Part E

User's Guide
for the program ELPLA-Graphic

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 An overview of ELPLA-Graphic

ELPLA-Graphic is used to display graphically the calculated results and input project data. The drawing of the results and data can be displayed first on the screen, and then can be sent to the printer or plotter. The calculated results and input project data can be presented graphically as follows:

- Results in isometric view
- Results as contour lines
- Result values in the plan
- Distribution curves of results in the plan
- Results as circular diagrams
- Deformation
- Principal moments as streaks
- Support reactions as arrows
- Soil deformation as vectors
- Soil deformation as deformed mesh
- Principal soil stresses as streaks
- Principal soil strains as streaks
- Data in isometric view
- Data in the plan
- Boring locations
- Boring logs/ Limit depth
- Punching shear
- Beam results

The drawings, if desired, can be saved as WMF-format files, in which they can be exported to other Windows applications to prepare reports, slide presentations or add further information.

2 Description of ELPLA-Graphic

ELPLA-Graphic is a 32-bit, graphical software product that operates under Microsoft Windows 9x/ NT/ ME/ XP. The common "what you see is what you get" of Windows applications makes it easy to learn how to use ELPLA-Graphic, especially if you are already familiar with the Windows environment. The program package ELPLA consists of 7 separate programs. These programs can run independently. The name and short description of the seven separate programs are given in Table E-1.

The usage of the program is typically such that first data files are created describing a certain problem by ELPLA-Data, then the project problem is analyzed by using ELPLA-Solver. Finally, the results can be presented as graphical drawing, graphs and tables using the five separate programs ELPLA-Graphic, ELPLA-Section, ELPLA-List, ELPLA-Boring and GEOTEC-Editor.

Table E-1 Names and descriptions of the 7 separate programs

Program name	Description of the program
ELPLA-Data	Editing project data
ELPLA-Solver	Analyzing the project problem
ELPLA-Graphic	Displaying data and results graphically
ELPLA-List	Listing project data and calculated results
ELPLA-Section	Displaying results graphically at specified sections
ELPLA-Boring	Editing and displaying boring logs graphically
GEOTEC-Editor	A simple text editor program

In order to use ELPLA-Graphic, first the user must define the project data by ELPLA-Data, and then must analyze the problem by ELPLA-Solver. Table E-2 gives a list of files, which are read or created by ELPLA-Graphic. The files can be classified in four groups.

Table E-2 Names of file groups

Group	Saved from the program
A Main data files	ELPLA-Data
B Graphic files (*.GRA)	ELPLA-Graphic
C Project data files	ELPLA-Data
D Final result files	ELPLA-Solver

Further more, Table E-3 shows the filenames, contents and groups of all files that may be read or created by ELPLA-Graphic.

Table E-3 Names and contents of files

A Main data files

Filename	Contents
FIRMA	Firm header
STEU	Default directory for files that are saved by ELPLA
NOFORMAT	Number formats
UNITS	System of units

B Graphic files

Filename	Contents
LINEFORM.GRA	Line formats
FONT.GRA	Font data
LEGENDE.GRA	Legend data
PAINT.GRA	Fill color data
PLOTPAR.GRA	Plot parameters
NODISPLA.GRA	Data of display values
ORDINATE.GRA	Max. ordinate data

C Project data files

Filename	Contents
*. AUF	3 lines text to identify the project
* .PO1	System data (calculation method-isolated slab)
* .PO2	System data (calculation method-system of slabs)
*. P23	Reinforcement data
*. P33	Data of supports/ boundary conditions
*. P35	Data of spring supports
*. P81	Data of spring supports for plane frame
*. P91	Data of spring supports for plane stress
*. P61	Data of supports/ boundary conditions for plane frame
*. P71	Data of supports/ boundary conditions for plane stress
*. P31	Data of supports/ boundary conditions for slab and grid
* .BAU	Soil data
*. PC1	Load data
*. PCF	Load data for plane frame
*. PCW	Load data for plane stress
*. PL6	FE-Net data
*. PL4	Area around nodes
*. GL1	Girder data
*. P21	Data of material/ slab thickness/ levels/ coordinates
*. P41	File of boring fields
*. PP1	File of external foundations
*. PV1	Data of additional soil settlements
*. DSS	FE-Net in z-direction
*. PIL	Pile properties

D Final result files

Filename	Contents
*. GH1	Internal forces of girders
*. PT3	Displacements due to temperature change (s_t)
*. PP3	Settlements due to neighboring foundations (s_e)
*. QUN	Ultimate bearing capacities at nodes (q_{ul})
*. PW1	Modulus of subgrade reaction (k_s)
*. PH1	Settlements (s)
*. PH2	Contact pressures (q)
*. PH3	Moments (m_x)
*. PH4	Moments (m_y)
*. PH5	Moments (m_{xy})
*. PH6	Shear forces (Q_x)
*. PH7	Shear forces (Q_y)
*. H10	Support reactions (V)
*. H11	Support reactions (M_y)
*. H12	Support reactions (M_x)
*. H13	Reinforcement of the slab (A_{sx1})
*. H14	Reinforcement of the slab (A_{sx2})
*. H15	Reinforcement of the slab (A_{sy1})
*. H16	Reinforcement of the slab (A_{sy2})
*.U_X	X-Displacements in soil (u)
*.V_Y	Y-Displacements in soil (v)
*.W_Z	Z-Displacements in soil (w=s)
*.S_X	X-Stresses in soil (σ_x)
*.S_Y	Y-Stresses in soil (σ_y)
*.S_Z	Z-Stresses in soil (σ_z)
*.TXY	XY-Shear stresses in soil (τ_{xy})
*.TXZ	XZ-Shear stresses in soil (τ_{xz})
*.TYZ	YZ-Shear stresses in soil (τ_{yz})
*.VAX	X-Strains in soil (ε_x)
*.VAY	Y-Strains in soil (ε_y)
*.VAZ	Z-Strains in soil (ε_z)
*.VXY	XY-Shear strains in soil (γ_{xy})
*.VXZ	XZ-Shear strains in soil (γ_{xz})
*.VYZ	YZ-Shear strains in soil (γ_{yz})
*. PPU	Punching results

The asterisk (*) matches any filename with the specified extension.

Next paragraphs describe the purpose and function of each ELPLA-Graphic command.

3 Starting ELPLA-Graphic

Start ELPLA-Graphic by clicking on the program icon in the Windows "Start"-Menu. The introduction screen (Figure E-1) appears.

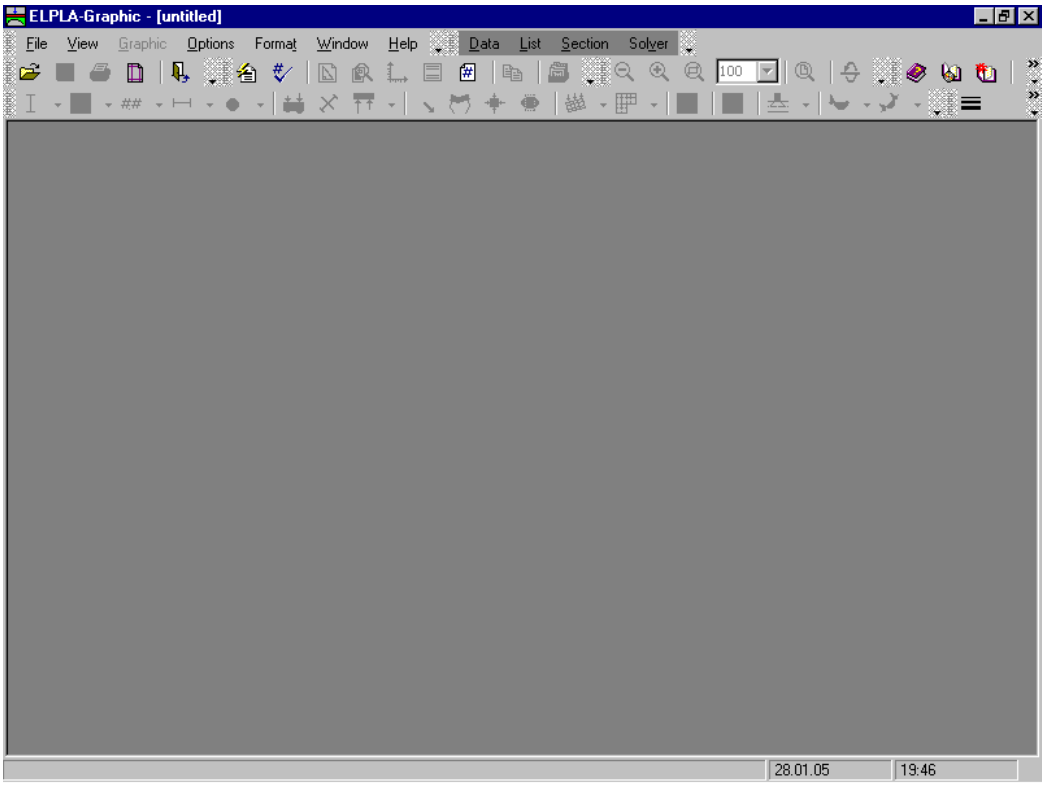

Figure E-1 Introduction screen of ELPLA-Graphic

The menu head of Figure E-1 contains the following seven commands:

- File
- View
- Graphic
- Options
- Format
- Window
- Help

After clicking one of the seven menu commands, other sub-commands or options become available. The seven menu commands and their sub-commands are presented and described in the following paragraphs 4 to 11.

4 File Menu

The File Menu commands are:

- Open
- Make WMF-File
- Send to ELPLA-Section
- Print
- Page setup
- Files 1, 2, 3, 4
- Exit

4.1 File Menu–"Open" command

By "Open" command the current project is closed, if one is loaded, and an existing project is opened. Figure E-2 shows "Open" Dialog box used to open a specified project.

ELPLA is used to analyze not only isolated slab foundation but also system of rafts. Therefore the program can read two types of file names. One has the extension of PO1, which represents the isolated raft and the other has the extension of PO2, which represents the system of rafts.

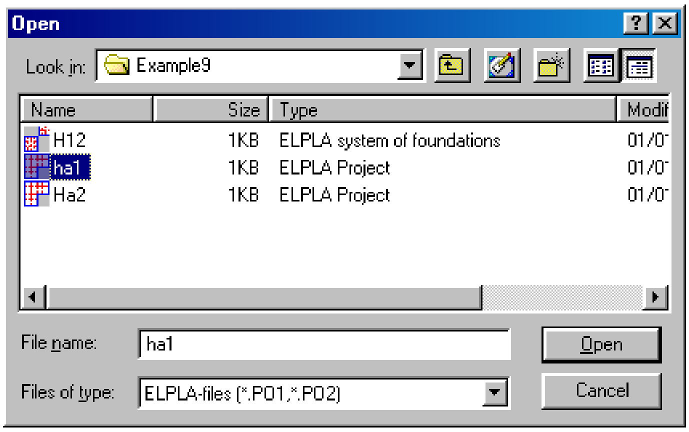

Figure E-2 "Open project" Dialog box

4.2 File Menu–"Make WMF-File" command

The drawing can be saved in a format that can be read by other programs. This feature allows you to include your drawing in reports and presentations and to enhance the drawing using other drawing or CAD software packages. The drawing can be exported in the Windows Metafile format (WMF). Figure E-3 shows "Save as" Dialog box used to export the drawing with the filename you wish to give the exported file, including extension and the directory in which to save the file.

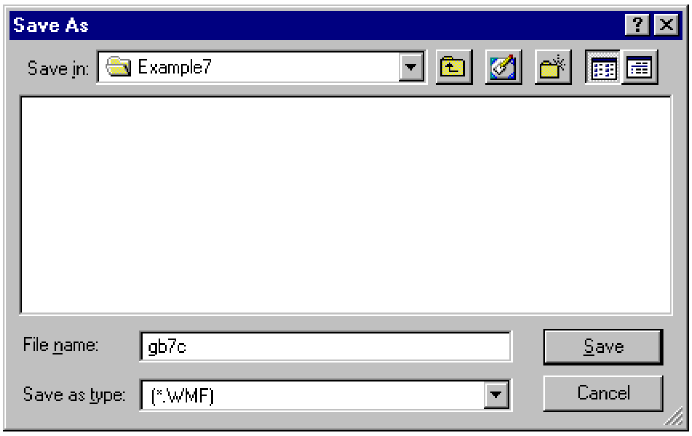

Figure E-3 "Save as" Dialog box

4.3 File Menu–"Send to ELPLA-Section" command

By "Send to ELPLA-Section" command it is possible, to define a diagram in ELPLA-Graphic by Mouse and end it to ELPLA-Section, Figure E-4.

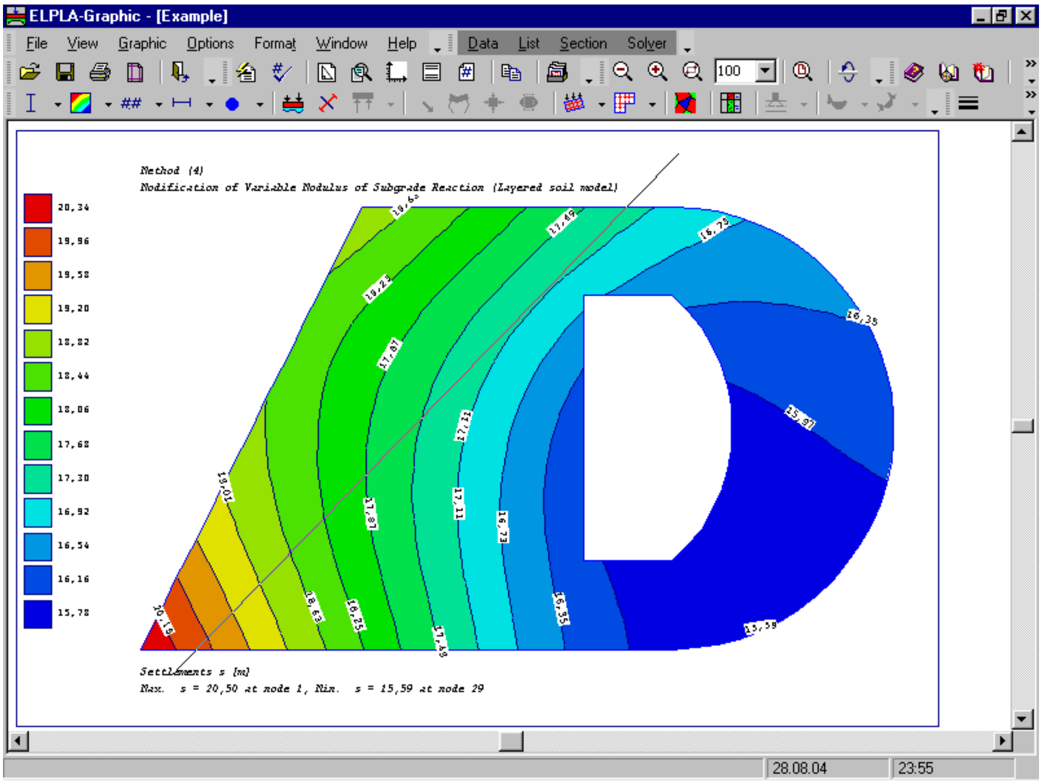

Figure E-4 Defining a diagram in ELPLA-Graphic

4.4 File Menu–"Print" command

By "Print" command data and results can be graphically plotted or printed. Only the objects currently displayed on the drawing are printed. Figure E-5 shows "Print" Dialog box. The printer group box contains controls for selecting the printer and changing its properties. Use "Name" Combo box to select the printer and use "Properties" Button to set printer settings. The number of printing copies can be defined in "Copies" Input box, Figure E-5.

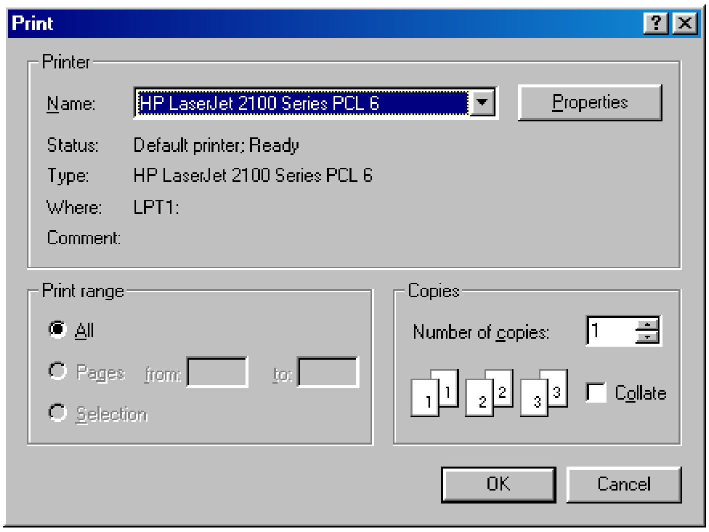

Figure E-5 "Print" Dialog box

4.5 File Menu–"Page setup" command

By "Page setup" command the standard "Page setup" Dialog box can be displayed with options to specify the printer, page orientation, paper size, and paper source, as well as other printing options. Figure E-6 shows "Page setup" Dialog box.

