Development and Evaluation of Hollow Concrete Interlocking Block Masonry System

Ying Chih Chen[1] and Rajan Sen[2]

Abstract:

The analogy of springs in series or parallel used for dynamic systems is also applicable for modeling rigidities in shear walls with openings. This paper formally integrates this concept into existing hand calculation methods for analyzing shear walls in low-rise buildings. Such integration permits visualization of the load path as an electrical current flowing through an imaginary "circuit" consisting of springs in series or parallel representing the interaction of rigidities of wall segments in a perforated wall. The application of the analogy is illustrated by numerical examples and accuracy of existing methods assessed against predictions from linear elastic finite element analysis. This indicated closer agreement was achieved if appropriate boundary conditions were used and member proportions consistent with assumptions implicit in simplified analyses.

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[1] Former graduate student, Dept. of Civil and Environmental Engineering, University of South Florida, Tampa, FL
[2] Professor and Jefferson Science Fellow, Dept. of Civil and Environmental Engineering, University of South Florida, Tampa, FL sen@usf.edu