

The results of an experimental study that was conducted to determine the strength of residential, wood floor systems over basements to uniform static load are presented in this report.

A single family residence which was slated for demolition was acquired and load tested. Two load tests were conducted. The first load test was concerned with the strength of the as-built floor system. One half of the floor system was instrumented and loaded to collapse. Failure was experienced as 185.4 psf.

The second load test was concerned with the strength of an expediently upgraded floor system. The remaining half of the floor system was upgraded by placing a studwall in the longitudinal direction halfway between the exterior wall and the girder in each of the two spans. The floor was loaded to 559.3 psf. At this load the test was terminated due to reasons of safety. The floor system did not fail.

Additional tests were conducted in the laboratory on the unfailed portions of the floor system. This consisted of three "simple beam" tests of samples consisting of two joists with flooring attached. The load was uniformly distributed. The loading in each case was accomplished using solid concrete block.

This report includes experimental results, analysis of experimental results and predicted collapse loads using a simplified prediction method.

Probability of people survival estimates are included for two shelter conditions. In the first, the shelter is assumed to consist of the as-built basement with one foot of soil for radiation protection. In the second, the shelter is assumed to consist of the expediently upgraded basement with one foot of soil for radiation protection. The probability of people survival is estimated against blast effects produced by the detonation of a single 1-MT nuclear weapon.