

## Izrada dokumentacije terenskog ispitivanja

Program: Stratigrafija – Izveštaji  
 Datoteka: Demo\_manual\_42.gsg

Ovaj priručnik će vam objasniti kako izraditi dokumentaciju terenskih ispitivanja.

Priručnici koji su povezani na ovaj:

- EM 43 – Izrada profila tla iz terenskih ispitivanja
- EM 44 – Izrada korisničkih predložaka (podaci i protokoli)

### Bušotina BH1

Bor Borehole, s. Nad. Kaminskou 24, Praha, 156 00		Log of Boring		BH1	
Project: Apartment building "Mooonlighting" - Geological survey					
Project ID: AA_0014 - 2019		Annex no.: A-10		Drilling equipment: HSBs 202 TP	
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	
Scale: one page		Drilling: GWT steady: 12.50 m		Coordinate Y: 0.00	
		Casing:		Coordinate Z: 0.00 m	
Depth from		Depth to		Drilling dia.	
0.00 m		20.00 m		195 mm	
20.00 m		24.00 m		156 mm	
		Depth from		Depth to	
		0.00 m		20.00 m	
				191 mm	

Stratigraphy	BH1	Sample and GWT classification	ROD [m]	From - To	Layers description	Note
Recent	sacI			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	
				4.90 - 6.40	Fill: coarse GRAVEL with some silt (clayey shale) and fresh angular cobbles up to 15 cm, dark grey colour	
Quaternary	Sa			6.40 - 8.60	Sand with trace of fines, medium grained with some fine soil, dark, rust-brown	Easy drilling
				8.60 - 9.60	Gravelly clay, hard, gravel particles up to 10 mm (weathered shale), brown	
				9.60 - 10.50	Sandy clay, hard, with some pieces of gravel (quartz) up to 50 mm dia., brown	
				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	
Ordovician	grCl			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	Loosing of drilling fluid
				14.80 - 15.80	Shale, weathered, in borehole core small planes, 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	


**Key:**

- ▽ GWT bored
- ▲ GWT steady
- Undisturbed
- Disturbed
- Rock strength


[GEO5 Beta - Stratigraphy (version 5.2020.40.0) hardware key 1025 (1) (Free - Daniel Turanský) Copyright © 2020 Free spol. s r.o. All Rights Reserved (www.freehome.eu)]

**Borehole - Field test** BH1

**Core - overall photography**

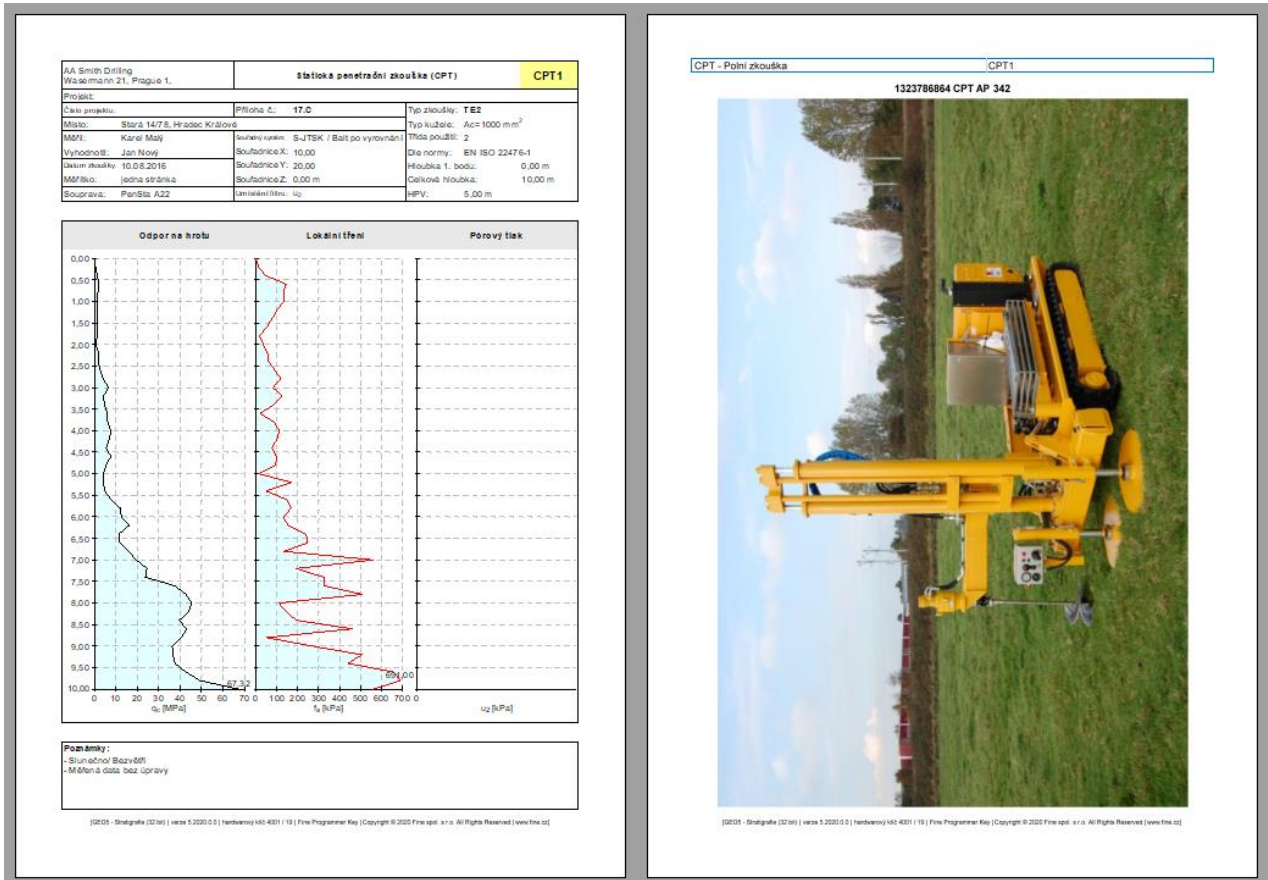


**Core - detail**



[GEO5 Beta - Stratigraphy (version 5.2020.40.0) hardware key 1025 (1) (Free - Daniel Turanský) Copyright © 2020 Free spol. s r.o. All Rights Reserved (www.freehome.eu)]

