

## Creation of Field Test Documentation

Program: Stratigraphy – Logs

File: Demo\_manual\_42.gsg



This manual will show you how to create documentation of field tests.

The following manuals to this one are:

EM 43 – Interpretation of field tests to soil profiles

EM 44 – Edit template (data and protocol)

### Borehole BH1

Borehole - Field test		BH1	
<b>Core - overall photography</b>			
			
<b>Core - detail</b>			
			

Log of Boring				BH1
Project: Apartment building "Moonlighting" - Geological survey				
Project ID: A.A. 0014 - 2019		Annex no.: A.10		Drilling equipment: HSBs 202 TF
Location: Prague 12		Overall depth: 24.00 m		Borehole position:
Date start: 22.11.2017	Foreman: Mr. Young	Ground water table:	Coordinate X: 0.00	
Date end: 23.11.2017	Documented: Mr. Smith	GWT bored: 15.80 m	Coordinate Y: 0.00	
Scale: one page		GWT steady: 12.50 m	Coordinate Z: 0.00 m	
Drilling:		Casing:		
Depth from:	Depth to:	Drilling dia.:	Depth from:	Depth to:
0.00 m	20.00 m	195 mm	0.00 m	20.00 m
20.00 m	24.00 m	156 mm		191 mm

Stratigraphy	BH1	Sample and GWT classification	RQD [%]	From - To	Layers description	Notes
Recent					Fill: fine grained SAND with some silt, dense, mixed with cobbles of concrete and pieces of bricks partly the size is larger than the borehole diameter, black colour of the soil	
					Fill: coarse GRAVEL with some silt (clayey shale) and fresh angular cobbles up to 15 cm, dark grey colour	
Quaternary					Sand with trace of fines, medium grained with some fine soil, dark, rust-brown	Easy drilling
					Gravelly clay, hard, gravel particles up to 10 mm (weathered shale), brown	
					Sandy clay, hard, with some pieces of gravel (angular) up to 50 mm dia., brown	
					Sandy clay, with some gravel, hard, gravel - sub angular shale up to 10 mm, sand is fine, mica included, brown colour	
Cretaceous					Shale, fully weathered - residual soil, clay character with small particles of shale up to 5 mm, gravel parts are weathered, grey	Loosing of drilling fluid
					Shale, weathered, in borehole core small planes, gently inclined, parts 10-50 mm, weak strength, mica and limonite on foliation planes, brown/red	
					Shale, moderately weathered, layered, drill sharp fragments 10-50 mm, gently inclined, weak/moderately strong, wet, dark grey	
					Shale, slightly weathered, moderate strong, fine layered, steeply inclined, wet (saturated - under water table), dark grey	

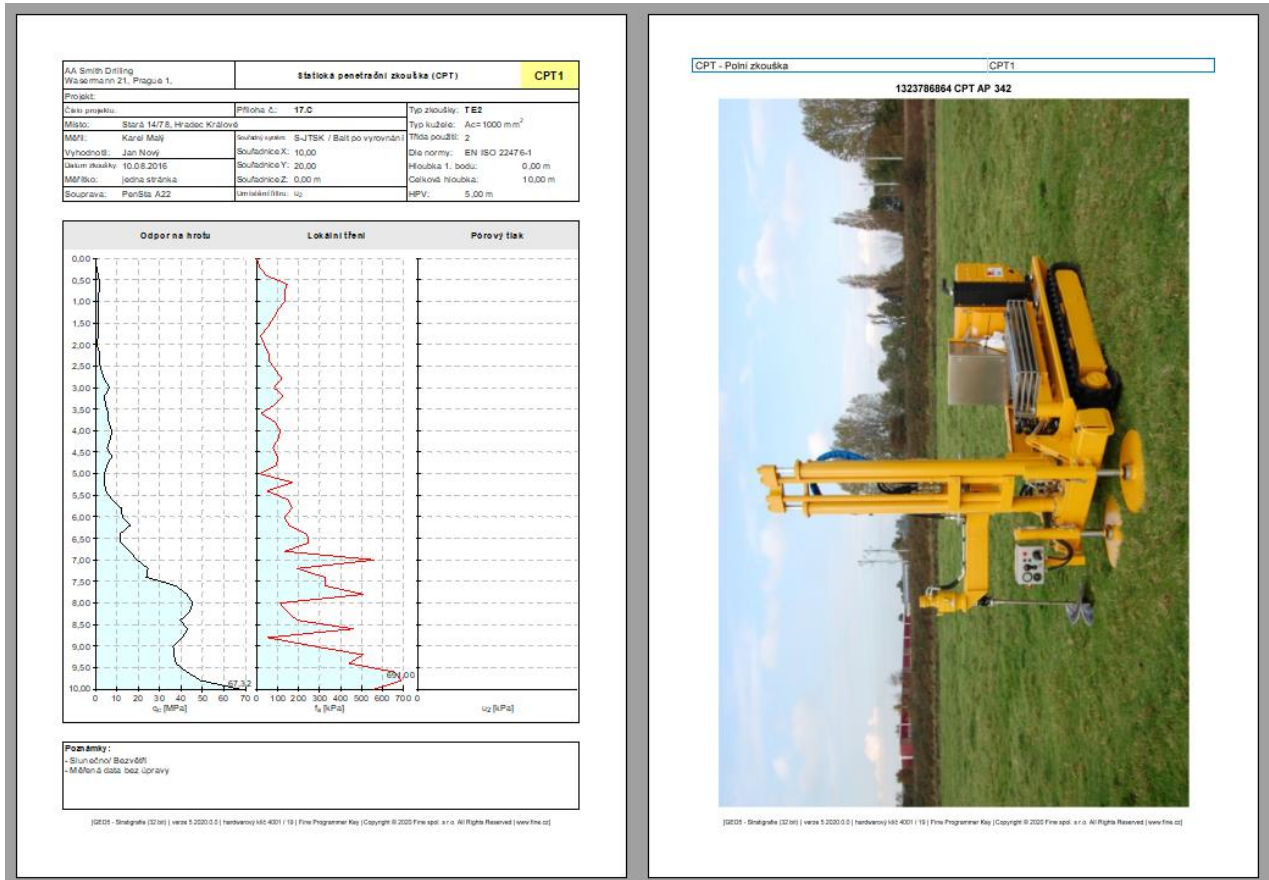
  

**Key:**

- ▽ GWT bored
- ▲ GWT steady
- undisturbed
- disturbed
- rock strength

[GEO5 Beta - Stratigraphy (version 5.2020.40.0) hardware key 1025 (1) (F.No. - Daniel Turanský) | Copyright © 2020 Fine spol. s r.o. All Rights Reserved (www.finesoftware.eu)]

