



Plaxis 2D 2010

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Evolutions from PLAXIS v8 to PLAXIS v9

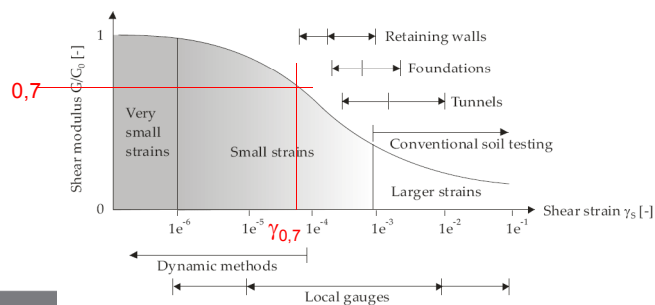
- Staged construction settings still available after re-meshing
- HSM small strain stiffness
- “Soil tests” tool for the simulation of laboratory tests
- Parameter variation

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Evolutions from PLAXIS v8 to PLAXIS v9

HS Small strain stiffness: new constitutive law

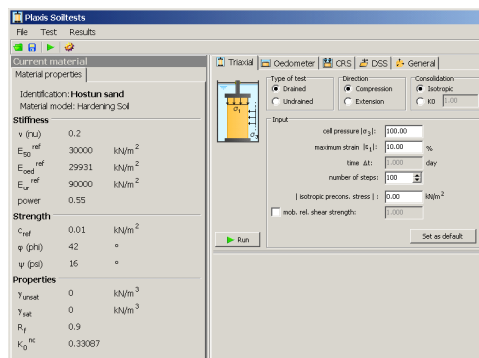
- Takes into account the stiffness for very small strains, in unloading/reloading (elastic behaviour).
- 2 extra soil properties required:
 - $G_{0,ref}$: shear modulus at very small strains for p_{ref}
 - $\gamma_{0,7}$: strain level for which $G/G_0 = 0,7$



Evolutions from PLAXIS v8 to PLAXIS v9

“Soil tests” tool for the simulation of laboratory tests

- Triaxial tests
- Oedometers
- Compression tests (CRS)
- Simple shear tests (DSS)
- « User-defined » tests (General)



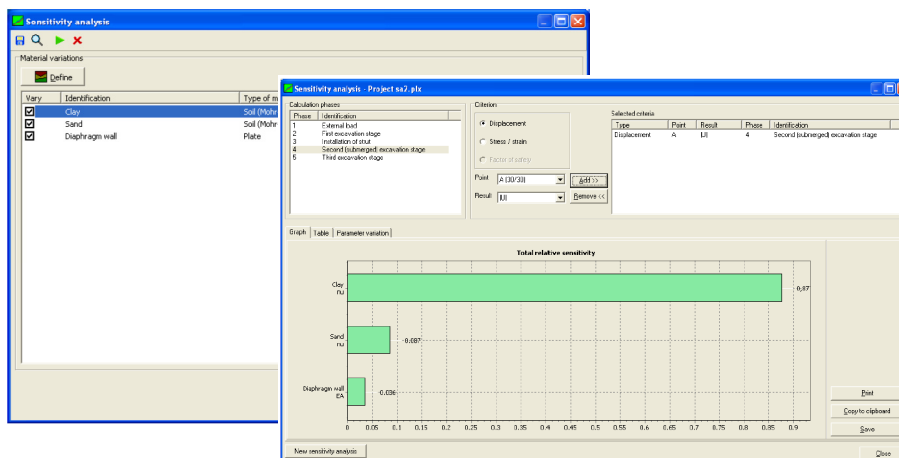
Evolutions from PLAXIS v8 to PLAXIS v9

Parameter variation and sensitivity analysis

- Variation of material data and some geometric settings (water level or load value for instance): all calculations have to be performed with the same mesh
- 2 options: “sensitivity analysis” and “parameter variation”
- “Sensitivity analysis” : individual influence of each parameter variations on a given result type for a given node or stress point (2n+1 calculations)
- “Parameter variation” : calculations for all combinations of lower and upper values for each parameter ($2^n + 1$ calculations)

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Evolutions from PLAXIS v8 to PLAXIS v9



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Evolutions from PLAXIS v9 to PLAXIS 2D 2010

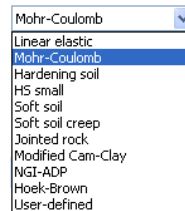
- **Constitutive laws**
- **Undrained behaviour**
- **Hydraulic calculations and coupling**
- **Calculation options**
- **Dynamic module**
- **User interface and output module**

Most of these new features are common developments for 2D and 3D software.