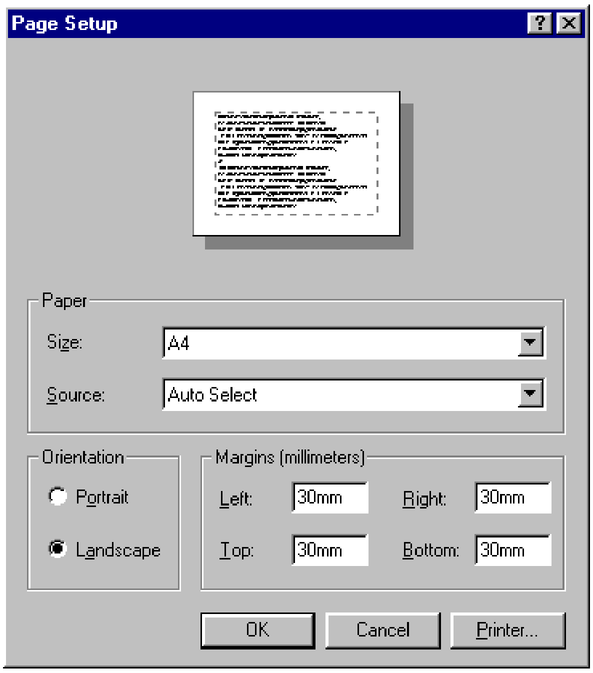

Figure E-6 "Page setup" Dialog box

4.6 File Menu–"Files 1, 2, 3, 4" command

By "Files 1, 2, 3, 4" command the user can open one of the last four loaded projects.

4.7 File Menu–"Exit" command

By "Exit" command the current project is closed and ELPLA-Graphic is quitted, Figure E-7.

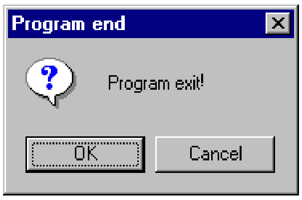

Figure E-7 "Exit" Message box

5 View Menu

The View Menu commands are:

- Status bar
- Tool bars

5.1 View Menu–"Status bar" command

The status bar displays information about the progress of the current operation.

5.2 View Menu–"Tool bars" command

Tool bars located just below the menu head are displayed with icons of program menus.

6 Graphic Menu

The graphic menu is the main menu, used to display the specified drawing with the setting given by options, format and window menus. The Graphic Menu commands are:

- Results in isometric view
- Results as contour lines
- Result values in the plan
- Distribution curves of results in the plan
- Results as circular diagrams
- Deformation
- Principal moments as streaks
- Support reactions as arrows
- Soil deformation as vectors
- Soil deformation as deformed mesh
- Principal soil stresses as streaks
- Principal soil strains as streaks
- Data in isometric view
- Data in the plan
- Boring locations
- Boring logs/ Limit depth
- Punching shear
- Beam results

6.1 Graphic Menu–"Results in isometric view" command

Calculated results can be displayed on the screen and plotted in isometric shape. In the Dialog box of Figure E-8 select an item to draw and click "OK". Figure E-9 shows the contact pressures in isometric view.

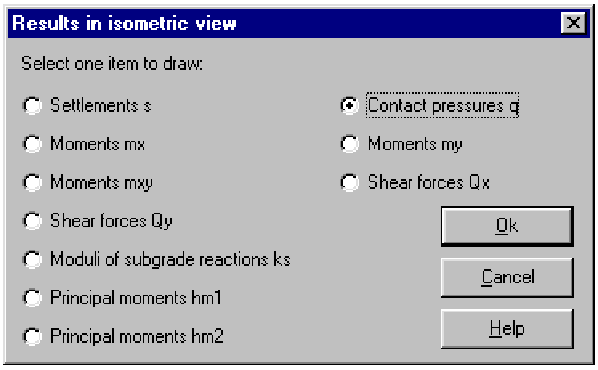

Figure E-8 "Results in isometric view" items

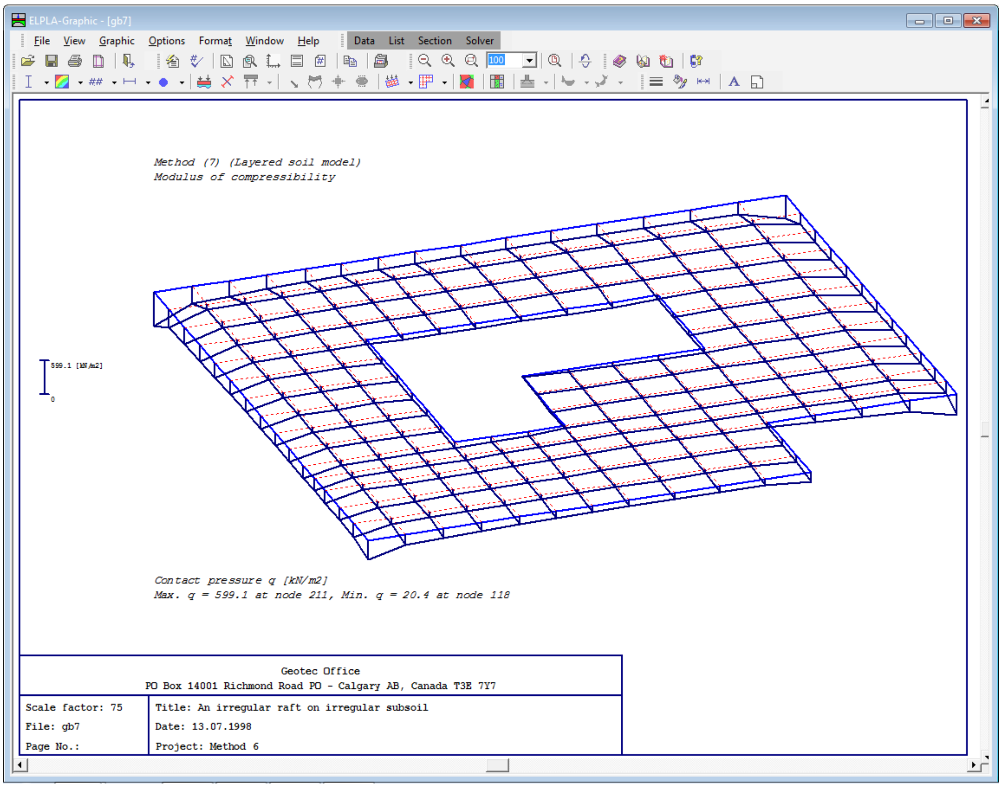

Figure E-9 Contact pressures in isometric view

6.2 Graphic Menu–"Results as contour lines"

By this command the calculated results can be contoured and shaded to reflect the variation of results. When "Results as contour lines" command is chosen, the selection Dialog box shown in Figure E-10 appears. In this dialog box select an item to draw and then click "OK" Button.

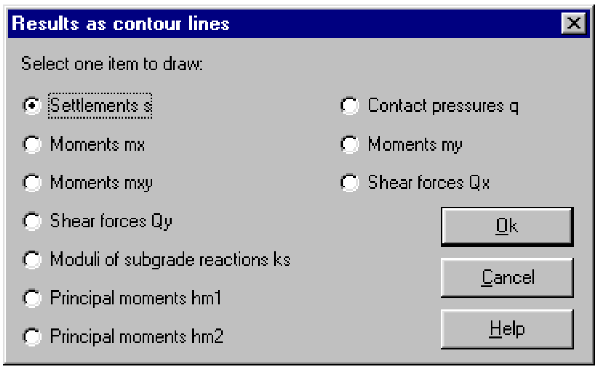

Figure E-10 "Results as contour lines" items

Contours with a constant interval

Contours can be displayed with a constant interval by checking "Contours with a constant interval" check box in "Plot parameters" form, Figure E-11. For drawing the contours, the minimum and maximum contour values, and also the contour interval are required. As an example, Figure E-12 shows the settlements as contours with a constant interval.

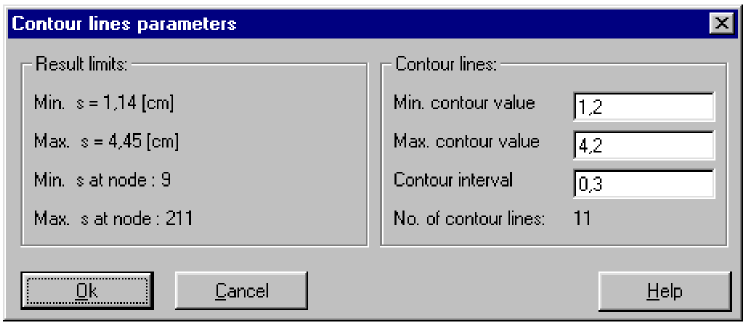

Figure E-11 "Contour lines parameters" Dialog box

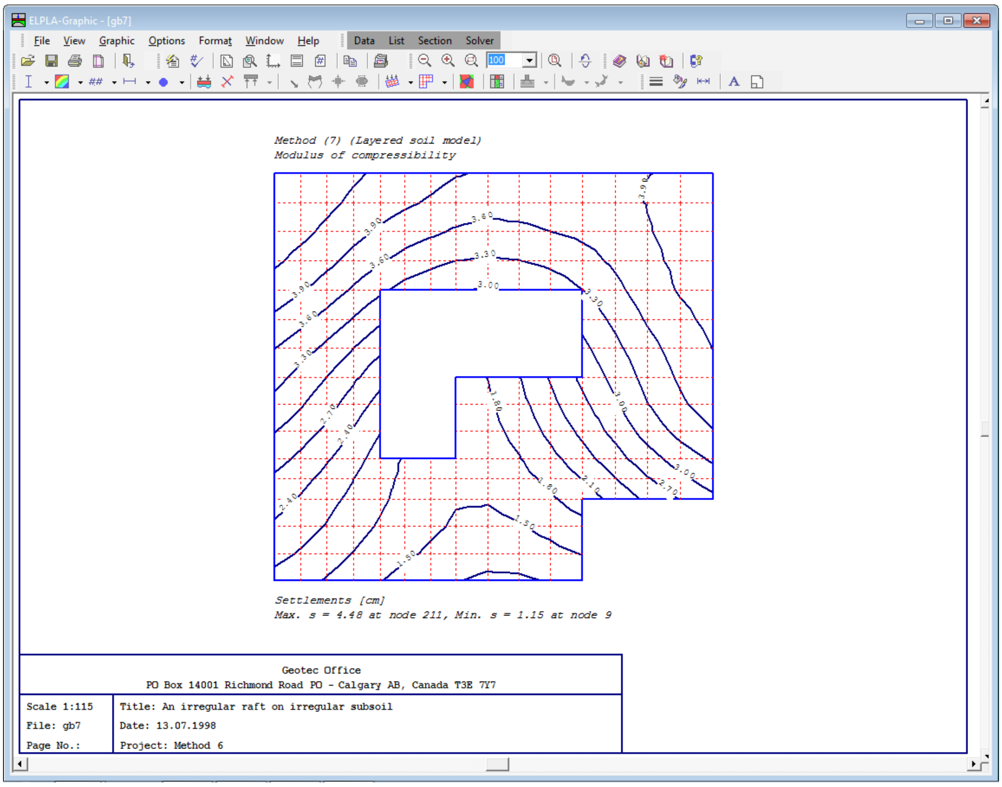

Figure E-12 Settlements as contour lines with a constant interval

Contours with a variable interval

Contours can be displayed with a variable interval by making "Contours with a constant interval" check box unchecked in "plot parameters" form, Figure E-41. For drawing the contour lines with a variable interval, the contour values are required to define in the form "Contour lines", Figure E-13.

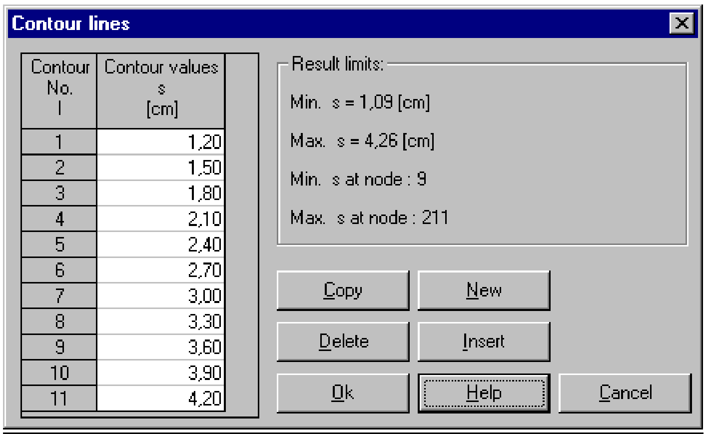

Figure E-13 "Contours with a variable interval" Dialog box

Color contours

Contours can be colored and shaded by checking "Color contours" check box in "Plot parameters" form, Figure E-41. The number of shaded colors is 13, start at color blue, which represents the minimum value and end at color red, which represents the maximum value. The lines between shaded contours will be displayed, if "Display lines" check box in "Plot parameters" form is checked. As an example, Figure E-14 shows the settlements in color contours.

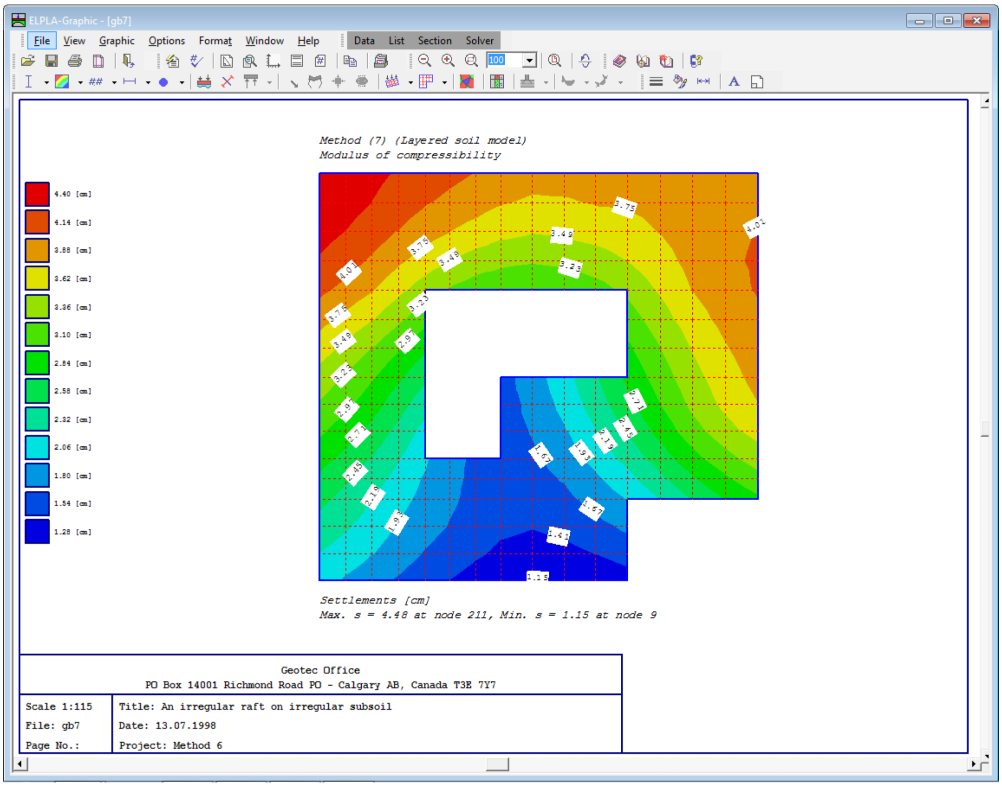

Figure E-14 Color contours for settlements

6.3 Graphic Menu–"Result values in the plan" command

The calculated results can be tabulated on the mesh. When this command is chosen, the selection Dialog box shown in Figure E-15 appears. Select an item to draw and then click "OK" Button. As an example, Figure E-16 shows the values of top reinforcement in *x*-direction on the mesh.

