

Bentley[®]
Advancing Infrastructure



PLAXIS[®] 3D

Geotechnical Projects Made Easy

As infrastructure assets are crucially linked to subsurface environments, they are vulnerable to geotechnical risk.

PLAXIS 3D allows you to make safe, cost-efficient decisions that offer fast, comprehensive analysis methods in a user-friendly platform. The PLAXIS interface guides you across several modes to efficiently create models with a digital geotechnical workflow. The software is equipped with advanced features to tackle modeling challenges in the most complex geotechnical projects.

Solve Simple and Complex Infrastructure Challenges

More than ever, you require scalable and safe solutions for excavation. You can easily generate the sequence of construction for simple and complex excavations with the Staged Construction mode. PLAXIS 3D can facilitate steady-state groundwater flow calculations, including flow-related material parameters, boundary conditions, drains, and wells.

You also need solutions for the multifaceted interactions of soil structure in foundations for building, civil, and offshore structures. The challenges posed by these unique structures are easily handled within PLAXIS 3D. Interfaces and embedded pile elements allow the modeling of relative movements between soil and foundations, such as slipping and gapping. In addition, the core capability of realistic soil models, along with a complete portfolio of visualization abilities, deliver powerful results you can trust.

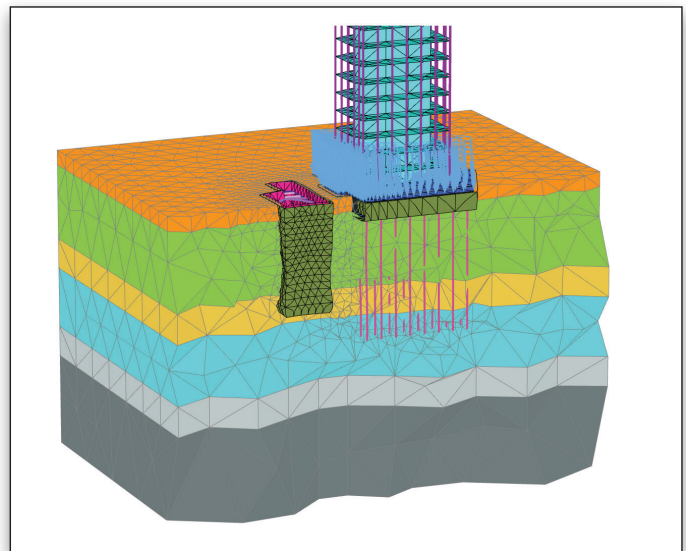
Fast and Efficient Finite Element Model Creation

Modeling behaviors of earth materials requires sound computational procedures. PLAXIS 3D provides a comprehensive solution for design and analysis of soils, rocks, and associated structures. Developed by geotechnical leaders with over 50 years of experience, Bentley's integrated products provide analysis support for optimizing designs, playing a valuable role in keeping infrastructure safe.

Enhanced Applications with Sound Computations

Soil structure interaction presents unique challenges to the geotechnical engineer. Calculation types offered, like plastic, consolidation, and safety analysis allow you to use PLAXIS 3D for a range of geotechnical problems. PLAXIS 3D is further enhanced with PlaxFlow for groundwater flow and Dynamics for dynamic load modeling.

Finite element modeling in full 3D is easy with drawing tools such as extrude, intersect, combine, and array operations. With multicore calculations and a



Excavation next to a building on a pile raft foundation

64-bit kernel, PLAXIS 3D handles simple and complex models as demonstrated by dozens of verification studies.

A large range of material models are offered to accurately model the behavior of various soils and rock types, which, along with PLAXIS 3D's robust calculation procedures, provide realistic assessment of stresses and displacements so you can see the full picture.

Strengthen Solutions with Digital Workflows

Drive efficiency through multidiscipline workflows from subsurface imports through design and analysis to various outputs. Engineers can easily work through a logical geotechnical digital workflow.

Users have total control over post processing. The adaptable Output program offers various ways to display forces, displacement, and stress or flow data, in contour, vector, and iso-surface plots. Cross-section applications allow areas of interest to be inspected in more detail and data can be exported from tables for further plotting purposes outside of PLAXIS.

PLAXIS 3D allows you to produce the world's most accurate and accessible geotechnical analyses. Bentley's geotechnical applications are backed by world-class expertise and used worldwide to support producing safer structures and environments for all.

System Requirements

Operating System

Windows 7 Professional 64-bit

Windows 8 Professional 64-bit

Windows 10 Pro 64-bit

Graphics Card

Required: GPU with 256 MB

OpenGL 1.3

Bentley recommends avoiding simple onboard graphics chips in favor of a discrete GPU from the nVidia GeForce or Quadro range with at least 128-bit bus and 1 GB of RAM, or equivalent solution from ATI/AMD.

