HUTCHIES

ALERT

Wet Area Construction (Waterproofing & Compliance)

QUALITY

FOR
All Company Members

ACTION
Ensure works underway and future works are carefully controlled to manage compliance

Correct structural falls to wastes in wet areas and quality membranes selection, along with installation and correct surface falls in showers / bathroom / laundry floors is critical to compliance.

The drainage location, substrate falls and preparation, angles, membrane, bedding, surface falls, tiles and adhesives, shower screens, all work together to form a robust system to meet the National Construction Code (NCC) and Australian Standard (AS) criteria and last the test of time.

It is important to know the requirements of AS3740 (refer to SAI Global on Hutchies' Toolbox).

We also have a range of resources to assist:

WET AREA QUALITY CONTROL DESIGN REVIEW

OPEN

WET AREA QUALITY CONSTRUCTION

OPEN

Hutchies' Quality Handbook Topic 8 provides detailed guidance and is now supplemented by the guides included in this alert.

REFER TO HUTCHIES' QUALITY HANDBOOK TOPIC 8

toolbox.hutchies.com.au/quality

Please review each of the following critical steps / hold points to achieve a compliant solution:

Design

The design must be managed from day one with correct setout of wastes, selection of membranes, and tiles selection (in particular, the format of the tiles, slip resistance and water absorption and propensity to staining eg natural stone).

Stain test tiles and stone to be used in wet areas and seek expert advice/quality team advice on treatment of natural stones in wet areas to avoid rising dampness/staining

If small format tiles are not able to be used to ensure cross falls, the careful use of large format tiles is critical as they require more splits in tiles (regardless of client/architect aesthetic insistence) or preferably full width grates with one way falls.

The waste position plays a large part of the final tile setout and must be coordinated with the final surface falls prior to slab construction.

Flat floors in bathrooms are NOT compliant regardless of what any building surveyor/certifier may consider/approve (usually because the selected large format tiles are difficult to achieve walls

All wet areas MUST be laid to the correct falls – meaning tiles will be smaller format or split to create the required falls or one way falls to a full-length trench grate

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Floor wastes

Setout in the correct location and install a puddle flange. Preference is for a cast in flange WC100K. Othrerwise recess the substrate (concrete, CFC) so the retro fit puddle flange is flush with substrate to prevent ponding of water around the puddle flange which may damage the membrane.

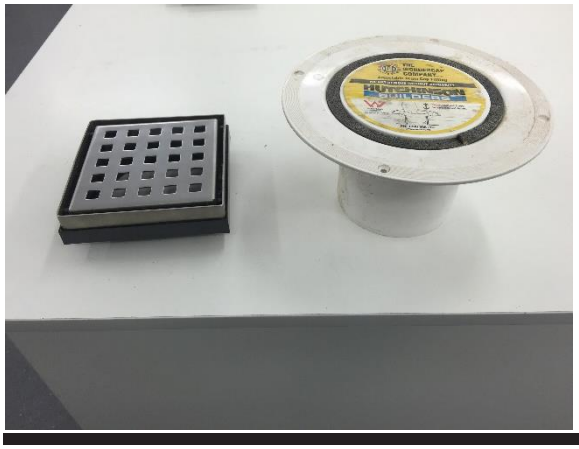
Puddle flanges must be flush with the substrate surface or slightly lower, so make sure you have these carefully recessed by grinding the surface prior to installing on a bed of polyurethane (refer to Hutchies' Quality Handbook Topic 8).

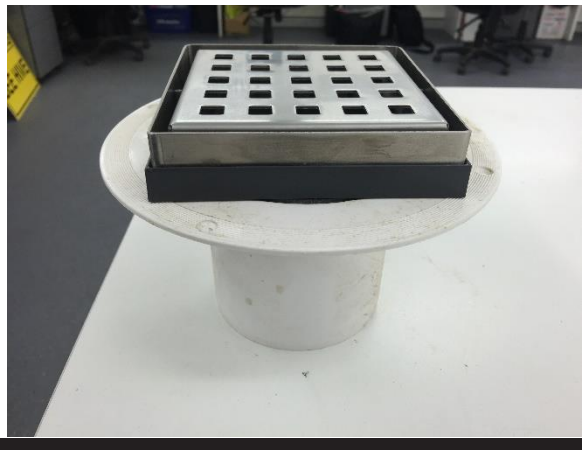
Use Wondercap or an equivalent product for good substrate drainage and temporary protection of drainage pipework (from concrete / rubbish / bedding / tile spacers falling into the drainage). Photo below of Wondercap in a CFC floor (on the right).

Ideally the Wondercap is set in place and used to finish concrete to as level, otherwise grind the slab and fit the puddle flange properly as described above

If a smart waste is to be installed in these flanges, then a dry fit prototype of the complete whole assemble must be reviewed as some products require more depth to install and still allow free drain substrates so not to block pathways within the puddle flange.

