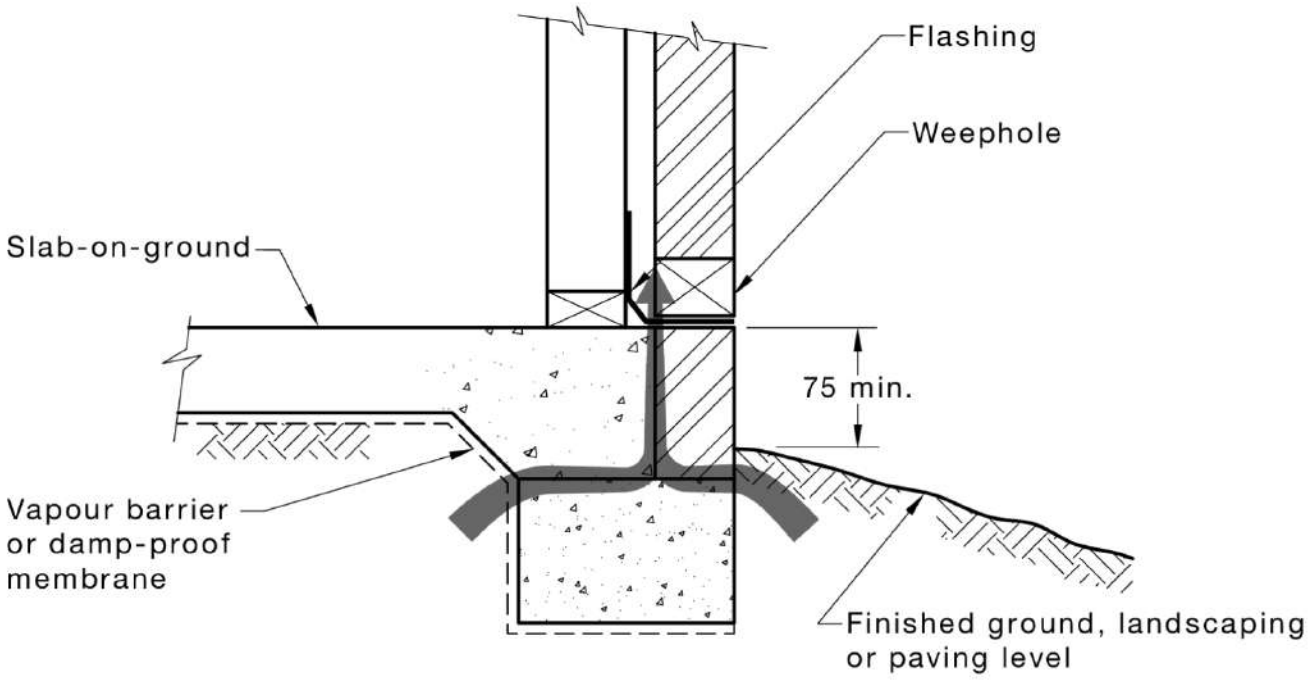
NOTE 2 Certain parts of buildings are at higher risk than other parts of being exploited by termites to gain concealed access. Cavities or discontinuities at or below exterior ground level are readily exploited by termites. With slab-on-ground construction these vulnerable points may include discontinuities in the slab (e.g. at joints and service penetrations) and mortar joints (in the lower courses of perimeter brick walls). Termite management systems need to be provided at these vulnerable points. For any particular building, the number and location of vulnerable areas will depend on the type of construction used.

Figure 2.1 — Examples of vulnerable points in buildings where termites commonly gain concealed access (path of termite attack indicated by arrow)

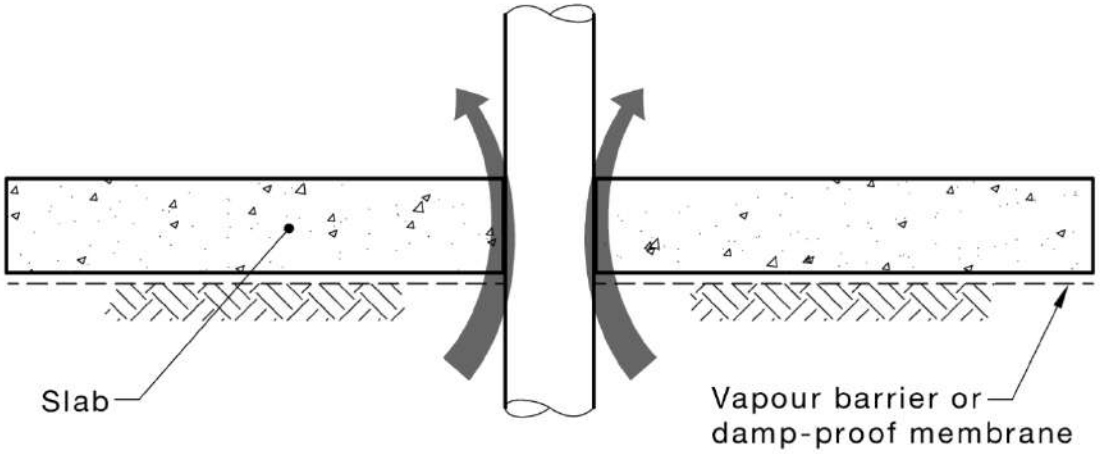
Dimensions in millimetres



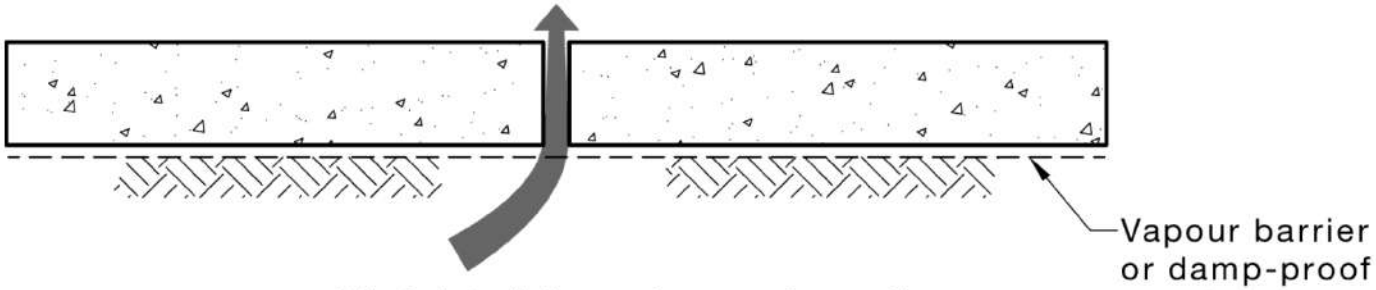
(a) External walls in conjunction with slab



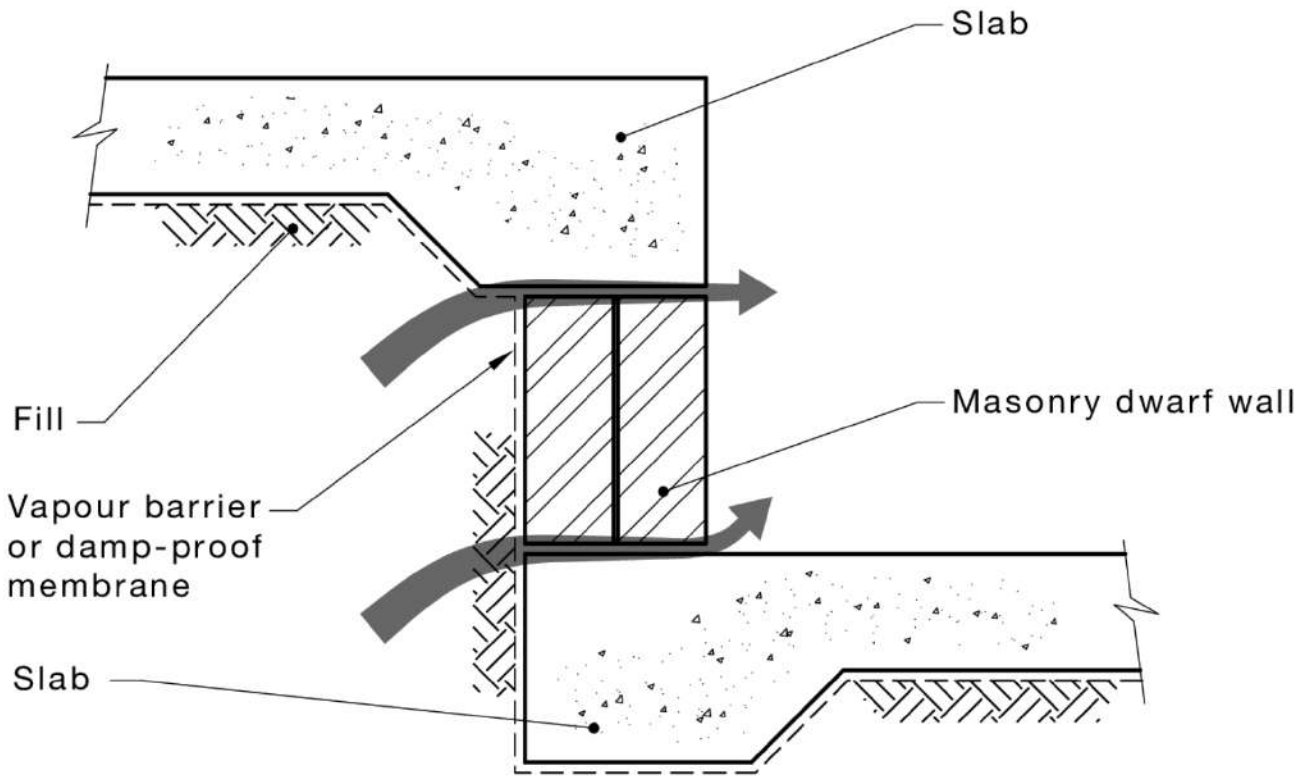
(b) Separate slabs and footings



(c) Penetrations



(d) Joints (planned or unplanned)



(e) Changes in level of concrete slabs

3 Requirements—General

3.1 Scope of section

This Section sets out requirements that meet the design criteria of Section 2 for specific termite management systems. It specifies the procedures to be implemented before, and in association with, any building practices and installation of physical or chemical termite management systems including those covered in Sections 4 to 7.

NOTE 1 Advice for certification of installed termite management systems is given in Paragraph A3, Appendix A.

NOTE 2 A listing of subterranean termites known to damage structures is given in Appendix B.

3.2 Structural elements below termite management systems

All structural elements below the termite management system or any penetration through a structural element or in contact with the ground shall be termite resistant.

NOTE Common penetrations of structural elements include pipes, conduits, pins and wires.

The following materials shall be deemed to be termite resistant:

(a) *Masonry*—fired clay and concrete bricks, concrete blocks and stone.

NOTE Termites may gain entry through mortar and other joints.

(b) *Concrete elements*—complying with AS 2870 or AS 3600 .

(c) *Timber*—complying with the following:

(i) Naturally termite-resistant timbers listed in Appendix C.

NOTE When considering using timbers listed in Appendix C for use in ground contact, appropriate reference should be made to AS 5604 . Reference was made to AS (AS/NZS) 1604 (series), AS 1720.2 and AS/NZS 1148 in compiling the list of termite-resistant timbers given in Paragraph C5, Appendix C.

(ii) Preservative-treated timbers in accordance with AS (AS/NZS) 1604 (series) and specified for the appropriate hazard level in accordance with Appendix D.

NOTE Where preservative-treated timbers are cut, notched, or planed, the affected surface should be treated with a suitable remedial preservative.

(d) *Steel, aluminium or other metals.*

(e) *Fibre-reinforced cement.*

(f) *Unplasticized polyvinyl chloride (PVC)*—having a minimum thickness of 1 mm and a minimum hardness Shore D 80 (instantaneous).

NOTE The use of termite-resistant materials in contact with the ground does not in itself form a termite management system. Termite-resistant materials may provide termites with concealed access to other parts of the building.

3.3 Requirements for suspended floors

3.3.1 General

This Clause (3.3) sets out requirements for buildings with suspended floors, where the termite management system needs to be inspected or replenished.

3.3.2 Access for visual inspection

The following apply:

(a) A minimum clearance of 400 mm between finished ground level and any structural components or other obstructions (e.g. bearers, joists, plumbing fixtures or ducting systems).

(b) The minimum clearance in Item (a) may be reduced to 150 mm at the inside face of an external wall, provided clearance from the finished ground level slopes to 400 mm within a horizontal distance not more than 2 m from the reduced clearance. Where the reduced clearance is applied, it shall be ensured that access for visual maintenance is maintained throughout the entire suspended floor.

NOTE 1 For details, see Figure 3.1(A).

NOTE 2 The risk of undetected termite access is significantly increased where the clearance for inspection is reduced below 400 mm.

3.3.3 Clearance from masonry components

No portion of timber subfloor members, including bearers, joists or bottom plates, shall be closer than 25 mm to any vertical external masonry wall surface.

NOTE For details, see Figure 3.1(B).

3.3.4 Isolated piers, posts and stumps

Access for inspection shall be available to all isolated piers, posts and stumps, which shall be covered with termite sheet material complying with Section 5. Termite sheet material requirements shall not apply where posts, piers and stumps comply with the following criteria:

(a) A vertical inspection zone of at least 75 mm is provided, and—

(i) where concrete stumps or drawn or welded metal tubular piers are used, provided the piers are free from perforations, they are sealed at the top and access for inspection of the full perimeter of the pier or stump is available;

(ii) where prefabricated metal piers are tightly fitted to any flange that complies with Clause 5.2 such that no gap exceeds 0.4 mm or, where any gap exceeds 0.4 mm, they are joined as specified in Clause 5.3.11 and access for inspection of the full perimeter of the pier or stump is available; or

NOTE For details, see Figure 3.1(C).

