

P21 RACKING TEST RESULTS EVALUATION

1800mm 10mm standard Baier board both sides, Baier board fastener pattern
 3 100x3.75 nails each side as P21 restraint, M12 bolts to plate concrete floor
 30x2.5 galv clouts 150mm centres No holddowns

Calculated to BRANZ TR No. 10. NZS 3604 1990
 Forest Research Institute, PB 3020 Rotorua. TE Lab

Summary		
Earthquake	69 (U)	BU/m
Wind	80 (U)	BU/m

Date of test:-	13-Oct-08	Ship No. 2461	Tested by <u>Doug Gaunt</u>
Date of calcn:-	15-Oct-08	Job No. TE08-017	Data Analysed by <u>Doug Gaunt</u>

Lab Number Plus direction Minus direction	Serviceability Cycles		Ultimate Cycles		P/2 (kN)	Wall dimensions	
	Cycle to H/300 or DLQ or DLW 8.00 X mm Loads S kN	Residual Defln, C mm	Cycle to Displacement y=(mm) Maximum Load P(kN)	def @ P y (mm)		L(mm)	H(mm)
						1800	2400
247891 plus	6.10	4.20	6.80	20.0	3.40	2.6	6.00
minus	5.75	3.80	7.00	20.0			
247892 plus	5.85	4.00	6.65	20.0	3.33	1.6	5.75
minus	6.93	3.80	7.70	20.0			
247893 plus	6.40	5.00	7.75	20.0	3.88	2.0	6.80
minus	6.90	3.50	7.25	20.0			
AvgS	(S) 6.32	(C) 4.05	(P) 7.19	(y) 20.00	3.53	(d) 2.07	(R) 6.23
CoV %	7.39	11.73	5.84	0.00	6.89	19.89	5.73

y = average failure deflection or peak deflection of the three tests.
 d = average first cycle displacement at half peak, (the very first cycle wall reaches the load)
 R = Residual load, P = Peak Load, S = Serviceability load
 Displacement Recovery Factor (k1) k1 = 1.4 - C/X 0.89 (.8 <= K1 <= 1.0)
 Resistance (earthquake - servicabilibity limit state) F = k1xS 5.65
 Average Structural Displacement Ductility factor u = y/d 9.68
 Ductility Modification factor K4 = 1.00
 DLW = Selected deflection limit for wind forces | DLQ = Selected deflection limit for earthquake forces

P21 TR 10 Supplement Calculations		
Branz Technical Recommendation No. 10. NZS 3604 1990		
Limit States Values 1800mm 10mm standard Baier board both sides, Baier board fastener pattern 3 100x3.75 nails each side as P21 restraint, M12 bolts to plate concrete floor 30x2.5 galv clouts 150mm centres No holddowns		
Earthquake Rating	Ultimate	Serviceability
EQ Ultimate	20 x K4 x R = 124.50 69.2 BU/m	20/0.48 x F/k4 = 235.42 Limited by Ultimate limit state
Wind Rating	Ultimate	Serviceability
Wind Ultimate	20* P = 143.83 79.9 BU/m	20 / 0.563 x F = 200.71 Limited by Ultimate limit state

Figure 4: P21 calculations for the BBS2 Baier 1800mm walls with nails on a concrete floor

Please feel free to contact me to discuss this information.



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