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WIND LOAD RESISTANCE SUBSTANTIATION SHEET

ISO:5216

SYSTEM:	**RCM YWall.**
Test Reference	**RCM SHEATHING BOARD LOADING ANALYSIS R0.4 Rev.5**
Test Laboratory:	**Wintech**
Test Standards Referenced:	**BS EN 1990; CWCT Standardised for Systemised Building Envelopes; CWCT Technical Update 14 (TU-14)**
Analysis Software:	**Winbeam v3.3**
Original Analysis Date:	**28/08/14**
Analysis Revision Date(s):	**Rev 1 - 18/04/14**
	Rev 2 - 12/12/17
	Rev 3 - 02/04/19
	Rev 4 - 02/04/19
	Rev 5 - 27/01/2020

Analysis Background

The purpose of this report is to provide a review of the allowable wind-load applied to 3No cementitious boarding product Y-Wall board for thicknesses noted in the results. The review consisted of a linear analysis of the boards, each board having fixings with nominal 200mm or 300mm centres with each row of fixings spanning 600mm for both single and double spanning boards (see figure 1 below). The review will be based on (i) the maximum allowable deflection (set at span/65), (ii) bending strength of boards and (iii) maximum allowable pull-through loads to the fixings.

Material Properties

Nominal density	1200kg/m^3
Bending Strength (Modulus of Rupture) f_0	8.8MPa
Modulus of Elasticity E_0	4.0GPa
Pull-through design load for 12mm board [safety factor 3 applied]	325N
Pull-out/through EJOT SW8-R 4.8x60 screw from 12mm board [SF=3]	402N