## Ispitivanje statičkom penetracijom CPT1



CPT - Půlní zkouška

1323786864 CPT AP 342

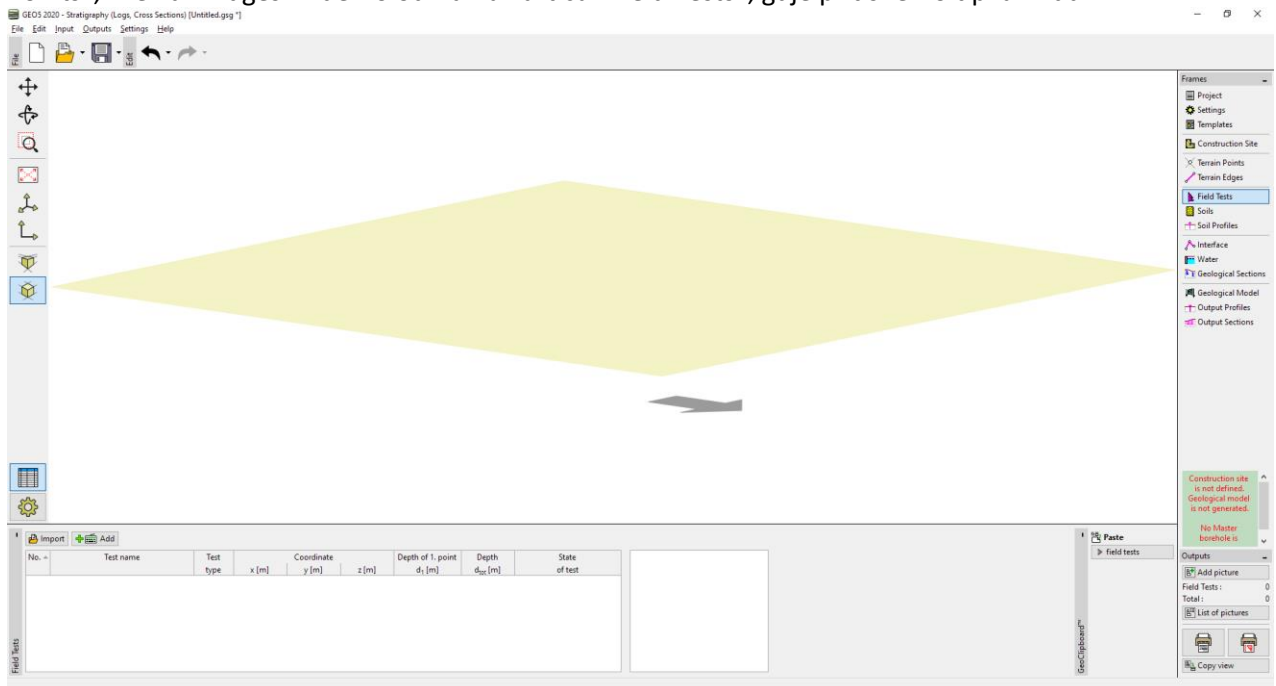
(GEO5 - Statigrafie (32 bit) | verze 5.2020.0.0 | hardwarevý klíč 4001 | 15 | Fine Programmer Key | Copyright © 2020 Fine spol. s r.o. All Rights Reserved | www.fine.cz)

## Rješenje:

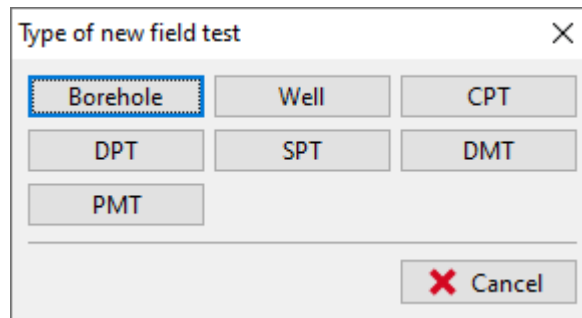
U kartici “Templates” provjerite imate li postavljen set predložaka koji želite koristiti. U ovom slučaju - “EN-Standard” (Ako je odabran drugi set predložaka, možemo ga promijeniti klikom na tipku “Select template set”).



