

Results

To:	Brad Smith	From:	Doug Gaunt
Organisation:	Kronospan Trading SRL	Subject:	P21:2010 9mm Kronspan OSB 600 Wall with Brackets
Location:	Northcote	Date:	10 th February 2020
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Brad

Please find below the P21 bracing results for your three 600mm x 2.40m 9mm Kronspan OSB walls tested with GIB Handibracs.

1. BU wind = 55 (91 BU/m) as limited by the serviceability load capacity.
2. BU Earthquake = 62(104 BU/m) as limited by the ultimate load capacity.

Figures 1, 2 & 3 show the load deflection plots, Figure 4 shows the P21:2010 calculations.

Wall Construction

- 9mm Kronspan OSB one side
- 90x45 H1.2 SG8 framing, studs at 600mm centres, no nogs
- OSB fixing - 50x2.87mm angular groove Paslode gun nails at 150mm centres to plates and end studs
- GIB Handibracs each end
- M12 hold down bolts to Handibracs and bottom plate
- P21 supplementary restraints used.

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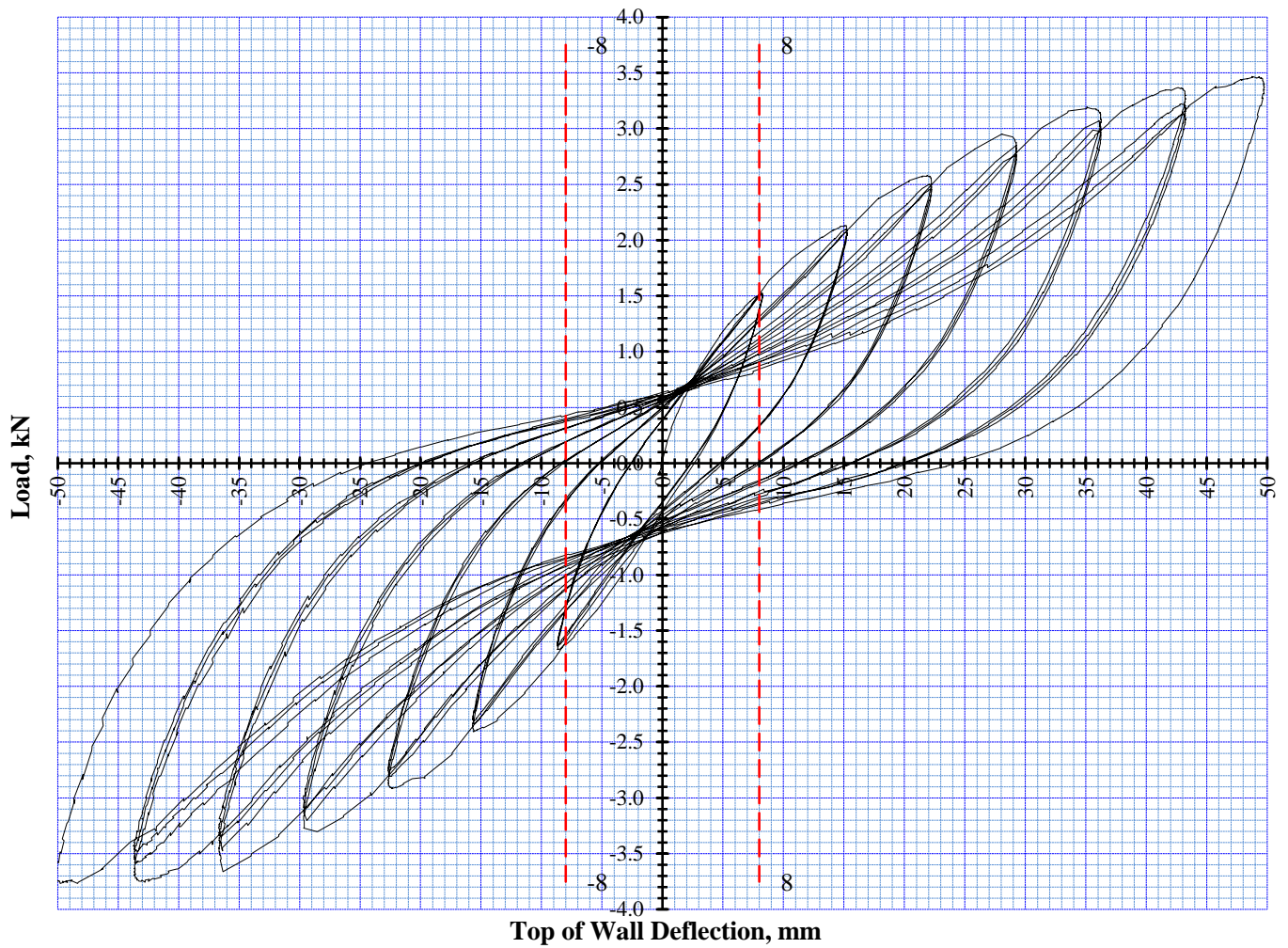
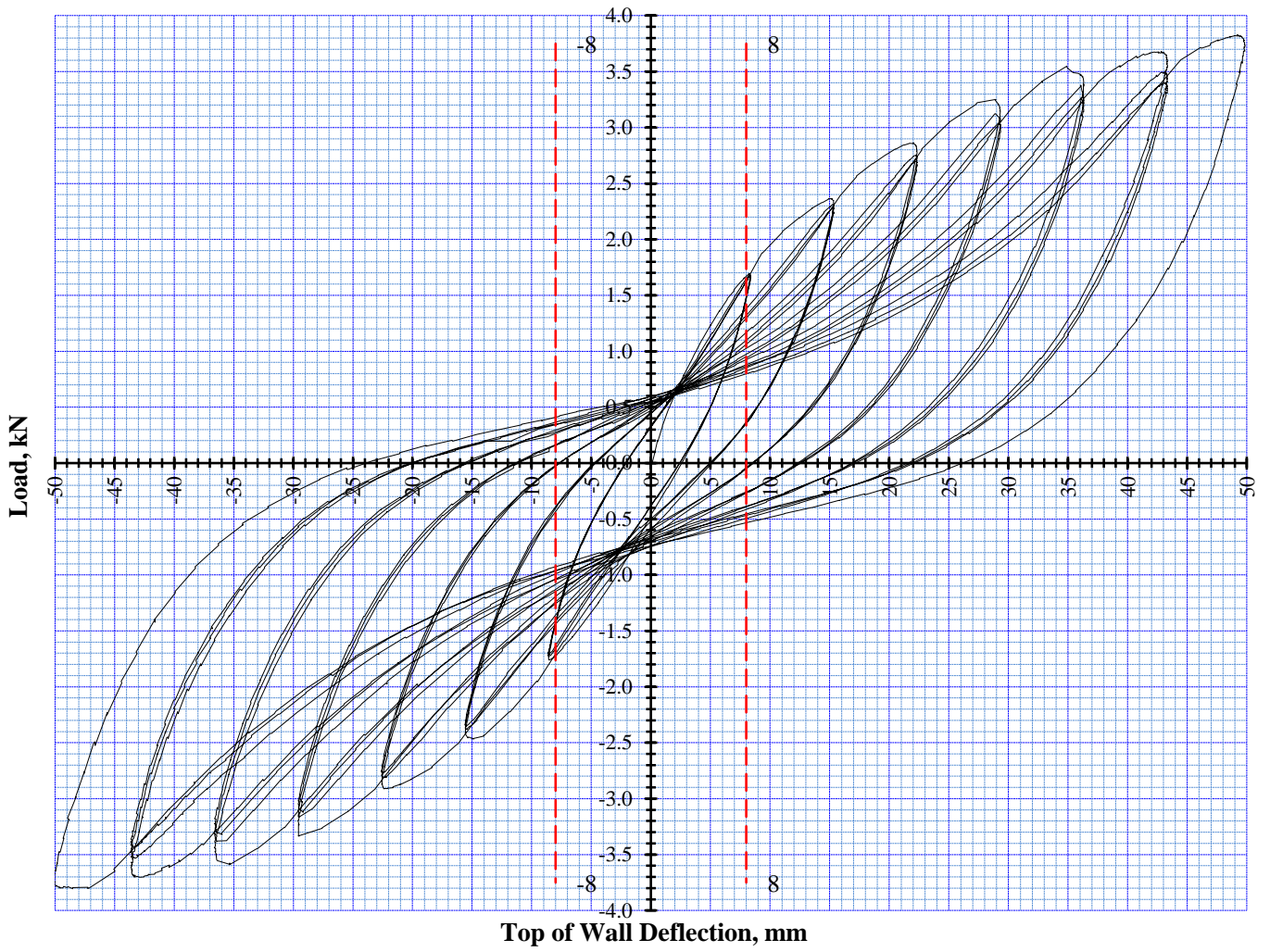