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Evolutions from PLAXIS v9 to PLAXIS 2D 2010

- **New soil constitutive laws:**
 - Hoek & Brown (rocks)
 - NGI-ADP model (clays with anisotropic undrained cohesion)
 - “User-defined” models available on request (list of available models on Plaxis website)



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Evolutions from PLAXIS v9 to PLAXIS 2D 2010

▪ Undrained behaviour

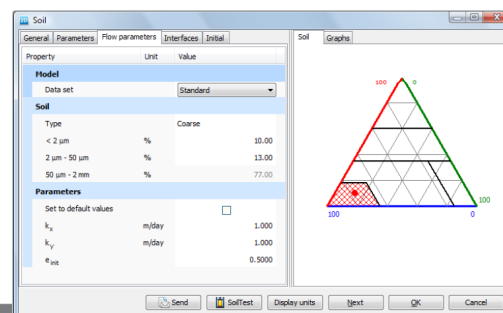
The definition of undrained conditions has been clarified within PLAXIS 2D 2010, with the choice between options “Undrained (A)”, “Undrained (B)” et “Undrained (C)”:

- **Undrained (A)** : effective stress analysis using effective parameters for stiffness and strength.
- **Undrained (B)** : effective stress analysis using effective parameters for stiffness and undrained strength parameters.
- **Undrained (C)** : total stress analysis with undrained parameters.

Evolutions from PLAXIS v9 to PLAXIS 2D 2010

▪ Hydraulic calculations and coupling

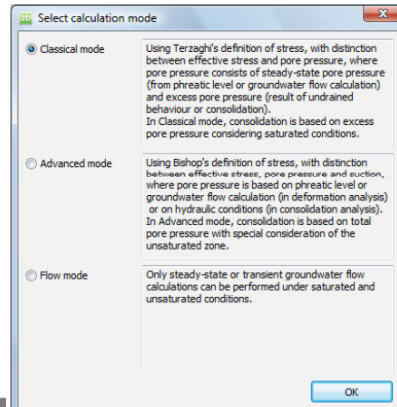
PlaxFlow has been fully integrated into PLAXIS 2D 2010, which enables now to perform transient flow calculations in addition to steady-state flow calculations (but transient flow calculations are still an option which should be purchased).



Evolutions from PLAXIS v9 to PLAXIS 2D 2010

Hydraulic calculations and coupling

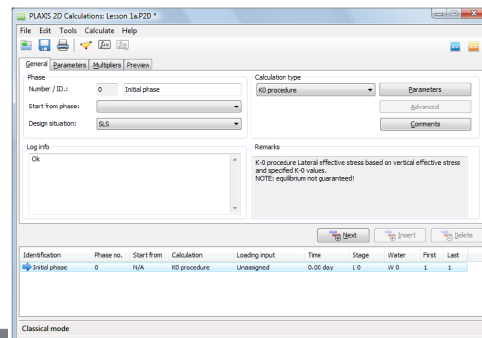
In the “Advanced” calculation mode, Plaxis enables fully coupling between deformations/hydraulic analysis, taking into account unsaturated behaviour and soil suctions above phreatic level.



Evolutions from PLAXIS v9 to PLAXIS 2D 2010

Calculation options

- Generation of initial stresses has been integrated as a preliminary phase in the staged-construction. It's possible using either K_0 procedure or gravity loading.
- Consolidation: it is possible to request the calculation to stop when reaching a given consolidate rate.



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- **Dynamics module**

New extended dynamics features:

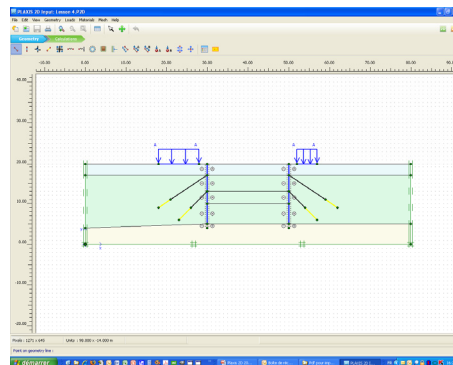
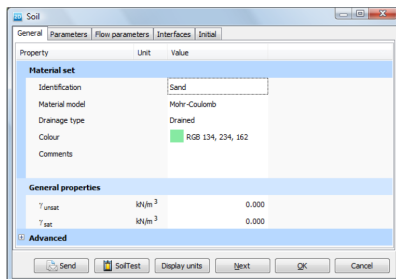
- Independant x, y accelerations components.
- Free vibration analysis.

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Evolutions from PLAXIS v9 to PLAXIS 2D 2010

- **The user interface and output module**

- Globally, the user interface was enhanced based on the features developed for the 3D program



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Evolutions from PLAXIS v9 to PLAXIS 2D 2010

▪ The user-interface and output module

- A special focus on the 2D output module, which is now the same as in the 3D program: it's much more efficient for graphical display and tables. Moreover, the "Curves" module has been fully included into the "Output" module and the video and report features have been updated. New result types are also available: "Forces" (to view forces and stresses in a group of structure elements), cross-sections that can be moved through the model ("moving cross sections"), values display, etc.

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Hardware specifications

- Pentium IV processor
- Windows XP, Vista 32 or 64 bits, 7 32 or 64 bits
Recommendation : Windows 7 / 64 bits
- Graphics card: 64 Mb minimum, compatible with Open GL (versions 1.3 and higher)
- Hard disk: minimum 500 Mo for installation, and 500 Mo working space
- RAM memory: minimum 2 Go
- Video mode: minimum 1024 x 768
Recommendation : > 1280 x 900

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