

# Thermal Stresses in Composite Masonry Walls

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## Abstract:

A computational procedure to estimate strains and stresses due to temperature variations in composite masonry walls is developed and presented in this paper. The initial strain approach is utilized in this development to calculate stresses in the collar joints of composite walls due to variations in temperature on the inside and outside wythe faces, using a two-dimensional plane-strain finite element analysis of the wall cross-section. It is shown that substantial additional strains can occur in a composite wall due to variations in temperatures which may yield sufficiently large tensile stresses to require steel reinforcement in the collar joint as well as both wythes.

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