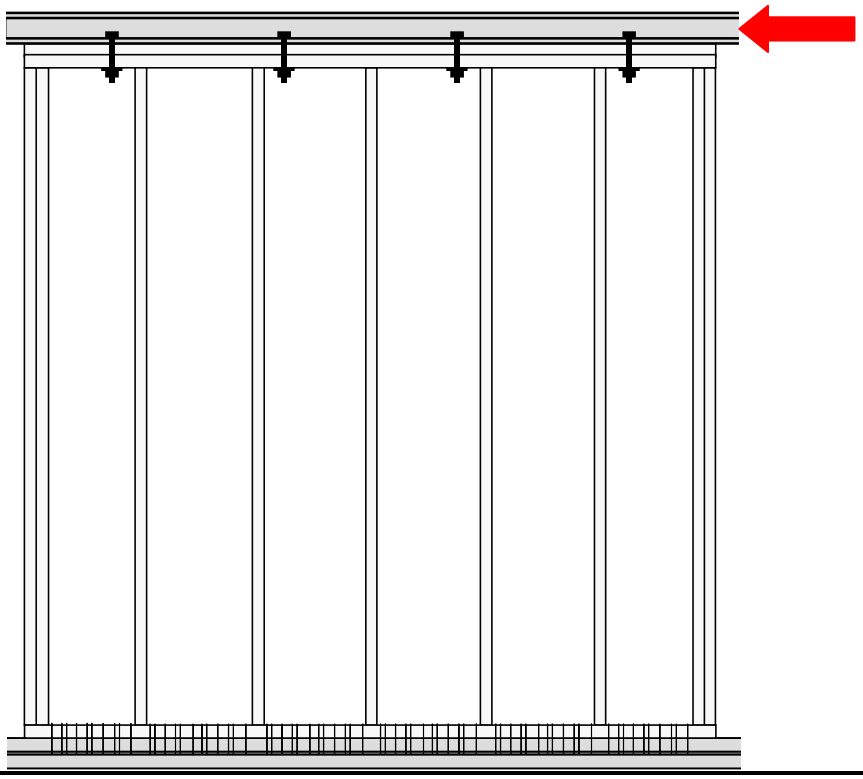
Walls 08NAm



Wall:	**08NAm1**	**No replication**
Manufactured:	**June 22, 1998**[1]	
MOE data files:	8nam1p.prn 8nam1s.prn	
MOE_{plates} (10^6 psi)	1.77	
MOE_{studs} (10^6 psi)	1.56	
$Density_{plates}$ (kg/m^3)	521	
$Density_{studs}$ (kg/m^3)	469	
Date tested:	**August 13, 1998**[2]	
Time tested:	12:40	
LTC files:		
Data files:	08NAm1.dat	
Excel files:	08NAm1_data	
Photo files:	no pictures	

[1] Low quality of sheathing attachment: the edge distance was 3/8±1/8 in.

[2] The bottom plate was attached to the base with 3 rows of 16d nails at 3 in. o.c. one hour before the test.

Wall 08NAm1

Observations: This wall exhibited a very low performance due to the inadequate sheathing attachment. The elastic stiffness was 37% less than that of walls 08IAm3 and 08IAm4. The peak load (1853 lbf.) was observed at 0.8-in. deflection. The resistance dropped quickly after the peak load was reached. The 20% load reduction was observed at 1.1-in. deflection. Sheathing unzipped from the bottom plate and the rest of the wall rocked away from the foundation as a rigid body. The sheathing moved relative to the studs and top plate less than 0.03 in. as the graphs show.

Failure mode: The sheathing unzipped along the bottom plate. Apparently, the wall could not provide adequate resistance with such a short edge distance of nailing.

Discussion: The shape of the load-deflection curve is similar to that of 08IAm3 wall: quick degradation soon after the peak load. The peak load is 16% less than the average peak load developed by 08IAm3 and 08IAm4 walls. The peak load and failure occurred earlier due to the shorter edge distance of nails and the low density of the bottom plate (505 kg/m^3). The obvious reason for the quick wall degradation can be found looking at the graphs of sheathing displacement. The peak load was reached as soon as the first sheathing nails tear through the edge of the panel. The wall performance was entirely dependent on the row of nails along the bottom plate.

Instrumentation: LVDT for measurement of stud uplift #3 was disconnected.

Table 08NAm1. Data summary.