## Static penetration test CPT1



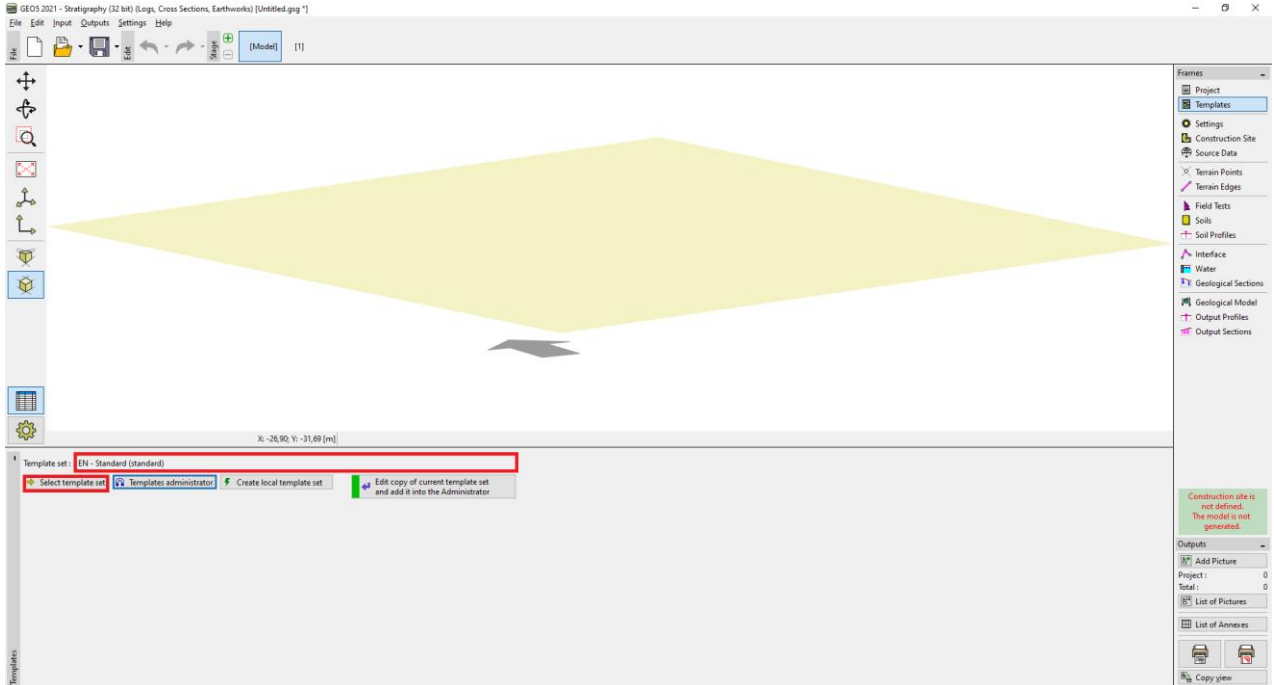
CPT - Pílní zkouška

1323786864 CPT AP 342

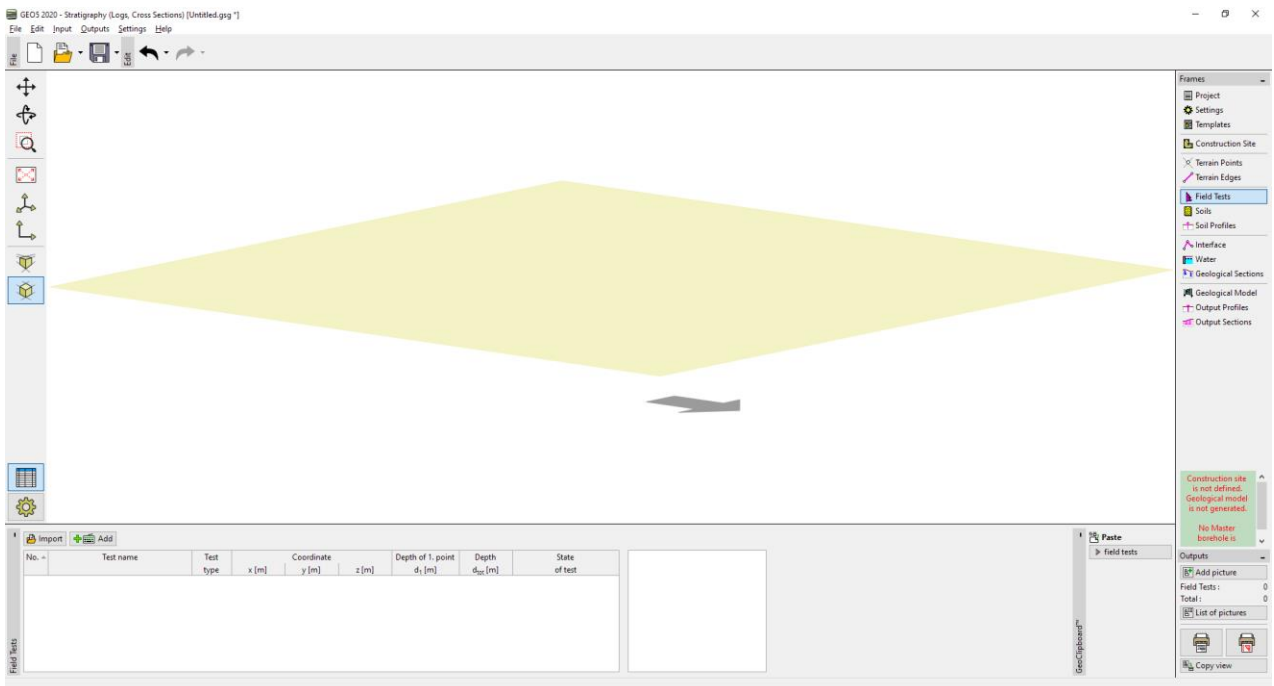
[GEO5 - Statigrafie (32 bit) | verze 5.2020.0.0 | hardwarevý klíč: 4001 | 15 | Fine Programmer Key | Copyright © 2020 Fine spol. s r.o. All Rights Reserved | www.fine.cz]

