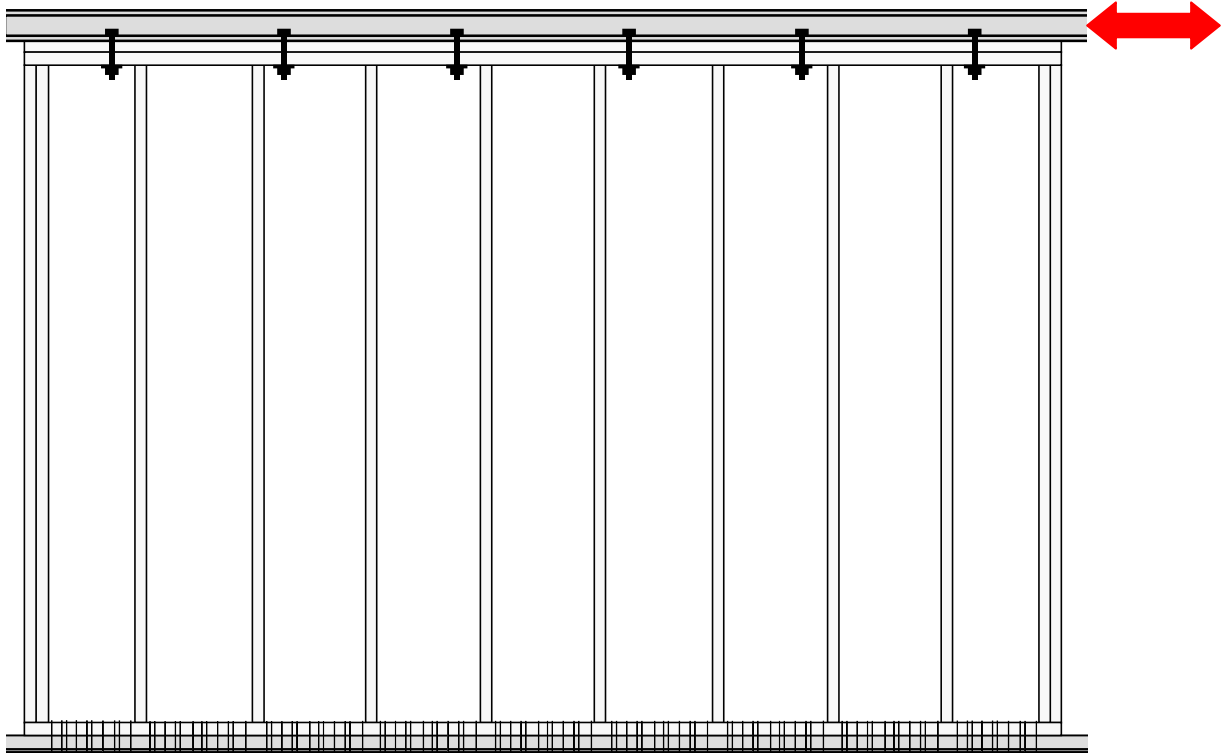


Walls 12NAc



Walls:	12NAc1	No replication
Manufactured:	June 23, 1998	
MOE data files:	12nam2s.prn	
MOE _{plates} (10 ⁶ psi)		
MOE _{studs} (10 ⁶ psi)	1.48	
Density _{plates} (kg/m ³)		
Density _{studs} (kg/m ³)	455	
Date tested:	August 17, 1998¹	
Time tested:	15:51	
LTC files:	30alex12	
Data files:	12NAc1.dat	
Excel files:	12NAc1_data 12NAc1_UTP	
Photo files:	837-839	

¹ For this test, the specimen 12Nam1 was used after the monotonic test. The bottom plate was replaced (no MOE data record) and the sheathing was attached at 6 in. o. c. with ³/₄-in. edge distance one hour before the test. The bottom plate was attached to the base with 3 rows of 16d nails at 3 in. o. c.

