



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 soil and rock such as earthquakes and moving traffic loads, and simulate complex hydrological conditions through time-dependent variations of water levels or flow functions on model or soil boundaries.

PROJECT AND MODEL PROPERTIES	PLAXIS 3D	PLAXIS 3D Advanced	PLAXIS 3D Ultimate	Available without GSE*
• 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 management	•	•	•	•
• Create point, line, and surface load tools	•	•	•	•
• Create point, line, and surface prescribed displacement tools	•	•	•	•
• Create embedded beam, cable, beam, plate, geogrid, fixed-end anchor, node-to-node anchor, interface, and discontinuity 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, cables, node-to-node anchors 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.

MATERIAL MODELS	PLAXIS 3D	PLAXIS 3D Advanced	PLAXIS 3D Ultimate	Available without GSE*
· 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		•	•	
· SANISAND-MS		•	•	
· Over consolidated clay		•	•	
· Creep-SCLAY1S		•	•	
· Masonry		•	•	
· Visco-elastic perfectly plastic		•	•	
· Generalized hardening soil		•	•	
· Hypoplastic model with inter-granular strain		•	•	
· Swelling rock		•	•	
· Isotropic jointed rock with Mohr-Coulomb failure criterion		•	•	
· Hoek-Brown with softening (strength softening and GSI softening models)		•	•	
· CreepRock-N2PC and N2PC-MCT (Norton-based double power creep with or without MC and tension cut-off failure surface)		•	•	
· NorSand		•	•	
· Clay And Sand Model (CASM)		•	•	
· Fluid		•	•	
· Barcelona Basic Model			•	
· UBC3D-PLM (liquefaction)			•	•

MATERIAL DRAINAGE TYPES

· Drained	•	•	•	•
· Undrained A	•	•	•	•
· Undrained B	•	•	•	•
· Undrained C	•	•	•	•
· Nonporous	•	•	•	•

STRUCTURAL ELEMENT MATERIAL TYPES

· Elastic and elastoplastic plates	•	•	•	•
· Mohr-Coulomb for discontinuities	•	•	•	•
· Elastic, elastoplastic, elastoplastic (N-Epsilon), and viscoelastic geogrids	•	•	•	•
· Elastic and elastoplastic beam	•	•	•	•
· Elastic and elastoplastic embedded beam	•	•	•	•
· Elastic and elastoplastic cables	•	•	•	•
· Elastic, elastoplastic, and elastoplastic with residual strength fixed-end and node-to-node anchors	•	•	•	•

DYNAMIC AND GROUNDWATER FLOW MATERIAL PROPERTIES	PLAXIS 3D	PLAXIS 3D Advanced	PLAXIS 3D Ultimate	Available without GSE*
· 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	•	•	•	•
· 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			•	•
MISCELLANEOUS FEATURES, TOOLS, AND INTEROPERABILITY				
· Create cluster field stress	•	•	•	•
· Staged construction and automatic regeneration of construction stages	•	•	•	•
· Multicore and parallel calculation		•	•	•
· Design approaches		•	•	•
· 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	•	•	•	

*IFCRoof, IFCSlab, IFCFooting, IFCPile, IFCBeam, IFCPlate, IFCWall, IFCColumn

MISCELLANEOUS FEATURES, TOOLS, AND INTEROPERABILITY	PLAXIS 3D	PLAXIS 3D Advanced	PLAXIS 3D Ultimate	Available without GSE*
• 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	•	•	•	
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			•	•
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 isosurface 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	•	•	•	

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