Seek advice from Hutchies' Quality Team if this is the case as there are methods that can be used to achieve success.





Supervision of the structural substrate

Once the slab is poured, patching of the substrate should be undertaken to the standards set out in the Hutchies' Quality Handbook Topic 8 (which references Ardex technical sheets).

Ensure the concrete setdown is rectified to the correct size (without concrete sections in the wet area).

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Ensure concrete floors are laid to falls of 1 in 100 to wastes and 1 in 80 for shower floors. The highpoints of the slab are the perimeter and low points the wastes. There should be a flat ridge in the concrete across the shower waterstop angle position to fall from the waterstop to the wastes in the shower on one side and to the bathroom floor waste on the other.

Check the falls using a digital level (see photo below). Top / grid as required.

REFER TO HUTCHIES' QUALITY HANDBOOK TOPIC 8

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Wet Area Construction (Waterproofing & Compliance)

Door frames

Must be cut 3mm ABOVE the tiled floor level (set by the waterstop angle as per diagram below) with a silicone joint between to allow the membrane to be applied to the sheeted wall behind and not over a door frame/architrave buried in the bedding/tiling

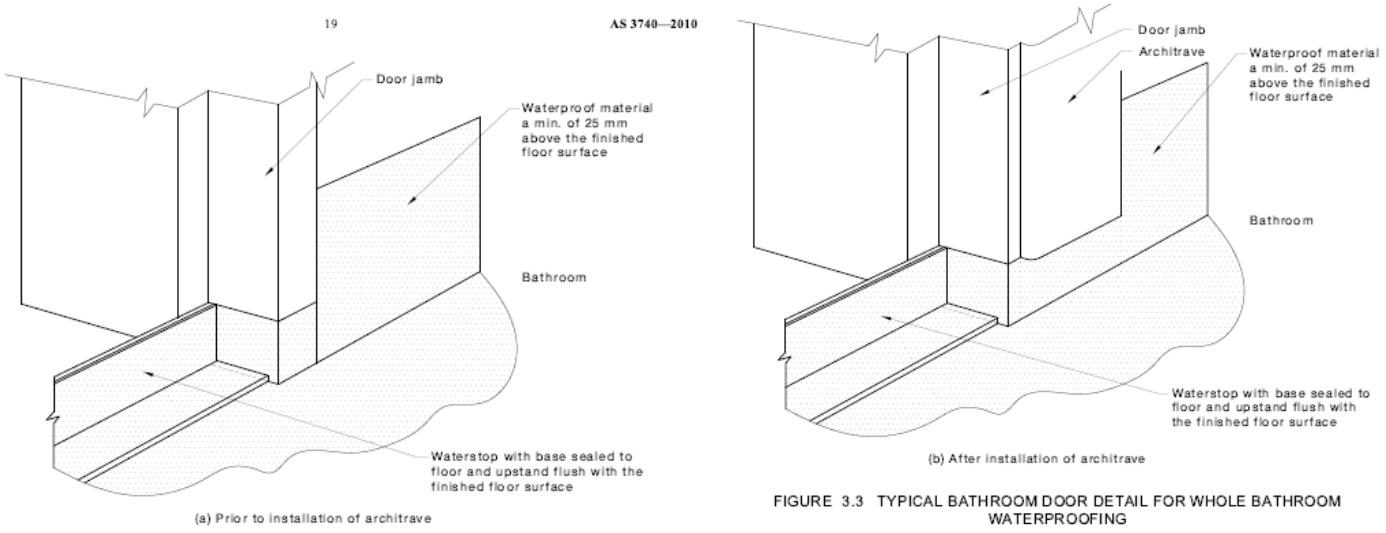


FIGURE 3.3 TYPICAL BATHROOM DOOR DETAIL FOR WHOLE BATHROOM WATERPROOFING

AS 3740 allows the frame to be extended into the bed as long as its waterproofed, but it is a source of failure resulting in rotting timber and rusting metal frames.

Do NOT use MDF in wet areas for frames or architraves.

Waterstop angles

Install the waterstop angle at the shower junction and door threshold to form trays in the wet areas.