Wall 12NAc1

Rationale: Wall 12NAc1 was manufactured with the inadequate edge distance of sheathing-to-framing connections (see Walls 12NAc). After the test, the specimen 12NAc1 remained visually intact except for the unzipped bottom plate. The specimen was repaired immediately after the test by attaching the sheathing to the new bottom plate at 6 in. o.c. with $\frac{3}{4}$ -in. edge distance. Similar situation was repeated later with wall 12IAc2 (see Walls 12IAc).

Observations: The elastic stiffness was approximately 20% less than during the monotonic test 12NAc1 due to the loading history of the perimeter nails. The peak load (4297 lbf.) was 16% higher than the peak load (3711 lbf.) of 12NAc1 wall but it was reached at approximately same (0.9-in.) amplitude. Nevertheless, the wall did not last long and degraded rapidly after the next phase of loading between 1.2 and 1.5-in. deflection.

Failure mode: The sheathing unzipped at both ends of the bottom plate: Nails tore through at the edge (see Photos 837-838). No nail fatigue was observed. The test was stopped during 1.8-in. phase when the wall separated from the bottom plate.

Instrumentation: The calibration factor in the LTC file was setup for 1100 lbf. range while the UTP controller was not reset from 55000 lbf. The adjustment of the row data was made during the analysis (multiply load data by the factor of 5).

Table 12NAc1. Data summary.

Specimen		12NAc1	Per unit length	
Nails			cyclic test	
Wall length			12.00ft.	3.657m
Date:	8-17-1998	Time:	15:51	
EEEP Parameters		units	initial	stabilized
Peak unit load, v_{peak}		Kip/ft.	0.358	0.315
		KN/m	5.226	4.591
Drift at peak load, Δ_{peak}		in.	0.907	0.907
		mm	23.03	23.03
Yield unit load, v_{yield}		Kip/ft.	0.321	0.282
		KN/m	4.685	4.112
Drift at yield load, Δ_{yield}		in.	0.439	0.436
		mm	11.15	11.08
Proportional limit, $0.4v_{peak}$		Kip/ft.	0.143	0.126
		KN/m	2.090	1.836
Drift at prop. limit, $\Delta@0.4v_{peak}$		in.	0.196	0.195
		mm	4.97	4.95
Unit load at failure or $0.8v_{peak}$		Kip/ft.	0.286	0.252
		KN/m	4.181	3.673
Drift at failure, $\Delta_{failure}$		in.	1.401	1.235
		mm	35.58	31.36
Shear modulus, G @ $0.4v_{peak}$		Kip/in.	5.851	5.167
		KN/mm	1.025	0.905
Work until failure per unit length		Kip-ft./ft.	0.269	0.317
		KN-m/m	1.198	1.411
Unit load, $v_{1/300}$ @ 0.32 in. (8.13 mm)		Kips/ft.	0.203	0.201
		KN/m	2.970	2.930
Unit load, $v_{1/200}$ @ 0.48 in. (12.19 mm)		Kips/ft.	0.261	0.247
		KN/m	3.811	3.606
Unit load, $v_{1/100}$ @ 0.96 in. (24.38 mm)		Kips/ft.	0.357	0.151
		KN/m	5.207	2.208
Unit load, $v_{1/60}$ @ 1.6 in. (40.64 mm)		Kips/ft.	0.188	0.000
		KN/m	2.743	0.000
EVDR @ v_{peak}			0.168	0.144

SEAOSC parameters		units	negative	positive	average
Yield Limit State	v_{YLS}	Kips/ft.	-0.199	0.192	0.196
		KN/m	-2.906	2.809	2.858
	Δ_{YLS}	in.	-0.302	0.296	0.299
		mm	-7.67	7.52	7.59
Strength Limit State	v_{SLS}	Kip/in.	5.279	5.204	5.242
		KN/mm	0.925	0.911	0.918
	Δ_{SLS}	in.	-0.356	0.360	0.358
		mm	-5.193	5.260	5.226
		mm	-0.911	0.902	0.907
		mm	-23.14	22.92	23.03
	G'_{SLS}	Kip/in.	3.124	3.196	3.160
		KN/mm	0.547	0.560	0.553

