



Wet Area Construction

Carpentry - Residential Construction

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CONTENTS

WET AREA CONSTRUCTION OVERVIEW	4
WALL FRAME PREPARATION	5
WATERPROOFING AND SEALANTS	6
WET AREA LINING MATERIALS	11
BATH INSTALLATION	15
SHOWER BASE INSTALLATION	23
INSTALLATION OF SINK/ VANITY UNITS	25
INSTALLING LAUNDRY CABINETS/ TUBS	31
WATER DAMAGE	32
GLOSSARY OF TERMS	33
FURTHER READING	34

WALL FRAME PREPARATION

Wall framing to wet areas may be of a steel or timber construction. Ideally where timber framing is selected, it is preferable to use well seasoned materials with section sizes as small as possible to reduce the effects of shrinkage. One of the most common problems encountered in wet areas is as a result of material shrinkage or movement.

Stud spacings should not exceed 600 mm with a row of noggings placed in-line, not staggered, behind all horizontal sheet joins for full edge support.

The studs may need to be checked out to a maximum depth of 20 mm to accept and support the lip of a bath or spa. This allows for wall linings to run down over the lip to provide adequate flashing. Refer to AS1684 - *Timber Framing Code* for notching of wall studs.

The assembled frame should be rigid and not rely on the wall sheet lining fixing for strength. All internal and external wall stud connections should have a nest of three studs, which are well fixed and blocked at 600 mm vertical centres.

Additional nogging fixing should be included in the following areas:

- 150 mm up from the floor around the base of a shower recess to provide sheet fixing and/or tray edge support
- Additional stud/s for shower screen fixing
- Trimmer on flat for shower head support and shower tap bridle-piece mounting
- Trimmers on flat for toilet cistern fixing and toilet control cock fixing
- Additional trimming/noggings, as required, for other fittings and fixtures such as a vanity cabinet, towel rails, wall mounted heaters/dryers, shaving cabinets, paper holders, etc.
- Framing up of niche to shower recess