Processor

Required: Dual Core CPU

Recommended: Quad Core CPU

Memory

Recommended: minimum 8 GB

Large projects may require more

Hard Disk

Minimum 2 GB free space on the partition where the Windows TEMP directory resides, and 2 GB free space on the partition where projects are saved. Large projects may require significantly more space on both partitions.

For best performance, ensure that the TEMP directory and the project directory reside on the same partition.

Video

Required: 1024 x 768 pixels, 32-bit color palette

Recommended: 1920 x 1080 pixels, 32-bit color palette



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PLAXIS 3D At-A-Glance

Modeling

- Elastoplasticity for beams and plates
- Revolve around axis tool *
- CAD import and export *
- Nonlinear geogrids: Elastoplastic (N-ε) and Viscoelastic (time-dependent)
- Cross and parallel permeability in interfaces
- Polar and rectangular array *
- Easy definition of rock bolts and girders in Tunnel Designer *
- Define excavation sequence in the Tunnel Designer *
- Automatic generation of staged construction phases for tunnels *
- Design arbitrary geometries combining NURBS curves and polycurves
- Automate processes with full command line support and remote scripting API *

Material Models

- Hardening soil
- HS small strain stiffness
- Soft soil (with and without creep)
- NGI-ADP model *
- Jointed rock
- Hoek-Brown with parameter guide *
- Sekiguchi-Ohta, viscid and inviscid *
- User-defined soil models *

Calculations

- Field stress initial calculation type *
- Full 64-bit software
- Multicore computing *
- Well-proven and robust calculation procedures
- Plastic calculation, consolidation analysis, and safety analysis
- Pseudo-static and dynamic analysis, including dynamics with consolidation *

- Facilities for steady-state groundwater flow calculations, including flow-related material parameters, boundary conditions, drains, and wells *
- Fully coupled flow-deformation analysis *
- Convenient and intuitive Phase explorer
- Automatic regeneration of construction stages for geometric changes

Results

- Structural forces from cylindrical and square volume piles
- Realistic assessment of stresses and displacements
- Output Model Explorer
- Movable cross-sections
- Extensive report and movie generator
- Contour, shading, iso-surface, and vectors plots
- Advanced data slicing

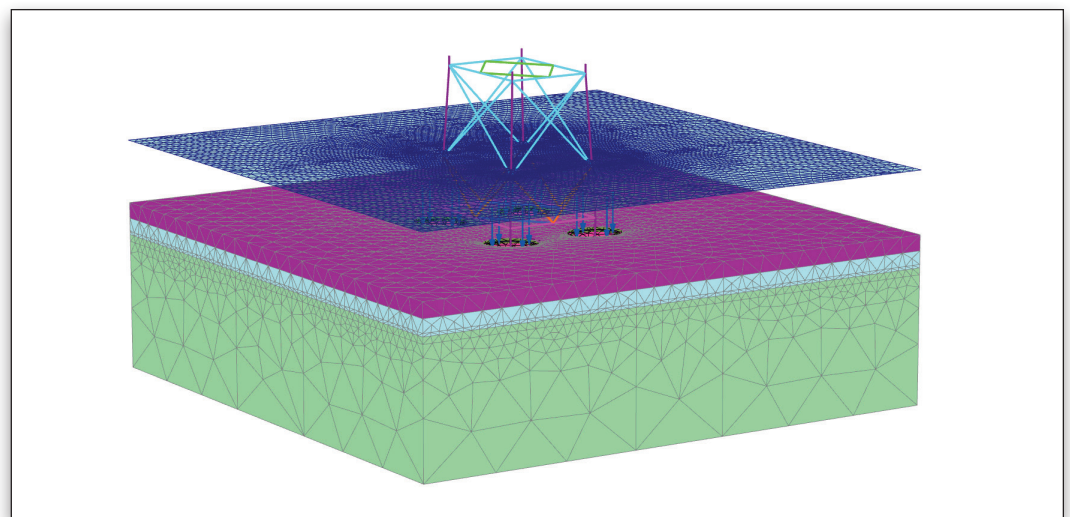
Usage

- Rock-mass response and surface settlements due to tunneling, mining, or reservoir depletion
- Slope stability and seepage analysis for earth and tailing dams, embankments, and open pit mines
- Predicting differential settlements of buildings adjacent to excavation pits
- Stability of and seepage into excavation pits, lateral displacements of diaphragm walls
- Bearing capacity analysis of suction anchors
- Calculate consolidation time for pore pressure dissipation in undrained loading problems

Subscription Entitlement Service Support

- Provides a universal ID to link together all activity within Bentley applications
- Manage license entitlements at a user level, without requiring activation keys or hardware dongles
- Access personal learn material, paths and history, timely product related news, automatic product updates and notifications

*Some Features are dependent on product level or SELECT entitlement.



Offshore platform with suction bucket foundation.