Figure 1: Wall 281517

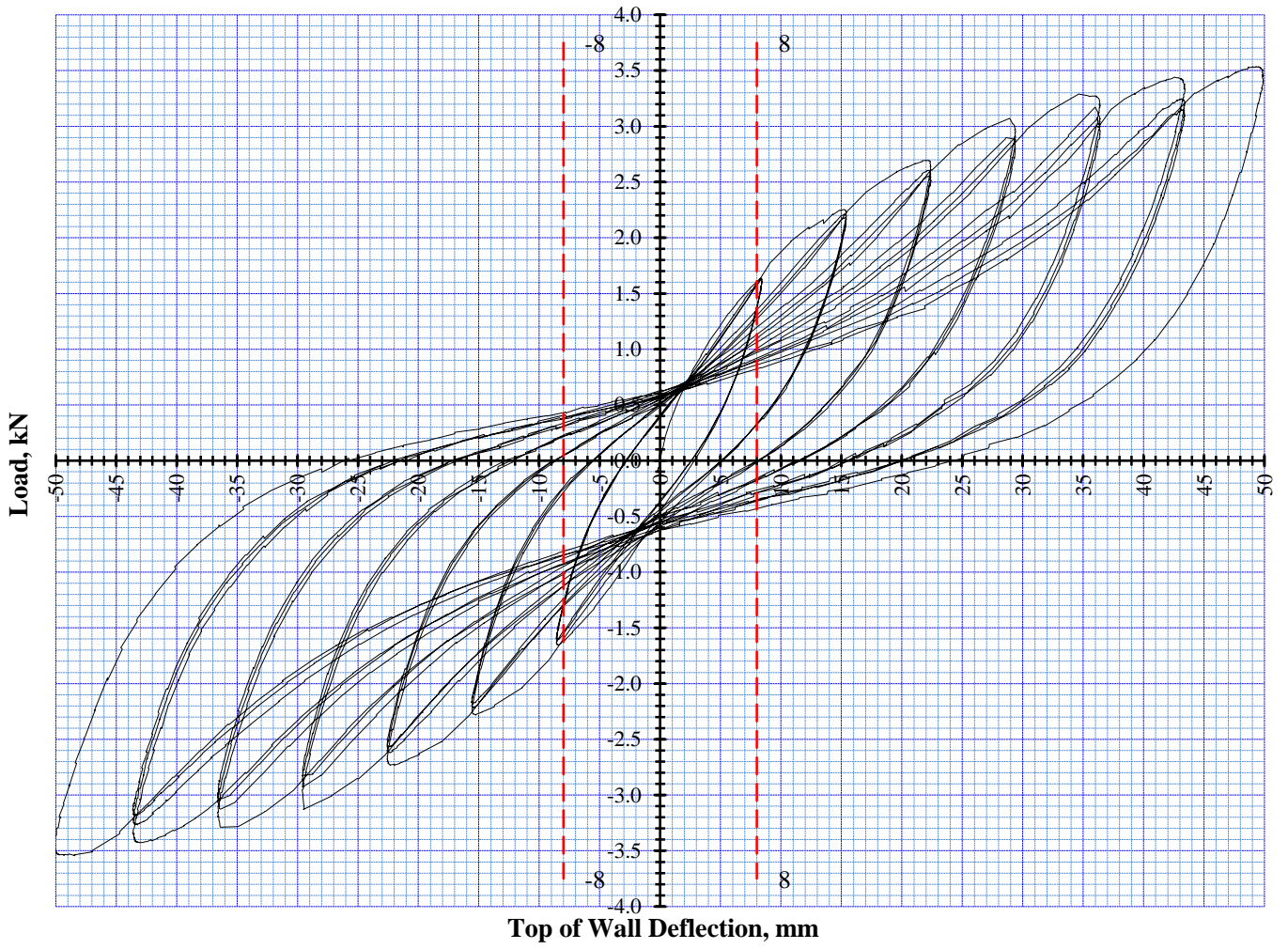
Observations

- No obvious signs of failure to framing.
- No obvious signs of failure to Handibracs.
- No obvious signs of failure to OSB
- No obvious signs of failure to OSB cladding nails.