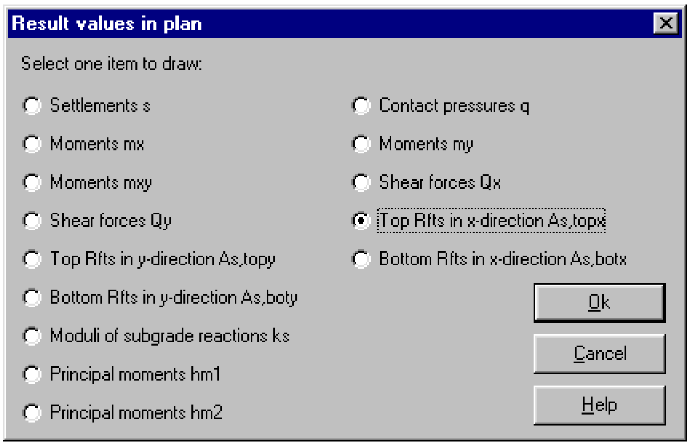

Figure E-15 "Result values in the plan" items

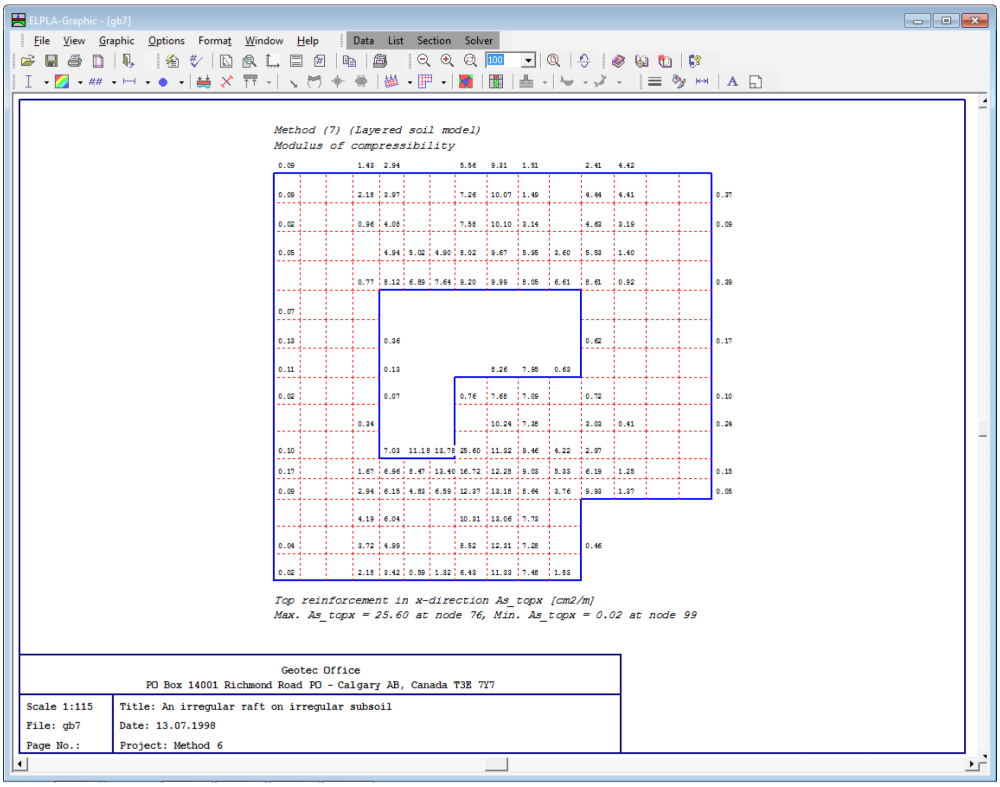

Figure E-16 Tabulation of the top reinforcement in x-direction on the mesh

6.4 Graphic Menu–"Distribution curves of results in the plan" command

By "Distribution curves of results in the plan" command the calculated results can be plotted as distribution curves on the mesh. When "Distribution curves of results in the plan" command is chosen, the selection Dialog box shown in Figure E-17 appears. In this Dialog box select an item to draw and then click "OK" Button. As an example, Figure E-18 shows the distribution curves of moment m_x on the slab.

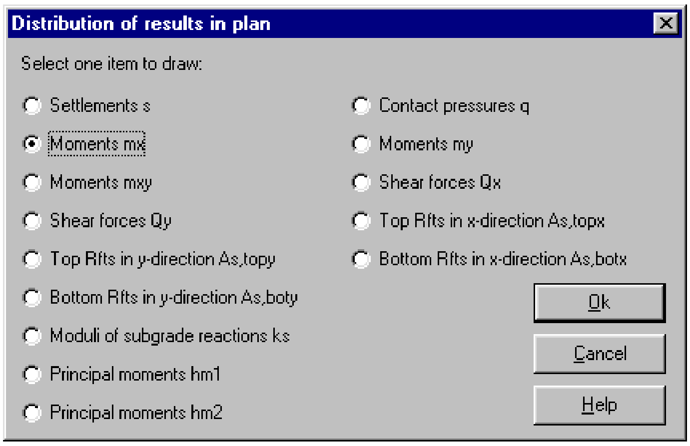

Figure E-17 "Distribution curves of results in the plan" items

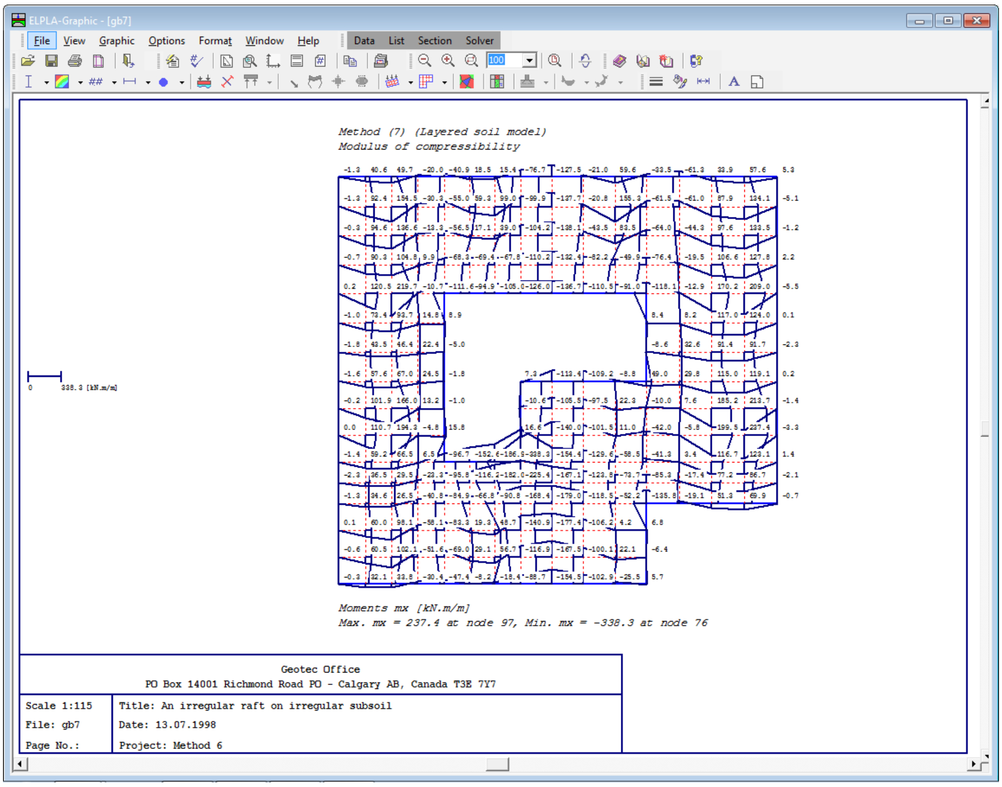

Figure E-18 Distribution curves of moment m_x on the slab

6.5 Graphic Menu–"Results as circular diagrams" command

By this command the calculated results can be plotted as circular diagrams on the mesh. When "Results as circular diagrams" command is chosen, the selection Dialog box shown in Figure E-19 appears. In this Dialog box select an item to draw, then click "OK" Button. As an example, Figure E-20 shows the circular diagrams for shear forces Q_x.

Color circles

Circular diagrams can be colored and shaded by checking "Color circles" check box in "Plot parameters" form, Figure E-41.

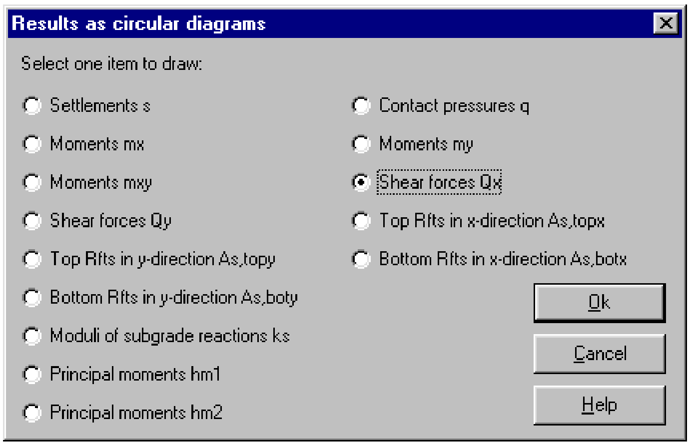

Figure E-19 "Results as circular diagrams" items

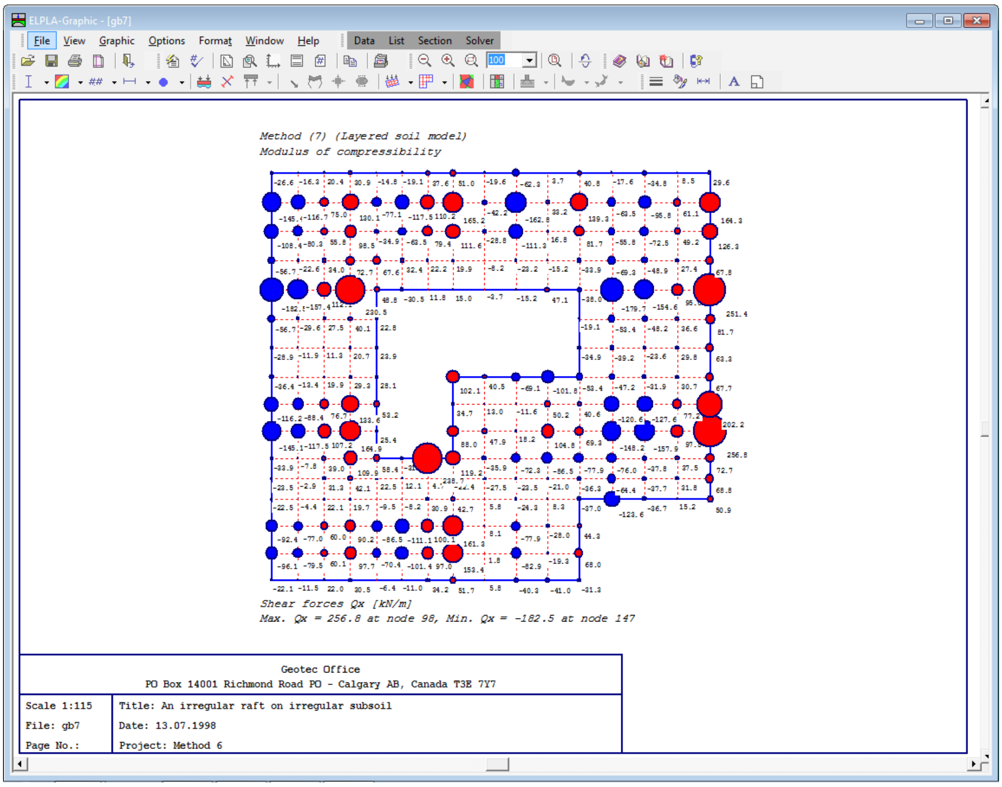

Figure E-20 Circular diagrams for shear forces Q_x

6.6 Graphic Menu–"Deformation" command

By "Deformation" command the slab deformation can be displayed as a deformed mesh plot as shown in Figure E-21.

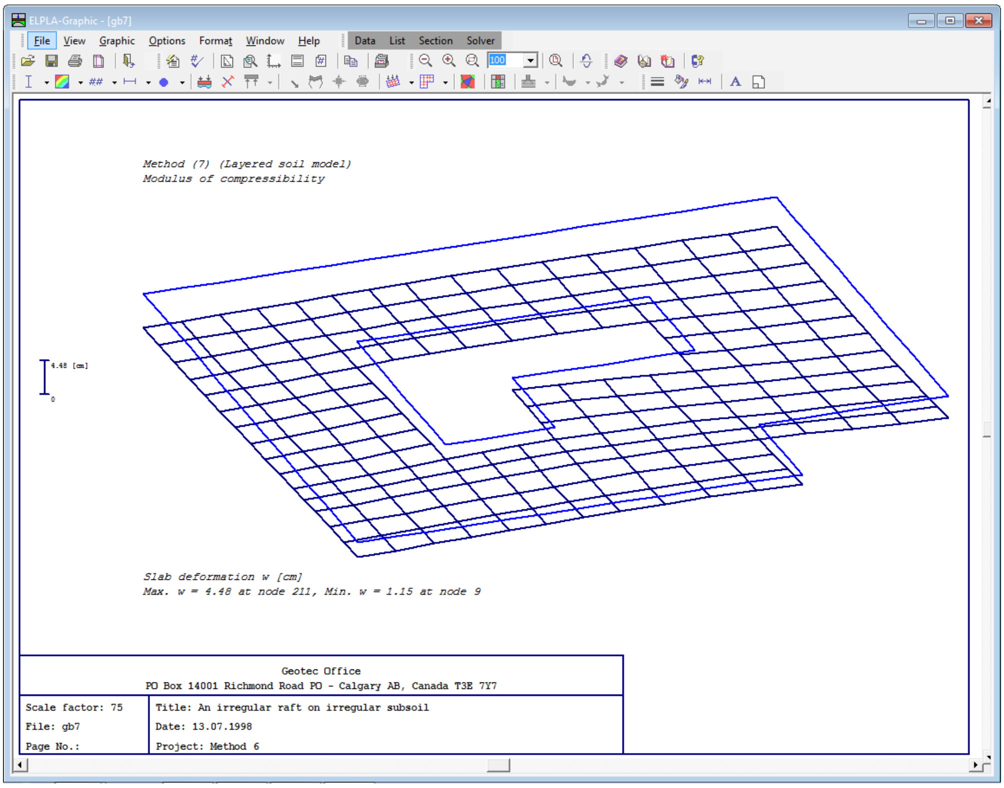

Figure E-21 Slab deformation

6.7 Graphic Menu–"Principal moments as streaks" command

By "Principal moments as streaks" command the principal moments h_{m1} and h_{m2} can be displayed as streaks as shown in Figure E-22.

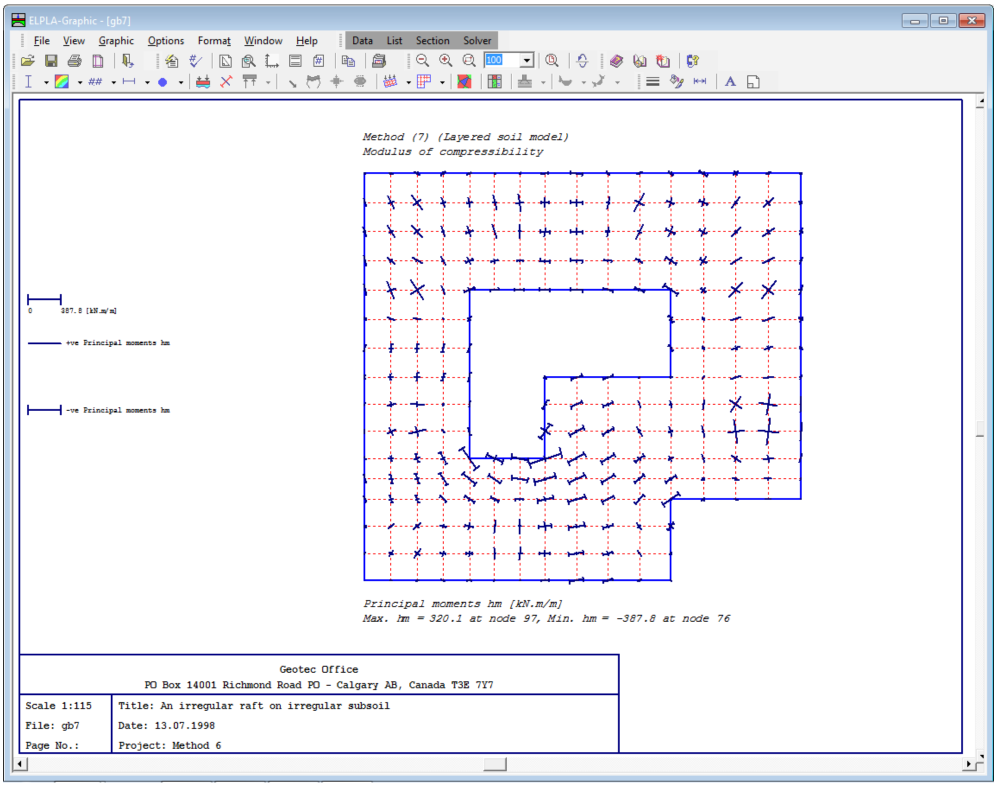

Figure E-22 Principal moments as streaks

6.8 Graphic Menu–"Support reactions as arrows" command

By "Support reactions as arrows" command the support reactions V, M_x and M_y can be displayed in isometric shape as arrows. When this command is chosen, the selection Dialog box shown in Figure E-23 appears. In this Dialog box select an item to draw, then click "OK" Button. As an example, Figure E-24 shows the support reactions V as arrows.

