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Doc Ref: Boundary Wall Weathertightness.doc
CSR Hebel – North Ryde Office

14 November 2011

TECHNICAL UPDATE

Weathertightness of the Hebel Low Rise Residential External Boundary Wall System (For Single & Two Storey Construction)

INTRODUCTION

A test on the Hebel Low Rise Residential External Boundary Wall was undertaken on the 19th of October, 2011 at the Hebel Factory at 112 Wisemans Ferry Rd, Somersby.

The test wall was constructed within the Sirowet test rig at the Hebel laboratory.

The purpose of the test was to determine the weathertightness of an uncoated Hebel wall system when subject to constant and intermittent water spray under static and cyclic wind pressures.

Criteria for acceptance of weathertightness of the wall system were such that the timber stud (supporting the Hebel panels via top hat sections) remained dry at the completion of the test procedure.

WATER PENETRATION TESTING PROCEUDRE

The weathertightness test on the Hebel Low Rise Residential External Boundary Wall was modelled on the water penetration test procedures outlined within AS\NZS 4284:2008 – Testing of Building Facades. The following clauses of this standard were adopted as the basis of the testing procedure:

- Clause 8.5 – Water penetration test by static pressure
- Clause 8.6 – Water penetration test by cyclic pressure*

* Cyclic pressures were not recorded on a device capable of recording and graphically displaying the variations in pressure as required in Clause 8.6.2 of AS\NZS 4284:2008. Cyclic pressure for the purposes of this test were varied manually and time intervals recorded at the change in pressure.



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In addition to the static and cyclic pressure tests, a wall cavity drainage test was also undertaken to determine whether water entering through the Hebel external cladding could drain out from the cavity from between the base of the Hebel panel and the damp-proof course flashing placed under the panel.

ASSESSMENT

Based on the outcome of the water penetration tests (both by static and cyclic pressure) the following assessment of the Hebel external wall system can be made in regard to weathertightness:

'Single or Double Adhesive' Hebel panel joints

'Single or Double Adhesive' joints between panels appeared to perform satisfactorily when subject to the static and cyclic pressure water penetration tests. Isolated blotching at panel joints appeared to be the extent of water ingress evidence. On the basis of these observations application of single or double adhesive at joints between Hebel panels is satisfactory in regard to weathertightness of the Hebel external wall system.

Horizontal joints between Hebel panels

Water blotching in the Hebel panel at or directly adjacent to the horizontal joints between panels was observed in horizontal joints that were sealed with a fire rated sealant (typically an external grade polyurethane fire rated sealant) along the joint. As the extent of this water ingress was not substantial at this joint, this form of construction of the horizontal joint is satisfactory in regard to weathertightness of the Hebel external wall system.

Flashing at base of Hebel panels

Water directed into the cavity between the back of the Hebel panel and the stud frame appeared to clearly discharge from the gap between the base of the Hebel panel and the damp-proof course flashing.

Such a detail at the base of the Hebel panel will be satisfactory in regard to relieving water that may enter the cavity between the Hebel and stud frame so as to ensure weathertightness of the Hebel external wall system.

Note: At the completion of the static and cyclic water penetration tests, the stud frame remained dry and free of moisture.

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CONCLUSION

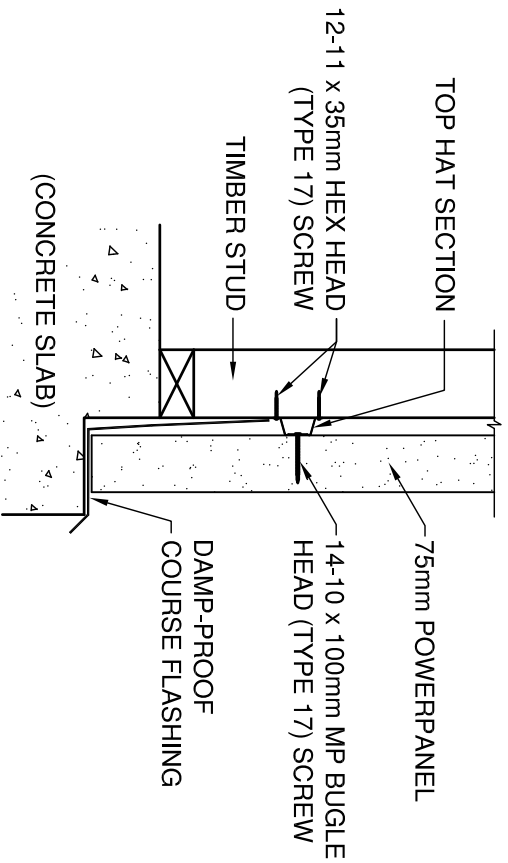
We recommend that the following, minimum installation requirements are adopted in the construction of an uncoated, Hebel external boundary wall system and incorporate the following specifications to ensure weathertightness of the wall system:

- All vertical joints between Hebel panels are to be at a minimum 'Single Adhesive' ensuring full coverage of adhesive at the joint,
- The detail at the base of the wall system i.e at the slab edge rebate, is to incorporate a damp proof course flashing and is to be installed as detailed in *Section A – Wall Base Detail*, drawing EBWT-1, Rev. A, dated the 4-11-11 (attached) to ensure egress of any water that may enter the cavity (between the stud frame and the Hebel panel) via the gap between the base of the panel and the damp proof course flashing,
- All horizontal and vertical control joints between Hebel panels are to be constructed as detailed in Section B – Horizontal Joint Detail, drawing EBWT-1, Rev. A, dated the 4-11-11 (attached) ensuring that a fire rated sealant (typically an external grade polyurethane fire rated sealant) is applied along the entire length of horizontal and vertical joints.

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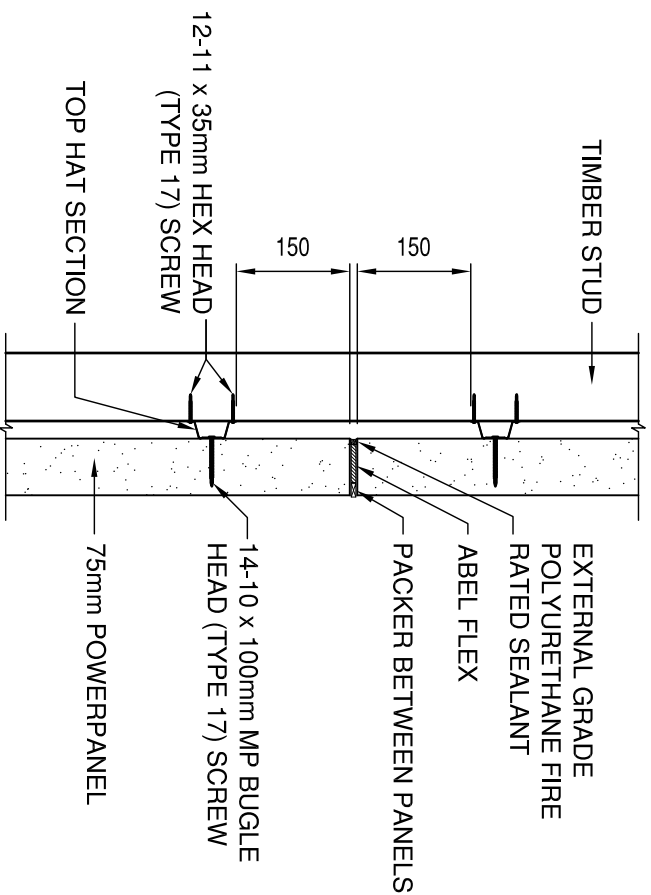
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SECTION A - WALL BASE DETAIL

SCALE 1:10



SECTION B - HORIZONTAL JOINT DETAIL

SCALE 1:10

Rev	Description	Drawn	Checked	Date
A	FOR INFORMATION ONLY	S.D	S.D	04.11.11

Drawing Number	Reference drawing

Scale	AS SHOWN		HEBEL Somesby - NSW - Australia	Drawn	S.D	04.11.11
Tolerances	AS SHOWN			Checked	S.D	04.11.11
DRAWN TO AS 1100 		This document is confidential. This document and its copyright are the property of or licensed to GSTR Limited, and must not be used, disclosed or reproduced in any form whatsoever except as authorised in writing. This document must be returned with quotation and/or on completion of the project as applicable.		Approved	S.D	04.11.11
DIMENSIONS IN MILLIMETRES DO NOT SCALE				Project: BOUNDARY WALL		Sheet
DETAILS OF HEBEL BOUNDARY WALL FOR WEATHERTIGHTNESS		Drawing Number EBWT-1		Revision		A