Top of Wall Deflection, mm

Figure 2: Wall 281518



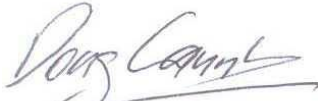
Top of Wall Deflection, mm

Figure 3: Wall 281519

P21:2010 BRACING RACKING TEST RESULT EVALUATION									
Wall Construction									
600mm, 9mm Kronspan OSB one side									
90x45 H1.2 SG8 framing, studs at 600mm centres, no nogs									
OSB fixing - 50x2.87mm angular groove Paslode gun nails at 150mm centres to plates and end studs						Summary			
GIB Handibracs each end						Earthquake	104 (U)	BU/m	
M12 hold down bolts to Handibracs and bottom plate						Wind	91 (S)	BU/m	
P21 supplementary restraints used									
Date of test:-		23-Oct-19	Ship No.		3072	Tested by			Jamie Agnew
Date of calc's:-		23-Oct-19	Job No.		TE19-028	Analysed by			Doug Gaunt
Calculated to BRANZ P21:2010, AS/NZS1170.2&5, NZS3604:2010 Scion, Private Bag 3020 Rotorua.									
Serviceability Cycles				Ultimate Cycles			Wall dimensions		
Lab Number	Direction	Cycle to H/300 or DLQ or DLW		Cycle to Displacement		P/2 (kN)	L(mm)	H(mm)	
		Loads	X mm	y=(mm)	Maximum		600	2400	
		(P ₈)	Defln, C	Load	def @ P		d at P/2	4th,R	
		kN	mm	P(kN)	y (mm)		d mm	kN	
281517	+	1.50	2.50	3.16	36.0	1.58	8.3	2.96	
	-	1.60	2.60	3.65	36.0			3.25	
281518	+	1.67	3.50	3.48	36.0	1.74	8.5	3.20	
	-	1.72	2.00	3.57	36.0			3.24	
281519	+	1.61	2.80	3.28	36.0	1.64	8.4	3.00	
	-	1.62	2.90	3.29	36.0			2.98	
		(P ₈)	(C)	(P)	(y)	P/2 (kN)	(d)	(R _y)	
Averages		1.62	2.72	3.41	36.00	1.65	8.40	3.11	
Coefficient of Variation %		4.17	16.66	5.11	0.00	3.99	0.97	4.07	
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), (0.8 <= K1 <= 1.0)						Systems factor K2 = 1.2			
Average Structural Displacement Ductility factor						u = y/d 4.29			
Ductility Modification factor						K4 = 1.00			
DLW = Selected deflection limit for wind forces				DLQ = Selected deflection limit for earthquake forces					
P21:2010 BR Calc's		K1	EQ ultimate	EQ service	Wind Ultimate	Wind Service			
Lab Number		(= 1.4 - C/X)	BU's	BU's	BU's	BU's			
281517	(BU)	1.00	62.1	67.6	68.1	52.4			
	(BU/m)		104	113	114	87			
281518	(BU)	1.00	64.4	74.0	70.5	57.3			
	(BU/m)		107	123	118	95			
281519	(BU)	1.00	59.8	70.5	65.7	54.6			
	(BU/m)		100	117	110	91			
<20% Result Check		281517	0% Ok result	-7% Ok result	0% Ok result	-7% Ok result			
		281518	5% Ok result	7% Ok result	5% Ok result	7% Ok result			
		281519	-6% Ok result	0% Ok result	-5% Ok result	0% Ok result			
Note: Where the value of BR Wind or BR EQ for any specimen is more than 20% greater than either of the other two specimens, assign it a value of 1.2 times the lower value before averaging.									
Average Earthquake BR			Ultimate			Serviceability			
EQ (BU's)	20 x K4 x R _y =		62	(P8 x K1) x (K2/0.55) =		71			
			104	Limited by		Ultimate limit state			
Average Wind BR			Ultimate			Serviceability			
Wind (BU's)	20 * P =		68	(P8 x K1) x (K2/0.71) =		55			
			91	Limited by		Serviceability limit state			

Figure 4: P21:2010 calculations for 600mm x 2.40m, OSB wall with brackets

Please feel free to contact me to discuss this information.


Doug Gaunt