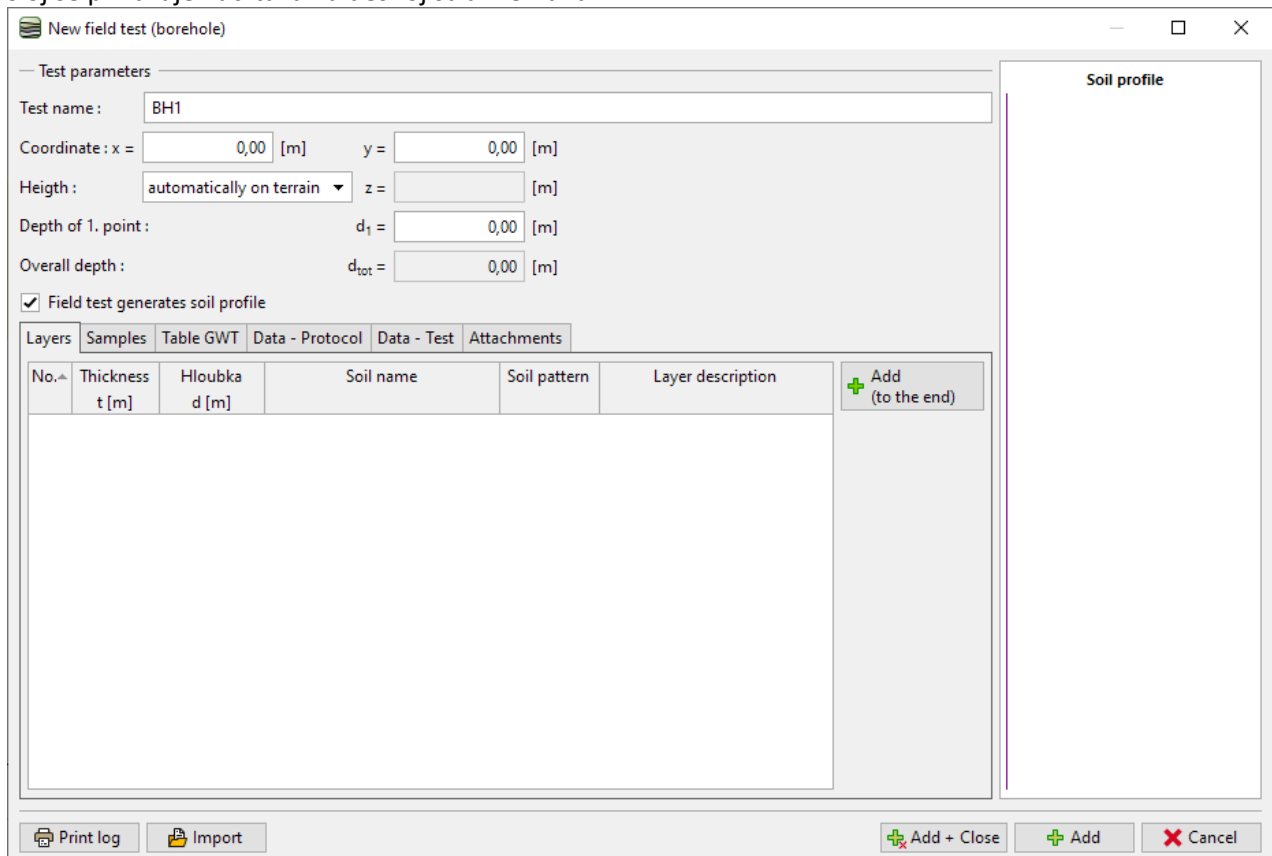
Program uvijek radi s cijelim gradilište i njegovim modelom. Kako bilo, ova činjenica nas ne limitira prilikom izrade dokumentacije ispitivanja. Preskočit ćemo “Construction Site”, “Source data”, “Terrain Points”, “Terrain Edges” i idemo odmah u karticu “Field Tests”, gdje pritisnemo tipku “Add”.



Najprije dodajemo bušotinu.



Nakon pritiska na tipku “Borehole”, pojavljuje se dijaloški prozor. Najprije unosimo potrebne podatke – Naziv ispitivanja: (BH1), Koordinate (pošto unosimo podatke za fiktivnu bušotinu, unijet ćemo [0,0]). Zatim nastavljamo s unosom individualnih slojeva. Koristite tipku “Add (to the end)” za unos prvog sloja. Uneseni sloj se prikazuje i ucrtava na desnoj strani ekrana.



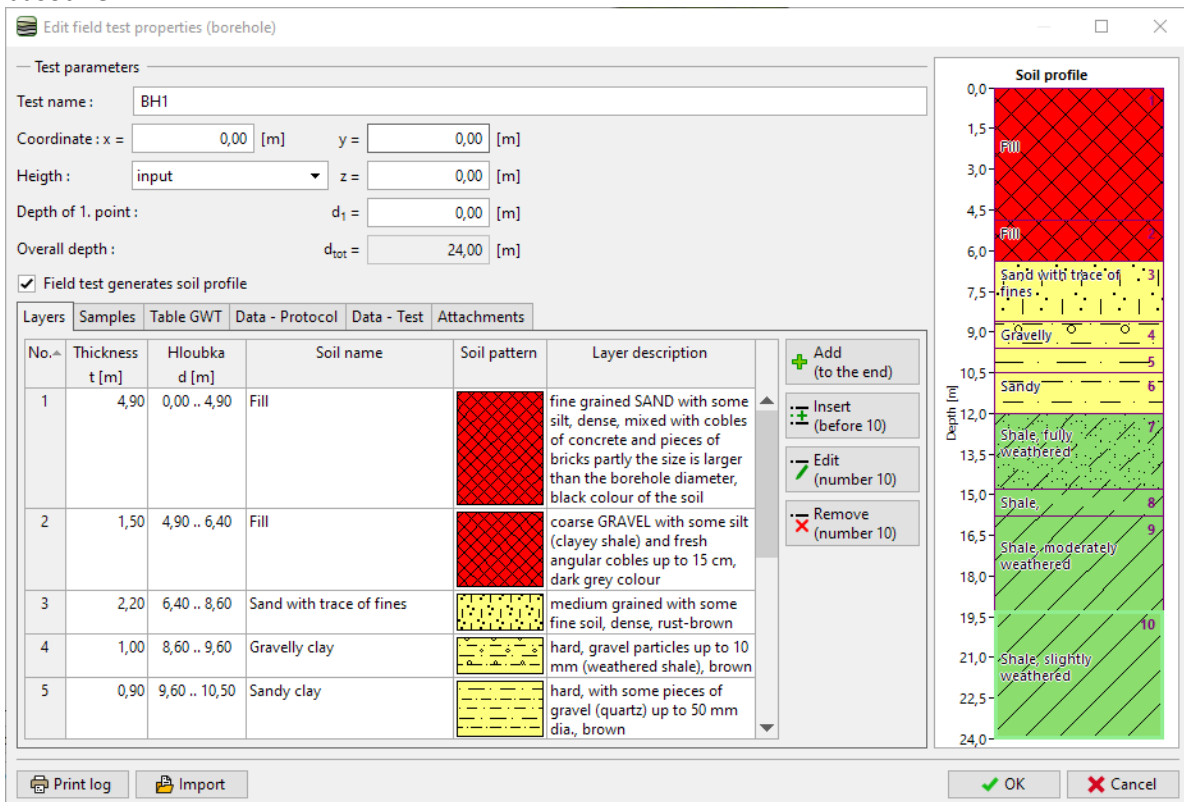
Neophodni podaci uključuju debljinu i dubinu sloja, naziv sloja, uzorka i boju. Opcionalni podaci su detaljni opis sloja i podaci u desnom dijelu prozora.

