

CivilFEM performs the best customization of the well-known Finite Element Program ANSYS. The combination of both programs, totally integrated, provides to the construction and civil engineering field with the possibility of applying the analysis with finite element method to a wide range of problems according to the requirements of this industry.

Using the same windows graphic user interface and sharing input data and results, makes it very easy for the user to apply this solution for solving difficult civil engineering problems. The ability to generate Finite Element models of any complex three-dimensional structure with non-linear behavior means a new and efficient approach to run advanced analysis in your PC.

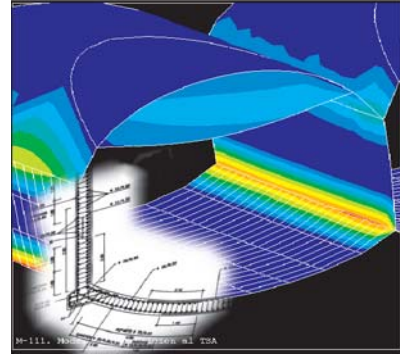
This bundle product allows to perform earthquake analysis, true non-linear buckling, checking and design according to reinforced concrete and structural steel standards, soil mechanics, dams, etc., reduces dramatically the time needed for designing and analyzing, as well as increasing the quality of the projects and efficiency if new construction process.

Libraries of materials, hot-rolled structural steel sections, etc. are included in this cutting-edge program to make easier the model generation. All material properties in CivilFEM are time dependent and allow the definition of true stress-strain diagrams. The user can create and save his/her own materials and sections into the corresponding CivilFEM libraries.

A very powerful and smart load combination module has been also incorporated for typical civil engineering results combinations. Furthermore, automatic modal spectrum for seismic analysis are supported.

The more general features are included in the module named CivilFEM INTRO. This software is distributed in its different versions: commercial and university, depending on the use of the product. Specific advanced modules could be optionally added.

CivilFEM is supplied together with ANSYS/Structural OPT. I, II and III as a totally integrated combined product. In addition it works with any other higher product of the ANSYS family as an add-on product.



CivilFEM INTRO performance simulation

1. GENERAL FEATURES

- Fully Integrated inside ANSYS Program
- Free Units System Selection

2. CIVIL MATERIAL LIBRARY

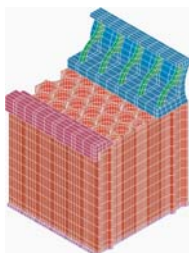
- Concrete Material Library
- Steel Material Library
- Reinforced Steel Material Library
- Time dependent material properties
- User defined material library

3. CIVIL SECTION LIBRARY

- Library of European Hot Rolled Shapes
- Library of American Hot Rolled Shapes
- Typical Steel Sections by Dimensions
- Generic Steel Sections by Plates
- Typical Concrete Sections by Dimensions
- Generic Mixed Material Concrete Sections
- Section Definition from 2D/3D ANSYS Models
- Discretization in points and tessellas inside the beam cross section
- User defined section library
- Section Merge and Composition

4. USER FRIENDLY BEAMS & SHELLS

- List & Plot of Section Geometry and Properties
- Automatic Load of Forces & Moments
- Plot and List of Beam & Shell Results
- Plot of Stresses and Strains Inside Beam Cross Sections



5. SKILLED COMBINATIONS

- Smart Selection of Loads and Coefficients
- Code Combination Logic
- Mobil Loads Combination
- Concomitance at Element Level
- Concomitance at Global Structural Level
- Worst Load Arrangements and Coefficients

6. STEEL CODE CHECKING

- Eurocode No 3 (European)
- EA (Spanish)
- AISC-LRFD (USA)
- British Standard 5950
- Others (*)

7. CONCRETE CODE CHECKING & DESIGN

- Eurocode No 2 (European)
- ACI 318 (American)
- EHE (Spanish)
- CEB-FIP (Model Code)
- British Standard 8110
- Australian Standard 3600
- Others (*)

8. SHELL REINFORCEMENT

- Wood Armer Reinforcement (Flexure)
- CEB-FIP (Flexure+Shear+Membrane Forces)

9. INTEGRATION WITH FLAC3D

- Mesh generation
- Postprocessing of structural elements.results.

PLATFORMS

Intel workstations (Windows NT 4.0, 98, 2000)

SPECIFIC MODULES

Non linear concrete module
 Geotechnical module
 Prestressed concrete module (*)
 Bridges module (*)
 Dams module (*)



In addition to all the features of CivilFEM INTRO, the software has some specific advanced capabilities for more civil engineering needs included into specific modules that can be added to CivilFEM INTRO such as the Geotechnical Module.

The geotechnical module was created with the purpose of becoming a powerful tool to allow civil engineers to deal easily with most typical geotechnical problems and make user friendly the advanced features of ANSYS and CivilFEM INTRO in this field.

With the aim of designing a compact program that allows the integration of a wide range of tools into it, CivilFEM has been provided with a geotechnical database which includes important characteristics such as a library of soil and rock properties, the use of correlations among different geotechnical parameters, a very common practice in Geotechnics, and the possibility of creating and adding user material libraries and correlations into the program.