(iii) where timber posts are installed without ground contact, metal stirrups that have a continuous base are used to prevent termites passing through the base of the stirrup.

NOTE For details, see Figure 3.1(D).

(b) Where timber posts and stumps installed in ground contact are used, they shall be preservative treated to minimum H5 in accordance with AS (AS/NZS) 1604 (series) or shall be of naturally termite-resistant timber (see Appendix C) and have sheet material installed to create an inspection zone.

NOTE Posts and piers may contain or develop cracks and defects that permit concealed termite access. Installation of sheet material is used to create an inspection zone.

3.3.5 Drainage

The ground beneath suspended floors and the external finished surface surrounding the external walls of the building shall be drained in accordance with the requirements of the National Construction Code (NCC). The subfloor area below a suspended floor shall be graded and drained to prevent ponding of water under the building. All exterior paving and other ground surfaces abutting external walls shall be graded to prevent water ponding against the building.

Figure 3.1(A) — Minimum clearance for sloping site

Dimensions in millimetres

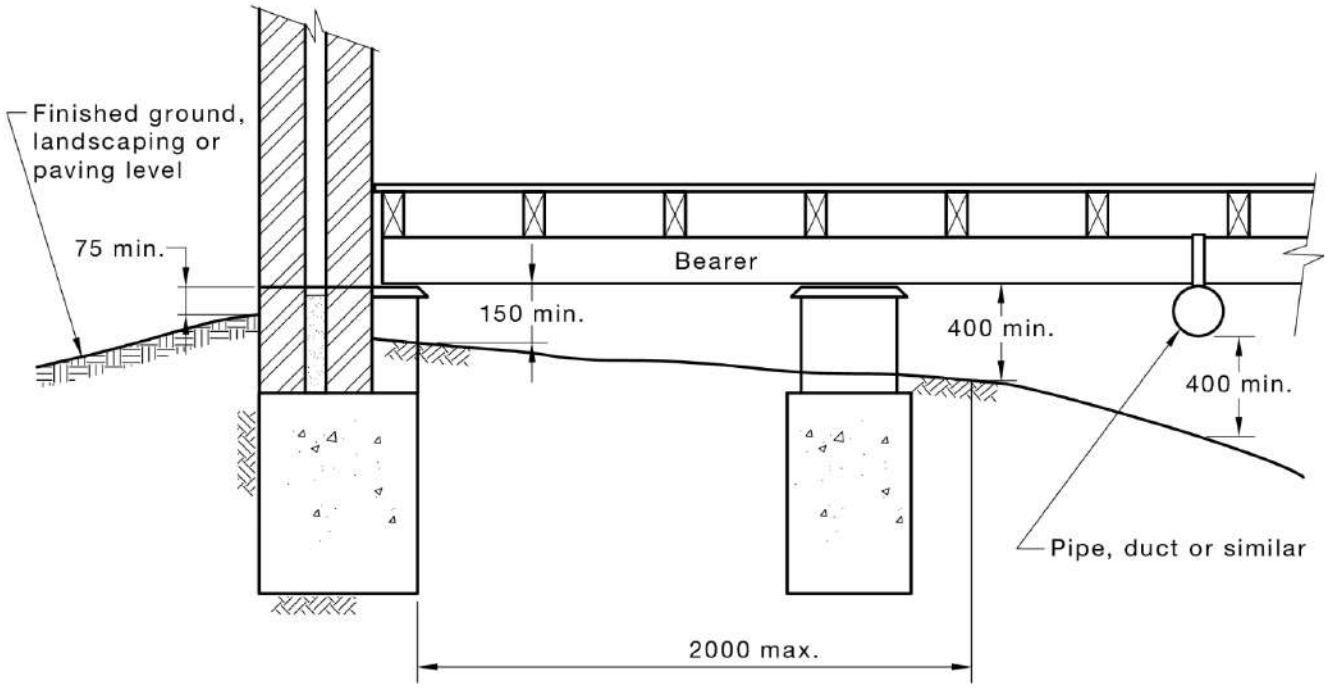
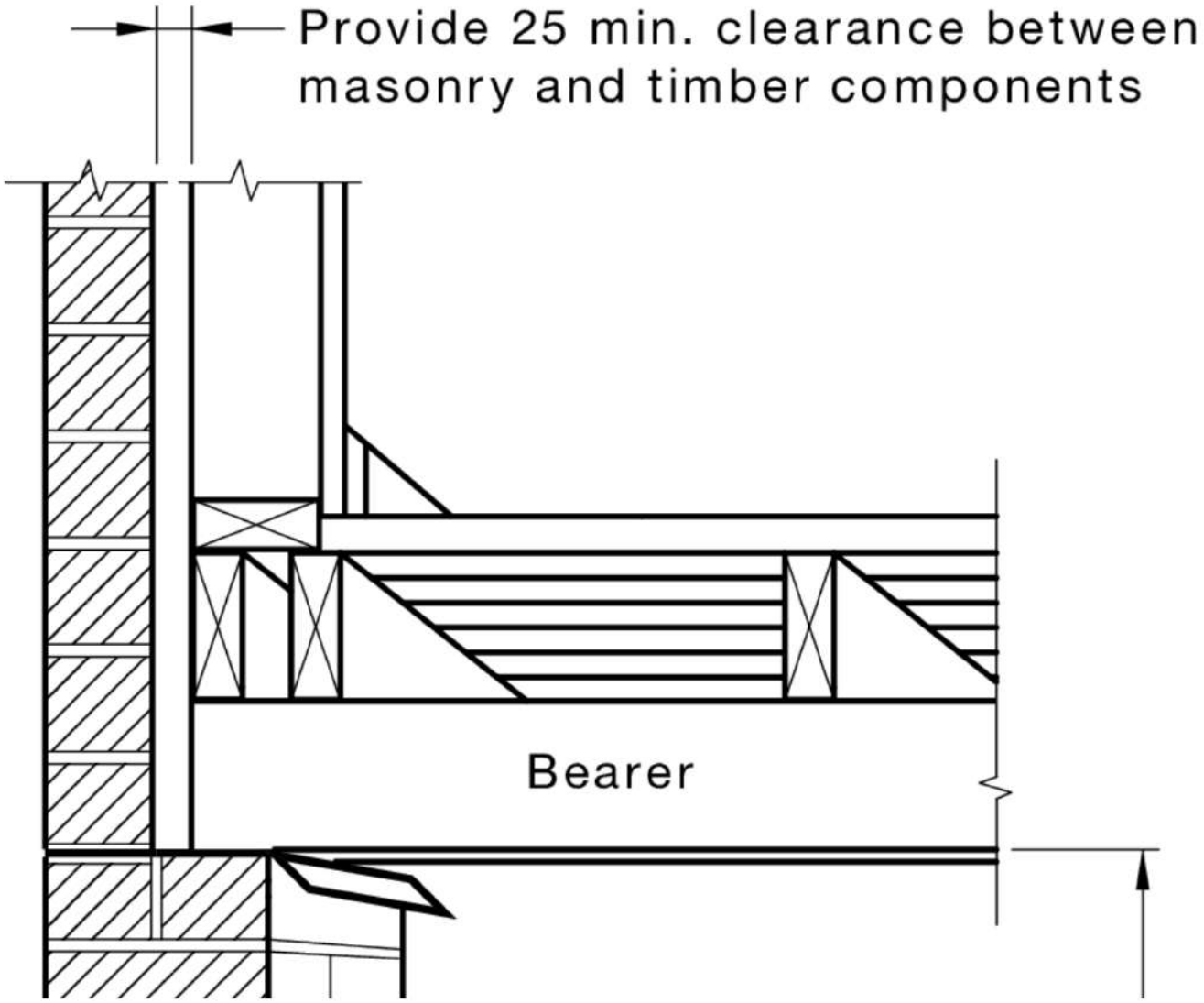


Figure 3.1(B) — Clearance from masonry components

Dimensions in millimetres



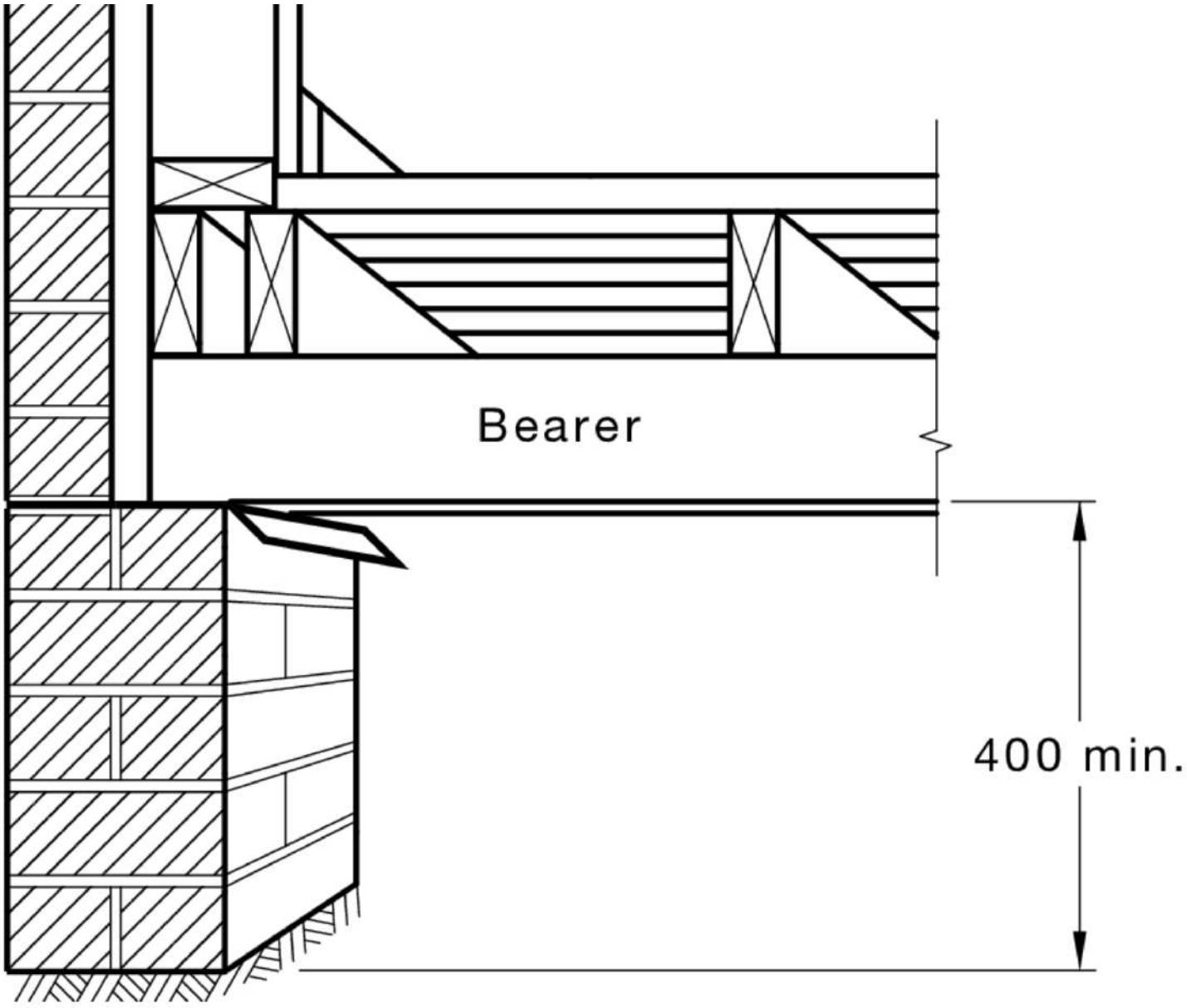
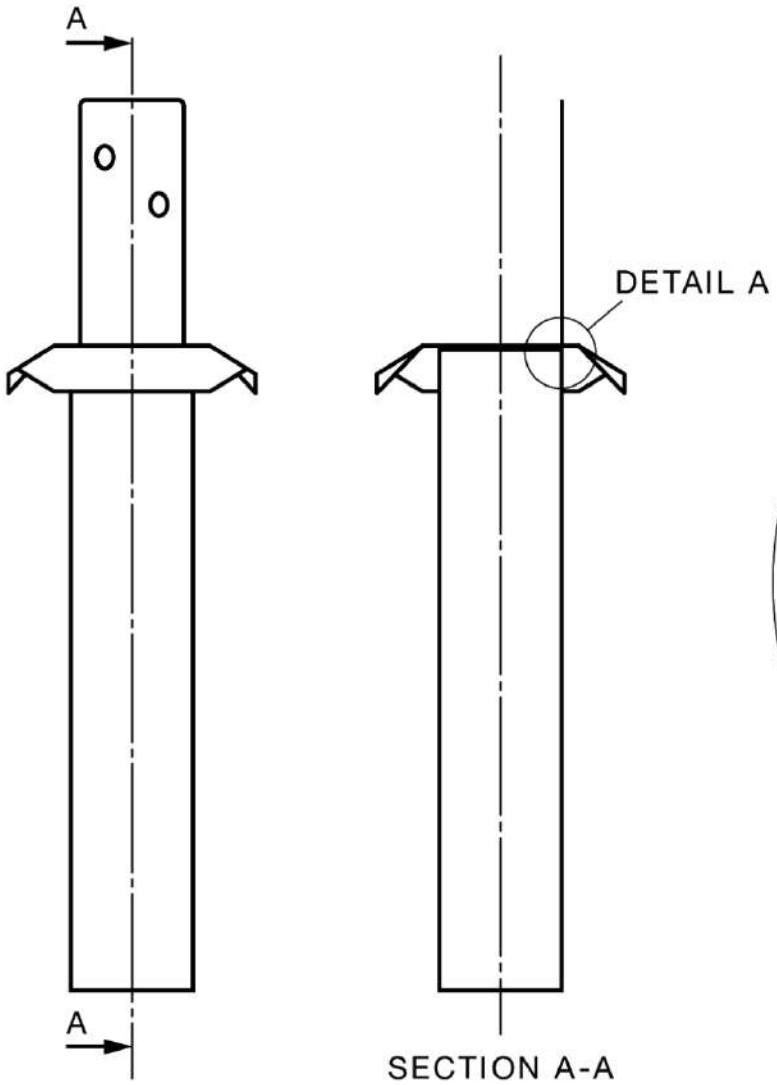
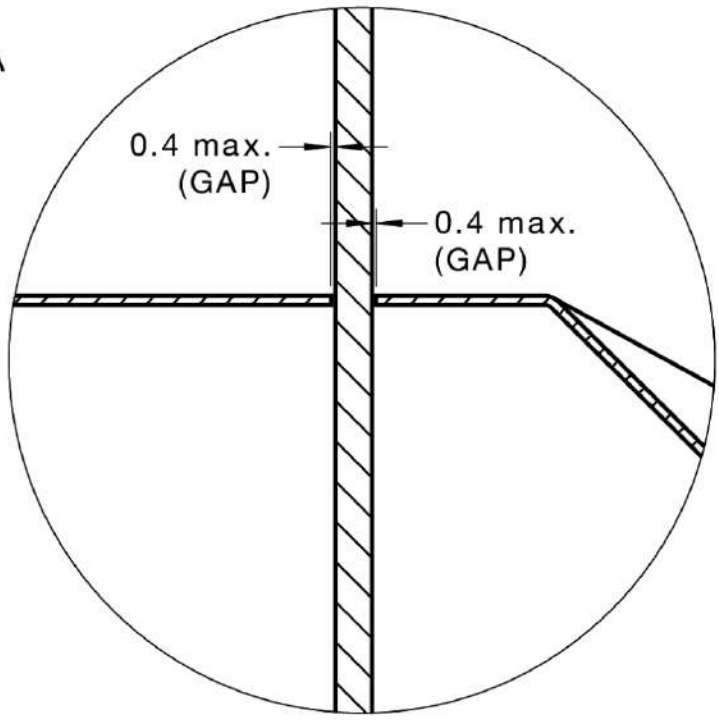


