# SAFI™ *Reinforced Concrete*

Integrated with SAFI™ 3D Software, SAFI™ Reinforced Concrete allows to verify and design the concrete members of any structure. The unique graphical user interface of SAFI™ allows to create, analyze and design complex models.

The Concrete Calculator™ and the Foundation Calculator™ are included and they allow to analyze or design concrete elements and footings.

Concrete slab of any shape can be analyzed using finite elements, the results of the iso-stresses and forces and moment contours are displayed in colors. The slabs can be reinforced in an iterative process using the results of the finite element analysis and the Concrete Calculator™ to reinforce the concrete critical sections for one way and two ways slabs.
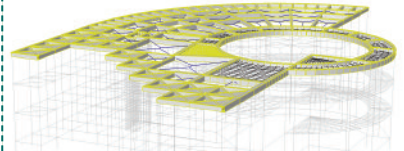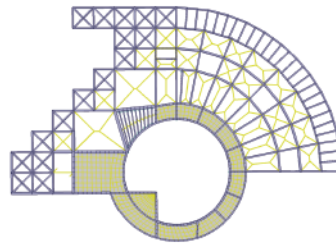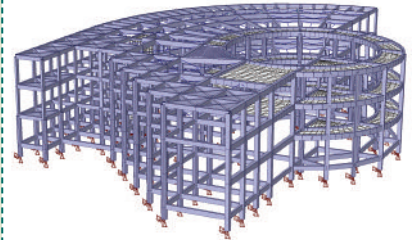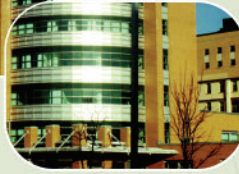
Technical *Specifications*

- State of the art technology built around the concept of physical members that allows to accurately design the reinforcement of continuous members such as beams and columns.

- The program can design a whole or a part of the structure.

- It supports the American ACI-318 code, the Canadian CSA-A23.3 and CSA-S6 codes, the Egyptian code ECCS 203.

- Libraries for standard American, Canadian or Egyptian reinforcement bars.

- It also allows to calculate the resistance of the elements once the reinforcement is known, which allows to improve the design of a structure or to evaluate the resistance of an existing one.