*Napomena: Podaci u desnom dijelu prozora su definirani u predlošku. Možete postaviti bilo koji broj različitih vrsta podataka (tekst, brojevi, numeracije, datum, vrijeme) – za više informacija pogledajte EM 44 – Izrada korisničkih predložaka*

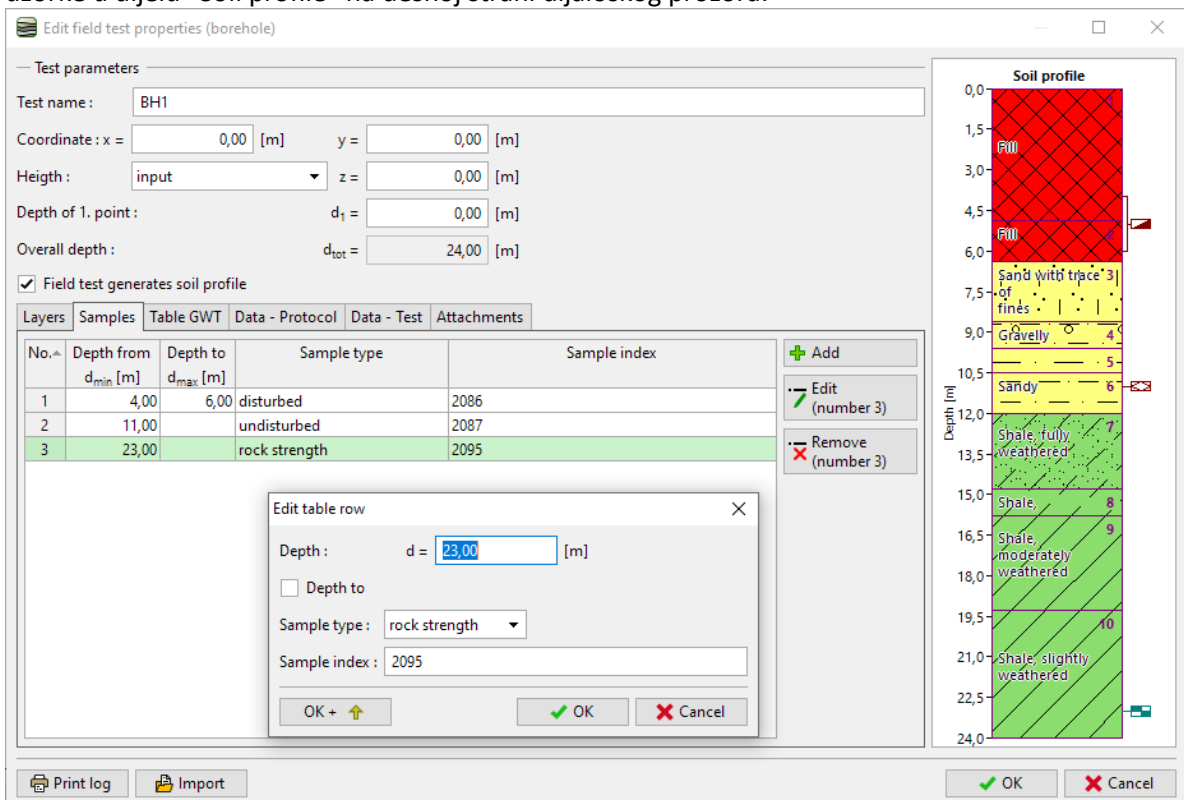
Klikom na tipku “Add”, spremićete sloj i nastavljate s unosom sljedećeg.

Tla (uključujući njihove uzorke, boje i korisničke podatke) su automatski poredana u bazi podataka programa. To je korisno ako trebate unijeti jedan sloj više puta (unutar iste ili različitih bušotina). Učitat ćemo sve podatke automatski iz prethodno spremljenih slojeva. Možete pristupiti bazi podataka tla klikom na tipku strelice, pokraj linije s nazivom tla.

Nakon unosa svih slojeva, zatvorite prozor klikom na tipku "Cancel". Vratit ćete se na glavni prozor za unos bušotine.



Sad ćemo preći na kartice za unos uzoraka gdje ćemo unijeti uzete uzorke. Uvijek možete vidjeti unesene uzorke u dijelu "Soil profile" na desnoj strani dijaloškog prozora.



Na isti način unesite razinu podzemne vode.

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  
3,0  
4,5  
6,0  
7,5  
9,0  
10,5  
12,0  
13,5  
15,0  
16,5  
18,0  
19,5  
21,0  
22,5  
24,0

Fill  
Sand with trace of fines  
Gravelly  
Sandy  
Shale, fully weathered  
Shale  
Shale, moderately weathered  
Shale  
Shale, slightly weathered

Print log Import OK Cancel

Dotat ćemo opcionalne (korisnički definirane) podatke o bušotini, za ispis protokola.

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]