Figure 3.1(C) — Piers, posts or stumps with gap around vertical tab

Dimensions in millimetres



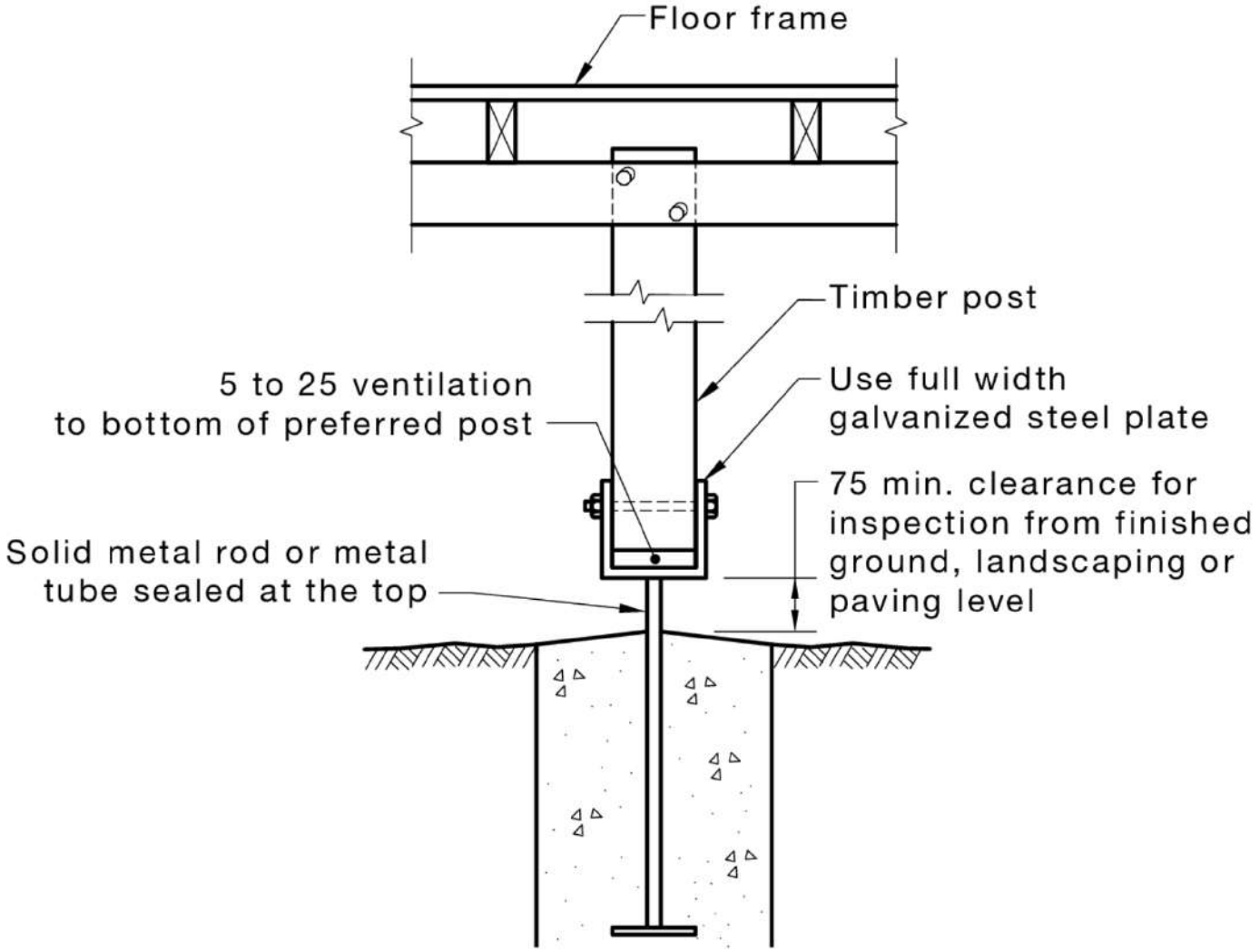
SECTION A-A



DETAIL A
(SCALE 10:1)

Figure 3.1(D) — Metal stirrup as alternative to sheeting for posts

Dimensions in millimetres



4 Requirements—Concrete slabs

4.1 General

This Section sets out requirements for concrete slabs to be used as a component of a termite management system to deter termites from gaining concealed access to a building.

4.2 Concrete slabs

In addition to the requirements of Clause 2.2, a concrete slab or footing forming part of a termite management system shall—

(a) have all interfaces between the penetrations and slab or footing provided with a termite management system integrated with the slab; and

(b) have all joints, except for tied footing slab construction joints [see Figure 4.1(c)], provided with a termite management system integrated with the slab.

4.3 Slab-on-ground

4.3 Slab-on-ground

4.3.1 General

A slab-on-ground shall be designed and constructed in accordance with AS 2870 or AS 3600 . All joints and penetrations shall comply with Clause 4.3.2, and the edge shall be exposed in accordance with Clause 4.4 or have a termite management system installed in accordance with Sections 5, 6 or 7.

NOTE 1 Compacting and curing the concrete will enhance the performance of the slab both structurally and in its ability to resist penetration by termites. Thoroughly compacting concrete ensures that maximum density and strength is achieved by eliminating voids. It also provides clean, sharp edges and maximum bond to the reinforcement. For edge beams and footings and in locations where a smooth slab edge is required, compaction is recommended.

NOTE 2 Curing ensures that the concrete will achieve its potential strength and reduce the likelihood of shrinkage and cracking. Curing is the retention of moisture in the concrete to allow hydration of the cement.

NOTE 3 If constructed in accordance with AS 3600 , due regard should be given to minimizing shrinkage and cracking.

Any penetrations through concrete slabs from temporary fixings, to support items such as formwork, shall be cleared and filled prior to the final setting of the concrete using either—

(a) a concrete of the same strength and properties; or

(b) a non-shrink grout of minimum strength greater than that of the concrete.

After final setting, any penetrations shall be filled using only a non-shrink grout equal in strength to that of the concrete.

4.3.2 Joints and penetrations

4.3.2.1 Vertical construction joints

Vertical construction joints, regardless of whether the reinforcement is continuous through the joint or not, shall have a termite management system installed in accordance with Sections 5, 6 or 7.

4.3.2.2 Footing slab construction joints

Where edge beams, stiffening beams, footing beams and retaining walls form part of the slab construction, and—

(a) they are placed as an integral component of the slab, or tied together in accordance with AS 2870 ;

(b) the surface of the footing is cleaned prior to placing the slab; and

(c) the concrete is compacted to eliminate voids at the joint,

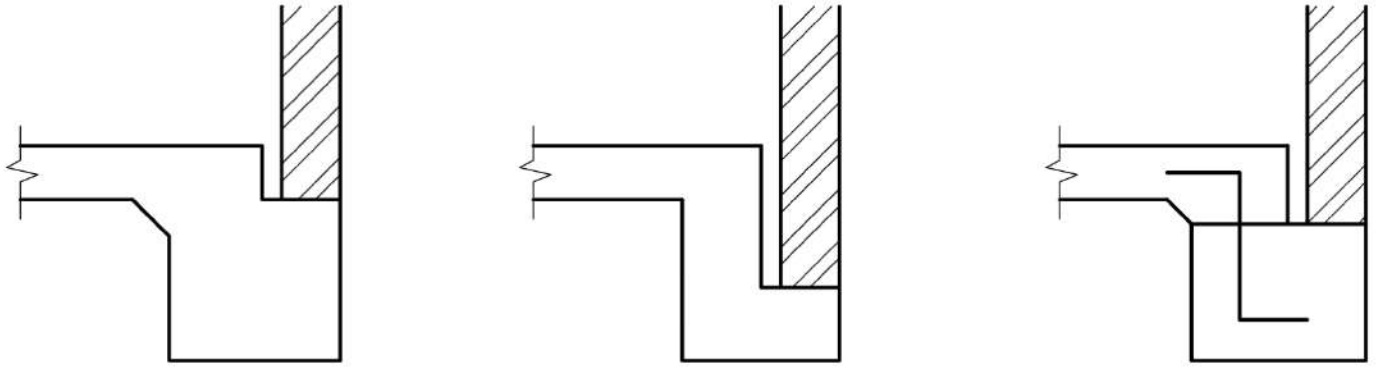
termite treatment of the joint is not required.

NOTE Examples of footing systems not requiring joint treatment are depicted in Figure 4.1.

In all other cases, joints at the junction/support of the slab and the horizontal joint shall have termite management systems installed in accordance with Sections 6, 7 or 8.

NOTE Examples of footing systems requiring joint treatment are depicted in Figure 4.2.

Figure 4.1 — Examples of footing systems requiring no joint treatment

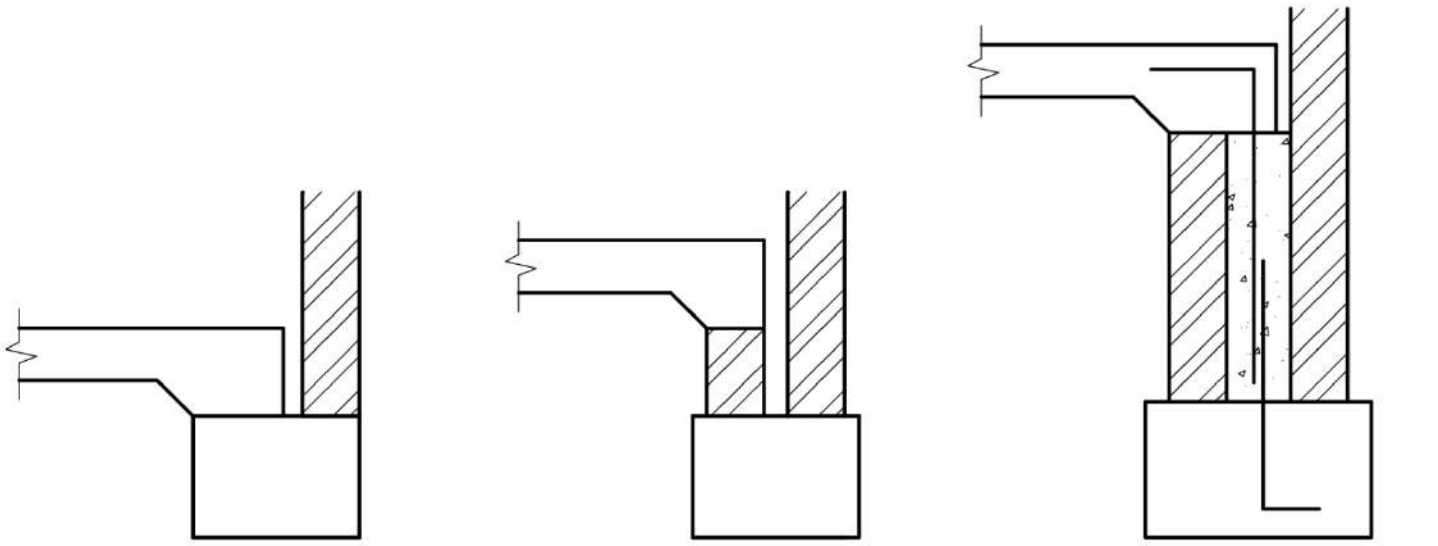


(a) Stiffened raft (no joint)

(b) Waffle raft (no joint)

(c) Footing slab construction joint

Figure 4.2 — Examples of footing systems requiring joint treatments



(a) Footing slab

(b) Footing slab

(c) Reinforced cavity masonry

4.3.2.3 Isolation, sawn or other movement control joints

Where isolation, sawn or other movement control joints occur in the slab, they shall have a termite management system installed in accordance with Sections 5, 6 or 7.