## Solution:

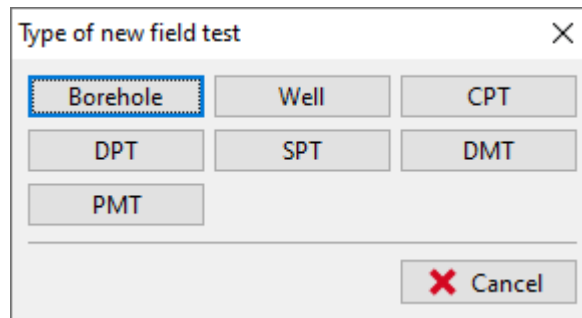
In the “Templates” frame check, whether you have set the template set that you wish to use. In this case - “EN-Standard” (If there is a different template set selected, we can change it by clicking the “Select template set” button).



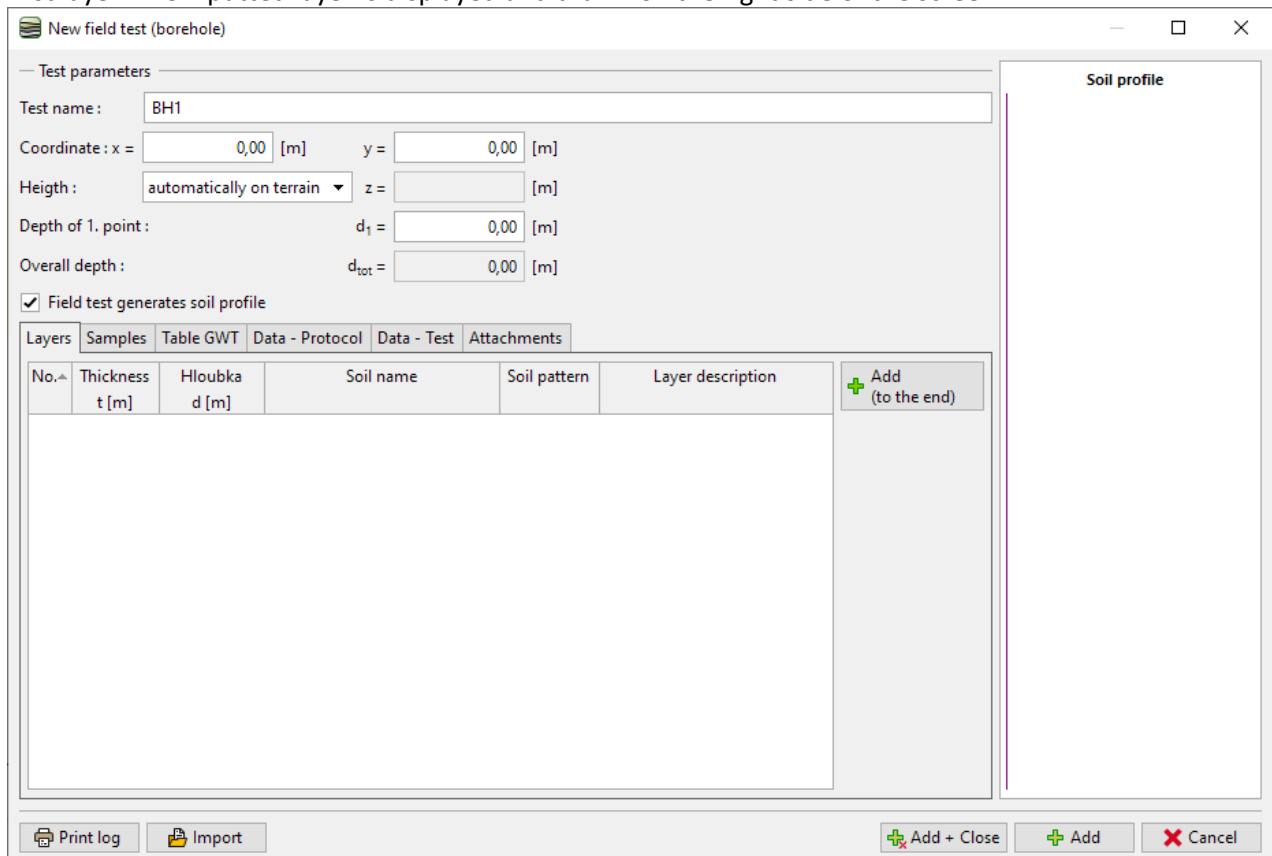
The program always works with the whole construction site and its model. However, this fact does not limit us when creating the test documentation. We will skip the “Construction Site”, “Source data”, “Terrain Points”, “Terrain Edges”, and go directly to the “Field Tests” frame, where we press the “Add” button.



Firstly, we will add a borehole.



After pressing the “Borehole” button, a dialog window is displayed. First, enter the required data – Test name: (BH1), Coordinates (because we are entering the data for a fictional borehole, we will input [0,0]). Then we will continue by inputting the individual layers. Use the “Add (to the end)” button to input the first layer. The inputted layer is displayed and drawn on the right side of the screen.



The mandatory data include thickness or depth of the layer, soil name, pattern, and color. Optional data are a detailed description of the layer and the data in the right part of the window.