- Reinforcement bars and stirrups, applied loads, resistance curves and interaction diagrams are displayed graphically.
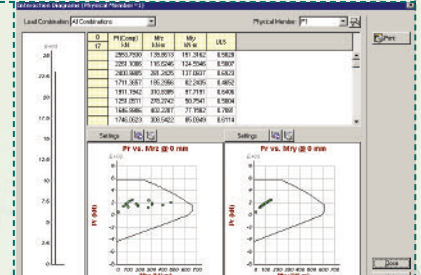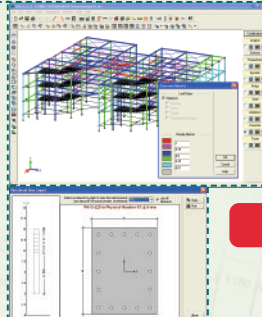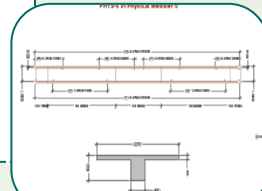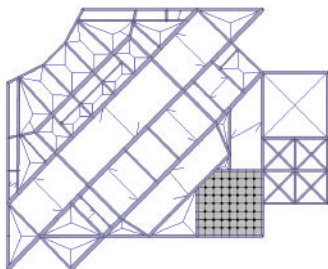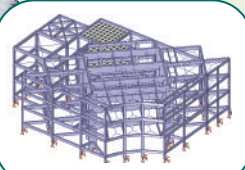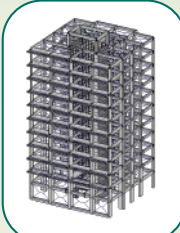
Potential users : *Engineers • Technicians and estimators • Architects • Infrastructures specialists Construction • Public works and municipalities • Governmental institutions • Academic institutions*
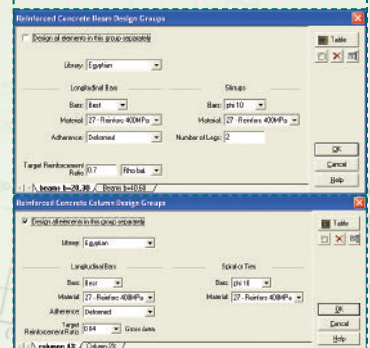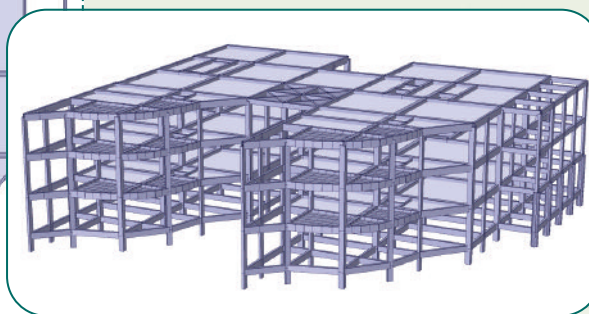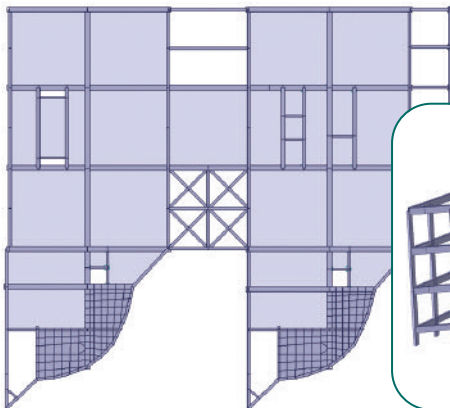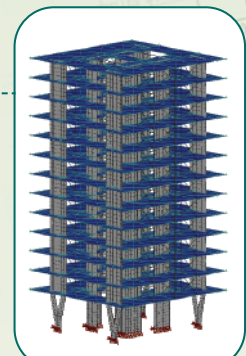
Design and Verification *Features*

- Allows design and verification of concrete members subjected to a linear, P-Delta, non-linear, seismic, dynamic or moving load analysis.

- Second order effects may be accounted for according to the simplified method of the design codes. Effects of lateral drift and internal member deformations may be considered together or independently.
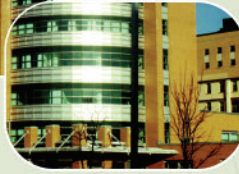
- Allows to design continuous members.

- Design and verification of bending, shear, torsion and combined axial forces and bending.

- Calculates all required reinforcement and development lengths.

- Calculated reinforcement can be further edited and additional resistance verification calculations can be performed on the whole or selected parts of the structure. This cyclic design method allows to closely match practical user requirements without the need of tedious hand calculations.

- The program can design longitudinal reinforcement, stirrups and column rein forcement for common concrete section shapes.
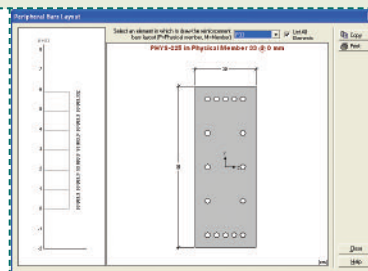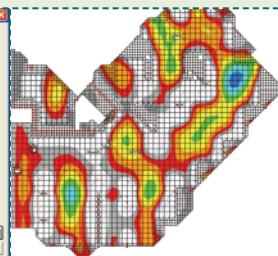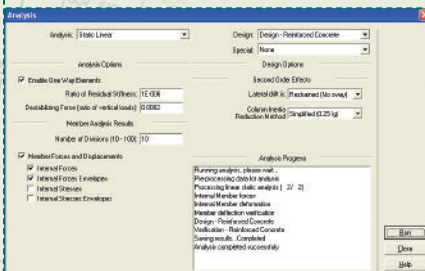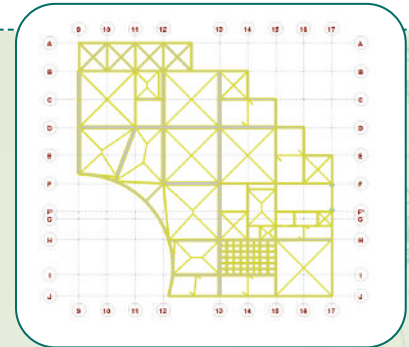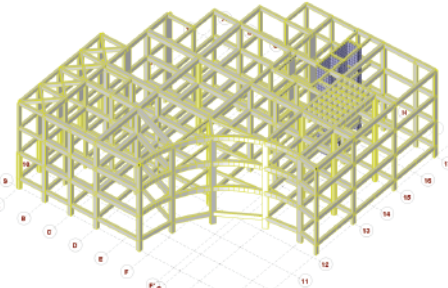
Design and Verification *Features*

