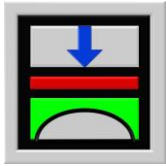


# Part G

## User's Guide for the program **ELPLA-List**



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- List

ELPLA-List is used to display and print input data and calculated results. Listing data and results can be displayed first on the screen, and then can be sent to the printer or MS Word.

The data and results can be viewed as follows:

- Display tables of data
- Print tables of data
- List tables of data through Text-Editor
- Display tables of results
- Print tables of results
- List tables of results through Text-Editor

The data and results, if desired, can be saved as ASCII-format Files, in which they can be exported to other Windows applications to prepare reports or add further information.

## 2 Description of ELPLA-List

ELPLA-List is a 32-bit software product that operates under MS 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-List, especially if you are already familiar with the Windows environment.

The program package ELPLA consists of 7 separate programs. They can be run independently. The name and short description of the seven separate programs are given in Table G-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 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 G-1 Names and description of the seven 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-List, first the user must define the project data by ELPLA-Data, and then analyze the problem by ELPLA-Solver. Table G-2 gives a list of files, which are read or created by ELPLA-List. The files can be classified in four groups.

Table G-2 Names of file groups

Group	Saved from the program
A Main data files	ELPLA-Data
B List files (*.LST)	ELPLA-List
C Project data files	ELPLA-Data
D Result files	ELPLA-Solver

Further more, Table G-3 shows filename, contents and groups of all files that may be read by ELPLA-List.

Table G-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
RFT	Design code parameters
UNITS	System of units

## B List file

Filename	Contents
PAGELAYO.LST	Page format
FONT.LST	Font format

## C Project data files

Filename	Contents
*. AUF	3 lines text to identify the project
*. BAU	Soil properties
*. LDH	Data of limit depth
*. PO1	System data (Analysis of isolated raft)
*. PC1	Load data
*. PL6	FE-Net data
*. P21	Data of slab properties/ levels/ coordinates
*. P23	Reinforcement data
*. GL1	Girder data
*. P31	Data of supports/ boundary conditions
*. P35	Data of spring supports
*. P41	File of boring fields
*. PT1	Data for temperature change
*. PP1	File of neighboring foundations
*. PV1	Data of additional soil settlements

## D Result files

Filename	Contents
*. PL4	Area around nodes
*. PC7	Foundation properties
*. PC8	Average contact pressure, eccentricity and area of slab
*. PS1	Deformations of the rigid slab ( $w_o$ , $\tan \theta_{xo}$ , $\tan \theta_{xo}$ )
*. PT2	Load vector due to temperature change
*. PP2	Load vector due to neighboring foundations
*. PW2	Moduli of subgrade reactions of borings
*. QUB	Main ultimate bearing capacity ( $q_b$ )
*. PD1	Flexibility matrix for loading
*. PD2	Flexibility matrix for reloading
*. PE1	Soil stiffness matrix
*. LD1	Limit depth
*. GH1	Internal forces of grid elements
*. PT3	Displacements due to temperature change ( $s_t$ )
*. PP3	Settlements due to neighboring foundations ( $s_e$ )
*. PV2	Load vector due to additional settlements
*. QUN	Ultimate bearing capacities at nodes ( $q_{ult}$ )
*. 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 ( $Q_y$ )
*. PH8	Settlements due to reloading ( $s_w$ )
*. PH9	Overburden pressures ( $Q_u$ )
*. 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 ( $A_{sy2}$ )
*. THY	Rotations about y-axis ( $\theta_y$ )
*. THZ	Rotations about z-axis ( $\theta_z$ )
*. PPU	Punching results

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

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

### 3 Starting ELPLA-List

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

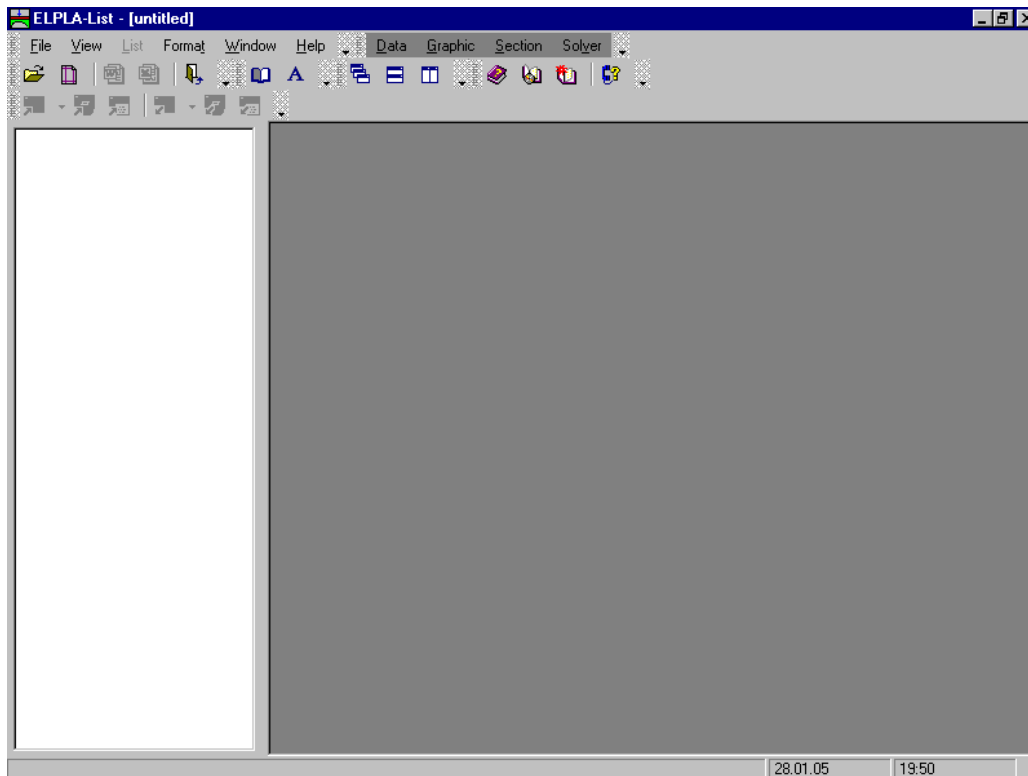


Figure G-1 Introduction screen of ELPLA-List

The menu head of Figure G-1 contains the following 6 commands:

- File
- View
- List
- Format
- Window
- Help

After clicking one of the six menu commands other sub-commands become available. These are presented and described in the following paragraphs 4 to 10.

#### **4 File Menu**

The File Menu commands are:

- Open
- Close project
- Print setup
- Send to Word
- Send to Excel
- 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 G-2 shows "Open" Dialog box used to open a specified project.

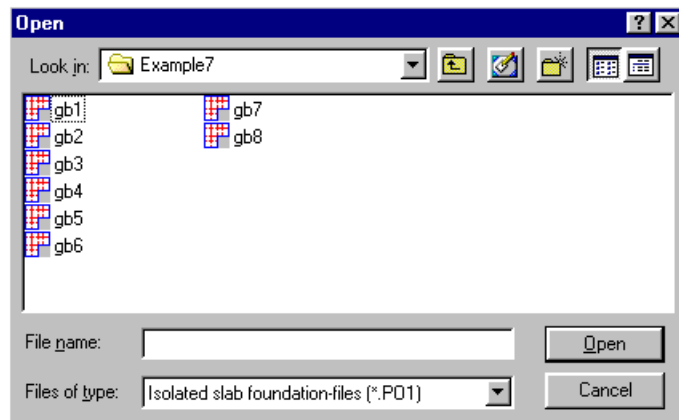


Figure G-2 "Open project" Dialog box

#### 4.2 File Menu – "Close project" command

By "Close project" command the current project is closed.

#### 4.3 File Menu – "Print setup" command

By this command the standard "Print setup" Dialog box can be displayed with options to specify printer, page orientation, paper size and paper source, as well as other printing options.

Table G-3 shows "Print setup" 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.

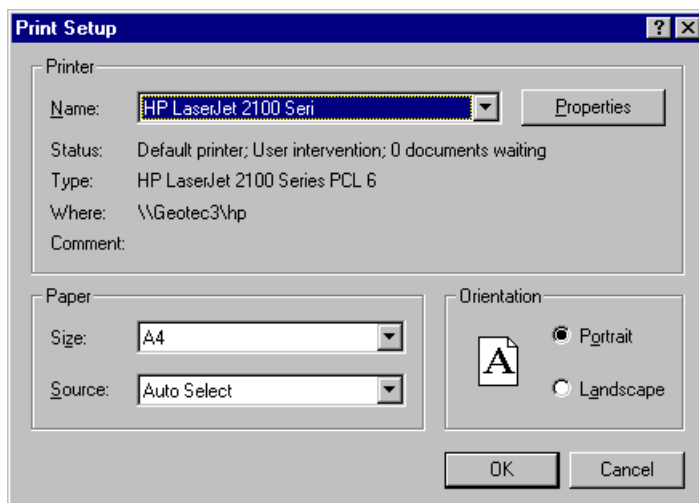


Figure G-3 "Print setup" Dialog box



#### 4.4 File Menu – "Send to Word" command

By "Send to Word" command it is possible to export data to MS Word, Figure G-4.

