Computer Models
For
Fire and Smoke

Model Name:	RCCON
Version:	Version 1
Classification:	Structural Finite Difference
Very Short Description:	Model for the calculation of the fire resistance of loaded reinforced concrete columns with rectangular cross section.
Modeler(s), Organization(s):	T.T. Lie and R.J. Irwin, National Fire Laboratory, Institute for Research in Construction, National Research Council of Canada.
User's Guide:	-----
Technical References:	Lie, T.T., and Irwin, R.J., "Evaluation of the Fire Resistance of Reinforced Concrete Columns with Rectangular Cross Section," Internal Report No. 601, Institute for Research in Construction, National Research Council of Canada, 1990. Lie, T.T and Irwin, R.J. 1993. Method to Calculate the Fire Resistance of Reinforced Concrete Columns with Rectangular Cross Section. ACI Structural Journal (90) 1, 52-60. Kodur, V.R., Lie, T.T., "A computer program to calculate the fire resistance of rectangular reinforced concrete columns," Third Canadian Conference on Computing in Civil and Building Engineering (Montreal, Quebec, 1996), pp. 11-20, 1996
Validation References:	-----
Availability:	Not Available
Price:	N/A

Necessary Hardware: -----

Computer Language: FORTRAN 77

Size: 100 kB

Contact Information: Venkatesh Kodur, Ph.D., P.Eng.
Research Officer
Institute for Research in Construction
National Research Council of Canada
Bldg. M59, 1500 Montreal Road
Ottawa, ON, K1A 0R6
Canada

Tel: (613) 993-9729
Fax: (613) 954-0483
E-Mail: venkatesh.kodur@nrc.ca

Detailed Description:

Input:

Dimensions of concrete section, bar diameter, number of bars, cover to the steel, column effective length, strength of concrete and steel and eccentricity of the load.

Output:

Strength of column as function of time during exposure to fire.

Assumptions:

RCCON calculates, using a finite difference method, the temperature history in the column and, using a finite element method, the strength of the column during exposure to the North American standard fire (any other fire can be substituted). The fire resistance is determined by calculating the time at which the column can no longer support the applied load.