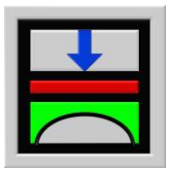
Part B

New features and enhancements in the program ELPLA



Determining
contact pressures, settlements, moments
and shear forces of slab foundations by the
method of finite elements

Version 9.2

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1 Preface

The program ELPLA is a part of the program group GEOTEC. The original program ELPLA 4.0 was developed first under the operating system MS DOS and then it was new revised for the operating system MS Windows 95 in order to use the possibilities of the user interface offered in it. The program runs also under Windows XP/ Vista/ 7/ 8.

ELPLA has a significant enhancement. The new features and enhancements are the result of feedback from users over the last years. The major enhancement in Version 9.0 is the ability to carry out a consolidation analysis beside elastic settlement analysis using the different calculation methods that are available in ELPLA. The program ELPLA also uses different types of finite elements, allowing the user to analyze any irregular shape of slabs with arc boundaries. Many improvements have been carried out in the generation of the flexibility matrix to allow the user solving large size problems faster.

The most important enhancements in ELPLA of versions 8.0 and 9.0 are explained in the next paragraphs.

2 Enhancements in version ELPLA 9.0

2.1 Design for punching

It is possible to design the slab floor or raft foundation for punching due to concentrated loads and reactions from columns, piles or supports. The design for punching is carried out according to 4 different codes: ACI, DIN 1054, EC2 and ECP.

2.2 Soil models

Now both layered soil model and isotropic elastic half-space soil model are available for all calculation methods. The isotropic elastic half-space soil model is added for the following methods:

Method 4: Modification of Variable Modulus of Subgrade Reaction
Method 6: Modulus of Compressibility (Iteration)
Method 8: Modulus of Compressibility for rigid raft, Figure B-1
Method 9: Modulus of Compressibility for flexible foundation

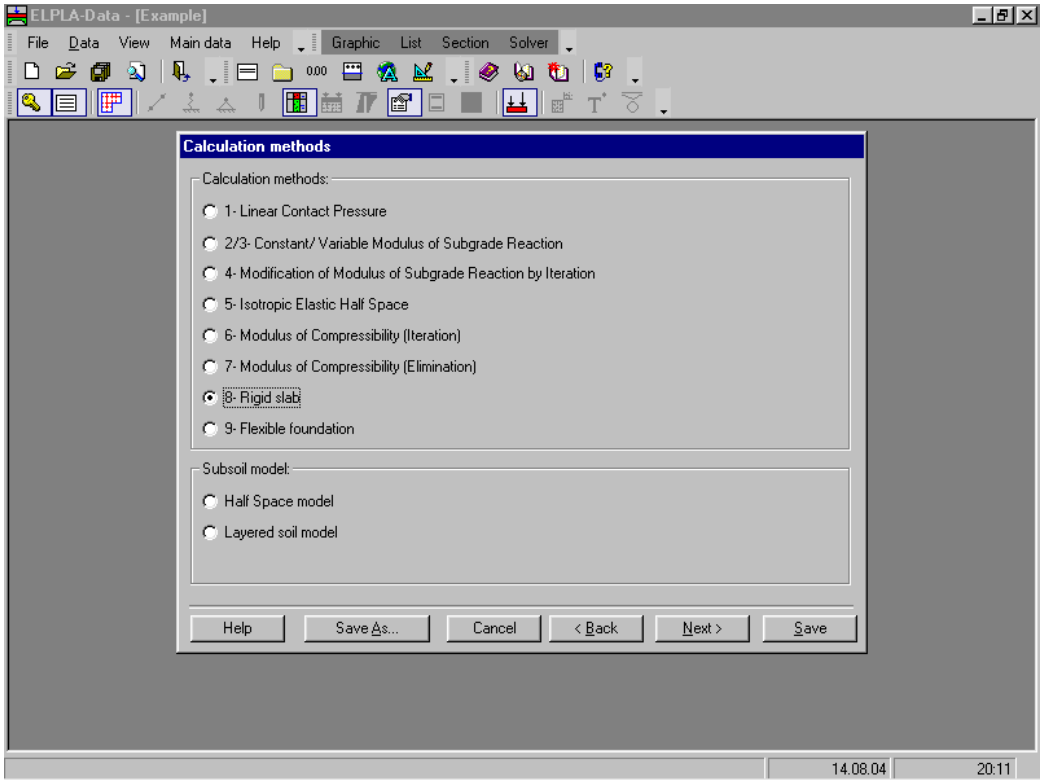


Figure B-1 Menu "Calculation method"

2.3 Bearing capacity factors

The bearing capacity factors used to determine the ultimate bearing capacity can optionally be defined according to different codes and authors. These factors are required to carry out the nonlinear analysis of the soil. The bearing capacity factors are defined according to Figure B-2:

- German Standard DIN 1054
- Euro Code EC 7
- Egyptian code ECP
- Terzaghi
- Meyerhof

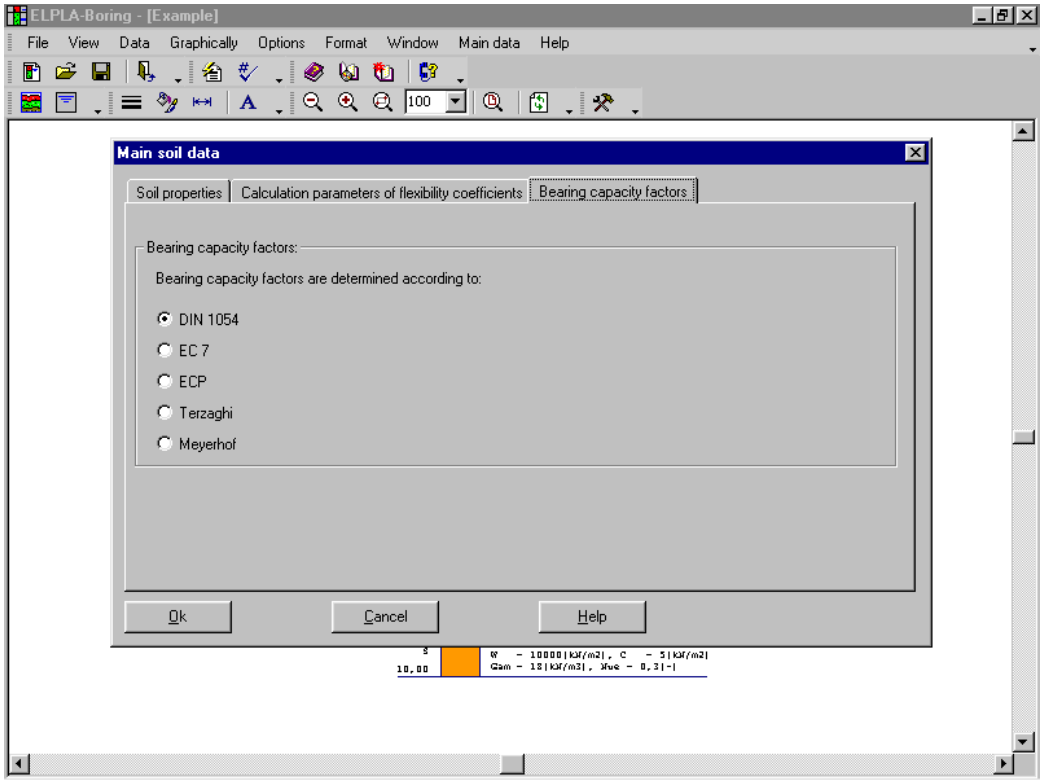


Figure B-2 Menu "Bearing capacity factors"

2.4 Flexibility coefficients for interior nodes

For rigid and elastic rafts it is convenient to determine the flexibility coefficient of interior node at the characteristic point of the loaded area on that node. While for flexible foundation it is real to determine the flexibility coefficient of interior node at that node.

Now it is possible to determine the flexibility coefficient of the interior node due to a uniform load at that node, Figure B-3:

- at the characteristic point of the loaded area, where rigid settlement is equal to flexible settlement
- at the midpoint of the loaded area, where maximum settlement occurs
- at the interior node on the loaded area

2.5 Flexibility coefficients for exterior nodes

Earlier versions of ELPLA determine flexibility coefficients for both interior and exterior nodes by assuming uniform loaded areas on these nodes. This assumption needs to use the principle of superposition for determining the flexibility coefficients. Now it is possible, optionally to convert the loaded areas on exterior nodes to point loads (Figure B-3). By this way the program doesn't need to use the principle of superposition in the analysis, making it much faster than the old analysis. The new way of analysis is consequently faster and more efficient for problems that contain a large finite element mesh.

2.6 Limit distance

If the distance between two nodes is too large, the settlement of a node due to a load on the other will be small enough to be neglected. To reduce the time required for determining the flexibility coefficients for great rafts, a limit distance between node i and j for determining the flexibility coefficient c(i, j) may be defined (Figure B-3).

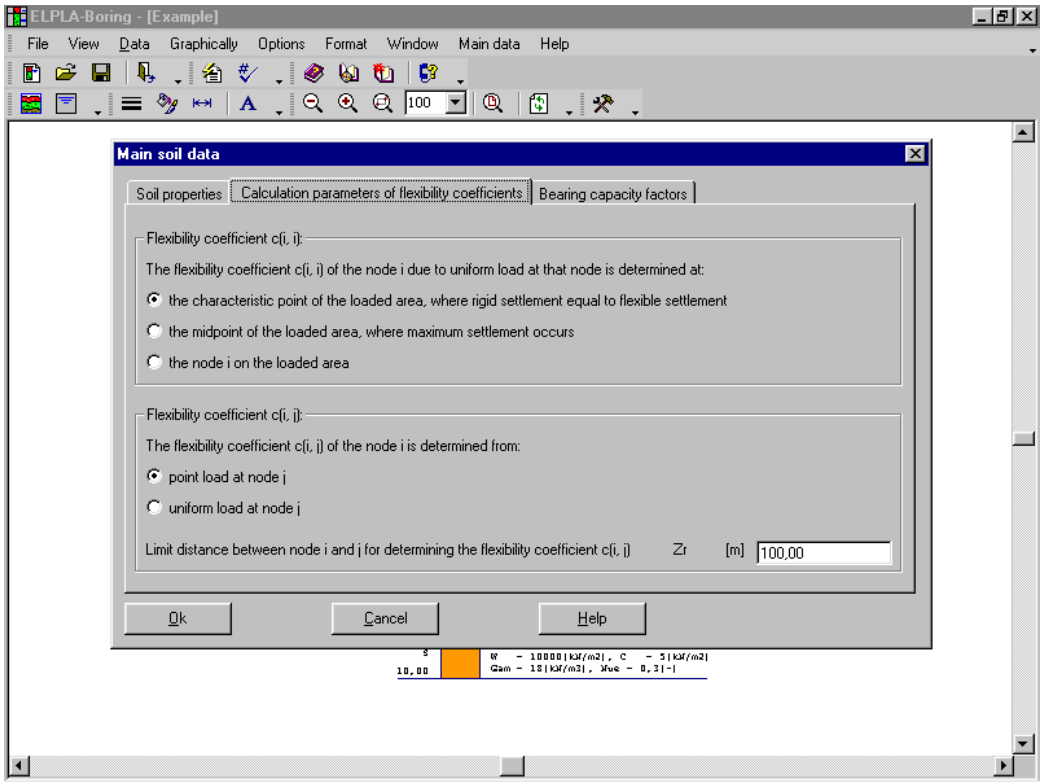


Figure B-3 Menu "Flexibility coefficients"

2.7 Soil properties

Elastic settlement and consolidation settlement can be determined using their actual properties, where the soil properties of the individual layers are defined by:

- Modulus of Compressibility Es (1/mv)
- Modulus of Elasticity E
- Compression Index Cc

This option enables ELPLA to analyze rafts on consolidated clay deposits by the different calculation methods that are available in ELPLA (Figure B-4). Also the user doesn't need to convert a soil parameter to another. When defining soil properties by the Modulus of Elasticity E, the *Poisson*'s ratio ν_s can be different for every layer.

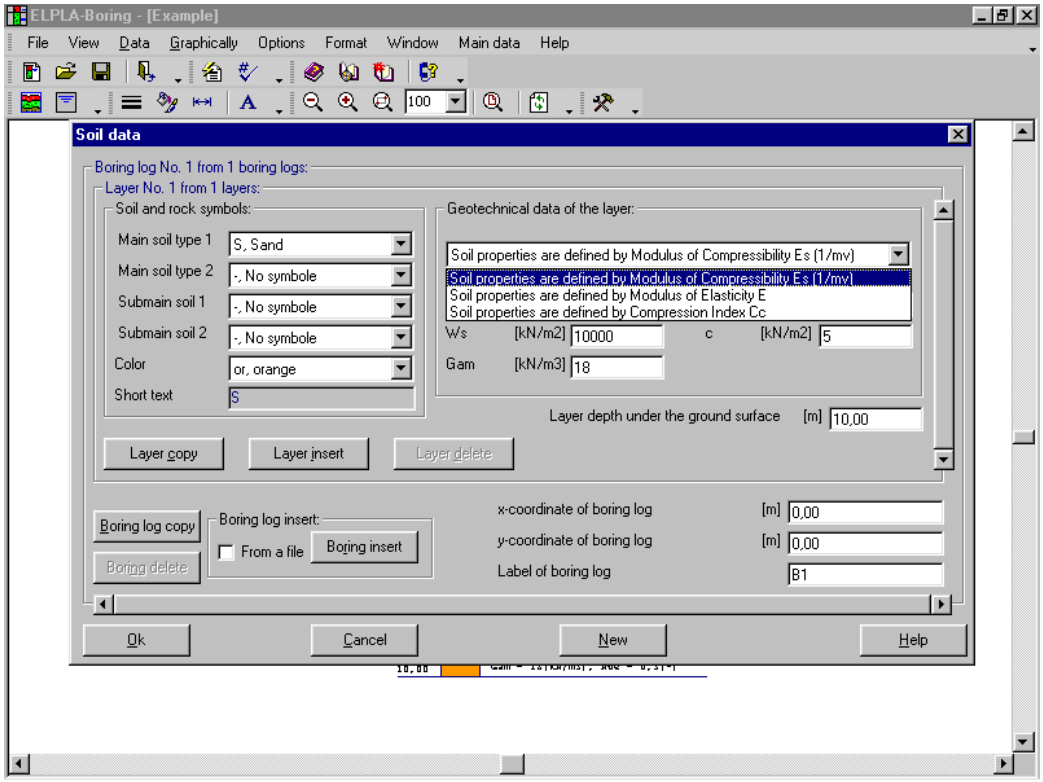


Figure B-4 Menu "Soil data"

2.8 FE-Net

Different element types are developed to generate the FE-Net of the slab according to Grid-based approach for both triangular and rectangular elements and according to *Delaunay*'s triangular generation for triangular elements.

A user-friendly embedded program for mesh generation is developed. The essential features in this embedded program are:

- generating the FE-Net for square, rectangular and irregular slabs using 6 different types of nets, Figure B-5

- generating the FE-Net for circular and ring slabs using 8 different types of nets, Figure B-6

- It can represent an irregular slab with openings and arc boundaries using a refine mesh, Figure B-7

- It is possible to use combined rectangular, quadratic and triangular finite elements at the same time for the slab, Figure B-8

- It is possible to define reference points and lines on the slab, Figure B-9. Reference points and lines are used to define the positions of girders, supports, piles, etc on the slab. Each time that the user generates the mesh, nodes of the FE-Net are passed automatically through these references. This provides the flexibility to make changes in the finite element mesh without having to redefine the positions of girders, supports, piles, etc

- You can refine the mesh in a specified region such as around supports to present the concentration of stress, moment and settlement in this region, Figure B-10

- It is possible to optimize the dimension of FE-Net by making all elements having nearly the same area using the option "smoothing the mesh"

- FE-Net can be displayed in separated elements, Figure B-11

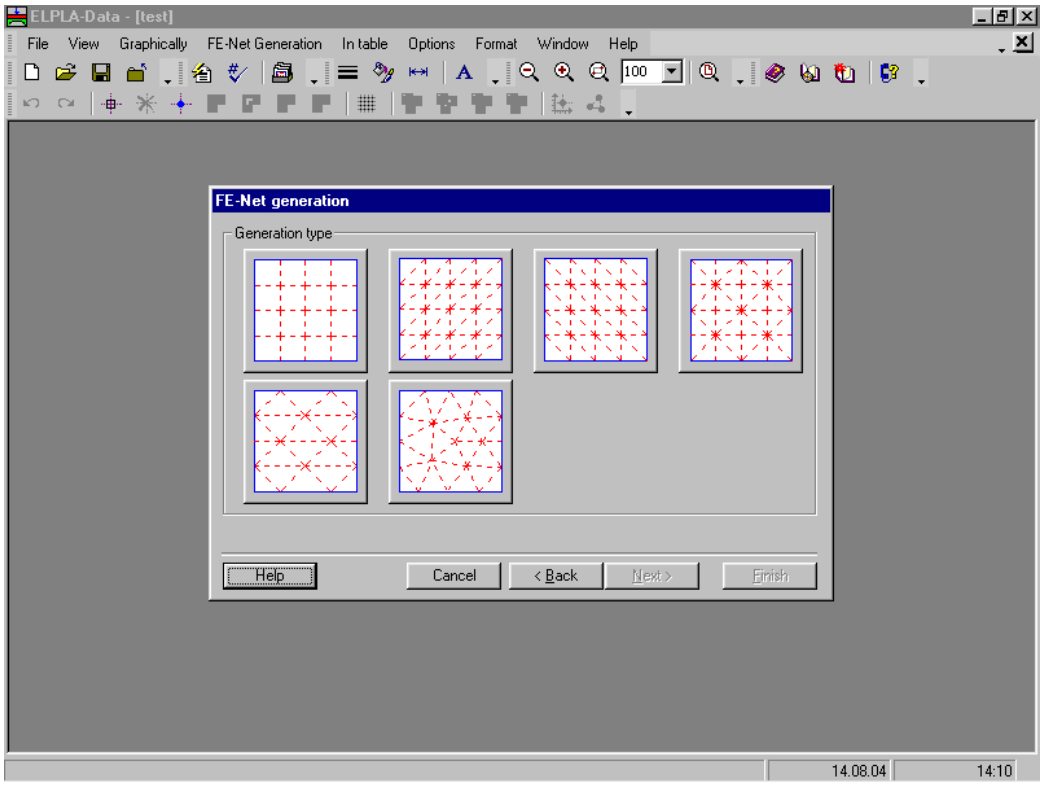


Figure B-5 Generation type for square, rectangular and irregular slabs

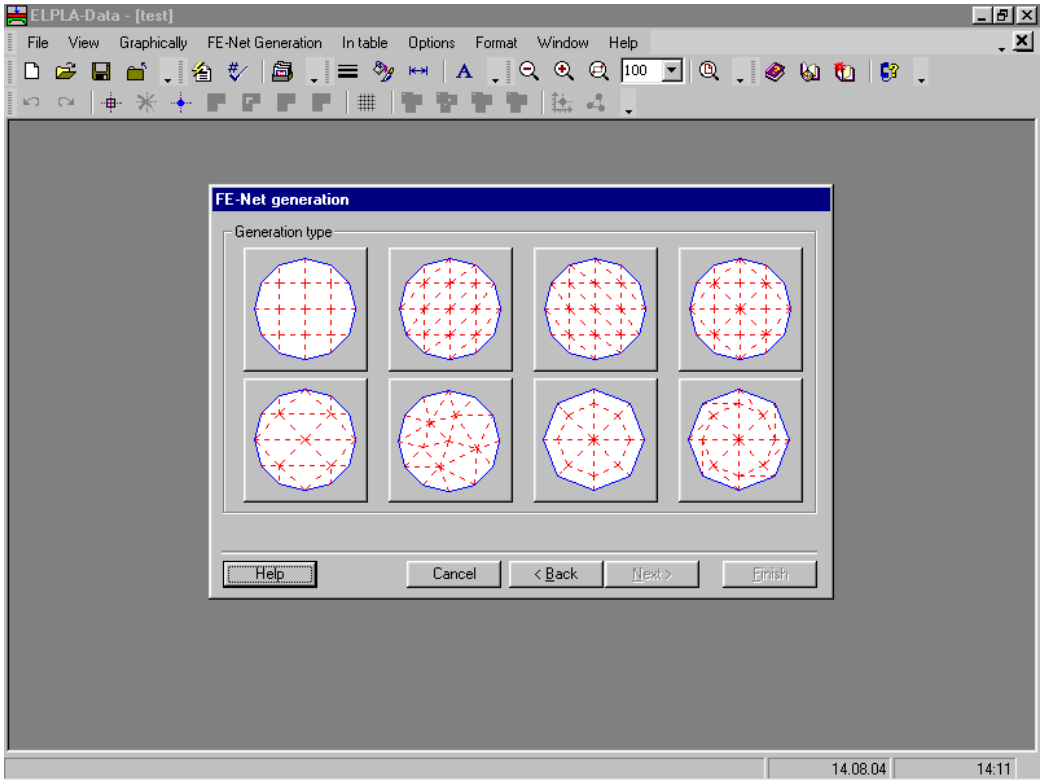


Figure B-6 Generation type for circular and ring slabs

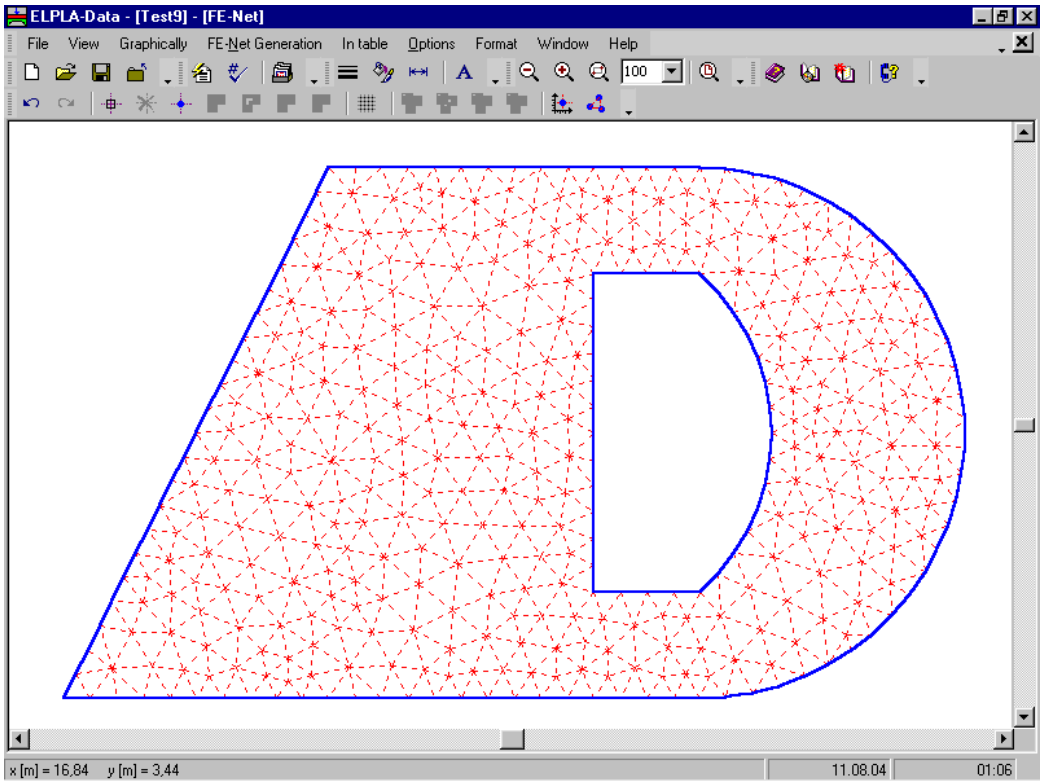


Figure B-7 Irregular slab with triangular finite elements

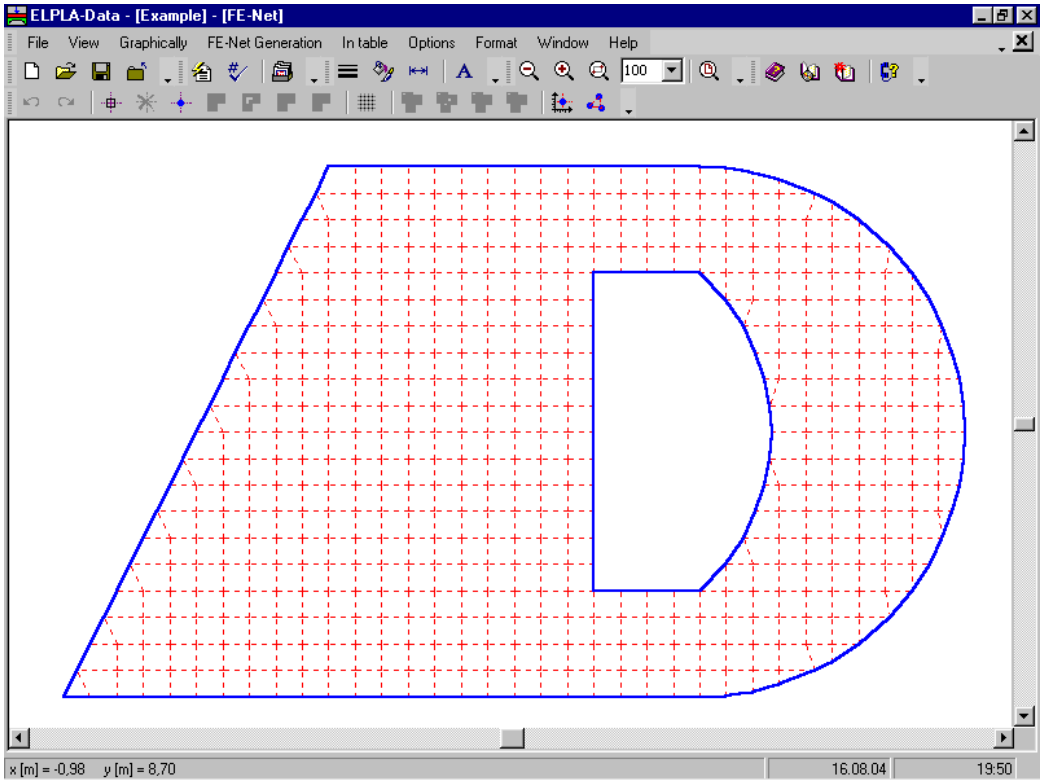


Figure B-8 Irregular slab with combined rectangular, quadratic and triangular finite elements

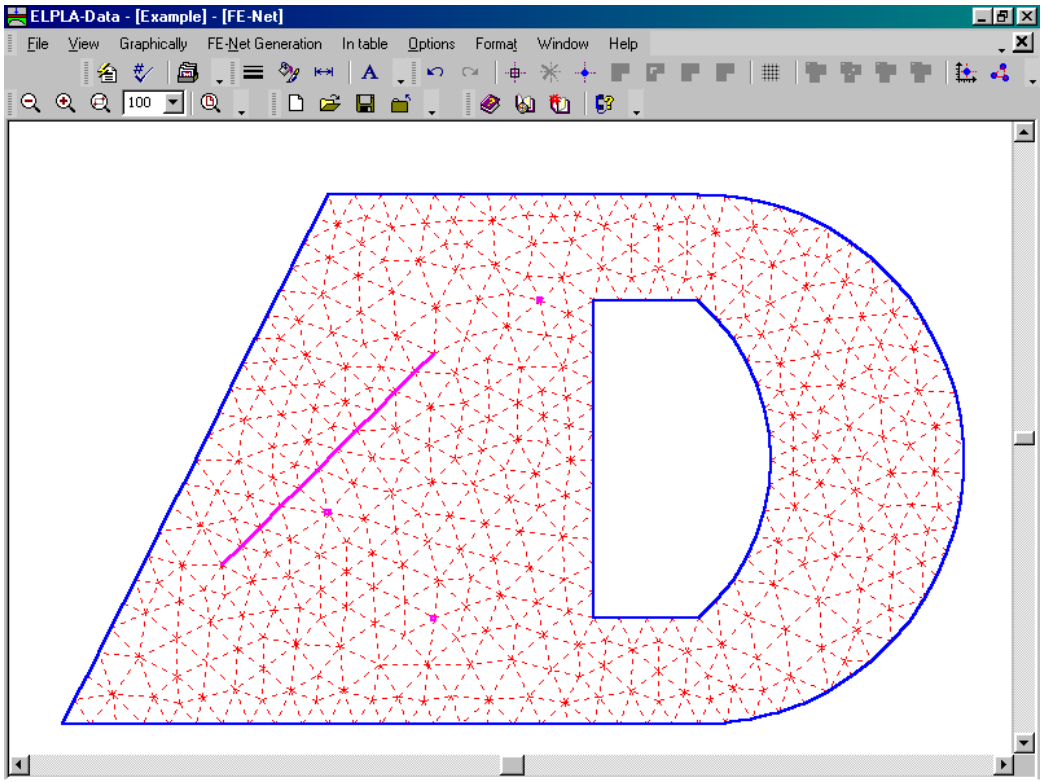


Figure B-9 Reference points and lines on the FE-Net

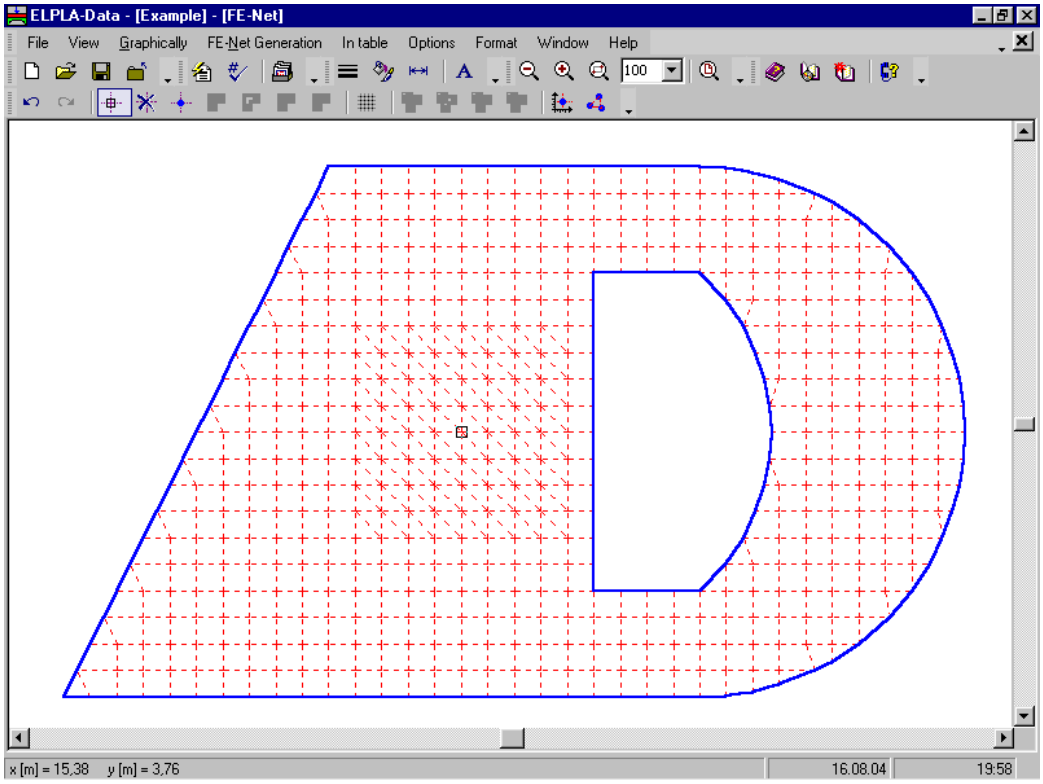


Figure B-10 Refining the mesh around a specified node

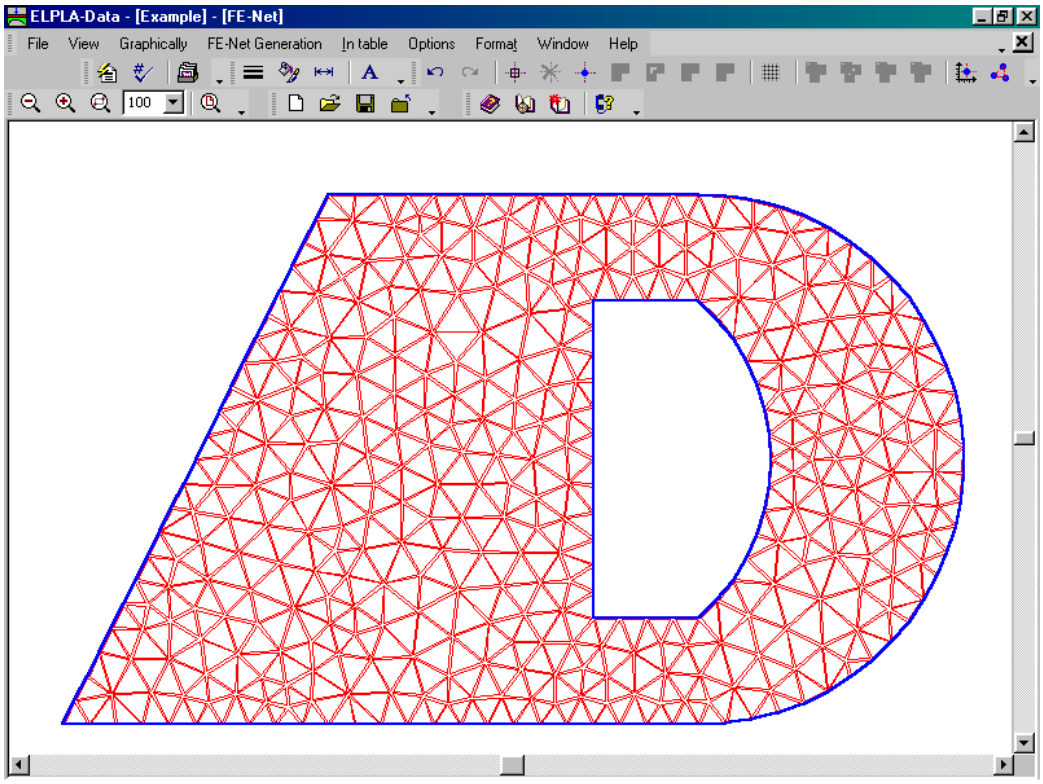


Figure B-11 FE-Net in separated elements

2.9 Unit systems

It is possible to set different unit systems such as SI-system or English-system without changing the real value of any previously defined data, Figure B-12.

