GEF-CPT

GEF-CPT - A standard exchange format for CPT's

GEF (Geotechnical Exchange Format) is a general language structure for storing and transferring geotechnical information. GEF states in a procedural way how a new structure (a set of rules for the storage of measurements) should be composed. This report provides a basis for a general exchange of digital cone penetration test data. Existing formats are specifically directed at a client and are therefore not unambiguous and exchangeable. In cases where there are large quantities of penetration test data delivered in a variety of formats, this not only leads to communication problems but also to delays and increased costs.

GEF and GEF-CPT-Report

There is a distinct difference between GEF and e.g. GEF-CPT-Report. GEF is a method for the exchange of data of an arbitrary test on soil. More info on GEF itself can be found on the GEF-Language page.
GEF-CPT-Report is a way to exchange data of precisely one, very specific test on soil, i.e. data obtained during a Cone Penetration Test (CPT).

GEF-CPT-Report

The new format, which is described in the GEF-CPT-REPORT document shows a number of advantages:

- Uniform:
  Conversions belong to the past; the format offers completeness, as the structure stores all relevant information.
- Flexible:
  In addition to the required minimal information, the user can add specific data.
- Unambiguous:
  Storage of the measurement data is unambiguous. In the case of measured pore water pressure, for instance, the level at which this is measured is also stated (in the cone or at a higher level). It is also possible to include more than one pore water pressure measurement.
- Directly applicable:
  Conversion software to the GEF-CPT-Report were made for various companies during the development process. This means that there is already application software which can use penetration test data directly from the GEF-CPT-Report. A conversion tool is also supplied to convert GEF-CPT-Report files into NENGEO format (and conversely). Furthermore, the direct applicability is enhanced by the availability of an Excel-conversion tool for importing and processing penetration test data as required.
- Freely available tools:
  The format is provided with freely available tools for verifying the supplied data and for making conversion programs. Verification software checks whether the structure of the data file complies with that of the GEF-CPT-Report (not a contents verification of the data file, but a structure check on compliance with GEF-CPT-Report). The method for verification is included in the gef2.dll, and so it can be incorporated into your own software. For verification purposes, a simple viewer is also provided.
- Usefulness:
  The continuous development process, involving a large number of experts, has resulted in high quality and efficiency. It will be possible to use the new format efficiently, particularly on large projects involving many parties.

Visualisation

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Example of a CPT with pore pressure u2, fricton and friction number. The graph has been made using the programm "GEFPlottool". For more info about this programm, visit the website of Deltares

Viewer and GEF Verification

In order to view the CPT-results graphically, you can use the GEF-CPT-viewer software. The cone resistance, sleeve friction, friction ratio and pore water pressure (u2) are displayed in conformity with the NEN 5140 standard (however mind the paper format!)

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GEF-Verification is part of the GEF-viewer. It can be used to verify whether files comply with the GEF-CPT-Report format. Verification consists of checking for syntax errors and contextual inconsistencies in digital CPT-files using the GEF-CPT-Report format. The software opens a GEF-file and performs a verification. A log of the errors that are found is given. Verification of GEF-files in batches is also possible.
In September 2002 the program has been updated, version: 1,1,0,0. It is now compatible with GEF-CPT-Report 1,1,0. Read readme.txt for installation. Download the program (340kB, 2003-05-23).

GEF Library

- *gef2.dll*
  The old GefLibrary.dll is no longer supported. It has been replaced by gef2.dll. In the meantime a new version has been prepared: 3,1,1. You can download the dll via the file gef2dll.zip. This archive contains, next to the dll, a file that explains what has been changed and added. (version 3,1,1; date 2007-10-02)
- *Programmers documentation*
  In order to simplify the use of the dll, a programmers documentation has been prepared. Furthermore include files and an import library for Visual

C++, a unit for Delphi and the function definitions for Visual Basic have been added, as well as sample files in these languages, which we hope will inspire the programmer. The documentation of the functions has been brought up to date with gef2.dll version 3.1.1. The document with the info on the functions in the GEF2.DLL can be downloaded. (date 2007-10-21)

- *Error handling*
  Ideally GEF files should not contain errors. In the common day practice errors or omissions are introduced. The way application programmers should handle such errors, is explained in a document.. This document has been integrated into the programmers documentation.

~~NENGEO conversion tool~~

~~The NENGEO format has been used since years as a standard format for CPT's in the Netherlands. If you are running Windows XP, it is possible to convert a file in the NENGEO format to GEF format and vice versa by means of the GEF-NENGEO converion tool.~~

- ~~Copy the file nengeostekker.zip (300 kB, 2006-07-06) to a directory of your choice and unzip the .zip file.~~
- ~~Create a short-cut to the file runner.bat. This file can be found in the subdirectory bin, which has been created during extraction.~~

~~The conversion tool has been written in Java. In order to run the tool, you must install SUNs© java runtime engine; you can download it via SUN©s website. On the SUN© website you must choose 'Windows Off line' (situation: November 2006). First of all: DO read the installation instructions. Alternatively you can download SUN©s file jre-1_5_0_08-windows-i586-p.exe. Note: you must login on your PC as a (local) administrator in order to install the java runtime engine on your PC.~~

GEF-CPT-Report to Excel

An Excel conversion tool to import data of a GEF-CPT-Report file into an Excel spreadsheet can be downloaded (77kB, 2000-12-14)

Documentation

The full documentation of GEF-CPT-Report and many other standards can be found in the public table of standards.