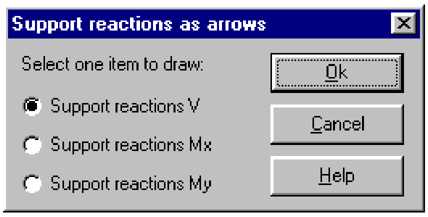

Figure E-23 "Support reactions as arrows" items

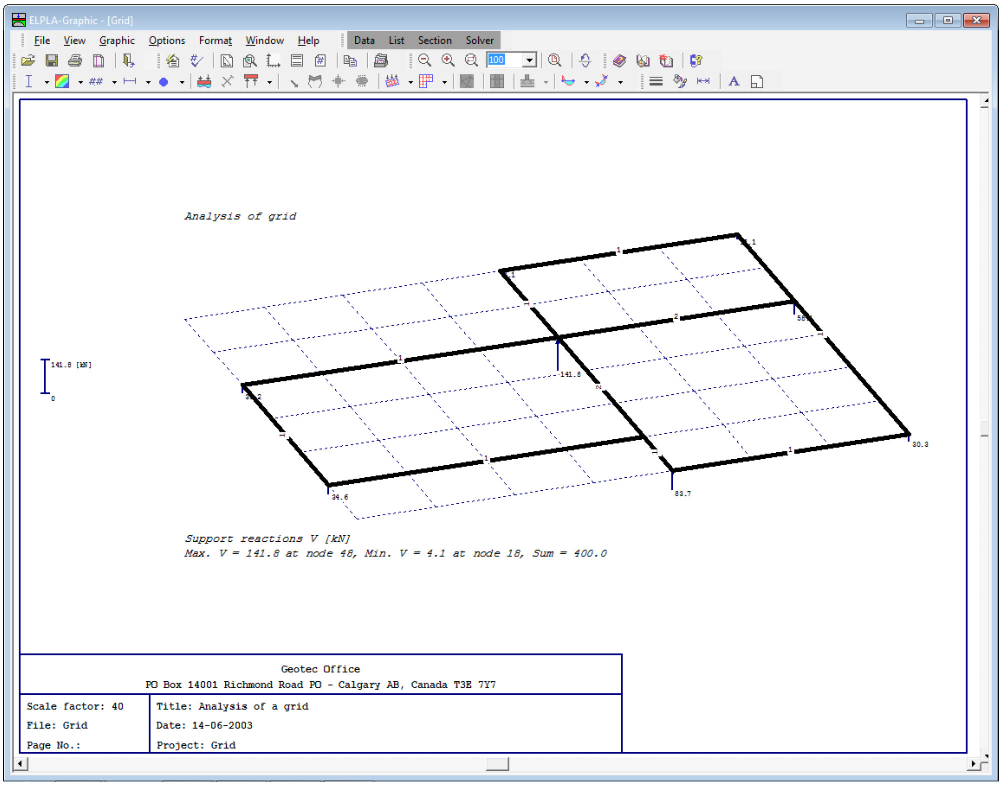

Figure E-24 Support reactions V as arrows

6.9 Graphic Menu–"Soil deformation as vectors" command

By "Soil deformation as vectors" command the soil deformation can be displayed as vectors. When this command is chosen, the selection Dialog box shown in Figure E-25 appears. In this Dialog box select an item to draw, then click "OK" Button. As an example, Figure E-26 shows the soil deformation as vectors.

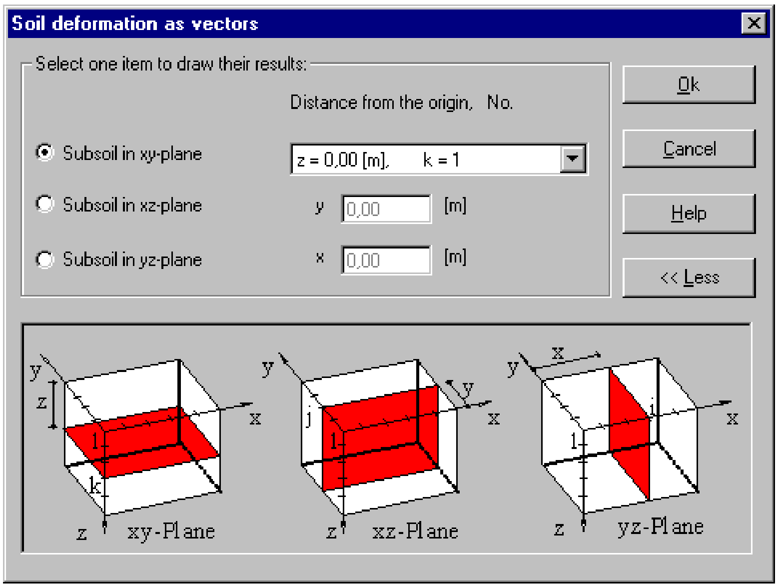

Figure E-25 "Soil deformation as vectors" items

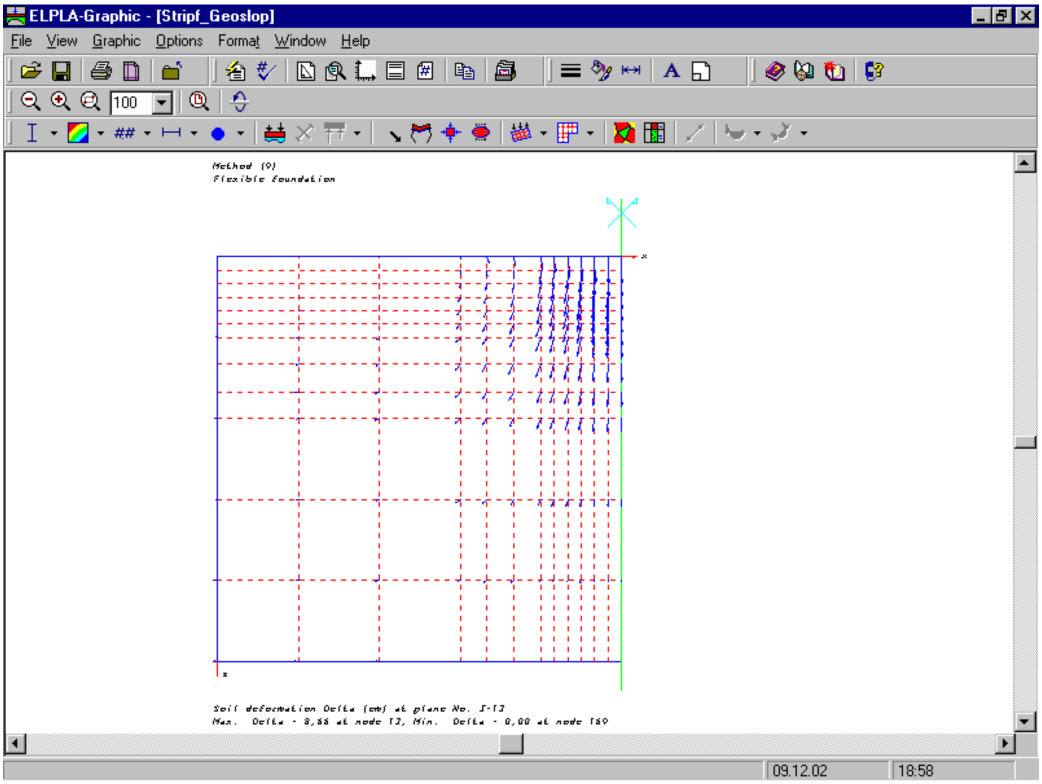

Figure E-26 Soil deformation as vectors

6.10 Graphic Menu–"Soil deformation as deformed mesh" command

By this command the soil deformation can be displayed as deformed mesh. As an example, Figure E-27 shows the soil deformation as deformed mesh.

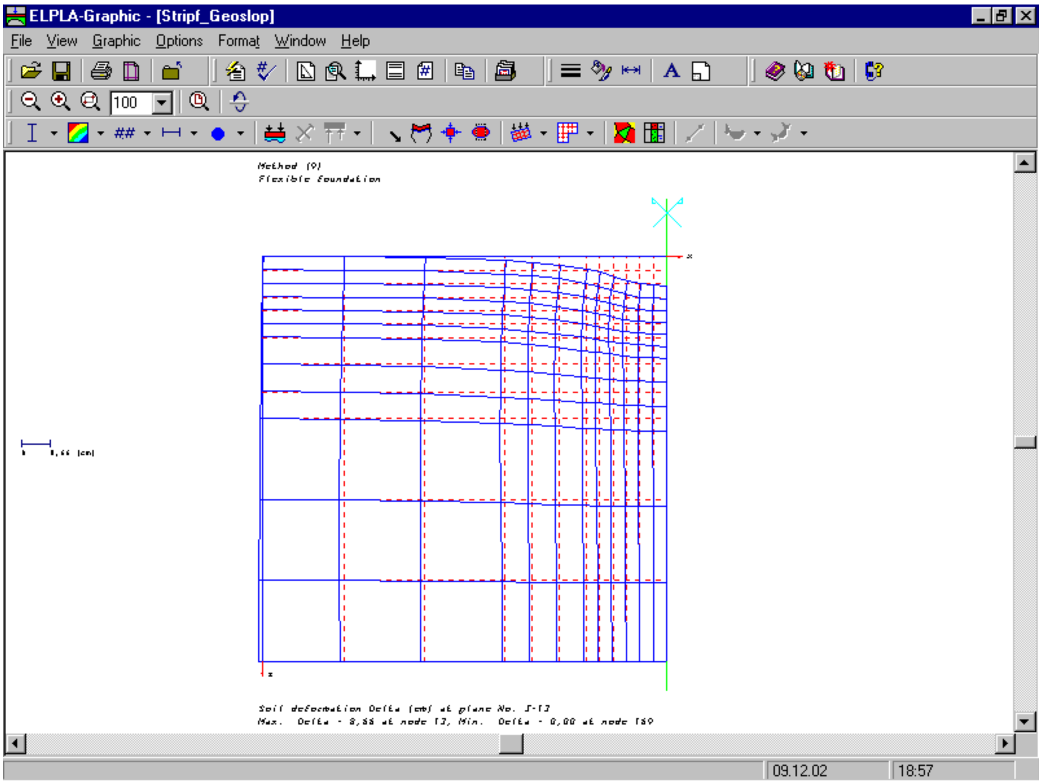

Figure E-27 Soil deformation as deformed mesh

6.11 Graphic Menu–"Principal soil stresses as streaks" command

Here the principal soil stresses can be displayed as streaks. As an example, Figure E-28 shows the principal soil stresses as streaks.

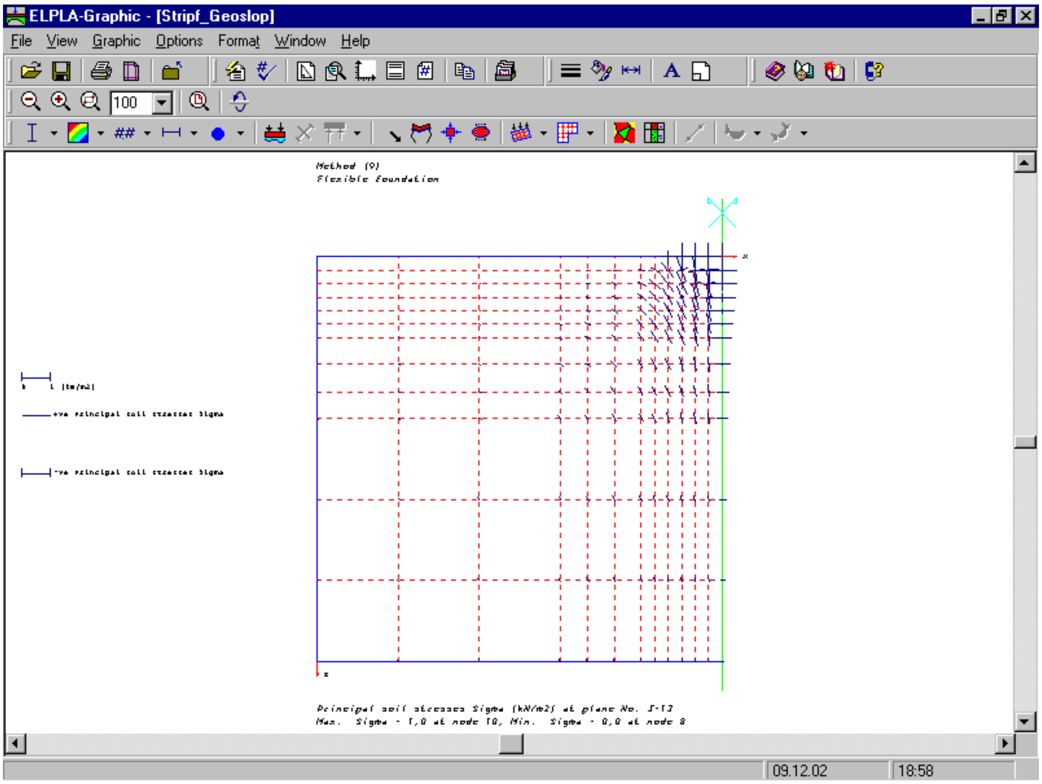

Figure E-28 Principal soil stresses as streaks

6.12 Graphic Menu–"Principal soil strains as streaks" command

By this command the Principal soil strains can be displayed as streaks. As an example, Figure E-29 shows the principal soil strains as streaks.

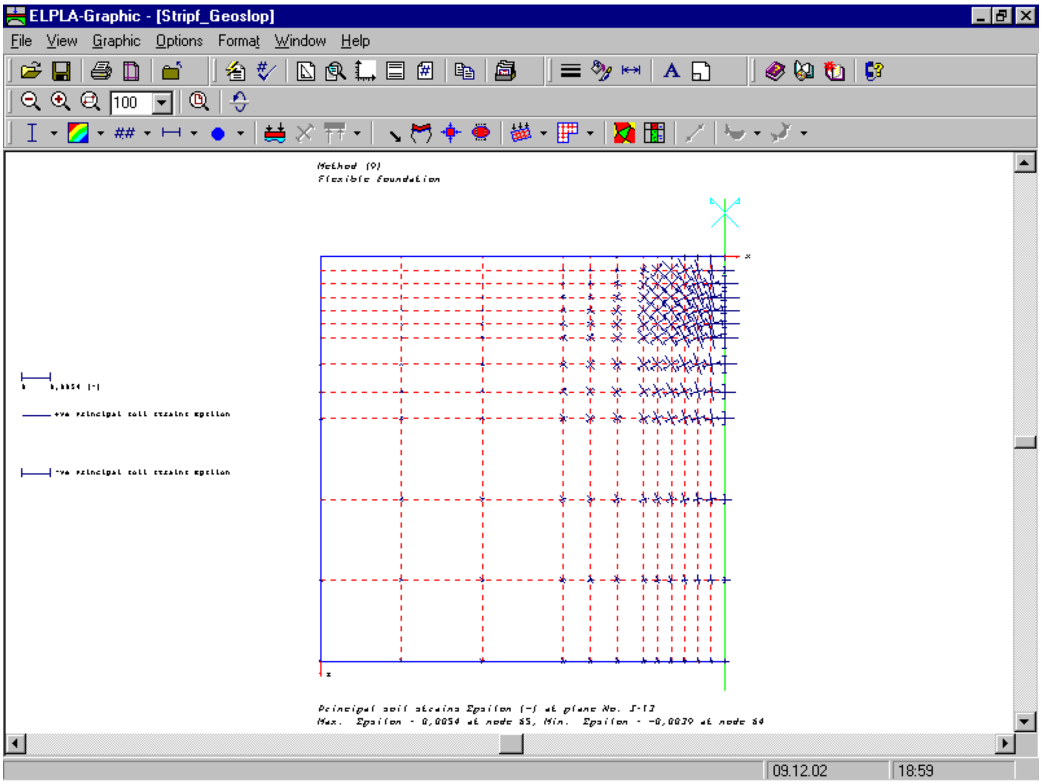

Figure E-29 Principal soil strains as streaks

6.13 Graphic Menu–"Data in isometric view" command

By "Data in isometric view" command the input data can be displayed on the screen and plotted in isometric shape. When "Data in isometric view" command is chosen, the selection Dialog box shown in Figure E-30 appears. In this Dialog box select an item to draw, then click "OK" Button. As an example, Figure E-31 shows the loading in isometric view.

