

Sectional Properties of Reinforced Concrete Sections

Features of Inertia-RC

Inertia-RC is a tool for the analysis and design of Reinforced Concrete Sections in the elastic range. It is an Excel spreadsheet template for calculating the uncracked and cracked section properties.

Features

- ◆ Area of concrete occupied by steel is deducted in the calculation of areas, centroid and moment of inertia.
- ◆ The role of each section part in both the uncracked and the cracked section is shown corresponding to 0.001 compressive strain at top edge of the section. Analysis output shows the strain, stress, force and moment values resisted by each section part.
- ◆ Three sets of properties are calculated: section being Uncracked-Unreinforced, Uncracked-Transformed and Cracked-Transformed.
- ◆ The section properties calculated are Area, Location of Neutral axis (centroid) and Moment of Inertia.
- ◆ Any consistent units can be used e.g. kN & m, lbf & in, etc
- ◆ Self weight of rebar per unit volume is calculated and shown in the output.
- ◆ An interactive help table is included to calculate areas of rebar for various diameters, numbers and spacing.
- ◆ A static diagram is included to show various dimensions used in the Inertia-RC analysis.
- ◆ An easy to use database facility is included within the Inertia-RC file. Data for more than 30,000 different sections can be stored, recalled and edited in a single Excel file.
- ◆ The Data is kept in the worksheet STORE that is visible to the user. Using the spreadsheet features of Excel, data in this file can be generated for new sections and or modified for existing ones.
- ◆ The template has virtually no user interface. The printed Output matches the Screen Display. Knowing how to use Excel and the ability to verify results as a designer is sufficient for using Inertia-RC.
- ◆ Shaded cells in the spreadsheet signify User-Input and un-shaded cells signify Spreadsheet-Results. This permits easy checking at a glance by the users and the checkers of the Inertia-RC output.