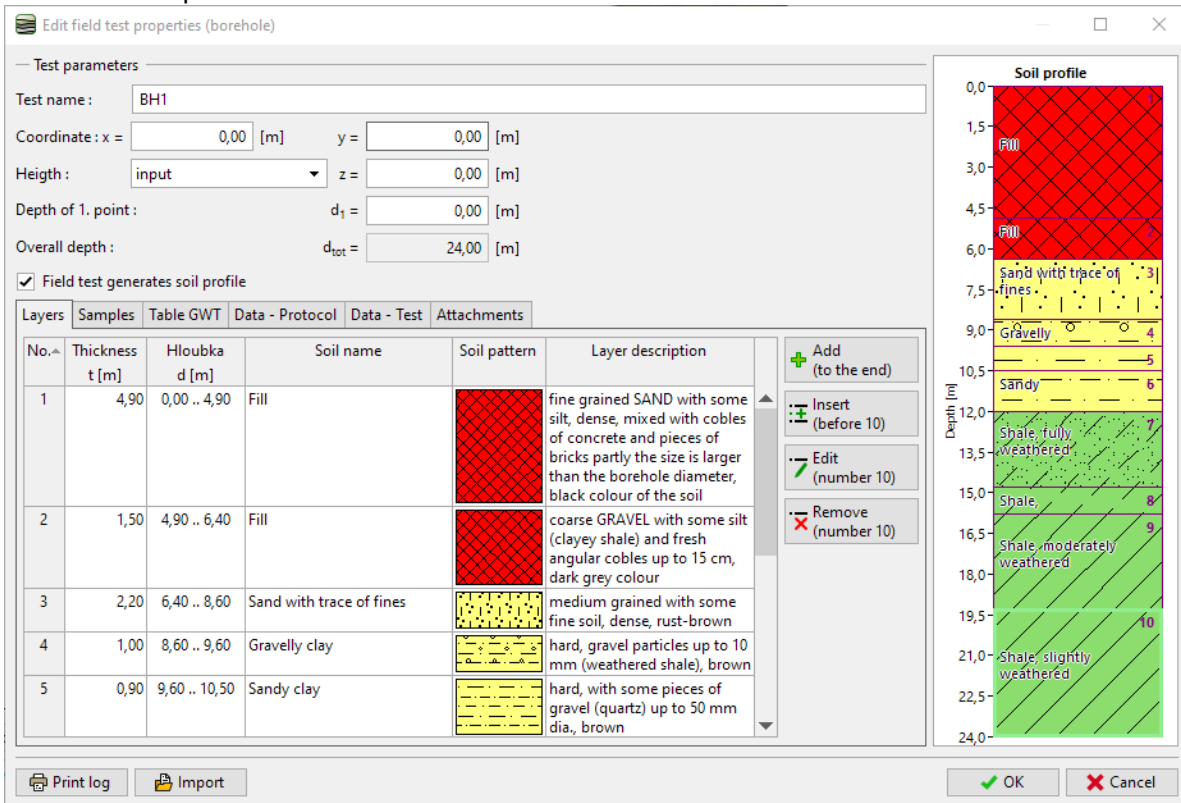
*Note: The data in the right part of the window are defined in the template. You can set any number of different data types (text, numbers, enumerations, date, time) – for more information see EM 44 – Creation of User-defined Template*

By clicking the “Add” button, you will save the layer and move on to entering another layer.

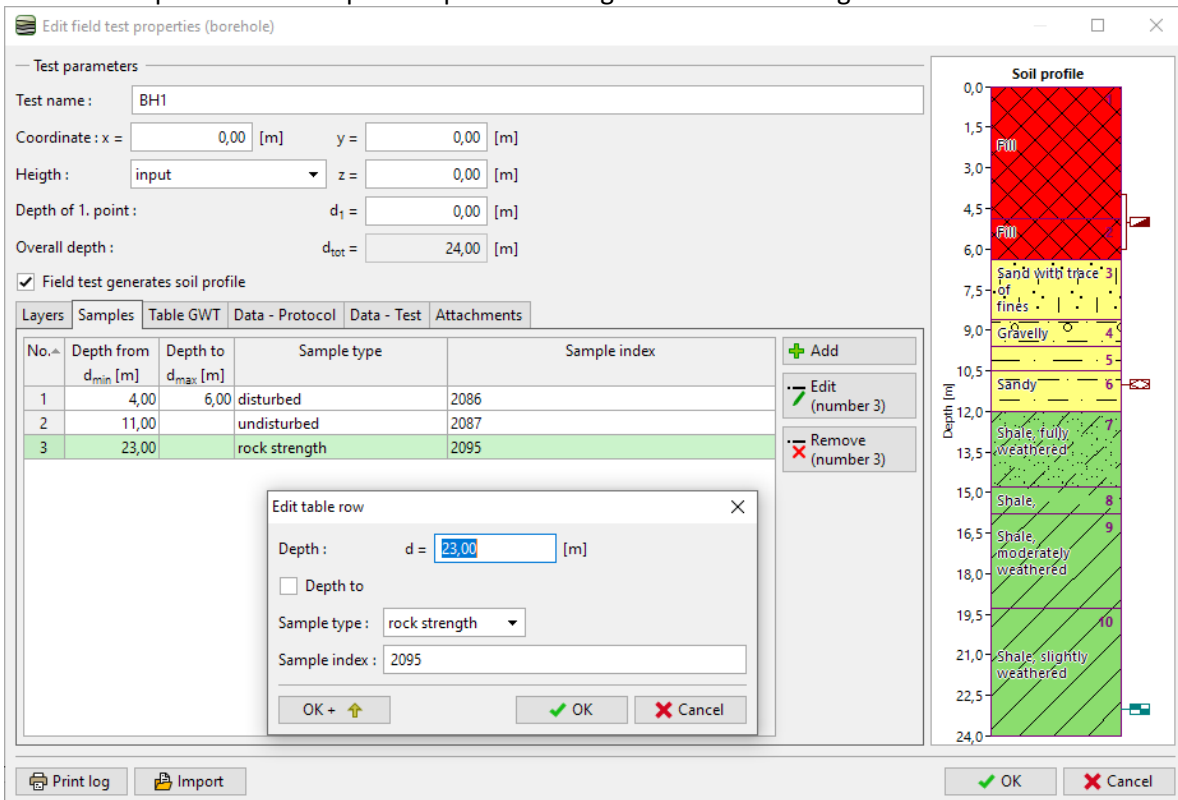
Soils (including their samples, colors, and user data) are automatically stored in the program database. This is useful if you need to enter one layer multiple times (either within one borehole or a different one). We will load all data automatically from previously saved layers. You can access the soil database by clicking the arrow button, next to the soil name input line.