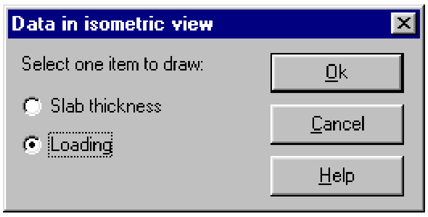

Figure E-30 "Data in isometric view" items

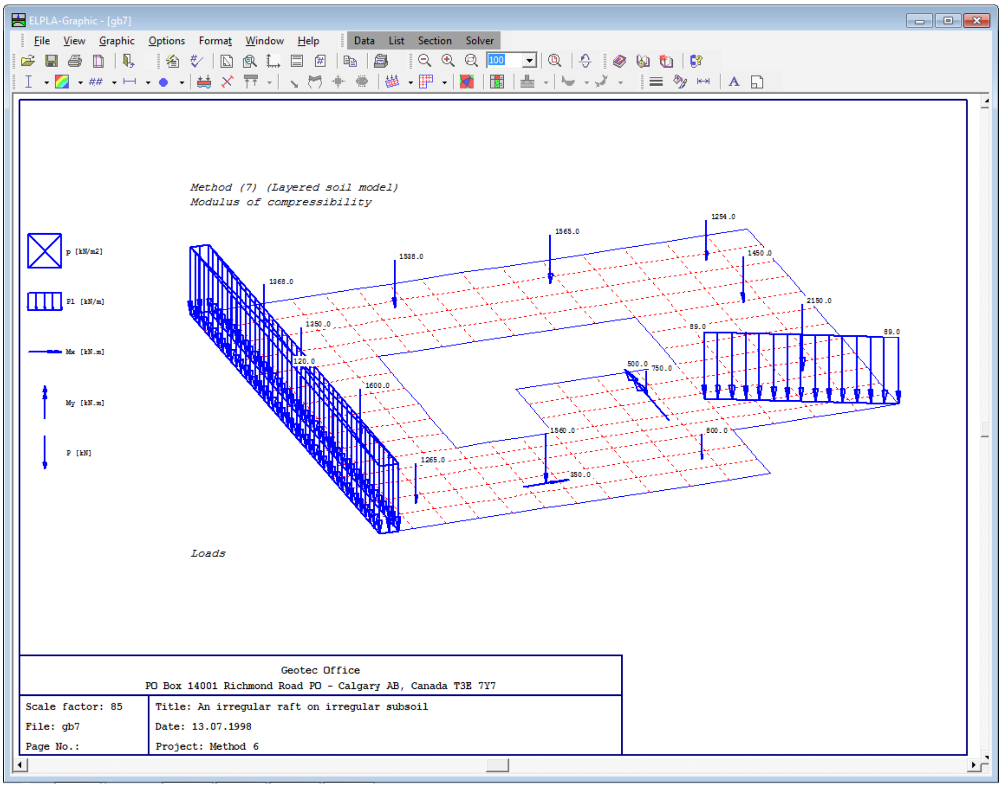

Figure E-31 Loading in isometric view

6.14 Graphic Menu–"Data in the plan" command

By "Data in the plan" command the input data can be displayed in the plan view. When "Data in the plan" command is chosen, the selection Dialog box shown in Figure E-32 appears. In this Dialog box select an item to draw and click "OK" Button. As an example, Figure E-33 shows the loading in the plan.

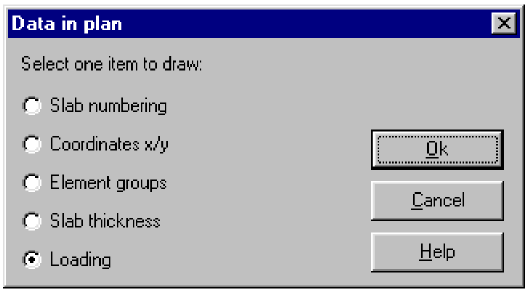

Figure E-32 "Data in the plane" items

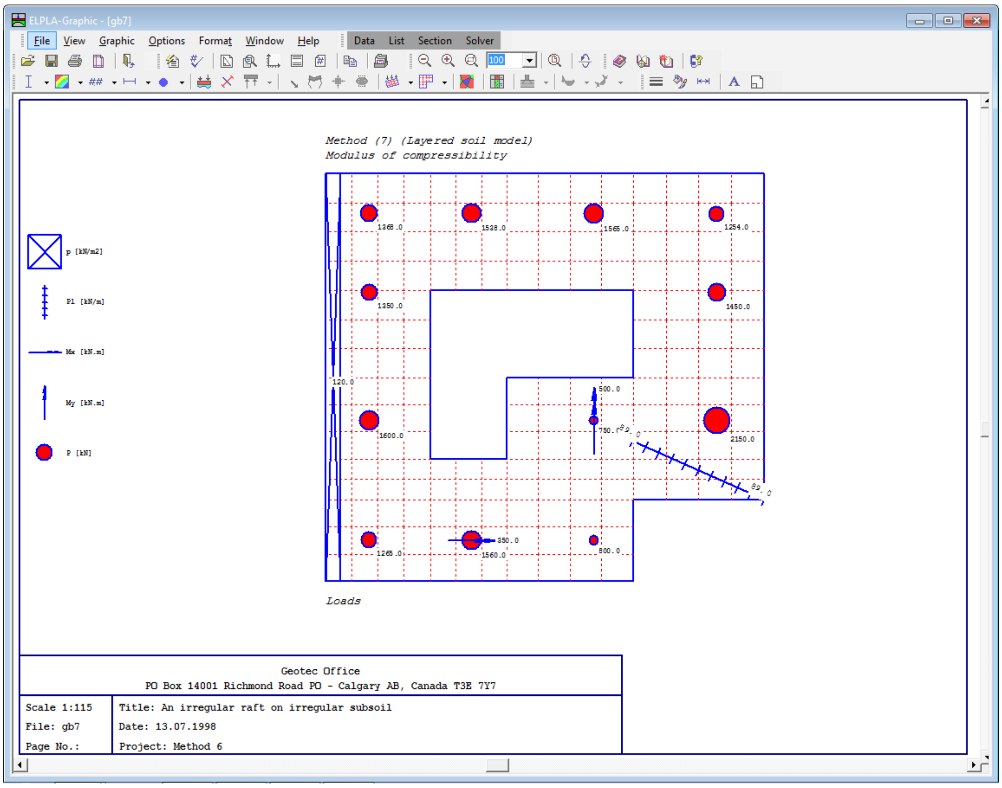

Figure E-33 Loading in the plan

6.15 Graphic Menu–"Boring locations" command

By "Boring locations" command the boring locations in global coordinates can be displayed with the slab geometry as shown in Figure E-34.

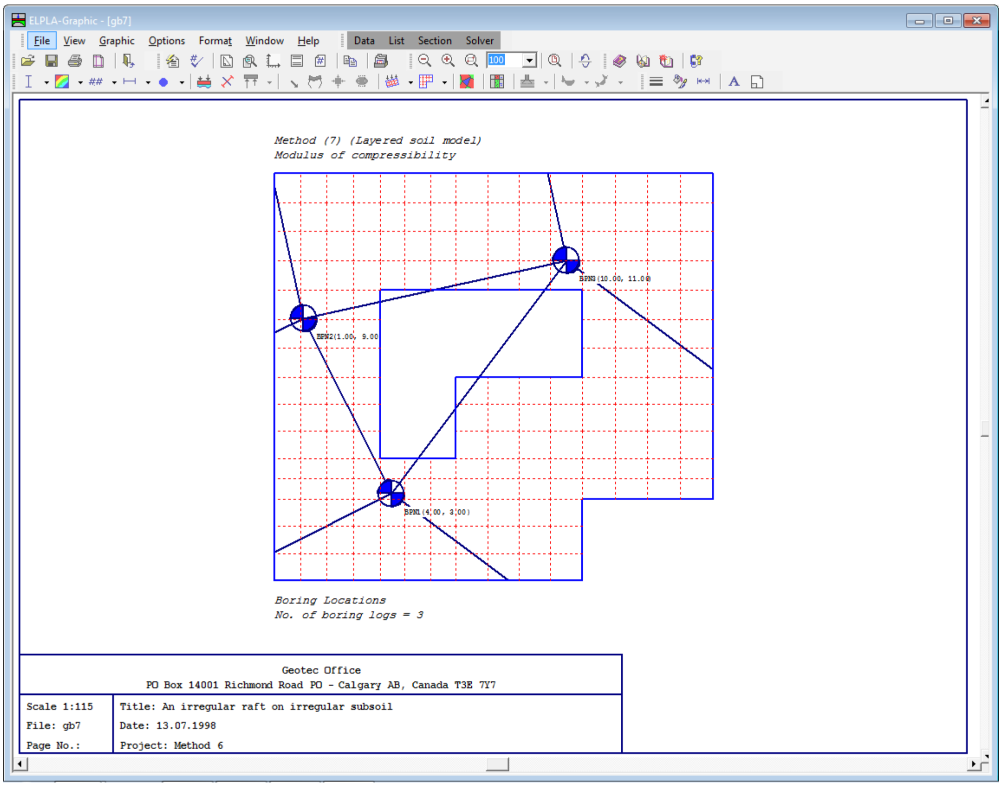

Figure E-34 Location of boring with zone types

6.16 Graphic Menu–"Boring logs/ Limit depth" command

Here the boring logs (boring layers, soil material, water table and limit depth) can be displayed through ELPLA-Boring as shown in Figure E-35. The stress on soil under a specified point on the foundation with effective stress can be also displayed beside the corresponding boring log through ELPLA-Boring as shown in Figure E-36. The stress on soil is used to determine the limit depth of the soil layers. To get information about ELPLA-Boring, see the User's Guide of ELPLA-Boring.

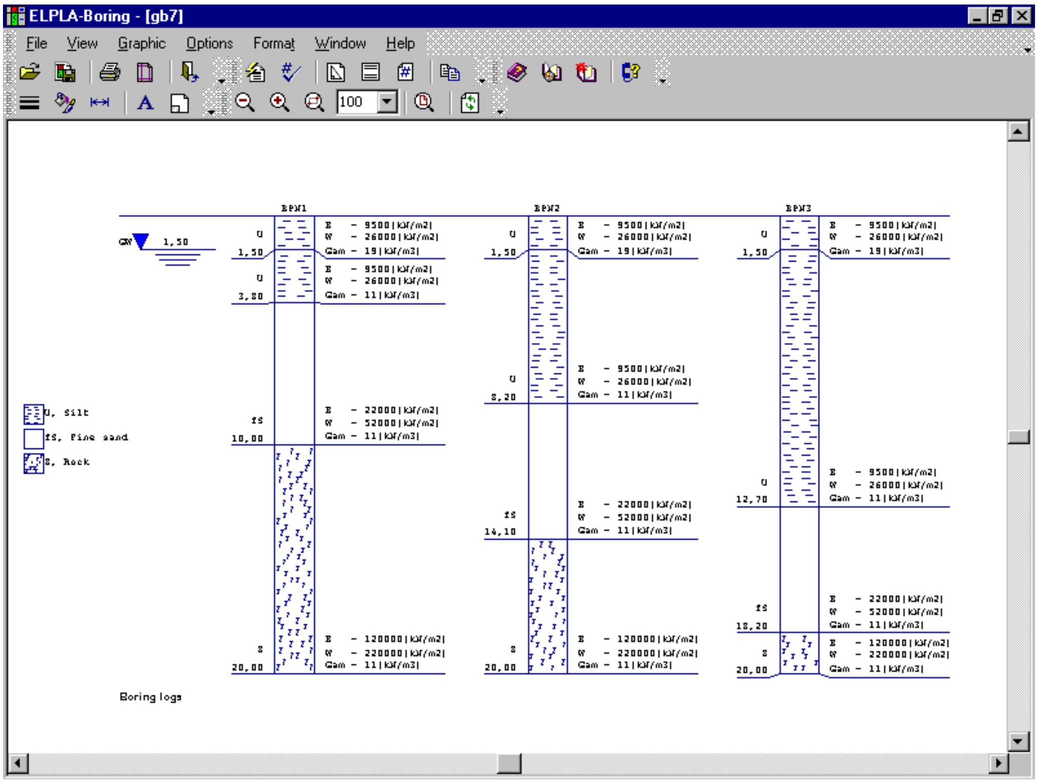

Figure E-35 Boring logs with multi-layers with different soil material

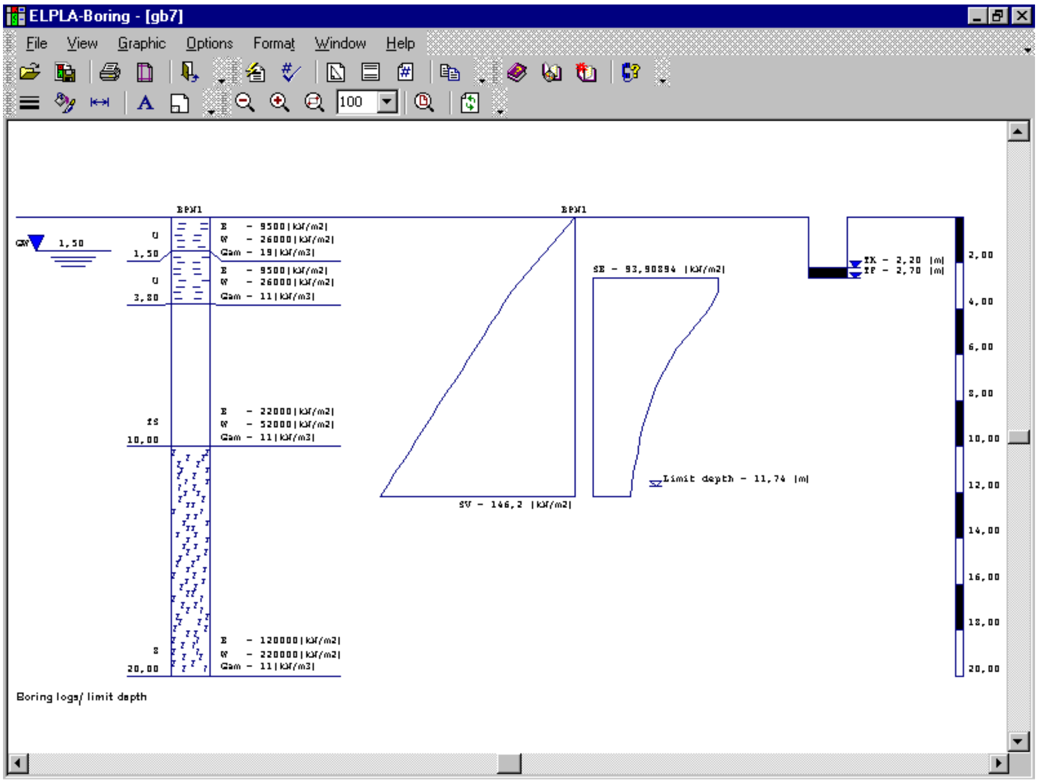

Figure E-36 Limit depth of the soil layers

6.17 Graphic Menu–"Beam results" command

In ELPLA the finite element method was used to analyze both of the raft and girders, in which the raft was represented by plate bending elements while the girders were represented by grid elements. Furthermore, a combination between plate elements and grid elements may be used to represent ribbed rafts. If girders are considered in the project, "Beam results" command will appear in the graphic menu.

"Beam results" command has the following options (commands):

- Distribution of internal forces in the plan
- Internal forces in isometric view

"Distribution of internal forces in the plan"–Option

This option displays the beam internal forces (torsion moments, bending moments and shear forces) with the slab geometry in the plan. The selection Dialog box shown in Figure E-37 appears. In this Dialog box select an item to draw and click "OK" Button. As an example, Figure E-38 shows the distribution of bending moments in the plan.