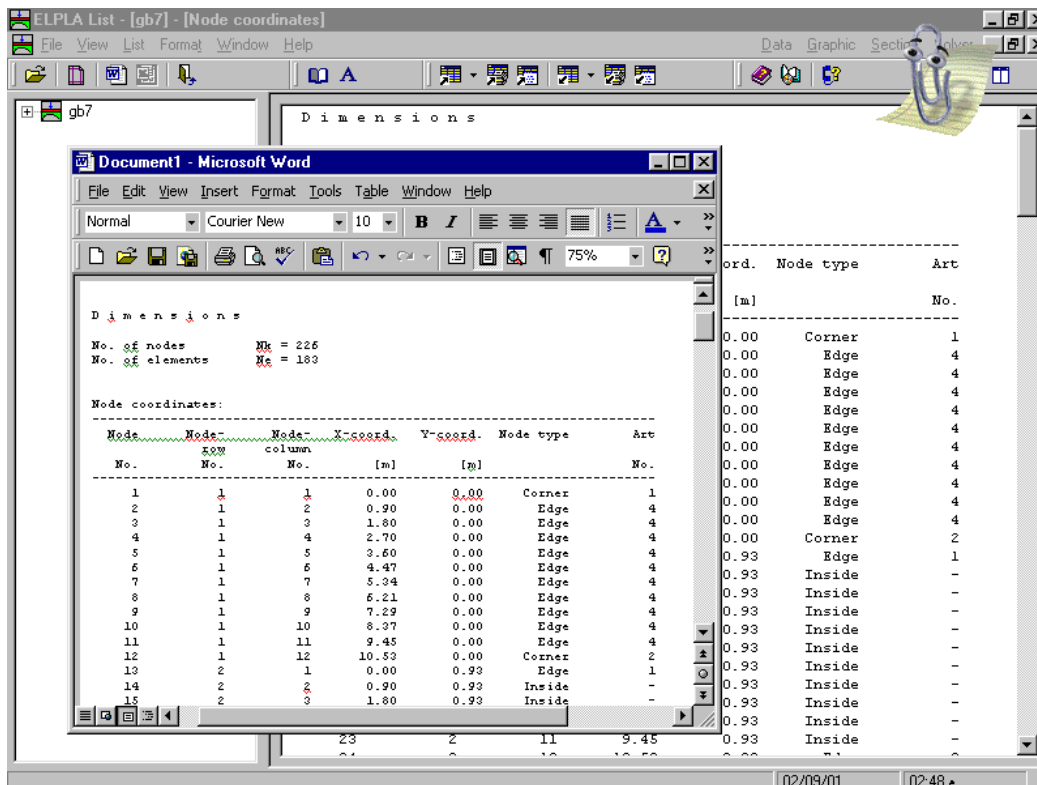


Figure G-4 Export data to MS Word

#### 4.5 File Menu – "Send to Excel" command

By "Send to Excel" command it is possible to export results to MS Excel, Figure G-5.

#### 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.

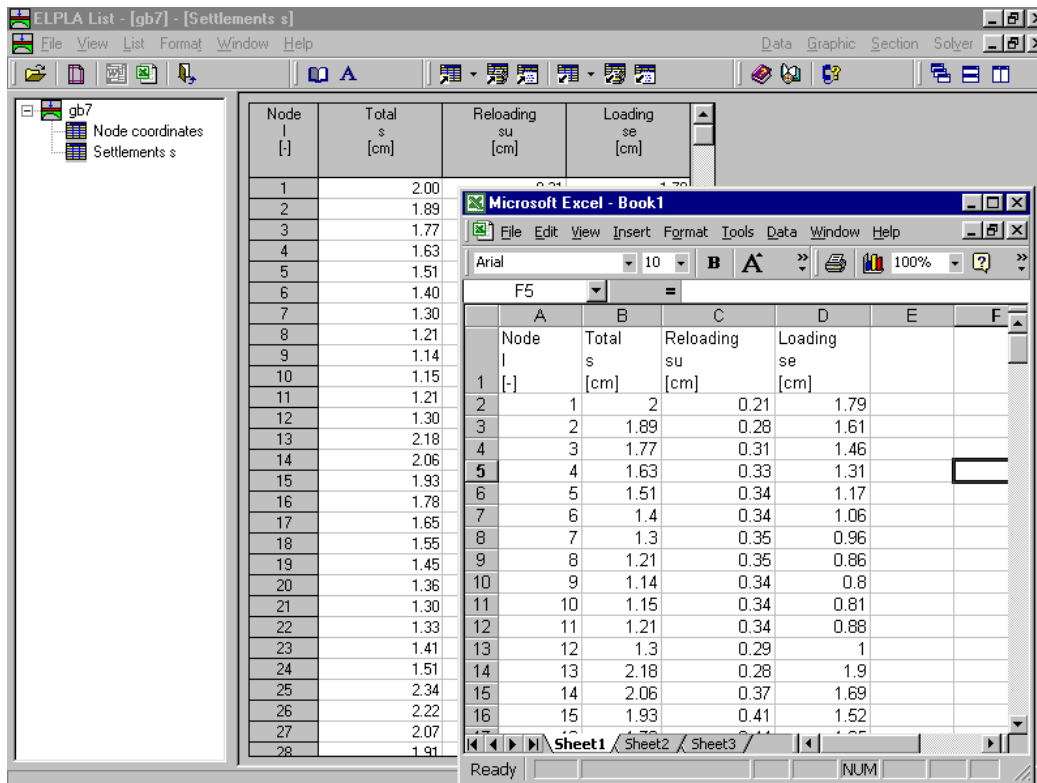


Figure G-5 Export results to MS Excel

#### 4.7 File Menu –"Exit" command

By "Exit" command the current project is closed and ELPLA-List is quitted, Figure G-6.

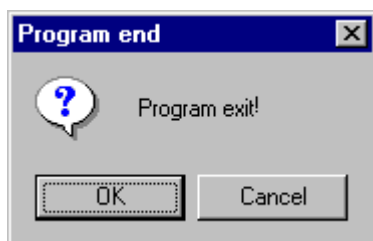


Figure G-6 "Exit" Message box

### 5 View Menu

The View Menu commands are:

- Project explorer
- Status bar
- Tool bars

#### 5.1 View Menu–"Project explorer" command

"Project explorer" command displays an explorer window on the screen at the left. It is possible to swap between data and results easily, Figure G-7.

Node I [ ]	Moment			Principal moment	
	mx [kN.m/m]	my [kN.m/m]	mxy [kN.m/m]	mh1 [kN.m/m]	mh2 [kN.m/m]
1	-0,111	2,583	-7,372	8,730	-6,258
2	30,221	-1,484	-9,451	32,825	-4,088
3	32,160	-1,966	-25,147	45,487	-15,293
4	-31,207	0,576	-26,964	15,983	-46,614
5	-46,950	-3,203	-6,403	-2,285	-47,868
6	-6,403	-0,911	3,524	0,811	-8,124
7	-15,478	4,022	-3,891	4,770	-16,226
8	-84,957	-5,410	0,912	-5,399	-84,968
9	-150,571	-0,326	21,483	2,686	-153,583
10	-99,775	-1,283	30,846	7,580	-108,638
11	-23,870	-3,969	23,344	11,457	-39,296
12	5,451	7,208	13,440	19,799	-7,140
13	-0,727	31,281	-15,400	37,487	-6,933
14	59,706	77,014	-18,822	89,076	47,644
15	101,429	106,254	-29,444	133,384	74,299
16	-51,491	59,040	-30,334	66,818	-59,269
17	-67,777	63,847	-8,830	64,437	-68,367
18	31,553	127,395	5,402	127,699	31,250
19	60,122	153,001	-11,121	154,314	58,809
20	-112,920	66,299	-5,061	66,442	-113,062
21	-164,084	33,913	26,851	37,490	-167,661
22	-98,075	42,119	38,221	51,862	-107,818
23	22,933	61,797	37,866	84,926	-0,196
24	-6,348	0,051	32,941	29,947	-36,244
25	0,113	13,868	-34,440	42,110	-28,130
26	59,734	57,035	-39,480	97,887	18,882
27	98,415	88,878	-34,064	128,042	59,250
28	-57,115	45,558	-34,904	56,299	-67,857

Figure G-7 "Project explorer"-Window

## 5.2 View Menu—"Status bar" command

"Status bar" command displays a status bar on the screen down. The status bar displays information about the progress of the current operation.

## 5.3 View Menu—"Tool bars" command

"Tool bars" command displays tool bars located just below the menu head. Tool bars contain icons of program menus.