4.3.2.4 Penetrations

4.3.2.4.1 General

Penetrations through slabs such as service pipes shall be termite resistant and shall have a termite management system installed, or shall function as a termite management system. A termite management system fitted to penetrations shall be —

(a) as specified in Sections 5, 6 or 7; or

(b) a collar.

Additionally, service pipes set into the cavity adjacent to infill slabs shall have a termite management system installed in accordance with Sections 5, 6 or 7, integrated with the slab or perimeter termite management system.

4.3.2.4.2 Penetration collars for use with concrete slabs

Collars shall be embedded into the concrete or adhered to the surface using a termite-resistant adhesive or filler in accordance with AS 3660.3 . Collars shall comply with the material requirements of one or more of Items (b) to (f) of Clause 5.2 or be of a chemically treated product complying with AS 3660.3 .

Where a collar is to be embedded in a concrete slab, it shall be placed so as to sit not less than 40 mm from the upper surface and not closer than 50 mm to any reinforcing mesh or bar chair.

NOTE Galvanized steel is not suitable and certain products that comply with Items (d) and (e) of Clause 5.2 may be prone to corrosion when in contact with the alkaline concrete. Collars placed too high or too close to reinforcing steel or bar chairs may not achieve the required concrete contact.

4.4 Slab edge exposure

Where slab edge exposure is used as part of a termite management system, the exposed face of the perimete
shall be off-the-form and shall not exhibit areas of rough surface, honeycombing or ripples. The slab edge sha
exposed for a minimum of 75 mm above finished ground, landscaping or paving level to permit ready detecti
entry and shall not be rendered, tiled, clad, or concealed by vapour barrier, plastic sheeting, flashings, adjoini
structures, paving, soil or other coating or cover that might provide scope for concealed termite access.

NOTE 1 For examples of slab edge exposure, see Figure 4.3.

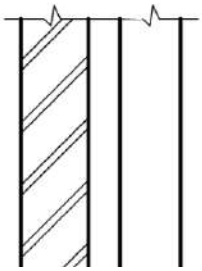
NOTE 2 The purpose of slab edge exposure is to provide an inspection zone for detection of termite ingress.

NOTE 3 Areas of rough surface, honeycombing or ripples caused by folds of vapour barriers can conceal termite mud-tubes

Figure 4.3 — Examples of slab edge exposure

Dimensions in millimetres

(a) Slab edge exposure—Vertical slab edge



4.4 Slab edge exposure

Where slab edge exposure is used as part of a termite management system, the exposed face of the perimeter of the slab shall be off-the-form and shall not exhibit areas of rough surface, honeycombing or ripples. The slab edge shall be exposed for a minimum of 75 mm above finished ground, landscaping or paving level to permit ready detection of termite entry and shall not be rendered, tiled, clad, or concealed by vapour barrier, plastic sheeting, flashings, adjoining structures, paving, soil or other coating or cover that might provide scope for concealed termite access.

NOTE 1 For examples of slab edge exposure, see Figure 4.3.

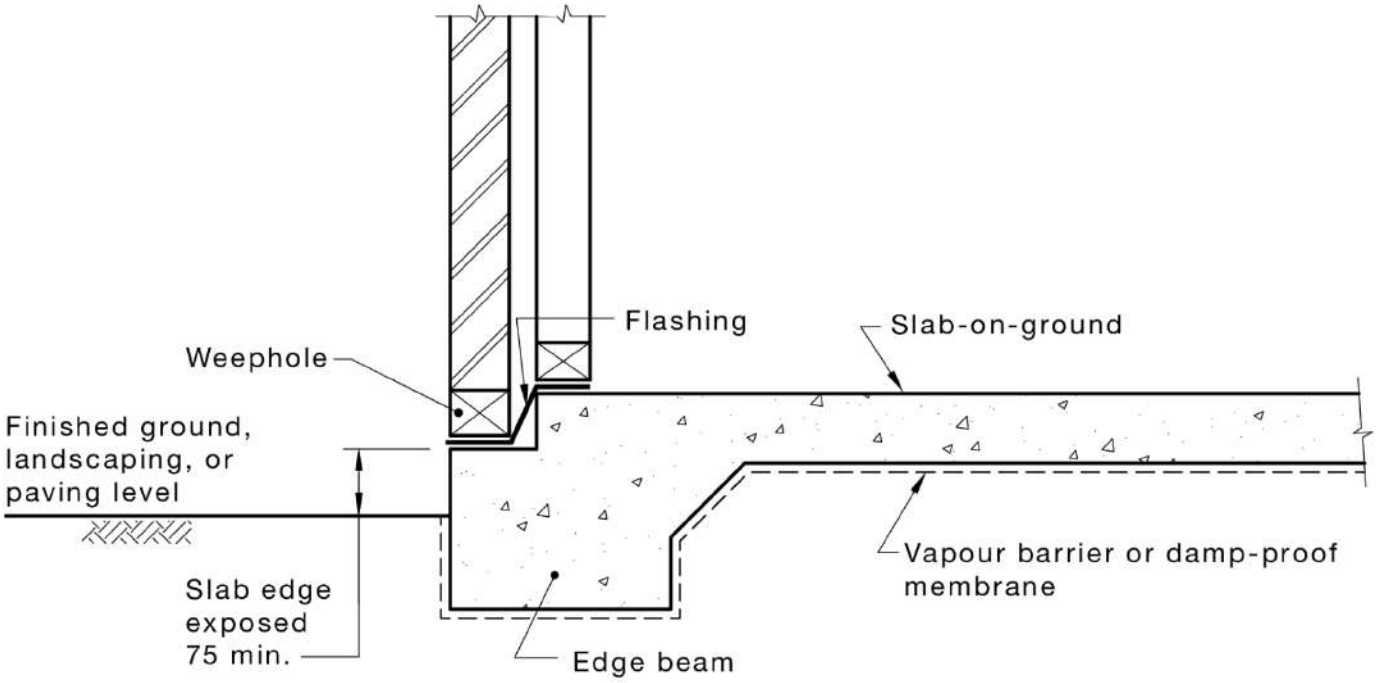
NOTE 2 The purpose of slab edge exposure is to provide an inspection zone for detection of termite ingress.

NOTE 3 Areas of rough surface, honeycombing or ripples caused by folds of vapour barriers can conceal termite mud-tubes.

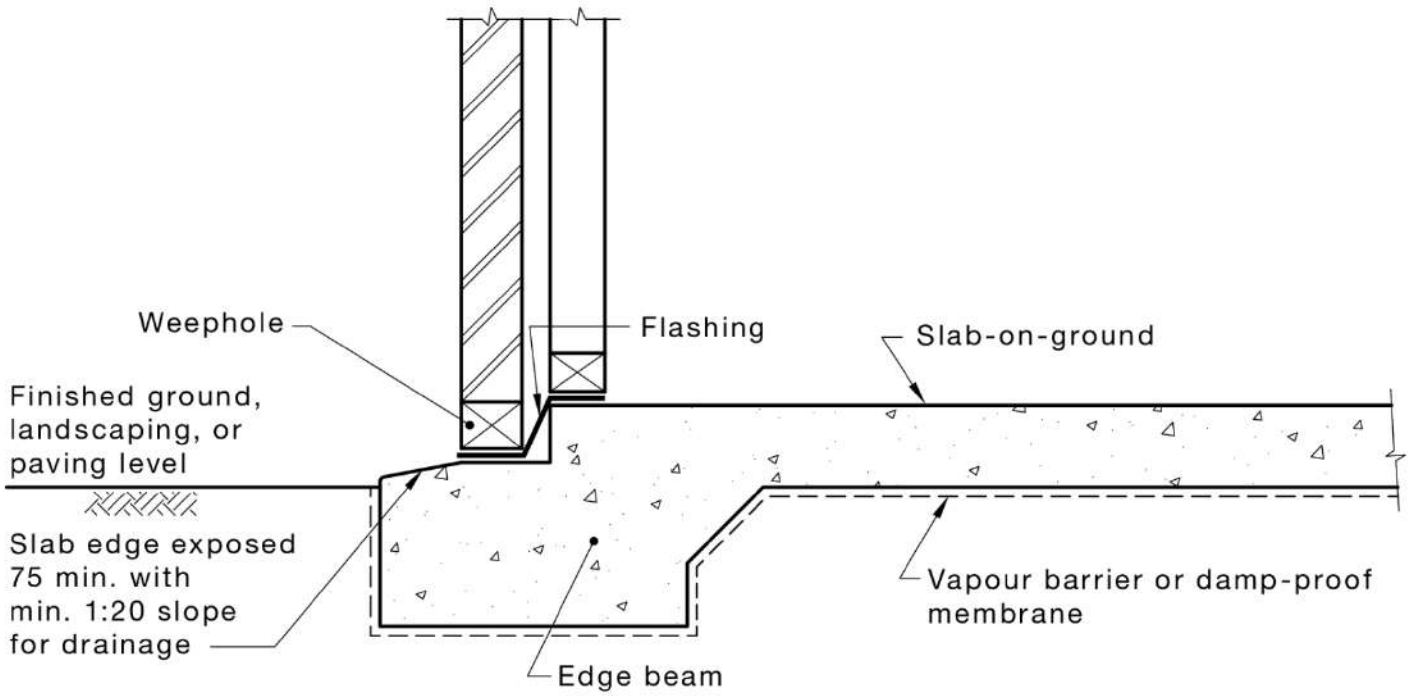
Figure 4.3 — Examples of slab edge exposure

Dimensions in millimetres

(a) Slab edge exposure—Vertical slab edge



(b) Slab edge exposure—Sloped slab edge



4.5 Suspended slabs

4.5.1 Design and construction

Suspended slabs shall be designed and constructed in accordance with AS 3600 .

4.5.2 Penetration and joints

Penetrations and joints that cannot be visually inspected shall have a physical termite management system installed.

5 Requirements—Sheet materials

5.1 General

This Section sets out the requirements for sheet materials used as a component of a termite management system to deter termites from gaining concealed access to a building.

Sheets are applied to cover subfloor construction that may otherwise permit termites to gain concealed entry.

This Section shall be read in conjunction with the requirements of Section 3.

5.2 Material requirements

Termite caps and sheeting shall be manufactured from one or more of the following materials:

(a) Galvanized steel, minimum thickness 0.5 mm (see Notes 1 to 4). Steel shall be galvanized to AS/NZS 4680 , and the coating class shall be at least Z275.

(b) Sheet copper, quarter hard, minimum thickness 0.4 mm (see Notes 1, 3 and 4).

(c) Stainless steel, half-hard, minimum thickness 0.4 mm (see Notes 1, 3 and 4).

(d) Aluminium alloy, minimum thickness 0.5 mm (see Notes 1, 3 and 4).

(e) Alloys of copper and zinc, minimum thickness 0.5 mm (see Notes 1, 3 and 4).

(f) Mesh, stainless steel minimum grade 316, with a minimum molybdenum content of 2.5% (see Notes 3 and 4). The mesh shall have an aperture size smaller than the head width of the termite species in the area of use. The mesh shall be tested in accordance with AS 3660.3 .

NOTE Recommend maximum aperture size is reduced for parts of Northern Australia where the very small species *Heterotermes vagus* may occur.

(g) PVC sheeting of Shore hardness D 80 (instantaneous), minimum thickness 1.0 mm.

(h) Chemically treated sheet tested in accordance with AS 3660.3 and registered with the pesticides registrar.

Materials and dimensions not specified above shall be tested in accordance with AS 3660.3 .

NOTE 1 Zinc/aluminium alloy-coated steel and zinc-annealed steel are both unacceptable because they can readily corrode.

NOTE 2 The atmospheric conditions and the corrosive potential of some building materials, e.g. bricks and mortar, should be considered when selecting the sheet material to be used. Coatings such as bitumen or zinc chromate may be required in order to provide corrosion resistance for the required service life.

NOTE 3 The material selected for sheeting should not produce electrolytic corrosion when used in contact with other components of the building, e.g. steel framing should not be in contact with stainless steel.

NOTE 4 The sizes given are 'first choice' (R10), see AS 2338 .

