

Bentley PLAXIS[®] 3D Product Tiers

Find the right product level for your needs

Project teams and their requirements can change. The right geotechnical analysis tools can help you conquer common or complex challenges with confidence, no matter how requirements evolve.

PLAXIS 3D is a user-friendly, finite element package with trusted computation that is used by geotechnical engineers worldwide. We offer three flexible options, each tailored to the different geotechnical analysis needs of any firm.

- **PLAXIS 3D** offers all the essential functionality to perform everyday deformation and safety analysis for soil and rock, which do not require the consideration of creep, steady-state groundwater, consolidation analysis, or any time-dependent effects.
- **PLAXIS 3D Advanced** enhances your geotechnical design capabilities with more advanced features and material models to consider creep or flow-deformation coupling through consolidation analysis. Its multicore solver adds powerful functionality to accelerate problem solving.
- **PLAXIS 3D Ultimate** adds functionality to deal with the most challenging geotechnical projects. Analyze the effects of vibrations in the soil, such as earthquakes and moving traffic loads, and simulate complex hydrological conditions through time-dependent variations of water levels or flow functions on flow functions on model, or soil boundaries.

Features	PLAXIS 3D	PLAXIS 3D Advanced	PLAXIS 3D Ultimate	Available without GSE*
PROJECT AND MODEL PROPERTIES				
Selection of imperial and SI units for length and force	✓	✓	✓	✓
GEOMETRY CREATION				
Create Borehole Tool	✓	✓	✓	✓
Select, Move, Rotate, and Array Tools	✓	✓	✓	✓
Create Point, Line, Nurbs Curve, and Surface Tools	✓	✓	✓	✓
Polycurve Designer	✓	✓	✓	✓
Intersect, Combine, Extrude, Revolve around Axis, Loft Polycurve, and Blend Surfaces Tools	✓	✓	✓	✓
Create Point, Line, and Surface Load Tools	✓	✓	✓	✓
Create Point, Line, and Surface Prescribed Displacement Tools	✓	✓	✓	✓
Create Embedded Beam, Plate, Geogrid, Fixed-end Anchor, Node-to-Node Anchor, and Interface Tools	✓	✓	✓	✓
Create Surface Contraction Tool	✓	✓	✓	✓
Create Well, Line Drain, Surface Drain, and Surface Groundwater Flow Boundary Condition Tools		✓	✓	✓
Create Added Mass Tool			✓	✓
Create Moving Point and Line Load Tools			✓	✓
Tunnel Designer	✓	✓	✓	
Reinforcement (Rockbolts and Umbrella Arches) Definition in the Tunnel Designer	✓	✓	✓	
Girder/Beam Definition in the Tunnel Designer	✓	✓	✓	
Tunnel Splitting Tool	✓	✓	✓	
Definition of Excavation Sequence in the Tunnel Designer	✓	✓	✓	
Automatic Generation of Staged Construction Phases for Tunnels	✓	✓	✓	

*GSE – Geotechnical SELECT Entitlement.

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SOIL MATERIAL MODELS				
Linear Elastic	✓	✓	✓	✓
Mohr-Coulomb	✓	✓	✓	✓
Hardening Soil	✓	✓	✓	✓
Hardening Soil Small Strain Stiffness	✓	✓	✓	✓
Modified Cam-Clay	✓	✓	✓	✓
Jointed Rock Model	✓	✓	✓	✓
NGI-ADP	✓	✓	✓	✓
Hoek-Brown, with Parameter Guide	✓	✓	✓	✓
Soft Soil		✓	✓	✓
Soft Soil Creep		✓	✓	✓
Sekiguchi Ohta (Viscid)		✓	✓	✓
Sekiguchi Ohta (Inviscid)		✓	✓	✓
UDCAM-S and Cyclic Accumulation Tool		✓	✓	✓
Concrete		✓	✓	✓
User Defined Soil Models		✓	✓	
SHANSEP Mohr-Coulomb		✓	✓	
SHANSEP NGI-ADP		✓	✓	
OverConsolidated Clay		✓	✓	
Creep-SCLAY1S		✓	✓	
Masonry		✓	✓	
Visco-elastic Perfectly Plastic		✓	✓	
Generalized Hardening Soil		✓	✓	
Hypoplastic Model with Inter-granular Strain		✓	✓	
Isotropic Jointed Rock with Mohr-Coulomb Failure Criterion		✓	✓	
Hoek & Brown with Softening (Strength Softening and GSI Softening Models)		✓	✓	
N2PC-MCT Rock Creep (Norton-based Double Power Creep with MC and Tension Cut-off Failure Surface)		✓	✓	
NorSand		✓	✓	
Fluid		✓	✓	
UBC3D-PLM (Liquefaction)			✓	✓
SOIL MATERIAL DRAINAGE TYPES				
Drained	✓	✓	✓	✓
Undrained A	✓	✓	✓	✓
Undrained B	✓	✓	✓	✓
Undrained C	✓	✓	✓	✓
Nonporous	✓	✓	✓	✓