Soil name	Color	Pattern	Layer description
Fill	Black	Red cross-hatch	coarse GRAVEL with some silt (clayey shale) and fresh angular cobbles up to 15 cm, dark grey colour
Gravelly clay	Black	Red cross-hatch	
Sand with trace of fines	Yellow	Yellow dots	
Sandy clay	Yellow	Yellow dots	
Sandy clay	Yellow	Yellow dots	
Shale, fully weathered	Green	Green diagonal lines	
Shale, moderately weathered	Green	Green diagonal lines	
Shale, slightly weathered	Green	Green diagonal lines	
Shale, weathered	Green	Green diagonal lines	

After entering all layers, close the window with the “Cancel” button. You will return to the main windows for borehole input.



We will now move to the tabs for entering samples and enter the taken samples. You can always see the entered samples in the “Soil profile” part on the right side of the dialog window.



In the same way, input the groundwater levels.

**Edit field test properties (borehole)**

Test parameters

Test name: BH1

Coordinate: x = 0,00 [m] y = 0,00 [m]

Height: input z = 0,00 [m]

Depth of 1. point: d<sub>1</sub> = 0,00 [m]

Overall depth: d<sub>tot</sub> = 24,00 [m]

Field test generates soil profile

Layers | Samples | **Table GWT** | Data - Protocol | Data - Test | Attachments

No.▲	Depth d [m]	GWT type	GWT description	Default
1	12,50	GWT steady		<input checked="" type="radio"/>
2	15,80	GWT bored		<input type="radio"/>

**Edit table row**

Depth: d = 15,80 [m]

GWT type: GWT bored

GWT description: GWT

Soil profile (Depth [m]):

- 0,0 - 1,5: Fill
- 1,5 - 4,5: Fill
- 4,5 - 7,5: Sand with trace of fines
- 7,5 - 9,0: Gravelly
- 9,0 - 10,5: Sandy
- 10,5 - 12,0: Shale, fully weathered
- 12,0 - 13,5: Shale
- 13,5 - 15,0: Shale, moderately weathered
- 15,0 - 16,5: Shale
- 16,5 - 18,0: Shale, moderately weathered
- 18,0 - 19,5: Shale
- 19,5 - 21,0: Shale, slightly weathered
- 21,0 - 22,5: Shale
- 22,5 - 24,0: Shale

We will add optional (user-defined) data about the borehole, for printing the protocol.

**Edit field test properties (borehole)**

Test parameters

Test name: BH1

Coordinate: x = 0,00 [m] y = 0,00 [m]

Height: input z = 0,00 [m]

Depth of 1. point: d<sub>1</sub> = 0,00 [m]

Overall depth: d<sub>tot</sub> = 24,00 [m]

Field test generates soil profile

Layers | Samples | Table GWT | **Data - Protocol** | Data - Test | Attachments

Annex no.: A.1G

Location: Prague 12

Documented: Mr. Smith

Evaluated: Eng. Checker

Processed: Mr. Smith

Date start: 22.11.2017

Date end: 23.11.2017

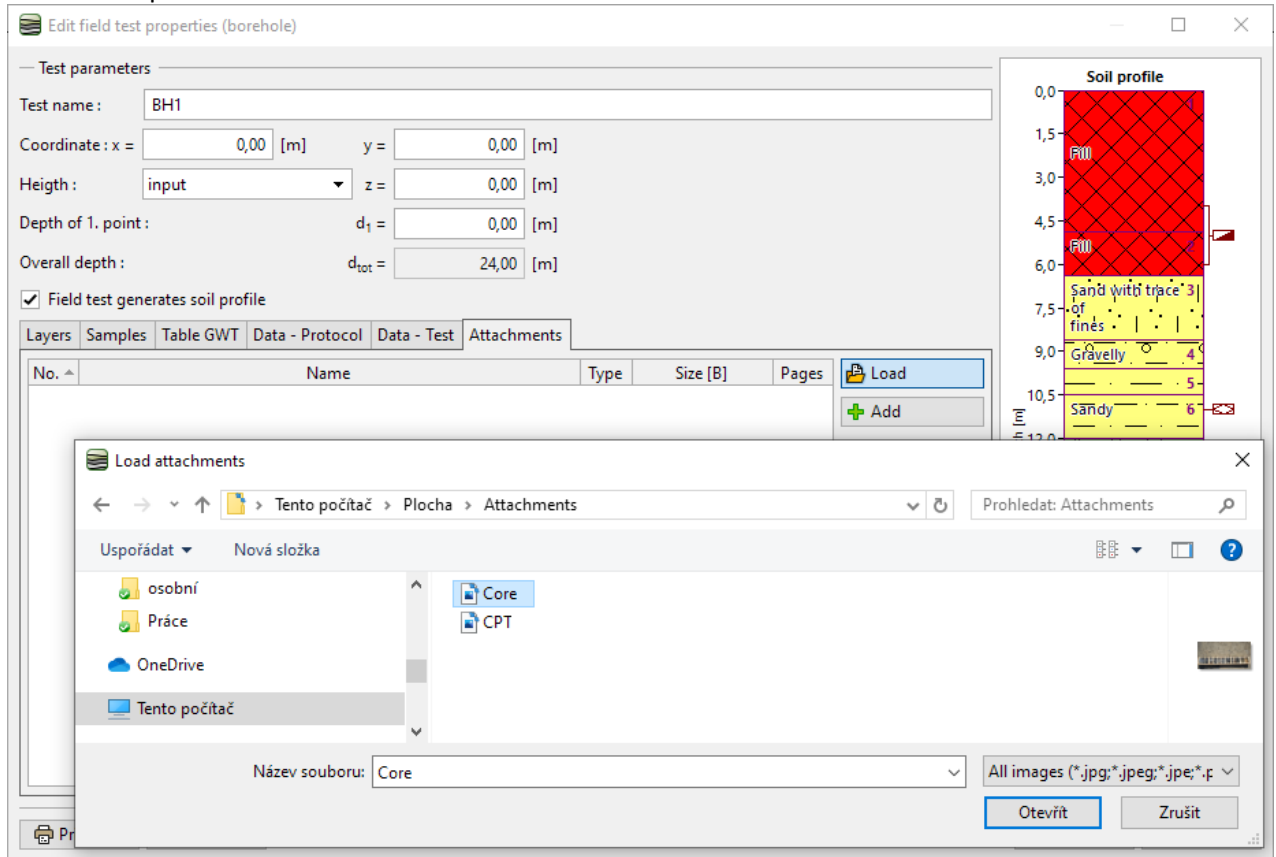
Foreman: Mr. Young

Soil profile (Depth [m]):