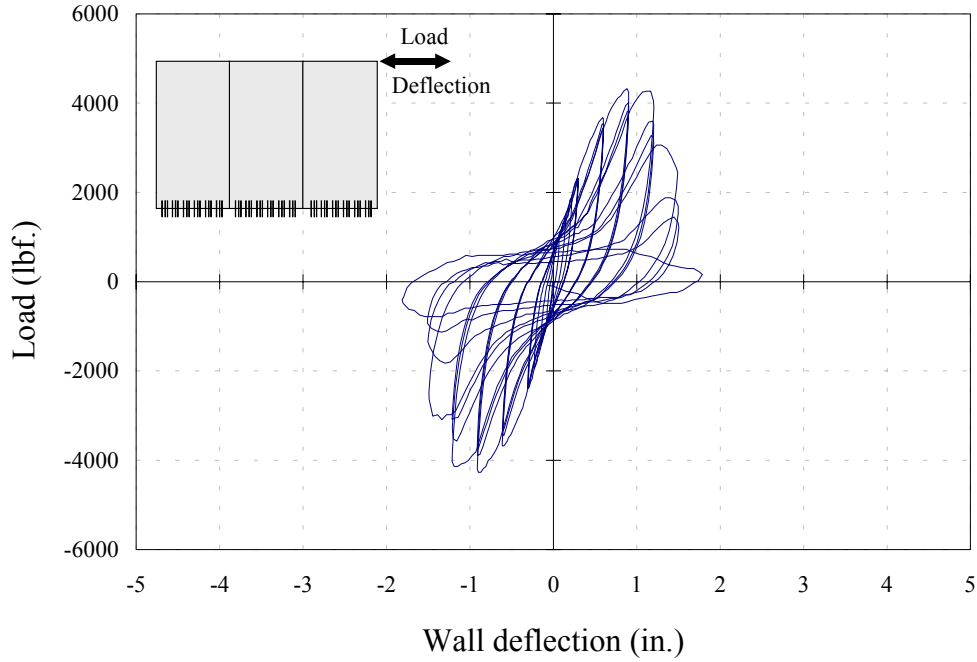


Figure 12NAc1- a. Observed load-deflection curve¹.