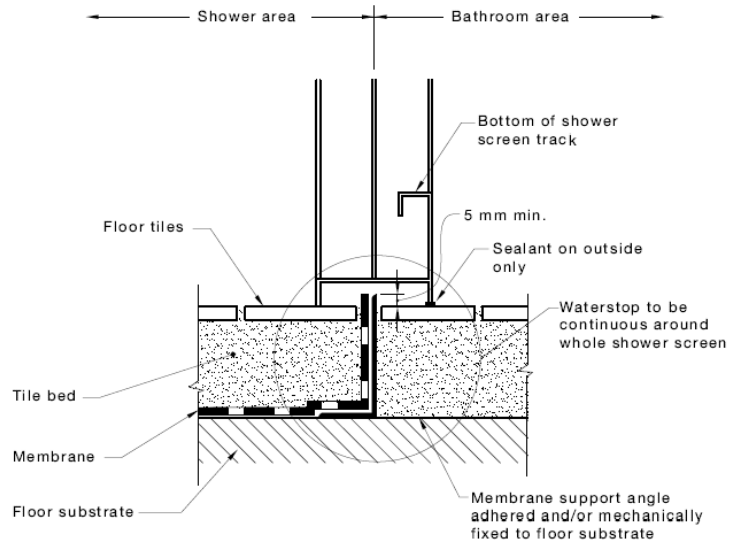
The water stop angle to the shower/bathroom delineation (under the shower screen) needs to be an appropriate height to finish flush with the top of the finish tile

THIS IS THE MOST COMMON TYPE USED

For Type 1 and Type 2 unenclosed showers, the water stop shall have the vertical leg finish flush with the finish surface of the floor and, where the water stop intersects with or joins a wall, the junction shall be waterproof.

or in the case of an Enclosed - FULLY framed shower screen (as defined in AS3740) 5 mm above the finish tile.

THIS IS NOT USED AS MUCH



NOTE: Some shower screen extrusions may not permit the water stop extending into a rebate. A channel section may be needed to be installed over the water stop angle with the shower screen placed on top of the channel including return panels.

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Ensure there is a gap between the waterstop angle and the side walls as you **MUST** install 2-3mm of mastic between the angle and the wall/door frame etc ensure the membranes have the correct preparation.

Waterstops at door thresholds must NOT be installed by the tiler onto the membrane using BAT type tilers' angles with cutouts in the bottom leg. These are NOT suitable for membrane and without correct termination of the membrane into the angle

The angle must be suitable to allow the membrane to terminate on the angle and create a complete 'tray' to the bathroom. If the tilers are installing, they MUST terminate the membrane into the angle correctly

Where the door is a cavity slider, ensure a return is provided to close the bathroom 'tray' and prevent water into the cavity.

Wet Area Construction (Waterproofing & Compliance)

Quality of waterproof membranes

Ensure there is a 5-15 mm gap between the bottom of the walls sheeting and the substrate to allow mastic to be put in the annual gap between the sheet and concrete to provide a proper bond breaker and coving to the perimeter, primer and the correct number and thickness of membrane coats.

Internal setting angles to plasterboard walls must not protrude into the wet zone (below the tiled floor surface/bedding). Use bond breaker in the corner.

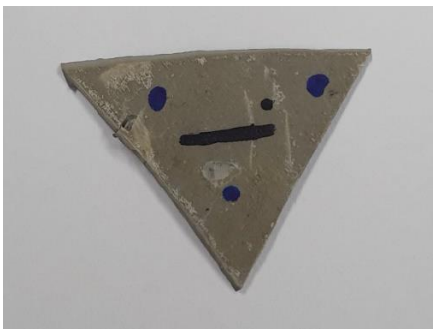
Detail carefully around all penetrations (mixers, shower heads etc) – this is a major source of leaks. Ensure there is a full and proper seal around these areas.

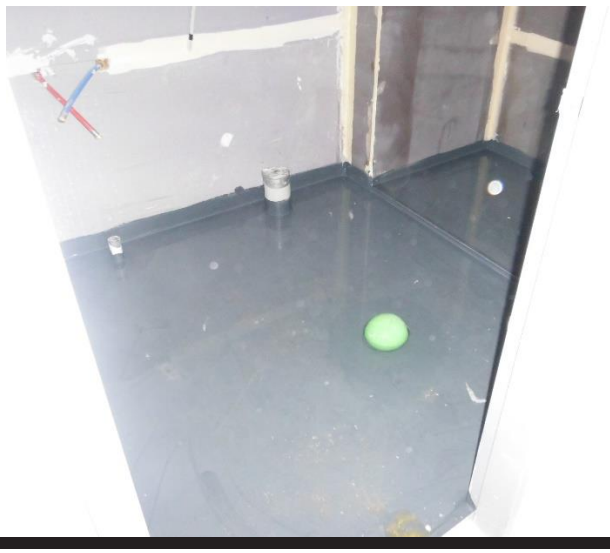
Check membrane regularly for thickness for the Dry Film Thickness (DFT) with a Positector 200 DFT measurer. Note the WFT and the DFT will vary depending on the membrane manufacturer these thicknesses are always noted in the product data sheet, on site supervisors need to make themselves familiar with all aspects of the datasheets.

Select random areas for cutting out completed membrane for checking with digital callipers (see photo below / example report) and static water test membranes with a bung (preferably) in the floor wastes to measure any water loss (see photo below). Note, invasive testing sample sites locations should be recorded and repaired **only** by the waterproofing contractor.

