

Bentley[®]
Advancing Infrastructure



PLAXIS[®] 3D

3D Geotechnical Engineering Software

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. Perform 3D analysis of deformation and stability in geotechnical engineering and rock mechanics with PLAXIS 3D. The intuitive interface guides you across several modes to efficiently create models and is equipped with advanced features to conquer the most common or complex geotechnical projects.

Solve Simple and Complex Infrastructure Challenges

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

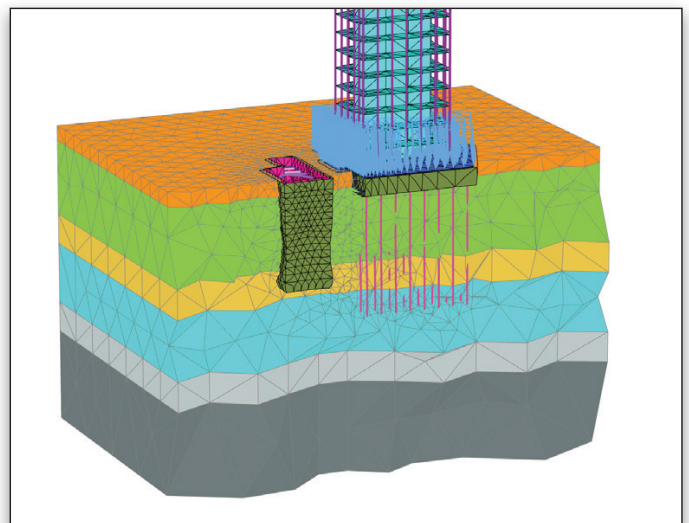
PLAXIS 3D offers solutions for the unique challenges of multifaceted interactions of soil structure in foundations for building, civil, and offshore structures. Interfaces and embedded pile elements allow modeling of relative movements between soil and foundations, such as slipping and gapping. In addition, 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 allow easy imports of data in many formats for quick model creation. PLAXIS also provides analysis support for optimizing designs, which plays 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, safety, consolidation,



Excavation next to a building on a pile raft foundation.

fully coupled flow-deformation, or dynamic analysis, allow you to use PLAXIS 3D for a range of geotechnical problems. Finite element modeling in full 3D is easy with drawing tools such as extrude, intersect, combine, and array operations. A large range of material models is 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 as demonstrated by dozens of verification studies.

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, acceleration, stress, or flow data in contour, vector, and iso-surface plots. Cross-section tools 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 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 optimum 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

**Find out about Bentley
at: www.bentley.com**

Contact Bentley

1-800-BENTLEY (1-800-236-8539)
Outside the US +1 610-458-5000

Global Office Listings

www.bentley.com/contact

PLAXIS 3D At-A-Glance

Modeling

- Automatic Swept Meshing for more efficient meshes
- Elastoplasticity for beams and plates
- Connections
- Design arbitrary geometries using Combine, Intersect, Extrude, Loft, Blendsurfaces and Revolve around axis tools
- CAD Import and Export *
- Nonlinear geogrids: Elastoplastic (N-ε) and Viscoelastic (time-dependent)
- Polar and rectangular array
- Tunnel Designer with easy definition of rock bolts, umbrella arches and girders*
- Define excavation sequence in the Tunnel Designer *
- Automatic generation of staged construction phases for tunnels *
- Automate processes with full command line support and remote scripting API *

Material Models

- Industry standard soil models: Hardening Soil, HSSmall, Soft Soil and Soft Soil Creep
- Rock models: Jointed rock, Hoek-Brown with parameter guide
- Concrete
- UDCAM-S with cyclic accumulation and optimization tool
- NGI-ADP
- User-defined soil models *
- Static and dynamic liquefaction models: NorSand, UBCSand

Calculations

- Well-proven and robust calculation procedures
- Multicore computing and 64-bit
- K0, gravity loading and field stress for initial stress calculations
- Distinguish between a plastic calculation, safety or consolidation analysis
- Facilities for steady-state or transient groundwater flow calculations, including flow-related material parameters, boundary conditions, drains, and wells
- Pseudo-static and dynamic analysis, including dynamics with consolidation and free field and compliant base boundary conditions, and moving point or line loads
- Specify load, acceleration or head variations through time with linear, harmonic, or table functions
- Fully coupled flow-deformation analysis
- Convenient and intuitive phase explorer
- Automatic regeneration of construction stages for geometric changes

Results

- Realistic assessment of stresses and displacements
- Vector, contour and iso-surfaces plots of displacement, stress, pore pressure, or acceleration
- Structural forces from cylindrical and square volume piles
- Curves Manager to create loads vs. displacement, Pseudospectral acceleration plots or cross-section curves
- Advanced data slicing
- Movable cross-sections
- Extensive report and movie generator
- PLAXIS 3D Viewer

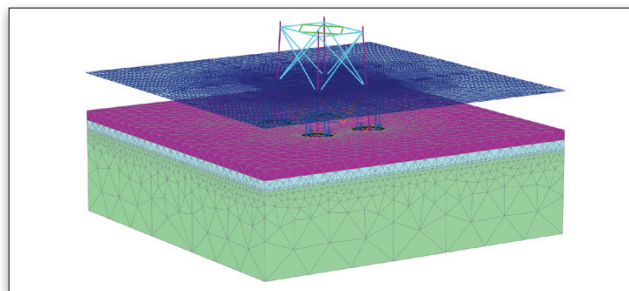
Usage

- 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
- Calculate consolidation time for pore pressure dissipation in undrained loading problems
- Bearing capacity and foundation settlement analysis for high-rise buildings, LNG tanks, and other structures (i.e. offshore suction anchors)
- Liquefaction analysis to predict the safety of critical infrastructure like levees or large dams under earthquake
- Stability of embankments for high-speed railways
- Seismic design of jetties, quays, walls, building foundations
- Stability of dams or levees under rapid drawdown, during seasonal variations of water level or during precipitation or flooding

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.