## 6 List Menu

The List menu is the main menu, which is used to view or print the calculated results and input project data with the setting given by option format menus.

The Menu List commands are:

- Display tables of data
- Print tables of data
- List tables of data through Text-Editor
- Display tables of results
- Print tables of results
- List tables of results through Text-Editor

## 6.1 List Menu – "Display tables of data" command

By "Display tables of data" command the input project data can be tabulated.

The input project data, which can be tabulated, are:

- Node coordinates
- Node boundaries
- Data of supports/ Boundary conditions
- Spring supports
- Girders
- Loading
- Slab properties/ Foundation level/ Global coordinates
- Data of reinforcement
- Data of temperature change
- Data of neighboring foundations
- Data of additional soil settlements
- Data of boring fields
- Soil properties

When the command is chosen, the selection Dialog box shown in Figure G-8 appears. In this Dialog box select one item to be tabulated and click "OK" Button. As an example, Figure G-9 shows a list of soil data.

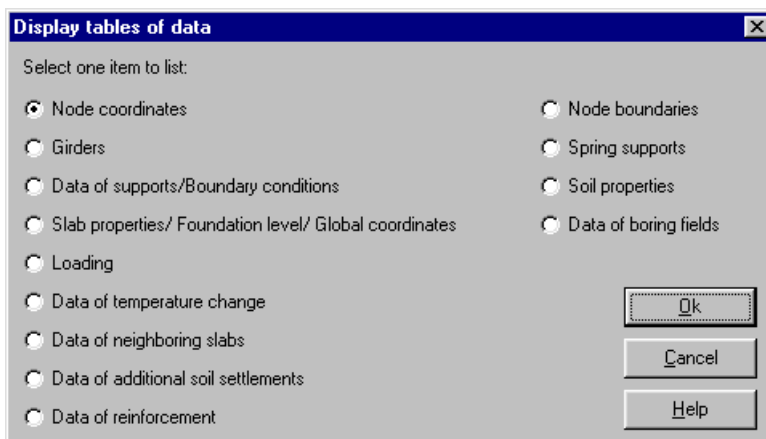


Figure G-8 "Display tables of data" items

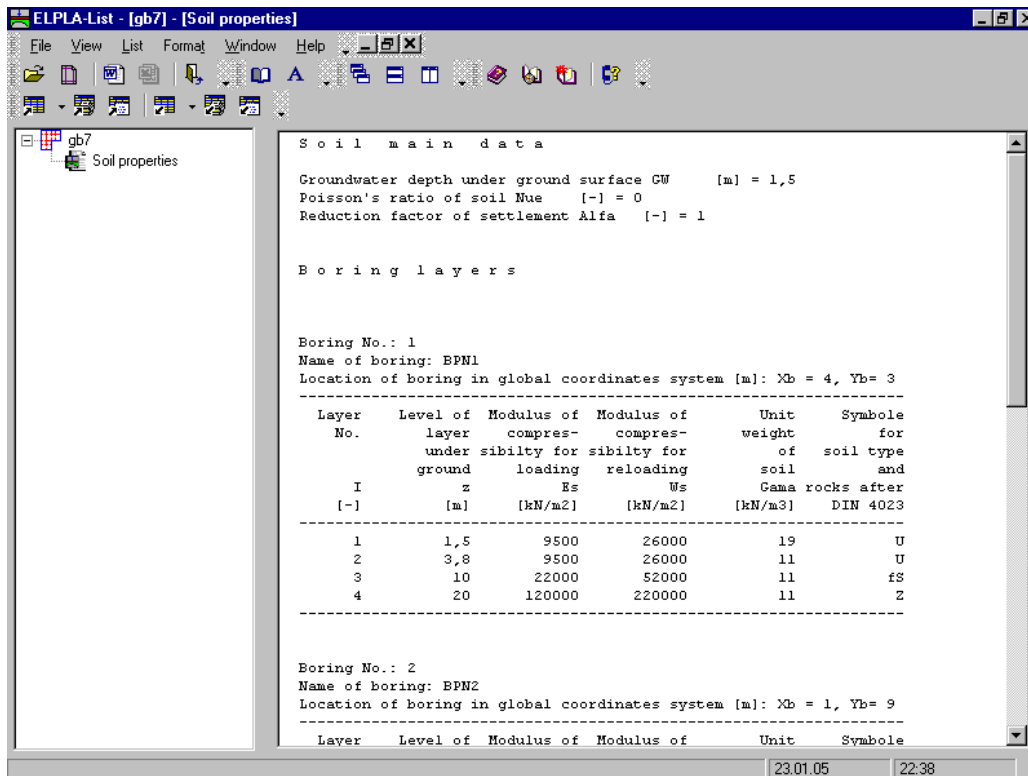


Figure G-9 List of node coordinates

## 6.2 List Menu – "Print tables of data" command

By "Print tables of data" command the title page of ELPLA can be printed. The input project data that can be viewed can be also printed. When "Print tables of data" command is chosen, the selection Dialog box shown in Figure G-10 appears. In this Dialog box check the items that you want to print, then click "OK" Button.

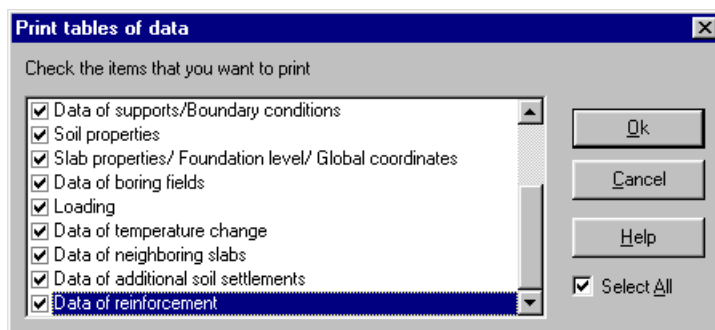


Figure G-10 "Print tables of data" items

For printing tables of data, the header options, page numbering and also number of copies are required as shown in Figure G-11.

### Header

- To print headers (Company), check the control box "Print header (Company)"
- To print an identification header, check the control box "Print identification header"

### Page numbering

- By the option "Start at" renumbering pages can be defined. To change the page number, type the new number in "Start at" Text box
- If the option "No page numbering" is activated, the page numbers will not be included in the document

### Copies

- In Dialog box "No. of copies" the number of printing copies can be defined

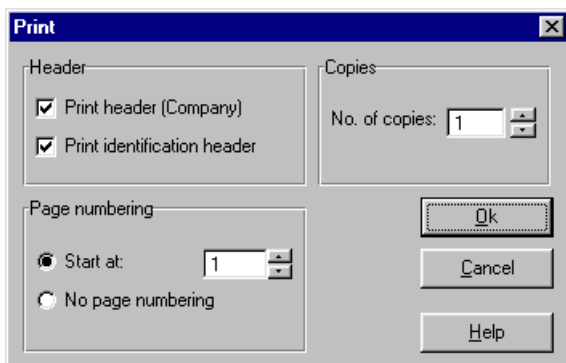


Figure G-11 "Print" Dialog box

### 6.3 List Menu –"List tables of data through Text-Editor" command

By this command the title page of ELPLA can be displayed through the ELPLA Text-Editor. The input project data that can be viewed can be also displayed. When the command is chosen, the selection Dialog box shown in Figure G-12 appears. In this Dialog box check the items that you want to list through Text-Editor, then click "OK" Button.

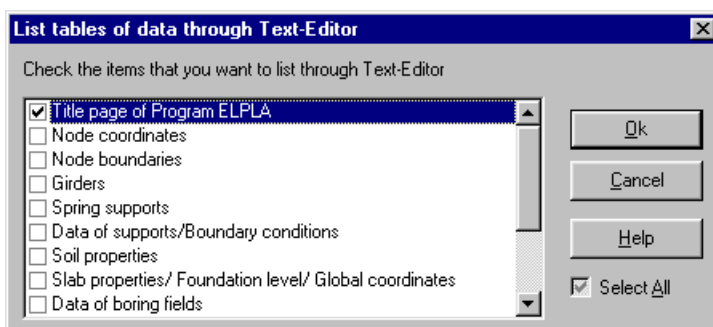


Figure G-12 "List tables of data through Text-Editor" items

For listing tables of data through Text-Editor, the header options and page numbering are required before loading Text-Editor. Figure G-13 shows Title page of ELPLA through the ELPLA Text-Editor (program GEOTEC-Editor). To get information about GEOTEC-Editor, see the User's Guide of GEOTEC-Editor.