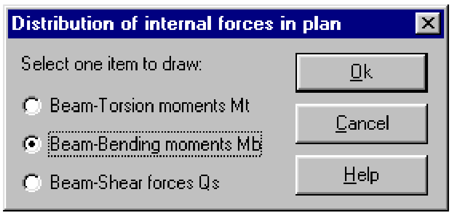

Figure E-37 "Distribution of internal forces in the plan" items

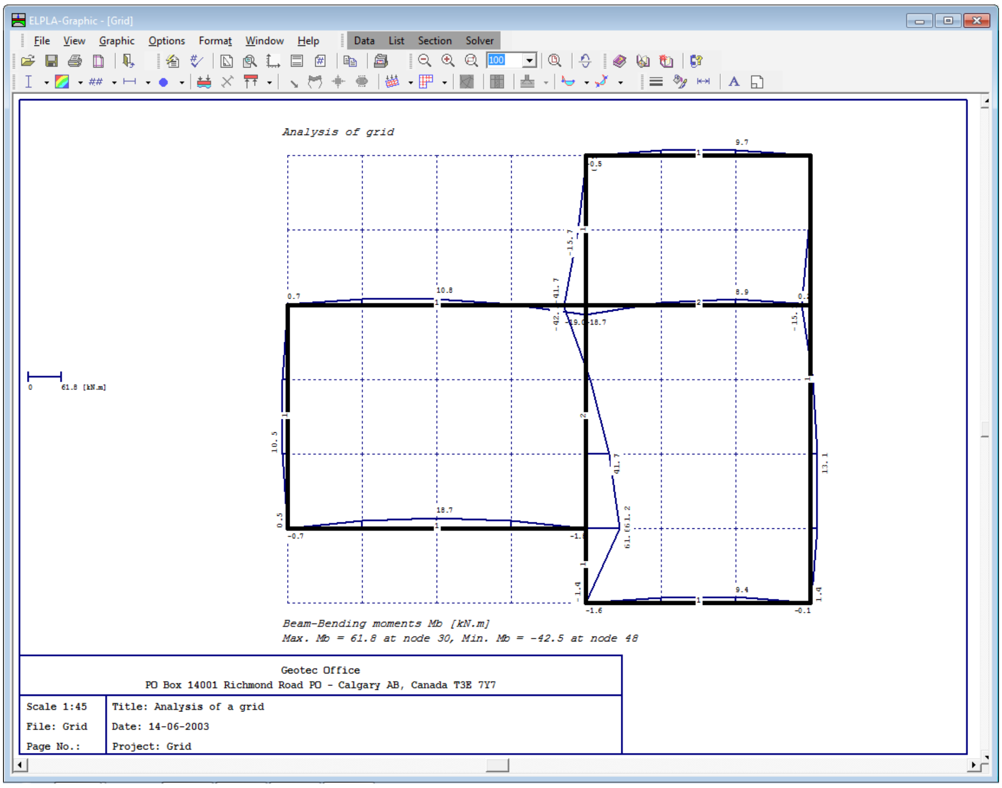

Figure E-38 Distribution of bending moments in the plan

"Internal forces in isometric view"–Option

This option displays the beam internal forces (torsion moments, bending moments and shear forces) with the slab geometry in isometric view. When "Distribution of internal forces isometric view"-Option is chosen, the selection Dialog box shown in Figure E-39 appears. In this Dialog box select an item to draw, then click "OK" Button. As an example, Figure E-40 shows the distribution of shear forces in isometric view.

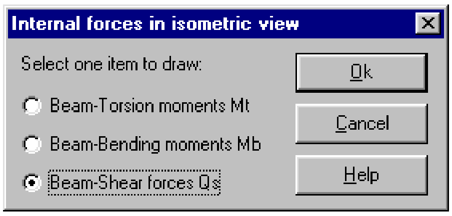

Figure E-39 "Distribution of internal forces in isometric view" items

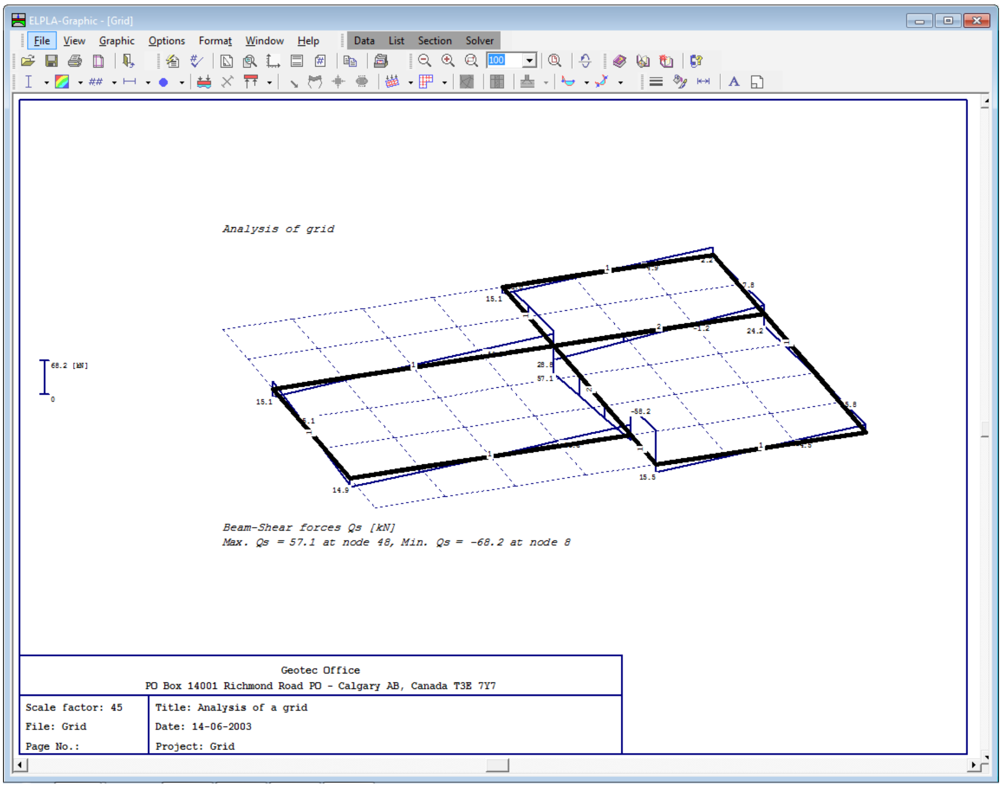

Figure E-40 Distribution of shear forces in isometric view

7 Options Menu

The Options menu has the following commands:

- Plot parameters
- Display values
- Scale
- Set range
- Axes
- Title
- Page No.
- Copy
- View grouping

7.1 Options Menu–"Plot parameters" command

Plot parameters may be set as default values by the program or be fully specified by the user. By "Plot parameters" command the following plot parameters can be specified (Figure E-41):

- Display FE-Net, Axes, slab dimensions, FE-Net in separated elements, reference points and lines, axis arrows
- Pages with or without a frame
- Color element groups and slab thickness
- Color section of punching shear
- Color girders

- Draw girder thickness
- Color circles of circular diagrams. If "color circles" is checked, the positive circles are red and the negative circles are blue
- Color contours with or without display contour lines. If "color contours" is checked, the contours will have 13 constant intervals with 13 colors. Colors start at color blue, which represents the minimum value and end at color red representing the maximum value
- Writing factor. If "Writing factor" is checked, the intensity of numbers on the contour lines will be defined
- Display contours with a constant interval
- Display boring subareas boundary
- Color boring subareas
- Mark boring subareas
- Draw neighboring foundations
- Draw block element
- Draw element border
- Color solid element
- Display FE-Net in separated elements
- Display reference points/ lines

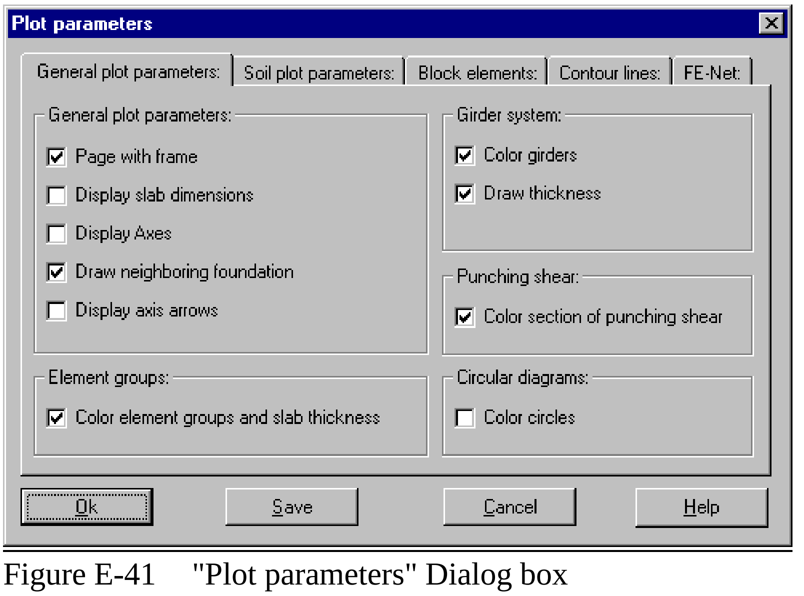

Figure E-41 "Plot parameters" Dialog box

7.2 Options Menu–"Display values" command

By "Display values" command the values of the following items can be displayed, if desired, on the drawing (Figure E-42):

- Loads
- Boundary conditions
- Spring supports
- Element groups
- Girder system
- Piles
- Internal forces of girders
- Axes

- Support reactions as arrows
- Slab thickness
- Isometric views
- Contour lines
- Circular diagrams
- Distribution curves of results
- Soil deformation as vectors
- Soil deformation as deformed mesh
- Punching shear
- Column types

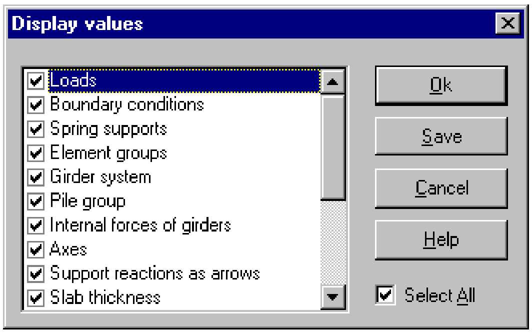

Figure E-42 "Display values" Dialog box

7.3 Options Menu–"Scale" command

By "Scale" command the scale factor of the drawing can be defined as shown in Figure E-43. The defaulted value for the scale factor is chosen to pass the active printer-paper format. By graphical drawing in the plan the scale is changed to scale factor, "scale factor" = "scale 1: ".

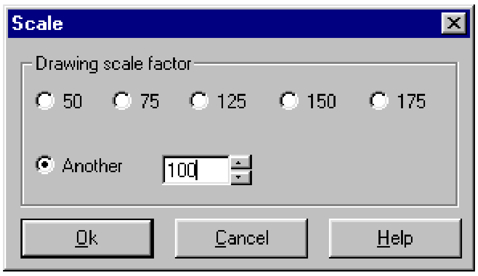

Figure E-43 "Scale" Dialog box

7.4 Options Menu–"Set range" command

By "Set range" command the area of the slab, that will be drawn, can be defined. In the Dialog box shown in Figure E-44 define ranges, which bound this slab area.

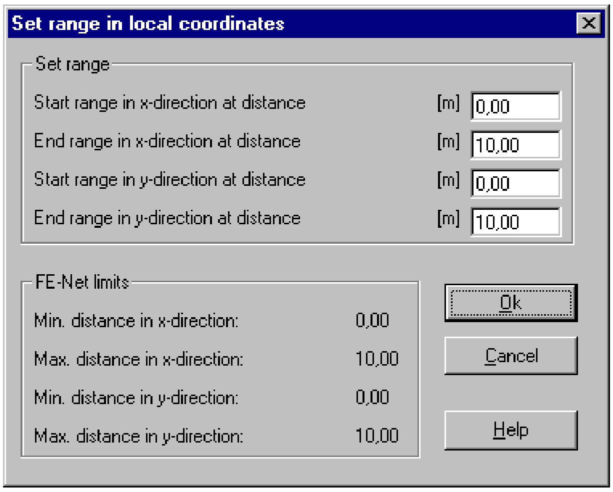

Figure E-44 "Set range" Dialog box

7.5 Options Menu–"Axes" command

By "Axes" command scaled axes can be defined on the drawing, Figure E-45.

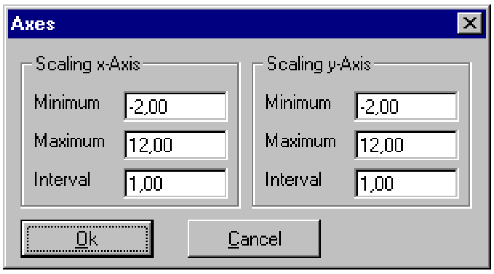

Figure E-45 "Axes" Dialog box

7.6 Options Menu–"Title" command

By "Title" command the text data (two lines text above the drawing and two lines text under the drawing) can be defined, Figure E-46.

Default texts are:

- A-Title1: Method No.
- A-Title2: Name of method
- U-Title1: Name of drawing
- U-Title2: No. of nod columns and nod rows that define the drawing

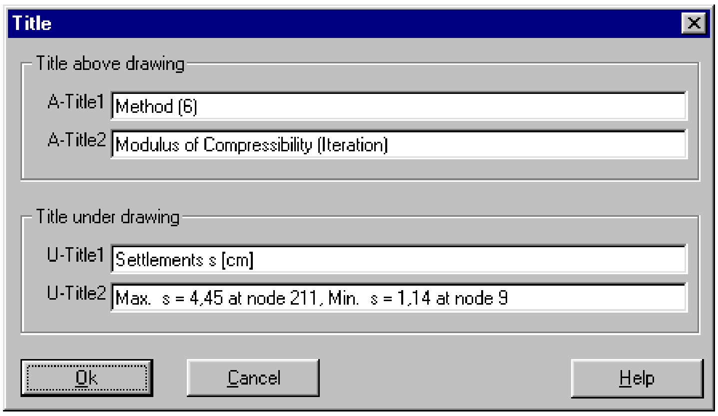

Figure E-46 "Title" Dialog box

7.7 Options Menu–"Page No." command

By "Page No." command the page No. can be defined, Figure E-47.

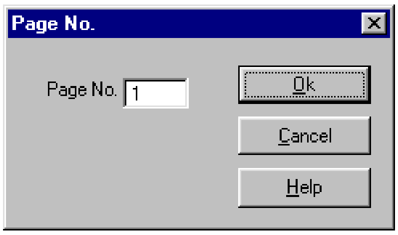

Figure E-47 "Page No." Dialog box

7.8 Options Menu–"Copy" command

By "Copy" command the current drawing can be copied in Metafile-Format to Clipboard. Then it can be inserted directly to other Windows programs such as Word and AutoCAD, Figure E-48.

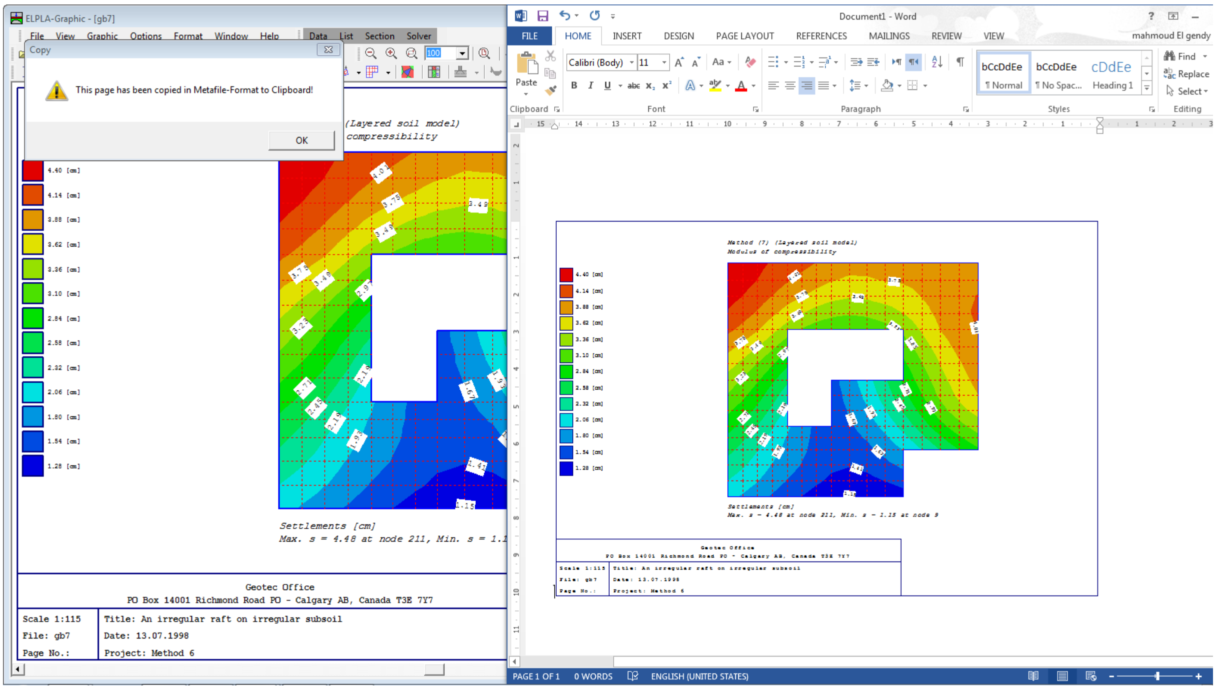

Figure E-48 Drawing can be copied to other Windows programs

7.9 Options Menu–"View grouping" command

Draw a group of data with results or a group of data together in one presentation (contour lines of settlements with loads and slab thickness, or loads with boring locations), Figure E-49.