With the geotechnical module, it is possible to carry out slope stability analysis applying either the classical failure methods, such as Fellenius, Bishop and Janbu or the results of a Finite Element Method calculation. Any kind of action can be introduced in the analysis such as anchors, seismic action, pore water pressures and so on.

An automatic generation of layered soils allows to define soils that are modeled by means of finite elements, the calculation of the soil foundation stiffness (ballast module) for any kind of foundation geometry are also examples of the useful and easy to use capabilities of this module.

The generation and calculation by FEM models of sheet piles (retaining walls) is another feature included in this module. It allows to carry out a non linear and evolutive calculation of the construction process (excavation or back fill) of this kind of structures.

A seepage analysis feature could be added allowing the calculation of the saturation line and solving the seepage problem through a porous media. The water pressure can be taken into account in the others module capabilities.

Geotechnical Module Features

1. SLOPE STABILITY ANALYSIS

- Classic Failure Methods
 - Fellenius
 - Bishop
 - Janbu
 - Morgensten Price (*)
- F.E.M. results

2. SOILS AND ROCKS LIBRARY

- Geotechnical properties and correlations
- User library

3. GENERATION OF LAYERED SOILS

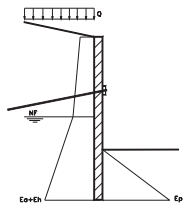
- Automatic generation of layered soils model and properties.

4. HOEK & BROWN FAILURE CRITERIA

- Behavior of rock following Hoek&Brown criteria

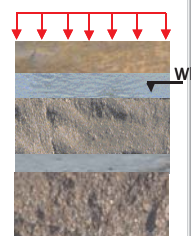
5. CALCULATION OF SHEET PILES

- Non linear and evolutive analysis
- One or two sheet piles can be analyzed simultaneously



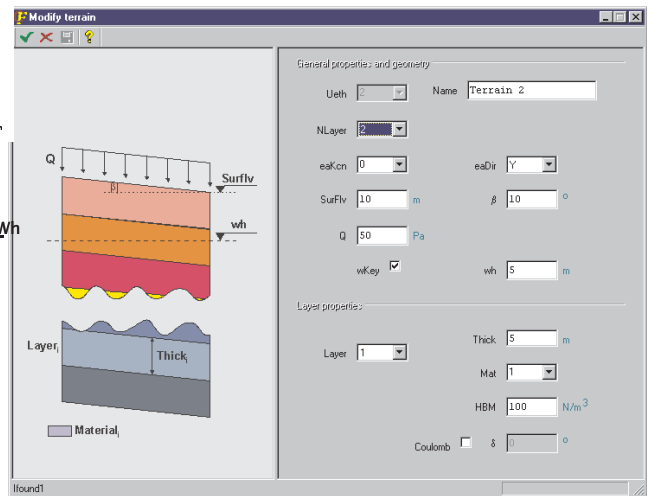
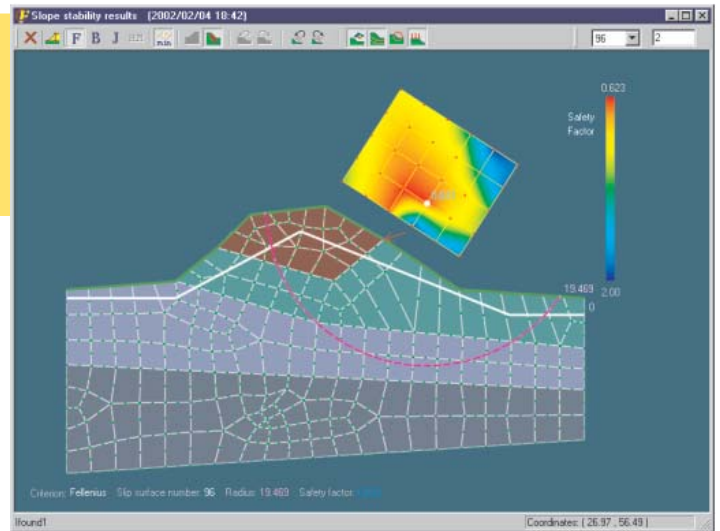
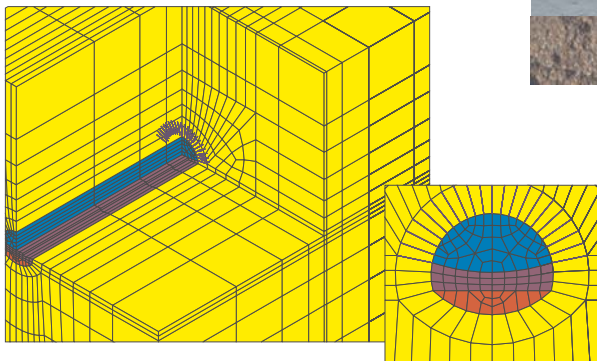
6. SEEPAGE ANALYSIS

- Obtain the saturation line and water pressure.



7. SOIL FOUNDATION STIFFNESS

- Calculation of precise, average, maximum and minimum values



(*) Please for further information and available capabilities contact your local CivilFEM Support Distributor

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