

waterproofing

DETAILING SHOWER WATERPROOFING PART 3: UNENCLOSED SHOWERS

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While there are not many showers constructed unenclosed to the extent as shown in **Figure 1**, there are many installations that result in a shower that needs to be classified as an unenclosed shower. Apart from the obvious where there is no closure by a door to the shower enclosure, they also include showers within a bath and those constructed with frameless glass screens. The reason for the frameless glass screen enclosure falling into the unenclosed category will be discussed later in the article. With these types of showers what should be obvious is that the water splash area from the shower should be drained to

a waste outlet, which often is not done. Leaking showers mainly from these types of installations is by far the main defect fault against builders.

The first thing that needs to be determined is how far is the splash distance. The current Australian Standard AS 3740 gives this distance as 1500mm from the shower rose. This standard is currently under revision as the revised standard is due to be published later this year. One of the main discussion points by the committee in the revision was, is this 1500mm correct. The dimension was in the first edition of the standard published in 1989

and carried over into the current edition published in 1994, but none of the current membership had any knowledge of where the justification for the dimension had been determined. To resolve the validity of the dimension I undertook testing to determine the validity of the 1500mm dimension. The testing used two different shower rose heads, one had two spay patterns and the other had four spay patterns. The patterns included a soft spray, a concentrated spray, and two pulsating jets. They were tested positioned in two fixed positions, one at the back of the shower recess (pointed to the opening), the other was at the side of the shower recess (pointed at the side screen) and well as being used as a non-fixed shower rose. Both male and female users of the shower were covered in the testing. The amount of water splash was measured by collecting it on strips of heavy toweling 100 mm wide that were weighted before and after each shower. In total there was over 40 tests measured, the data from the full set of results is much more than could be given in this article. However, **Figure 2** is an extract of them showing the cases that gave the furthest to minimum splash distance. The difference given is measured from the shower rose. The first measured distance for the shower roses mounted at the back is greater than that of the ones mounted on the side. This is due to the additional distance to the back of the shower recess to the mid point where the side rose was mounted. The measurements all started a distance of 900mm from the back of the shower recess, as the shower used in the test had a 900mm square drained floor area, and it was considered not relevant to make measurement within the drained floor area. After all, the test was to determine the splash zone outside what would normally be drained to the shower waste.



Figure 1



Figure 4



Figure 5

Figure 1 Unenclosed shower.

Figure 2 Splash distance from shower rose.

Figure 4 Enclosed shower over a bath, available in Europe.

Figure 5 Frameless glass shower screen installation.

The jet pattern always gave the greater splash distance and there is a clear difference in mounting the shower rose at the side to the back of the shower recess. There is much less splash distance with the side mounted shower rose. This is due



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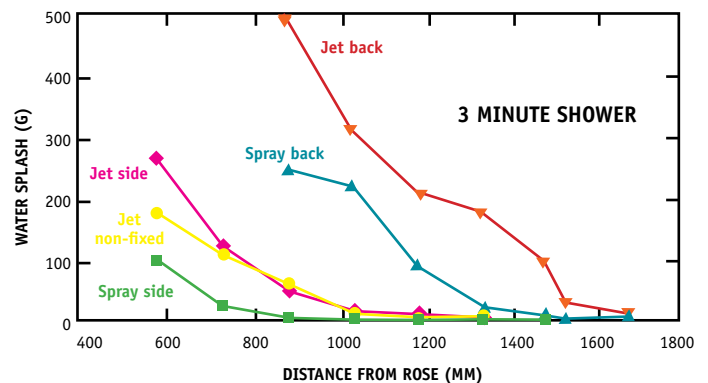
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Figure 2



to the fact that when you physically turn in the shower, you tend to step around which results in the water flow from shower being unobstructed for a short time, spraying directly out to the maximum distance it can travel. Thus the jet patterns that squirt the hardest naturally give the furthest travel distance, and when mounted at the back the flow can travel unobstructed until it hits the floor. It was also interesting to see that the non-fixed shower rose was not as bad as often thought in regard to the splash distance. This is because with a non-fixed shower rose you do not step around to spray the other side of the body and the rose tends to be pointed down at a steeper angle during showering. Clearly if you play water games with a non-fixed shower rose you can get a much greater splash distance, but the testing was focusing on what splash distance was possible under normal shower operations. This testing confirmed that the 1500mm distance in AS 3740 is correct.

Thus for the unenclosed shower it is important that for a distance of 1500mm from the shower rose the shower floor drains back to the waste outlet. It is even more important that the waste outlet can drain the water from this shower floor area without overflowing outside the shower area. This means that the size of the waste must match

the flow of the shower rose or roses in those showers that have multiple roses. This factor of matching drainage capacity to that of the shower-rose, while sounding quite obvious, is often overlooked, especially in shower recesses that have multiple rose outlets. It is the perimeter distance around the edge of the waste that governs the drainage capacity of the waste if excessive ponding on the shower floor is to be controlled. Thus doubling the waste diameter only doubles the waste capacity to drain the floor without excessive water level buildup on the floor, even though the area of the waste is increased by a factor of 4. The surface area of the waste only comes into the drainage capacity of the waste once there is enough water level on the floor for the whole waste to be submerged. To fully submerge the waste not only would have water flow well outside the shower area it could well be beyond the door to the bathroom as well.

