

INFLUENCE OF CROSS-SECTION SHAPE ON FIRE RESISTANCE OF COMPOSITE CONCRETE-STEEL COLUMNS

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The purpose of this study is to investigate the fire response of centrally loaded composite columns subjected to Standard fire curve according to ISO 834. The variables considered in the study include shape of the cross-section, cross-sectional size and axial load ratio. The analysis have been carried out by nonlinear finite element program for predicting the structural behavior of frame structures exposed to fire, developed by Professor M. Cvetkovska.

The columns are exposed to fire on all four sides and the end conditions of the columns are: fixed at the bottom and freely supported at the end. Four different types of cross-sections are investigated: composite-concrete filled section in which the concrete is hidden, totally encased section, partly encased section and reinforced concrete section. All cross-sections are symmetrical about both axes and reinforced. Dimensions are varied from 30x30, 30x50 to 40x40, and axial load ratio from 0,1 to 0,3.

At the end comparison of results conducted with this computer program with results calculated with other commercial software package is discussed.