Take plenty of photos of the works! Note, all photos should have Date and Time stamp.

Alternatively, if you do not have the equipment or want a 3rd party, using the membrane manufacturer to check quality or engage independent waterproofing QA service can be beneficial (particularly when regulators inspect/investigate)





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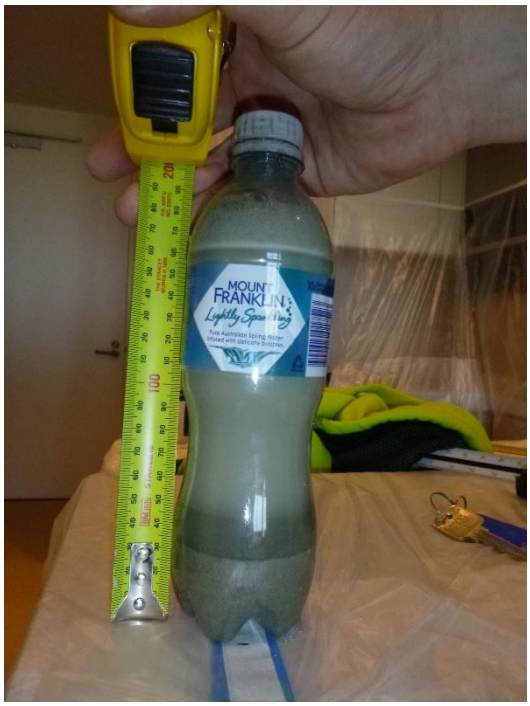
Surface falls (including bedding)



Shower areas need to have 1 in 80 falls and bathroom areas 1 in 100.

This is created by carefully bedding the floor over the membrane. There is no requirement to membrane OVER the bed noting that the exception may be the use of natural stone products to avoid the porous stone staining. If you have this product discuss with the Hutchies Quality Team. Where membraning is used over a bedding mix, it must meet min 20-25 mPa for membrane warranty (to avoid the bedding cracking and compromising the membrane substrate.

Normal bedding does NOT achieve this strength. It is weaker and porous to allow water to drain to the falling concrete floor/membrane/substrate drainage wondercap waste.

Install bedding to bathroom floor with the correct mix as bedding that is too hard will not drain and the water will be building up under the tiles.

It needs to be 4 sand to 1 cement mix – check ratio during mixing. Use clear container ½ filled with mix and add water till jar ¾ full with bedding mix saturated. Shake and let this settle. Sand and cement should separate and show ratio of sand and cement present.

The floor waste should be flush or 1mm below the tile surface to ensure there is free flowing drainage.

The tile format plays an important factor in this so make sure the setout is clear before the bedding commences to control the cuts and splitting of tiles.

To test drainage for falls including surface tension. If its holding water thicker than a 20c piece when the water is turned off in the shower and stopped flowing (ie static water testing - usually around 3min) then the area is defective.

Recessed areas in showers

Ensure recessed areas in showers are constructed correctly and waterproofed

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Tiling

Where split tiles are required ensure, they are neatly finished – equally spaced, correctly aligned, no sharp edges.

Ensure tiles are correctly adhered to bedding/walls with adequate coverage of glue as per AS 3958.1.

Spot fixing is **NOT ACCEPTABLE**. 'Drummy' tiling is a major issue in the performance of several aspects of bathrooms. See example investigation by a regulator below

WET AREAS WALL TILING

DEFECT – SPOT-FIXING OF TILES

ISSUE

Spot-fixing of wall tiles in wet areas.

This may lead to serious defects due to water penetrating cavities or voids.

ACTION NEEDED

AS3958.1 - 2007 Clause 5.6 requires **minimum** contact coverage of 90% for wet areas.

Supervise trades onsite to ensure they are correctly fixing tiles. It is a serious defect and can result in significant rectification costs for the developer and builder.

NSW GOVERNMENT

This is a guide only and to refer to relevant laws, codes and standards

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Shower Screens

Shower screens are classified as Enclosed - fully framed or Unenclosed - semi or fully frameless.

Most shower screens are semi frameless and need to be properly detailed to ensure water is directed back to the shower.

The frame should be sealed on the bathroom side only and when installed the installer needs to seal the wall/floor tile junction FIRST to ensure there is no gap that water can track into the bathroom from the shower

Ensure the installer seals the underside of the bottom track to the tile just like a sill on a window or door to prevent water penetration into the underside of sill and likely falling on the back side of the termination angle with nowhere to escape

A plastic deflector may be required on the bottom of a frameless door to ensure water is deflected into the shower.

Completion

Use a camera to check the drains and clear out any rubbish –Waste causes the drainage to backup and overflow/flood