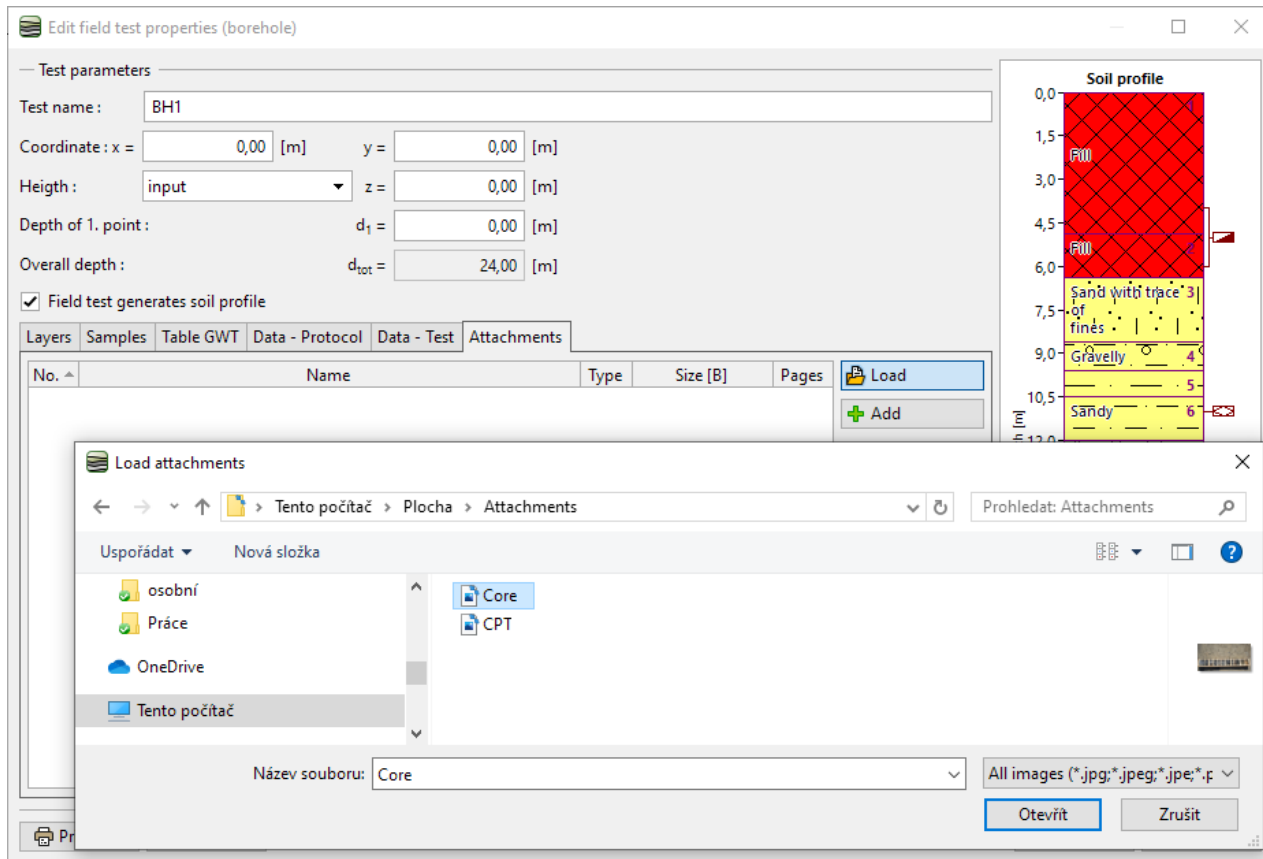
0,0  
1,5  
3,0  
4,5  
6,0  
7,5  
9,0  
10,5  
12,0  
13,5  
15,0  
16,5  
18,0  
19,5  
21,0  
22,5  
24,0

Fill  
Sand with trace of fines  
Gravelly  
Sandy  
Shale, fully weathered  
Shale  
Shale, moderately weathered  
Shale  
Shale, slightly weathered

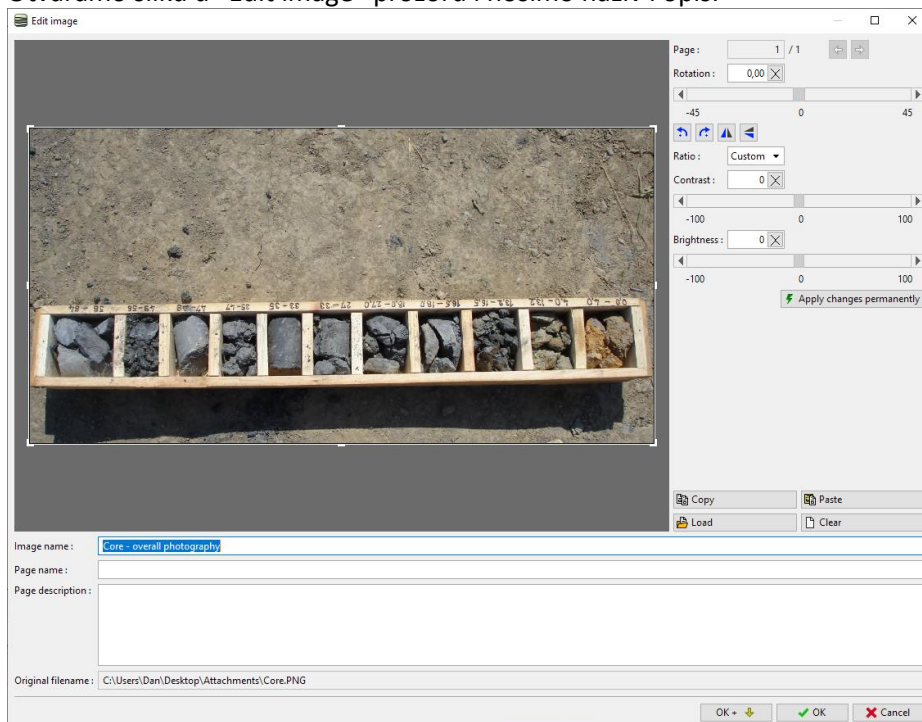
Print log Import OK Cancel

*Napomena: Podaci su definirani u predlošku. Možete definirati bilo koji broj različitih vrsta podataka (tekst, brojevi, numeracije, datum, vrijeme) – za više informacija pogledajte EM 44 – Izrada korisničkih predložaka*

Možemo postaviti slike ili PDF dokumente u odjeljku za privitke. Kliknite na tipku “Load” i učitajte željenu sliku.

