AUSTRALIAN STEEL INSTITUTE

Low-High-Low, Cyclic Test Method for Cyclonic Regions

During cyclonic events, elements of the building envelope are subjected to highly fluctuating wind loads which can cause the fatigue of material, reducing its strength.

The Building Code of Australia May 2009 introduced a requirement that all metal roofing systems used in cyclonic regions shall demonstrate performance to a new standardised cycle test method.

This method is known as low-high-low (LHL) based on the low, then high, then low pressure sequence used to simulate the wind loads resulting from the passage of tropical cyclones across a building.

For the past couple of decades there have been two different test methods used (DABM in The Northern Territory and AS4040.3 for Queensland and Western Australia) to evaluate the fatigue performance of building materials and systems for use in cyclonic regions. The LHL will now be the only test required for the cyclonic regions of Australia.

The LHL test is applicable to metal roof cladding, its fasteners and immediate supporting members.

LHL testings requirement does not currently apply to wall cladding.

Roofing manufacturers who comply with the BCA requirement for LHL testing have published revised product data for cyclonic regions which reflects the LHL test results.

All previous test data for cyclonic regions is obsolete.

The LHL test has proven to be more conservative than previous methods and has generally resulted in reduced spans for roof sheeting.

Certification of Designs of structures including sheds and industrial buildings with metal roof cladding are required to be revised in accordance with manufacturers' LHL test data. Compliance with LHL requirements should be noted on specifications and plans referencing the manufacturer.

Designs in cyclonic regions not based on LHL data do not comply with the BCA May 2009 and should not be approved or accepted.

Roof cladding systems (metal roofing, fasteners & battens) installed on domestic housing are required to be installed in accordance with the roofing manufacturers published data for cyclonic regions that incorporates LHL test results.

BCA 2009 references:
BCA Vol 1 – Part B 1.2 (c) (iii) & (iv)
BCA Guide - Specification B1.2 Design of Buildings in Cyclonic Areas
BCA Vol 2 – Addition Constructions Requirements - Part 3.10.1.0 (f)