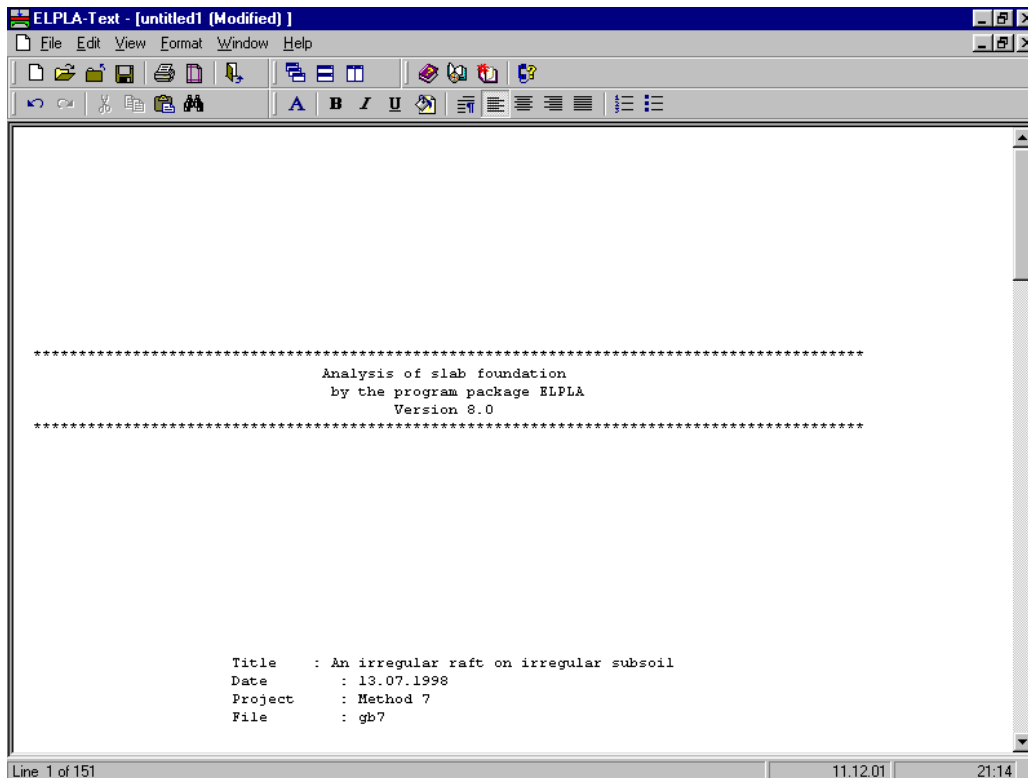


Figure G-13 Title page of ELPLA through GEOTEC-Editor

#### 6.4 List Menu – "Display tables of results" command

By "Display tables of results" command the calculated results can be tabulated.

The calculated results, which can be tabulated, are:

- Settlements, contact pressures, deformation and internal forces
- Flexibility matrix [ $C_e$ ]
- Flexibility matrix [ $C_w$ ]
- Stiffness matrix [ $k_s$ ]
- Modulus of subgrade reaction ( $k_s$ )
- Ultimate bearing capacity ( $q_{ult}$ )
- Settlements due to temperature change ( $s_t$ )
- Settlements due to neighboring foundations ( $s_e$ )
- Additional soil settlements ( $s_s$ )
- Support reactions ( $V$ )
- Limit depth ( $z_g$ )
- Reinforcement ( $A_s$ )
- Punching results

When "Display tables of results" command is chosen, the selection Dialog box shown in Figure G-14 appears. In this Dialog box select one item to be tabulated, then click "OK" Button. As an example, Figure G-15 shows a list of settlements.

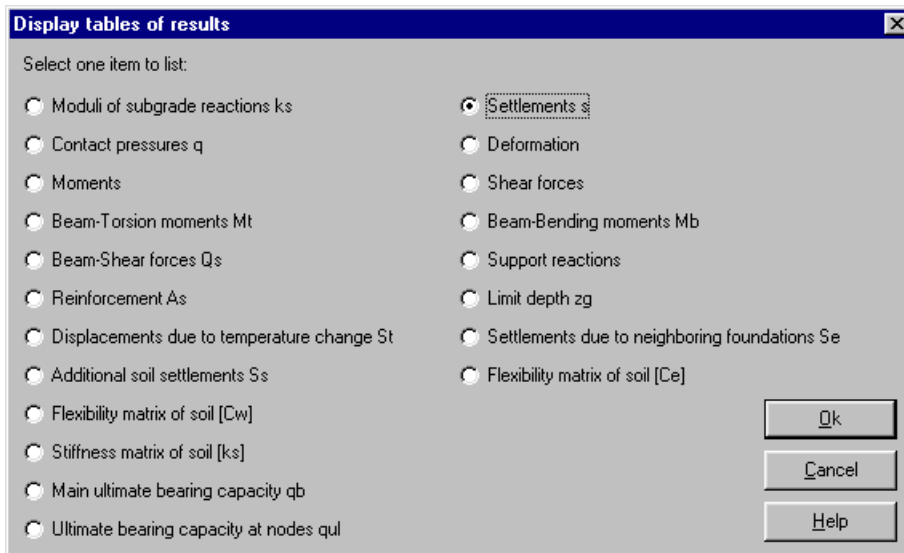


Figure G-14 "Display tables of results" items

Node I [-]	Total s [cm]	Reloading su [cm]	Loading se [cm]
1	1,9742	0,1980	1,7862
2	1,8514	0,2522	1,5992
3	1,7184	0,2809	1,4375
4	1,5765	0,2971	1,2794
5	1,4439	0,3067	1,1373
6	1,3302	0,3120	1,0181
7	1,2213	0,3147	0,9066
8	1,1212	0,3157	0,8055
9	1,0411	0,3127	0,7284
10	1,0353	0,3089	0,7264
11	1,0825	0,3015	0,7811
12	1,1468	0,2468	0,9000
13	2,1221	0,2533	1,8688
14	1,9950	0,3442	1,6508
15	1,8532	0,3839	1,4692
16	1,6939	0,4045	1,2894
17	1,5521	0,4162	1,1359
18	1,4396	0,4227	1,0169
19	1,3311	0,4261	0,9051
20	1,2254	0,4257	0,7997
21	1,1521	0,4327	0,7194
22	1,1650	0,4442	0,7208
23	1,2339	0,4331	0,8008
24	1,3111	0,3548	0,9562
25	2,2600	0,3003	1,9597
26	2,1192	0,3950	1,7242

Figure G-15 List of settlements

### 6.5 List Menu – "Print tables of results" command

The calculated results can be printed. When "Print tables of results" command is chosen, the selection Dialog box shown in Figure G-16 appears. In this Dialog box check the items that you want to print, then click "OK" Button.

For printing tables of results, the header options, page numbering and also number of copies are required as shown in Figure G-11.



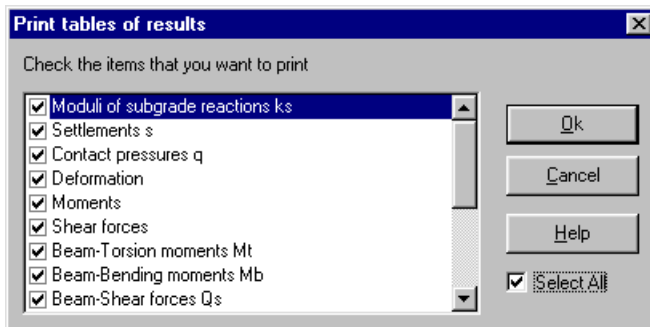


Figure G-16 "Print tables of results" items

## 6.6 List Menu – "List tables of results through Text-Editor" command

By "List tables of data through Text-Editor" command the calculated results can be displayed through ELPLA Text-Editor. When the command is chosen, the selection Dialog box shown in Figure G-17 appears. In this Dialog box check the items that you want to list through Text-Editor, then click "OK" Button.

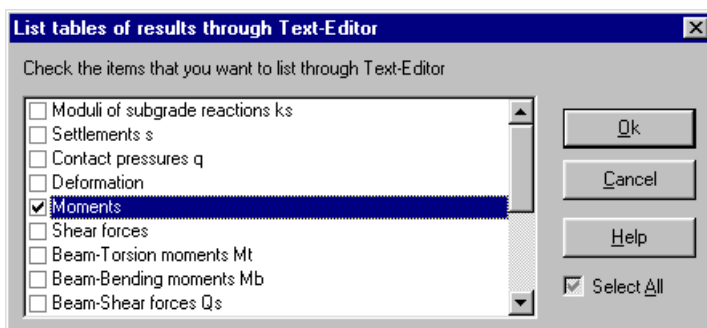


Figure G-17 "List tables of results through Text-Editor" items

For listing tables of data through Text-Editor, the header options and page numbering are required before loading Text-Editor. Figure G-18 shows moments through ELPLA Text-Editor. To get information about GEOTEC-Editor, see the User's Guide of GEOTEC-Editor.