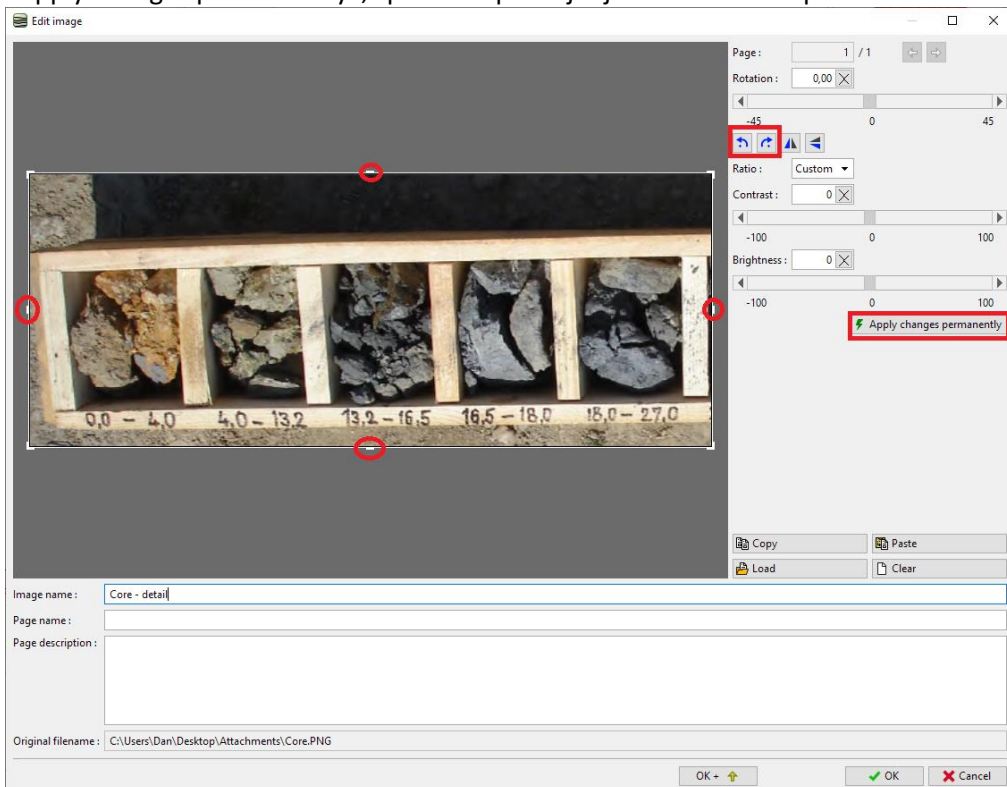


Otvaramo sliku u “Edit image” prozoru i nosimo naziv i opis.

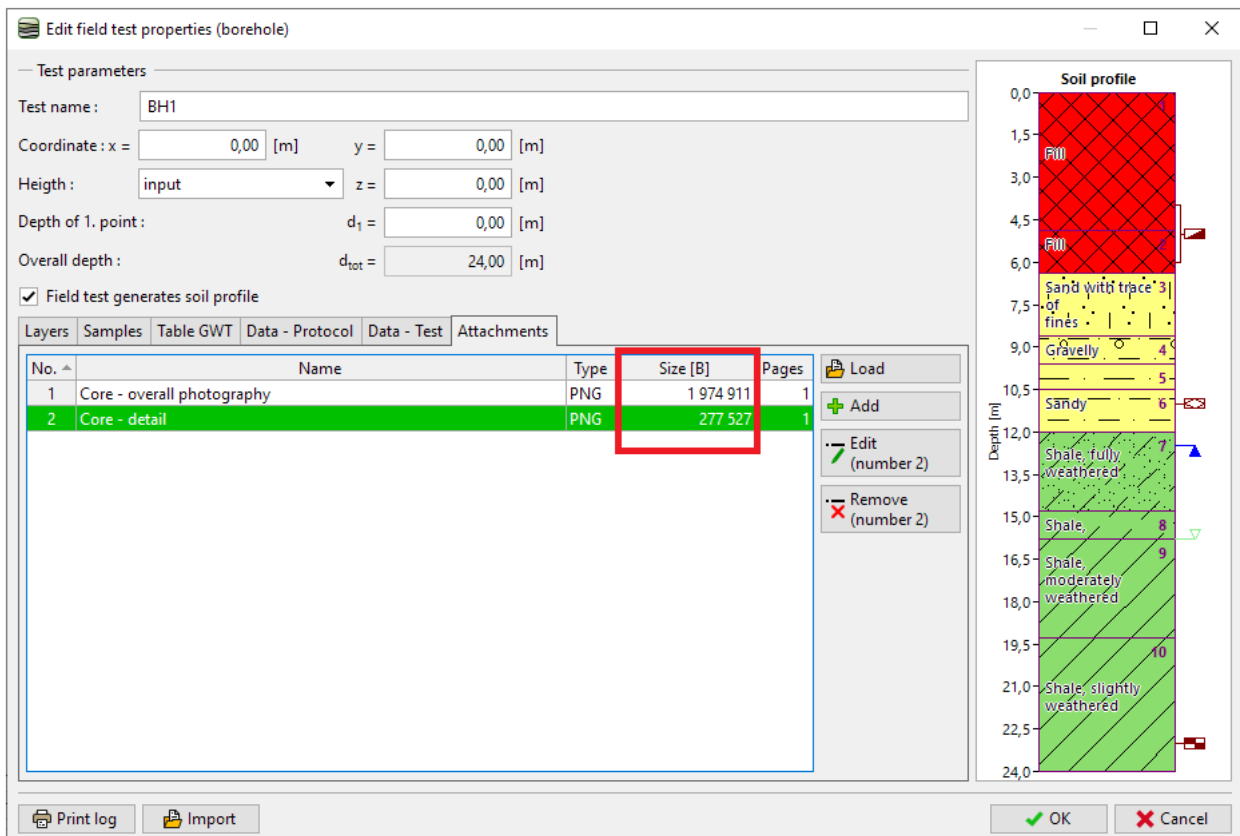




U ovom prozoru možemo urediti sliku. Ponovno učitavamo istu sliku. Rotiramo sliku za 180 stupnjeva i ubližimo dio s uzorcima iznad 27 m dubine. Također možemo promijeniti kontrast i svjetlinu. Koristeći tipku "Apply changes permanently", spremate promijenjenu sliku u novi privitak.



U popisu privitaka možemo vidjeti da je drugi privitak puno manji zbog rezanja. Ovo također može pomoći u smanjenju veličine datoteke, jer svi učitani privici postaju dio nje.




Na taj način smo završili bušotinu BH1 – klikom na tipku “Print protocol”, a sad ćemo je ispisati. Ako smo zadovoljni rezultatom, kliknut ćemo na “OK” da bismo je spremili.