- 0,0 - 1,5: Fill
- 1,5 - 4,5: Fill
- 4,5 - 7,5: Sand with trace of fines
- 7,5 - 9,0: Gravelly
- 9,0 - 10,5: Sandy
- 10,5 - 12,0: Shale, fully weathered
- 12,0 - 13,5: Shale
- 13,5 - 15,0: Shale, moderately weathered
- 15,0 - 16,5: Shale
- 16,5 - 18,0: Shale, moderately weathered
- 18,0 - 19,5: Shale
- 19,5 - 21,0: Shale, slightly weathered
- 21,0 - 22,5: Shale
- 22,5 - 24,0: Shale

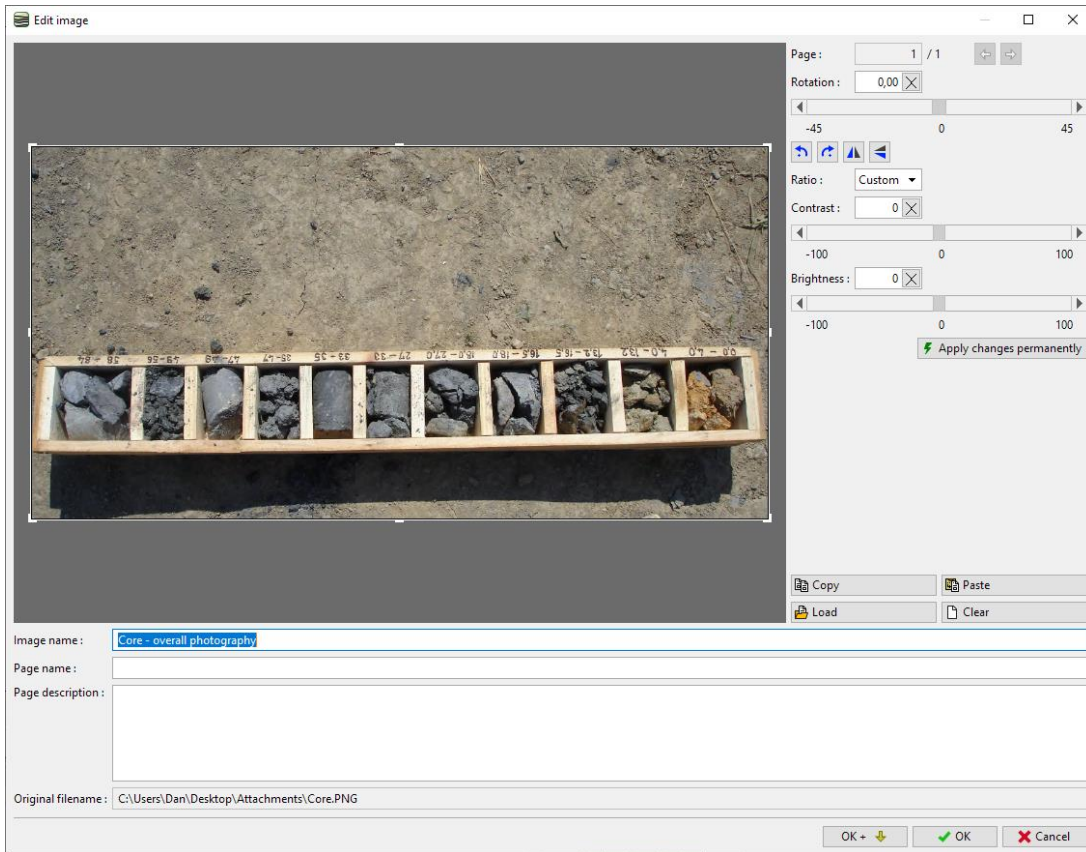
*Note: Data is defined in the template. You can define any number of different data types (text, numbers, enumerations, date, time) – for more information see EM 44 – Creation of User-defined Template*

We can upload photos or PDF documents to the attachment section. Click the “Load” button and upload the desired picture.

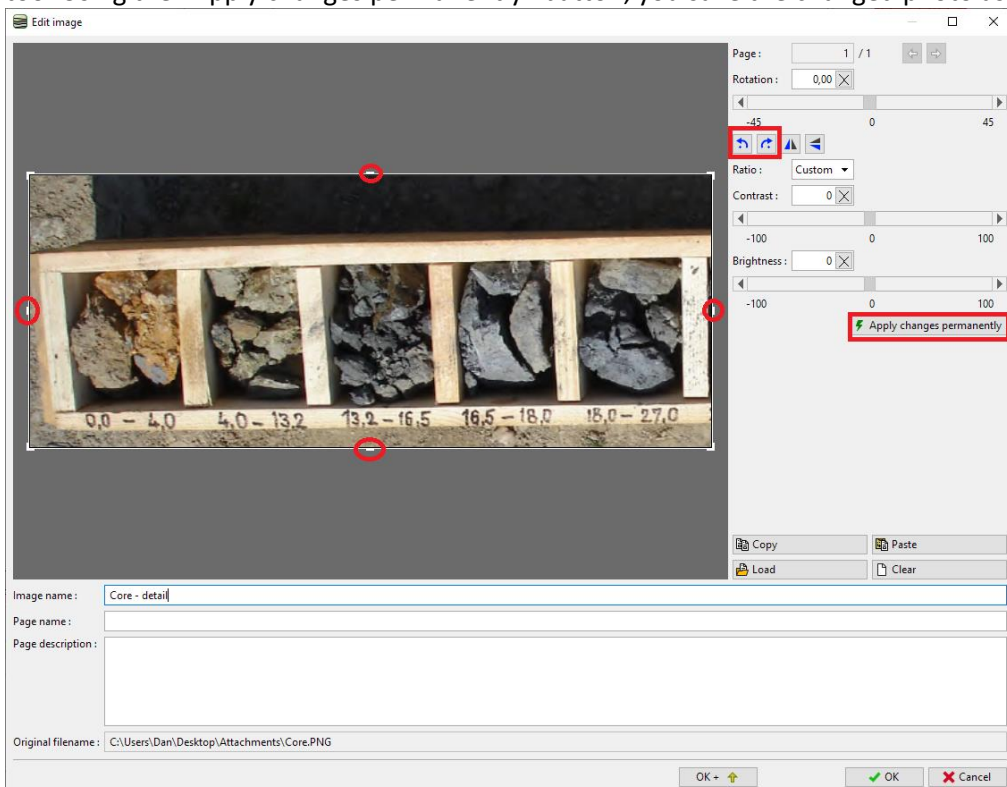


We open the photo in the “Edit image” window and input its name and description.