- Reinforcement layouts, resistance curves and interaction diagrams are displayed graphically.

- The program considers longitudinal reinforcement and bent bars for bending resistance.

- The program considers straight or inclined stirrups and bent bars for shear and torsion resistance.

- The program considers column reinforcement for combined axial and bending loads.

Reports

- Results can be visualized either graphically or numerically.

- Input data and results may be printed for the whole structure or partial structures using a graphical selection or a range of elements.

- Customized list of input data and results to be printed.

- Reports are available in several formats including SAFI reports, Microsoft Excel worksheets, Microsoft Access databases and ASCII text files.

- All graphics can be printed or copied to the clipboard for use in external programs.
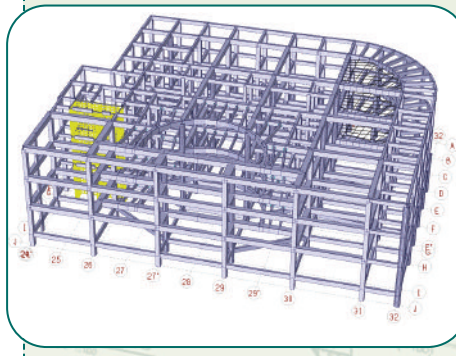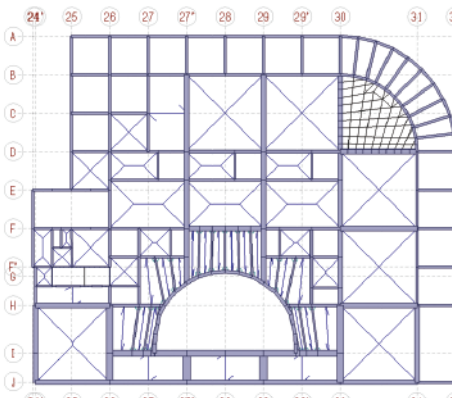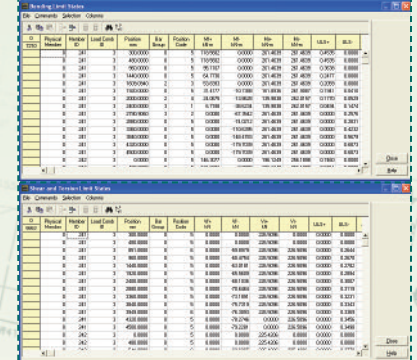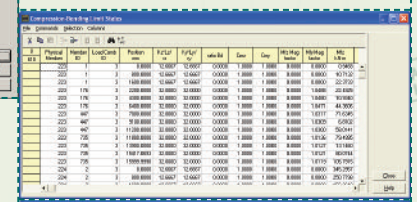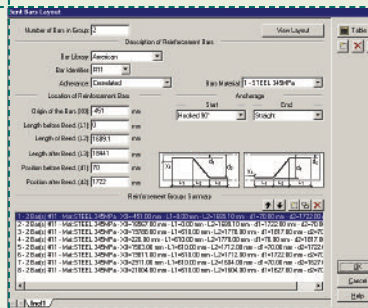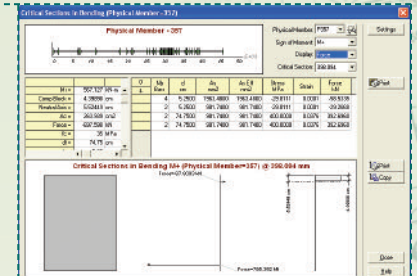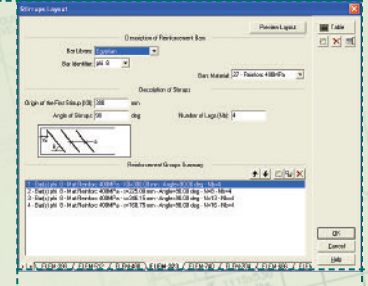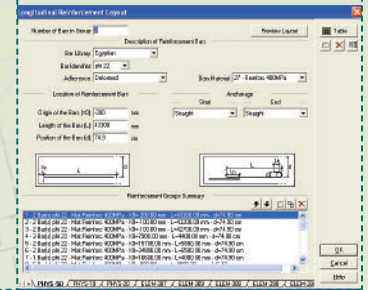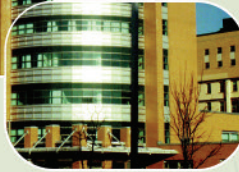
Concrete Calculator™