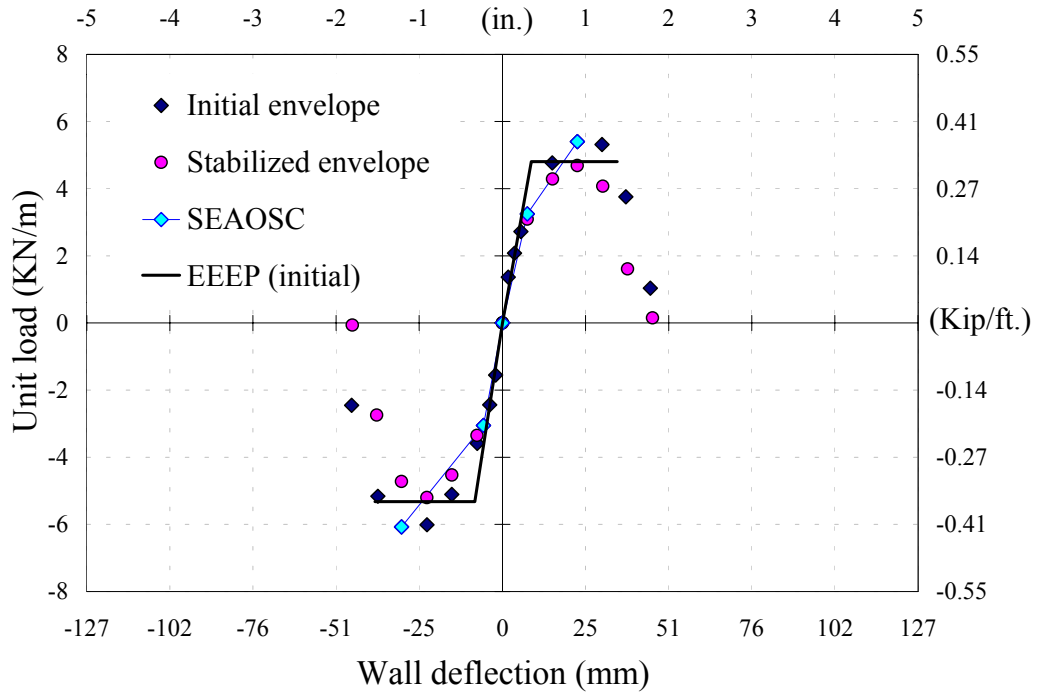


Figure 12NAc1- b. Envelopes, SEAOSC, and EEEP curves².

¹ The scale of the graph varies between test series.

² The scale of the graph is uniform between test series for comparison purposes.

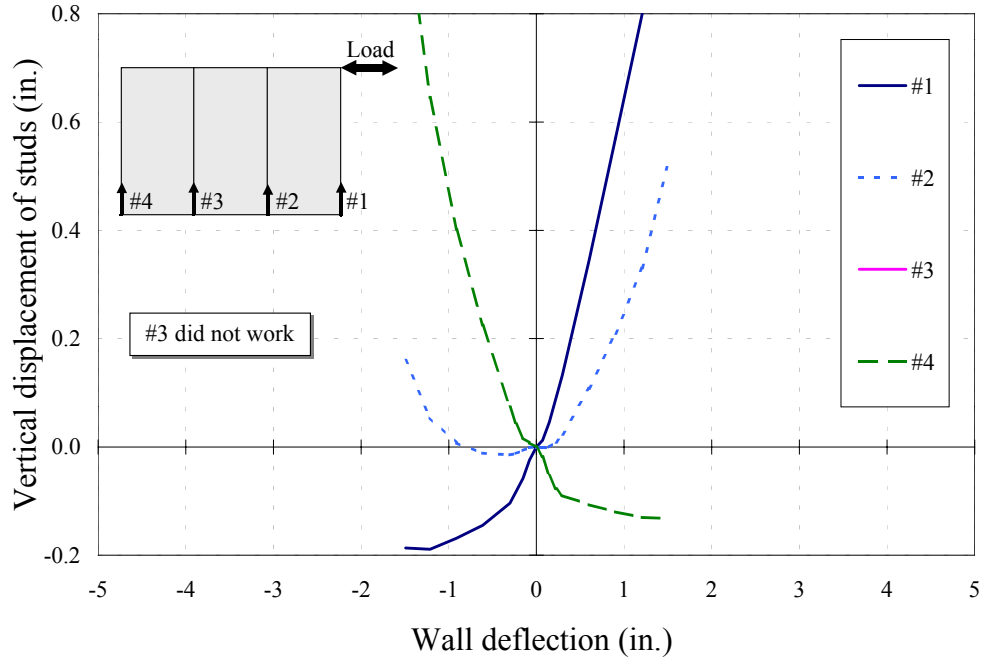


Figure 12NAc1- c. Vertical displacement of studs (initial envelope).

