

INTERMAT SUREBOARD SERIES 200W ON LIGHT GAUGE STEEL FRAME WALLS - RACKING SHEAR TEST: REDUCED DESIGN DATA

SUMMARY

Specialized Testing was contracted by InterMat, Inc. to provide testing and reporting services for their proprietary SureBoard Series 200W sheathing material. Racking shear tests were performed on 4-ft. long x 9-ft. tall light gauge steel framed wall assemblies constructed with SureBoard Series 200W sheathing.

The tests were performed pursuant to the SEAOSC Standard Method of Cyclic (Reversed) Load Test for Shear Resistance of Framed Walls for Buildings (1997). The design data included in this summary is based in the averaged “push” and “pull” peak strength envelope data provided by Specialized Testing, as illustrated in Figure 1.

The test program scope included three replicate tests of shear walls with 14-gauge steel framing members and a sheet of SureBoard Series 200W sheathing screwed onto both sides of the wall. The test program also included single replicate tests of 14-gauge, 16-gauge, and 18-gauge steel framing members with a single sheet of SureBoard Series 200W sheathing screwed onto one side of the wall.

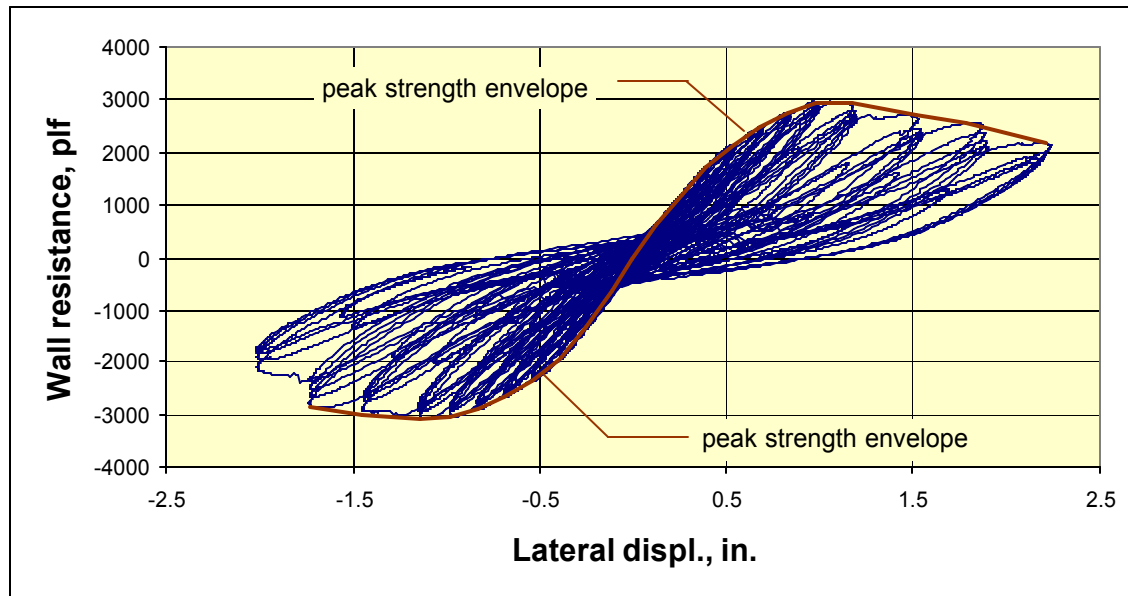


Figure 1. Typical response curve showing “push and “pull peak strength envelope curves

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Summary of Test Results

Test No.	Shear Wall Description	Limit State ^b	P (lbs) ^c	S _{max} (lb/ft) ^c	? (in) ^c	H/L (ft/ft) ^c	G' (lb./in.) ^c	S _{nom} (lb/ft)	D _n (in)	D _s (in)
1	14-Ga. Framing, 2 sided Sheathing w/Series 200W	Yield	13,654	3414	0.558	2.25	55,056	4958	1.773	0.390
		Strength	19,896	4,974	1.897	2.25	23,598			
		Allowable	7,958	1,990	0.247	2.25	72,492			
2	14-Ga. Framing, 2 sided Sheathing w/Series 200W	Yield	13,361	3340	0.573	2.25	52,465	5078	2.063	0.431
		Strength	20,349	5,087	2.042	2.25	22,422			
		Allowable	8,140	2,035	0.269	2.25	68,086			
3	14-Ga. Framing, 2 sided Sheathing w/Series 200W	Yield	12,866	3217	0.792	2.25	36,551	5242	2.357	0.651
		Strength	20,982	5,246	2.330	2.25	20,262			
		Allowable	8,393	2,098	0.421	2.25	44,856			
Test Average	Mean YLS _{Tests 1-3} Mean SLS _{Tests 1-3} Mean ALS _{Tests 1-3}	Yield	13,294	3,323	0.641	2.25	46,664	5093	2.064	0.491
		Strength	20,409	5,102	2.089	2.25	21,982			
		Allowable	8,164	2,041	0.312	2.25	58,873			
4	14-Ga. Framing, 1 sided Sheathing w/Series 200W	Yield	9,656	2,414	0.535	2.25	40,647	3097	1.378	0.329
		Strength	12,401	3,100	1.329	2.25	20,994			
		Allowable	4,960	1,240	0.206	2.25	54,175			
5	16-Ga. Framing, 1 sided Sheathing w/Series 200W	Yield	8,900	2,225	0.525	2.25	38,141	3025	1.065	0.270
		Strength	12,112	3,028	1.045	2.25	26,078			
		Allowable	4,845	1,211	0.244	2.25	44,677			
6	18-Ga. Framing, 1 sided Sheathing w/Series 200W	Yield	8,089	2,022	0.577	2.25	31,543	2142	0.831	0.229
		Strength	8,586	2,146	0.811	2.25	22,096			
		Allowable	3,434	858	0.145	2.25	53,286			

^a FME = 0.60-in.

^b Yield limit based on bi-linear segments noted on hysteresis plots.

^c P = Load at limit state. S_{max} = Maximum force per lineal foot. ? = Top Displacement, H/L = Aspect ratio,

G' = Shear Modulus. Note P and ? values presented are average absolute values.

S_{nom} = nominal strength

Δ_n = Lateral displacement at S_{nom}

Δ_s = Lateral displacement at φS_{nom}, where φ (resistance factor) = 0.55