Specimen	**08NAm1**	**Per unit length**	
Nails		**monotonic test**	
Wall length		**8.00ft.**	**2.438m**
Date:	8-13-1998.	**Time:**	12:40
		units	**08NAm1**
Peak unit load, v_{peak}		Kip/ft. KN/m	0.232 3.380
Drift at peak load, Δ_{peak}		in. mm	0.788 20.02
Yield unit load, v_{yield}		Kip/ft. KN/m	0.204 2.982
Drift at yield load, Δ_{yield}		in. mm	0.413 10.50
Proportional limit, $0.4v_{peak}$		Kip/ft. KN/m	0.093 1.352
Drift at prop. limit, $\Delta@0.4v_{peak}$		in. mm	0.188 4.76
Unit load at failure or $0.8v_{peak}$		Kip/ft. KN/m	0.185 2.700
Drift at failure, $\Delta_{failure}$		in. mm	1.096 27.83
Shear modulus, G $@0.4v_{peak}$		Kip/in. KN/mm	3.953 0.692
Work until failure per unit length		Kip·ft./ft. KN·m/m	0.015 0.067
Unit load, $v_{1/300}$ @ 0.32 in. (8.13 mm)		Kips/ft. KN/m	0.135 1.974
Unit load, $v_{1/200}$ @ 0.48 in.(12.19 mm)		Kips/ft. KN/m	0.179 2.616
Unit load, $v_{1/100}$ @ 0.96 in. (24.38 mm)		Kips/ft. KN/m	0.212 3.087
Unit load, $v_{1/60}$ @ 1.6 in. (40.64 mm)		Kips/ft. KN/m	**0.095** **1.392**

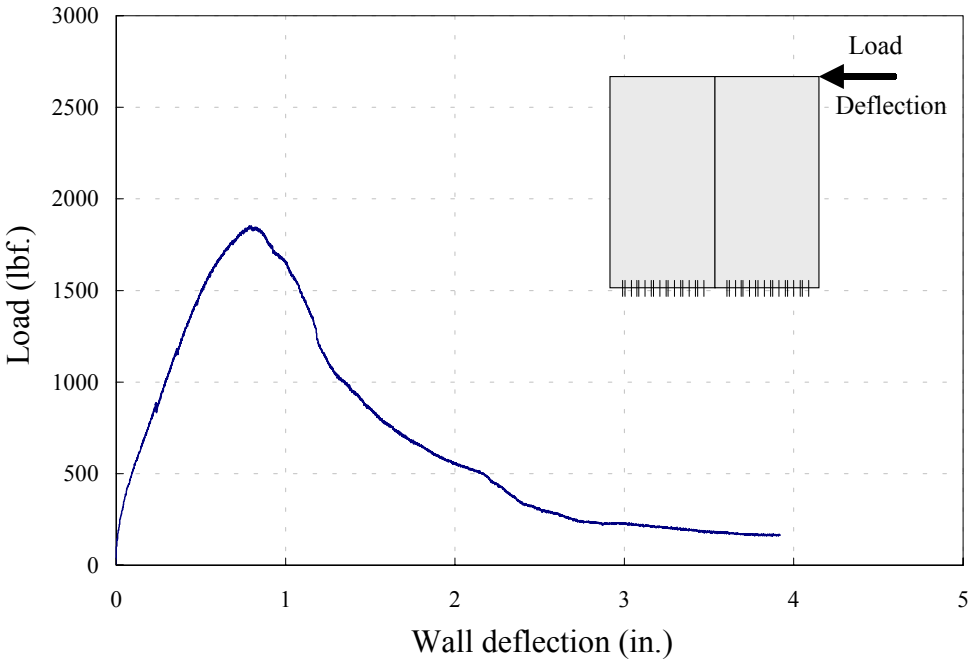


Figure 08NAm1- a. Observed load-deflection curve[1].

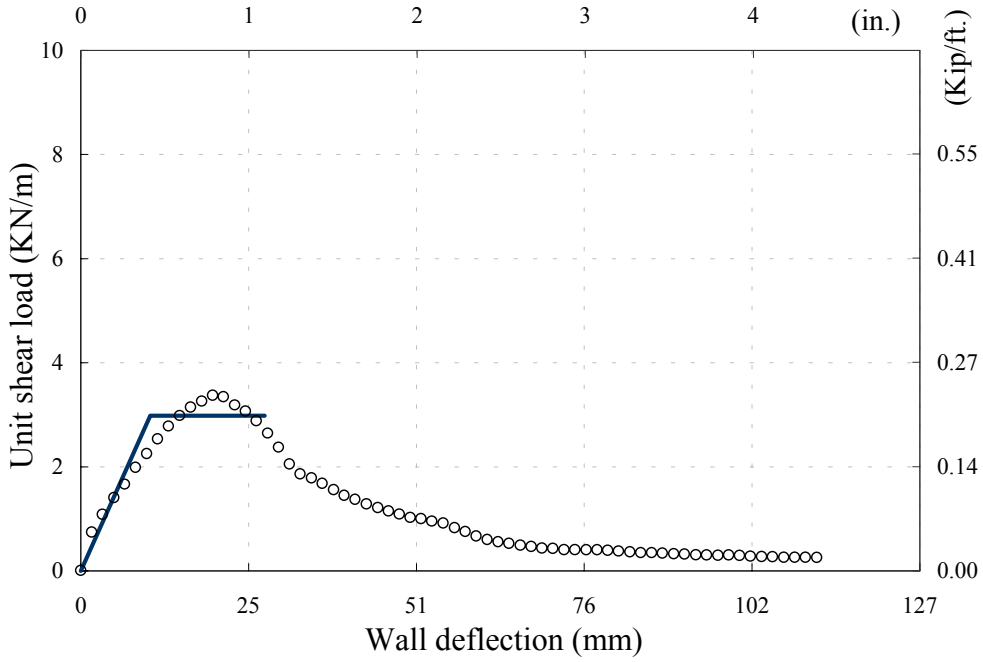


Figure 08NAm1- b. Unit load-deflection and EEEP curves[2].