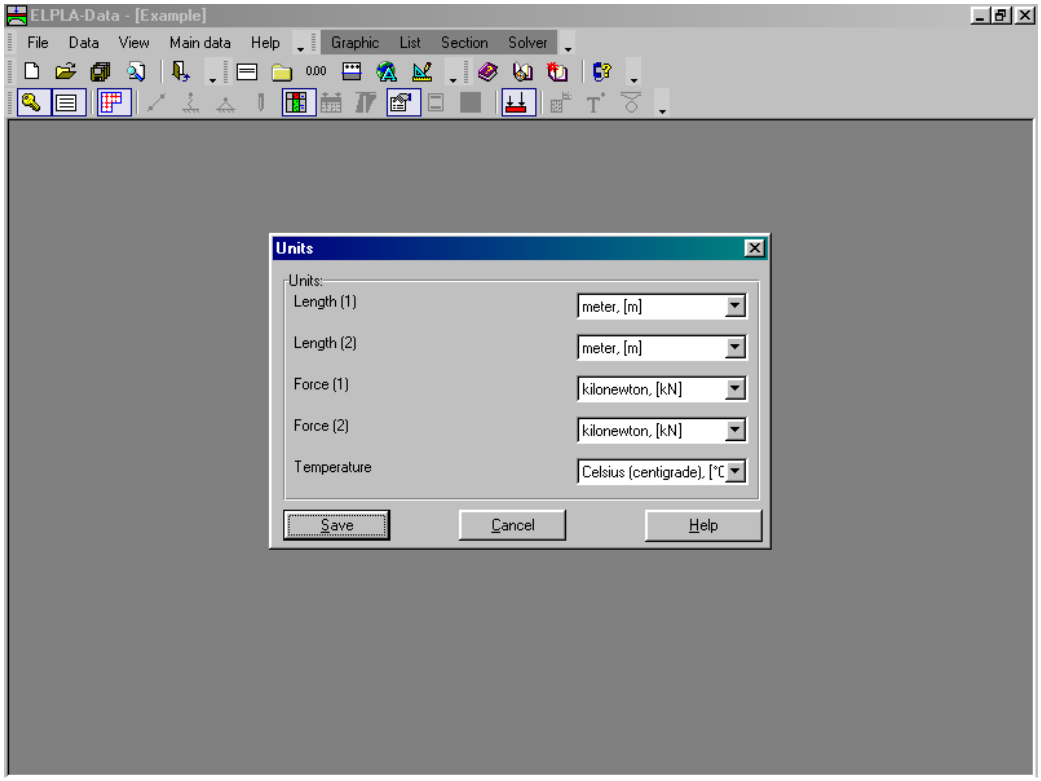


Figure B-12 Menu "Setting unit system"

2.10 Creating tasks through Wizard assistance

Simple step-by-step Wizard assistance in different tasks is possible, such as creating input data, redefining existing data or generating the net of finite elements. The Wizard assistance simplifies the process of creating and redefining the data using the standard and familiar "wizard" interface. A Wizard is a series of forms in a special window helping you through a task. The Wizard is used throughout Windows and by many Windows applications. The Wizard interface is ideal if you want to know as little about the task as possible. With the Wizard you simply click the "Next" button few times to carry out the task. Figure B-13 shows an example for Wizard assistance when defining the calculation method.

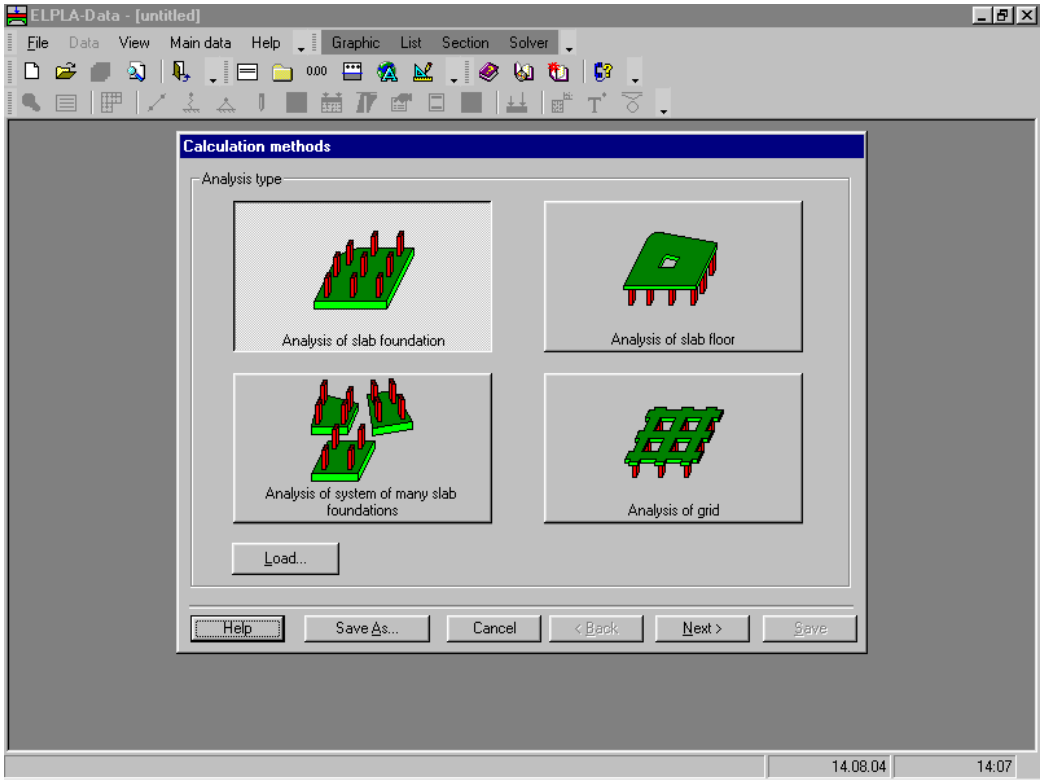


Figure B-13 Menu "Calculation methods" through Wizard assistance

2.11 Undo and Redo of commands

It is possible to undo and redo all commands in ELPLA-Data when defining a project. You may wish to undo the effects of a selected command and return to a previous state, Figure B-14.

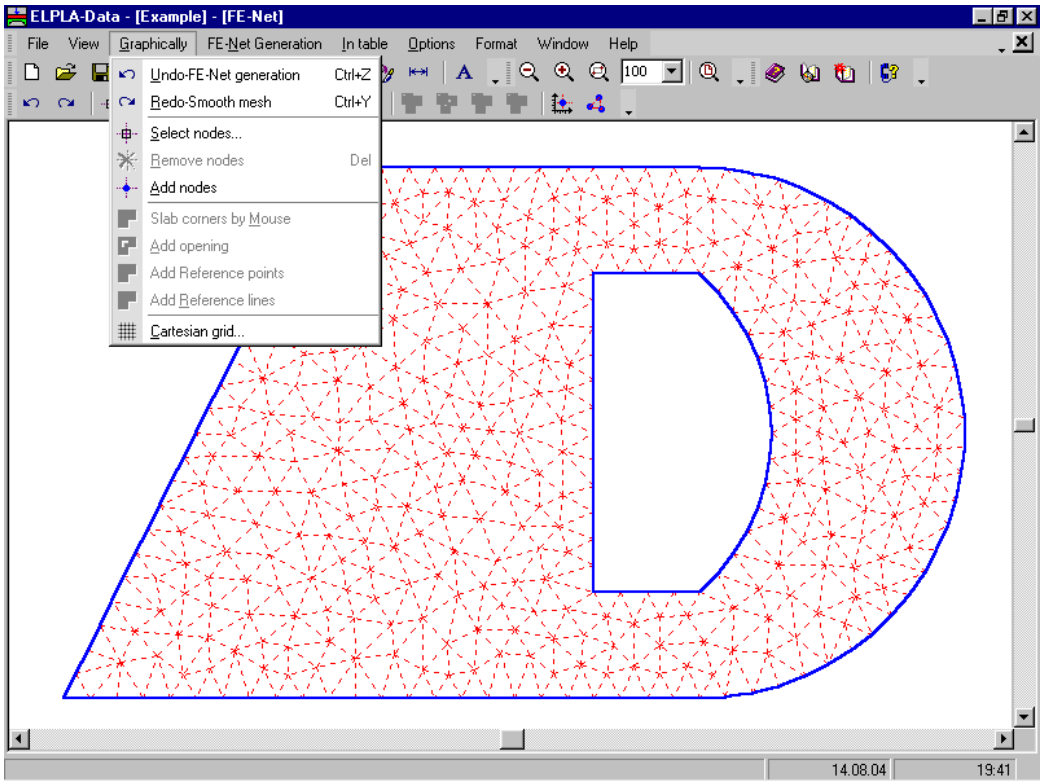


Figure B-14 Undo and redo the commands when defining FE-Net

2.12 Compressing data files into one file

The files of input data, intermediate results or final results for a project can now optionally be stored in one compressed file. Instead of storing hundreds of data files, you can now have one automatically compressed file for each project. This makes it easier to send projects to other persons or simply manage your own files. It also reduces the amount of disk space required to store all of your data files. The compressed file is ZIP-compatible, allowing you to manually extract the data files using WinZip or other data compression tools if you wish, Figure B-15.

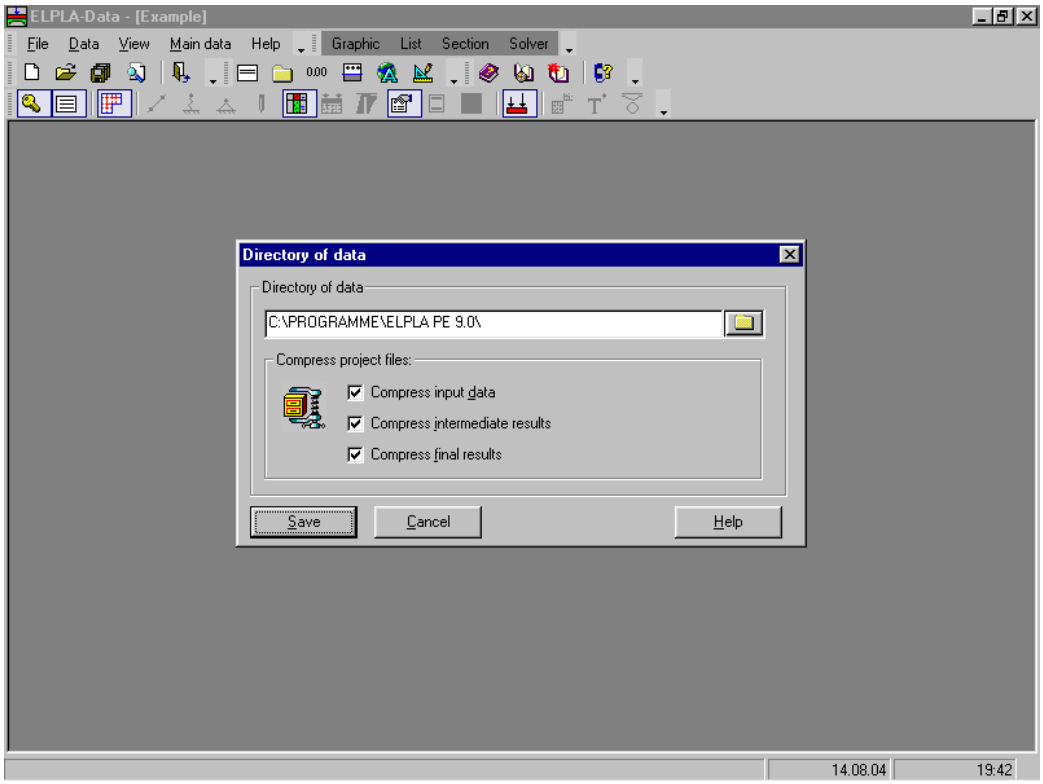


Figure B-15 Menu "Compressed project files"

2.13 Floating toolbars and icon menus

Many menu items and toolbars have been modified to make the commands easier to use:

- New toolbars have been added to ELPLA for quicker access to commonly used commands. These toolbars can be placed anywhere in ELPLA-window or can be hidden from view, Figure B-16

- Most of Menus and Popup-Menus in ELPLA have icons to easy identify the command, Figure B-17

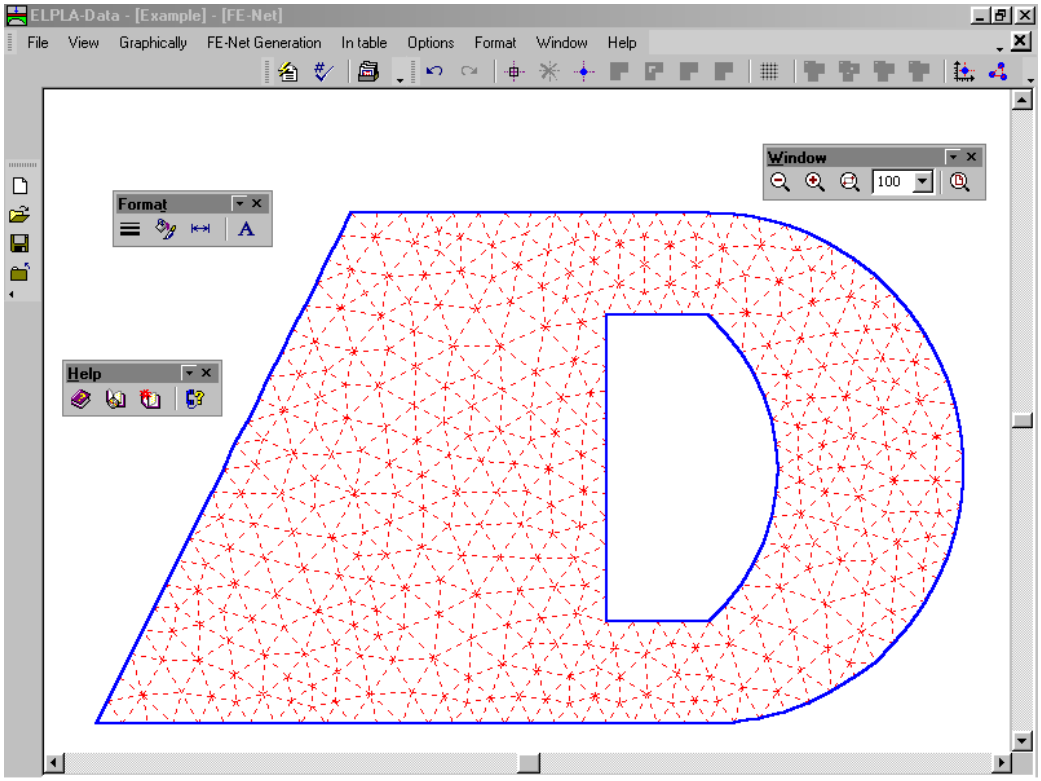


Figure B-16 Toolbars can be placed anywhere in the ELPLA-window

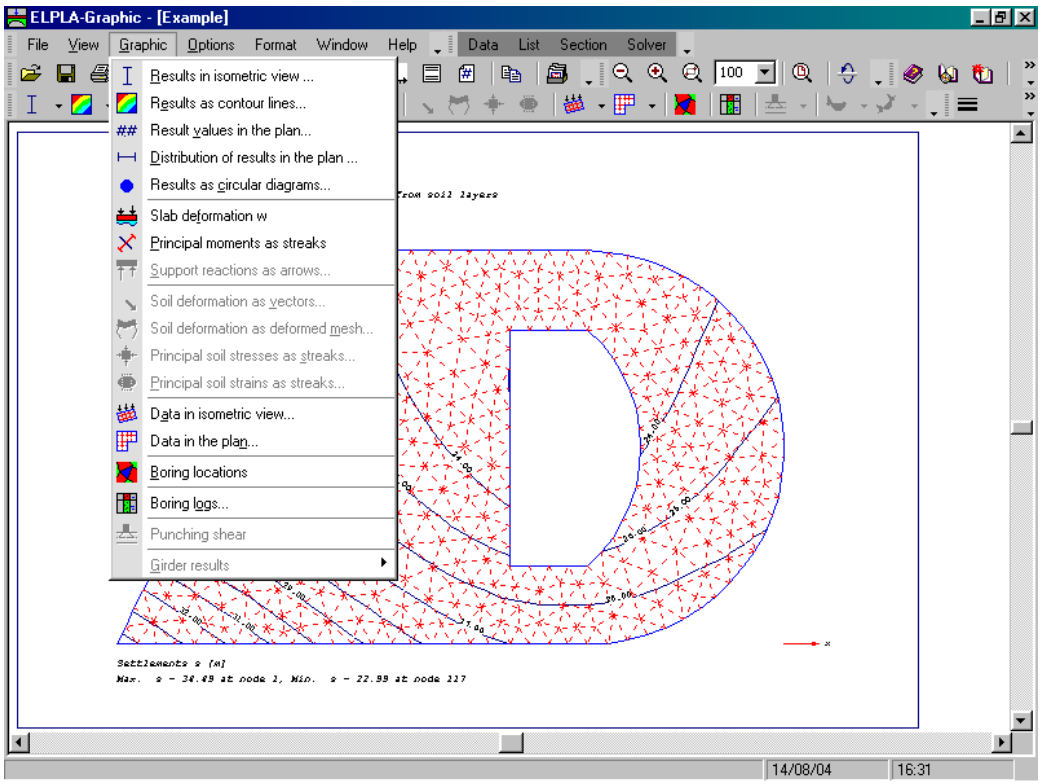


Figure B-17 Menu "Graphic" with icons

2.14 Graphic output

- Line formats setting for ELPLA-Data and ELPLA-Graphic are the same, Figure B-18
- Max. ordinates setting for ELPLA-Data and ELPLA-Graphic are the same, Figure B-19
- Fill colors setting for ELPLA-Data and ELPLA-Graphic are the same, Figure B-20
- The boundaries between contour regions are improved to be very smooth, Figure B-21
- It is possible to draw girders in isometric view with actual size, Figure B-22
- Each girder type has a specific color to easy identify the girder system, Figure B-22

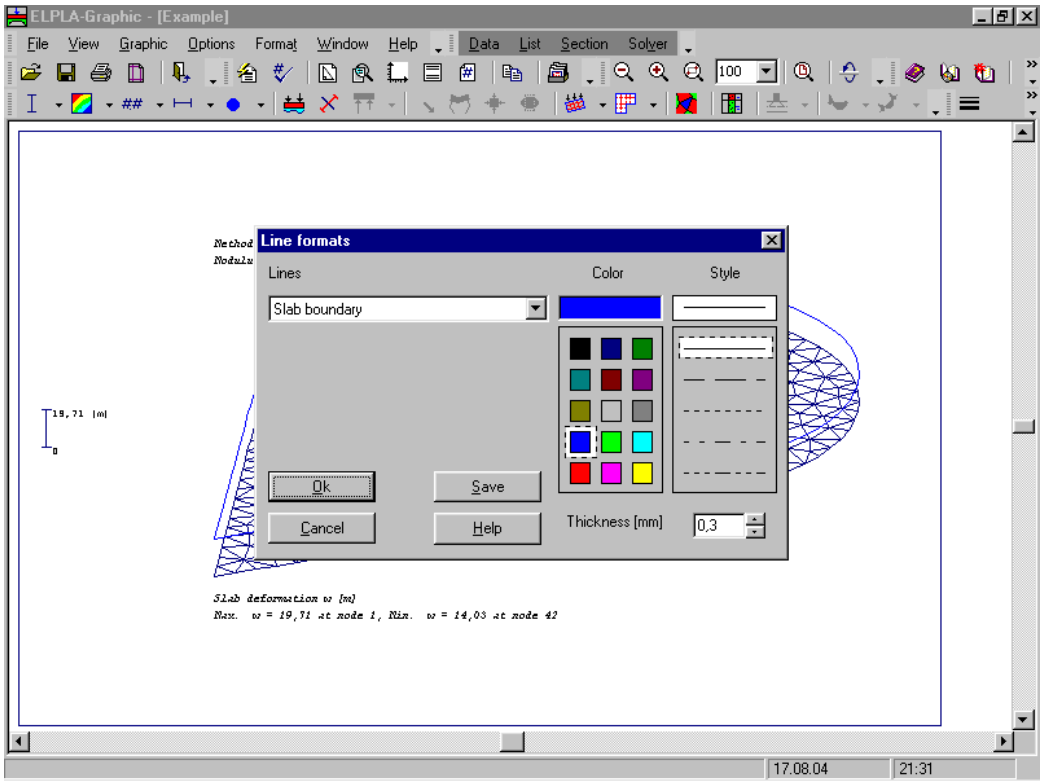


Figure B-18 Line formats for Data and Graphic are the same setting

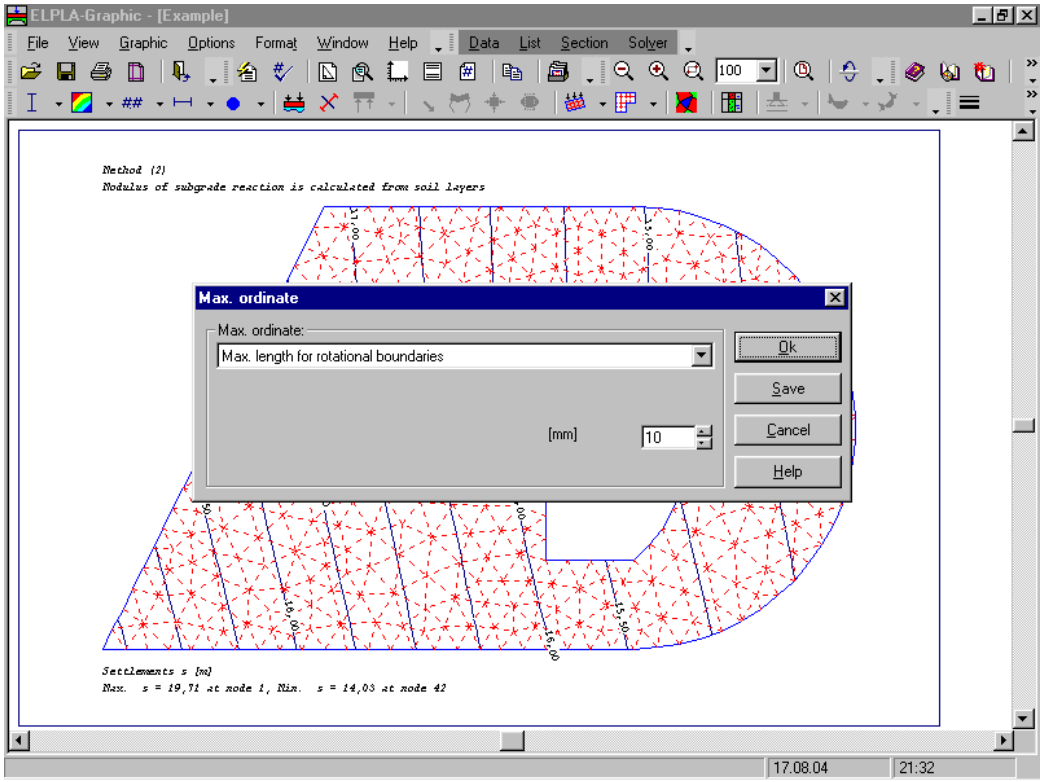


Figure B-19 Max. Ordinates for Data and Graphic are the same setting

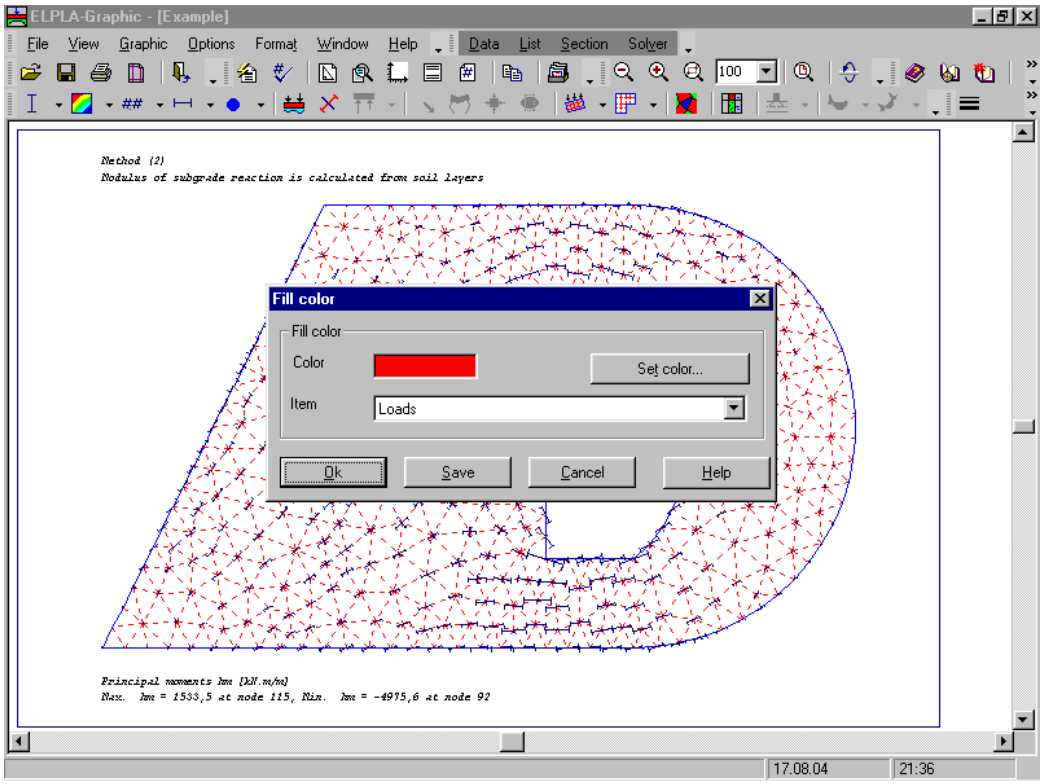


Figure B-20 Fill colors for Data and Graphic are the same setting

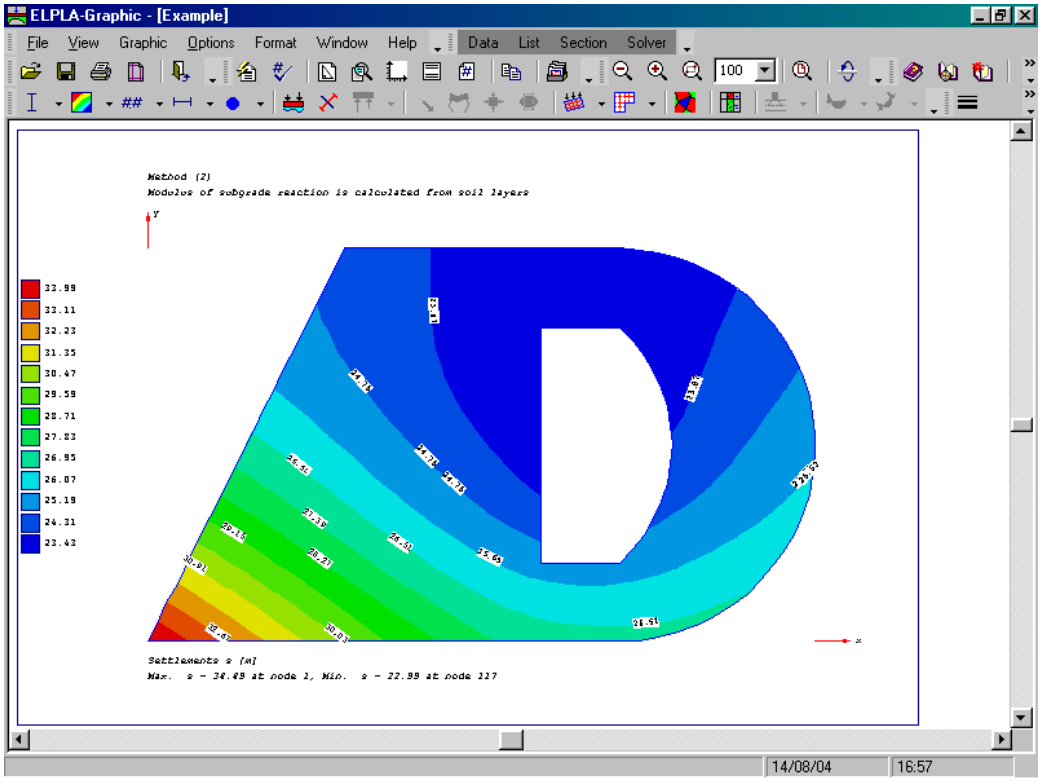


Figure B-21 Boundaries between contour regions are very smooth

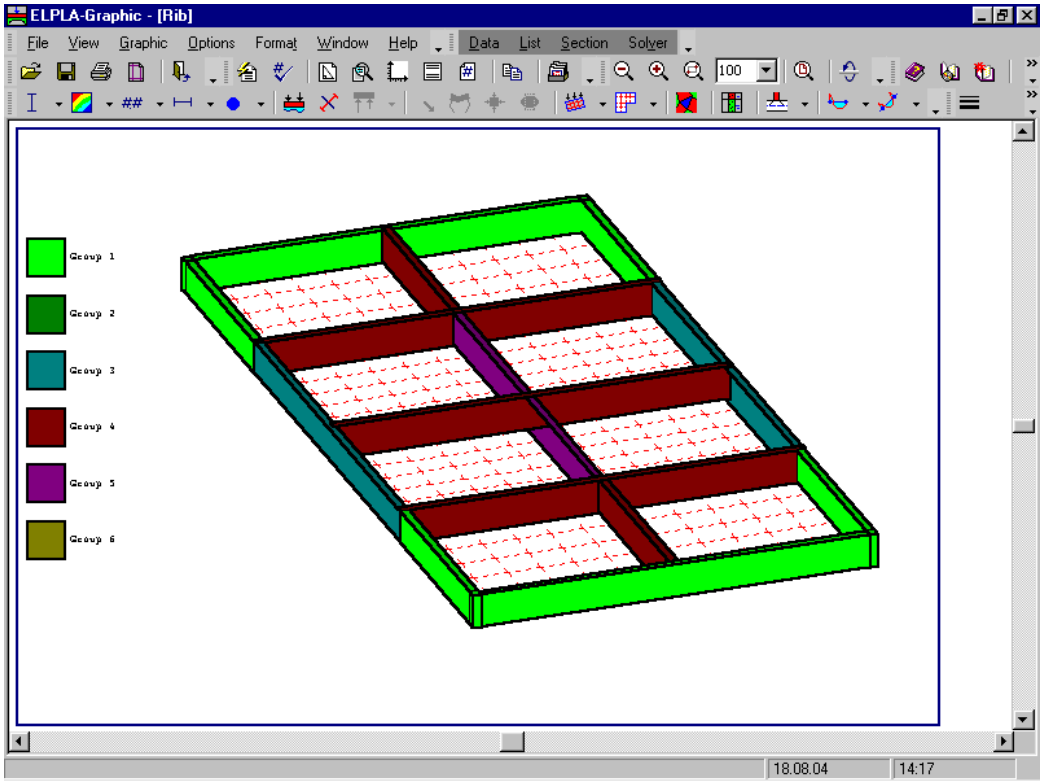


Figure B-22 Girder system in isometric view with actual size

2.15 Diagrams

- It is easy to define the required section where a plan of the raft with the chosen section is displayed when defining that section, Figure B-23

- It can be drawn with the diagram, a legend shows the plan of FE-Net with line indicating the chosen section, Figure B-24

- It is possible to plot a diagram at any section of the raft, Figure B-24

- It is possible to export diagrams from ELPLA-Section to MS Excel

- It is possible to define a diagram in ELPLA-Graphic by Mouse and to send it to ELPLA-Section, Figure B-26

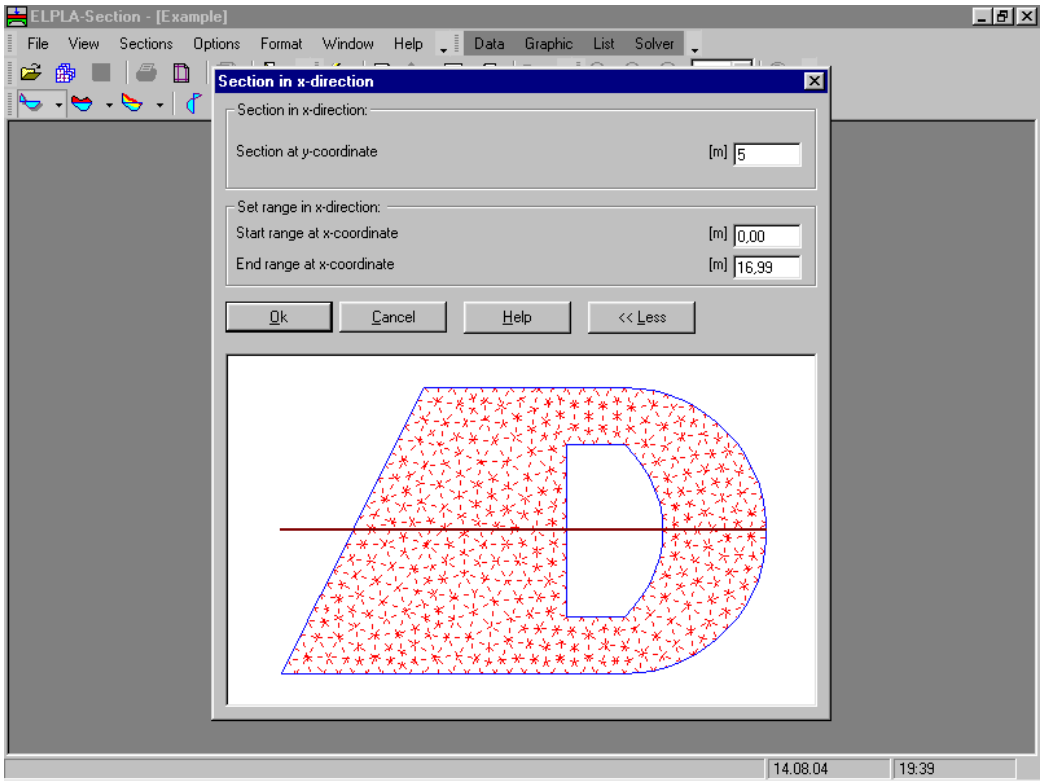


Figure B-23 Menu "Section in x-direction"