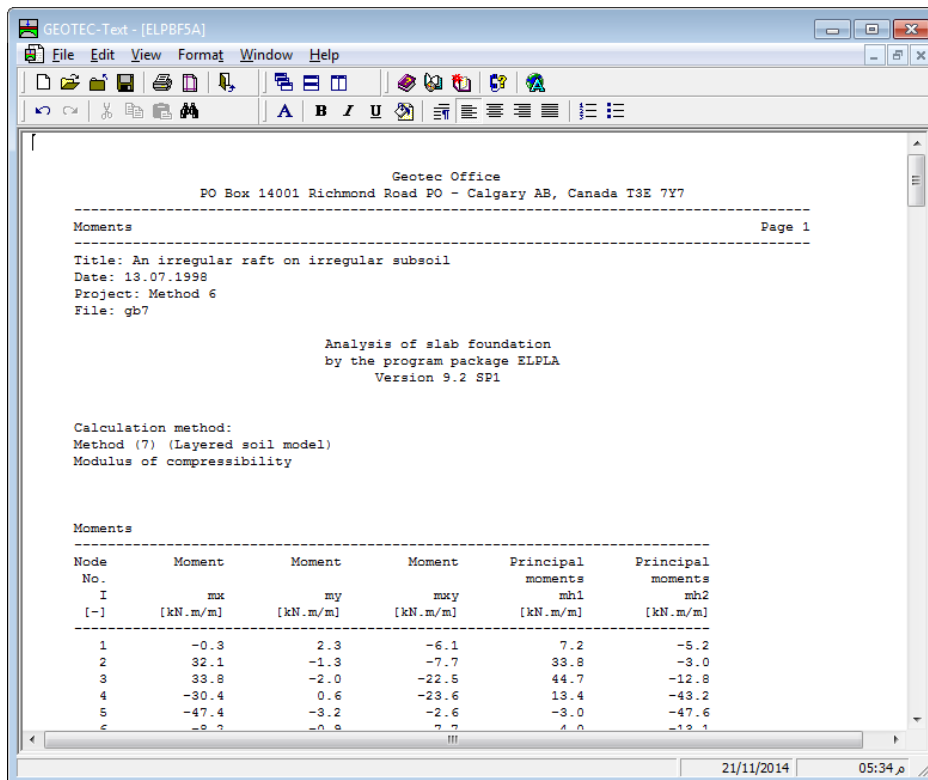


Figure G-18 Moments through GEOTEC-Editor

## 7 Format Menu

The Format menu has the following commands:

- Page format
- Font

### 7.1 Format Menu –"Page format" command

By "Page format" command the page margins, number of lines per page and number of characters per line can be defined, Figure G-19. The user has the possibility at any time to specify one of the following left, top or bottom boundaries.

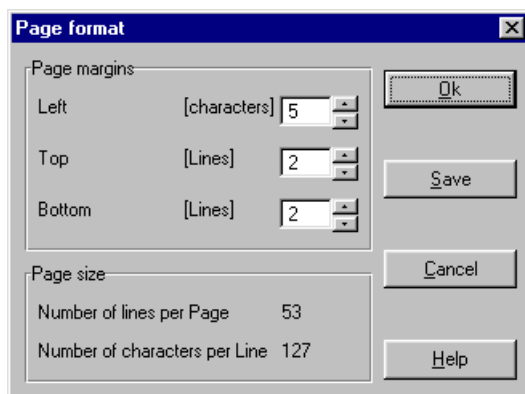


Figure G-19 "Page format" Dialog box

## 7.2 Format Menu –"Font" command

By this command font size (Figure G-20) and font type (Figure G-21) for the text can be defined.

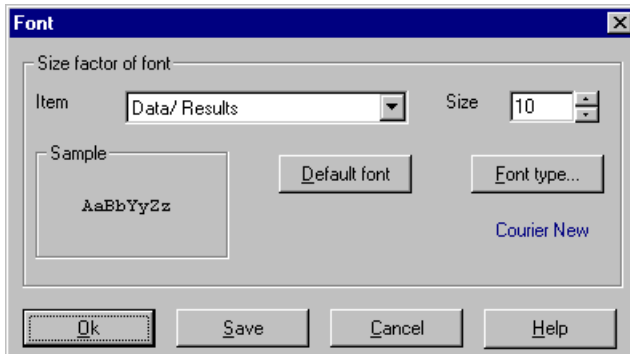


Figure G-20 "Font size" Dialog box

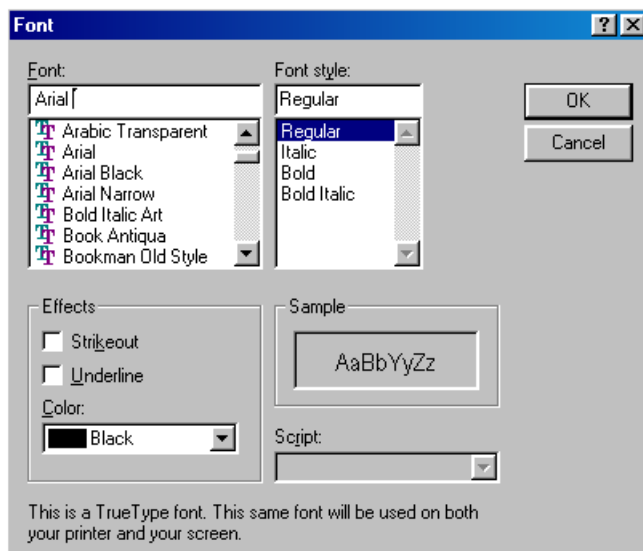


Figure G-21 "Font type" Dialog box

## 8 Window Menu

The Window menu has the following commands:

- Cascade
- Tile horizontally
- Tile vertically
- Arrange icons
- Window 1, 2, 3, ...

### 8.1 Window Menu–"Cascade" command

By "Cascade" command all non-minimized forms are cascaded.

## **8.2 Window Menu—"Tile horizontally" command**

By "Tile horizontally" command all non-minimized forms are tiled horizontally.

## **8.3 Window Menu—"Tile vertically" command**

By "Tile vertically" command all non-minimized forms are tiled vertically.

## **8.4 Window Menu—"Arrange icons" command**

When choosing "Arrange icons" command, the icons of minimized forms are arranged.

## **8.5 Window Menu—"Window 1, 2, 3 ..." command**

By "Window 1, 2, 3 ..." command the user can display a list of the previous loaded data or results.

# **9 Help Menu**

The Help Menu commands are:

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

## **9.1 Help Menu—"Contents" command**

"Contents" command displays a help file in HTML-Format containing the complete User's Guide of ELPLA, Figure G-22.

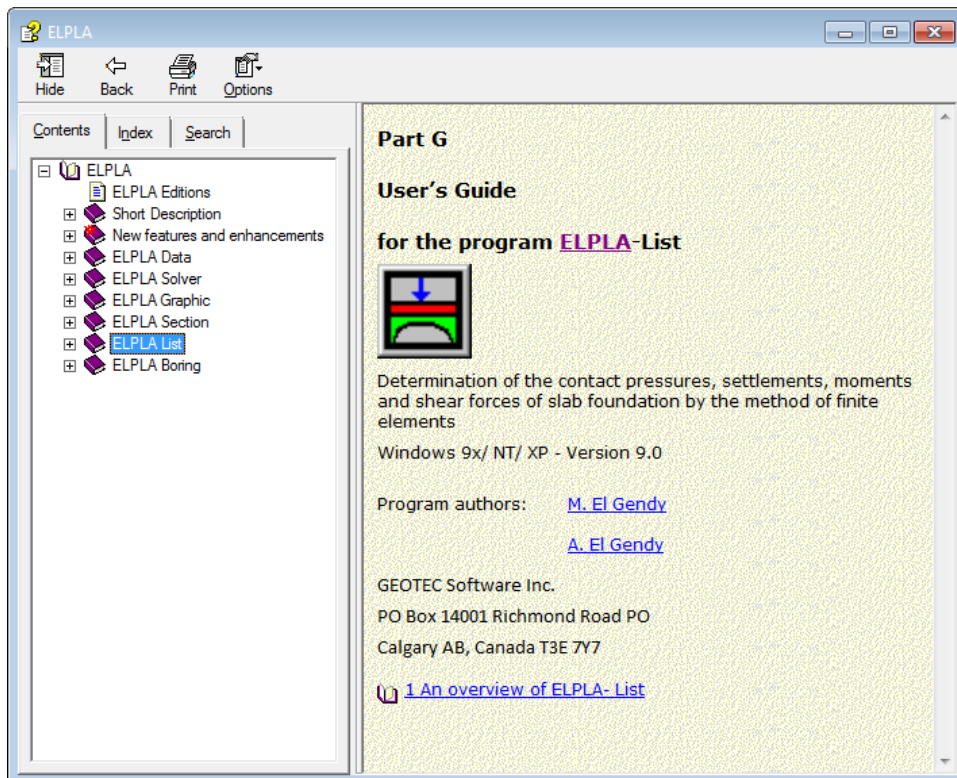


Figure G-22 Menu "Contents"

## 9.2 Help Menu—"Short description of ELPLA" command

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

## 9.3 Help Menu—"New in ELPLA" command

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

## 9.4 Help Menu—"About ELPLA-List" command

Clicking the command displays the information form of ELPLA-List as shown in Figure G-23, which gives information about ELPLA-List and the calculation method of the loaded project.