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STRUCTURAL ELEMENT MATERIAL TYPES				
Elastic and elastoplastic plates	✓	✓	✓	✓
Elastic, elastoplastic, elastoplastic (N-Epsilon), and viscoelastic geogrids	✓	✓	✓	✓
Elastic and elastoplastic beam	✓	✓	✓	✓
Elastic and elastoplastic embedded beam	✓	✓	✓	✓
Elastic, elastoplastic, and elastoplastic with residual strength fixed-end and node-to-node anchors	✓	✓	✓	✓
DYNAMIC AND GROUNDWATER FLOW MATERIAL PROPERTIES				
Groundwater properties, including soil classification systems (Hypres, USDA, etc.) and predefined data sets	✓	✓	✓	✓
Rayleigh damping for soil and structural elements			✓	✓
INITIAL CALCULATION TYPES				
K ₀ procedure	✓	✓	✓	✓
Gravity loading	✓	✓	✓	✓
Field stress	✓	✓	✓	✓
Groundwater flow only			✓	✓
PORE PRESSURE CALCULATION TYPES				
Phreatic level	✓	✓	✓	✓
Use pore pressures from previous phase	✓	✓	✓	✓
Steady state groundwater flow		✓	✓	✓
Transient groundwater flow			✓	✓
DEFORMATION CALCULATION TYPES				
Plastic	✓	✓	✓	✓
Safety	✓	✓	✓	✓
Consolidation		✓	✓	✓
Dynamic			✓	✓
Dynamic with consolidation			✓	✓
Fully coupled flow-deformation			✓	✓
PORE PRESSURE CALCULATION TYPES				
Phreatic level	✓	✓	✓	✓
Use pore pressures from previous phase	✓	✓	✓	✓
Steady state groundwater flow		✓	✓	✓
Transient groundwater flow			✓	✓

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MISCELLANEOUS FEATURES, TOOLS, AND INTEROPERABILITY				
Create cluster field stress	✓	✓	✓	✓
Staged construction and automatic regeneration of construction stages	✓	✓	✓	✓
Multicore and parallel calculation		✓	✓	✓
Pseudostatic analysis		✓	✓	✓
Generate stratigraphy from imported CPT Logs	✓	✓	✓	
SoilTest and parameter optimization tool	✓	✓	✓	
Calculation manager	✓	✓	✓	
CAD import (includes IFC, point clouds, parametric, triangulated surfaces, borehole top and bottom) and export	✓	✓	✓	
Command line input (input, output, and soiltest)	✓	✓	✓	✓
Command line autocomplete (input, output, and soiltest)	✓	✓	✓	
Commands runner (input, output, and soiltest)	✓	✓	✓	
Macro library and running macros (input, output, and soiltest)	✓	✓	✓	
Remote scripting for input, output, and soiltest	✓	✓	✓	
Scripting reference	✓	✓	✓	
ProjectWise integration, loading from and saving to ProjectWise server	✓	✓	✓	
Bentley Cloud Services: personal and project portal, project association	✓	✓	✓	
Soil structure interaction with structural packages through super element	✓	✓	✓	
Import of and export to ISM	✓	✓	✓	
PLAXIS 3D coupling tool for STAAD.Pro	✓	✓	✓	
TIME-DEPENDENT FUNCTIONS				
Time-dependent groundwater flow components for water levels, groundwater flow boundary conditions, and soil clusters			✓	✓
Definition of groundwater flow functions to specify time-dependent changes in head or prescribed discharge			✓	✓
Dynamic components in x and y direction for point and line loads or displacements			✓	✓
Definition of dynamic multipliers to create vibration and earthquake signals			✓	✓
Scaling tools, Fourier, response spectra, Arias intensity plots, and drift correction for input earthquake signals			✓	✓
Definition of movement functions to specify time-dependent changes in velocity			✓	✓

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DYNAMIC BOUNDARY CONDITIONS				
Viscous			✓	✓
Compliant base and free field boundaries			✓	✓
All nodes fixity			✓	✓
POSTPROCESSING AND RESULTS				
Various ways to display forces, displacements, stresses, and strains in contour, vector, and iso-surface plots	✓	✓	✓	✓
Tables of results with copy, sorting, and filter options	✓	✓	✓	✓
Curve manager to plot graphs of various results across a selection of calculation phases	✓	✓	✓	✓
Load-displacement curves	✓	✓	✓	✓
Cross-section tools and curves	✓	✓	✓	✓
Automatic and manual centerline extraction for structural forces plots of volumes piles	✓	✓	✓	✓
Resulting forces view	✓	✓	✓	✓
Plot annotations	✓	✓	✓	✓
Animations	✓	✓	✓	✓
Report generator	✓	✓	✓	✓
Printing and saving plots and curves	✓	✓	✓	✓
Plots and curves of accelerations, velocities, and structural forces envelopes for dynamic phases			✓	✓
Curve plots of pseudo-spectral acceleration, relative displacements, and switching between time and frequency representations			✓	✓
Plots and curves of pore pressures for phreatic level calculations	✓	✓	✓	✓
Plots and curves of pore pressures, saturation, suction, and Darcy flux for steady-state groundwater flow calculations		✓	✓	✓
Plots and curves of pore pressures, saturation, suction, and Darcy flux for transient groundwater flow or fully coupled flow deformation calculations			✓	✓
Export of results to Paraview	✓	✓	✓	