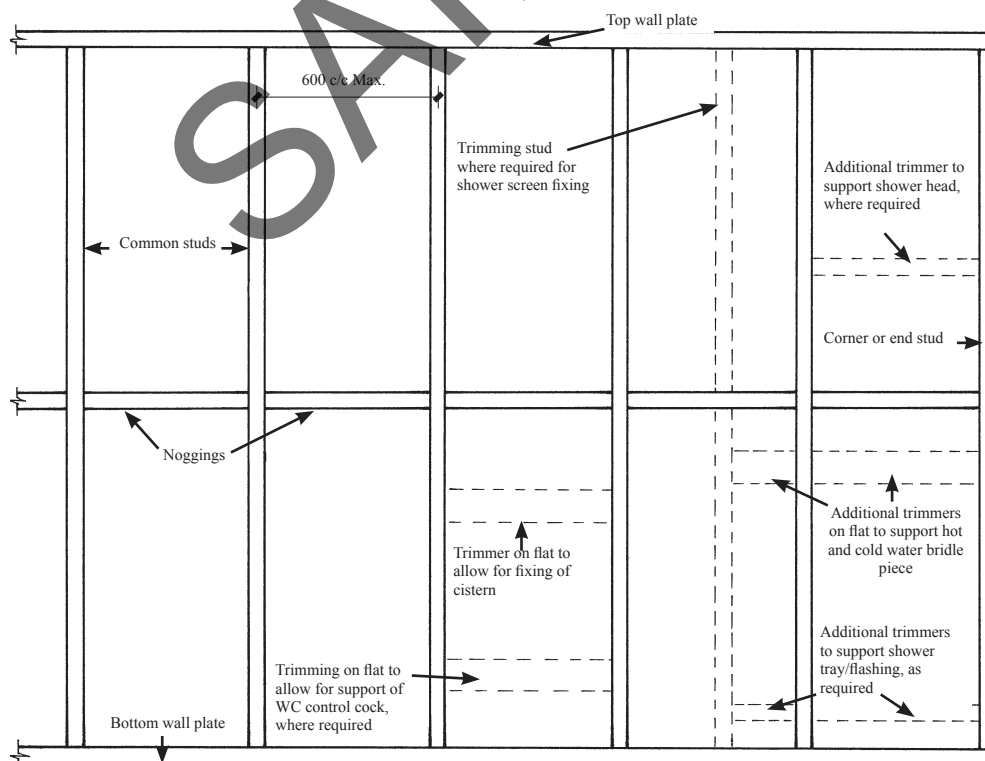


Fig. 2 Preparing the wall frames

PREPARATION FOR FOLLOW ON TRADES

The carpenter is responsible for preparation of subgrade surfaces for plasterer, waterproofer and tiler to work over. Any discrepancies in the framework will be reflected in the overall quality of finish and aesthetics of the finished room.

The carpenter shall provide the wet area framework which is plumb, floor sheeting if used installed as per manufacturer's specification and walls straightened along length of wall as well as studs straight in length. Additional trimming should be installed for any fixtures as this will provide strength to fastenings as fixings will have integrity with the framework and not just into the lining. Wall niche framing within the shower wall requires the sill trimmer to have fall into the shower recess which allows any water to drain away from framework, preventing ponding.

Care needs to be observed when housing of wall studs that are a maximum of 20 mm for recessing the bath/spa or shower base that AS1684 requirements for stud notching are not exceeded. With minimum tolerances allowed the wall framing may fail the frame inspection by structural weakness.

It is also mandatory that no metal angle or strap wall bracing is cut in the installation of bath/spa or shower base unit. If this occurs alternative bracing requirements will need to be implemented and could involve sheet bracing within the cavity or strap bracing on the other side of wall due to notching regulations.

WATERPROOFING AND SEALANTS

Waterproofing

Waterproofing requirements vary depending on the material substrate for floor and walls as outlined in the BCA waterproofing requirements for building elements in wet areas. These requirements deal with identification of the area, floors and horizontal surfaces, walls, wall junctions and joints and penetrations, defining specific requirements for each application.

In general the following is an overview:

- Shower Areas – floor membrane to whole floor and upturn a minimum of 150 mm above floor or 25 mm above maximum retained water level (eg above enclosed shower screen)
- Wall – waterproof vertical joints to moisture resistant wall sheet and other joints that may exist in wall lining. The waterproofing of whole shower wall exceeds the AS3740, however is generally undertaken as best practice.
- Penetrations - all penetrations shall be 'waterproof', this is taps or mixer and shower rose outlet sealed to wall lining

Areas outside of shower recess are treated to the extent of:

1. Exposure and concentration of water to area
2. Substrate material to the area

Requirements within AS3740 require that surfaces, joints or penetrations will require either a 'water resistant' or 'waterproof' classification to identified wet area location. Some materials such as 6mm fibre cement sheet wet area wall lining already has a water resistant classification on the material, however a rendered brick wall will require the application of a waterproofing membrane applied to reach the same classification.

There are three classifications of waterproofing membrane installed within the appropriate 'bond breaker' which is determined by 'elongation to break', these are classified as:

- Class 1 - < 60%
- Class 2 - 60% - 300%
- Class 3 - > 300%

Each bond breaker functions differently from each other and must be installed to the specification of the membrane.

The following is an overall guide to general wet area installation requirements that may need to be undertaken:

Water stops (Door angles/ shower angles)

Height of door angle installed is referenced to the Australian Standard for tiling. Concrete slabs have minimal movement/deflection and the tile bed or screed does not require extensive structural integrity to function correctly and can be 'bonded' to the substrate and hence 25 mm minimum height is required.

Sheet Floor systems over floor joists will experience deflection within the members and the floor screed cannot be bonded to the floor. This is called an 'unbonded screed' and requires a separation layer, generally a sheet of 200 micron plastic sheet to prevent the flexure of the floor cracking the tile bed placed over it. To resist the cracking of the bed the depth is increased to provide the structural integrity of the bed to prevent floor tiles from becoming loose due to failure of the tile bed. The height of door angle is increased to 40 -50 mm for 'unbonded' floor systems. Door angles may need to be increased over large areas due to fall in tile requirements.