5.3 Installation of sheeting

5.3.1 General

Where used, termite sheet materials shall be installed on all subfloor structures through or on which termites might gain concealed access, such as piers, posts, stumps and walls, below the underside of the lowest floor-framing member or suspended concrete slab. The surfaces in contact with termite sheet materials shall be free from irregularities that could damage the sheets.

5.3.2 External walls

Where used, the entire width of the external walls, including any cavities in the wall, shall be sheeted to the outside wall face and the sheeting shall be continuously visible at the exterior. When the external wall is rendered, the sheet shall be finished flush with the outside face of the render.

NOTE For an example, see Figure 5.1(a).

5.3.3 Internal foundation walls

All internal foundation walls shall be covered with termite sheet materials. The sheet materials on engaged piers shall be an extension of the wall sheeting. Where crawl space accesses or ventilation openings have a height of less than 400 mm, sheeting shall be continuous over the opening. Sheet material shall project on all sides so that no edge is less than 40 mm from the vertical face of the pier and the edges are turned down at an angle from the horizontal.

NOTE 1 Typical examples of the above are depicted in Figures 5.1(b) and 5.1(c).

NOTE 2 Where a sheet overhangs an edge, it may be necessary to provide support from beneath to ensure the minimum 40 mm overhang is retained. Any such support should—

(a) be compatible with the sheet;

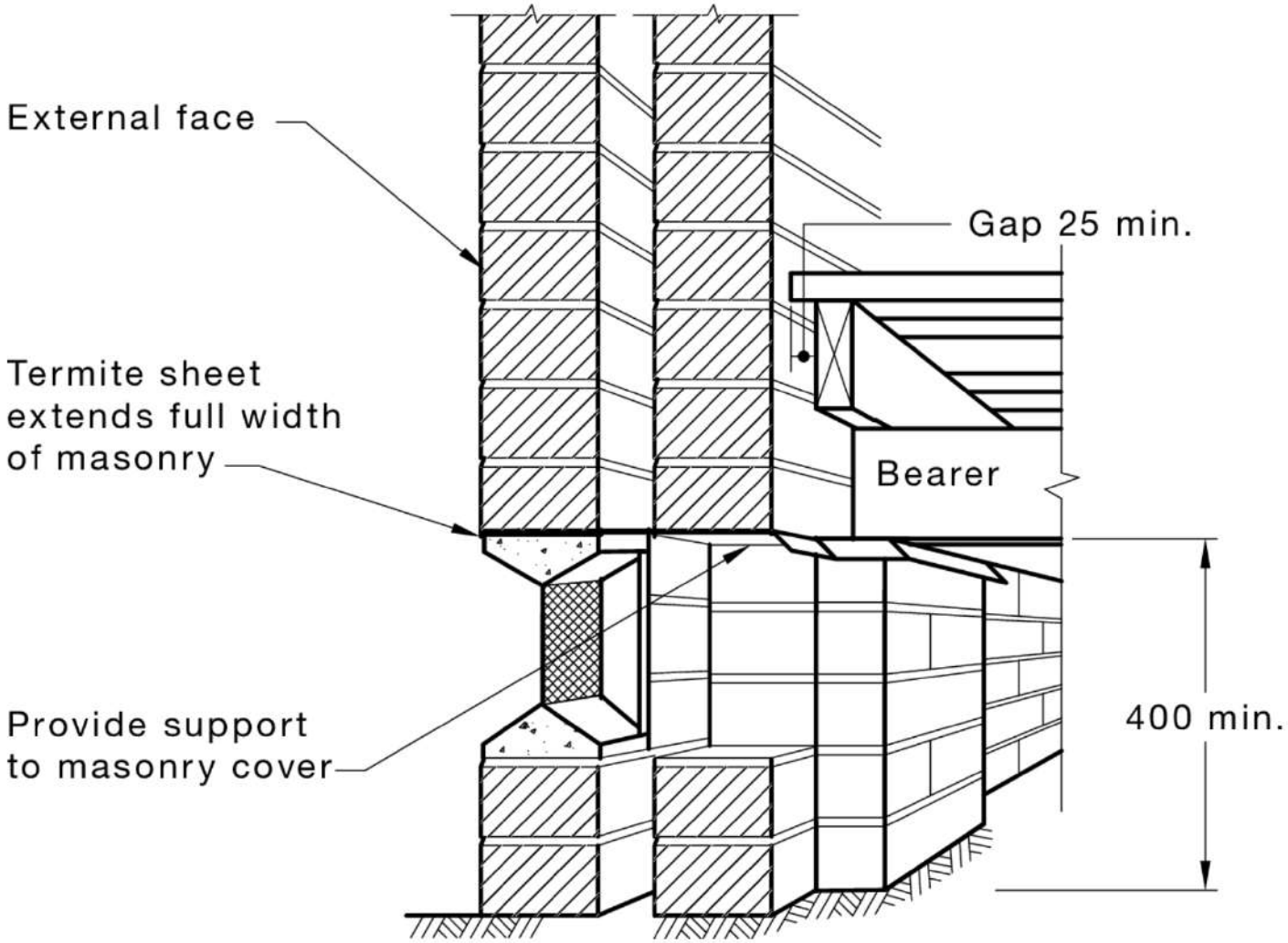
(b) not extend beyond the sheet; and

(c) not impede visual inspection.

Figure 5.1 — Typical termite sheeting

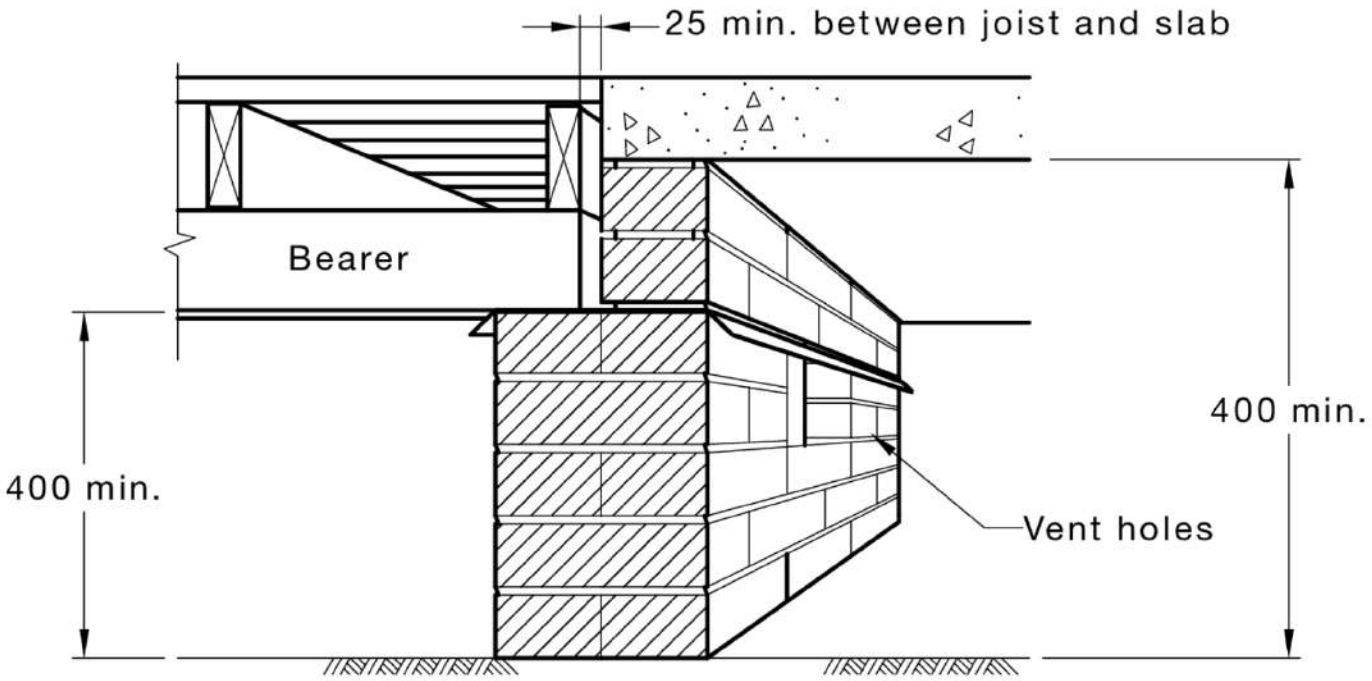
Dimensions in millimetres

(a) External substructure wall

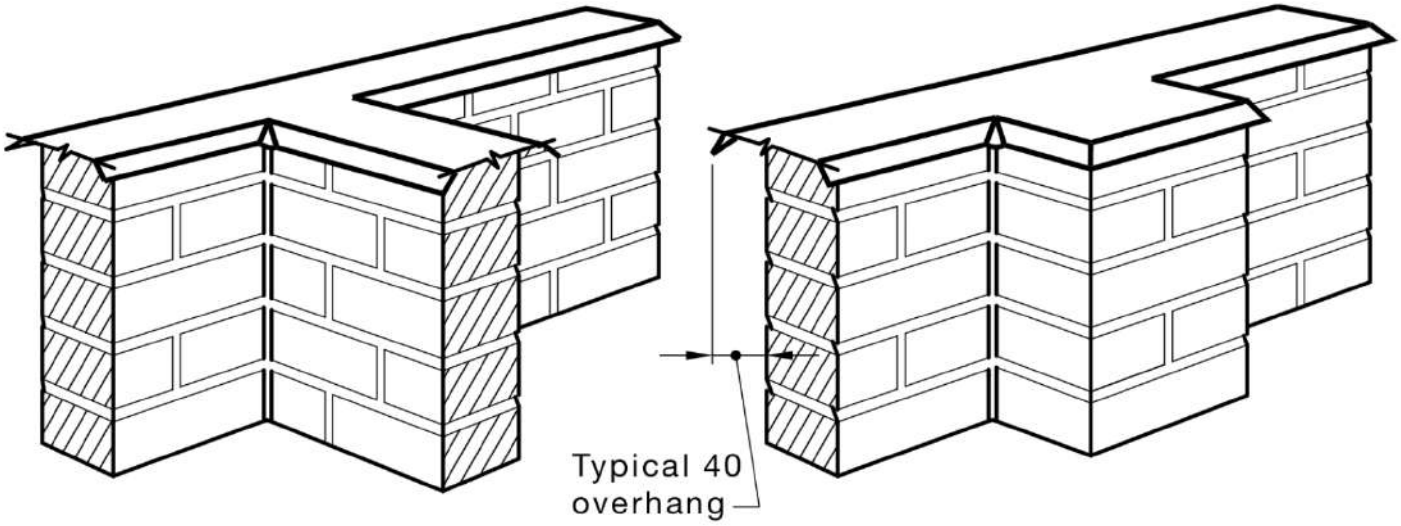


NOTE Where the external masonry is rendered, the external edge of the sheeting still needs to be exposed to view.

(b) Suspended floors



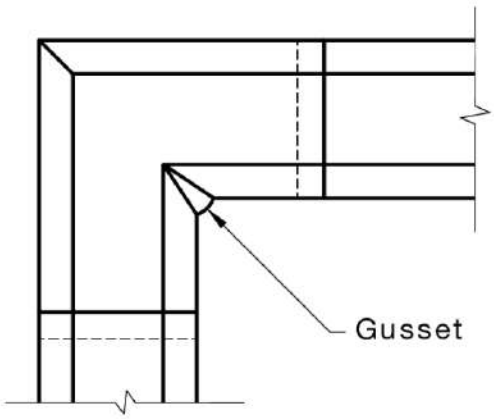
(c) Internal substructure walls



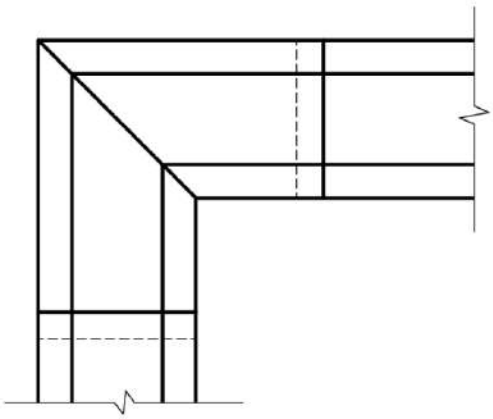
(i) Intersecting wall

(ii) Engaged piers

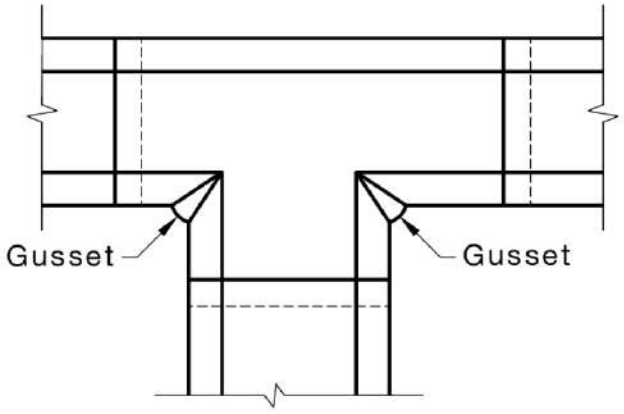
(d) Internal substructure walls



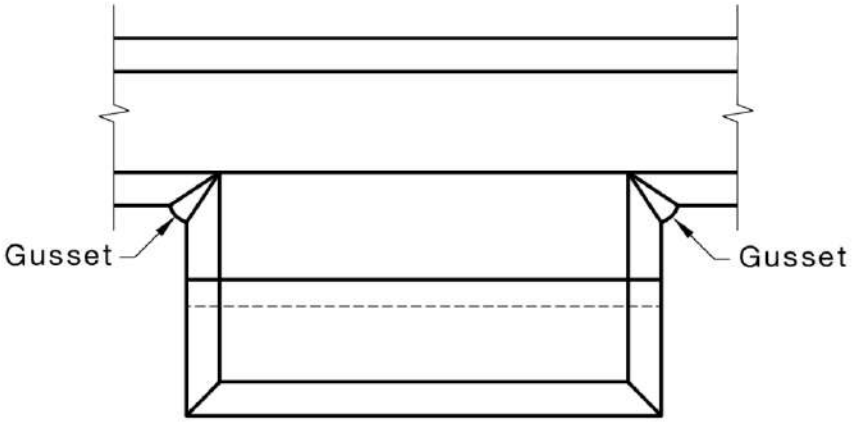
(iii) Corner shield made from one piece of material



(iv) Corner shield made of two pieces butted together



(v) Shielding at wall intersection



(vi) Shields for engaged piers

5.3.4 Suspended floors

A sheet shall have a plane surface of size and shape to fully cover the top of the pier, post, or the horizontal surface of the wall. The sheet shall project on all sides so that no edge shall be less than 40 mm from the vertical face of the pier or wall when the edges are turned down at an angle from the horizontal.