In this window, we can edit the photo. We upload the same photo once again. We rotate the photo by 180 degrees and zoom the part with samples above 27 m depth. We can change the contrast and brightness too. Using the “Apply changes permanently” button, you save the changed photo as a new attachment.



In the list of attachments, we can see that the second attachment is much smaller due to cut. It can help to save the size of a data file, as all uploaded attachments become part of it.

**Edit field test properties (borehole)**

Test parameters

Test name:

Coordinate: x =  [m]    y =  [m]

Height:     z =  [m]

Depth of 1. point:  [m]

Overall depth:  [m]

Field test generates soil profile

Layers | Samples | Table GWT | Data - Protocol | Data - Test | Attachments

No.	Name	Type	Size [B]	Pages	Load
1	Core - overall photography	PNG	1 974 911	1	Load
2	Core - detail	PNG	277 527	1	Add

Soil profile

Print log    Import    OK    Cancel

By doing so, we have the BH1 borehole completed – by clicking the “Print protocol” button, we will print it. If we are satisfied with the result, click “OK” to save it.

**Log of Boring BH1**

Project: Apartment building "Moonlighting" - Geological survey

Date start: 22.11.2017    Foreman: Mr. Young    G round water table: 24,00 m    Borehole position: Coordinate X: 0,00

Date end: 23.11.2017    Documented: Mr. Smith    GWT bored: 15,80 m    Coordinate Y: 0,00

Scale: one page    GWT steady: 12,50 m    Coordinate Z: 0,00 m

Drilling		Casing	
Depth from	Depth to	Drilling dia.	Casing dia.
0,00 m	20,00 m	195 mm	20,00 m
20,00 m	24,00 m	156 mm	191 mm

stratigraphy	BH1	sample and GWT	Observed according to EN ISO 14888-1	ROD [m]	From - To	Layers description	Notes
Recent					0,00 - 4,90	Fill, fine grained SAND with some silt, dense, mixed with cobbles of concrete and pieces of bricks partly the size is larger than the borehole diameter, black colour of the soil	
Quaternary					4,90 - 6,40	Fill, coarse GRAVEL with some silt (clayey shale) and fresh angular cobbles up to 19 cm, dark grey colour	Easy drilling
					6,40 - 8,60	Sand with trace of fines, medium grained with some fine silt, dense, rust-brown	
					8,60 - 9,60	Gravelly clay, hard, gravel particles up to 10 mm (weathered shale), brown	
Ordovician					9,60 - 10,30	Sandy clay, hard, with some pieces of gravel (quartz) up to 30 mm dia., brown	Loading of drilling fluid
					10,50 - 12,00	Sandy clay, with some gravel, hard, gravel - sub angular shale up to 10 mm, sand is fine, mica included, brown colour	
					12,00 - 14,80	Shale, fully weathered, residual soil, clay character with small particles of shale up to 5 mm, gravel parts are weathered, grey	
					14,80 - 15,80	Shale, weathered, in borehole core small pieces, gently inclined, parts 10-50 mm, weak strength, mica and limonite on foliation planes, brownish	
					15,80 - 19,30	Shale, moderately weathered, layered, drill sharp fragments 10-50 mm, gently inclined, weak/moderately strong, wet, dark grey	
					19,30 - 24,00	Shale, slightly weathered, moderate strong, fine layered, steeply inclined, wet (saturated - under water table), dark grey	

Legend:   
 - GWT bored   
 - GWT steady   
 - undisturbed   
 - disturbed   
 - rock strength

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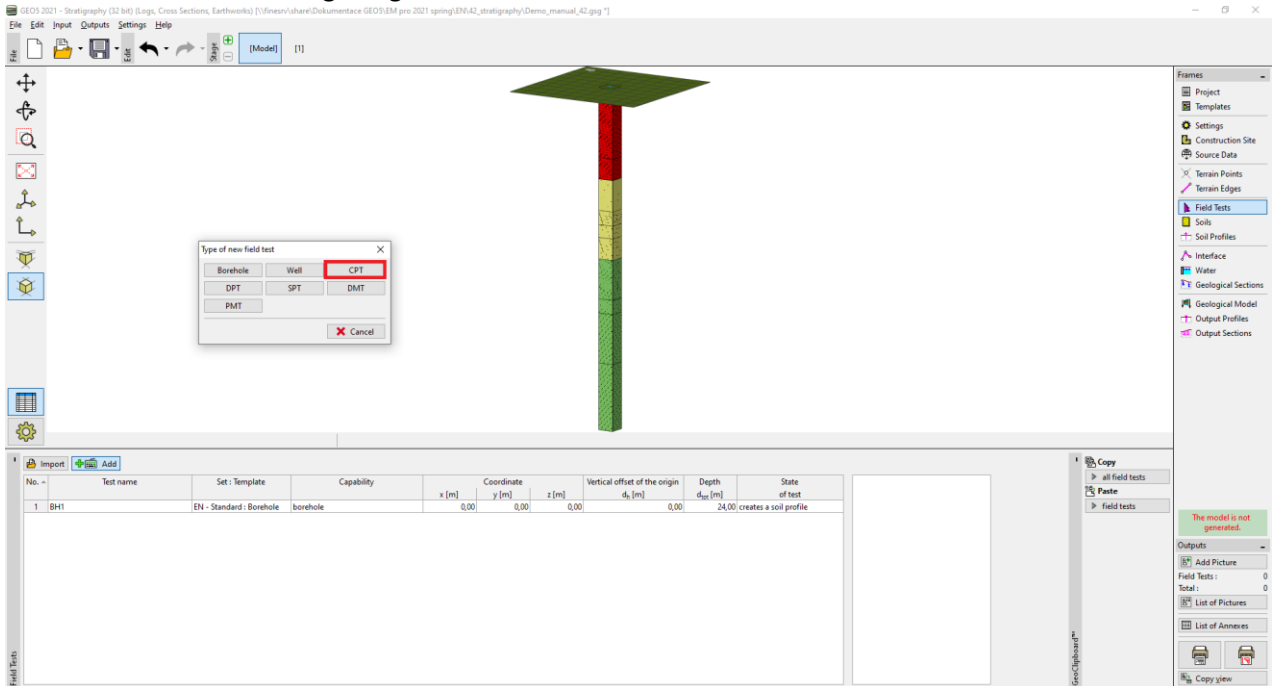
**Borehole - Field test BH1**

