

Design Provisions for Post-Tensioned Masonry Walls Loaded Out-of-Plane

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Abstract:

This paper reviews the expressions for estimating of tendon stress at nominal flexural strength of post-tensioned masonry walls provided by five masonry design codes worldwide. The accuracy of the masonry design provisions used in the United States is investigated with data from 127 finite element analyses and 66 experimental wall tests. A new expression for estimating the tendon stress at nominal flexural strength for posttensioned masonry walls was developed and verified. The proposed formula applies to walls subjected to out-ofplane loads and considers a range of variables including aspect ratio, reinforcement ratio, magnitude of effective prestress, magnitude of external axial load, material properties, tendon restraint conditions, and support conditions.

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