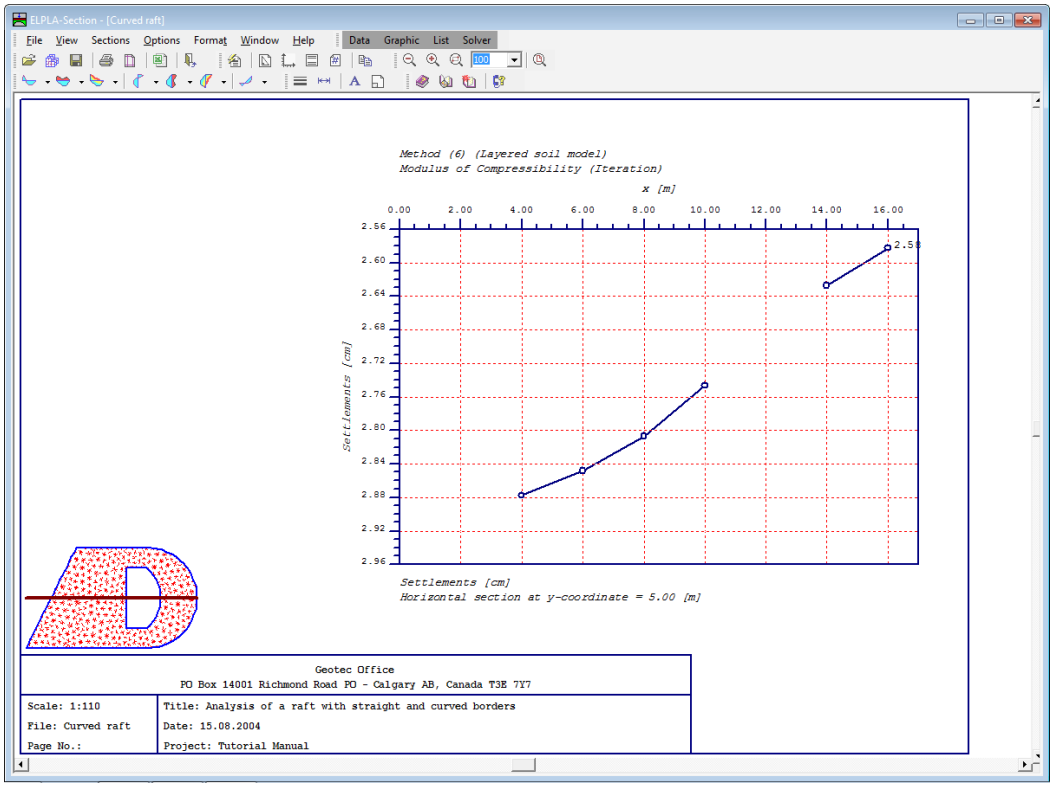


Figure B-24 Diagram with a legend showing a plan of FE-Net

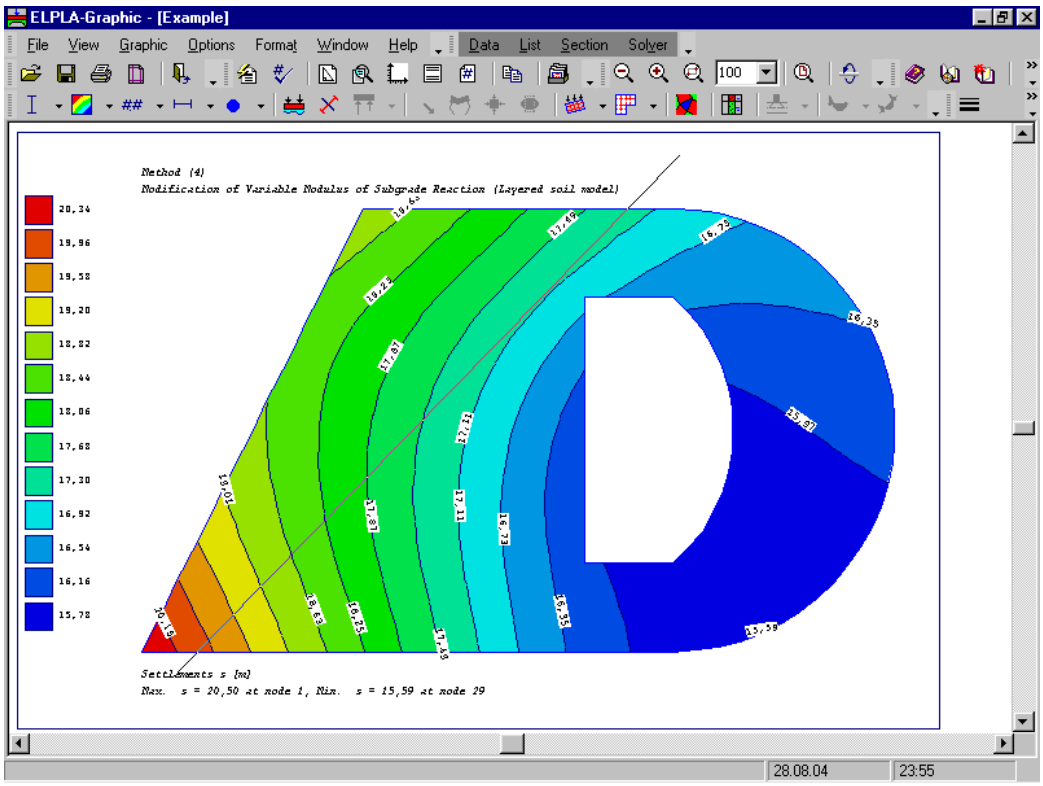


Figure B-26 Defining a diagram in ELPLA-Graphic

2.16 Loads

- It is possible to define a polygon load with variable ordinates to represent dam or embankment loads, Figure B-27

- It is possible to define a line moment to represent moments from walls or line supports, Figure B-27

- Point load is never applied in reality. If a point load represents a column load on a mesh of refine finite elements, the moment under the column will be higher than the real moment. To take the effect of the load distribution through the slab thickness, the column load must be distributed outward at 45 [°] from the column face until reaching the center line of the slab. Now it is possible, to overcome this problem by converting the point load to an equivalent uniform load over an appropriate area, Figure B-28

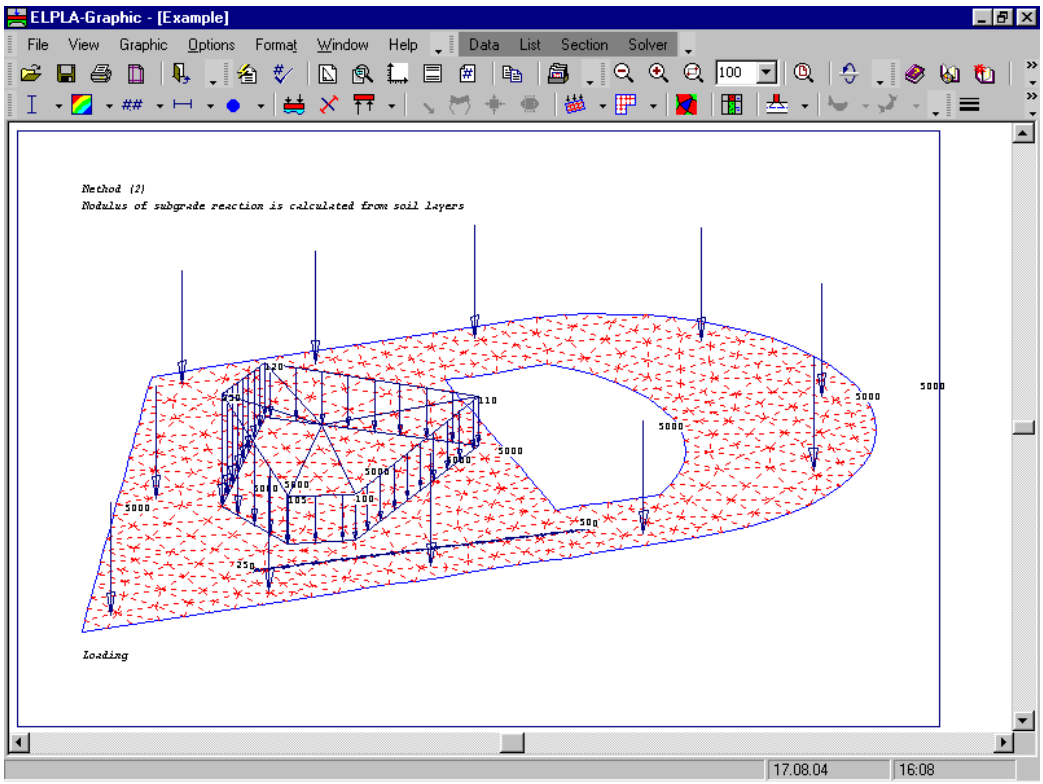


Figure B-27 Polygon load with variable ordinates and line moment

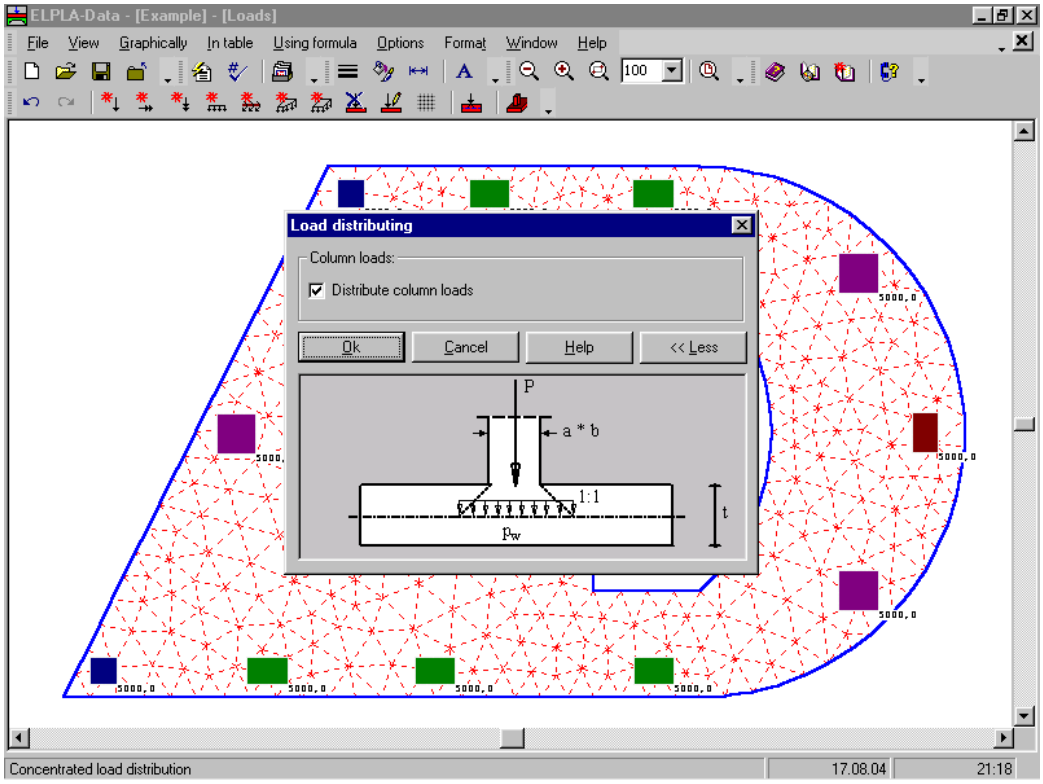


Figure B-28 Distributing the column point load over an appropriate area

2.17 Column cross-section and punching area

- It is possible to define column dimensions that are used to design columns for punching and to convert column concentrated load to equivalent distributed load, Figure B-29

- Column cross-section can be drawn with column load, Figure B-29

- It is possible to draw column cross-sections in colored groups to easy identify the column capacity, Figure B-30

- Area of punching can be displayed according to the specified code of design with column cross-section, Figure B-31

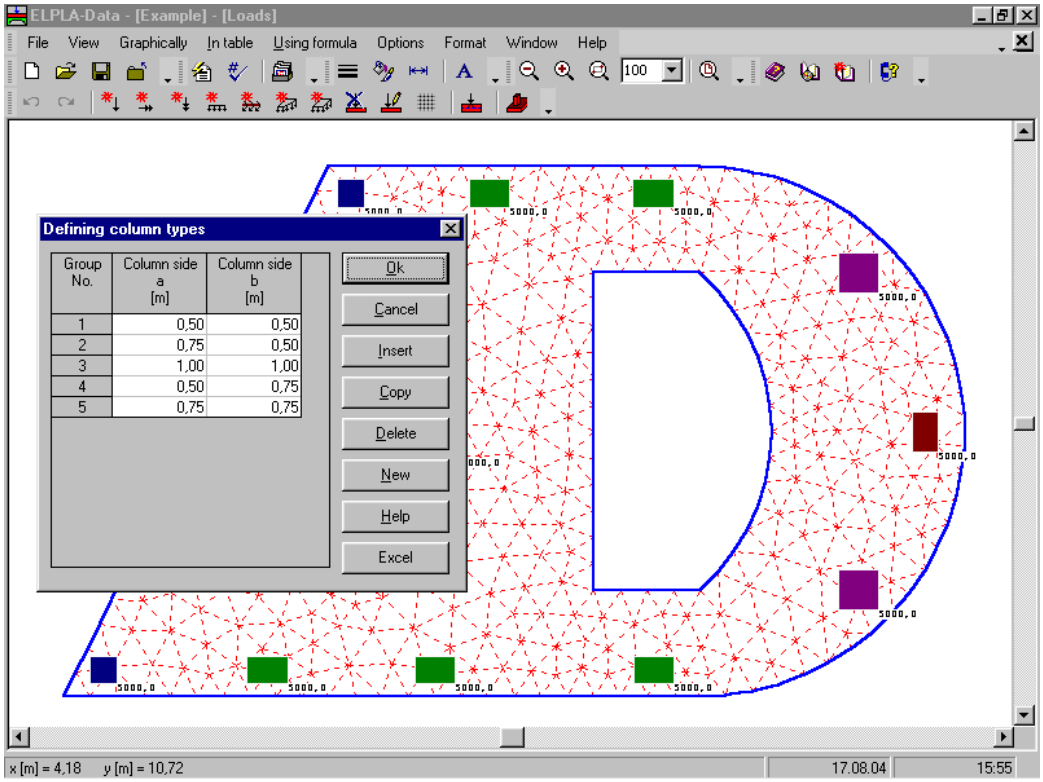


Figure B-29 Column cross-sections with column loads

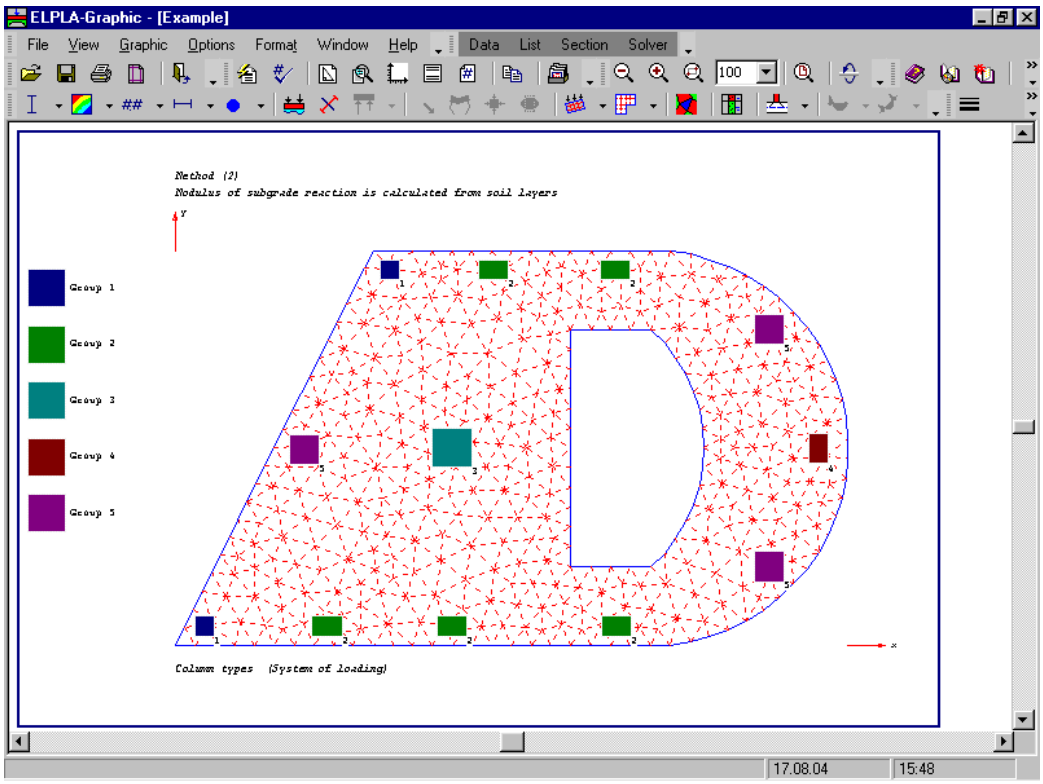


Figure B-30 Column cross-sections in colored groups

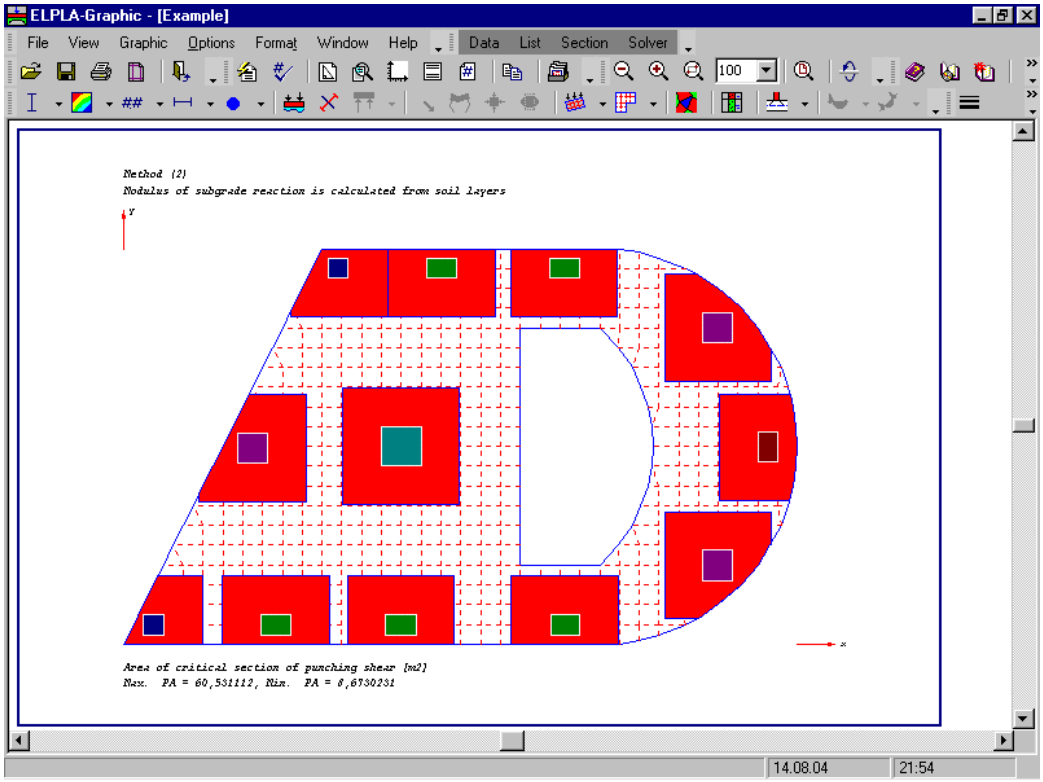


Figure B-31 Punching areas according to ACI with column cross-sections

2.18 Output list

- It is possible to open many projects at the same time in one view in the program ELPLA-List to compare between their results, Figure B-32

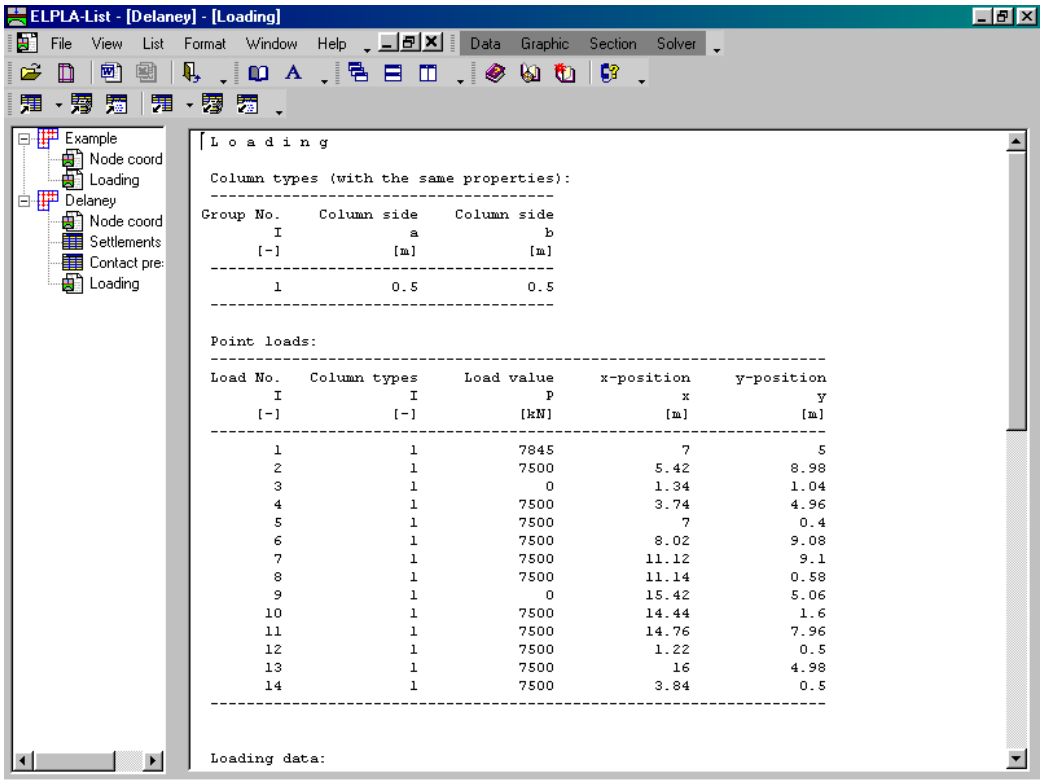


Figure B-32 Two projects are opened at the same time in the program ELPLA-List

3 Enhancements in version ELPLA 8.1

3.1 Analysis of grid

Besides the three different analyses available in the program ELPLA to analyze foundations and slab floors, a new analysis "Analysis of grid" is added (Figures B-33 and B-34).

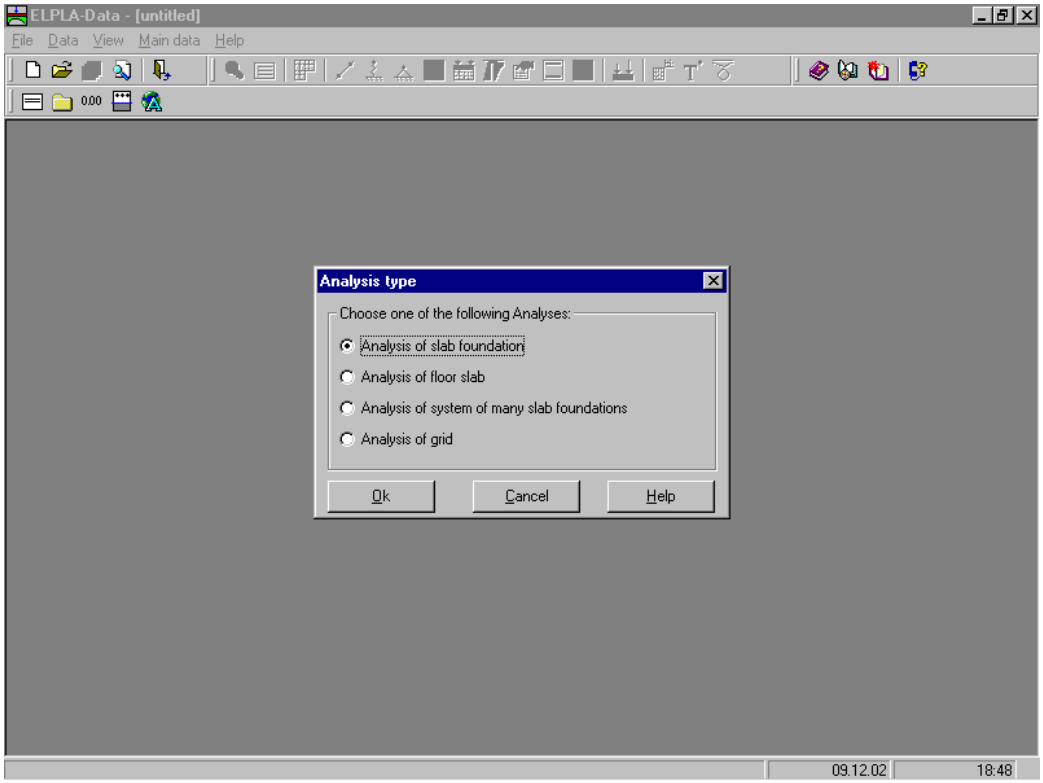


Figure B-33 Menu "Analysis type"

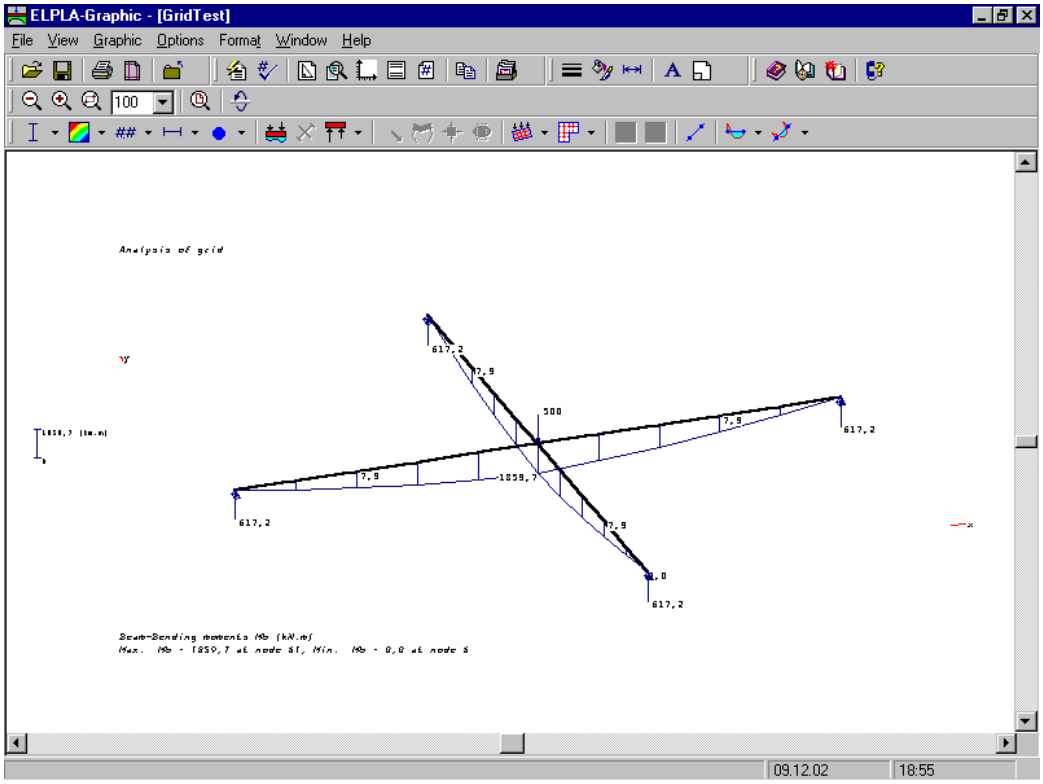


Figure B-34 Beam-Moments

3.2 Determining stresses, strains and displacements in soil

You can determine the stresses, strains and displacements in soil under the foundation in a net in z-direction (Figures B-35 to B-38).

ELPLA can display results of stresses, strains and displacements in different forms such as:

- Soil deformation as deformed mesh, Figure B-39
- Soil deformation as vectors, Figure B-40
- Principal soil stresses as streaks, Figure B-41
- Principal soil strains as streaks, Figure B-42

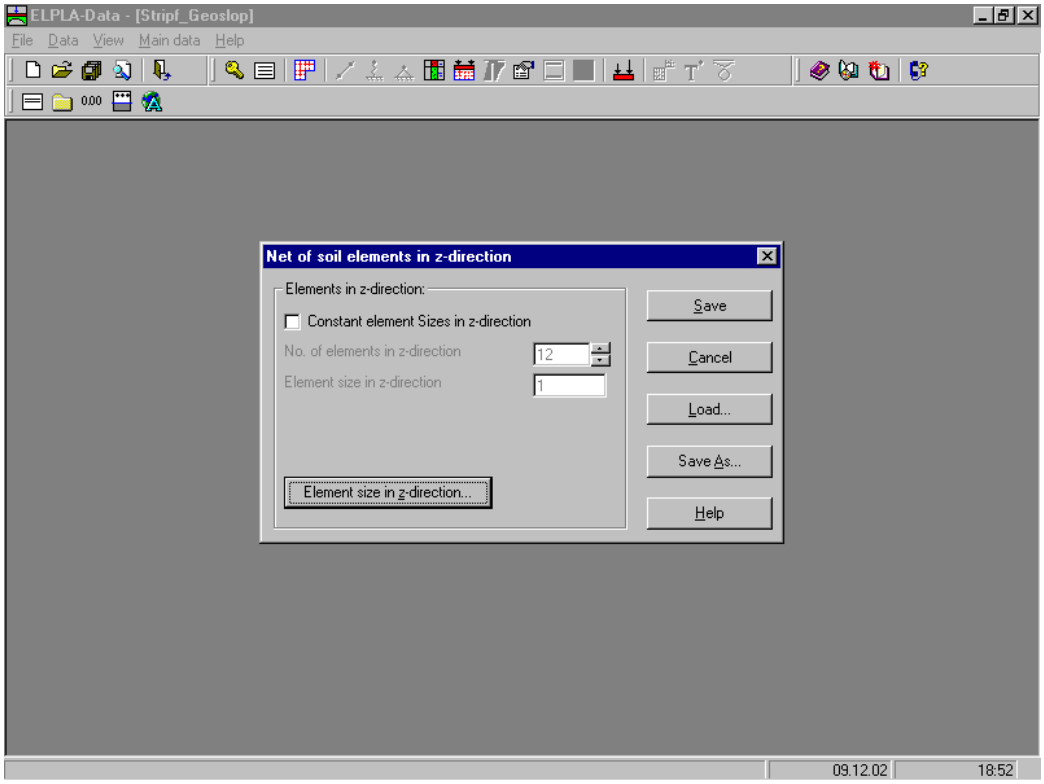


Figure B-35 Menu "Net of soil elements in z-direction"