Water stops to shower recess are classified as either an 'enclosed' or 'unenclosed' shower. An enclosed shower keeps all water within the shower recess and will have sliding doors or a door which opens into the shower recess. The water stop will finish a minimum of 5 mm above the finished floor tiles, and an aluminium sill section sits over the top. This prevents any egress of water outside of the shower recess.

An unenclosed shower has the water stop finishing at floor level. This includes all frameless shower/semi frameless/shower curtain or disabled bathroom installations. Water is not contained within the shower recess.

Where a shower hob is installed it should be constructed from brick, concrete or 'hebel', however timber must NOT be used. AS3740 requires that when installing a shower screen on an upstanding hob it is installed to ensure that it is:

- (a) Flush with the shower area side of the hob
- (b) Overhanging into the shower area
- (c) Inside the hob

INSERT BATH

An insert bath is where the bath lip is installed onto a horizontal plinth or surface. The frame can be of brick, hebel or framed in timber, lined with 6 mm fibre cement sheet. When this installation is required for a bath or spa a water stop extending 5 mm minimum above finished tile height must be installed under the lip around the periphery of the unit.

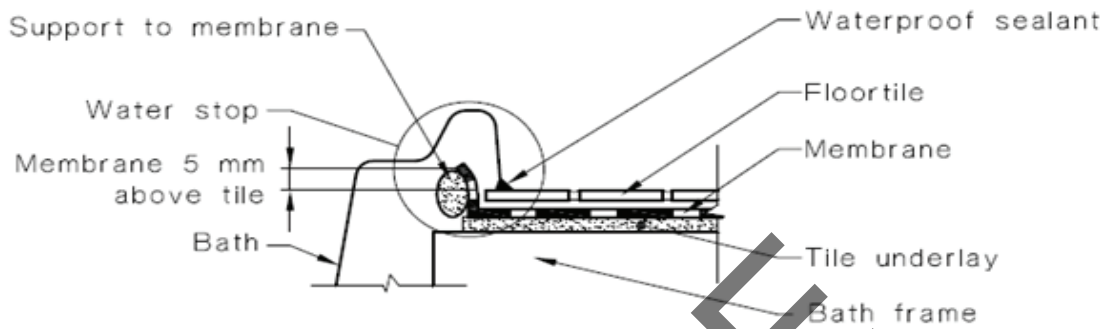
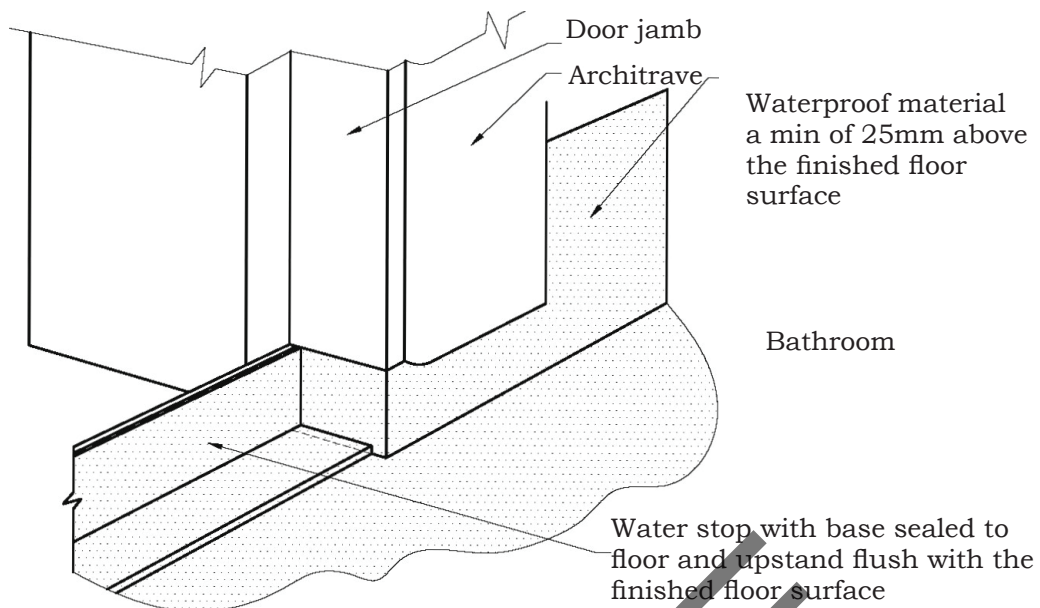


