

## **Software for structural analysis, designs and drafting from SERC, Madras**

Structural Engineering Research Centre (SERC), Madras offers several general purpose software packages for analysis and design of structures. The features of these packages are briefly outlined below.

### ***INFRAN (Interactive FRame ANalysis)***

This software package allows the user to interactively analyse two-dimensional rigid-jointed plane frame systems under different static load conditions. It performs analysis for nodal forces and moments in addition to member loads in the form of concentrated, uniformly distributed and trapezoidal load conditions. Interactive sessions are possible to change member properties of co-ordinates of the nodes.

### ***INTRAN (Interactive TRuss ANalysis)***

This package allows the user to interactively analyse two and three dimensional pin-jointed truss system for static nodal load conditions. Interactive sessions are possible to change boundary conditions, connectivity, member properties and co-ordinates of the nodes.

### ***INGRID (Interactive GRID analysis)***

This software package allows the user to interactively analyse rigid-jointed grid system subjected to lateral loads. Interactive sessions are possible to change connectivity, member properties and co-ordinates of the nodes.

### ***INSPACE (Interactive SPACE frame analysis)***

This software package allows the user to interactively analyse three-dimensional rigid-jointed space frame systems under static load conditions performing analysis for nodal forces and moments in addition to member loads in the form of concentrated, uniformly distributed and trapezoidal load conditions.

### ***INCYSHELL (INteractive CYlindrical SHELL analysis)***

This software package helps to analyse circular shell roofs (barrel shells) with or without edge beams for given uniformly distributed loads based on the procedure developed by Gibson.

### ***INFOLD (INteractive FOLDeD plate analysis)***

This software package aids the analysis of simply supported folded plate structures under uniformly distributed load, line loads and moments using the finite strip method.

### ***RC SLABS (G) (Reinforced Concrete SLABS design)***

This package allows the user to interactively design RC slabs with different boundary conditions. The design by limit-state approach follows the provisions of IS 456 : 2000. In addition to the design, it also generates the reinforcement details on the screen which can be plotted on a plotter/dot matrix printer. Interactive session is available to change the design variables.

### ***RC SLABS***

It is a non-graphic version of *RC SLABS (G)*.

### ***RC FLAT SLABS (G) (Reinforced Concrete FLAT SLABS design)***

The program allows the user to interactively design RC flat slabs following the design provisions of IS 456 : 2000. In addition to the design, it generates the reinforcement details on the screen which can be plotted on a plotter/dot matrix printer.

### ***RC FLAT SLABS***

It is a non-graphic version of *RC FLAT SLABS (G)*.

### ***RC BEAMS (G) (Reinforced Concrete BEAMS design)***

This software allows the user to interactively design reinforced concrete beams of rectangular, T and L shape following the design provisions of limit-state approach of IS 456 : 2000. In addition it also generates the reinforcement details which can be displayed on the screen and subsequently plotted. Interactive session is available to change the design variables

### ***RC BEAMS***

It is a non-graphic version of *RC BEAMS (G)*.

### ***RC COLUMNS (G) (Reinforced Concrete COLUMNS design)***

This software enables the user to interactively design reinforced columns following the design provisions of IS 456 : 2000. Design can be carried out for columns of square and rectangular sections with axial load and uniaxial or biaxial moments. In addition, it also generates the reinforcement details on the screen which can be plotted on a plotter/dot matrix printer. Interactive session is available to change the design variables.

### ***RC FOOTINGS (G) (Reinforced Concrete FOOTINGS design)***

The program allows the user to interactively design RC Isolated footings as per the design provisions by limit state approach of IS 456 : 2000. In addition to design, this generates the reinforcement details on the screen which can be plotted on a plotter of matrix printer.

### ***RC FOOTINGS***

It is a non-graphic version of *RC FOOTINGS (G)*.

### **RC COMBINED FOOTINGS (G) (Reinforced Concrete COMBINED FOOTINGS design)**

The program package allows the user to interactively design RC combined footing as per the design provisions of IS 456 : 2000. It generates the reinforcement details on the screen which can be plotted on a plotter/dot matrix printer.

### **RC COMBINED FOOTINGS**

It is a non-graphic version of RC COMBINED FOOTINGS (G).

### **RC STRIP FOOTINGS (Reinforced Concrete STRIP/Continuous Footings design)**

The program package allows the user to interactively design RC Strip footings. Both axial load and uniaxial/biaxial column moments can be considered for analy-

sis. The design by limit-state approach follows the provisions of IS 456 : 2000.

### **WINFRAN (WINdows based FFrame ANalysis system)**

This package helps the user to interactively generate the geometry of two-dimensional rigid-jointed plane frame systems and carry out their analysis under different load conditions. This has been developed in C,C++ and the graphics is supported by MS WINDOWS. The package is leased as load module and can be installed in IBM PC AT 386 and more advanced Intel-based systems, with EGA/VGA/SVGA monitor and mouse.

### **RC INTZE TANK (Design of RC INTZE water tank)**

This package helps the user to interactively design RC Intze type water tanks following the provisions of relevant IS codes of

practice for concrete structure for storage of liquids. The program also generates the reinforcement details which can be viewed on the screen or can be plotted on a plotter/ dot matrix printer

### **INDROOS (analysis of INDustrial ROOF Systems)**

This package helps the user to interactively analyse industrial trussed roof systems. The roof tusses such as King Post, Howe, Pratt, Fan, North light and Fink are available in the program library. The analysis is menu driven with graphic support.

For more details, please contact :

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