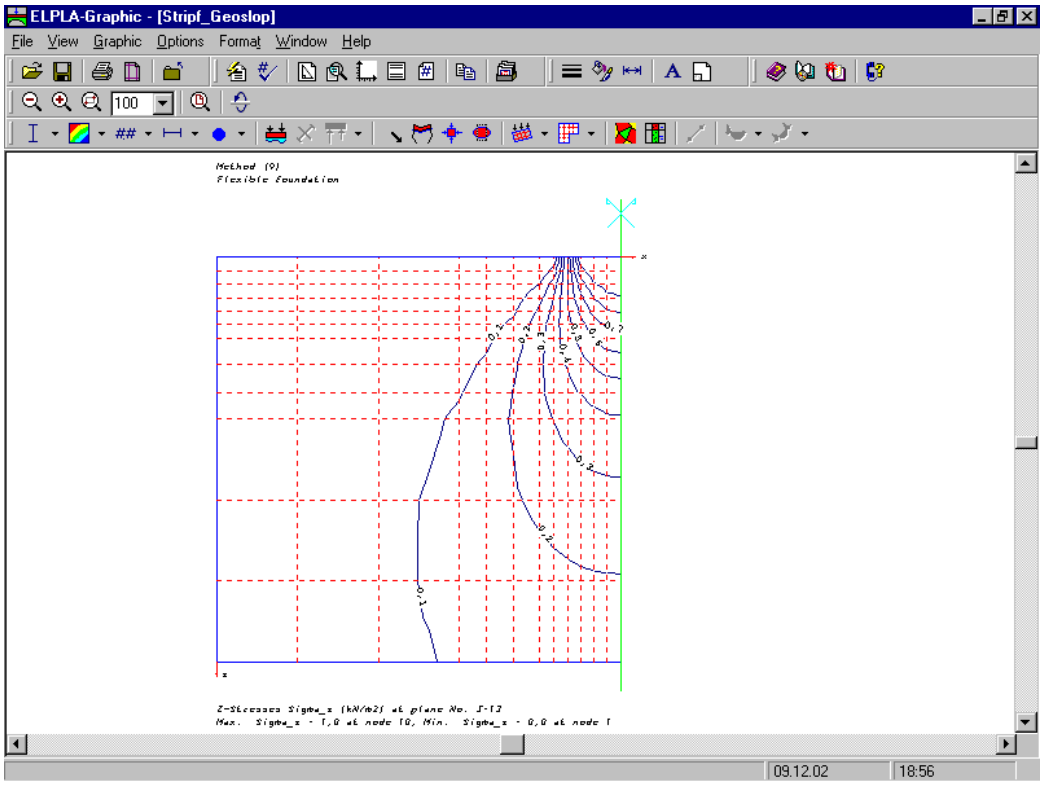


Figure B-36 Z-Stresses Sigma_z

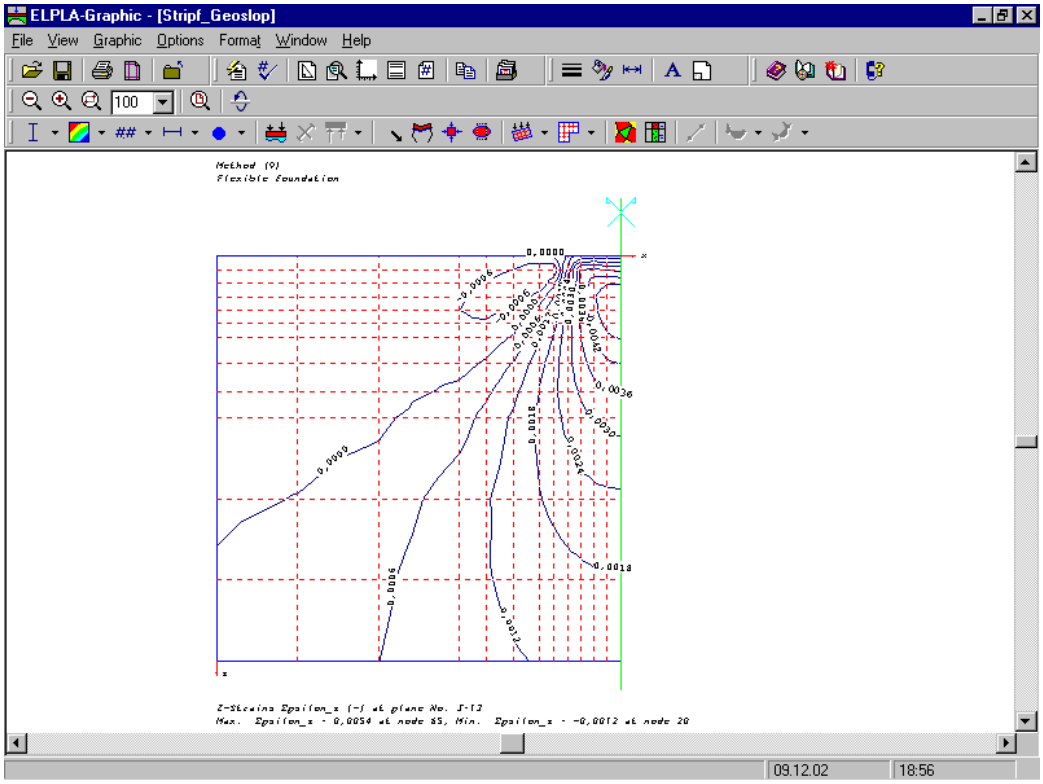


Figure B-37 Z-Strains Epsilon_z

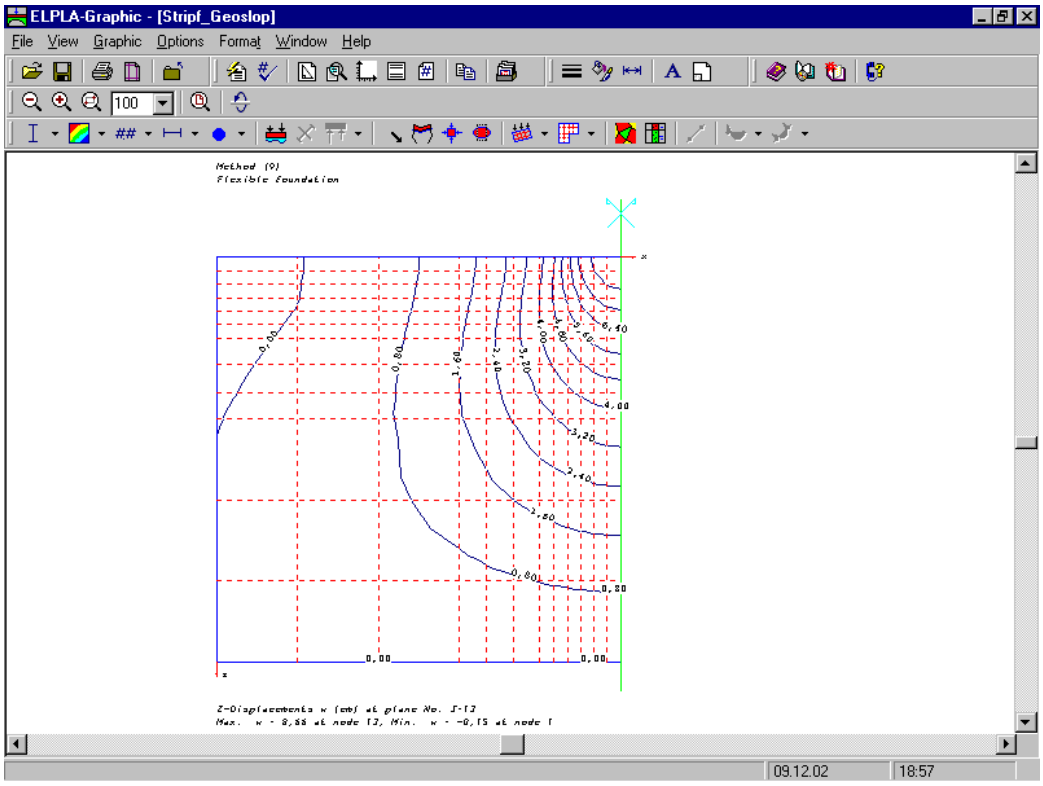


Figure B-38 Z-Displacements w

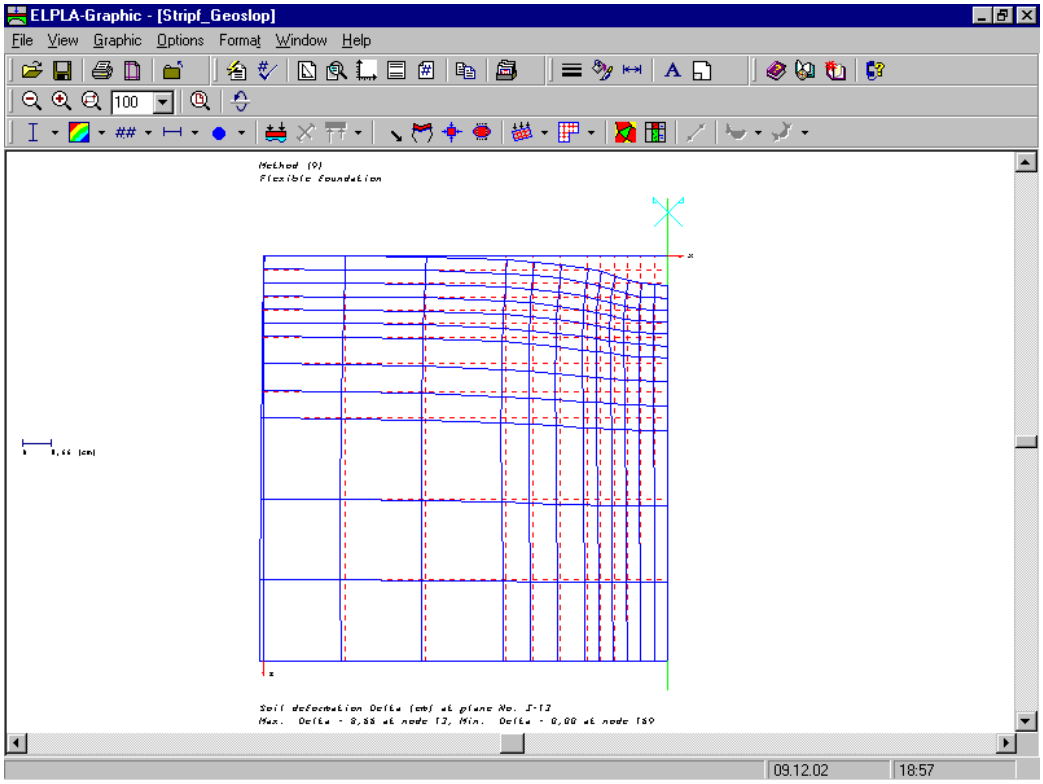


Figure B-39 Soil deformation as deformed mesh

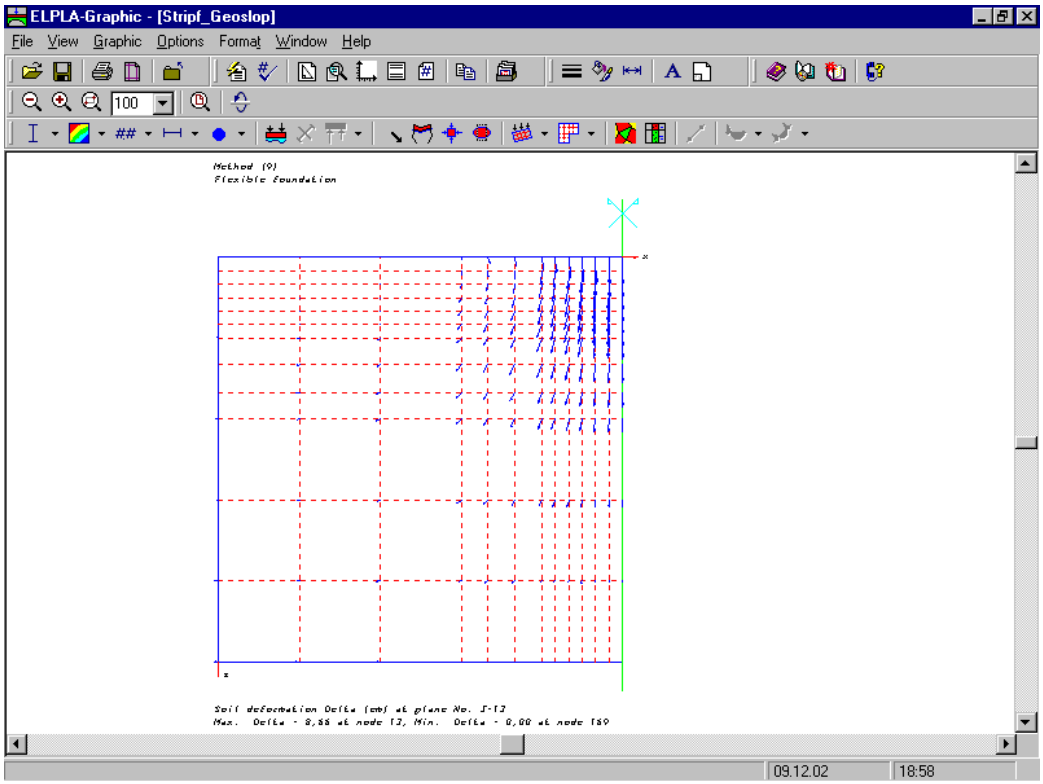


Figure B-40 Soil deformation as vectors

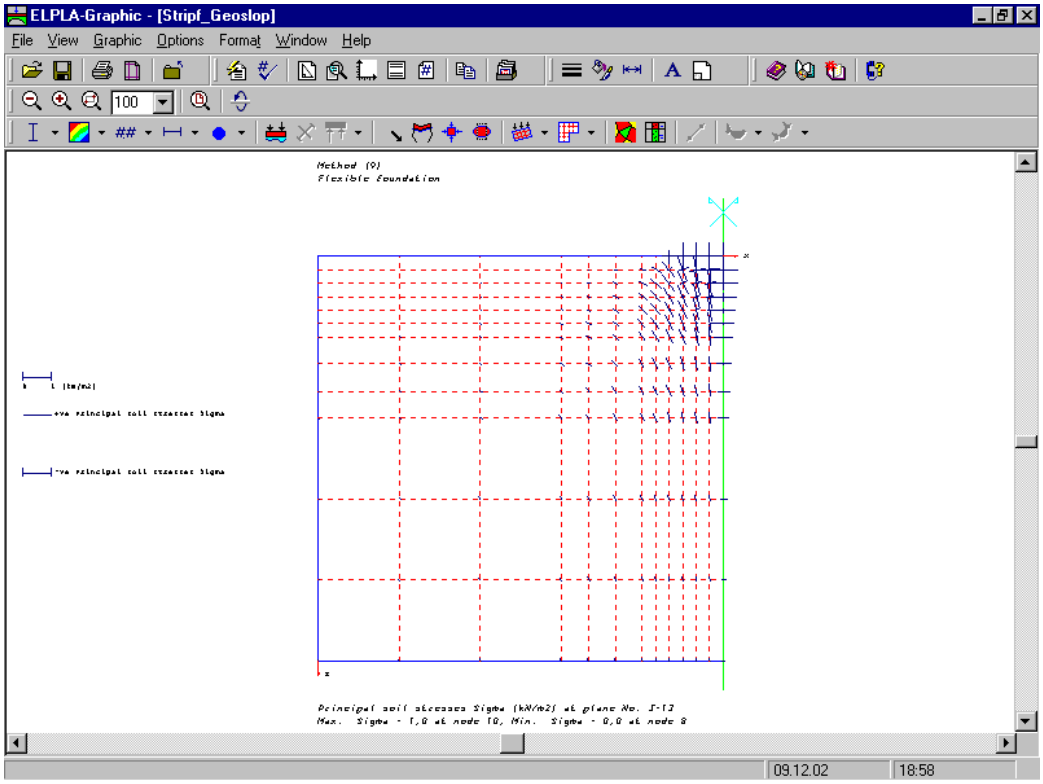


Figure B-41 Principal soil stresses as streaks

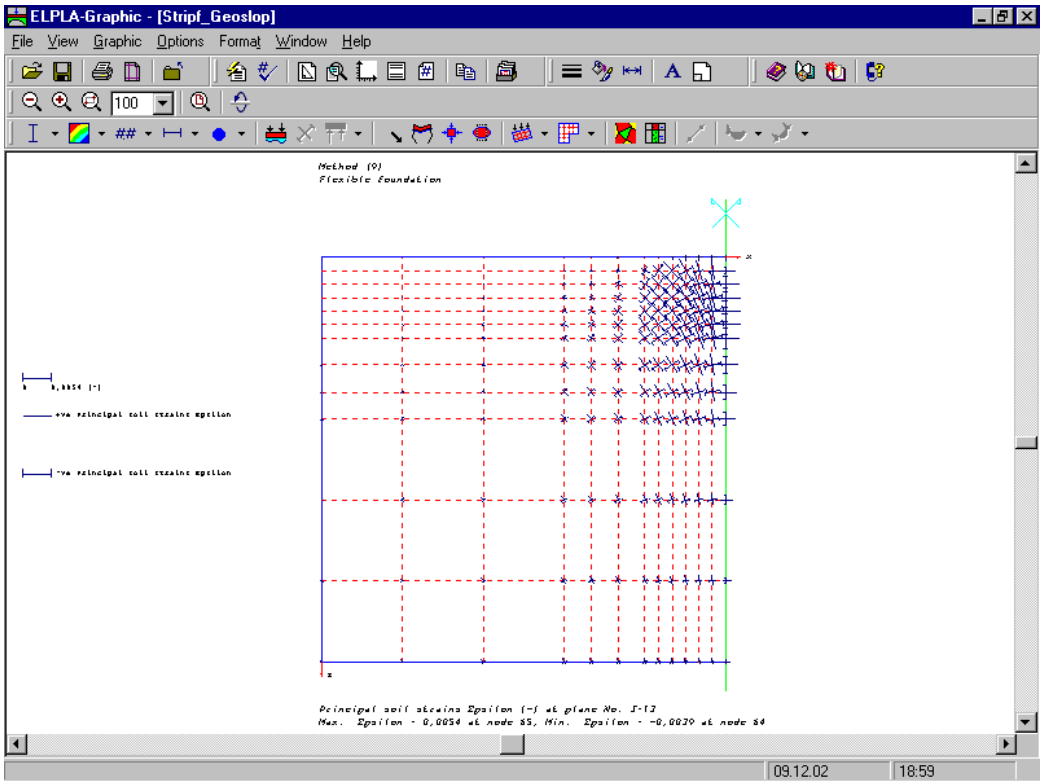


Figure B-42 Principal soil strains as streaks

3.3 Language of the help

You can define the language of the help system used in ELPLA applications. The three languages are English, German and Arabic (Figures B-43 to B-46).

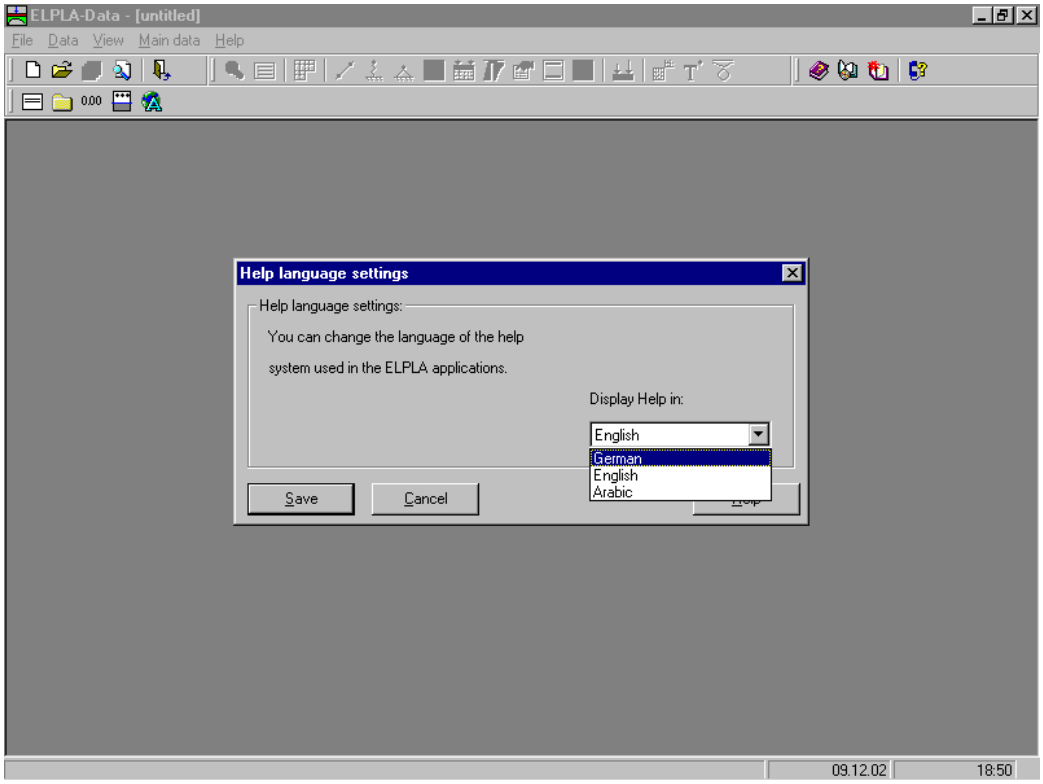


Figure B-43 Menu "Help language settings"

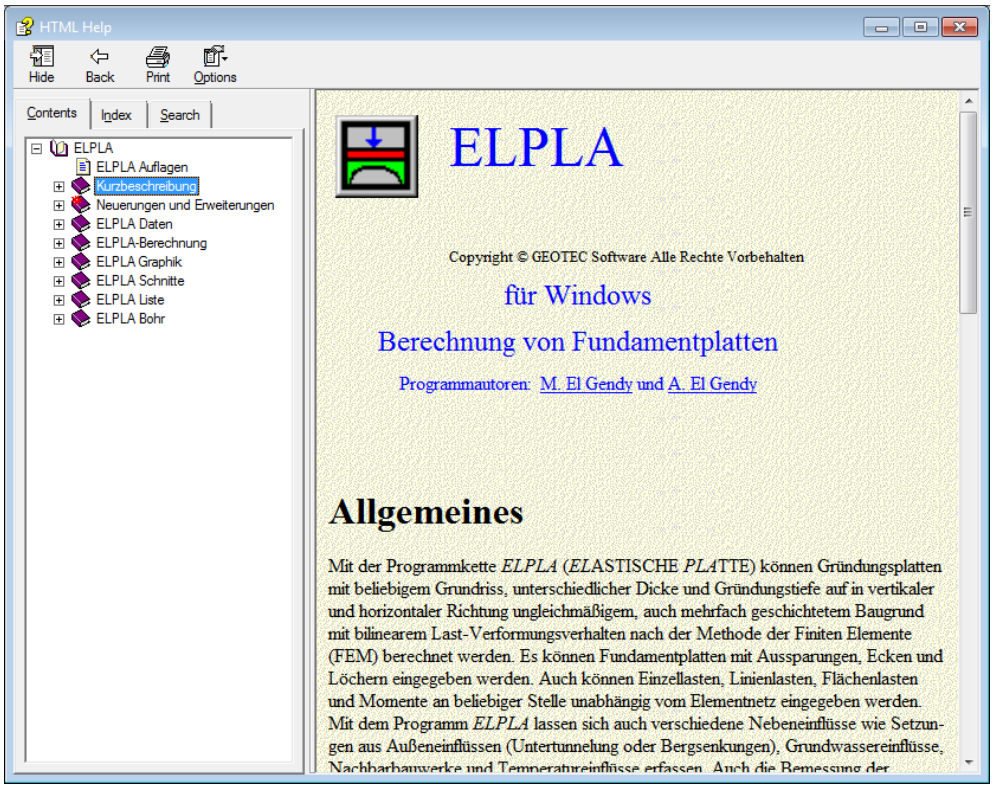


Figure B-44 Help language in German

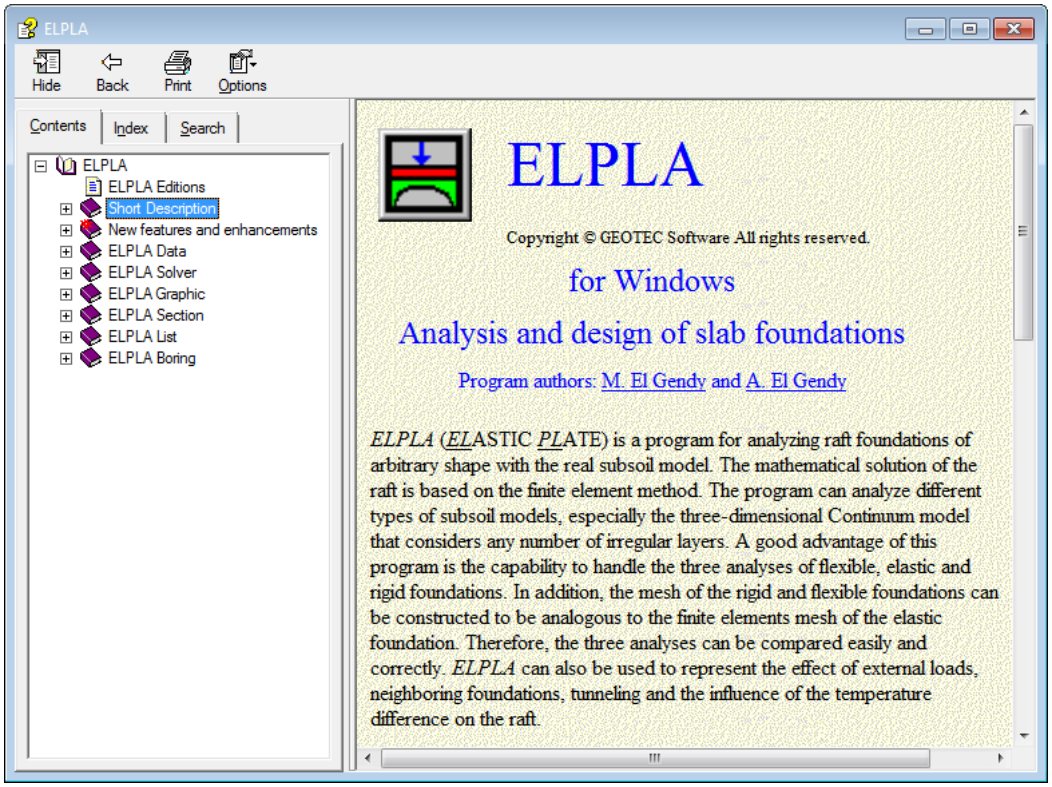


Figure B-45 Help language in English

Figure B-46 Help language in Arabic

3.4 Converting Loads

Contact pressures on nodes or reactions may be converted to applied loads on these nodes, Figure B-47.

3.5 Displaying axis arrows

You can display axis arrows in x-, y- and z-directions, Figure B-48.

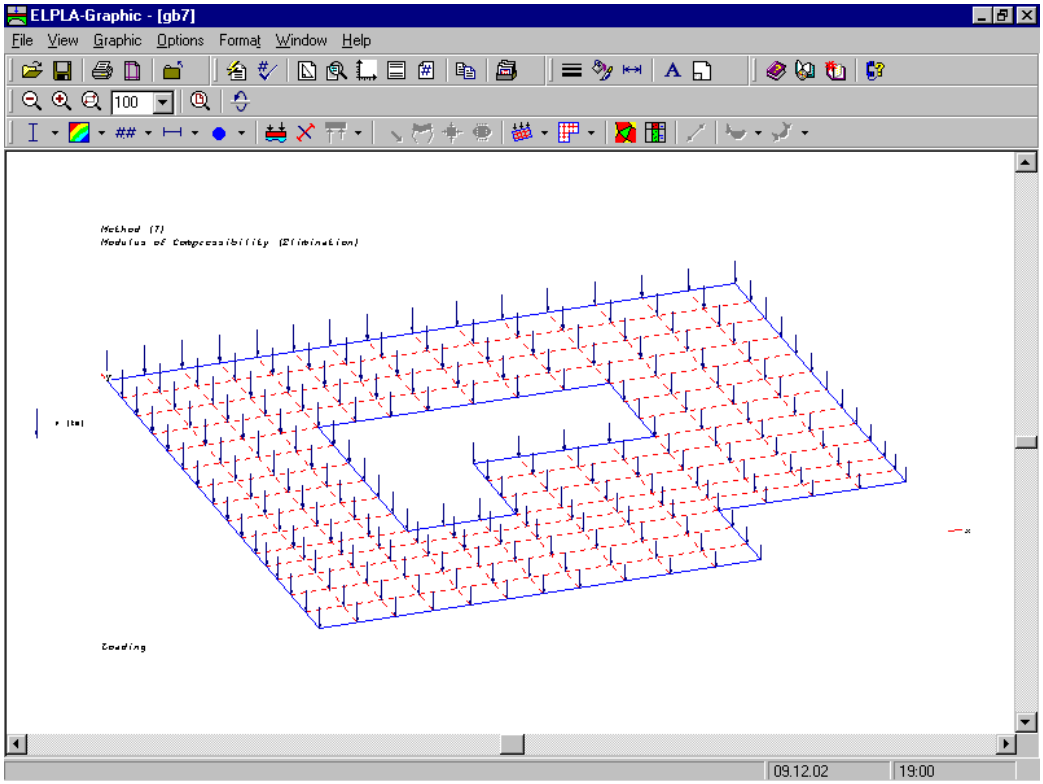


Figure B-47 Contact pressures on nodes as applied loads

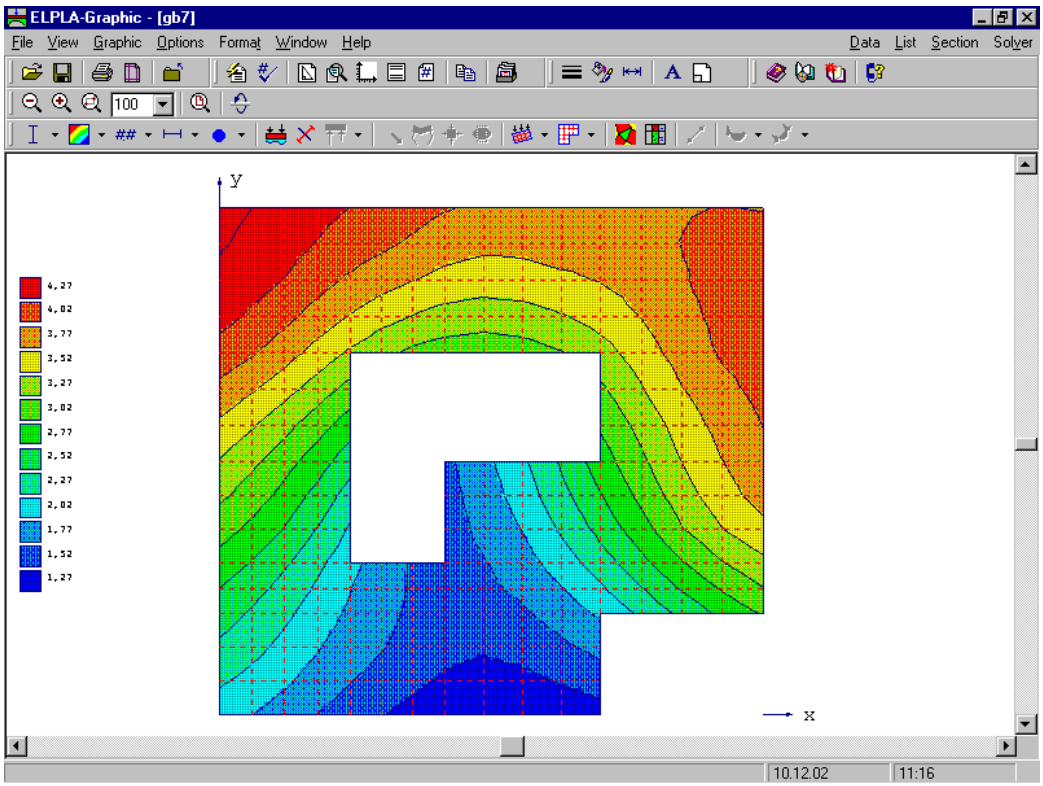


Figure B-48 Raft with x- and y-axis arrows

3.6 Boring logs

The display of soil properties C and Phi is optional. This option allows displaying more borings together, Figure B-49.

Soil colors according to German Standard DIN 4023 are considered automatically, if desired, in the drawing of boring logs, Figure B-50.