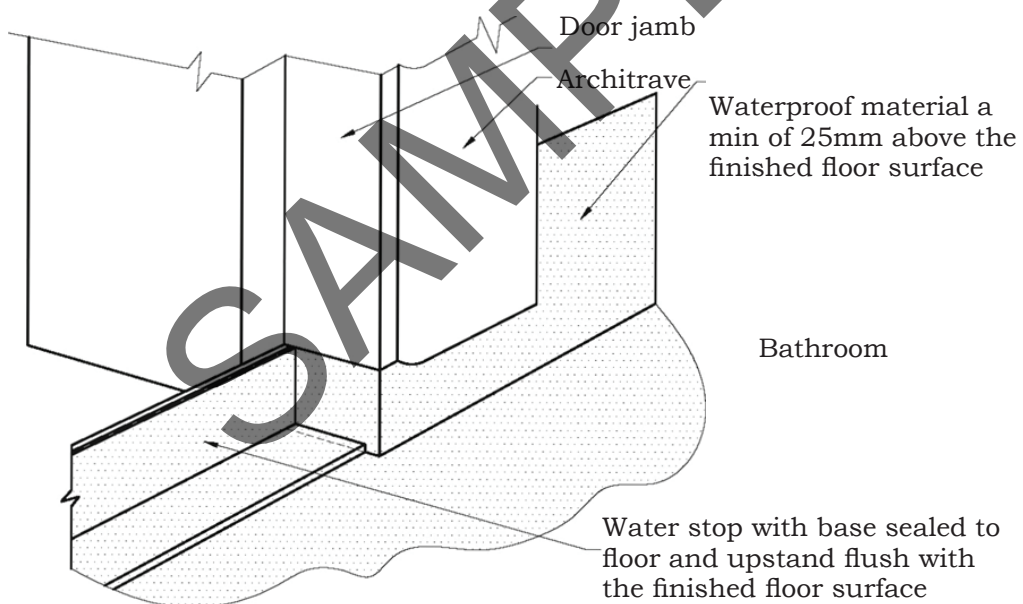
Fig. 3 – Bath/Shelf Junction

Waterproofing installation must be inspected and passed prior to being covered over by other trades. Good industry practice also allows sufficient time to 'flood test' installation prior to tiling, identifying any defects if present and repair, saving major disruption and cost later. If the membrane is damaged during work, notify contractor to come back and repair. This will save major cost later.

Perimeter flashings must be used at the floor/wall junction in all general wet areas and must extend a minimum of 25 mm above the finished floor surface.



(a) Prior to installation of architrave



(b) After installation of architrave

Fig. 4 Typical Bathroom door detail for whole bathroom waterproofing

WET AREA LINING MATERIALS

Typically, wet area linings are either water-resistant plasterboard or fibre-cement sheeting in residential construction. Brick rendered brick and besser block are also methods of wet area construction

PLASTERBOARD

- '*Boral Wet Area Plasterboard*' is manufactured with recessed edges for water resistant jointing in tiled areas and normal jointing beyond tiled areas. The board has face and back liners, which are resistant to moisture penetration as well as a moisture resistant gypsum core. The board is available in both 10 mm and 13 mm thicknesses. Sheet lengths range from 2400 mm to 4200 mm. The board is a distinctive green colour.
- '*CSR Aquachek*' is a gypsum plasterboard with the core, face and back treated during manufacture to make it resistant to moisture and humidity. Available in both 10 mm and 13 mm thickness, with 1200 mm wide sheets available in 2400 mm to 4200 mm lengths and 1350 mm wide sheets available in 3600 mm and 4800 mm. The board is a blue-grey colour.
- '*Lafarge Watershield*' plasterboard. Conforms to ASTM C630. Has a water resistant gypsum core and a specially treated heavy duty linerboard. The board is a bluish colour.