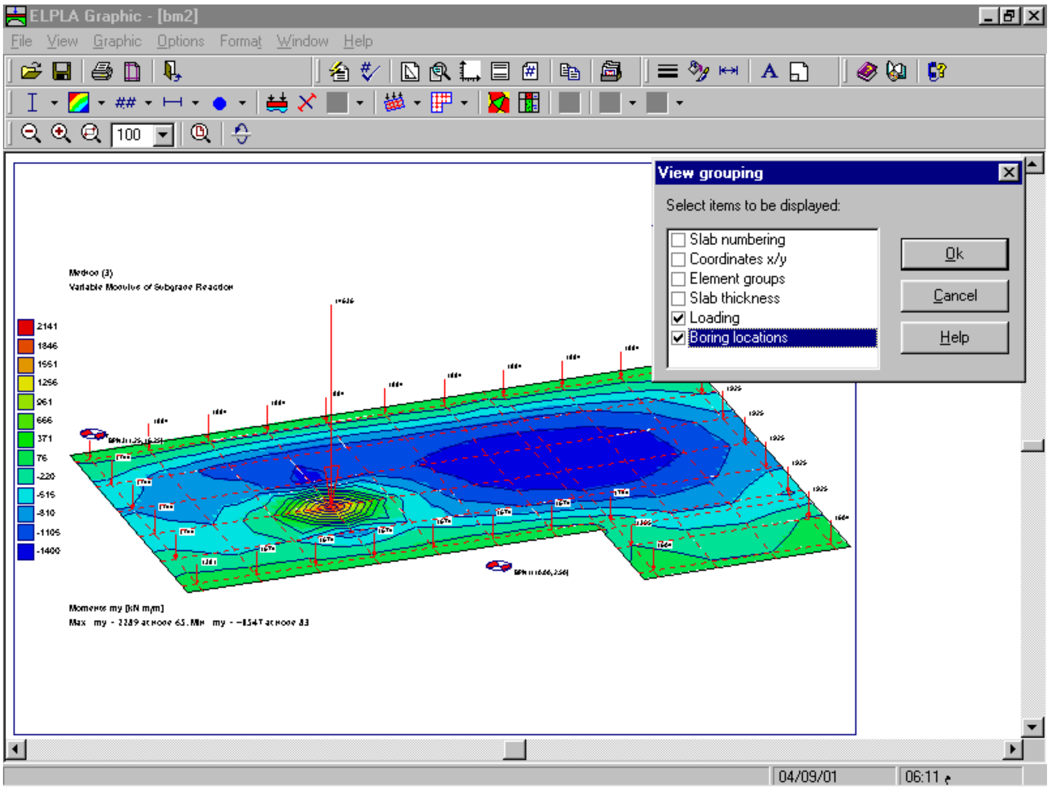

Figure E-49 Presentation of a group of data with results

8 Format Menu

The Format menu has the following commands:

- Line formats
- Fill color
- Max. ordinate
- Font
- Legend

8.1 Format Menu–"Line formats" command

By "Line formats" command the color, style and thickness of drawing lines can be defined, Figure E-50. The way a line is drawn depends on the setting of the color and style properties. There are available 15 different colors and 5 styles for line formats. The following list shows the available lines, which can be formatted:

- Slab boundary
- Elements
- Isometric view
- Distribution curves of results
- Contour lines

- Legends
- Circular diagrams
- Arrows of support reactions
- Page boundary
- Identification box
- Streaks of principal moments (+ve)
- Streaks of principal moments (-ve)
- Slab dimensions
- Loads
- Boundary conditions
- Boring logs
- Slab thickness
- Axes of symmetry
- Beam elements
- Spring supports
- Axes of symmetry
- Symbol of symmetry
- Vectors of soil deformation
- Deformed mesh of soil deformation
- Axis arrows
- Girder axes
- Piles in plan
- Pile length
- Pile hatching
- Additional settlements
- Reference points and lines
- Columns
- Cartesian grid
- Punching shear
- Borders of block elements

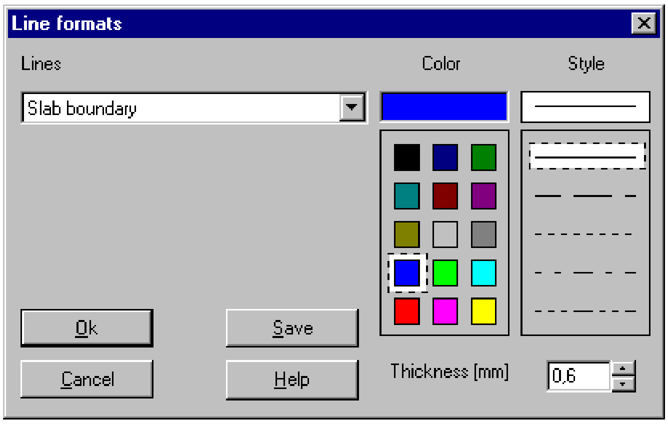

Figure E-50 "Line formats" Dialog box

8.2 Format Menu–"Fill color" command

By "Fill color" command the fill color of drawing can be defined, Figure E-51. The following list shows the available items, which can be filled with a specified color:

- Loads
- Boundary conditions
- Springs
- Zone type I: Bilinear interpolation
- Zone type II: Linear interpolation
- Zone type III: Node corresponds to boring
- Circle of boring
- Additional settlements
- (+ve) Circular diagrams
- (-ve) Circular diagrams
- Punching shear
- Material No.
- Girder group No.
- Sub area of boring No.
- Pile group No.
- Column group No.

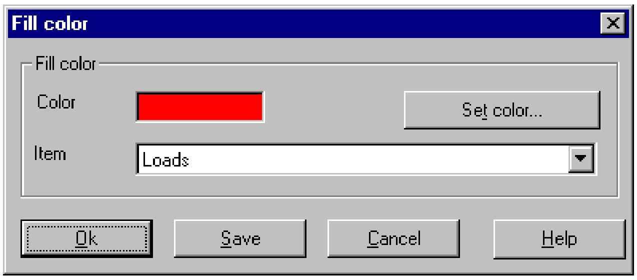

Figure E-51 "Fill color" Dialog box

8.3 Format Menu–"Max. ordinate" command

By "Max. ordinate" the max. ordinate, max. diameter, max. side, max. width and max. length for the drawing can be defined, Figure E-52.

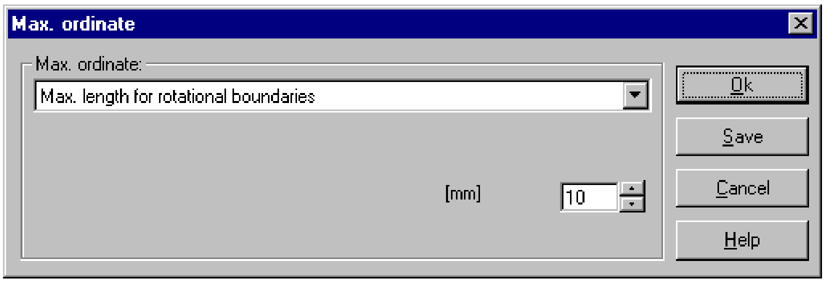

Figure E-52 "Max. ordinate" Dialog box

8.4 Format Menu–"Font" command

By "Font" command the font size (Figure E-53) and font type (Figure E-54) can be defined.

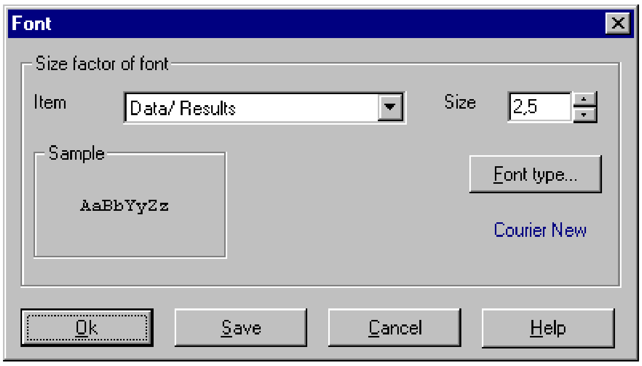

Figure E-53 "Font size" Dialog box

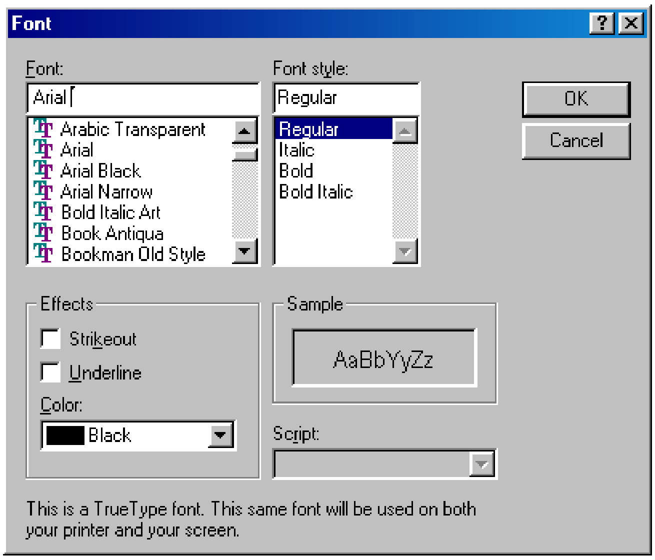

Figure E-54 "Font type" Dialog box

8.5 Format Menu–"Legend" command

By this command the height and width of legends can be specified as shown in Figure E-55.

Display legend

In "Display legend" Group box check the legend that you wish to display.

Legend size

In "Legend size" Group box the height and width of the legend can be defined.

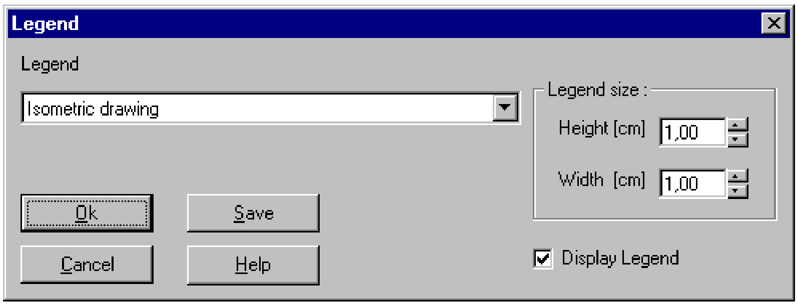

Figure E-55 "Legend" Dialog box

9 Window Menu

The Window menu has the following commands:

- Zoom in
- Zoom out
- Zoom window
- Zoom %
- Original size
- Viewing angle

9.1 Window Menu–"Zoom in" command

By "Zoom in" command the size of the drawing on the screen can be reduced.

9.2 Window Menu–"Zoom out" command

By "Zoom out" command the size of the drawing on the screen can be increased.

9.3 Window Menu–"Zoom window" command

By "Zoom window" command the size of the drawing on a specified area can be increased.

9.4 Window Menu–"Zoom %" command

When you choose "Zoom %" command, the following Dialog box in Figure E-56 appears.

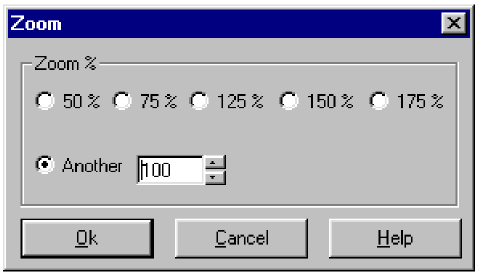

Figure E-56 "Zoom %" Dialog box

By "Zoom %" command the size of drawing on the screen can be specified. Choosing "Zoom %" allows you to increase or decrease the size at which the drawing is displayed. Choosing 100% displays the drawing at its original size. Clicking on the percentage, changes the drawing size to the specified percentage. The drawing can be displayed at any size by typing the desired percentage in the specified Edit box.

9.5 Window Menu–"Original size" command

The commands "Zoom in", "Zoom out" and "Zoom %" can change the size of drawing on the screen. The drawing can be displayed in its original size again using "Original size" command.

9.6 Window Menu–"Viewing angle" command

The perspective drawing in a three dimensional view can be defined, Figure E-57.

The default viewing angle for isometric drawing, Figure E-58:

Viewing angle about x-Axis = 295
Viewing angle about y-Axis = 0
Viewing angle about z-Axis = 20

The default viewing angle for drawing in the plans:

Viewing angle about x-Axis = 0
Viewing angle about y-Axis = 0
Viewing angle about z-Axis = 0

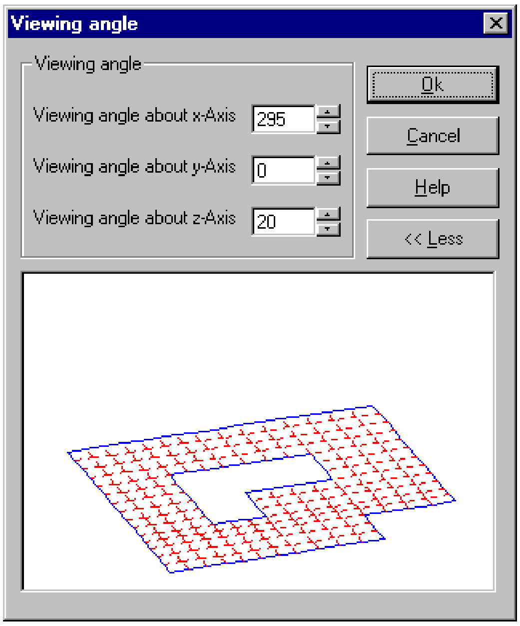

Figure E-57 "Viewing angle" Dialog box

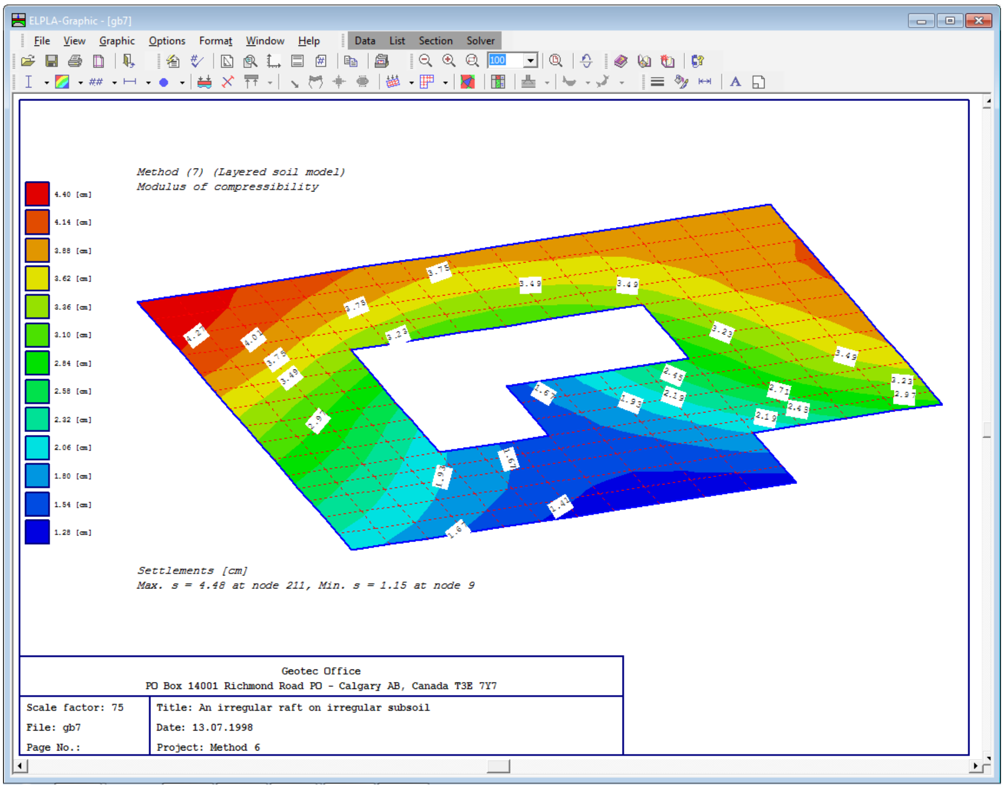

Figure E-58 Contour lines of settlements with viewing angles 295, 0, and 20 about the x-, y-, and z-axes, respectively

10 Help Menu

The Help Menu commands are:

- Contents
- Short description of ELPLA
- New in ELPLA
- About ELPLA-Graphic

10.1 Help Menu–"Contents" command

"Contents" command displays a help file in HTML-Format containing the complete ELPLA User's Guide, Figure E-59.