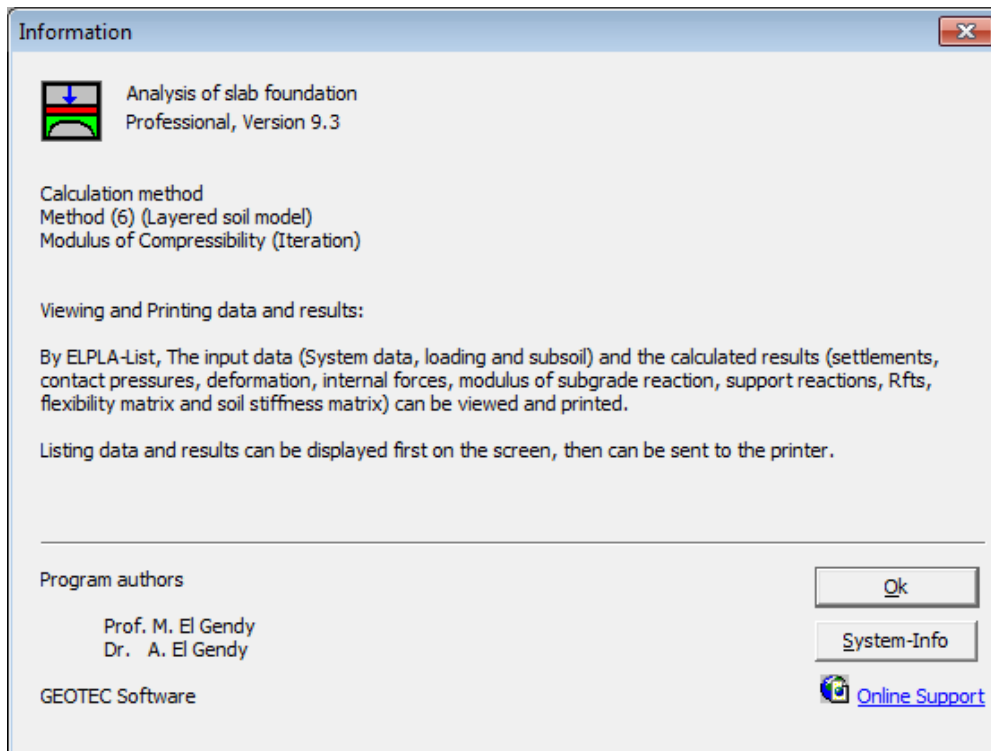


Figure G-23 Information form of ELPLA-List

## 10 Tips and Tricks

### 10.1 Keyboard

The user can obtain all menu titles and commands also through Shortcut keys. The action of the Shortcut keys is listed in Table G-4 to Table G-10.

Table G-4 Shortcut keys of menu head

Shortcut keys	Action
[Alt+f]	Calling menu head "File"
[Alt+v]	"View"
[Alt+l]	"List"
[Alt+t]	"Format"
[Alt+w]	"Window"
[Alt+h]	"Help"

Table G-5 Shortcut keys of File-Command

Shortcut keys	Action
[Ctrl +o] or [Alt+f] then [o]	Calling command "Open"
[Alt+f] then [c]	"Close project"
[Alt+f] then [u]	"Print setup"
[Alt+f] then [w]	"Send to Word"
[Alt+f] then [e]	"Send to Excel"
[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 G-6 Shortcut keys of View-Command

Shortcut keys	Action
[Alt+v] then [x]	Calling command "Project explorer"
[Alt+v] then [b]	"Status bar"
[Alt+v] then [t]	"Tool bars"
[Alt+v] then [t], then [f]	"Tool bars-File"
[Alt+v] then [t], then [l]	"Tool bars-List"
[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 G-7 Shortcut keys of List-Command

Shortcut keys	Action
[Alt+l] then [t]	Calling command "Display tables of data"
[Alt+l] then [a]	"Print tables of data"
[Alt+l] then [b]	"List tables of data through Text-Editor"
[Alt+l] then [e]	"Display tables of results"
[Alt+l] then [p]	"Print tables of results"
[Alt+l] then [l]	"List tables of results through Text-Editor"

Table G-8 Shortcut keys of Format-Command

Shortcut keys	Action
[Alt+t] then [p]	Calling command "Page format"
[Alt+t] then [f]	"Font"

Table G-9 Shortcut keys of Window-Command

Shortcut keys	Action
[Alt+w] then [c]	Calling command "Cascade"
[Alt+w] then [h]	"Tile horizontally"
[Alt+w] then [v]	"Tile vertically"
[Alt+w] then [a]	"Arrange icons"
[Alt+w] then [1, 2, 3, ...]	"Window 1, 2, 3 ..."

Table G-10 Shortcut keys of Help-Command

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

## 10.2 Mouse

By clicking the right mouse Button on the screen, the user can obtain the Popup-Format-Menu, Figure G-24.



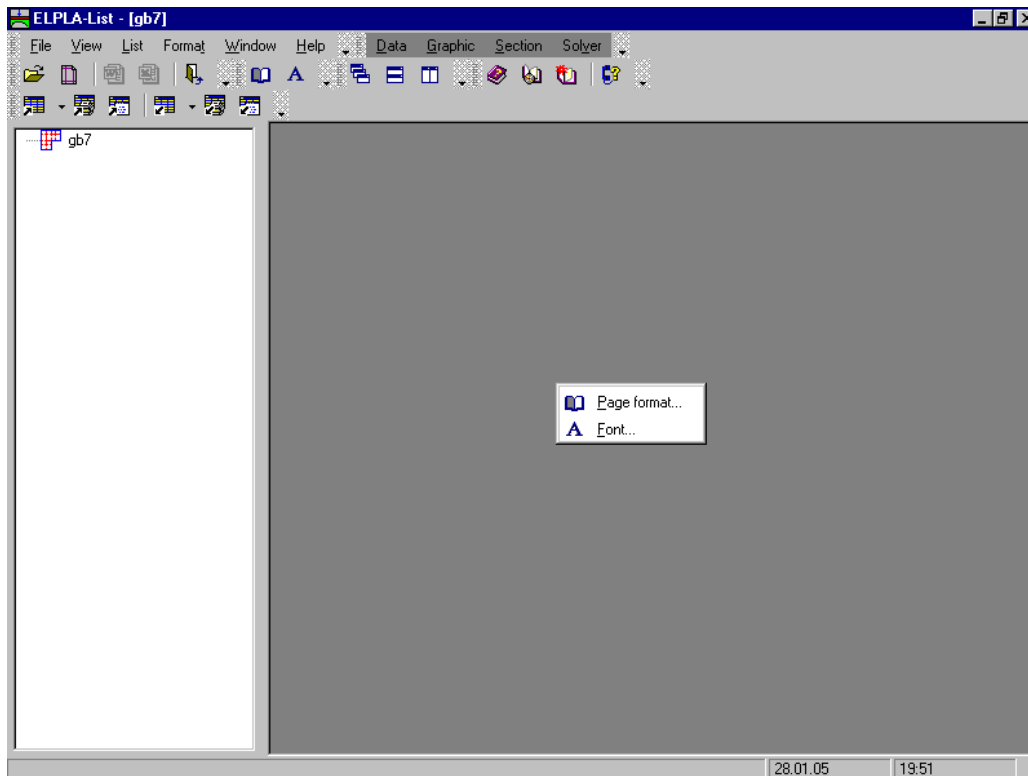


Figure G-24 Menu "Popup-Format"

## 11 Listing samples for data and results using ELPLA-List

ELPLA-List gives the ability to print data and results in arranged tables. In this paragraph some of the printed text for data and results of example problems gb7, an irregular raft on irregular subsoil, are presented.

The pages 1 to 2 contain some printed text of input project data for the example problem gb7, while pages 3 to 7 contain some printed text of results for the same example problem, according to Table G-11 and Table G-12.