Log of Boring				BH1																	
Project: Apartment building "Novo Mlýnské lázně" - Geological survey																					
Project ID: AA_0014 - 2019		Annex no.: A-10		Drilling equipment: Mokka 202 TP																	
Location: Prague 12		Drilling 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																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Drilling</th> <th colspan="2">Casing</th> </tr> <tr> <th>Depth from</th> <th>Depth to</th> <th>Drilling dia.</th> <th>Casing dia.</th> </tr> </thead> <tbody> <tr> <td>0.00 m</td> <td>20.00 m</td> <td>195 mm</td> <td>191 mm</td> </tr> <tr> <td>20.00 m</td> <td>24.00 m</td> <td>158 mm</td> <td></td> </tr> </tbody> </table>						Drilling		Casing		Depth from	Depth to	Drilling dia.	Casing dia.	0.00 m	20.00 m	195 mm	191 mm	20.00 m	24.00 m	158 mm	
Drilling		Casing																			
Depth from	Depth to	Drilling dia.	Casing dia.																		
0.00 m	20.00 m	195 mm	191 mm																		
20.00 m	24.00 m	158 mm																			


  

Stratigraphy	BH1	Sample and GWT	Disturbance according to EN10181-2	ROD [m]	From To	Layers description	Notes
Recent	s(ac)				0.00 - 4.90	Fit, fine grained SAND with some silt, dense, mixed with cobbles of concrete and pieces of bricks (size of the size is larger than the borehole diameter, black colour of the soil)	Easy drilling
					4.90 - 6.40	Fit, coarse GRAVEL with some silt (clayey shale) and fresh angular cobbles up to 15 cm, dark grey colour	
					6.40 - 8.60	Sand with trace of fines, medium grained with some fine soil, dense, rust-brown	
					8.60 - 9.60	Gravelly clay, hard, gravel particles up to 10 mm (weathered shale), brown	
					9.60 - 10.50	Sandy clay, hard, with some pieces of gravel (quartz) up to 50 mm dia., brown	
Quaternary	s(ac)				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	Loosing of drilling fluid
					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 cone small planes, gently inclines, parts 10-50 mm, weak strength, mica and limonite on foliation planes, brown/rust	
Cretaceous					15.80 - 19.30	Shale, moderately weathered, layered, drill sharp fragments 10-50 mm, gently inclines, 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	