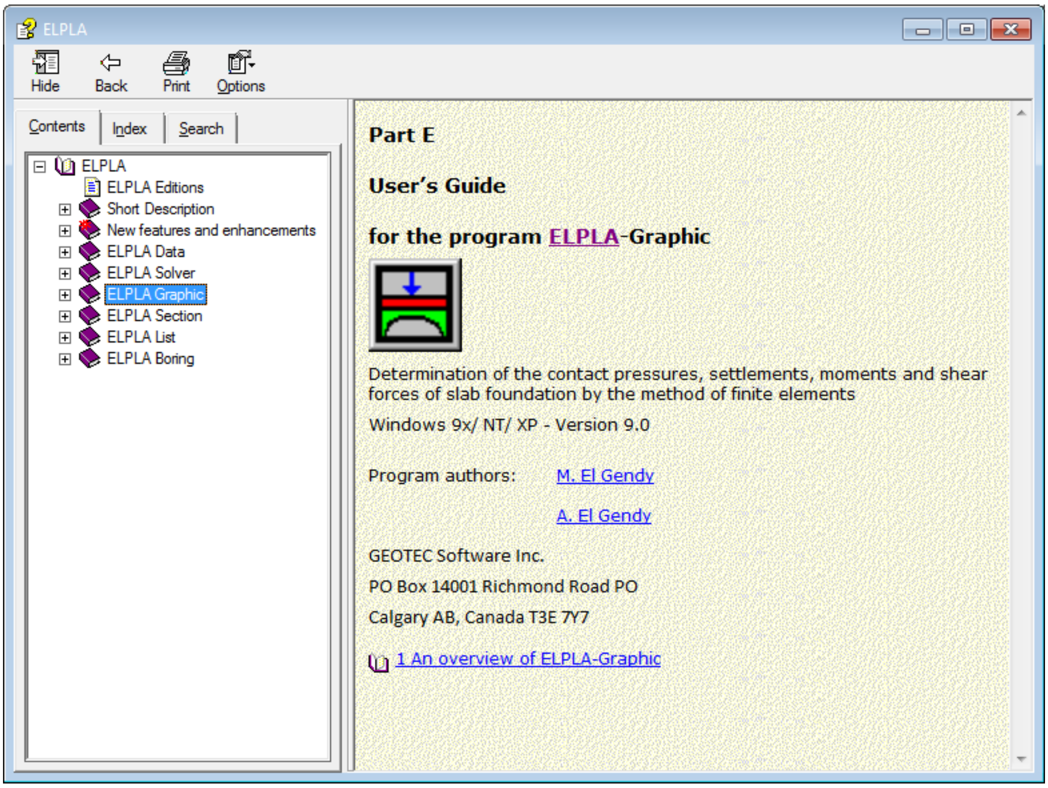

Figure E-59 Menu "Contents"

10.2 Help Menu–"Short description of ELPLA" command

"Short description of ELPLA" command gives a short description of ELPLA package.

10.3 Help Menu–"New in ELPLA" command

"New in ELPLA" command summarizes the new features and enhancements in ELPLA.

10.4 Help Menu–"About ELPLA-Graphic" command

Clicking the command "About ELPLA-Graphic" displays the information form of ELPLA-Graphic as shown in Figure E-60, which gives information about ELPLA-Graphic and the calculation method of the loaded project.

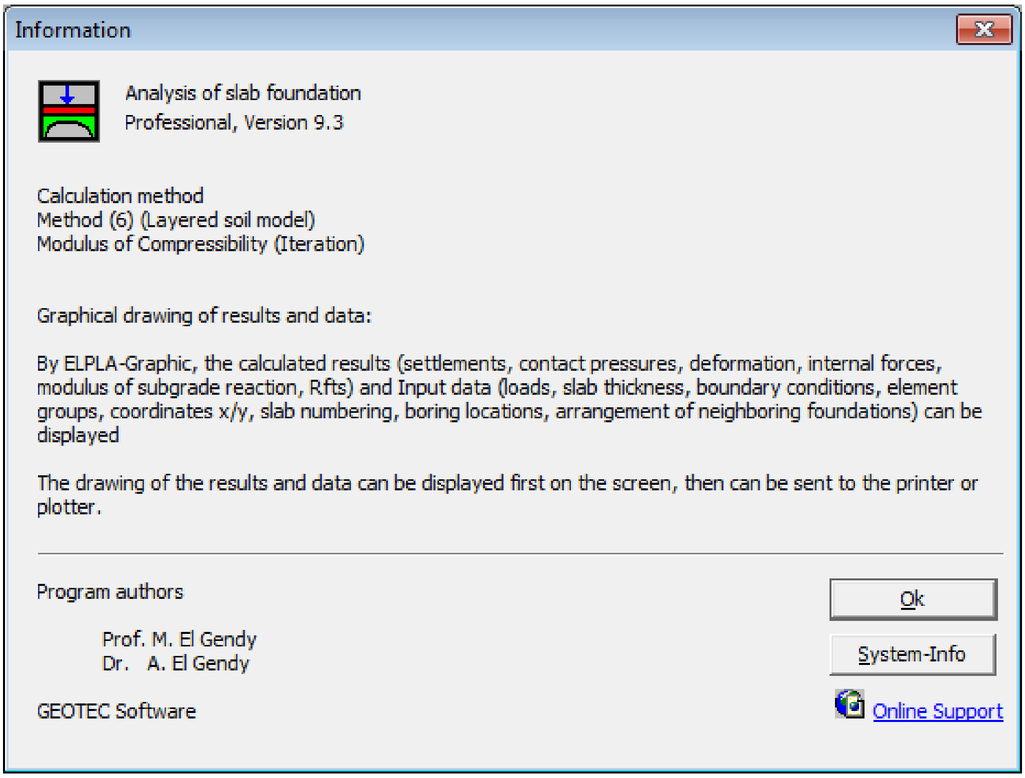

Figure E-60 Information form of program ELPLA-Graphic

11 Tips and Tricks
11.1 Keyboard

The user can obtain all menu titles and commands also through Shortcut keys. The action of the Shortcut keys is listed in Table E-4 to Table E-11:

Table E-4 Shortcut keys of menu head

Shortcut keys	Action
[Alt+f]	Calling menu head "File"
[Alt+v]	"View"
[Alt+g]	"Graphic"
[Alt+o]	"Options"
[Alt+t]	"Format"
[Alt+w]	"Window"
[Alt+h]	"Help"

Table E-5 Shortcut keys of File-Command

Shortcut keys	Action
[Ctrl +o] or [Alt+f] then [o]	Calling command "Open"
[Alt+f] then [w]	"Make WMF-File"
[Alt+f] then [s]	"Send to ELPLA-Section"
[Ctrl +p] or [Alt+f] then [p]	"Print"
[Alt+f] then [u]	"Page setup"
[Alt+f] then [1]	Calling the first project from the last four loaded projects
[Alt+f] then [2]	Calling the second project from the last four loaded projects
[Alt+f] then [3]	Calling the third project from the last four loaded projects
[Alt+f] then [4]	Calling the fourth project from the last four loaded projects
[Ctrl+q] or [Alt+f] then [x]	Calling command "Exit"

Table E-6 Shortcut keys of View-Command

Shortcut keys	Action
[Alt+v] then [b]	Calling command "Status bar"
[Alt+v] then [t]	"Tool bars"
[Alt+v] then [t], then [f]	"Tool bars-File"
[Alt+v] then [t], then [g]	"Tool bars-Graphic"
[Alt+v] then [t], then [o]	"Tool bars-Options"
[Alt+v] then [t], then [t]	"Tool bars-Format"
[Alt+v] then [t], then [w]	"Tool bars-Window"
[Alt+v] then [t], then [h]	"Tool bars-Help"
[Alt+v] then [t], then [r]	"Reset Toolbar"

Table E-7 Shortcut keys of Graphic-Command

Shortcut keys	Action	
[Alt+g] then [r]	Calling command	"Results in isometric view"
[Alt+g] then [e]		"Results as contour lines"
[Alt+g] then [v]		"Result values in the plan"
[Alt+g] then [d]		"Distribution curves of results in the plan"
[Alt+g] then [f]		"Deformation"
[Alt+g] then [p]		"Principal moments as streaks"
[Alt+g] then [s]		"Support reactions as arrows"
[Alt+g] then [v]		"Soil deformation as vectors"
[Alt+g] then [m]		"Soil deformation as deformed mesh"
[Alt+g] then [s]		"Principal soil stresses as streaks"
[Alt+g] then [p]		"Principal soil strains as streaks"
[Alt+g] then [a]		"Data in isometric view"
[Alt+g] then [n]		"Data in the plan"
[Alt+g] then [b]		"Boring locations"
[Alt+g] then [o]		"Boring logs/ Limit depth"
[Alt+g] then [g]		"Beam results"

Table E-8 Shortcut keys of Options-Command

Shortcut keys	Action	
[Alt+o] then [l]	Calling command	"Plot parameters"
[Alt+o] then [d]		"Display values"
[Alt+o] then [c]		"Scale"
[Alt+o] then [s]		"Set range"
[Alt+o] then [a]		"Axes"
[Alt+o] then [t]		"Title"
[Alt+o] then [p]		"Page No."
[Alt+o] then [c]		"Copy"
[Alt+o] then [v]		"View grouping"

Table E-9 Shortcut keys of Format-Command

Shortcut keys	Action	
[Alt+t] then [l]	Calling command	"Line formats"
[Alt+t] then [i]		"Fill color"
[Alt+t] then [x]		"Max. ordinate"
[Alt+t] then [f]		"Font"
[Alt+t] then [d]		"Legend"

Table E-10 Shortcut keys of Window-Command

Shortcut keys	Action	
[Alt+w] then [i]	Calling command	"Zoom in"
[Alt+w] then [o]		"Zoom out"
[Alt+w] then [w]		"Zoom window"
[Alt+w] then [z]		"Zoom %"
[Alt+w] then [r]		"Original size"
[Alt+w] then [v]		"Viewing angle"

Table E-11 Shortcut keys of Help-Command

Shortcut keys	Action	
[Alt+h] then [c]	Calling command	"Contents"
[Alt+h] then [s]		"New in ELPLA"
[Alt+h] then [n]		"Short description of ELPLA"
[Alt+h] then [a]		"About ELPLA-Graphic"

11.2 Mouse

By double-clicking the left mouse Button on a specified screen position the user can obtain almost menus of the program.

- By double-clicking on *legend*, *firm header*, *title* or *project identification* the corresponding menu appears
- By double-clicking on *scale* in the identification box "Scale"-Menu appears
- By double-clicking on *file name* in the identification box "Open"-Menu appears
- By double-clicking on *page No.* in the identification box "Page No."-Menu appears
- By clicking the right mouse Button at any position on the screen the user can also obtain the Popup-Options-Menu, Figure E-61
- By double-clicking on a specified node on the FE-Net the corresponding node information appears, Figure E-62

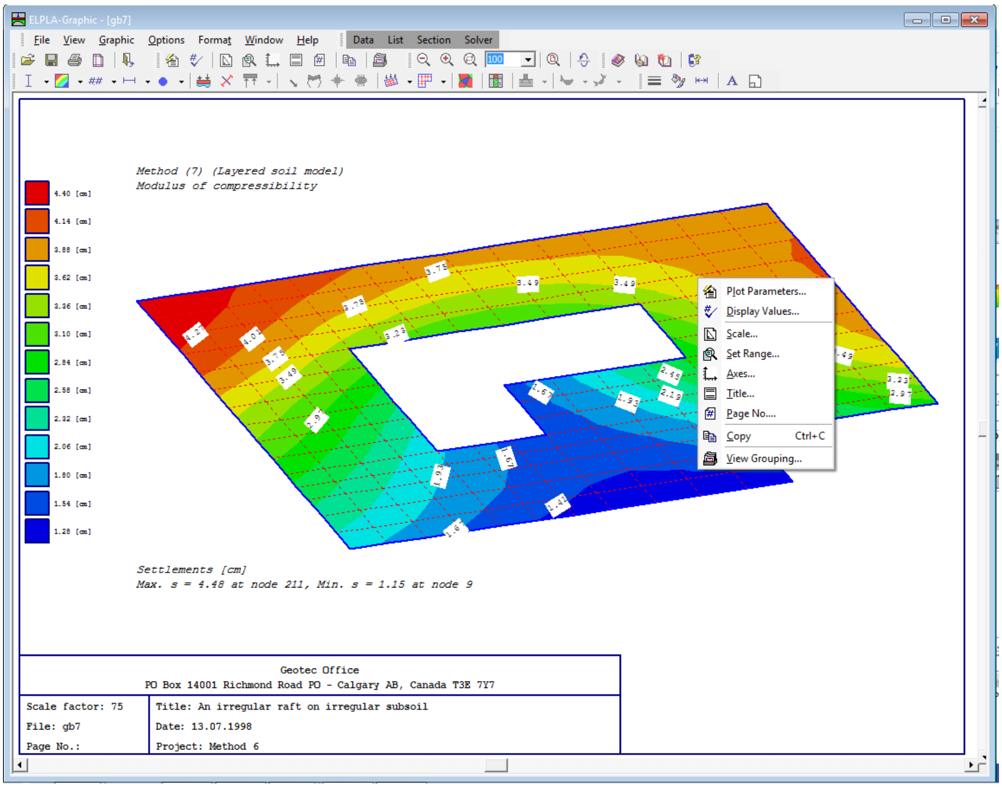

Figure E-61 Menu "Popup-Options"

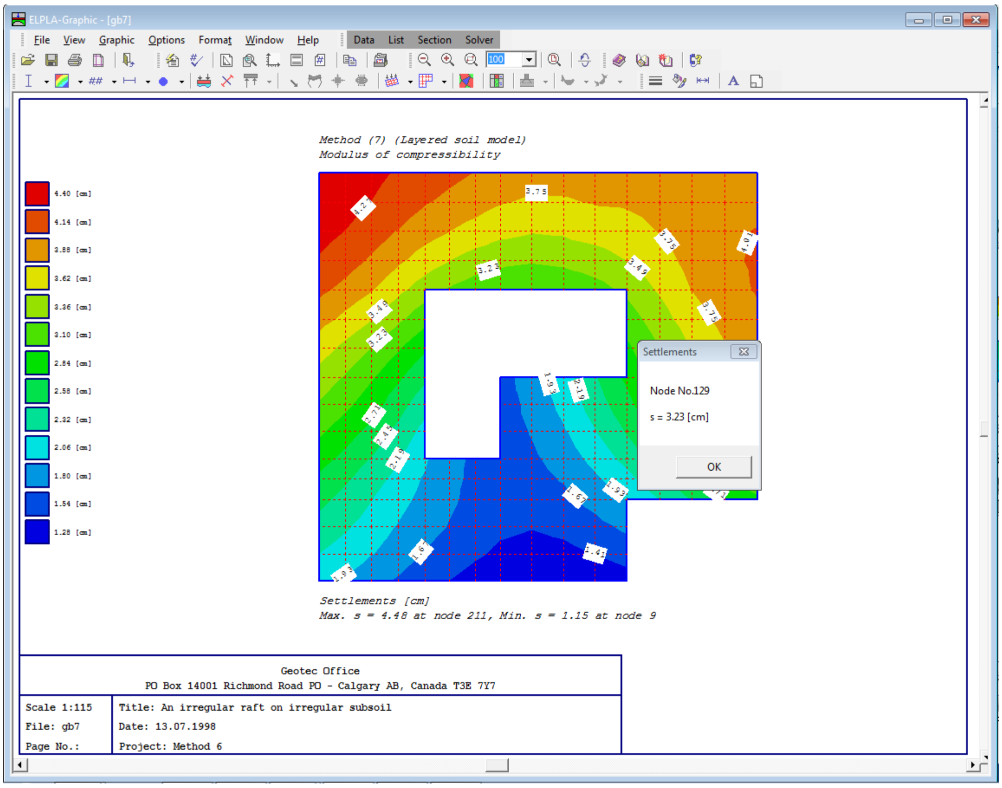

Figure E-62 Node information

12 Samples for graphical drawings using ELPLA-Graphic

ELPLA-Graphic gives the ability to present more than 100 different graphical drawings for data and results. In this paragraph some graphical drawings for data and results of example problems "gb7" (an irregular raft on irregular subsoil) and "rib" (a ribbed raft) are presented.

The pages P1 to P10 show some graphical presentations of data and results for example problem "gb7", while pages P11 and P12 show the graphical presentation of girders for example problem "rib".

12.1 Graphical drawings of data

Data in isometric view	Loading	Page	P1
Data in the plan	Geometry of slab with loading		P2
	Location of borings		P3

12.2 Graphical drawings of results

Results in isometric view	Contact pressures q	P4
Deformation	Deformation w	P5
Results as contour lines	Settlements s	P6
Result values in the plan	Bottom Rafts y-Direction A_{sy2}	P7
Distribution curves of results in the plan	Moments m_y	P8
Results as circular diagrams	Moments m_x	P9
Principal moments as streaks	Principal moments	P10
Girders presentation in the plan	Beam-Bending moments M_b	P11
Girders presentation in isometric view	Beam-Bending moments M_b	P12

13 Index

W

Z