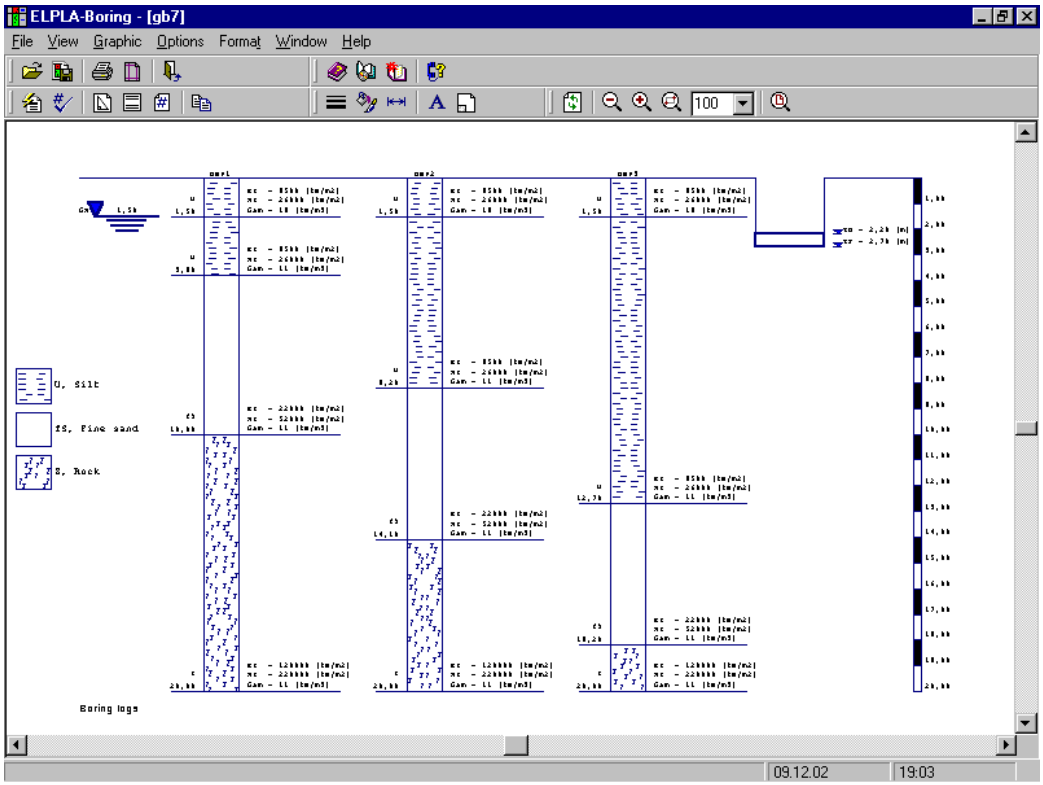


Figure B-49 Many borings together

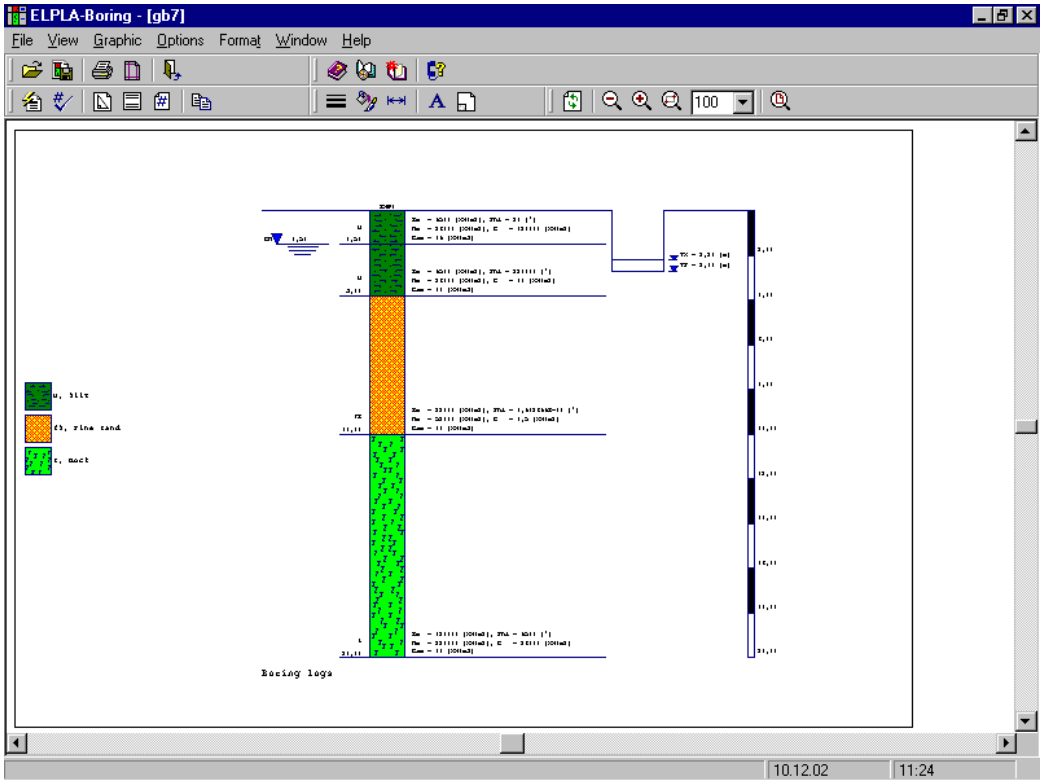


Figure B-50 Boring log with soil colors according to German Standard DIN 4023

4 Enhancements in version ELPLA 8.0

4.1 Calculation methods

- Besides the eight different calculation methods available in ELPLA to analyze foundations, a new method "Flexible foundation (method 9)" is added. This method can be used for settlement calculations of flexible foundations such as embankments, dams or direct loads on the ground, Figure B-51

- You can analyze system of flexible, elastic and rigid foundations together, Figure B-52

- You can determine the influence of flexible neighbor foundations or external loads of different arts on the examined foundation. Until now only the influence of elastic or rigid neighbor foundations could be considered, Figure B-53

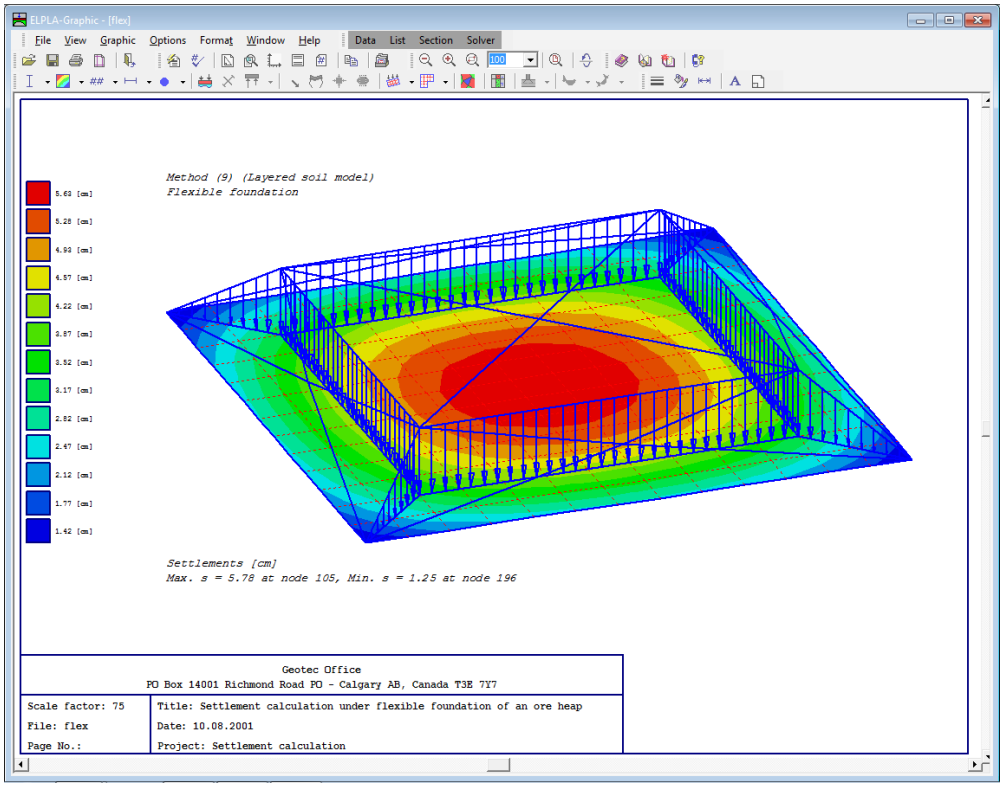


Figure B-51 Flexible foundation

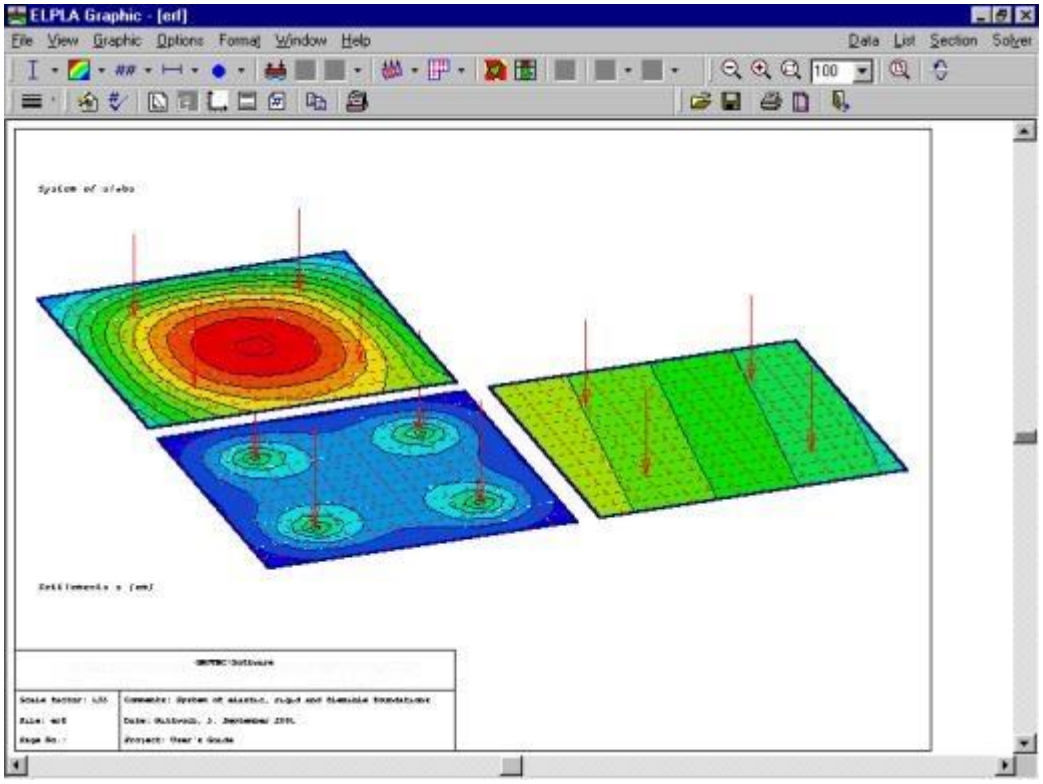


Figure B-52 System of flexible, rigid and elastic foundations

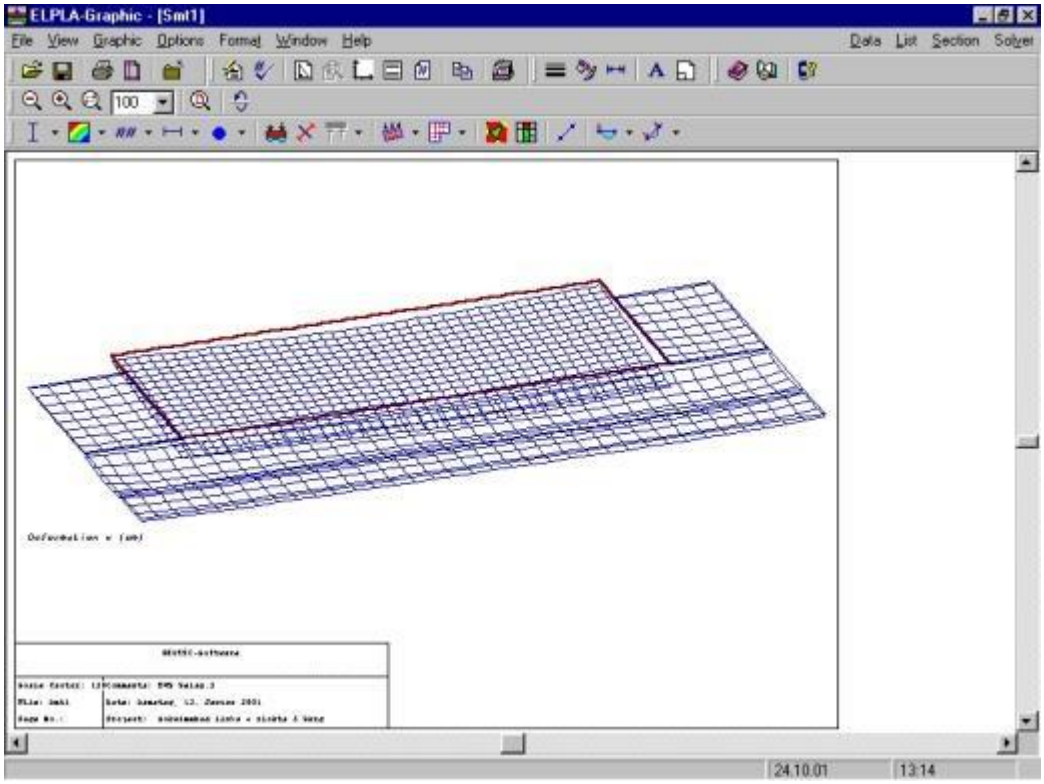


Figure B-53 Influence of flexible neighbor foundations

- You can introduce translational or rotational spring stiffness on nodes for the rigid slab (method 8). Until now, it was possible only for methods 1 to 7. The springs can be used for analysis of rigid pile caps, Figure B-54

- Negative contact pressure can be eliminated for methods 1 to 8, if it appears on the bottom of the foundation. Until now, elimination of negative contact pressures was available for methods 4, 6 and 8, Figure B-55

4.2 Soil

- Not only bilinear but also nonlinear soil deformations can be taken into account, as example for plastic deformations at heavy loading, Figure B-56

- For all nodes the bearing capacity of foundation on a variable soil can be determined through interpolation, Figure B-57

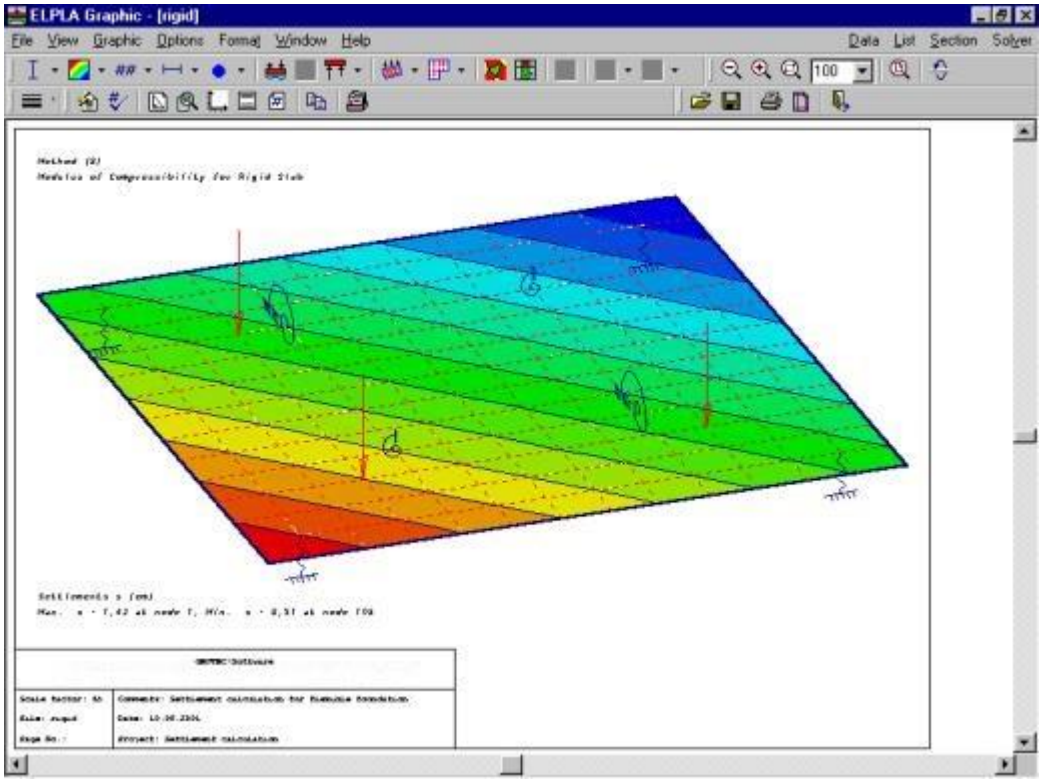


Figure B-54 Rigid raft with translational and rotational spring

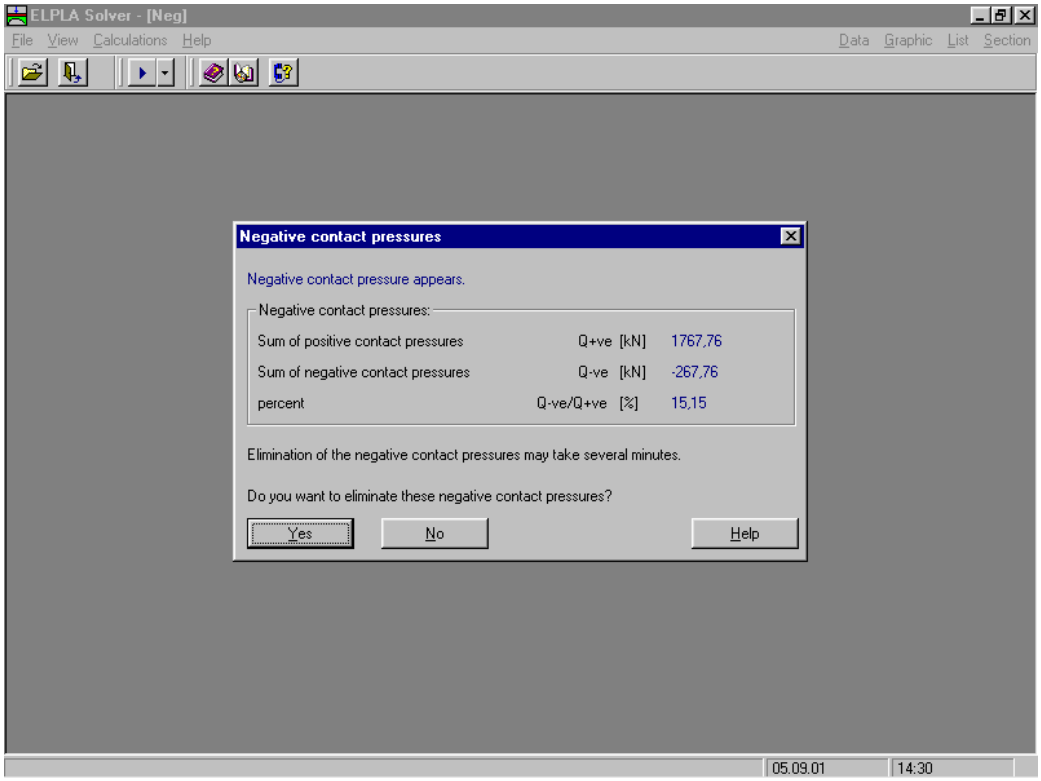


Figure B-55 Elimination of negative contact pressure

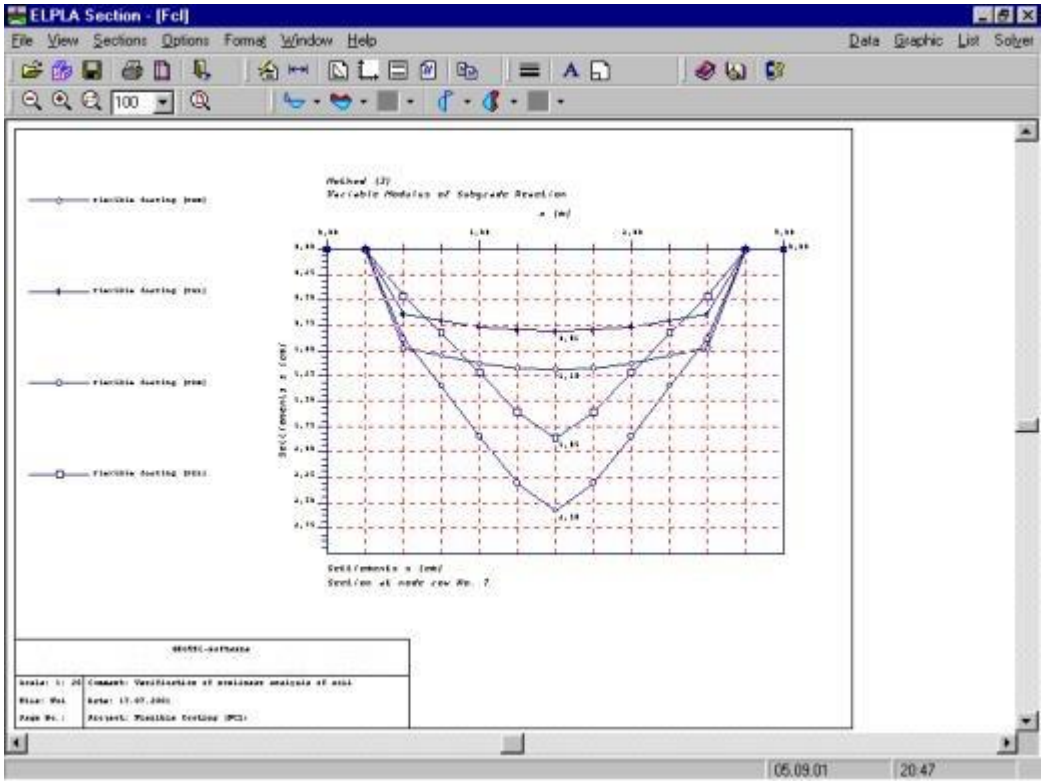


Figure B-56 Nonlinear soil deformation

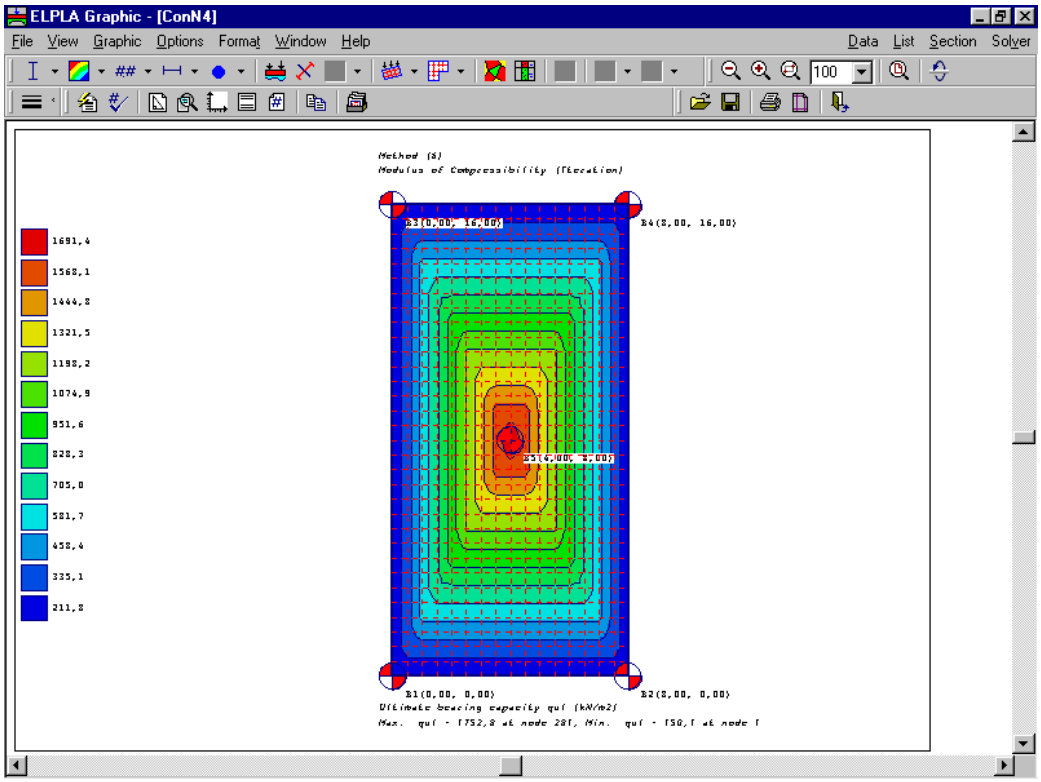


Figure B-57 Bearing capacity for variable soil

4.3 Plot parameters

- Line formats can be defined and saved, Figure B-58
- The fill color can be defined and saved, Figure B-59
- Font format (size, type …) can be defined and saved, Figure B-60
- You can define and save the maximum ordinate, length, side or diameter of symbols for the drawing, Figure B-61

4.4 Input data

- The menus are extended by some explanation figures, Figure B-62
- The values of data, if desired, can be displayed on the FE-Net, Figure B-63
- The additional settlement can be defined graphically, Figure B-64
- Boring fields can be defined graphically, Figure B-65
- Boring logs can be inserted from a file, Figure B-66
- Besides the definition of girder section by moment of inertia and torsion moment of inertia, the section can be also defined by its width and height, Figure B-67