Pull-out/through design load for 6x90 wood screw from 12mm board [SF=3]	416.67N

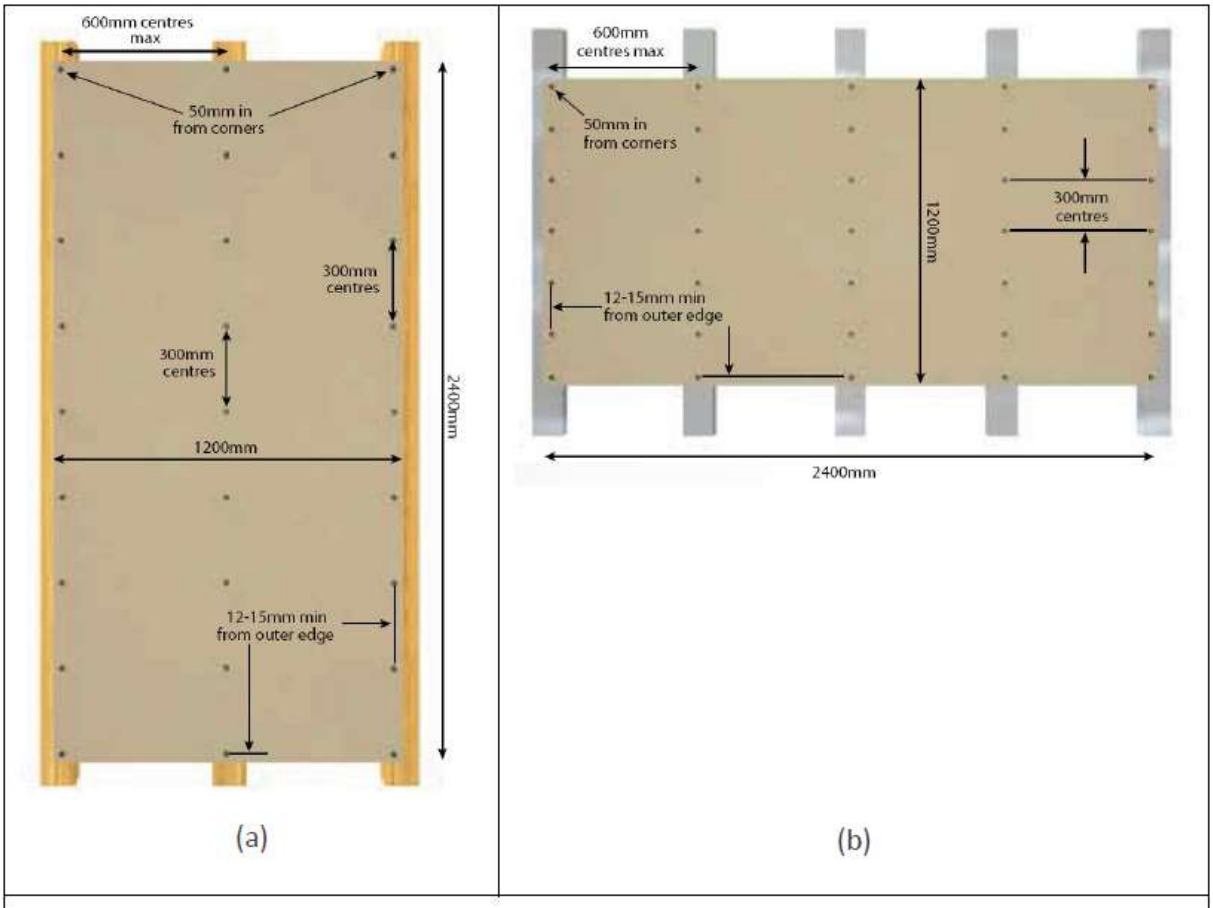

Figure 1: Typical double spanning board (a) vertically fixed and (b) horizontally fixed with 600mm fixing spans and 200mm or 300mm fixing centres.

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TEST RESULTS:

TABLE 1a: RCM BOARD WIND LOAD CAPACITIES			
200mm fixing centres and 600mm span between vertical wall studs			
RCM board type	Thickness	Allowable wind load [SLS]	
		Single span	Double span
Y-wall board	6mm	0.39kN/m2	0.39kN/m2
	9mm	0.88kN/m2	0.88kN/m2
	12mm	1.57kN/m2	1.57kN/m2

TABLE 1b: RCM BOARD WIND LOAD CAPACITIES			
300mm fixing centres and 600mm span between vertical wall studs			
RCM board type	Thickness	Allowable wind load [SLS]	
		Single span	Double span
Y-wall board	6mm	0.39kN/m2	0.36kN/m2
	9mm	0.88kN/m2	0.81kN/m2
	12mm	1.57kN/m2	1.44kN/m2

Blue – Allowable wind load governed by span/65 deflection limit for the board

Red – Allowable wind load governed by bending strength of the board

Green – Allowable wind load governed by pull-through capacity of screws from board

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TABLE 2a: RCM BOARD WIND LOAD CAPACITIES BASED ON PULL-THROUGH CAPACITIES OF SCREWS (200mm Fixing Centres)			
		Allowable wind load [SLS]	
RCM board type	Thickness	Single span	Double span
Y-wall board	6mm	1.35kN/m2	0.54kN/m2
	9mm	3.05kN/m2	1.22kN/m2
	12mm	5.42kN/m2	2.16kN/m2

TABLE 2b: RCM BOARD WIND LOAD CAPACITIES BASED ON PULL-THROUGH CAPACITIES OF SCREWS (300mm Fixing Centres)			
		Allowable wind load [SLS]	
RCM board type	Thickness	Single span	Double span
Y-wall board	6mm	0.90kN/m2	0.36kN/m2
	9mm	2.03kN/m2	0.81kN/m2
	12mm	3.61kN/m2	1.44kN/m2

Board maximum Design Moment based on bending strength			
Board Thickness	6mm	9mm	12mm
Max Design Moment (kNm)	0.0053	0.0119	0.0211

Board deflection corresponding to allowable wind load span/65 deflection limit			
(a) Single span (mm)	9.14	6.11	4.59
(b) Double span (mm)	3.8	2.54	1.91

In all cases and for all board types, a single span board is 2400mm by 600mm and a double span board is 2400mm by 1200mm. In both cases the fixings have 200mm or 300mm centres with each row of fixings spanning 600mm