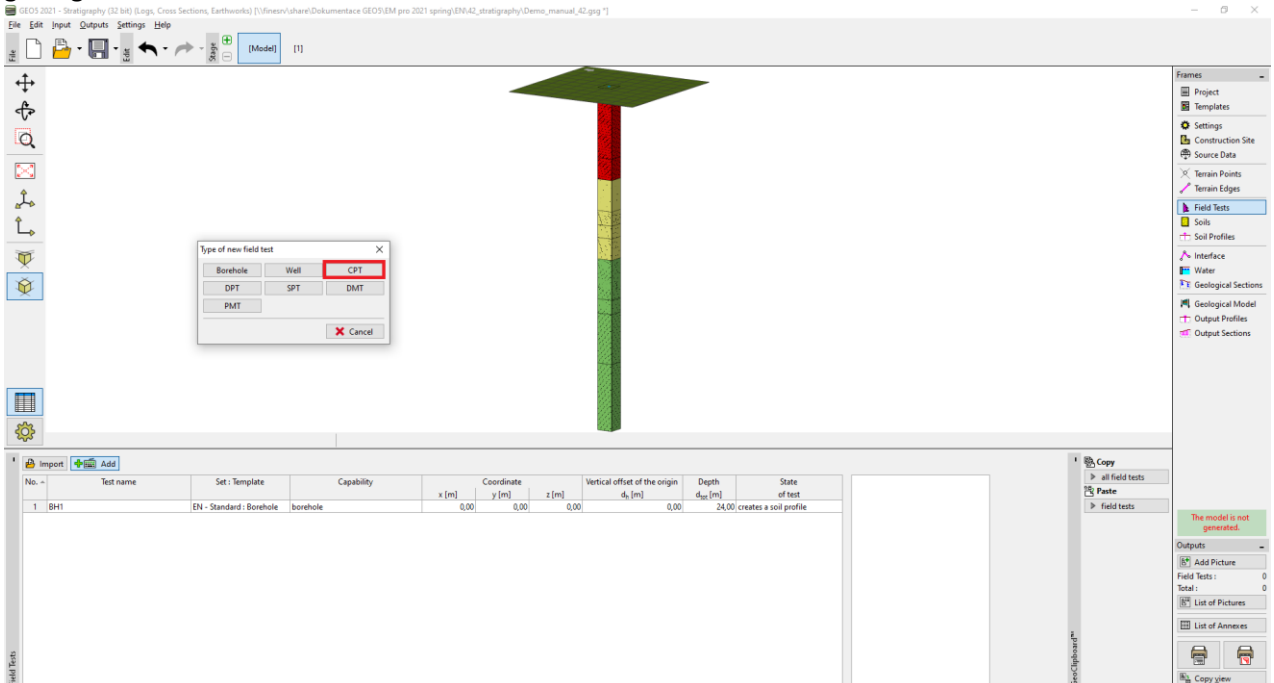
Borehole - Field test BH1

Core - overall photography

Core - detail

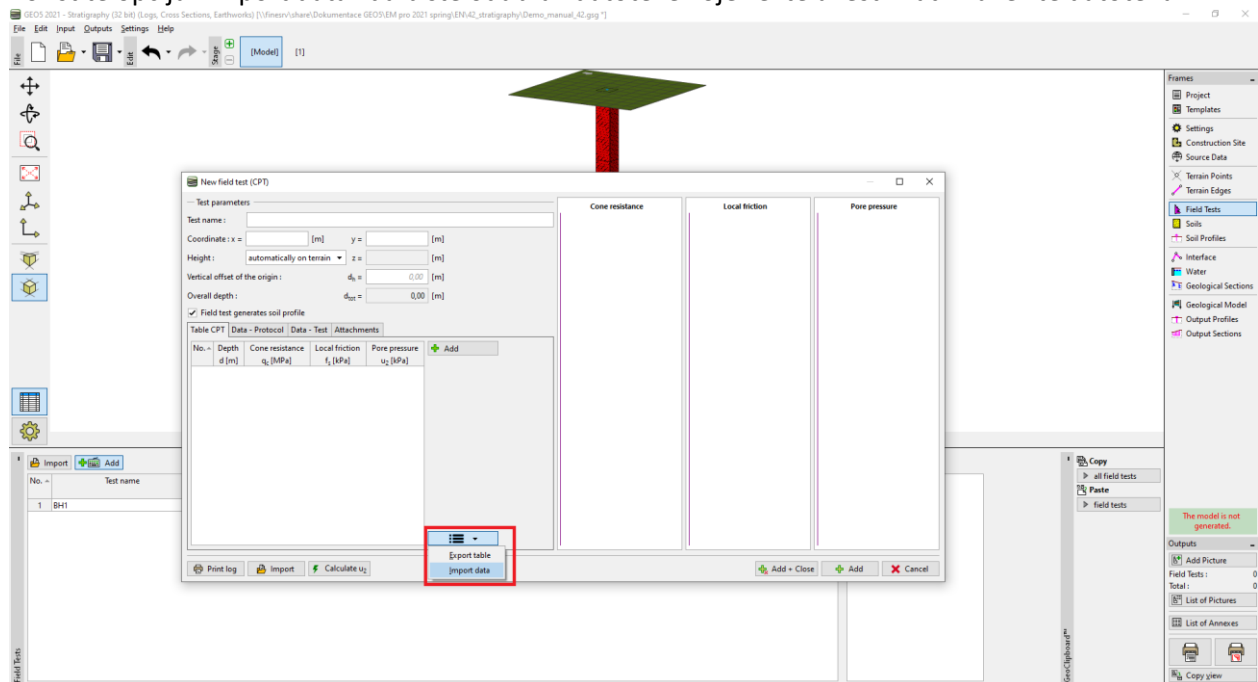
Prelazimo na **penetracijski test**. Uvest ćemo ga direktno iz datoteke, u xls formatu, koju smo dobili od geologa.



The screenshot shows the GEO5 software interface. A dialog box titled "Type of new field test" is open, with "CPT" selected. The background shows a 3D model of a borehole with a color-coded soil profile. Below the model is a table with the following data:

No.	Test name	Set: Template	Capability	x [m]	y [m]	z [m]	Vertical offset of the origin d <sub>v</sub> [m]	Depth d <sub>so</sub> [m]	State of test
1	BH1	EN - Standard: Borehole	borehole	0,00	0,00	0,00	0,00	24,00	creates a soil profile

Koristite opciju "Import data" da biste odabrali datoteke koje želite uvesti. Zatim uvezite datoteku.



*Napomena: Velik broj različitih formata se mogu koristiti prilikom uvoza – specifični formati ispitivanja (npr. .cpt, .gef, .ags...za CPT) se uvoze direktno koristeći tipku „Import“. Osnovni tablični podaci (npr. xls) se mogu uvesti u CPT u dijaloškom prozoru „New field test (CPT)“. Detaljne informacije kako ispravno uvesti tablične podatke mogu se naći u EM 27 (Uvoz podataka u TXT formatu), IM47 (Izvoz i uvoz podataka terenskih ispitivanja u Stratigrafiji) ili u pomoći programa: <https://www.finesoftware.eu/help/geo5/en/table-data-import-01/>*

Nakon uspješnog uvoza, prikazane su izmjerene vrijednosti. Nakon toga unosimo naziv i koordinate ispitivanja.

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

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 u2 OK Cancel

Dodat ćemo korisnički definirane podatke o ispitivanju za ispis protokola:

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.: <input type="text" value="17.C"/>			
Location: <input type="text" value="Stará 14/78, Hradec Králové"/>			
Measured: <input type="text" value="Joe Fieldman"/>			
Evaluated: <input type="text" value="Bill New"/>			
Date of test: <input type="text" value="10.08.2016"/>			
Acc. to standard: <input type="text" value="EN ISO 22476-1"/>			
Notes: <input type="text" value="- Sunny/ Partially cloudy/ Calm - Raw data not modified"/>			

Print log Import Calculate u2 OK Cancel

Dodat ćemo još jednu sliku (CPT uređaj) i unijeti naziv i opis.

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

Test parameters

Test name: CPT1

Coordinate: x = 10,00 [m] y = 20,00 [m]

Height: input z = 0,00 [m]

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

Overall depth: d<sub>tot</sub> = 10,00 [m]

Field test generates soil profile

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

No.	Name	Type	Size [B]	Pages	Load

**Load attachments**

Tento počítač > Plocha > Attachments

Uspořádat Nová složka

- osobní
- Práce
- OneDrive
- Tento počítač

Core

CPT

Název souboru: CPT

All images (\*.jpg;\*.jpeg;\*.jpe;\*.jf)

Qtevit Zrušit

Print log Import Calculate u2 OK Cancel

**Edit image**

Page: 1 / 1

Rotation: 0,00

Ratio: Custom

Contrast: 0

Brightness: 0

Apply changes permanently

Copy Paste

Load Clear


Image name: Machine

Page name: CPT AP 342

Page description:

Original filename: C:\Users\Dan\Desktop\Attachments\CPT.jpg

OK Cancel



Na kraju ispisat ćemo protokol klikom na tipku “Print protocol”. Ovaj puta ćemo ispisati sliku u A4 formatu.

Print and export document

Document: CPT1 - CPT1 - Field test - one page  
Scheme: color

Save Print Open and edit Send as attachment

Select all Remove selection Copy

Page width Page height One page Multiple pages Book

Field test attachment

- CPT1
  - Name (top)
  - Description (bottom)
  - Layout (1 per page)  1 per page  2 per page  4 per page  6 per page
  - Attachments (1 of 1)
    - Machine
    - Page header
    - Rotate to fit

Cone penetration test (CPT1) CPT1

Property	Assigned building: Workshop - 8. Ringstrasse	Type of soil: FE6
Project	8. Ringstrasse	10.00
Location	8. Ringstrasse	10.00
Reference	8. Ringstrasse	10.00
Test date	10.00.2000	10.00
Test time	10.00.2000	10.00
Test place	8. Ringstrasse	10.00
Test person	8. Ringstrasse	10.00
Test machine	8. Ringstrasse	10.00

Cone resistance Local friction Pore pressure

Notes

- 1 - Original Particle Diameter Chart
- 2 - Raw data not modified

Machine CPT1 AP 342

Document matches its settings | 1 - 2 / 2 | A4 (21,0 x 29,7 cm)