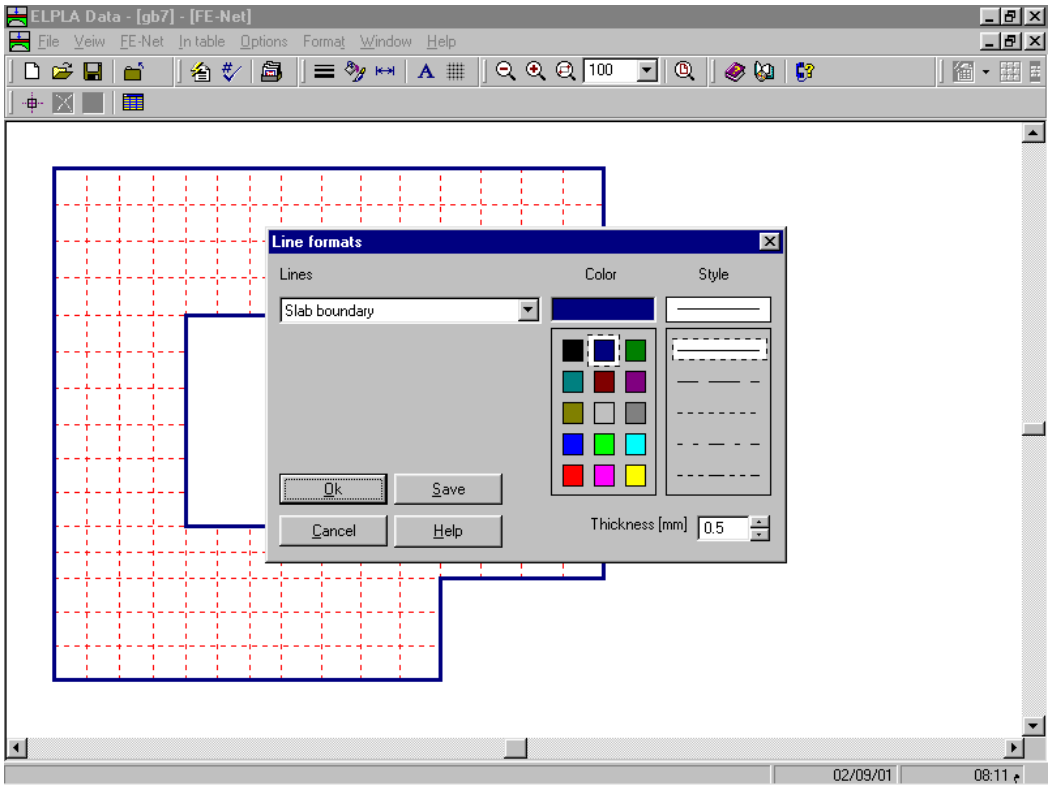


Figure B-58 Line formats

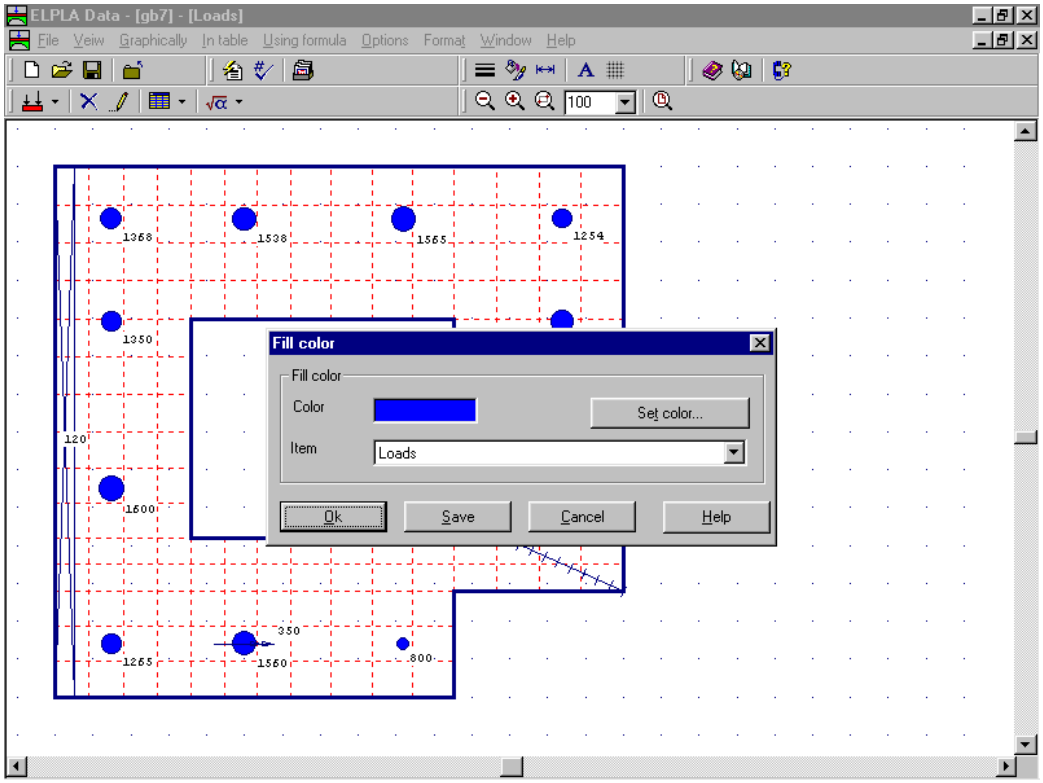


Figure B-59 Fill color

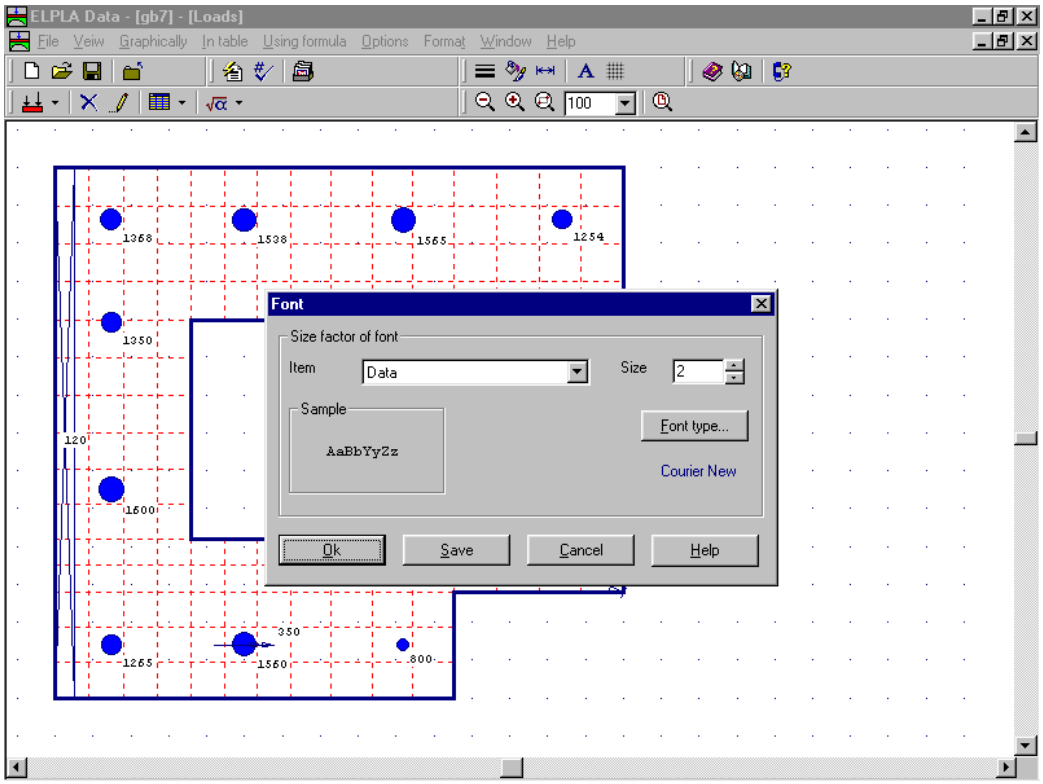


Figure B-60 Font

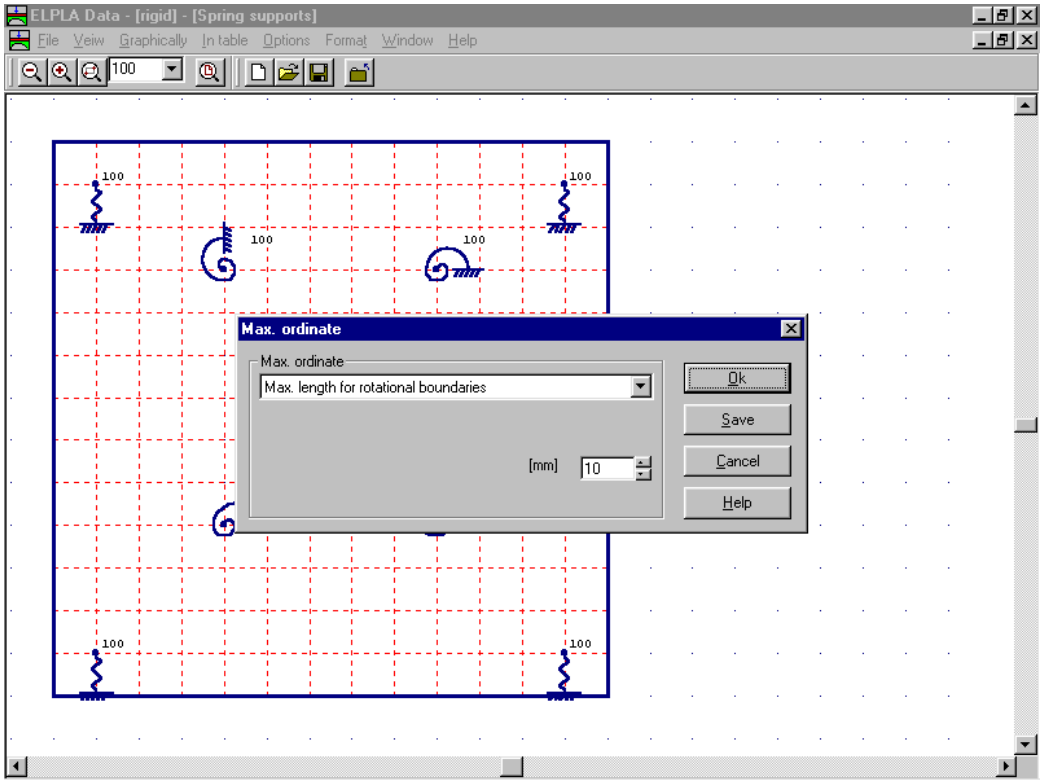


Figure B-61 Max. ordinate

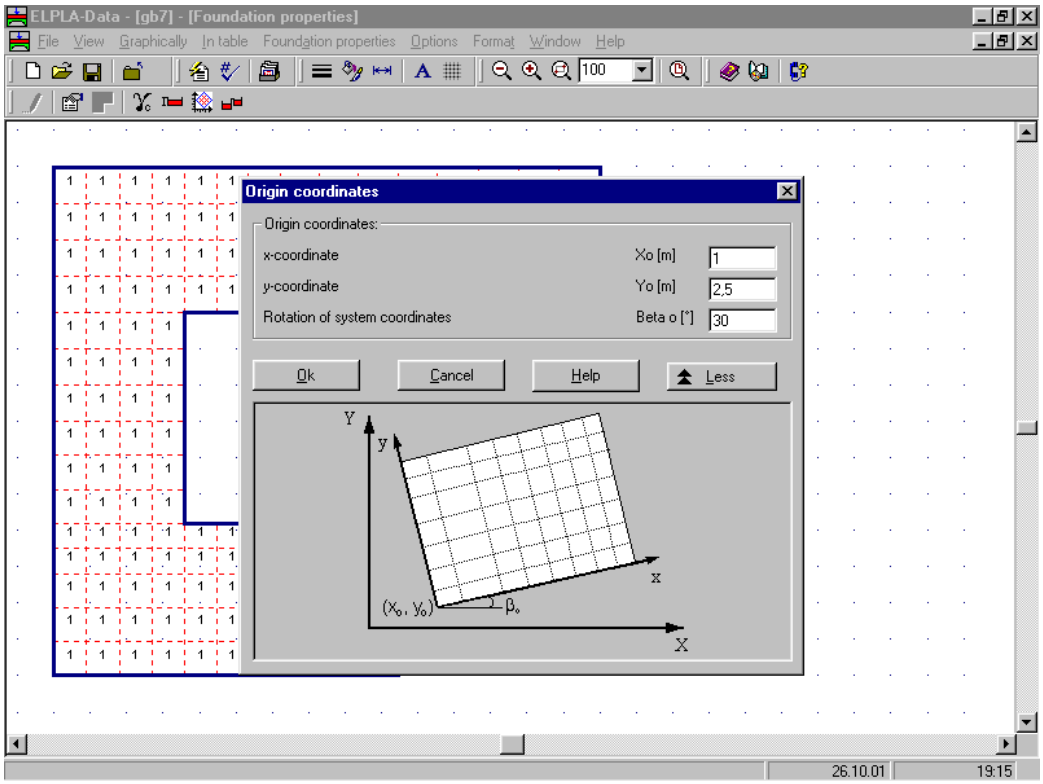


Figure B-62 Menu with explanation figure

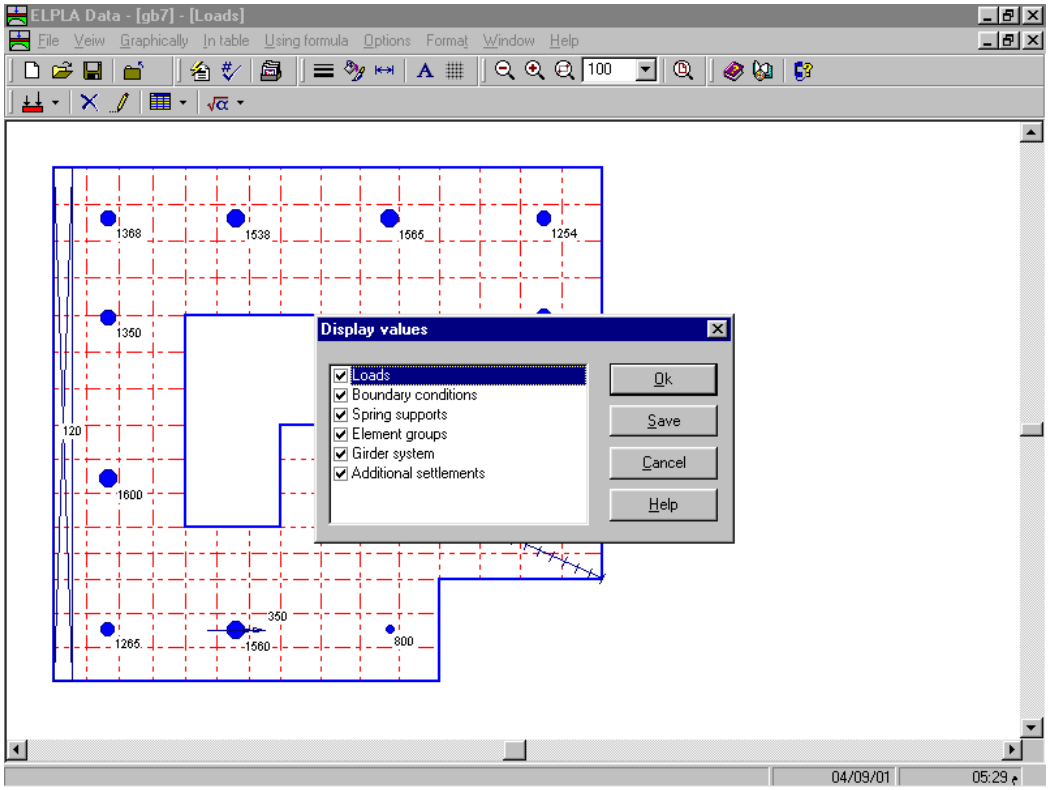


Figure B-63 Displaying values

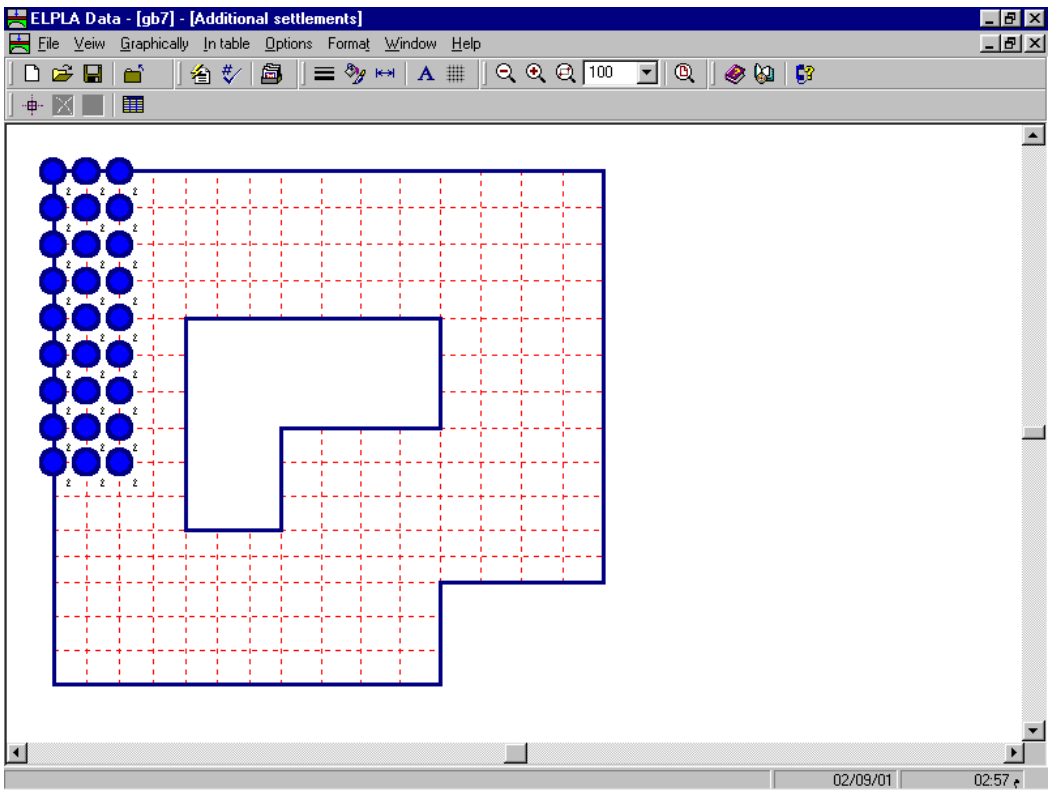


Figure B-64 Defining additional settlements

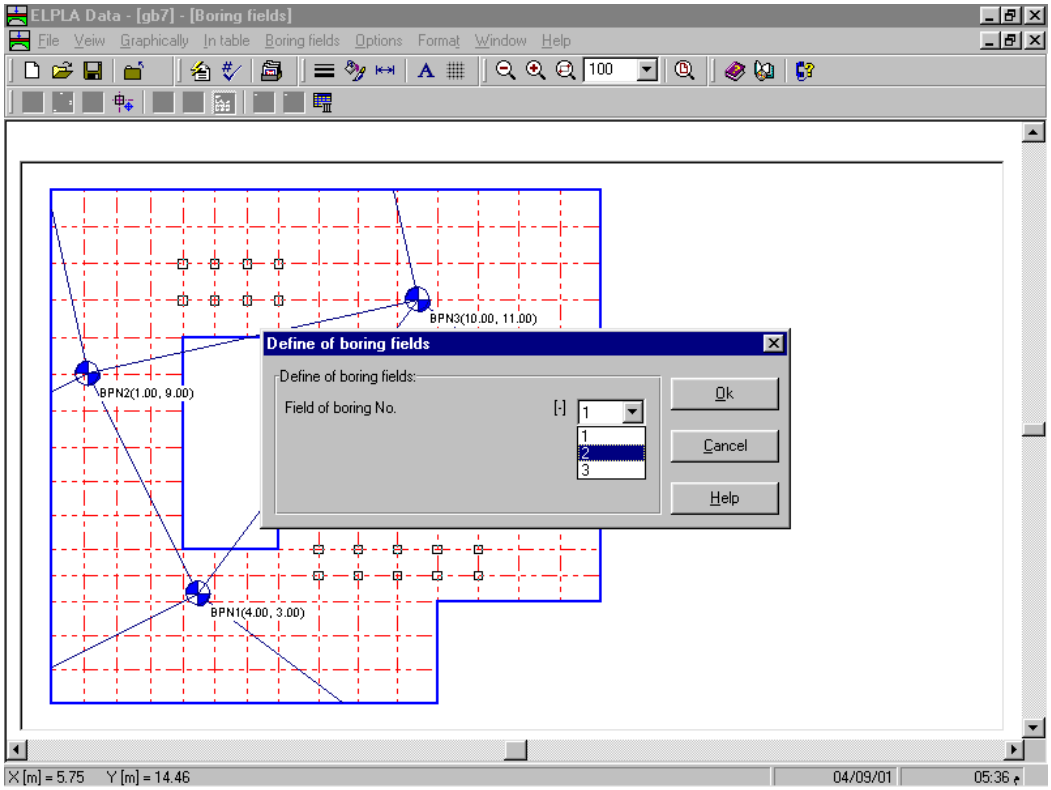


Figure B-65 Defining boring fields

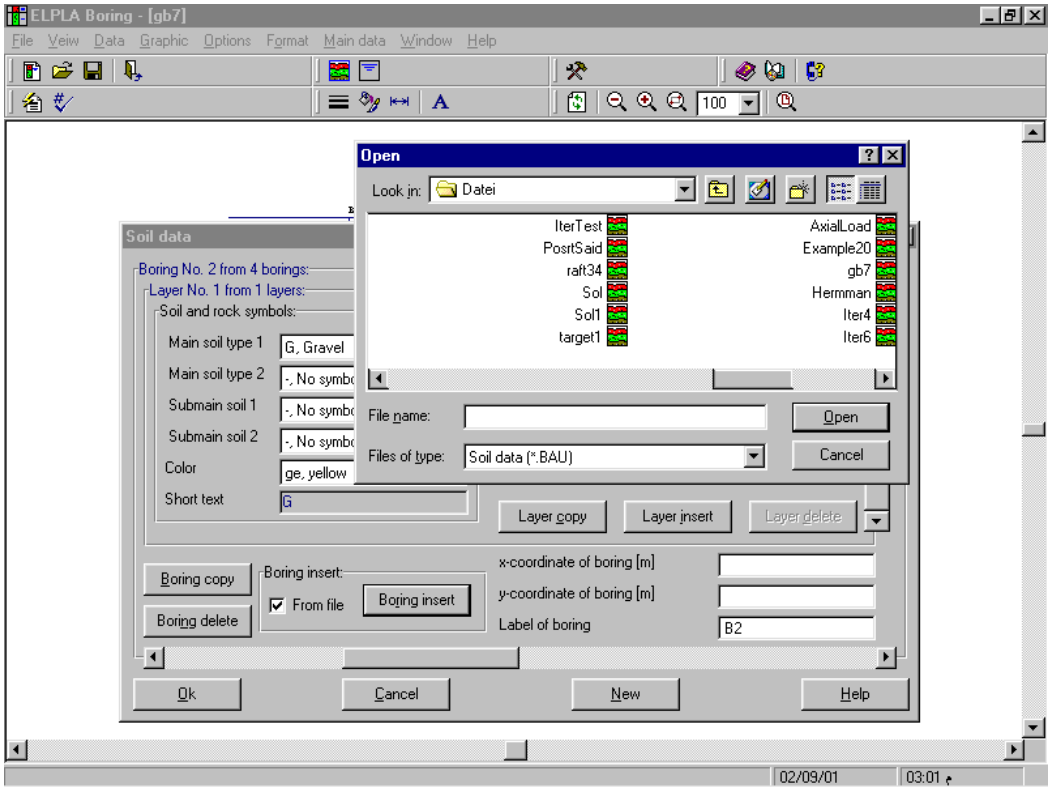


Figure B-66 Inserting the boring log from file

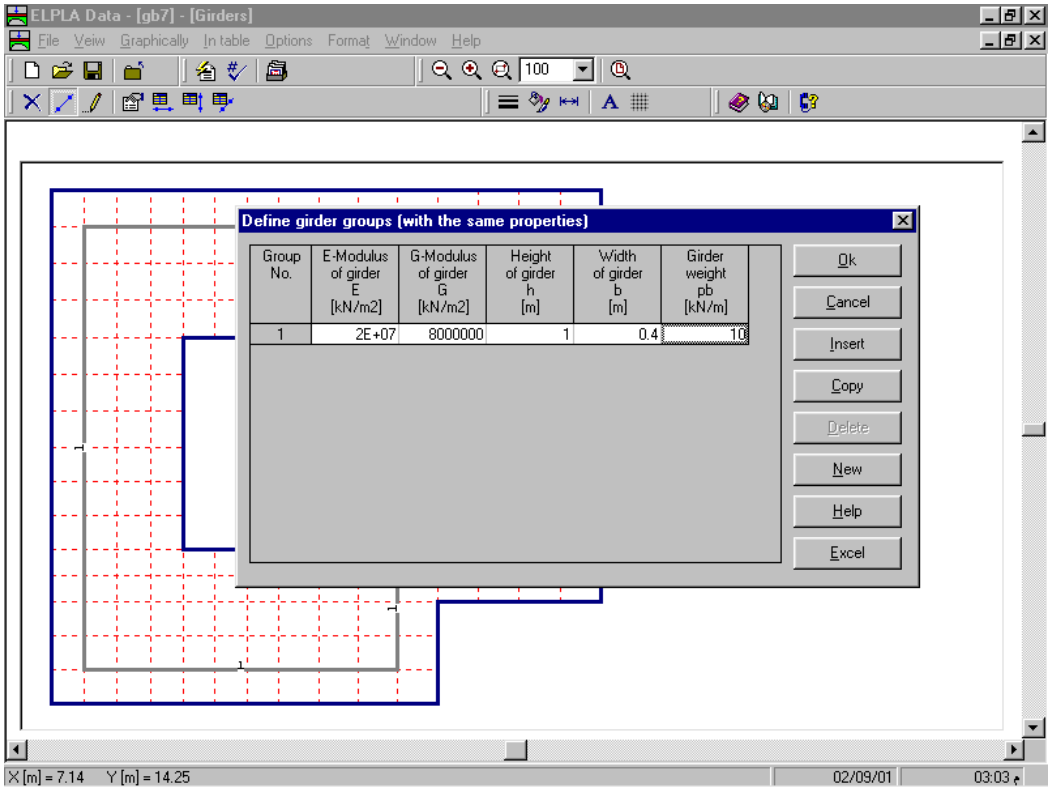


Figure B-67 Defining the girder section by width and height

- The stiffness of girders those have T/ L-section can be simulated on the slab by using additional beam elements. The stiffness of the girder can be obtained through a replacement beam arranged in the center plan of the slab. The dimensions of the replacement beam can be determined as in DIN 1075 or EC 2, Figure B-68

- When defining a set of data (for example FE-Net), another data with this set can be displayed - for example FE-Net with loads and boring locations, Figure B-69

- The date can be defined from the computer calendar, Figure B-70

- When all data sets are defined and saved, changes are carried out to one set, the data that are affected by these changes can be automatically fixed (for example the data those are set outside the FE-Net), Figure B-71

- It is possible to import or export data to MS Excel, Figure B-72

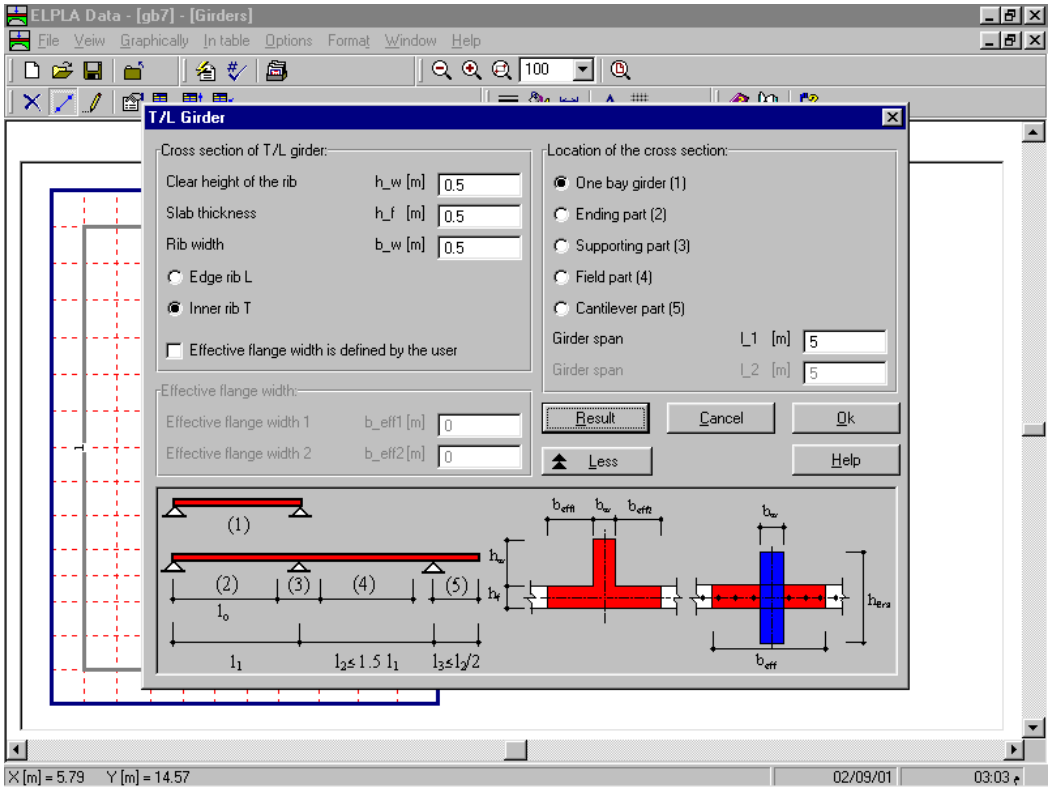


Figure B-68 Defining the girder of T/L-section

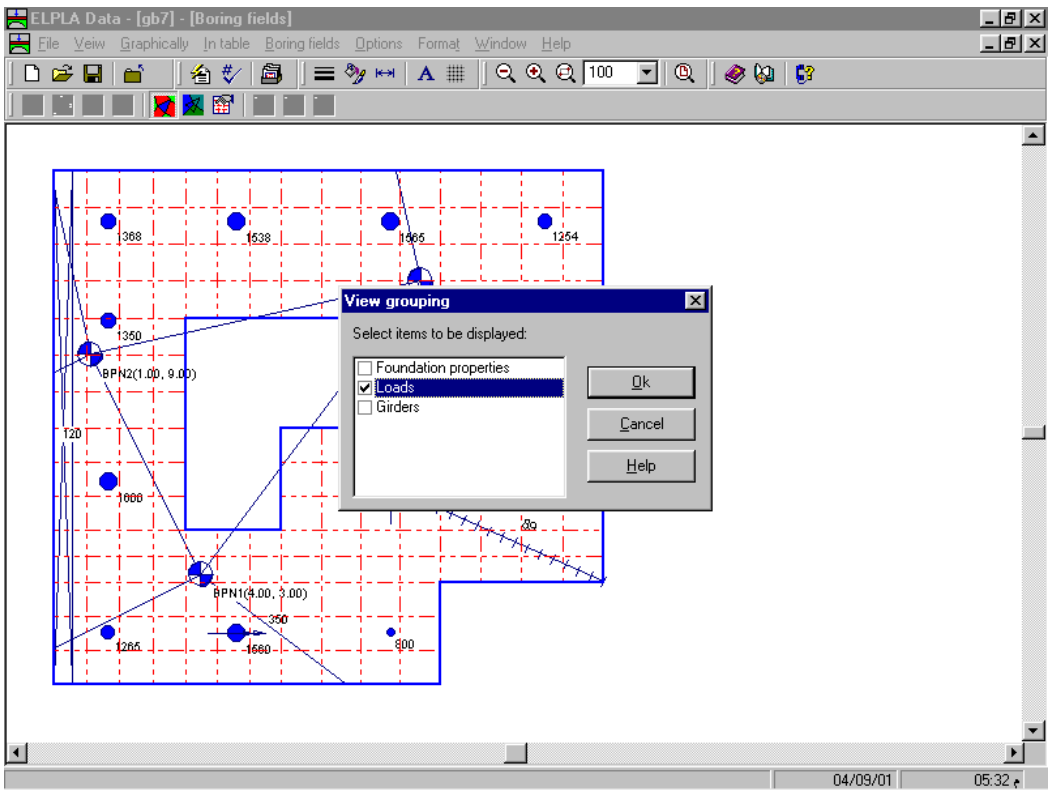


Figure B-69 View grouping data

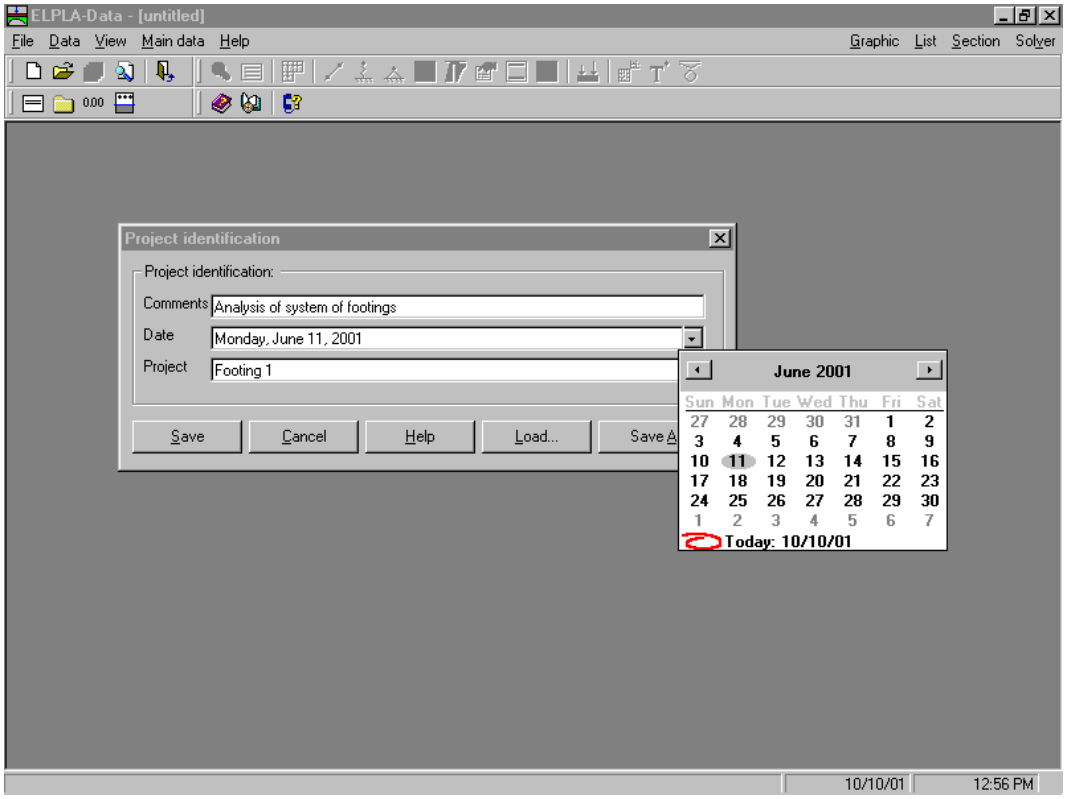


Figure B-70 Defining the date from computer calendar

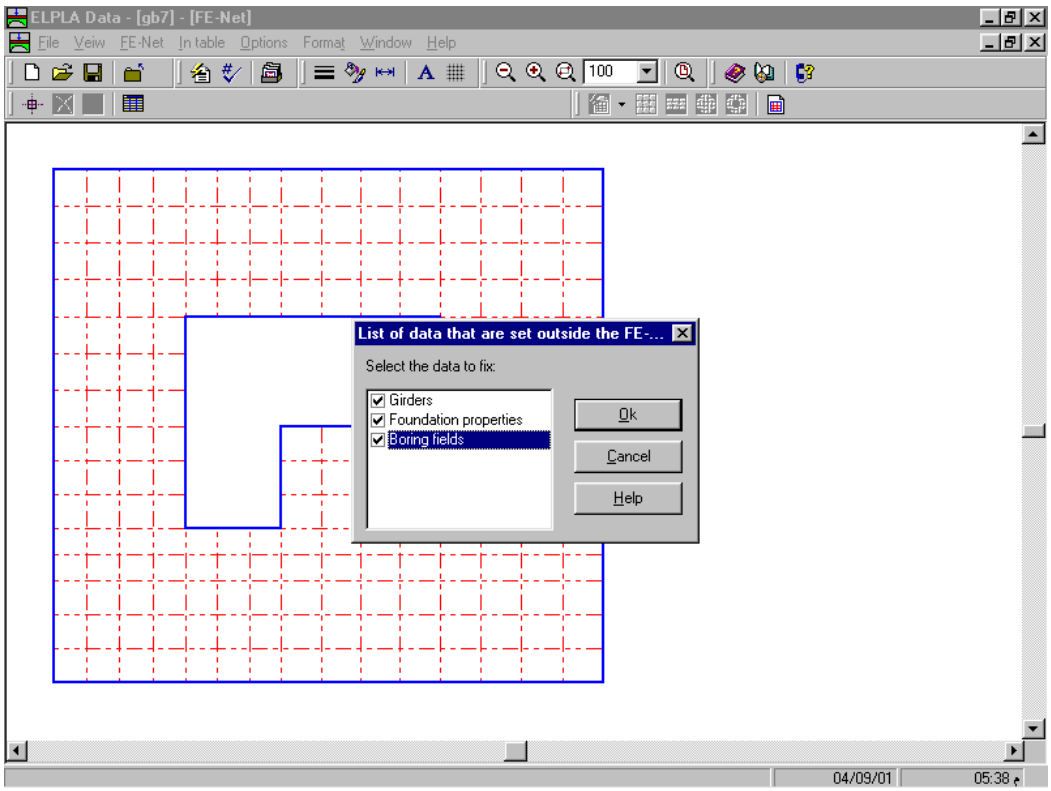


Figure B-71 Fixing data outside FE-Net

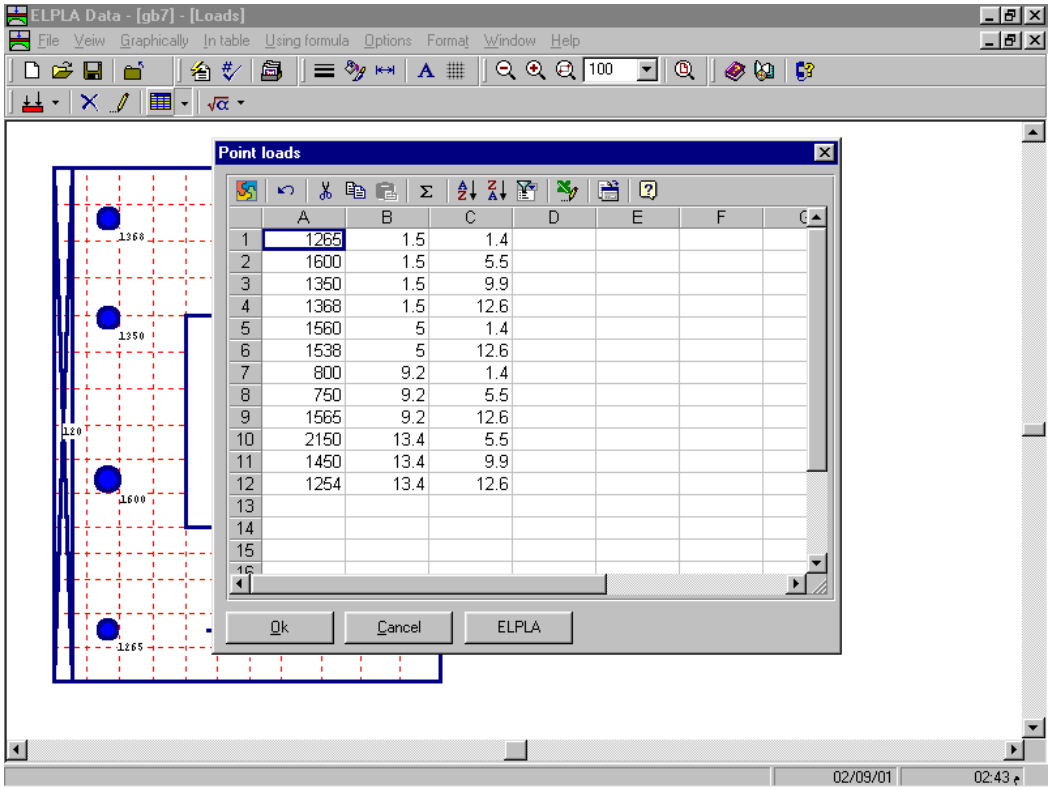


Figure B-72 Exporting and importing data to MS Excel

4.5 File list

- Not only all project data can be deleted but also intermediate results or final results can be separately deleted, Figure B-73

- Deleted files by ELPLA are sent to the recycle pin, Figure B-74

- It is possible to sort ELPLA-files according to project identification data (file name, description, date and project), Figure B-75