NOTE For an example, see Figure 5.1.

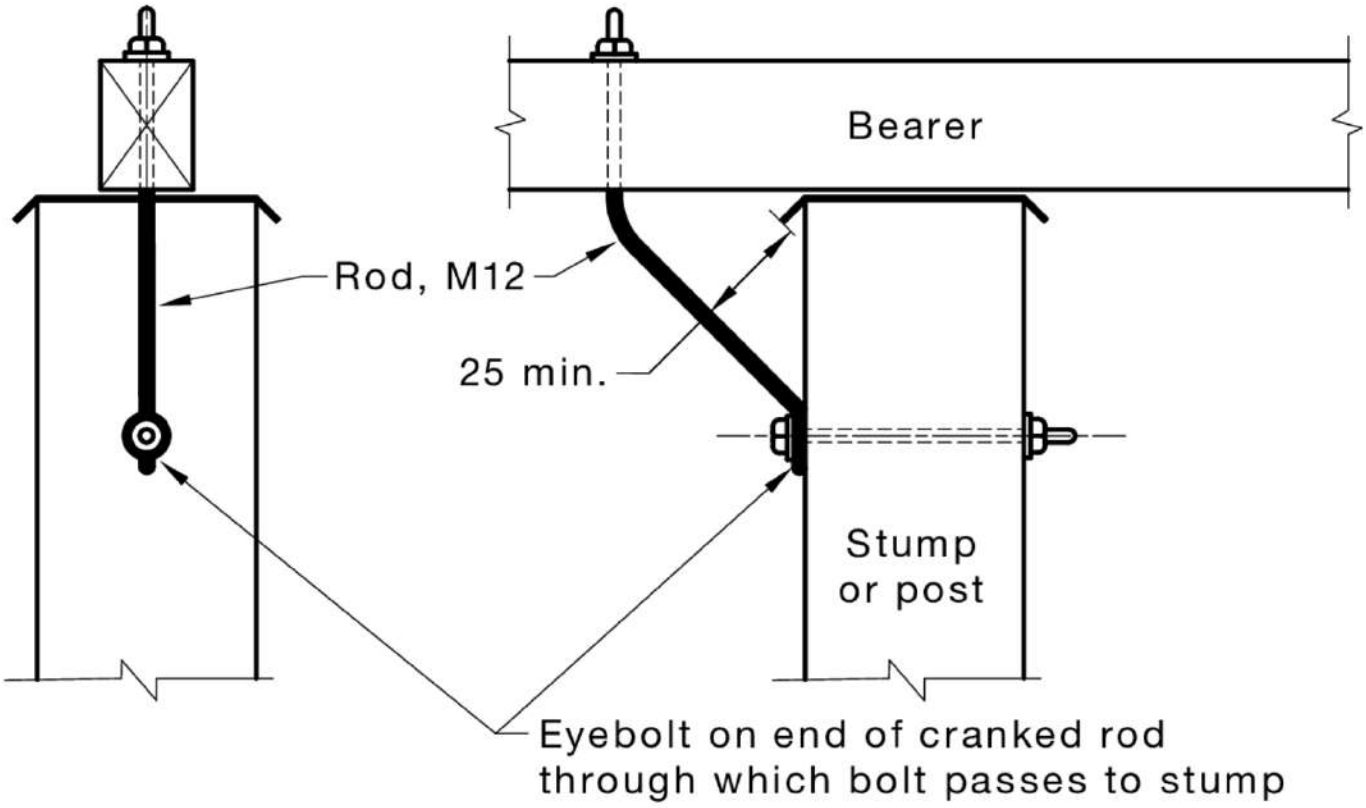
Service pipes, ties and similar connections beneath suspended floors shall not be fitted closer than 25 mm from the edges of any sheet unless the sheet termite management system is extended to include the service pipe or connection.

NOTE For a typical treatment, see Figure 5.2.

The sheet fitted to the top of a pier, post or other subfloor structure shall be able to be visually inspected. Where access for inspection is restricted, the sheet shall be continuous with adjoining termite management system components.

Figure 5.2 — Clearance between sheeting and anchor bolts

Dimensions in millimetres



NOTE Where specific tie-downs are required to accommodate wind uplift, these details may vary, particularly in high wind areas.

5.3.5 Under slab

Where a concrete slab is not to be termite resistant [see Clauses 3.2(b) and 4.3.1], it may be fully underlain with sheet material. Under-slab sheeting shall be—

(a) placed so as to accommodate expected movements;

(b) integrated with management system components applied to pipes and penetrations and any joints; and

(c) integrated continuously with the perimeter termite management system.

NOTE Care should be exercised to ensure that the integrity of the sheet material is not impaired by levelling pegs or formwork.

5.3.6 Concrete slab penetrations

Where sheeting is used on a slab-penetrating pipe or service, a collar, consisting of an annular flange of sheet material with a minimum annular width of 15 mm and minimum height against the pipe or service of 20 mm, shall be cast into the concrete slab or, where it is to be concealed beneath a permanent fixture, it shall be sealed to the top surface of the slab with a termite-resistant adhesive tested in accordance with AS 3660.3 .

Attachment to the pipe or service shall be such that no gap is in excess of 0.4 mm. Where a flange to be cast into a concrete slab is clamped or tied to retain position on the pipe or service, the clamp or tie shall be above the horizontal annulus.

NOTE 1 For typical details of collar cast into concrete slab, see Figure 5.3, Options B and C.

NOTE 2 Consideration should be given to the spacing of adjacent pipes or services to allow sufficient space for the installation of sheet to each such pipe or service.

NOTE 3 An upper surface sheet flange may be protected from incidental damage if it is embedded in the mortar bed of tiled floor finishes, or concealed under false floors of kitchen cupboards or bathroom vanities.

Figure 5.3 — Typical details for the installation of sheet at service pipe penetrations

Dimensions in millimetres

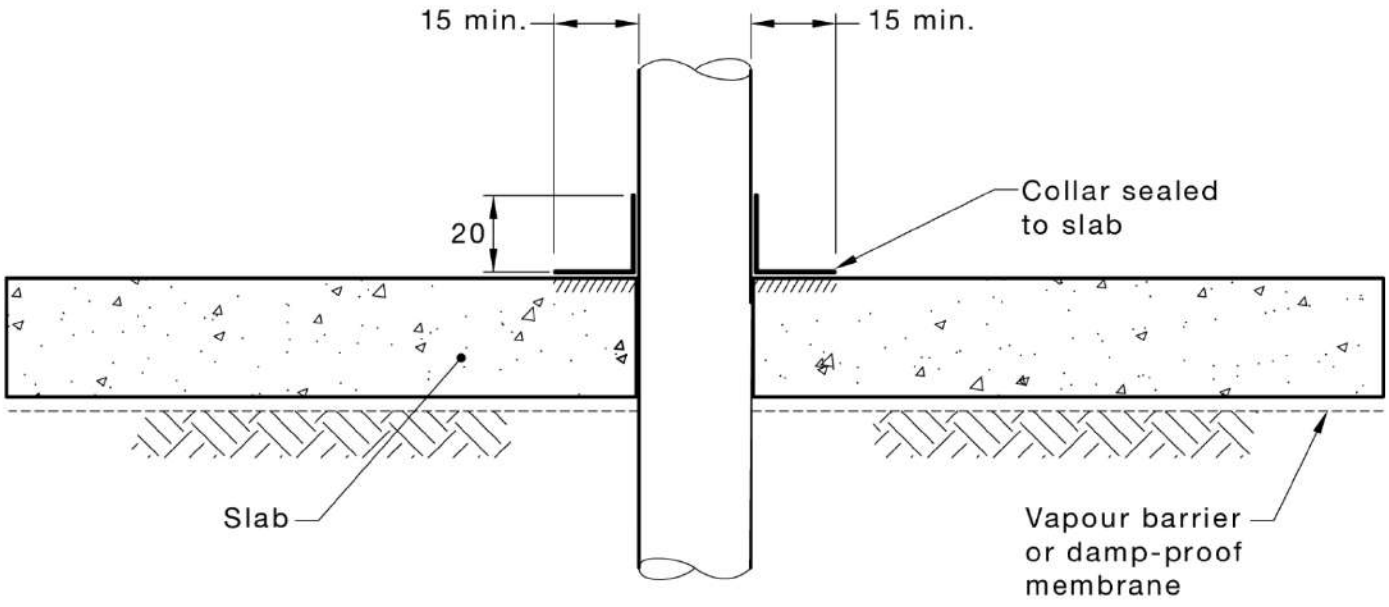
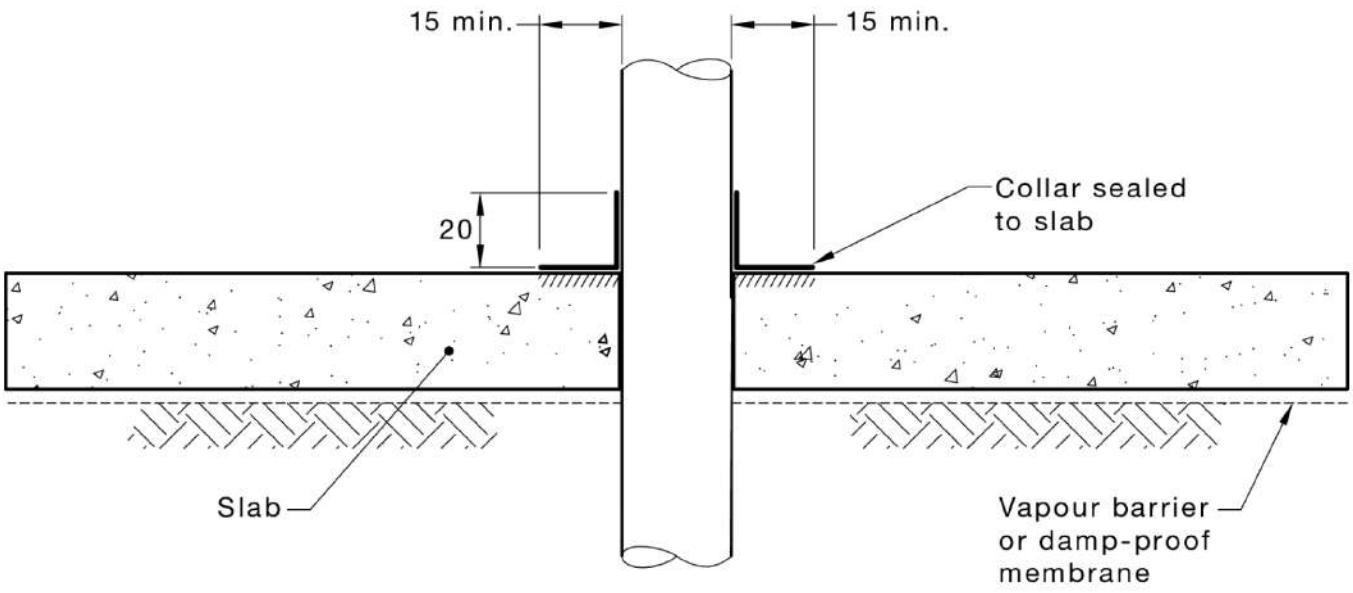
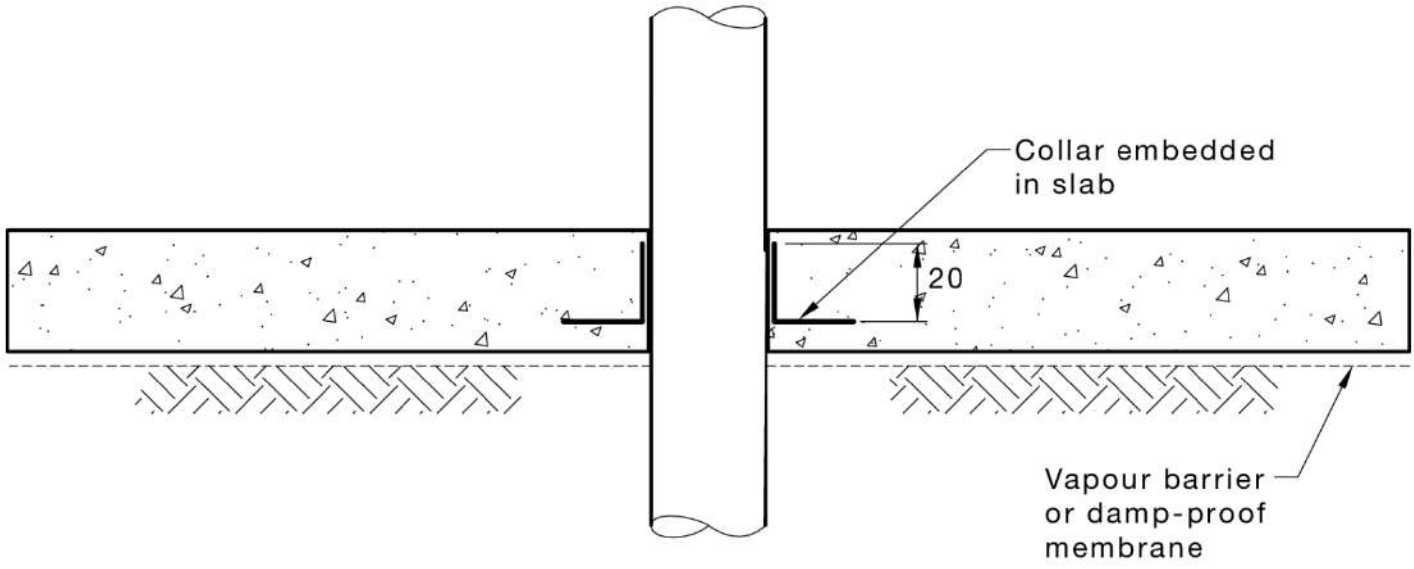


