

# STRENGTH CALCULATION MODEL FOR STANDOFF SCREWS IN COMPOSITE JOISTS

By  
Ubejd Mujagic

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W. Samuel Easterling, Chairman

Thomas M. Murray

Carin Roberts-Wollmann

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W. Samuel Easterling, Chairman  
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(ABSTRACT)

The objective of the research reported herein is to present a comprehensive evaluation of all available experimental data from push-out tests utilizing the ELCO Grade 8 standoff screws. The goal is to develop a strength prediction equation and determine reliability parameters compatible with the Load Factor Resistance Design (LFRD) procedure that would allow the use of this shear connector in design of composite floor systems.

The study considers results from push-out tests using this type of screw reported by Hankins et al. (1994), Alander et al. (1998), Webler et al. (2000), and Mujagic et al. (2000). Further, this study identifies the limitations in earlier approaches aimed at predicting the strength of standoff screws. An improved strength prediction model is developed that considers all applicable limit states and determines maximum strength of a connector. A reliability study was also conducted to derive strength reduction factors to be used in design. Parameters considered in the model include deck type and geometry, screw height, concrete compressive strength, top chord angle yield strength, and stand-off screw rupture strength. Results from strength prediction model were compared with results from composite joist tests.