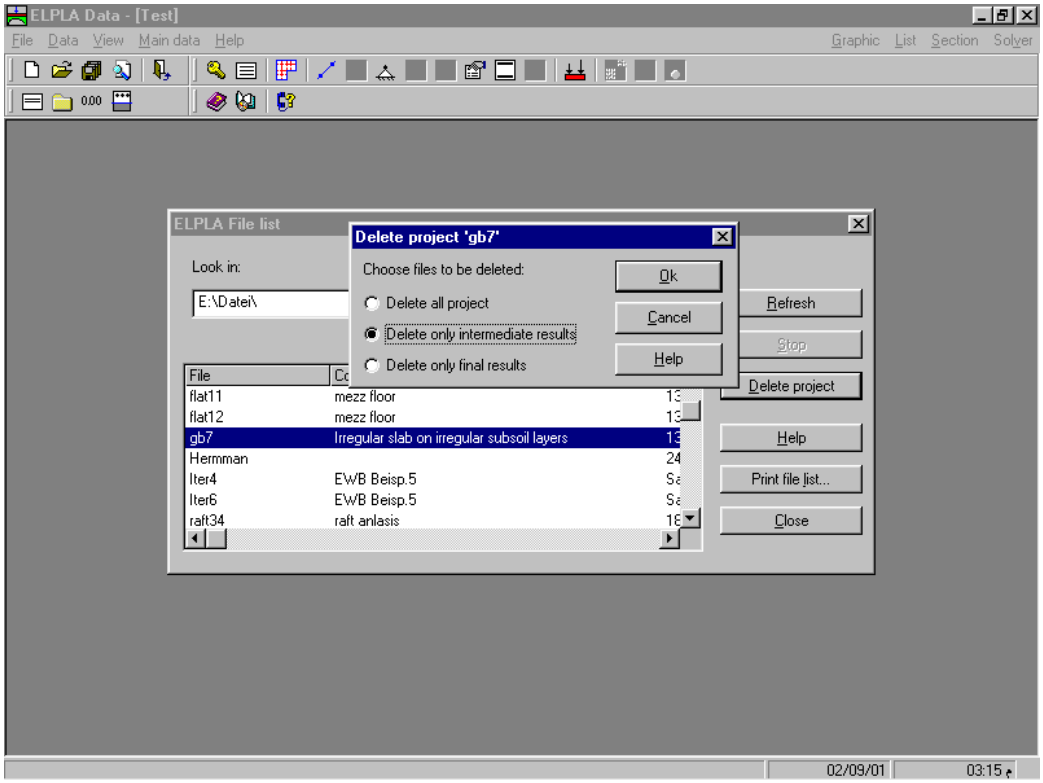


Figure B-73 Deleting intermediate and finial results

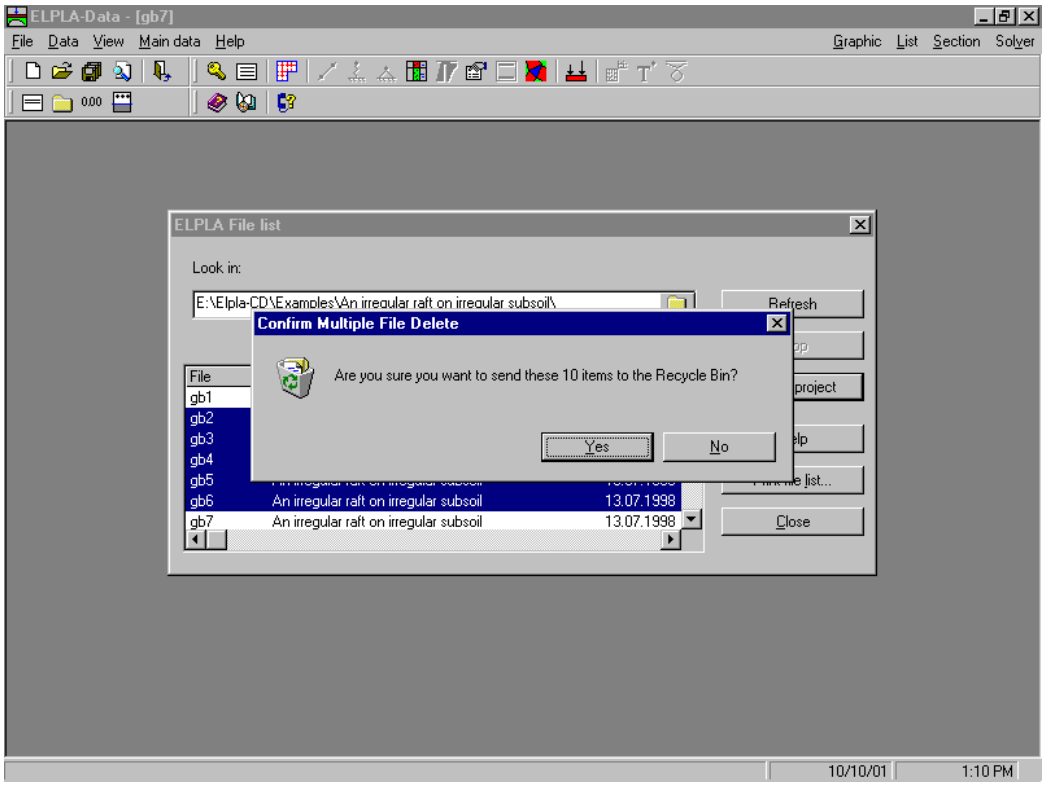


Figure B-74 Sending deleted files to recycle pin

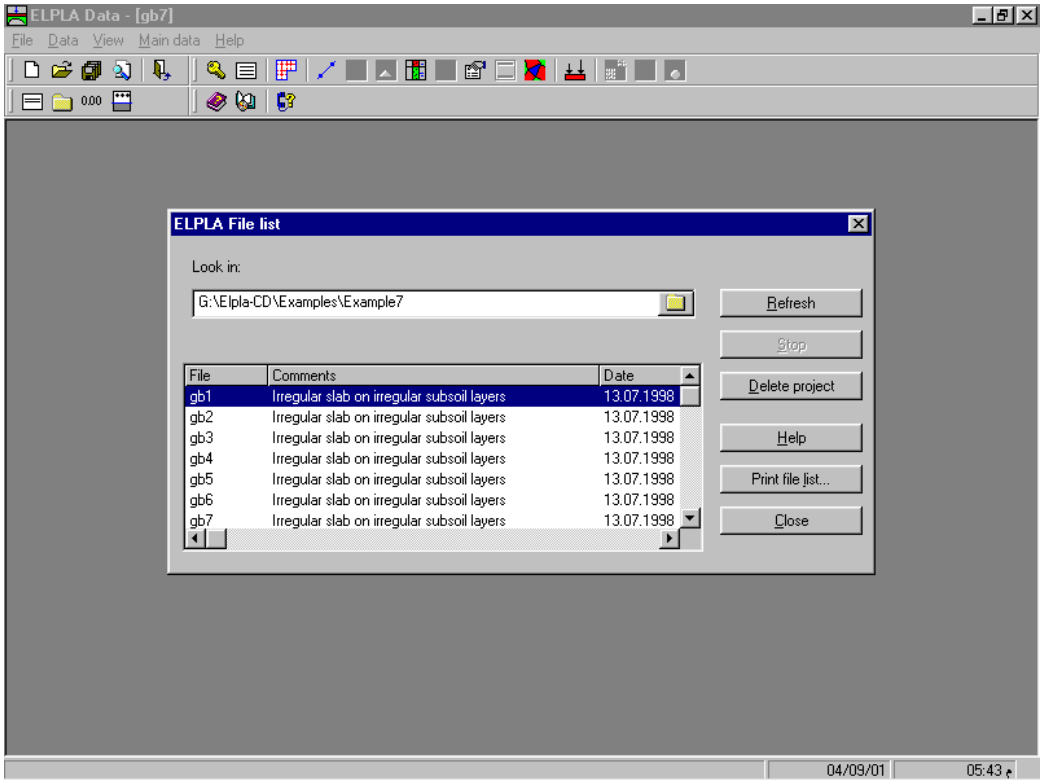


Figure B-75 Sorting ELPLA-files

4.6 Templates

- Templates for different types of FE-Net are available, Figure B-76

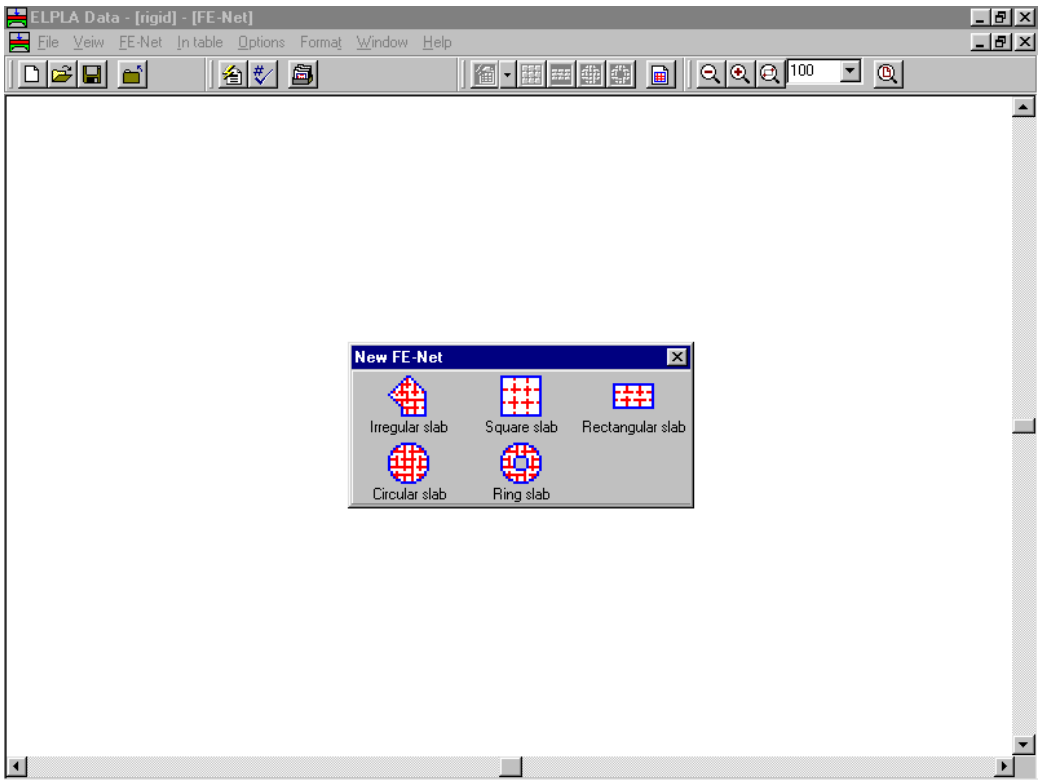


Figure B-76 Templates for different types of FE-Net

4.7 Graphic

- The limit depth can be drawn, if desired, beside its corresponding boring log, Figure B-77

- When drawing a group of boring logs or limit depths in one presentation, the user has the possibility to choose the sequence of boring logs or limit depths (for example boring 6 at the left, boring 1 at the right next to it, boring 3 at the right next to boring 1 etc.). So the user can draw subsoil sections, Figure B-78

- The intensity of numbers on the contour lines can be decided through a writing factor, Figure B-79

- Legend for the maximum ordinate is inserted for results in isometric view, distribution of results in the plan, results as circular diagrams, deformation and principal moments as streaks, Figure B-80

- When studying the effect of neighbor foundations, all foundations can be drawn with data or results in one representation, Figure B-81

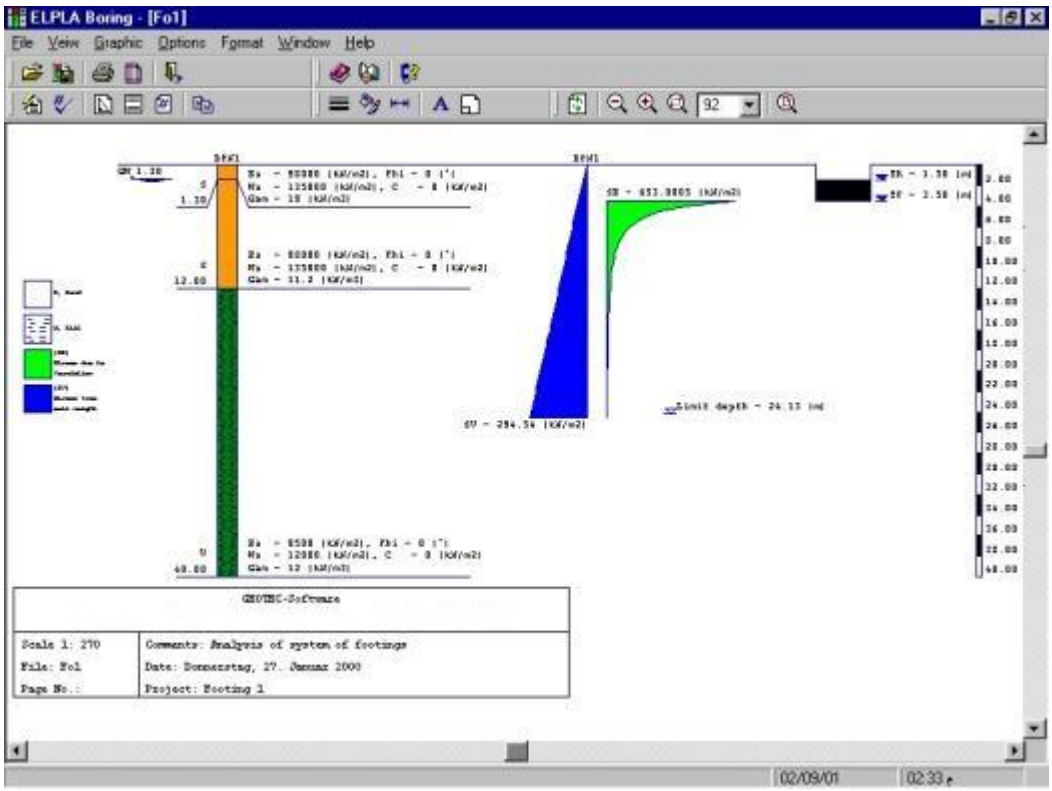


Figure B-77 Limit depth beside boring log

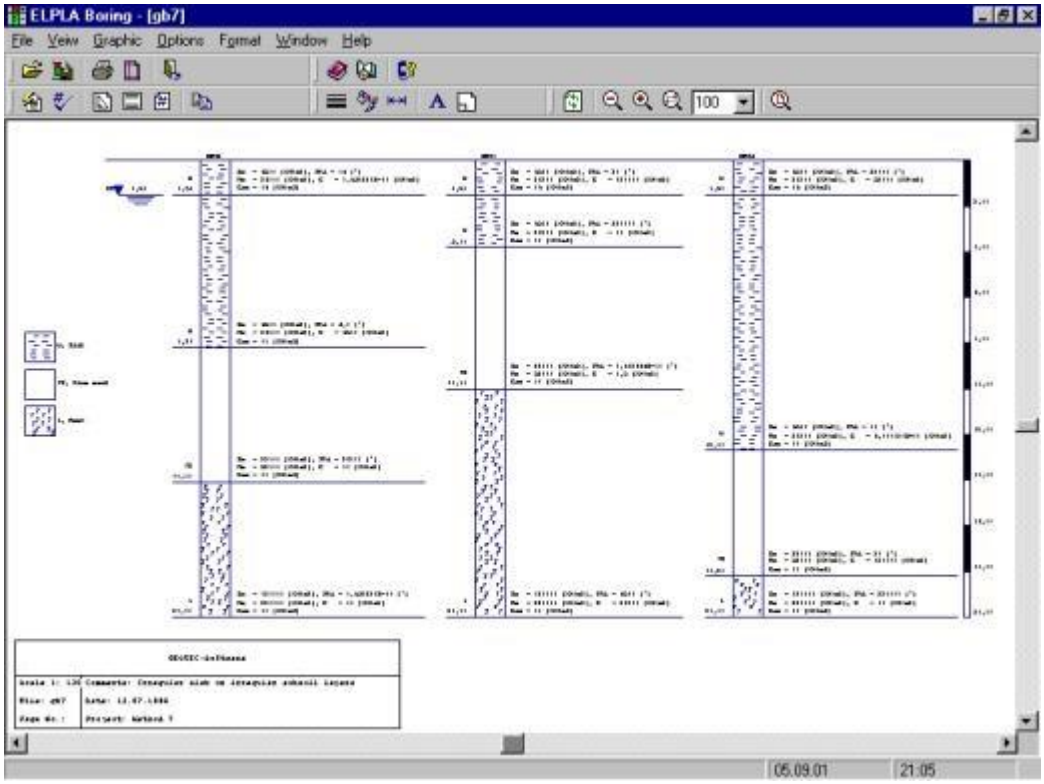


Figure B-78 Choosing the sequence of boring logs in the drawing

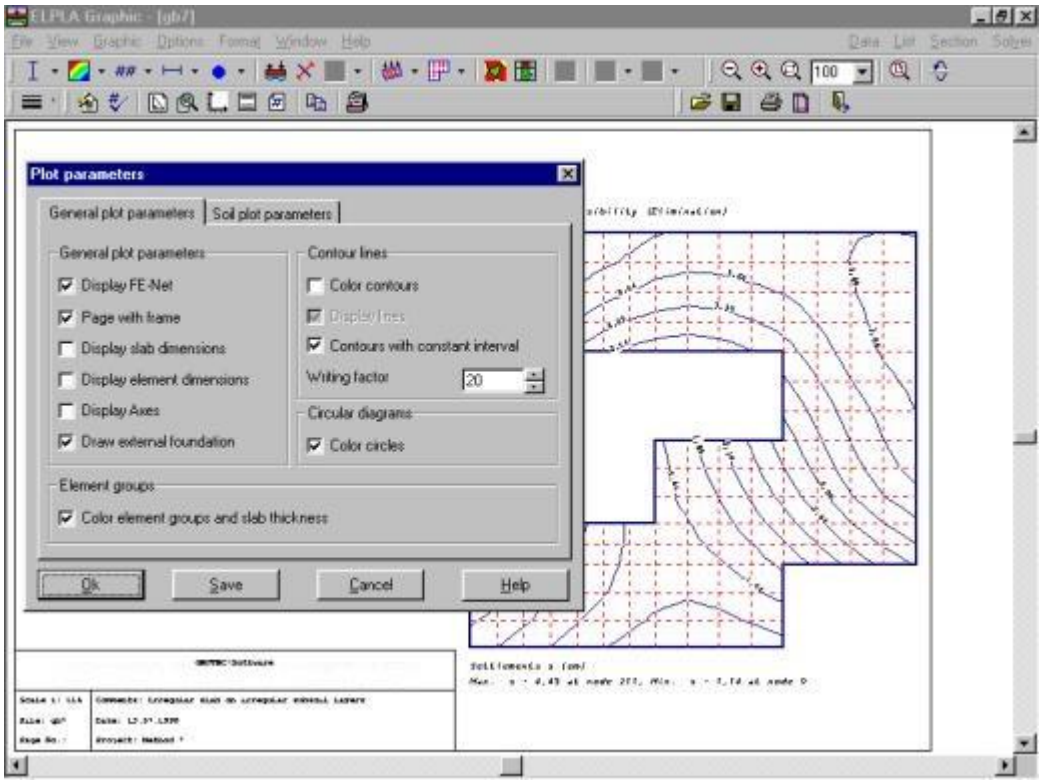


Figure B-79 Writing factor for contour lines

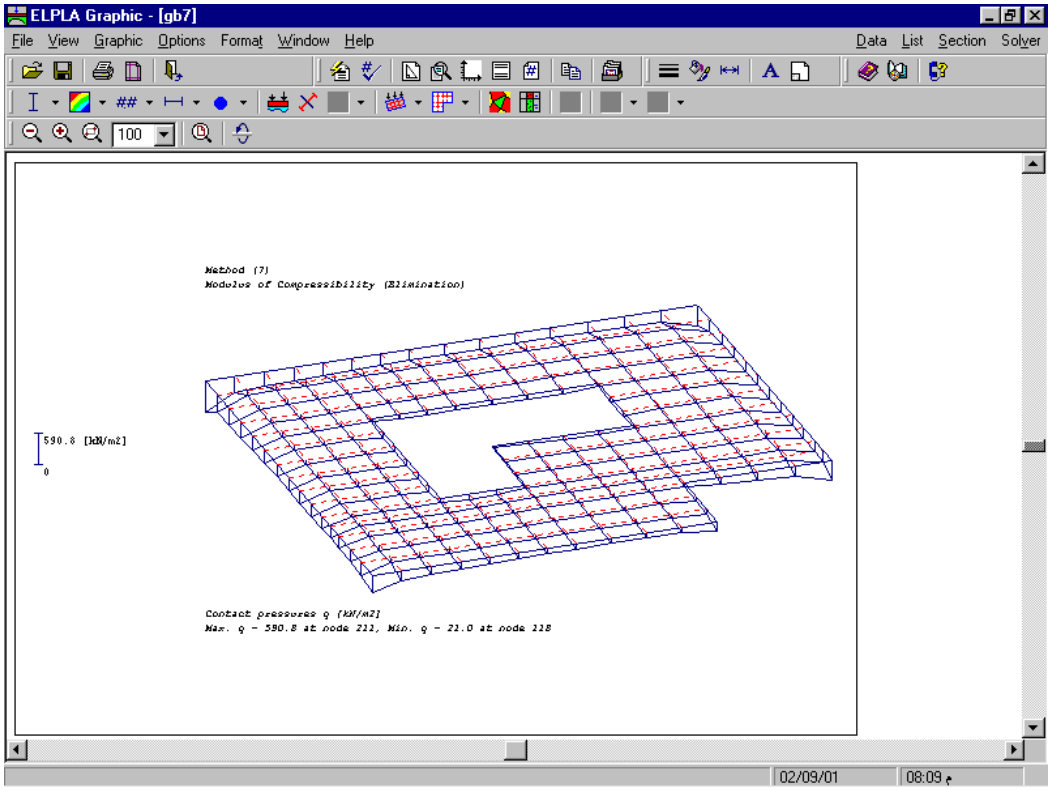


Figure B-80 Legend for maximum ordinate

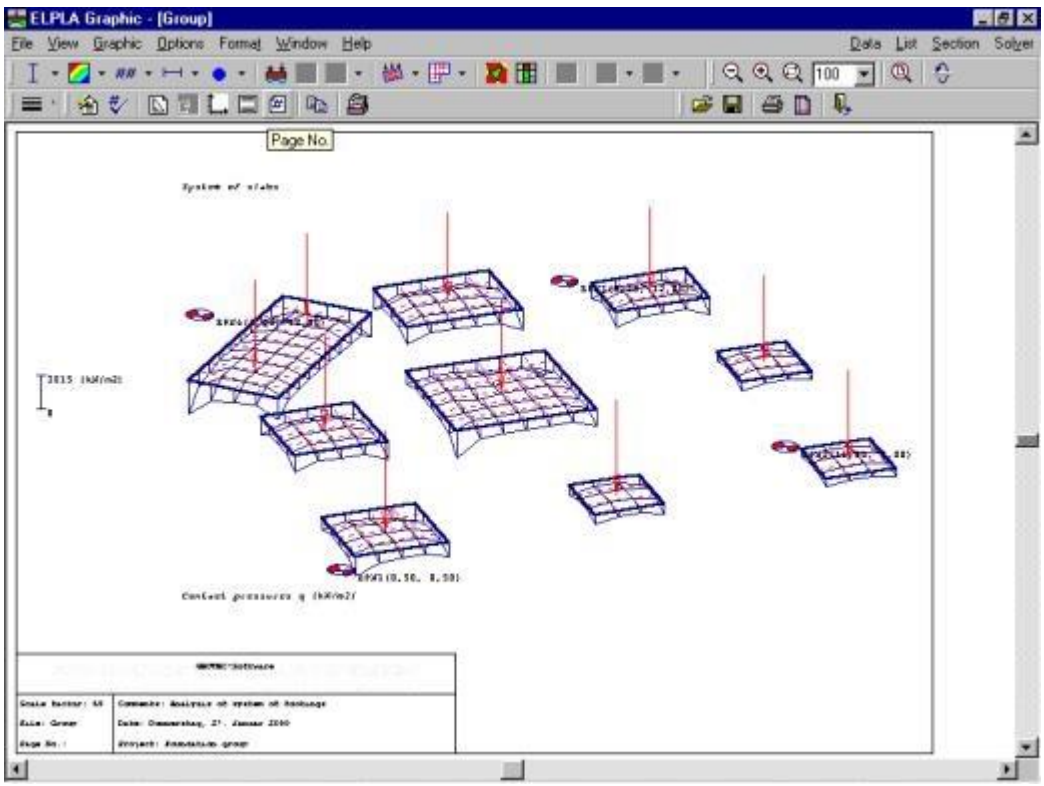


Figure B-81 Drawing a group of foundations with data

- You can draw a group of data with results or a group of data together in one presentation (for example contour lines of settlements with loads and slab thickness, or loads with boring locations), Figure B-82

- When defining view angles about x-, y- and z-axis for a drawing in three-dimensional, the drawing is previewed on a small menu before displaying it on the screen, Figure B-83

- New expressed symbols for boundary conditions and supports are presented, Figure B-84

- If the system is symmetrical, the symbols of symmetry will be automatically drawn, Figure B-85

- The graphical drawing can be copied in Metafile-Format to Clipboard and then inserted directly to other Windows-programs, Figure B-86

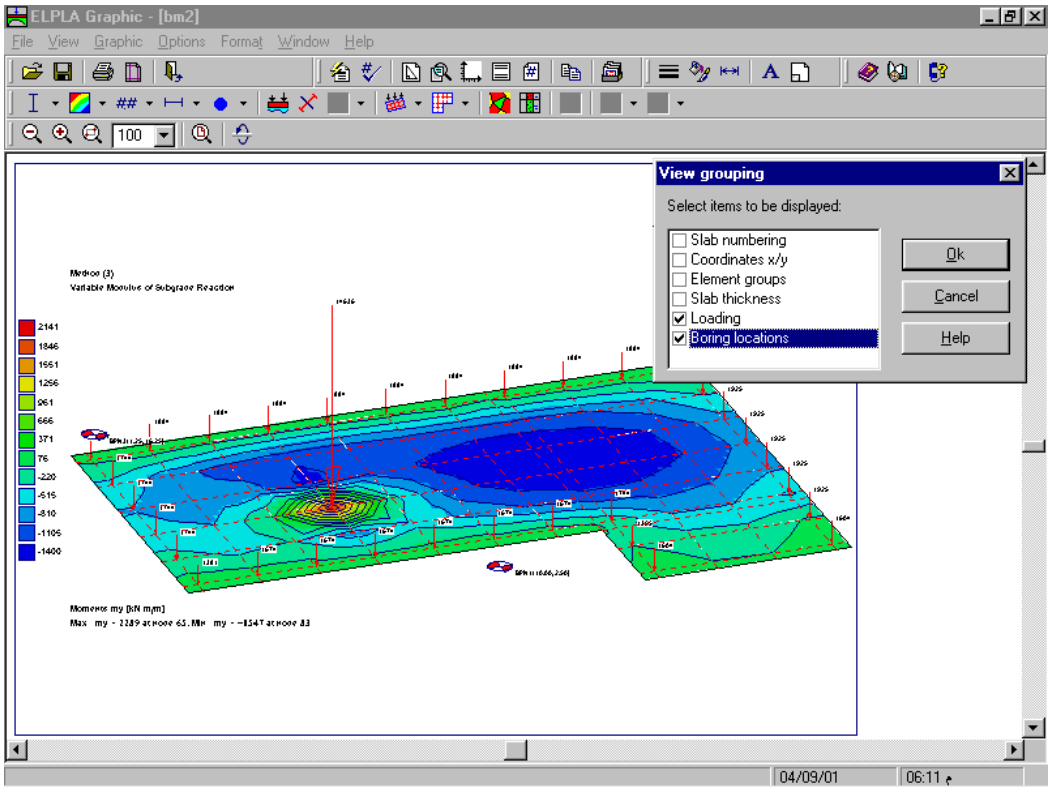


Figure B-82 Drawing data and results in one presentation

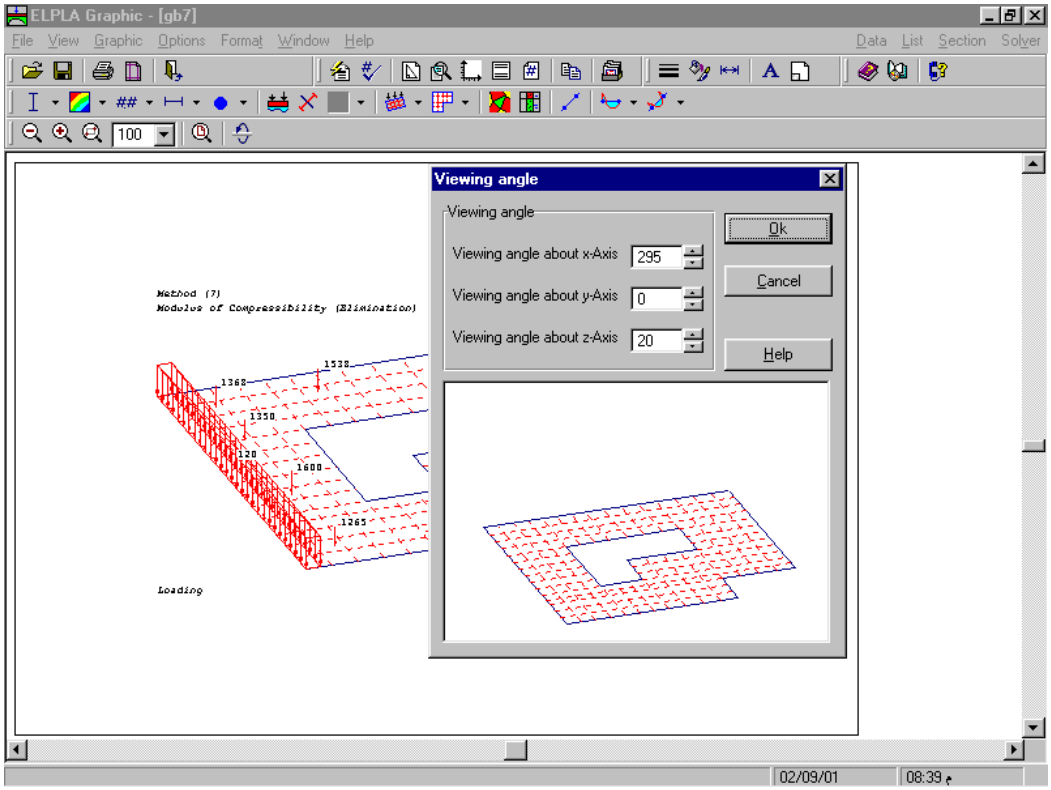


Figure B-83 Viewing angle

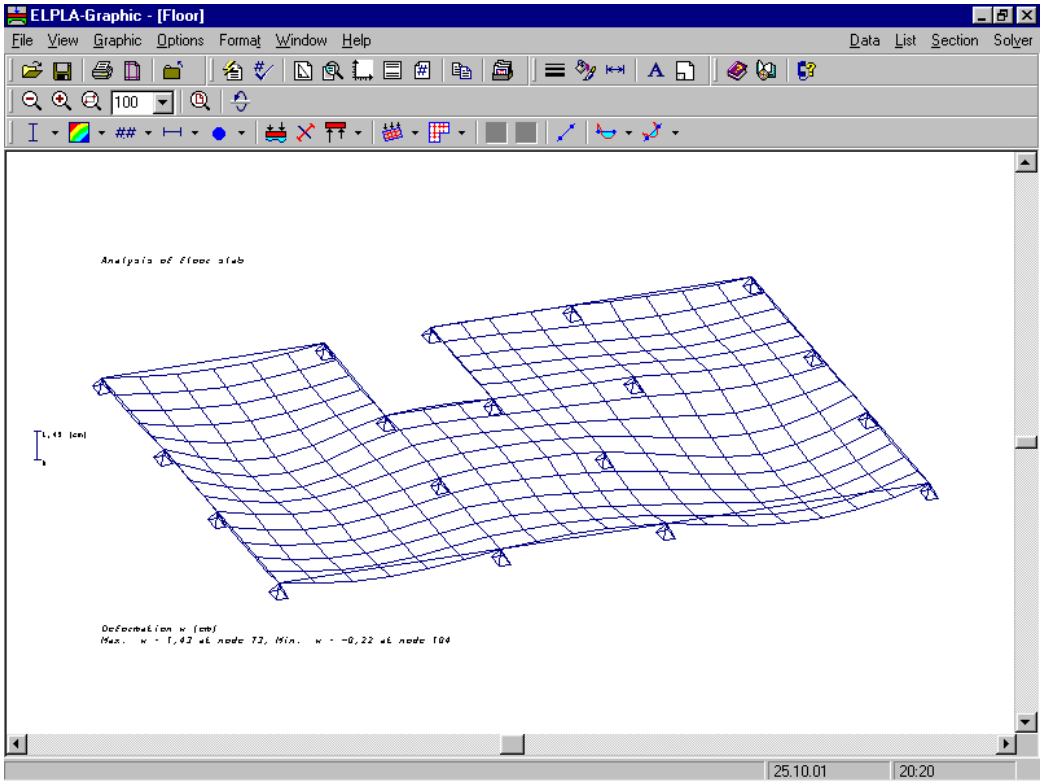


Figure B-84 New expressed symbols for boundary conditions

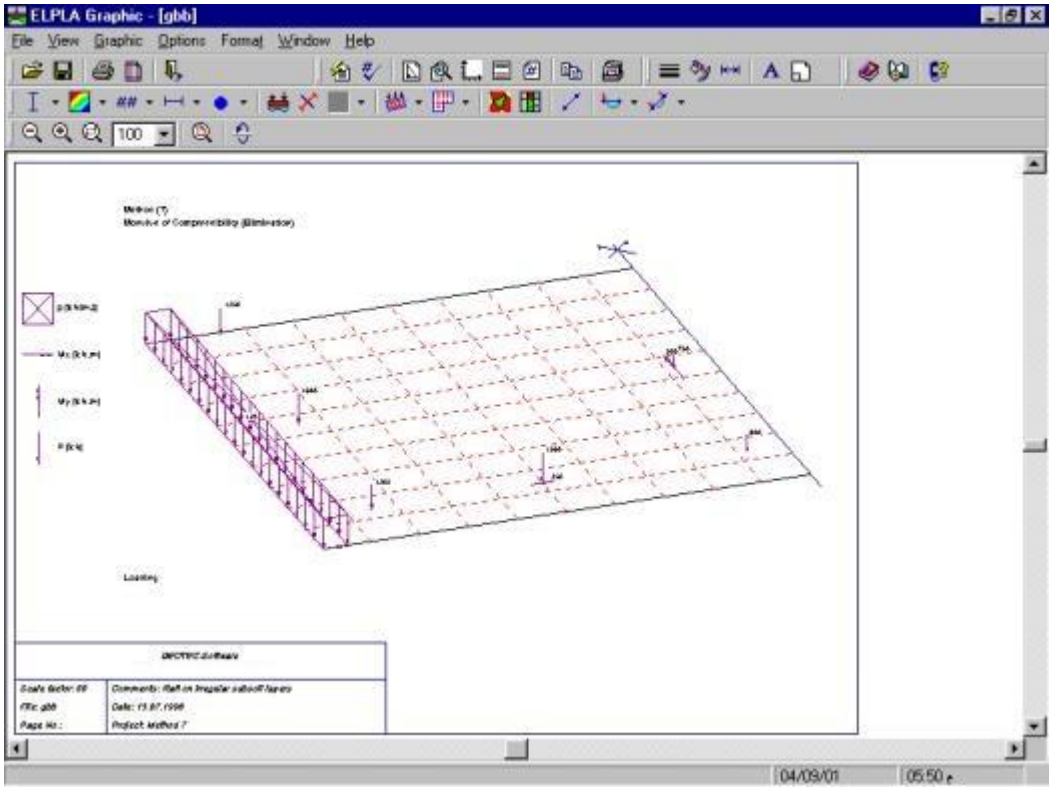


Figure B-85 Drawing symbols of symmetry

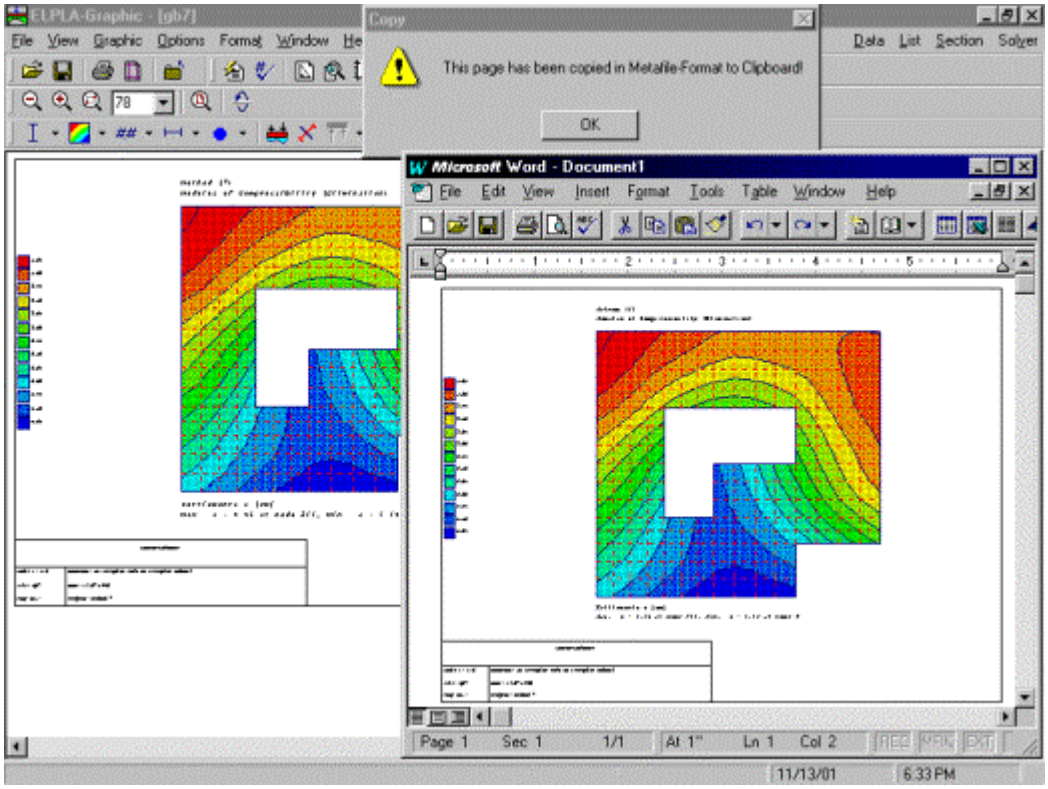


Figure B-86 Copying the drawing to clipboard

4.8 List

- It is possible to export results to MS Excel, Figure B-87
- It is possible to export results to MS Word, Figure B-88
- A new user interface for the program ELPLA-List is developed. The user can deal with different results in different windows at the same time, Figure B-89
- With project Explorer it is possible to swap between data and results easily, Figure B-90