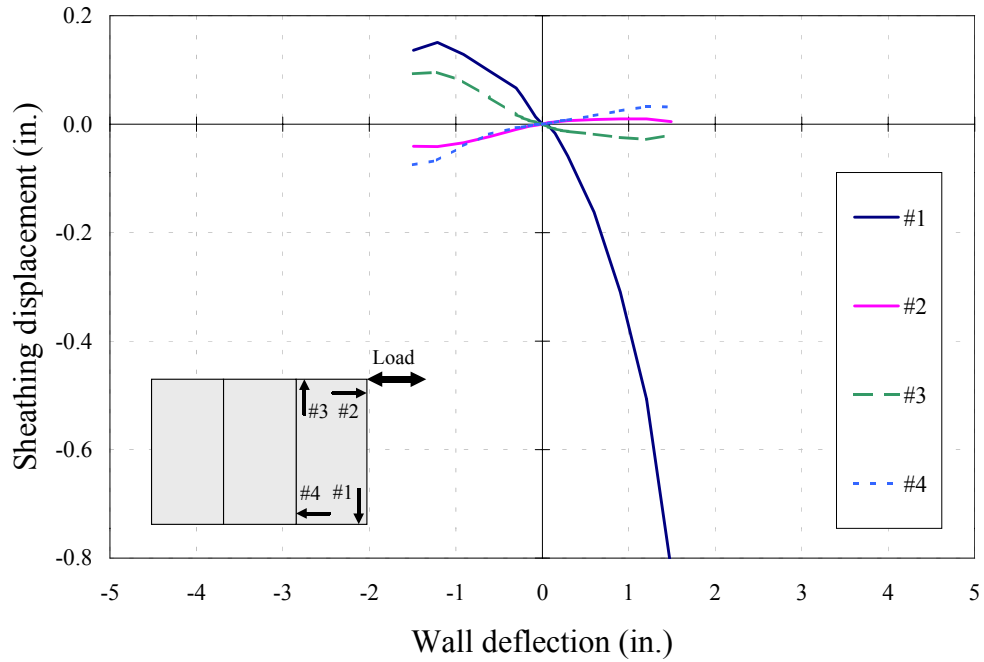


Figure 12NAc1- d. Sheathing displacement (initial envelope).

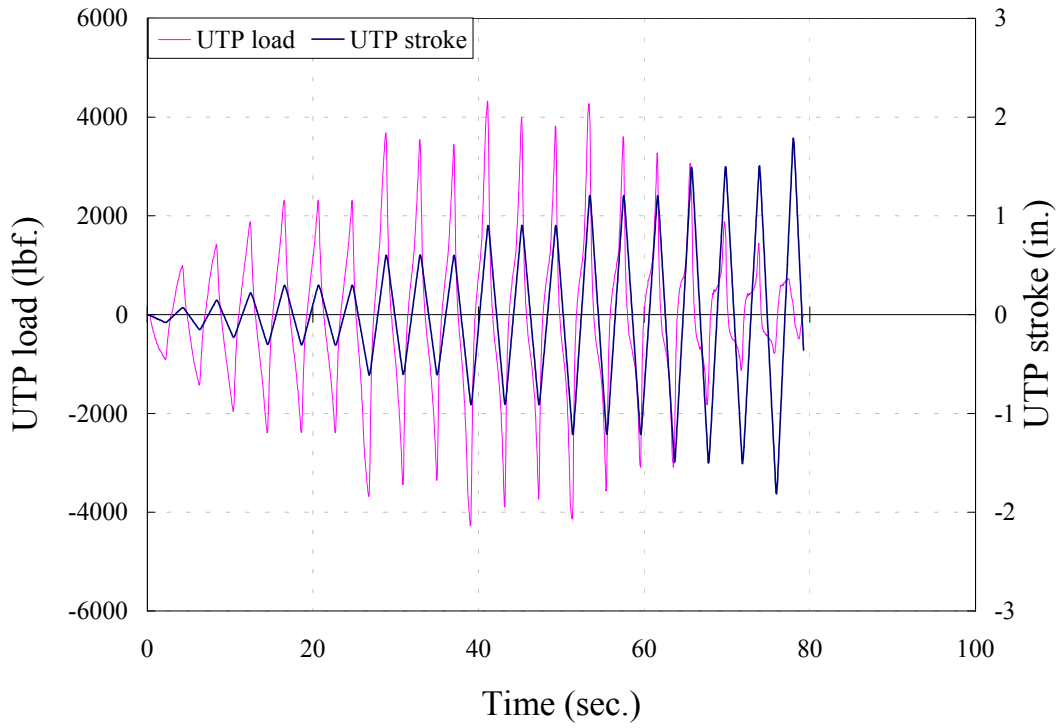


Figure 12NAc1- f. Load- and displacement-time record.