**Core - overall photography**

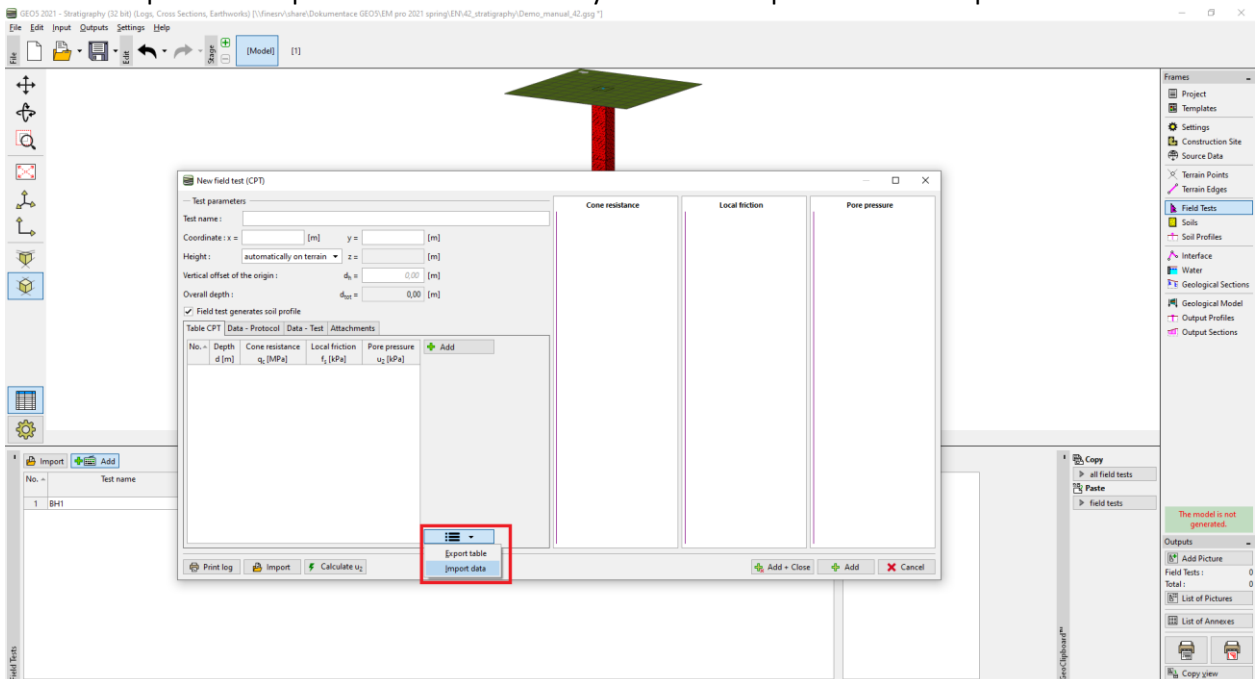
**Core - detail**

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We will move on to entering the **cone penetration test**. We will import it directly from the file, in xls format, that we received from the geologist.



Use the “Import data” option and select the files you want to import. Then we import it.



*Note: A large number of different formats can be used for import – specific field tests formats (e.g. .cpt, .gef, .ags...for CPTs) are imported directly using the „Import“ button. The general table data (e.g. xls) can be imported into the CPT in the dialog window „New field test (CPT)“. A detailed information on how to import table data correctly can be found in EM 27 (Data import in TXT format), IM47 (Export and Import of Field Tests in the Stratigraphy) or in program help: <https://www.finesoftware.eu/help/geo5/en/table-data-import-01/>*

After a successful import, the measured values are displayed. Next, enter the name and coordinates of the test.

**Edit field test properties (cone penetration test)**

Test parameters

Test name:

Coordinate: x =  [m] y =  [m]

Height:  z =  [m]

Depth of 1. point:  [m]

Overall depth:  [m]

Field test generates soil profile

Table CPT | **Data - Protocol** | Data - Test | Attachments

No.~	Depth d [m]	Cone resistance $q_c$ [MPa]	Local friction $f_s$ [kPa]	Pore pressure $u_z$ [kPa]
1	0,00	0,00	0,00	0,00
2	0,20	0,46	12,00	0,00
3	0,40	1,28	45,00	0,00
4	0,60	2,18	143,00	0,00
5	0,80	1,54	131,00	0,00
6	1,00	1,30	132,00	0,00
7	1,20	1,32	101,00	0,00
8	1,40	1,08	77,00	0,00
9	1,60	1,36	51,00	0,00
10	1,80	1,32	17,00	0,00
11	2,00	0,46	35,00	0,00
12	2,20	2,04	55,00	0,00
13	2,40	1,92	60,00	0,00
14	2,60	2,74	91,00	0,00

Print log | Import | Calculate  $u_2$  | OK | Cancel

We will add user-defined data about the test for printing the protocol:

**Edit field test properties (cone penetration test)**

Test parameters

Test name:

Coordinate: x =  [m] y =  [m]

Height:  z =  [m]

Depth of 1. point:  [m]

Overall depth:  [m]

Field test generates soil profile

Table CPT | **Data - Protocol** | Data - Test | Attachments

Annex no.:

Location:

Measured by:

Evaluated by:

Date of test:

Acc. to standard:

Notes:

Print log | Import | Calculate  $u_2$  | OK | Cancel

We will add another photography (now a CPT machine) and input its name and description.

