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Ultimate Strength Prediction of Shear Walls with an Aspect Ratio between One and Two

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Abstract : This paper presents an analytical study on the behavior of rectangular reinforced concrete walls with an aspect ratio between one and tow. Several experiments on such walls have been selected to be studied. Database from various experiments were collected and nominal wall strengths have been calculated using formulas, such as those of the ACI (American), NZS (New Zealand), Mexican (NTCC), and Wood equation for shear and strain compatibility analysis for flexure. Subsequently, nominal ultimate wall strengths from the formulas were compared with the ultimate wall strengths from the database. These formulas vary substantially in functional form and do not account for all variables that affect the response of walls. There is substantial scatter in the predicted values of ultimate strength. New semi empirical equation are developed using data from tests of 46 walls with the objective of improving the prediction of ultimate strength of walls with the most possible accuracy and for all failure modes.

Keywords : prediction, ultimate strength, reinforced concrete walls, walls, rectangular walls
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