

Date of issue: Monday, 6th December 2010

BEAL
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Plimmerton
Porirua 5026
New Zealand

BTS 908 - CERTIFICATE OF TEST: TR101001

E2/VM1 WEATHERTIGHTNESS TEST

1.0 CLIENT:

LOXO Cladding NZ Ltd
P.O.Box 10176
Christchurch
New Zealand

2.0 OBJECTIVE:

2.01 BEAL Testing Services were contracted by LOXO Cladding NZ Ltd to verify that "when installed according to the manufacturer's instructions, the LOXO AAC Panel Cladding system will meet one of the essential requirements necessary for the product to contribute to the performance requirements of clause E2 of the NZ Building Code.

The basis for this test is to assess the weathertightness of the LOXO AAC Panel Cladding System when tested to the Verification Method E2/VM1.

3.0 METHODOLOGY:

3.01 Testing was conducted based on the Verification Method E2/VM1 and sections 8.5 and 8.6 of AS/NZS 4284:2008 Testing of building facades.

3.02 Series 1: Static pressure water penetration test; (AS/NZS 4284:2008: Section 8.5)
The water penetration test by static pressure shall be conducted in accordance with clause 8.5 of AS/NZS 4284 at the maximum test pressure of 500Pa as per E2/VM1 Clause 1.4.2.

3.03 Series 1: Cyclic pressure water penetration test; (AS/NZS 4284:2008: Section 8.6)
The water penetration test by cyclic pressure shall be conducted in accordance with clause 8.6 of AS/NZS 4284 at the prescribed stage 1 and stage 2 cyclic test pressures, with stage 3 deleted as per E2/VM1 clause 1.4.3.

Test pressures used are tabulated below

Testing stage	Pressure range
Stage 1	150 - 300 Pa
Stage 2	300 - 600 Pa

3.04 Series 2: Water management testing
Sections 3.02 and 3.03 shall be repeated, following the formation of 6mm diameter holes through holes through the wetwall as per AS/NZS 4284 Clause 8.8 in at least 4 places.

3.04 Deviations

- The size of the wall sample tested was 2.0m by 1.6m

4.0 CRITERIA:

- 4.01 Non-compliance shall be the presence of water as defined in paragraph 4.02 after carrying out all the scheduled tests.
- 4.02 “During testing, water is allowed to spatter up from the footer flashing, provided that it is not held above any cavity obstruction. Water which is able to penetrate to the back of the wetwall through introduced defects and joints shall be controlled. It may contact battens and other cavity surfaces, but no water shall be transferred to the plane of the building wrap, cavity air sealing or structural framing due to a design or systematic failure. Water that may arrive on the underlay due to an “isolated blemish” may be disregarded. No water may drip through an airspace within the cavity where it is possible for water to impact on a surface in the cavity and splash onto the building wrap. However, the spattering of water into the cavity through introduced defects shall be ignored.”

5.0 TEST EQUIPMENT:

BEAL Weathertightness Machine

6.0 SAMPLES:

- 6.01 A 2m by 1.6m wall was constructed and clad with LOXO AAC Panel System and finished using the Dulux Acratex Plaster System.
- 6.02 The LOXO AAC cladding system was determined to be a class 2 cladding as per E2/VM1 Section 1.3. Test elements included: External and internal corners, vertical control joints and window and pipe penetration.
- 6.03 The following other design elements as required by E2/VM1 for a class 2 cladding system have been assessed;
- The parapet detail (both plastered and metal cap) have been assessed and deemed satisfactory by BEAL
 - The LOXO AAC Panel Cladding System is sealed at the top of the walls, which has been deemed satisfactory.
 - Both the LOXO PVC slotted vermin control cavity closer – classic (22mm) and LOXO PVC slotted vermin control cavity closer – deluxe (50mm) have been assessed, and deemed compliant with compliance document E2/AS1 providing an area opening of at least 1000mm² per lineal metre.
- 6.04 A internal lining of plywood sheet was fixed to the back of the wall and fitted with observation windows located
- Directly under the window
 - Internal and external corner junction
 - Directly under the meterbox.
- 6.05 A 15mm diameter hole was formed in the internal lining, to simulate the presence of light switches and electrical outlets as per E2/AS1.
- 6.06 Following series 1 testing, 6mm diameter holes were drilled into the wetwall in the following locations
- Through the window/wall joint at ¾ height of window jambs,
 - Immediately above the head flashing,
 - Through the external sealing of a vertical control joint,
 - Above the pipe penetration,
 - Immediately above the meterbox

7.0 CONDITIONS:

- 7.01 Room Temperature of ~18°C

8.0 RESULTS:

8.01 Date of test: 29th September 2010

TEST	COMMENT
Series 1: Static Water penetration Test pressure 500Pa Duration 15 mins	No leakage
Series 1: Cyclic Water penetration Test pressure 150 – 300Pa Duration 5 mins Test pressure Duration 5 mins	<i>Small leakage - controlled</i> <i>Small leakage - controlled.</i>
Series 2: water management Tests Static water penetration Test pressure 500 Pa Duration 15 mins	<i>Controlled leakage observed from introduced defects. Deemed satisfactory with no water transferred to the building paper plane</i>
Series 2: Water management tests Cyclic water penetration Test pressure 150 – 300 Pa Duration 5 mins Test pressure 300 – 600 Pa Duration 5 mins	<i>Controlled leakage observed from introduced defects. Deemed satisfactory with no water transferred to the building paper plane</i>
Comments	<i>Any moisture ingress observed through the wetwall was always controlled and at no instance was moisture observed to be present on the building wrap. The small leakage that was observed during the cyclic water penetration test series 1, was found to be originating between the bottom of the headflashing and top of the window flange, which was due in part to capillary action and lack of kick out flashing on the head flashing.</i>

9.0 COMMENTS:

9.01 The LOXO AAC Panel Cladding System finished with the Dulux Acratex Plaster System was found to have satisfactory weathertightness. Where the small leak was observed between the bottom of the head flashing and top of the window flange, BEAL has recommended the use of foam tape running between the headflashing and top of the window flange to prevent any further moisture ingress at this point which has been adopted by the LOXO AAC Panel cladding system.

10.0 CONCLUSION

10.01 This test result indicates that the *LOXO AAC Panel Cladding System finished with the Dulux Acratex Plaster System* subjected to this test, when installed according to the manufacturer's instructions, meets one of the essential requirements necessary for the product to meet the performance requirement of clause E2 of the NZ building Code.

Authorised signatory,



Colin R Prouse
 Principal Building Scientist
 Building Element Assessment Laboratory Limited