A shower installation over a bath is usually classified as an unenclosed shower as the small screen will not stop the splash from the 1500mm dimension for the shower rose as shown in **Figure 3**. The areas marked in red are those that need to be made waterproof, and those in yellow need to be of water resistant construction. For practical reasons of installing a water-stop

around the perimeter of the area needing to be waterproofed on the bathroom floor will require a rectangular extension to the curved area to fit the floor tile layout. The curved area just shows the area that must be waterproofed. There are showers over bath installations available in Europe that will meet the enclosed shower classification. A typical example of such an installation is shown in **Figure 4**. There could well be enough demand for this type of installation in Australia, especially in the multi-storey unit developments being built in our cities.

The other type of shower installation that needs to be considered as an unenclosed shower is those fitted with a frameless glass shower screen. These types of screens are very popular for use in small bathrooms as they assist in giving the impression of a larger bathroom by not imposing the shower recess into the bathroom space. While they restrain most of the water splash within the shower area, some water will always leak out through the gaps that are required between the panels. The gaps required between panels are shown in **Figure 5**. From the study of water splash from showers discussed above, the amount of water that could leak out through these gaps could be as high as 500 ml per shower. This is more than enough to cause damage to water sensitive substrates

that are not protected by waterproofing. These substrates are mainly wood based. While some try to limit this leaking by the use of clear silicon seals, these readily grow a black mould growth and are usually removed by the owner because of the continual unsightly growth.

Hopefully this information gives you a background into the changes that have been incorporated into the revision to the Australian standard AS 3740. The adoption of this standard into the industry will alleviate many of the current problems of damage caused by leaking showers.

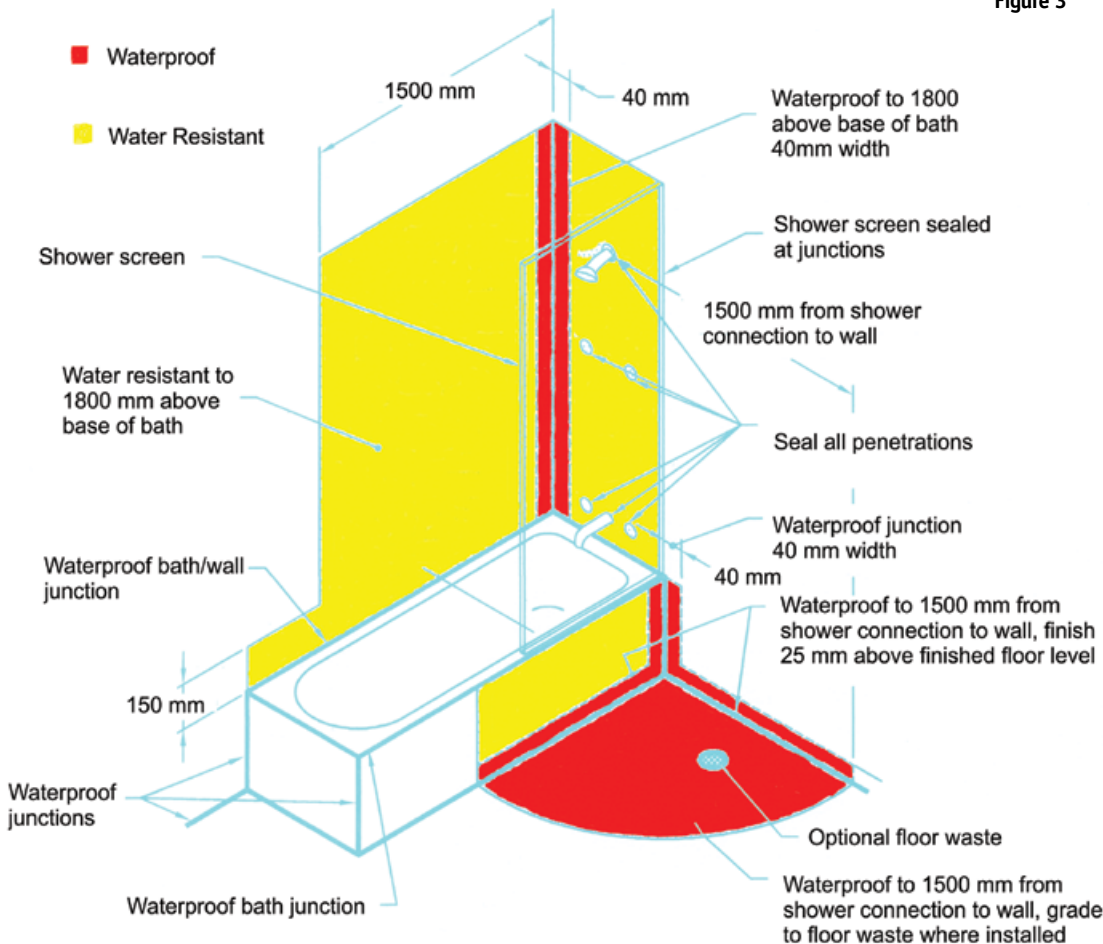


Figure 3