FIBRE-CEMENT SHEET

- '*Hardies Villaboard*' is manufactured to conform to Australian Standard AS2908.2 - Cellulose - Cement Products.

Villaboard is composed of Portland cement, ground sand, cellulose fibre and water and manufactured in three thicknesses, e.g. 6 mm, 9 mm and 12 mm. The 6 mm board is commonly used as a tile substrate for internal walls. The thicker sheets are recommended where there is a requirement for impact resistance.

The 6 mm board is available in the following sizes:

Width mm	Lengths mm
900	2400, 3600, 4200
1200	1800, 2100, 2400, 2700, 3000, 3600, 4200
1350	2400, 3000, 3600

Mass:

6 mm Villaboard has an approx. mass of 8.5 kg/m²

- ‘CSR Fibre-cement Wallboard’ is an autoclaved, cellulose fibre reinforced cement sheet, which is immune to water damage and will not rot. It conforms to the requirements of AS2908.2, ‘Cellulose-Cement Products Part 2: Flat Sheets’.

It is manufactured in 900 mm, 1200 mm and 1350 mm widths with lengths ranging from 1800 mm to 4200 mm.

The sheet thickness is 6 mm and the mass is approximately 9 kg/m².

FIBRE-CEMENT SHEETING

The following details provide a broad overview of cutting and installation methods.

Cutting

Cutting fibre-cement sheeting can be achieved in four different ways. The most traditional method is to use the Hand Guillotine, as shown below. The guillotine produces clean, straight edges, while cutting on the off-cut side of the line to allow for thickness of the blade.

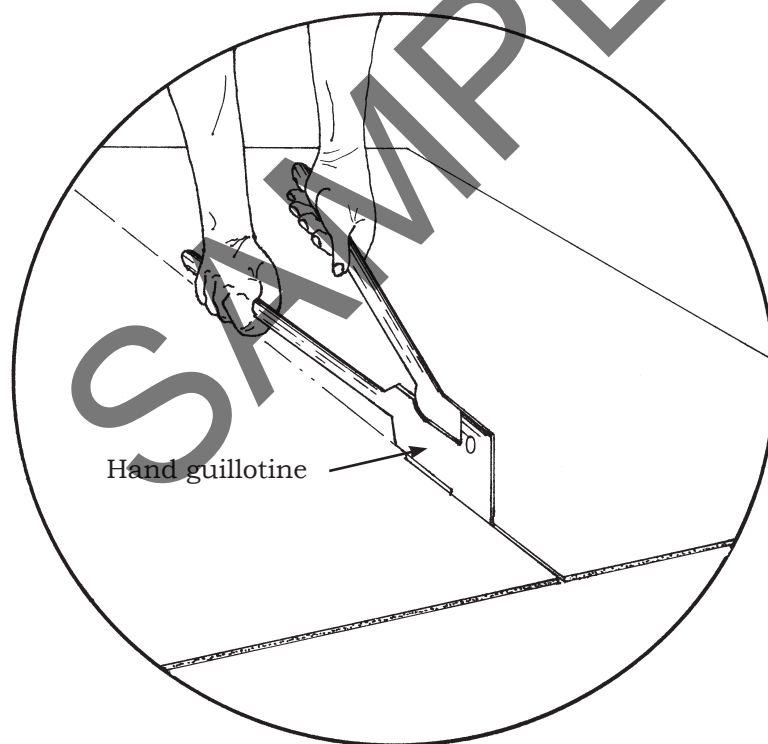


Fig. 6 Cutting along the line with a hand guillotine (‘Fibro cutters’)