

Wood-Frame Wall Panels Under Impulsive Loads

Objective

Study light-framed wood frame wall panels under simulated blast with emphasis on connection behavior

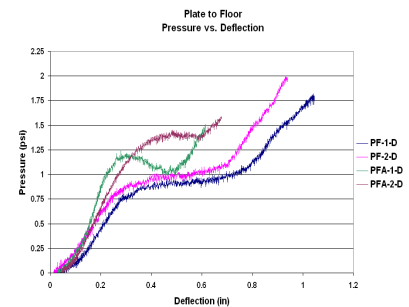
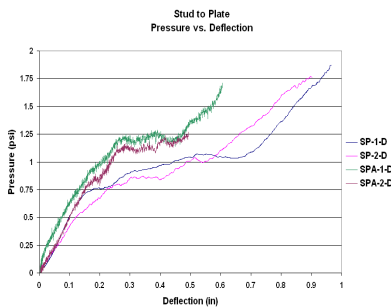
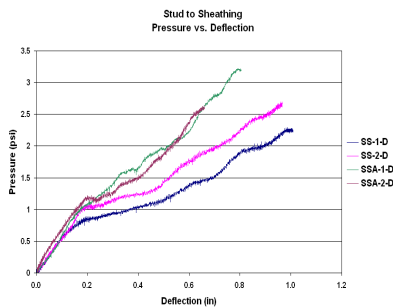


Test Matrix

- Two specimens per test case
- Each case with and w/o adhesive
 - Stud to Sheathing (SS)
 - Stud to Plate (SP)
 - Plate to Floor (PF)
- Studs – 2x6x8 Southern Yellow Pine, No. 2 stud grade
- Top and Bottom Plates – 2x6x8 Southern Yellow Pine, No. 2 stud grade
- Sheathing – 15/32" span rated 5 ply plywood
- Joist Hangers – Top flange joist hangers for 2x6 lumber

Test Approach

Use custom built test rig to rapidly compress air bladders by drop hammer impact to create a uniformly distributed dynamic pressure loading on specimens



Conclusions

- The use of adhesives increased panel stiffness
- Nailed plate to floor connection yielded
- Failure was governed by studs
- Top flange joist hangers provided adequate
- Follow up research will enable innovative blast resistant wood construction