Figure 5.3 — Typical details for the installation of sheet at service pipe penetrations

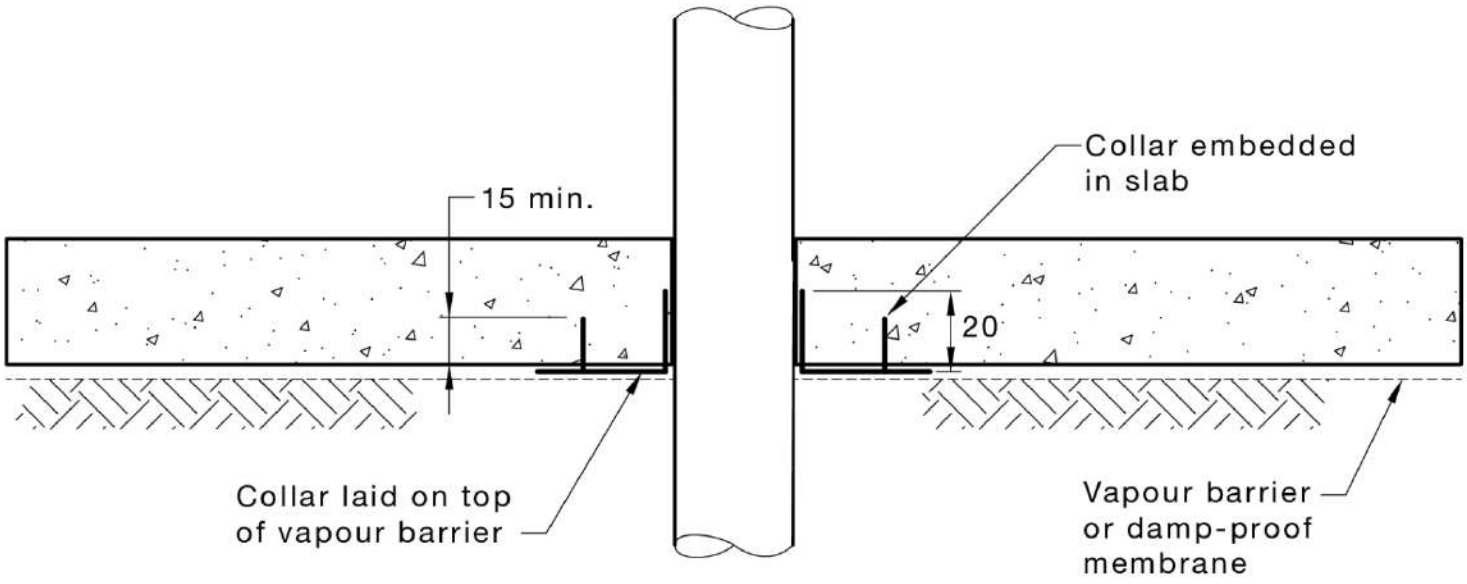
Dimensions in millimetres



OPTION A (POST-POUR)



OPTION B (PRE-POUR)



OPTION C (PRE-POUR)

5.3.7 Concrete slab joints

Where there is a discontinuity in the slab such as a key joint or where separate slabs align, any sheet material shall be placed so as to accommodate the expected movement or, if not specified, shall be placed so as to accommodate a horizontal movement of not less than 15 mm with not less than 35 mm contact with any slab face.

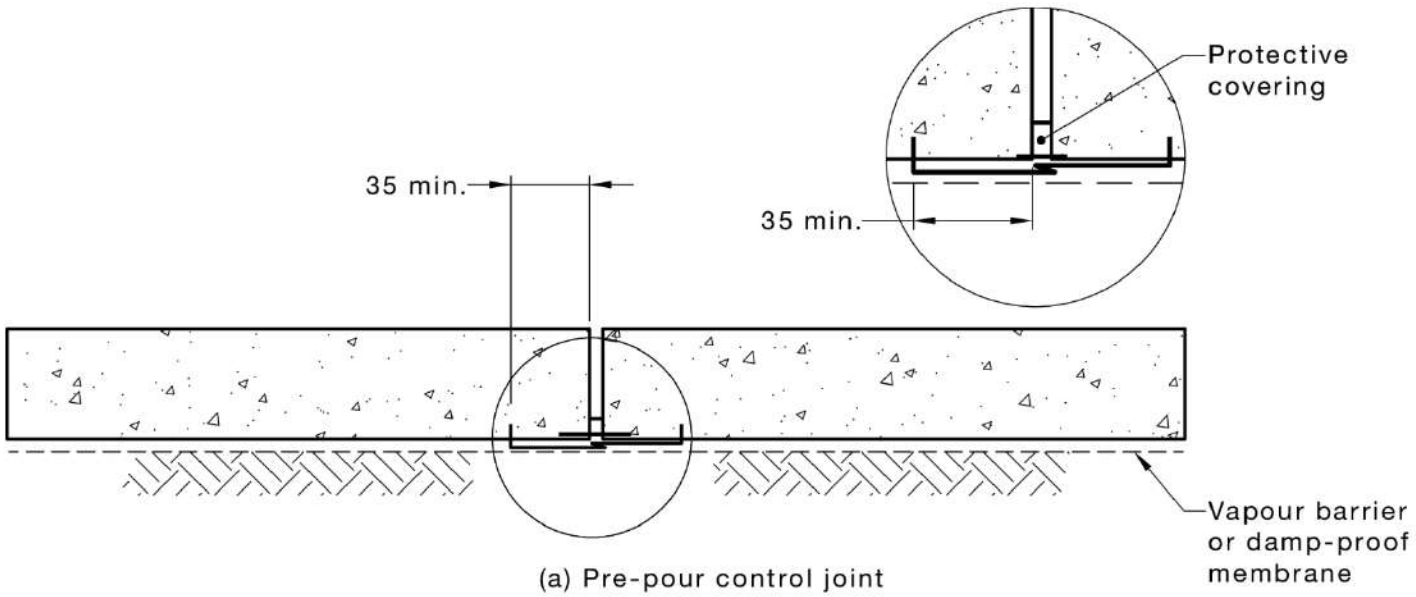
NOTE 1 This change allows other than 35 mm where specified.

NOTE 2 For example, this may be achieved with a strip of stainless steel mesh with a 15 mm wide concertina-fold under the line of the joint placed on the vapour barrier membrane where the edges of the mesh are turned up a minimum of 25 mm to be cast into the slab and a strip of the vapour barrier membrane or similar material laid on the mesh to prevent the concrete slurry from bonding the concertina-fold (see Figure 5.4).

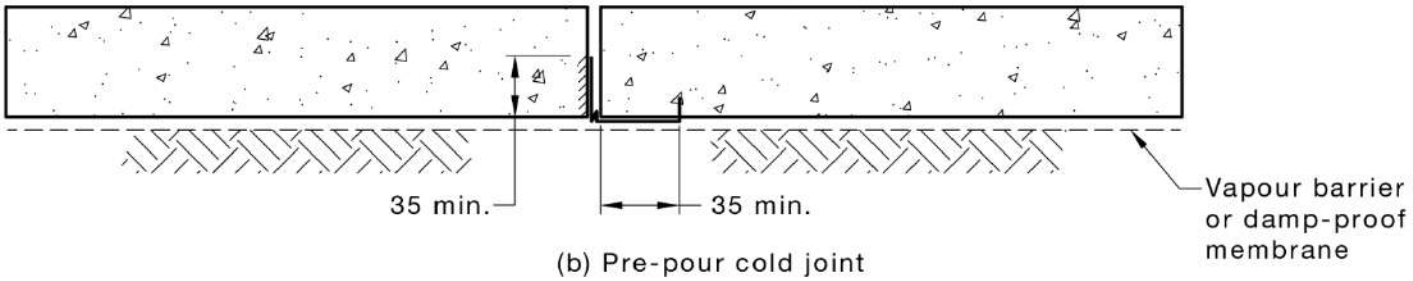
The sheet so placed shall extend for the full length of the joint and interconnect with adjacent termite management system components.

Figure 5.4 — Typical details for sheet at concrete slab joints

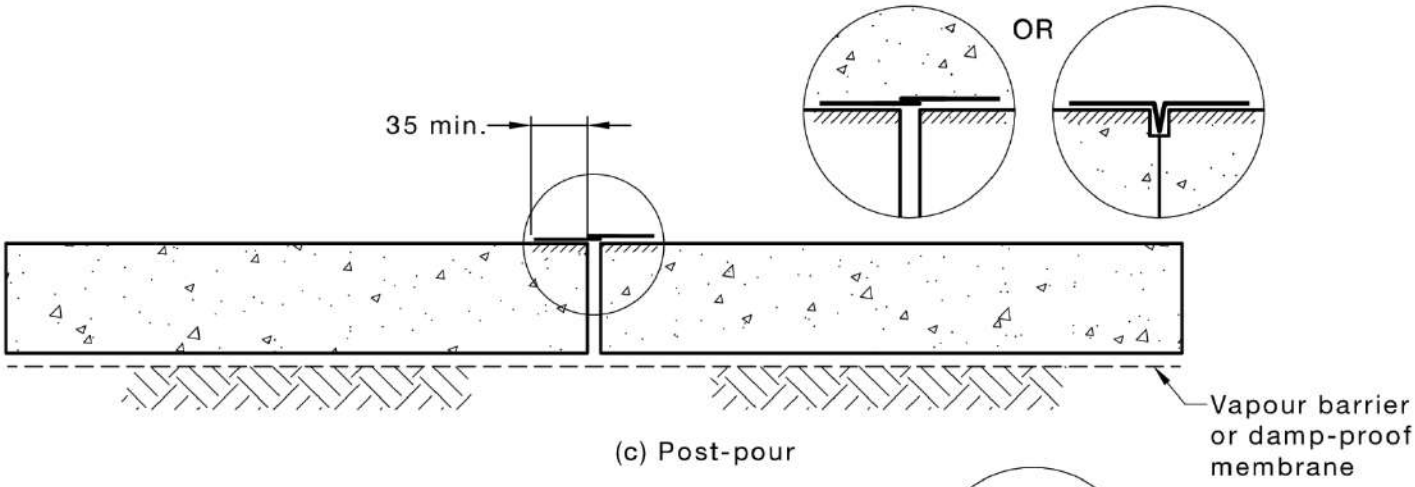
Dimensions in millimetres



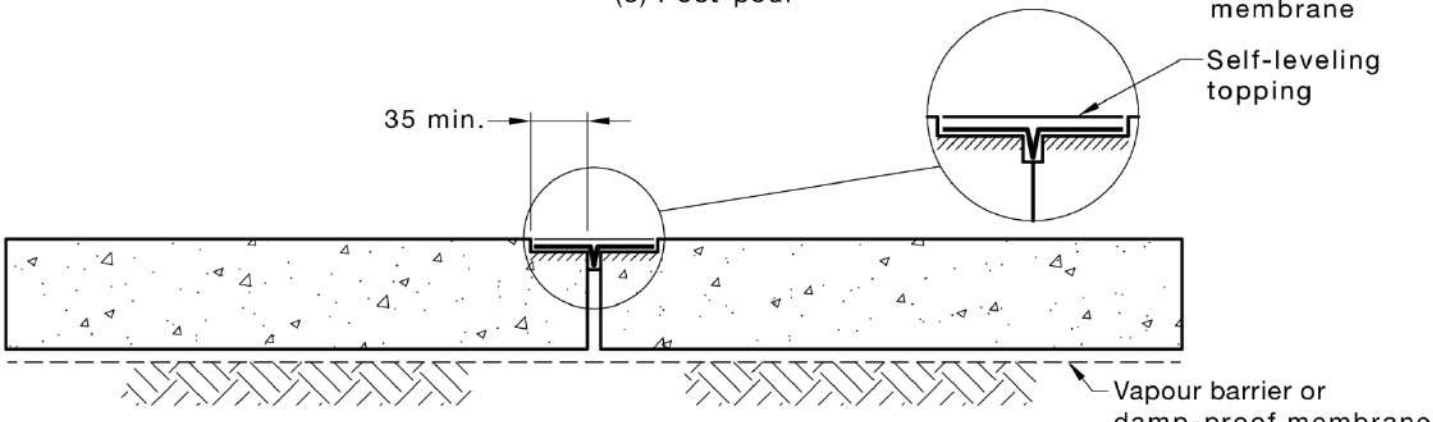
(a) Pre-pour control joint



(b) Pre-pour cold joint



(c) Post-pour



(d) Post-pour

5.3.8 External walls

5.3.8.1 General

Sheeting applied to external walls shall extend through the wall and be continuously visible at the exterior.