[1] The scale of the graph varies between test series.
[2] The scale of the graph is uniform between test series for comparison purposes.

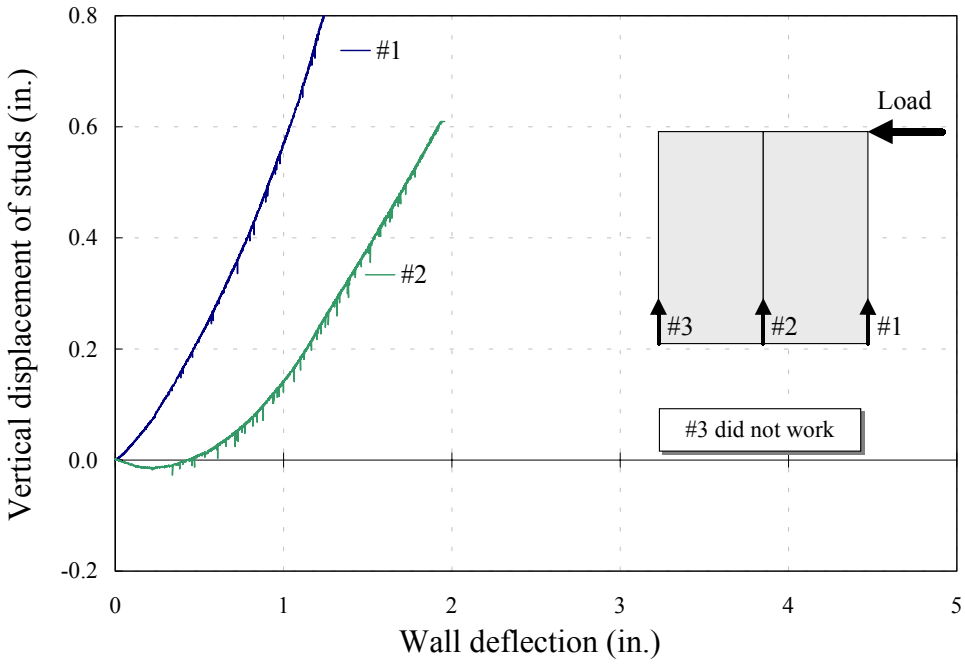


Figure 08NAm1- c. Vertical displacement of studs.

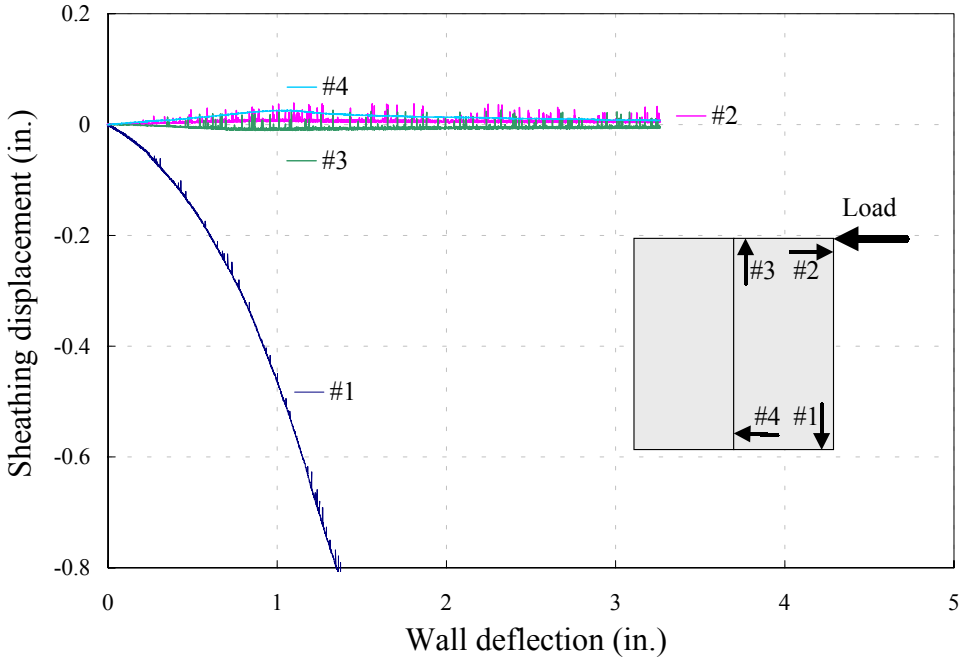


Figure 08NAm1- d. Sheathing displacement.