### 11.1 Listing input project data

Table G-11 Input project data

Presentation	Page
Title page of program ELPLA	-
Loading	1 – 2

### 11.2 Listing of calculated results

Table G-12 Results

Presentation	Page
Moments m	3 – 7

```
*****  
Analysis of slab foundation  
by the program package ELPLA  
Version 9.0  
*****
```

```
Title      : An irregular raft on irregular subsoil  
Date       : 13.07.1998  
Project    : Method 7  
File      : gb7
```

```
Calculation method:  
Method (7) (Layered soil model)  
Modulus of Compressibility (Elimination)
```

```
Program authors: M. El Gendy/ A. El Gendy  
GEOTEC: PO Box 14001 Richmond Road PO - Calgary AB, Canada T3E 7Y7
```

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-----  
Loading Page 1  
-----

Title : An irregular raft on irregular subsoil  
Date : 13.07.1998  
Project : Method 7  
File : gb7

Analysis of slab foundation  
by the program package ELPLA  
Version 9.0

Calculation method:  
Method (7) (Layered soil model)  
Modulus of Compressibility (Elimination)

L o a d i n g  
Point loads:

Load No. I [1]	Load value P [kN]	x-position x [m]	y-position y [m]
1	1265	1,5	1,4
2	1600	1,5	5,5
3	1350	1,5	9,9
4	1368	1,5	12,6
5	1560	5	1,4
6	1538	5	12,6
7	800	9,2	1,4
8	750	9,2	5,5
9	1565	9,2	12,6
10	2150	13,4	5,5
11	1450	13,4	9,9
12	1254	13,4	12,6

Moments Mx:

Moment No. [1]	Moment value Mx [kN.m]	x-position x [m]	y-position y [m]
1	350	5	1,4

Moments My:

Moment No. [1]	Moment value My [kN.m]	x-position x [m]	y-position y [m]
1	500	9,2	5,5

Line loads:

Load No. I [1]	Load value P1 [kN/m]	Load start x1 [m]	Load start y1 [m]	Load end x2 [m]	Load end y2 [m]
1	89	10,5	4,8	15	2,8

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Loading

Page 2

Distributed loads:

Load No.	Load value	Load start	Load start	Load end	Load end
I	P	x1	y1	x2	y2
[1]	[kN/m <sup>2</sup> ]	[m]	[m]	[m]	[m]
1	120	0	0	0,5	14

Loading data:

Slab weight	Pe	[kN]	=	0,0
Force on slab	Pa	[kN]	=	17927,1
Groundwater force	Pw	[kN]	=	2031,2
Total load (P = Pe + Pa - Pw)	P	[kN]	=	15895,9
Groundwater pressure on slab	Qw	[kN/m <sup>2</sup> ]	=	12,0
Average contact pressure	Qo	[kN/m <sup>2</sup> ]	=	93,9
Sum Mx from loads	Mx	[kN.m]	=	7039,1
Sum My from loads	My	[kN.m]	=	-6683,2
Eccentricity of loading in x-direction	ex	[cm]	=	-42,04
Eccentricity of loading in y-direction	ey	[cm]	=	44,28
Moment of inertia of slab about x-Axis	Ix	[m <sup>4</sup> ]	=	2923,08
Moment of inertia of slab about y-Axis	Iy	[m <sup>4</sup> ]	=	3423,36
Product of inertia	Ixy	[m <sup>4</sup> ]	=	366,19
Area of slab	A	[m <sup>2</sup> ]	=	169,27

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-----  
Moments

Page 3

Title : An irregular raft on irregular subsoil  
Date : 13.07.1998  
Project : Method 7  
File : gb7

Analysis of slab foundation  
by the program package ELPLA  
Version 9.0

Calculation method:  
Method (7) (Layered soil model)  
Modulus of Compressibility (Elimination)

Moments:

Node No.	Moment mx [kN.m/m]	Moment my [kN.m/m]	Moment mxy [kN.m/m]	Principal moment mh1 [kN.m/m]	Principal moment mh2 [kN.m/m]
1	-0,2	2,4	-5,3	6,6	-4,4
2	32,6	-1,4	-7,1	34,1	-2,8
3	34,9	-1,9	-22,2	45,4	-12,3
4	-29,2	0,6	-23,4	13,4	-42,0
5	-46,1	-3,2	-2,3	-3,1	-46,2
6	-6,9	-0,9	7,9	4,6	-12,3
7	-17,3	4,0	0,6	4,0	-17,3
8	-87,9	-5,4	5,2	-5,1	-88,2
9	-154,1	-0,3	25,1	3,7	-158,1
10	-102,8	-1,3	33,2	8,6	-112,7
11	-25,6	-4,0	24,3	11,8	-41,4
12	5,7	7,3	13,7	20,3	-7,2
13	-0,7	31,9	-13,0	36,4	-5,2
14	61,6	77,6	-16,2	87,7	51,5
15	103,4	106,5	-26,4	131,4	78,6
16	-50,1	58,9	-26,7	65,1	-56,3
17	-67,6	63,3	-4,8	63,5	-67,7
18	30,5	126,5	9,7	127,4	29,5
19	58,0	151,8	-6,7	152,3	57,5
20	-115,9	64,8	-0,8	64,8	-115,9
21	-166,9	32,6	30,4	37,1	-171,4
22	-99,7	41,4	40,6	52,3	-110,5
23	22,5	61,3	39,1	85,5	-1,7
24	-6,4	-0,9	33,6	30,1	-37,4
25	0,1	14,7	-31,6	39,8	-25,1
26	61,2	57,5	-36,4	95,8	22,9
27	99,5	88,5	-30,6	125,1	62,9
28	-56,6	44,4	-31,0	53,1	-65,3
29	-81,6	70,5	-34,8	78,0	-89,2
30	20,9	147,6	-19,7	150,6	17,9
31	50,1	170,4	2,4	170,5	50,0
32	-139,9	92,9	29,2	96,5	-143,5
33	-176,7	35,5	46,9	45,4	-186,6
34	-105,7	36,2	47,2	50,5	-120,0
35	4,9	51,6	61,0	93,5	-37,0
36	6,3	-18,5	90,6	85,4	-97,5
37	-1,3	-56,0	-36,0	16,6	-73,9
38	35,6	-64,0	-42,4	51,2	-79,7

Continue of table at next page

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-----  
MomentsPage 4  
-----

Continue of table

Node No. I [1]	Moment mx [kN.m/m]	Moment my [kN.m/m]	Moment mxy [kN.m/m]	Principal moment mh1 [kN.m/m]	Principal moment mh2 [kN.m/m]
39	27,7	-69,8	-41,5	43,0	-85,0
40	-39,2	-40,7	-52,4	12,5	-92,3
41	-82,9	-9,8	-73,5	35,7	-128,5
42	-64,9	3,3	-58,5	36,9	-98,6
43	-89,4	15,2	1,2	15,2	-89,4
44	-167,2	38,0	57,2	52,9	-182,1
45	-178,3	5,2	69,5	28,5	-201,7
46	-117,9	-19,5	64,7	12,6	-150,0
47	-52,1	-45,1	83,9	35,4	-132,6
48	-130,8	-48,6	115,7	33,1	-212,5
49	-19,8	10,5	40,8	38,8	-48,1
50	50,5	-1,8	17,9	56,0	-7,3
51	68,3	1,8	3,8	68,5	1,6
52	-0,6	-3,2	2,5	0,9	-4,7
53	-2,2	-76,6	-27,6	6,9	-85,7
54	37,4	-87,1	-32,0	45,1	-94,9
55	30,6	-97,5	-50,0	47,8	-114,7
56	-21,9	-92,4	-75,8	26,5	-140,8
57	-93,2	-61,4	-100,7	24,7	-179,3
58	-114,0	-41,7	-74,2	4,7	-160,4
59	-180,4	-10,8	-25,6	-7,0	-184,2
60	-224,0	9,9	78,8	33,9	-248,1
61	-166,6	-18,4	84,5	19,8	-204,9
62	-123,3	-35,3	80,9	12,7	-171,4
63	-72,8	-38,4	84,3	30,4	-141,7
64	-83,3	-4,7	81,3	46,3	-134,3
65	-16,3	17,9	43,1	47,2	-45,6
66	77,1	32,4	24,4	87,9	21,7
67	86,3	32,0	-0,2	86,3	32,0
68	-2,2	23,0	-3,8	23,6	-2,7
69	-1,5	-32,6	-13,5	3,6	-37,7
70	60,2	-53,2	-15,6	62,3	-55,3
71	67,6	-82,3	-47,4	81,3	-96,0
72	6,8	-94,7	-84,7	54,8	-142,7
73	-91,3	-176,1	-134,9	7,7	-275,1
74	-151,5	24,1	-110,3	77,3	-204,7
75	-185,9	4,7	-48,1	16,1	-197,4
76	-335,8	17,1	140,5	66,2	-384,9
77	-154,3	-35,2	96,2	18,3	-207,9
78	-129,0	-23,6	91,0	28,9	-181,5
79	-57,5	-12,2	95,3	63,1	-132,8
80	-39,9	41,2	49,2	64,4	-63,1
81	4,5	88,3	44,2	107,3	-14,5
82	117,1	90,3	31,7	138,1	69,3
83	123,2	83,1	-7,1	124,4	81,9
84	1,4	102,7	-18,2	105,9	-1,7
85	0,0	51,8	-7,0	52,7	-0,9
86	111,9	100,6	-7,4	115,5	96,9
87	195,3	116,3	-22,2	201,1	110,5
88	-3,6	-24,0	-30,2	18,0	-45,7
89	15,1	-73,6	-33,8	26,5	-85,0
90	16,3	-82,6	157,7	132,1	-198,4
91	-139,6	-23,5	90,4	25,8	-189,0
92	-101,0	10,0	77,9	50,1	-141,2

