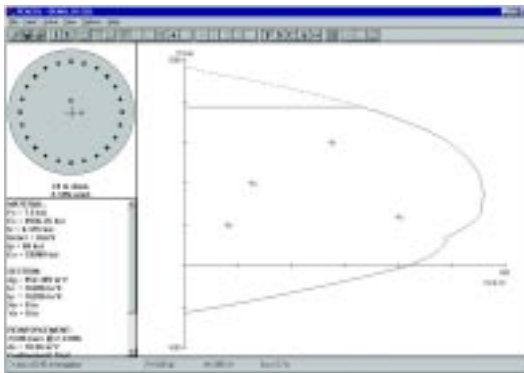


PCA column

For the design and investigation of reinforced concrete column sections



PCA Column is software for the design and investigation of reinforced concrete column sections. The column section can be rectangular or round with any reinforcement layout or pattern, and slenderness effects can be considered.

Pull-down menus, dialog boxes, and push-button icons simplify data input and clearly present the output.

Options

- Run option: Design or investigation
- System of units: English or metric (SI)
- Design code: ACI 318-95 or CSA-A23.3-94
- Run axis: About X, About Y, or Biaxial
- Column type: Slender or non-slender

Section geometry

- Rectangular, circular, or irregular (requires PCA Column+ module)

Material properties

Concrete

- Compressive strength
- Modulus of elasticity
- Maximum allowable compressive strength
- Rectangular stress block depth factor
- Ultimate strain in extreme compression fiber

Steel

- Yield strength
- Modulus of elasticity
- Rupture strain

System Requirements

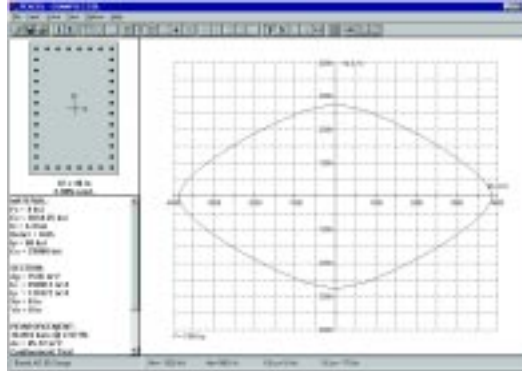
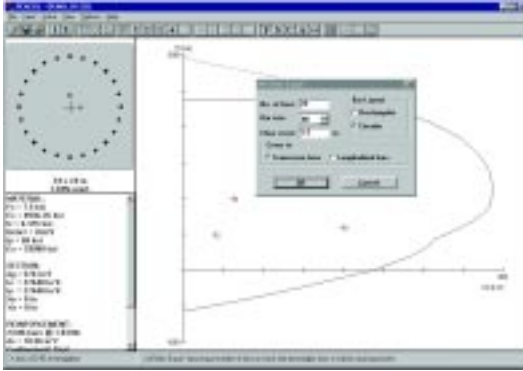
- Microsoft Windows
- 1 MB of free hard-disk space

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Slenderness

- Column height
- Braced or unbraced column
- Section and material properties of framing members to compute effective length factors
- Option to input effective length factors (k_b and/or k_s)
- Cracked-section coefficients for beams and columns

Loads

- Factored loads and moments
- Service loads and moments—load factors and combinations may be modified
- Range of axial loads—moment capacities are computed
- Control points—key capacity points are computed

Rebar database

- ASTM A615, ASTM A615M, CSA G30.18, prEN 10080, or user-defined

Views

PCA Column's graphical interface is powerful and yet simple and easy to use. The following are some of its main features:

- PCA Column displays a scaled cross-section of the column along with other input data such as section dimensions, material properties, reinforcement information and slenderness data (if any).
- For uniaxial runs, PCA Column displays the P-M interaction diagram of the section; all input loads are shown relative to the displayed diagram.
- For biaxial runs, PCA Column computes the three-dimensional failure surface of the column section; you can display the P-M interaction diagram at any M_x - M_y ratio or the M_x - M_y contour plot at any axial load value; all input loads will be shown relative to the displayed diagram or contour.

- While viewing a diagram or contour, you can get the axial load, bending moment, and corresponding eccentricity values of any point by simply moving the cursor over that point
- Superimpose diagrams or contours of different columns for comparison

Output

- Graphical printout of the column interaction diagram or contour plot, along with a scaled cross-section of the column and its reinforcement and other relevant information
- Text output file that can be viewed and printed, including: echo of input data, slenderness calculations and moment magnification factors (if any), and input loads with corresponding capacities

General Features

- Online help
- Checking of data as they are input
- Ability to flip or rotate the section (requires PCA Column+)
- Ability to import loads, geometry, or reinforcement data from a text file
- Input dialog boxes have clear labels with corresponding units displayed at all times
- Ability to save settings to be used in future input sessions
- A tool bar with push buttons provided for quick access to the commands you use most

Program Capacity

- 500 reinforcing bars
- 50 points defining the section and 50 points defining an opening within the section (requires PCA Column+)
- 320 factored load entries or 10 service load entries
- 3 load cases and up to 8 load combinations
- 16 bars in a user-defined rebar database

Section reinforcement

Pattern

- Equally-spaced bars - rectangular or circular layout
- Rectangular layout with equal number of bars on each side
- Rectangular layout with a different number of bars on each side
- Irregular pattern

Confinement

- Tied, spiral, or other (strength reduction factors may be modified)

Other parameters

- Clear cover to bars or ties
- Bar spacing (design option)
- Minimum and maximum reinforcement ratios (design option)
- Design-to-required ratio (design option)

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