The Concrete Calculator™ is an easy and productive tool for the analysis and design of reinforced concrete cross sections. It allows to determine the resistance or the reinforcement of critical sections in mere seconds.

- The Concrete Calculator™ is to be used as a stand-alone application or in combination with SAFI™ 3D Concrete program.

- It supports the American ACI-318 code, the Canadian CSA-A23.3 and CSA S6 codes, the Egyptian code ECCS 203.

- The Concrete Calculator™ is made to provide quick answers to common problems without the overhead of a full structural design program. It is a very handy and productive tool associated with SAFI™ Concrete program.
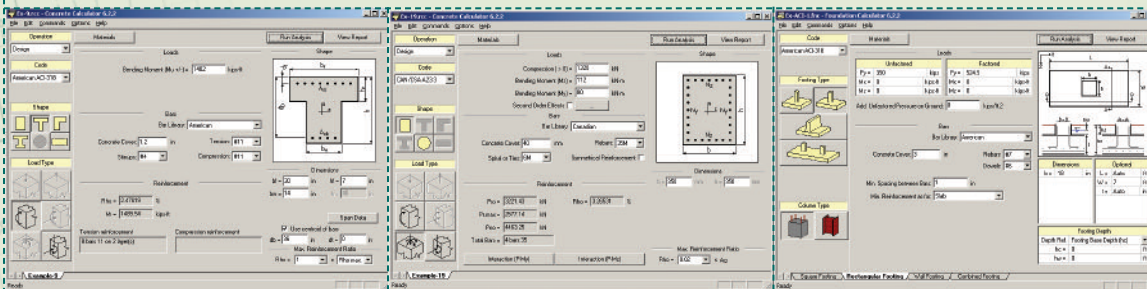
Footings Calculator™

The Footings Calculator™ is an easy and productive tool for the design of square, rectangular, strip and combined footings. It allows to determine the required reinforcement of a footing in mere seconds.

- The Footings Calculator™ is used as a stand-alone application or in combination with the SAFI™ Concrete program.

- It supports the American ACI-318 code, the Canadian CSA A23.3 code, the Egyptian code ECCS 203.
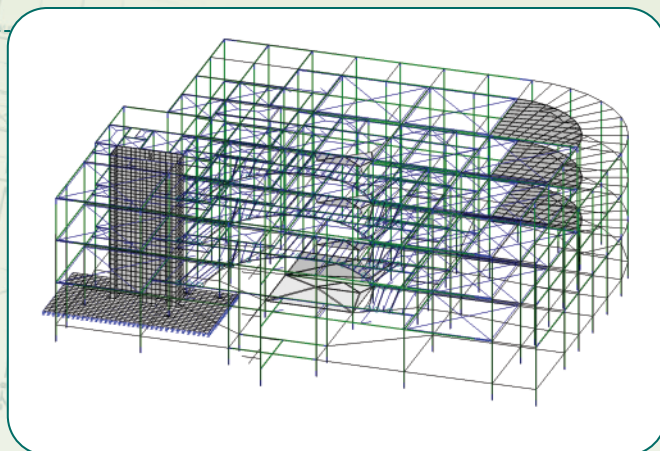
SAFI, *simply reliable* since 1986