Continue of table at next page

Continue of table

Node No. I [1]	Moment mx [kN.m/m]	Moment my [kN.m/m]	Moment mxy [kN.m/m]	Principal moment mh1 [kN.m/m]	Principal moment mh2 [kN.m/m]
93	12,0	98,4	71,8	139,0	-28,7
94	-40,8	99,1	30,7	105,6	-47,2
95	-4,7	132,9	22,7	136,6	-8,4
96	200,0	274,1	14,0	276,6	197,5
97	237,9	320,7	-8,6	321,6	237,0
98	-3,3	204,9	-17,4	206,4	-4,8
99	-0,3	39,2	-9,9	41,6	-2,6
100	103,2	66,1	-10,1	105,7	63,5
101	167,2	68,9	9,8	168,2	67,9
102	14,1	-15,2	18,8	23,3	-24,4
103	-0,9	-58,0	13,0	1,9	-60,8
104	-10,6	-69,4	63,2	29,8	-109,7
105	-105,4	-23,4	61,8	9,7	-138,6
106	-97,2	14,8	47,7	32,3	-114,8
107	23,4	67,9	24,3	78,5	12,7
108	-8,5	68,3	22,3	74,3	-14,5
109	8,6	104,2	-14,9	106,4	6,3
110	185,7	210,6	-25,3	226,4	169,9
111	214,3	248,2	-7,0	249,6	212,9
112	-1,4	182,6	-2,3	182,7	-1,5
113	-1,6	-46,3	1,8	-1,5	-46,4
114	59,0	-62,1	2,3	59,1	-62,2
115	68,3	-81,1	23,3	71,9	-84,6
116	25,5	-76,4	34,5	36,1	-87,0
117	-1,8	-84,4	28,9	7,3	-93,5
118	7,4	12,9	33,2	43,4	-23,2
119	-113,5	-7,6	42,9	7,6	-128,7
120	-109,1	-3,7	40,0	9,7	-122,6
121	-9,0	0,7	22,0	18,4	-26,7
122	53,6	-25,8	0,0	53,6	-25,8
123	29,6	21,3	-34,0	59,7	-8,8
124	115,6	26,9	-39,9	130,9	11,6
125	119,8	33,6	-18,4	123,6	29,8
126	0,2	56,1	-15,4	60,0	-3,7
127	-1,7	-68,3	19,3	3,4	-73,5
128	45,1	-78,6	23,1	49,2	-82,8
129	47,8	-86,3	22,7	51,5	-90,0
130	23,5	-83,5	26,1	29,5	-89,5
131	-4,9	-83,4	33,1	7,2	-95,5
132	-9,1	-39,1	-45,2	23,5	-71,7
133	33,2	-33,2	-35,9	49,0	-48,9
134	92,0	-31,6	-33,3	100,3	-40,0
135	92,5	-26,5	-35,6	102,3	-36,4
136	-2,3	-23,9	-38,9	27,2	-53,4
137	-1,0	26,7	36,0	51,4	-25,7
138	75,1	18,4	41,1	96,7	-3,1
139	95,2	1,7	21,3	99,8	-2,9
140	16,2	9,1	18,6	31,6	-6,3
141	8,0	-17,9	52,4	49,0	-58,9
142	7,8	-36,7	-69,0	58,1	-86,9
143	8,8	-2,3	-36,5	40,2	-33,6
144	117,5	19,7	-29,4	125,7	11,5
145	124,8	25,8	-49,4	145,3	5,3
146	0,1	34,7	-57,2	77,1	-42,3

Continue of table at next page

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Moments

Page 6

Continue of table

Node No. I [1]	Moment mx [kN.m/m]	Moment my [kN.m/m]	Moment mxy [kN.m/m]	Principal moment mh1 [kN.m/m]	Principal moment mh2 [kN.m/m]
147	0,3	124,8	32,2	132,6	-7,5
148	122,4	204,8	36,2	218,4	108,8
149	221,6	252,2	37,5	277,4	196,4
150	-10,1	95,1	41,2	109,3	-24,3
151	-106,0	47,9	54,2	65,1	-123,1
152	-93,4	0,2	11,4	1,6	-94,7
153	-103,5	2,7	0,8	2,7	-103,5
154	-124,9	-2,4	-11,9	-1,2	-126,1
155	-136,1	-2,6	-16,8	-0,6	-138,1
156	-110,0	-1,9	-26,1	4,1	-115,9
157	-90,7	9,3	-55,7	34,2	-115,6
158	-113,7	-35,6	-106,2	38,5	-187,8
159	-13,0	36,3	-71,6	87,4	-64,1
160	171,0	187,5	-54,6	234,5	124,1
161	209,9	232,5	-49,5	272,0	170,5
162	-5,5	97,8	-46,4	115,6	-23,3
163	-0,6	109,2	34,2	119,0	-10,4
164	92,4	86,2	36,2	125,7	52,9
165	106,8	59,9	50,0	138,6	28,1
166	12,1	85,5	62,6	121,3	-23,8
167	-65,9	69,8	62,3	94,1	-90,2
168	-67,1	38,8	32,8	48,1	-76,5
169	-66,2	20,9	-1,5	20,9	-66,2
170	-108,9	30,6	-19,6	33,3	-111,6
171	-131,4	31,9	-13,7	33,0	-132,5
172	-81,3	25,3	-17,2	28,0	-84,0
173	-48,6	13,2	-55,7	46,0	-81,4
174	-74,9	43,8	-102,0	102,4	-133,6
175	-18,6	54,4	-93,4	118,2	-82,4
176	107,2	50,3	-73,3	157,4	0,1
177	128,7	49,3	-50,2	153,1	25,0
178	2,2	79,0	-41,8	97,3	-16,1
179	-0,3	103,2	48,5	122,3	-19,4
180	96,8	130,9	47,9	164,7	63,0
181	138,9	147,8	44,8	188,3	98,3
182	-11,1	113,3	48,7	130,1	-27,8
183	-54,5	116,1	57,0	133,4	-71,7
184	19,0	150,3	41,5	162,3	7,0
185	40,5	154,1	2,2	154,1	40,5
186	-102,9	101,0	-18,5	102,7	-104,6
187	-137,1	81,4	-11,7	82,0	-137,7
188	-42,6	116,6	-14,7	117,9	-43,9
189	84,4	156,3	-56,5	187,4	53,4
190	-63,0	94,5	-90,8	135,9	-104,4
191	-43,3	71,2	-81,4	113,4	-85,6
192	98,4	93,6	-63,9	159,9	32,0
193	134,4	95,7	-55,0	173,3	56,8
194	-1,2	53,0	-55,2	87,4	-35,6
195	-1,3	77,6	32,3	89,1	-12,8
196	94,6	145,7	32,9	161,8	78,6
197	156,7	182,1	44,8	216,0	122,9
198	-28,2	106,8	49,4	123,0	-44,3
199	-53,0	108,6	38,4	117,2	-61,7
200	61,0	179,0	24,6	183,9	56,1

Continue of table at next page



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Moments

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Continue of table

Node No. I [1]	Moment mx [kN.m/m]	Moment my [kN.m/m]	Moment mxy [kN.m/m]	Principal moment mh1 [kN.m/m]	Principal moment mh2 [kN.m/m]
201	100,7	201,7	15,4	204,0	98,3
202	-98,6	106,3	3,3	106,4	-98,7
203	-136,6	79,1	-14,6	80,1	-137,6
204	-19,9	137,7	-32,2	144,0	-26,2
205	156,1	212,4	-46,6	238,7	129,8
206	-60,7	90,9	-61,1	112,5	-82,2
207	-60,2	61,6	-71,4	94,5	-93,2
208	88,6	114,1	-63,2	165,8	36,9
209	134,9	123,9	-43,7	173,4	85,4
210	-5,2	33,1	-35,3	54,1	-26,2
211	-1,1	4,1	20,2	21,8	-18,8
212	41,6	-2,3	21,5	50,3	-11,1
213	51,5	-3,3	43,9	75,9	-27,6
214	-18,1	1,0	50,3	42,6	-59,7
215	-39,2	-0,1	27,6	14,2	-53,5
216	20,1	-1,7	13,4	26,5	-8,1
217	16,9	-3,8	18,9	28,1	-15,0
218	-75,7	0,6	11,5	2,3	-77,4
219	-127,1	-1,1	-14,9	0,6	-128,8
220	-20,6	-0,1	-37,5	28,5	-49,2
221	59,9	-4,0	-39,9	79,1	-23,2
222	-33,3	0,6	-46,2	32,9	-65,5
223	-61,0	-0,6	-66,2	41,9	-103,6
224	34,1	-0,7	-61,2	80,3	-47,0
225	57,1	-3,5	-35,4	73,4	-19,7
226	5,4	4,0	-21,3	26,1	-16,6

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