

## **FIRE RESISTANCE OF REINFORCED CONCRETE CONTINUOUS BEAMS**

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In this work we will define the fire resistance of reinforced concrete continuous beams that are exposed to a standard fire ISO 834, and depending on the support conditions (structurally undefined), the dimensions of the cross section, the intensity of the initial fire load, percent of reinforcement, thickness of the protection layer and the fire scenario – the position of the elements in terms of the fire scenario. Also, the redistribution of the stress and deformation in the cross section of the constructive elements, as well as along their length will be defined, and in relation to the time progression of the temperature field.

For the above mentioned purpose, the computer program FIRE [Cvetkovska,2002] written in the program language FORTRAN 90, will be used. The computer program FIRE is comprised of two modules out of which one is in relation for non-linear structural analysis FIRE-S (Fire Response Structural analysis), while for the calculation of the problem of the non-linear and non-stationary transfer of the heat, based on the approximation of the minimized integral of the finite element method, the computer module FIRE-T (Fire Response thermal analysis) is used.

The problem will be analysed as a two dimensional heat transfer. In this case – two scenarios are analysed. In the first case, for the entire duration of the fire, the bottom side of the beam is exposed to the fire, and in the latter case, the top side of the beam is exposed to fire. This is done in order to see the influence of the fire scenario on the fire resistance of reinforced concrete beams.