Where flexible sheeting is installed with a fold at the corners, it shall be placed so that no fold opens to the wall interior.

NOTE 1 For typical examples, see Figures 5.5 and 5.9.

NOTE 2 A fold that opens into a cavity or internal space may permit partially concealed access and hence, such folds should open to the visible perimeter.

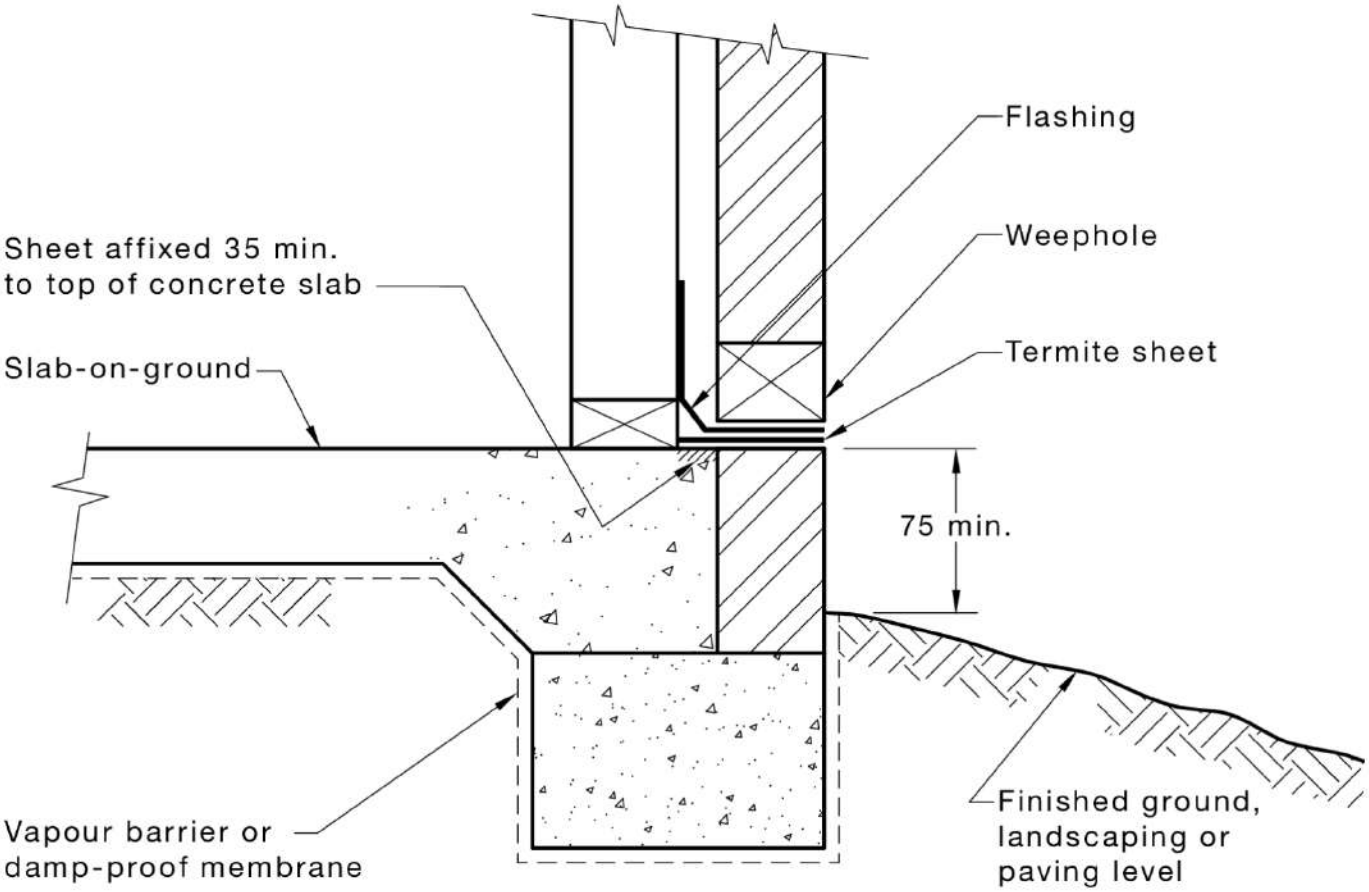
5.3.8.2 External walls in conjunction with concrete floor slab

Sheet material shall extend from the concrete slab to the exterior surface of the wall. At the face of the concrete, any part of the sheet that is not fully and permanently compressed beneath the bottom plate or other building components, such that no gap exceeds 0.4 mm, shall extend a minimum of 35 mm and be triple-rolled, brazed, welded or jointed using a termite-resistant filler or termite-resistant adhesive.

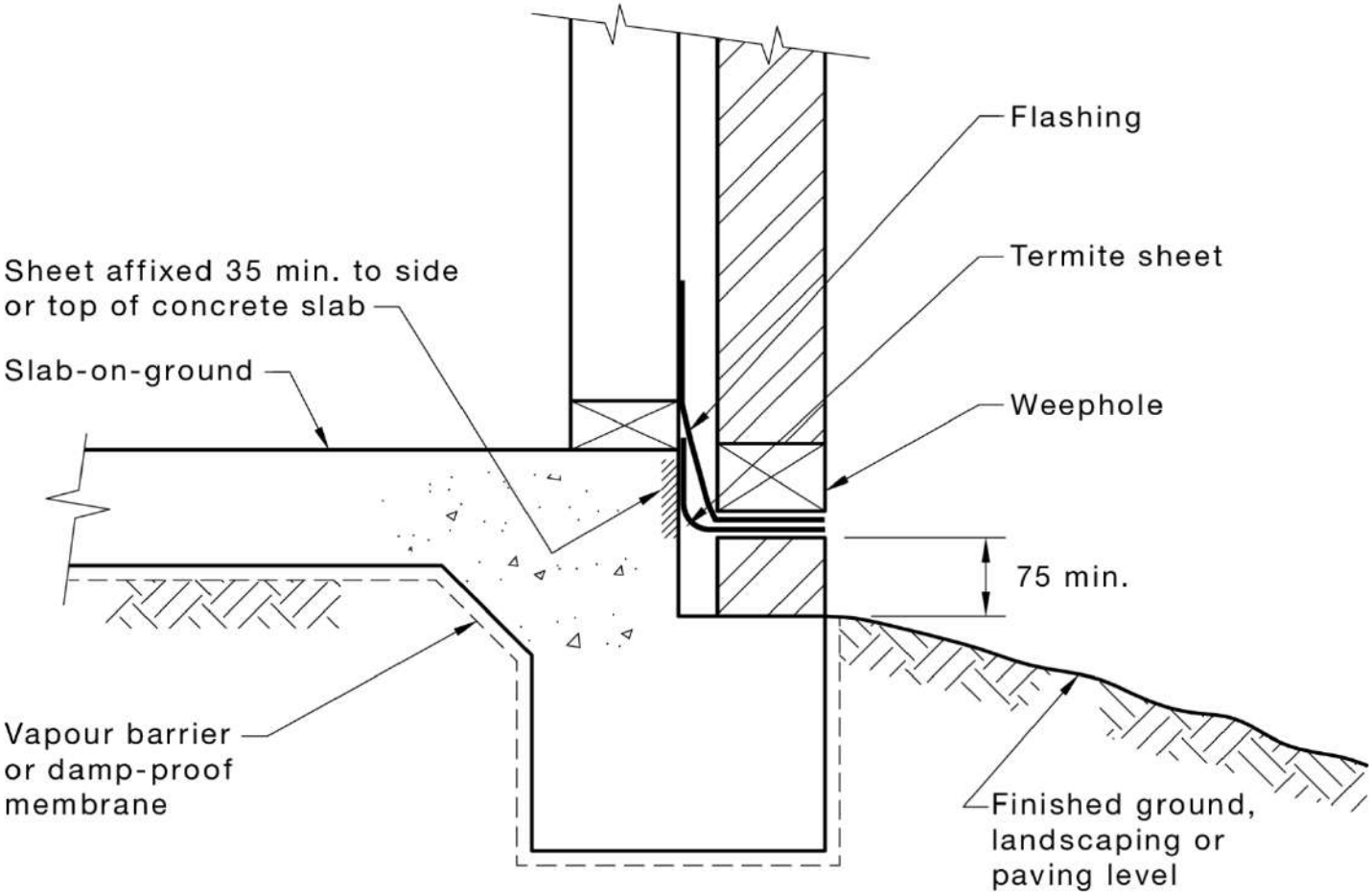
For an infill slab poured against masonry, the sheet material shall extend a minimum of 35 mm from exterior face or beyond any exposed upper edge of infill (knockout) block [see Figure 5.5(c)].

Figure 5.5 — Typical sheet installation to external wall with concrete floor slab

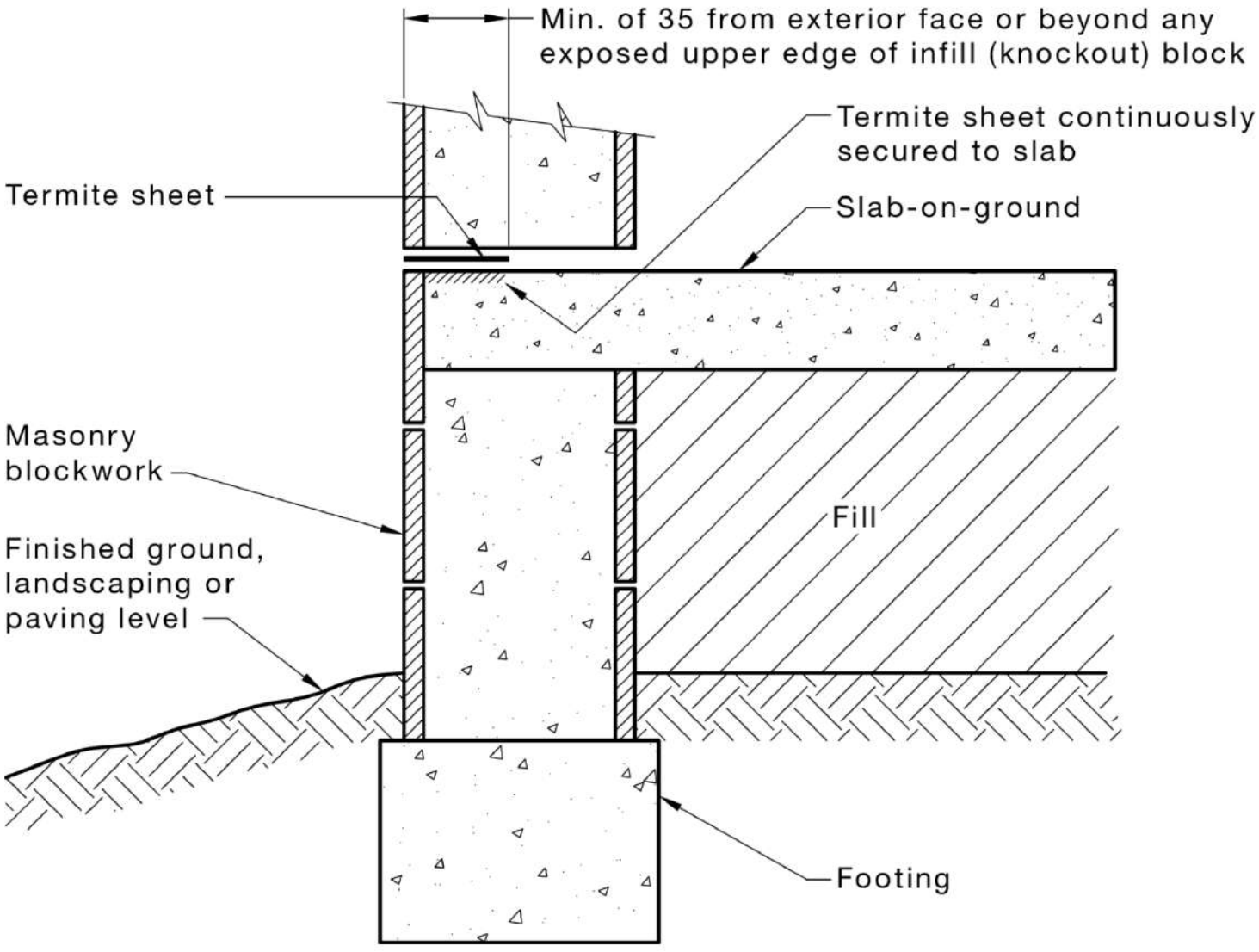
(a) Masonry veneer with separate strip footings



(b) Monolithic concrete slab-on-ground



(c) Blockwork wall at concrete infill slab



NOTE 1 Slip joint not shown.