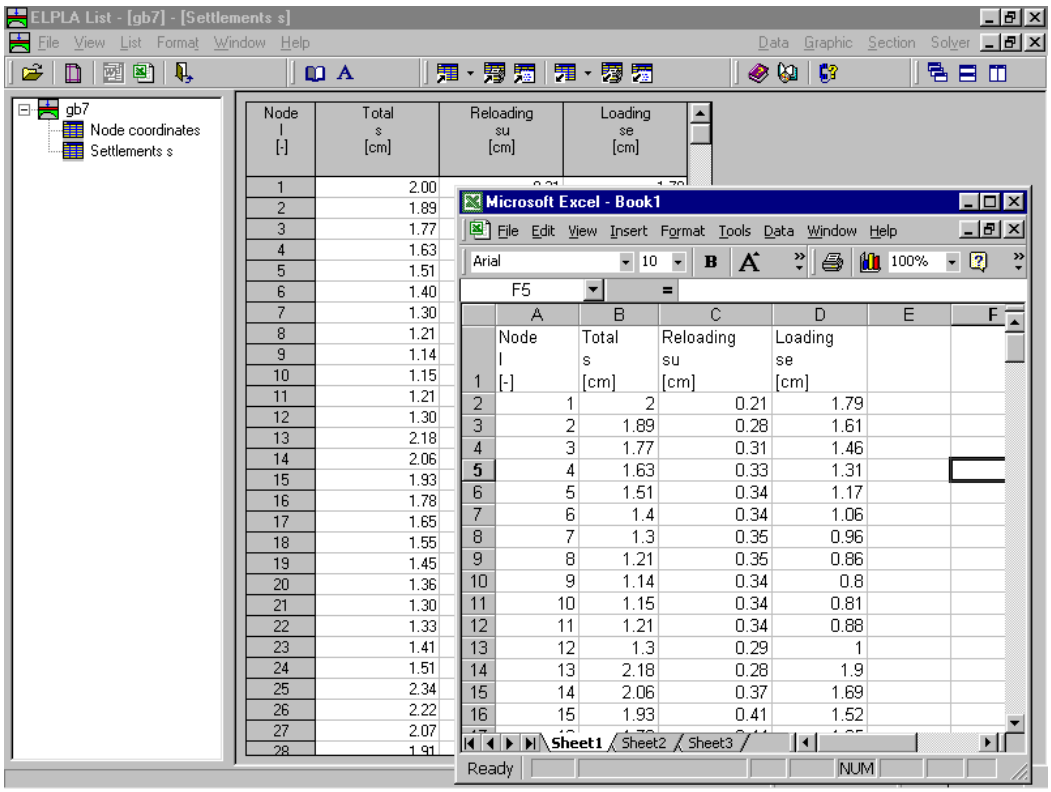


Figure B-87 Export results to MS Excel

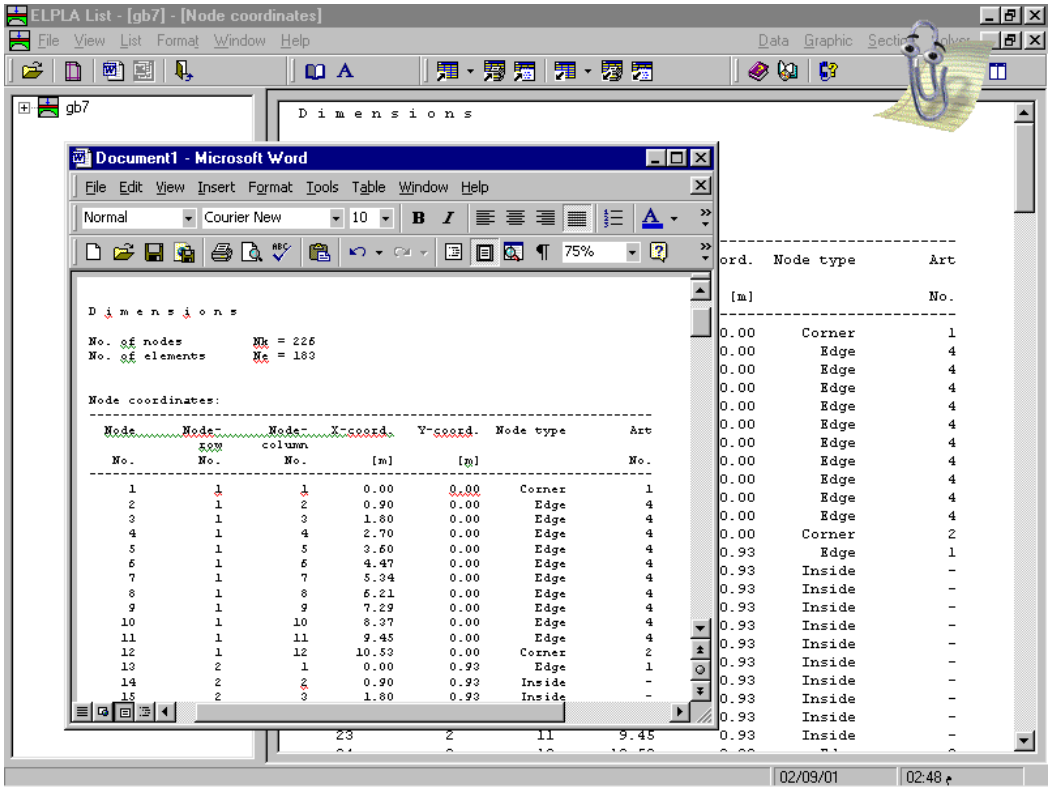


Figure B-88 Export results to MS Word

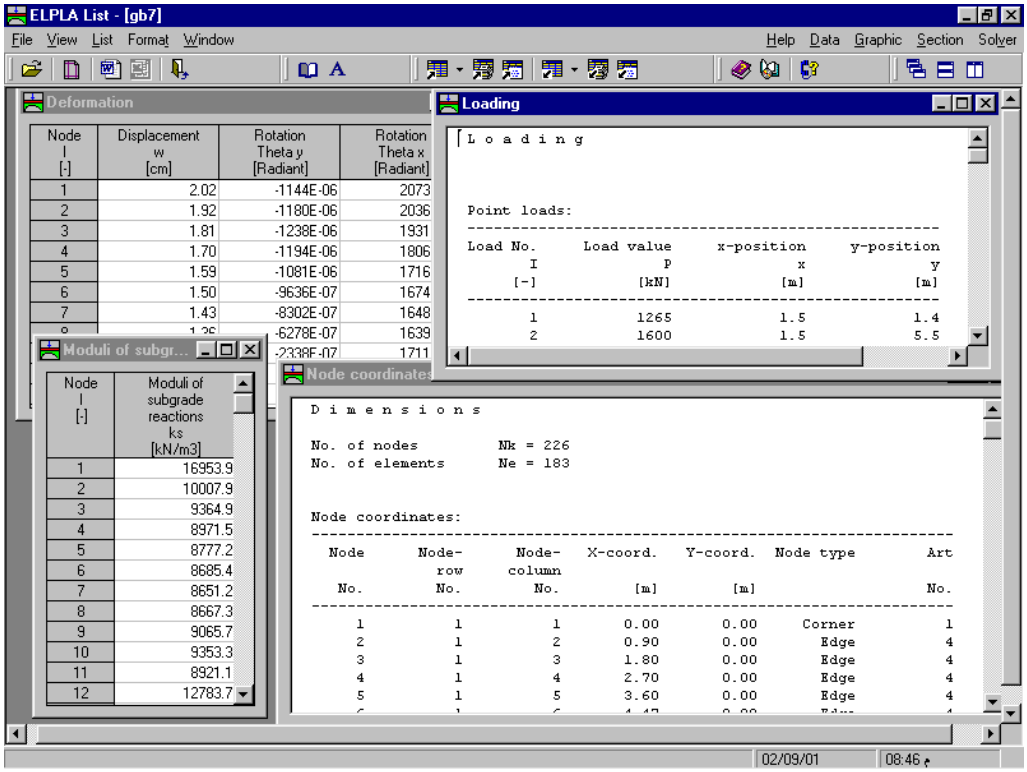
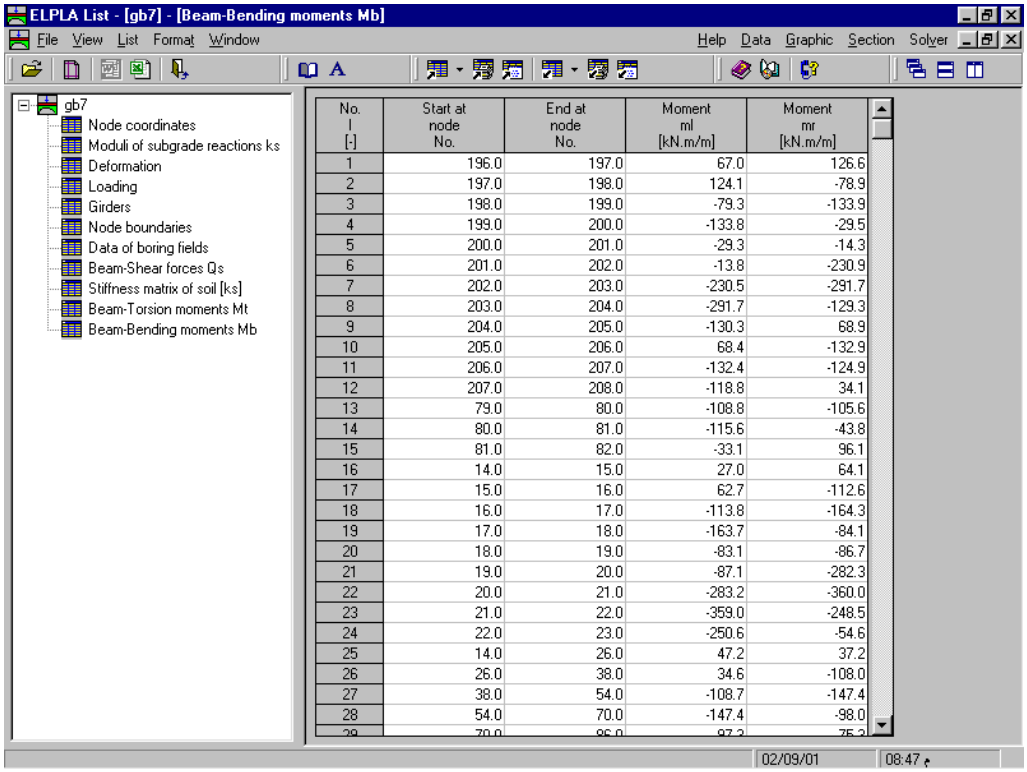


Figure B-89 Many windows of data and results in ELPLA-List



No. l [-]	Start at node No.	End at node No.	Moment ml [kN.m/m]	Moment mr [kN.m/m]
1	196.0	197.0	67.0	126.6
2	197.0	198.0	124.1	-78.9
3	198.0	199.0	-79.3	-133.9
4	199.0	200.0	-133.8	-29.5
5	200.0	201.0	-29.3	-14.3
6	201.0	202.0	-13.8	-230.9
7	202.0	203.0	-230.5	-291.7
8	203.0	204.0	-291.7	-129.3
9	204.0	205.0	-130.3	68.9
10	205.0	206.0	68.4	-132.9
11	206.0	207.0	-132.4	-124.9
12	207.0	208.0	-118.8	34.1
13	79.0	80.0	-108.8	-105.6
14	80.0	81.0	-115.6	-43.8
15	81.0	82.0	-33.1	96.1
16	14.0	15.0	27.0	64.1
17	15.0	16.0	62.7	-112.6
18	16.0	17.0	-113.8	-164.3
19	17.0	18.0	-163.7	-84.1
20	18.0	19.0	-83.1	-86.7
21	19.0	20.0	-87.1	-282.3
22	20.0	21.0	-283.2	-360.0
23	21.0	22.0	-359.0	-248.5
24	22.0	23.0	-250.6	-54.6
25	14.0	26.0	47.2	37.2
26	26.0	38.0	34.6	-108.0
27	38.0	54.0	-108.7	-147.4
28	54.0	70.0	-147.4	-98.0

Figure B-90 Swapping between data and results

4.9 Languages

ELPLA is available in three languages: English, German and Arabic. An exchange of data for the three versions is possible with full compatibility .

4.10 Boring log

The new separate program ELPLA-Boring is developed. By the program the user can define boring logs graphically and draw limit depths, Figure B-94.

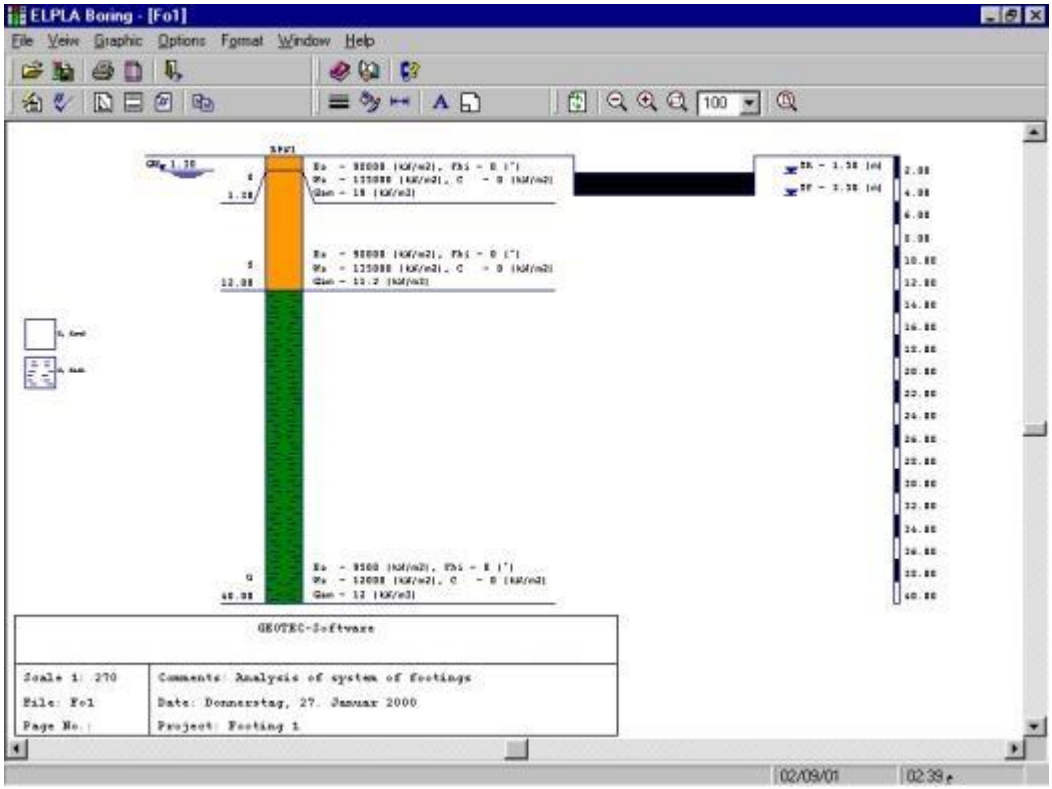


Figure B-94 ELPLA-Boring

4.11 ELPLA-Editor

A new separate program ELPLA-Editor is developed. The program is a simple editor program and can deal with text files that are created by ELPLA, Figure B-95.

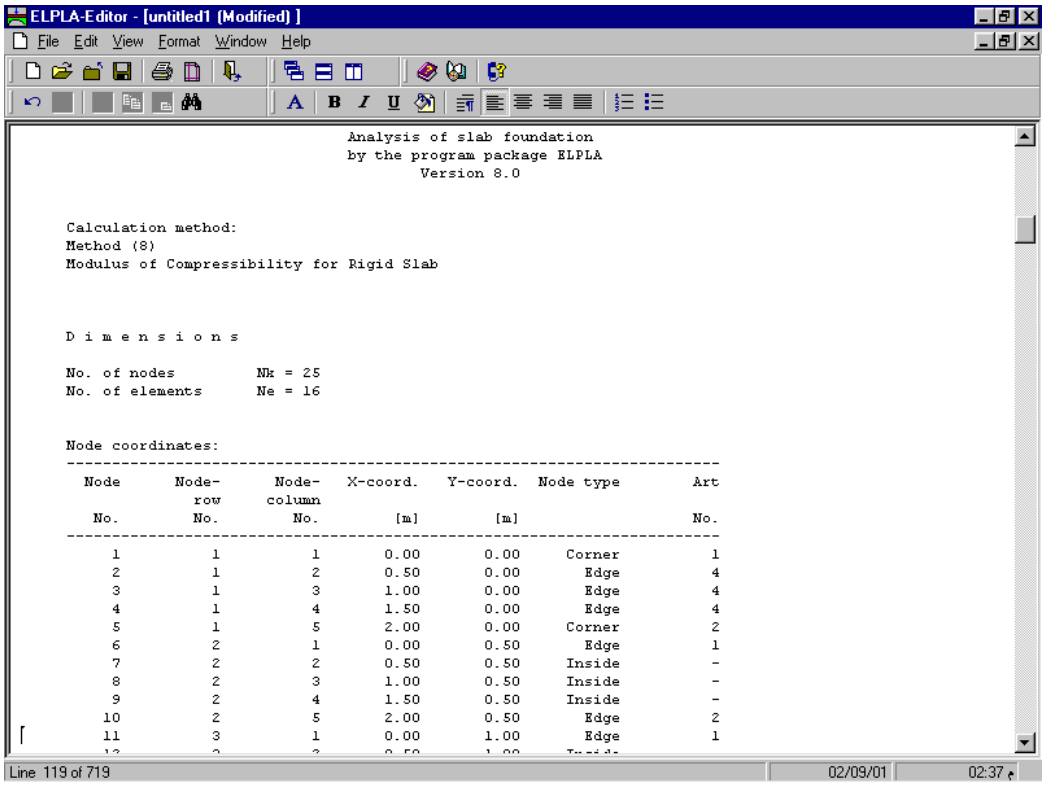


Figure B-95 ELPLA-Editor

4.12 Group functions

- The 7 separate programs ELPLA-Data, ELPLA-Solver, ELPLA-Graphic, ELPLA-Section, ELPLA-List, ELPLA-Boring and ELPLA-Editor can run independently of each other or as a group, Figure B-96

- All program menus are represented also by icons (Toolbar), Figure B-97

- Page setup (portrait format, landscape format, printer, ...) is saved separately for each of the programs ELPLA-Graphic, ELPLA-List, ELPLA-Section, ELPLA-Boring and ELPLA-Editor, Figure B-98

- The user can connect directly through ELPLA with ELPLA-Website in Internet, Figure B-99

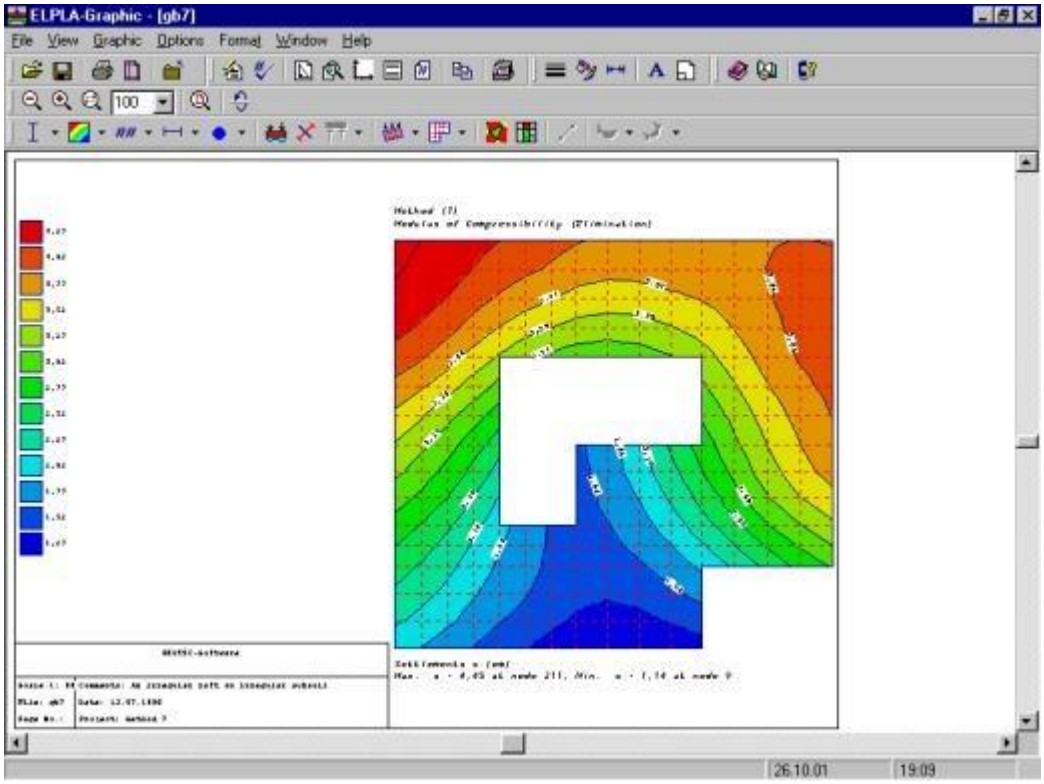


Figure B-96 ELPLA-Graphic alone

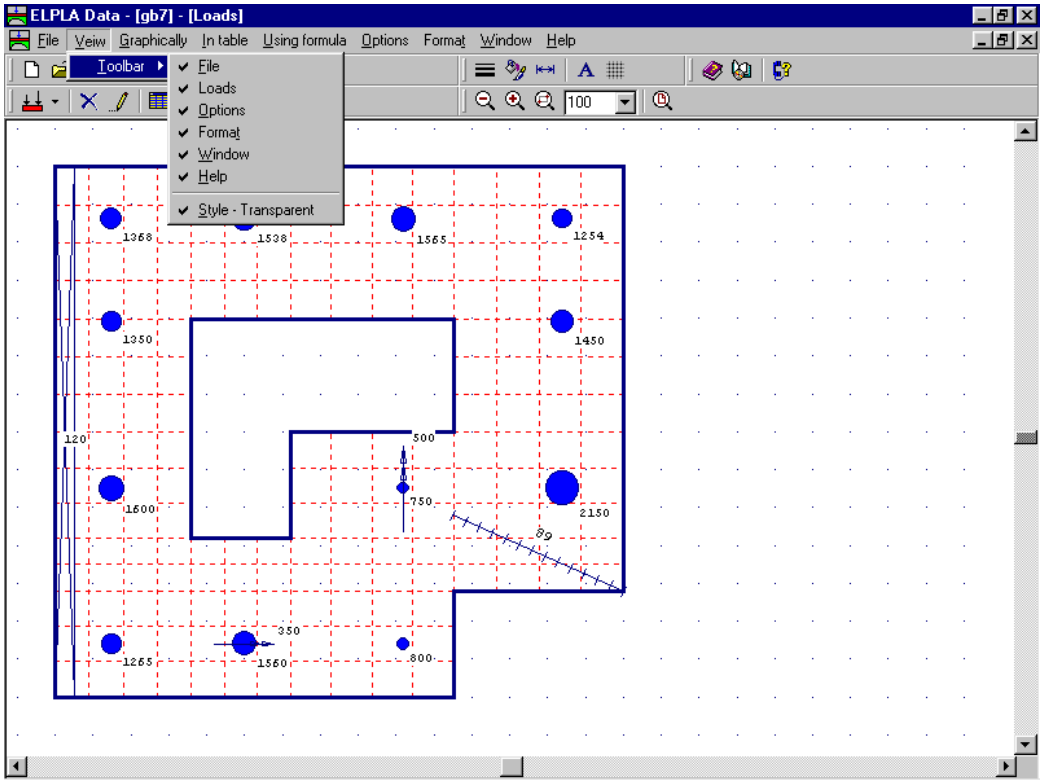


Figure B-97 Menu with Toolbars and icons

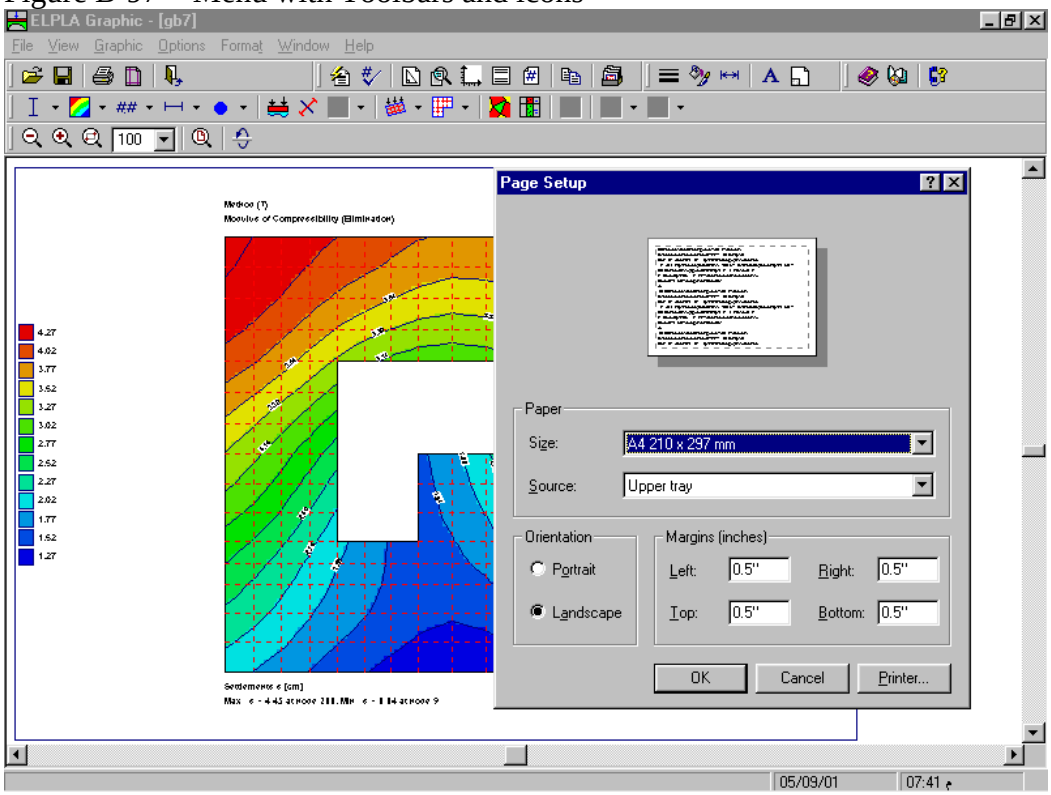


Figure B-98 Page setup for each program

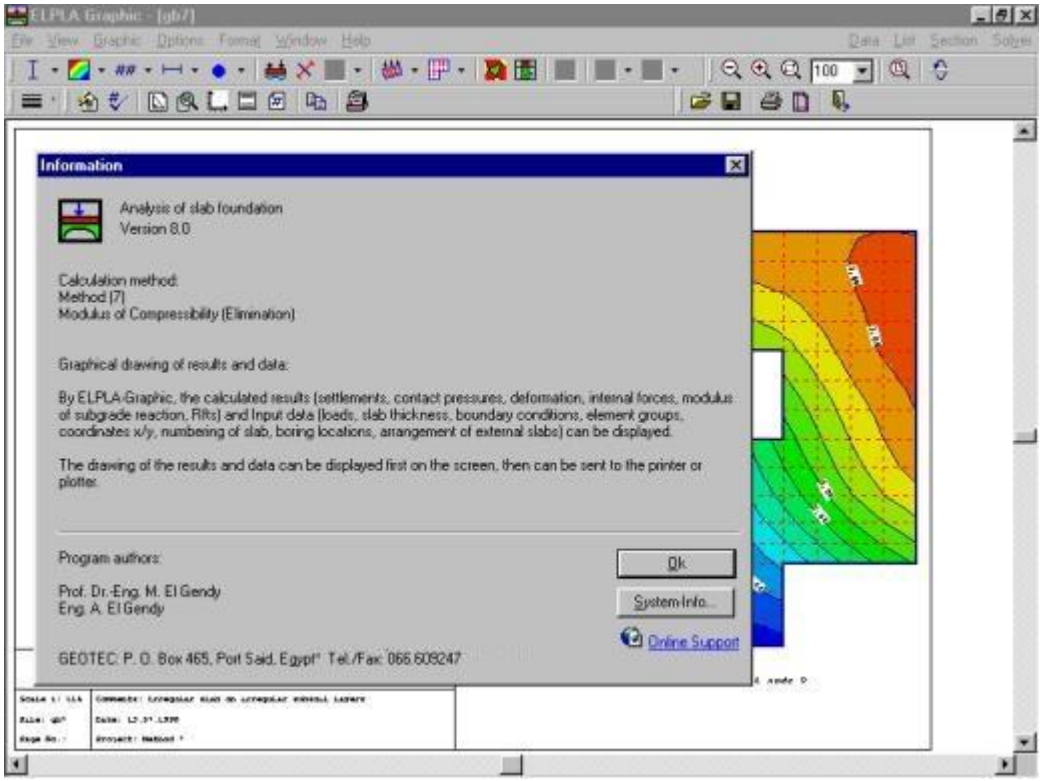


Figure B-99 The user can connect to internet through ELPLA

- The computer knows the files of the ELPLA-project automatically. Running the program can be carried out by clicking on the icons of the files *.PO1, *.PO2 or *.BAU, Figure B-100

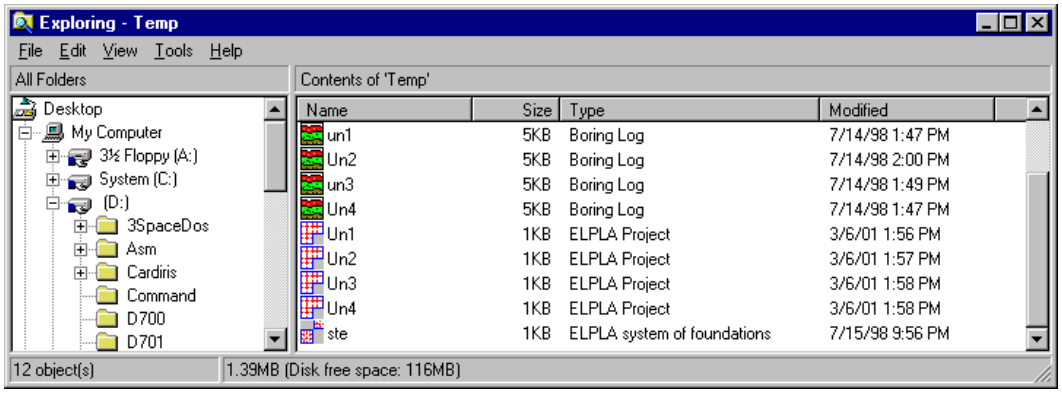


Figure B-100 Running ELPLA by clicking on project icon

4.13 Help file

- The help file in HTML-Format contains the text of the user's guide, Figure B-101

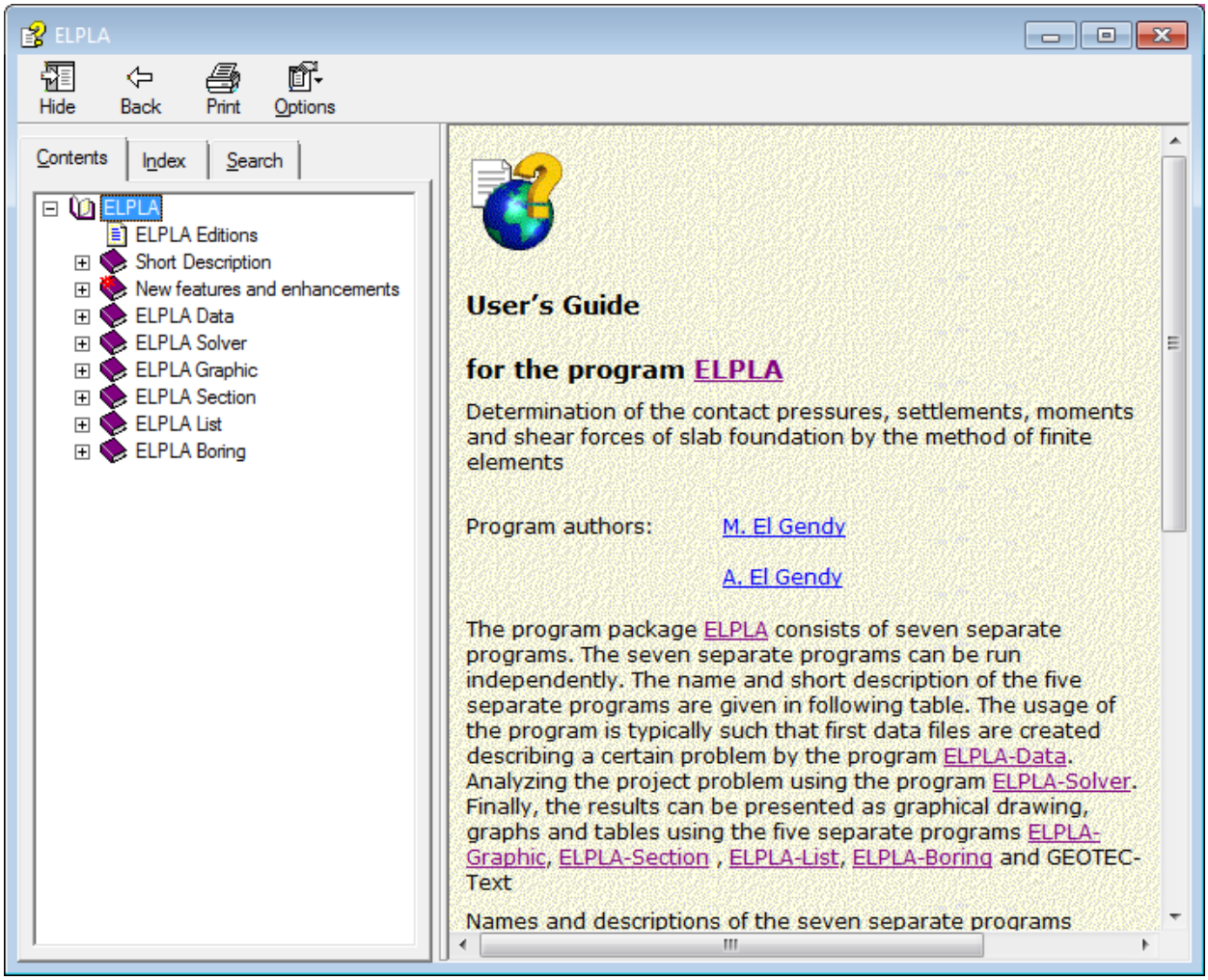


Figure B-101 Help file in HTML-Format