SETTING THE STANDARD FOR WEATHERTIGHTNESS

Many Standards address weathertightness to ensure an acceptable and achievable expectation of building element performance, particularly from the exterior skin. Here we look at AS/NZS 4284.

By John Burgess, BRANZ Senior Scientist

Most New Zealand Building Code clauses ensure the exterior envelope (façade, exterior skin or cladding systems made up of outer walls, roofs and floors and their components) has the ability on an ongoing basis to adequately separate the outside and inside environments. This allows the occupier or designer to have tight control over the interior conditions, important for occupant comfort, health and safety, and the building's performance.

1980s test led to Standard

One Standard which addresses weathertightness is AS/NZS 4284: 1995 *Testing of building facades*. This is currently under review with an amendment expected in early 2008.

AS/NZS 4284 developed from the need to assess cladding systems designed to *manage* the ingress of water, rather than relying on a continuous layer to provide weathertightness. This started with the drained-jointed cladding systems developed in the 1980s for high-rise commercial buildings. These systems were a response to the significant ongoing costs of maintaining the integrity of continuous skins over large buildings with a multiplicity of penetrations for windows, doors and services. Separating the performance expectation of the external skin into sections had the benefit that elements could then be specifically designed for single rather than multiple functions.

A test method was needed that could cope with the concept of pressure equalisation and the management of exterior water, rather than simply its exclusion. The answer was *Specification for the performance testing of building facades by the Sirowet method*, published in the 1980s by the CSIRO, Division of Building, Construction and Engineering. Hence the Sirowet test was born, now known as the AS/NZS 4284 test method.

Used as E2/VM1

AS/NZS 4284 provides a means of assessing the weathertightness, airtightness and structural deflection of a section of a building façade. The assessment allows for seal degradation, the restraint of building maintenance units (BMUs – the platforms that window washers use to hang onto the outside of buildings) and seismic loading.

A further development of AS/NZS 4284 came about as a result of the leaky buildings crisis in the late 1990s. A section of the AS/NZS 4284 test was used as the Verification Method for weathertightness in the Building Code Clause E2/VM1.

AS/NZS 4284 was developed for commercial building walls of metal, glass and concrete and does not test for water

Exterior of a monolithic domestic cladding system testing panel with a window, parapet wall extension and meterbox.

leaks reaching less durable material like timber. The test for failure is based on water leaking through to the interior of the building. The E2/VM1 test, however, assesses whether the design of the cladding system allows water to reach sensitive parts of the construction, such as framing, and whether the system can manage penetrating water.

Many commercial cladding facades have been built and tested to the weathertightness portion of AS/NZS 4284. A generic domestic monolithic cladding system has been tested at BRANZ (see photo), and is currently being submitted to the E2/VM1.

Stands test of time

The AS/NZS 4284 test has stood the test of time very well, with only minor amendments currently needed. It has provided regulators with an Acceptable Solution and industry bodies with a compliance path.

There are still a few issues with the alignment of the air pressures that are used in this Standard with those in NZS 4211, NZS 4223 and NZS 3604, but these standards all need to consider slightly different matters, and the minor differences are not normally noticed.

Weathertightness standards have been developed by committees whose members have been drawn from BRANZ and major product suppliers and users.