BUILD3D

3D Geotechnical Geometry Design

BUILD3D is a revolutionary software tool for constructing 3D analysis-ready geometries. Its powerful feature-based design allows for quick construction of 3D geotechnical models with complex topography or geology, sweeping tunnels or rivers, and 3D geometry from CAD files.

SEAMLESS INTEGRATION

GeoStudio's 3D analysis products include basic 3D construction tools. Users can easily add the full-featured BUILD3D to unlock several additional tools enabling unlimited geometry creation.

FEATURE-BASED DESIGN

BUILD3D is a feature-based geometry creation tool that allows modifications of a model at any point in the Design History. Changes are quickly and automatically cascaded through the entire model geometry, providing huge time-savings.

POWERFUL OPERATIONS

A suite of powerful Boolean operations are available in BUILD3D, including: intersect, cut, merge, and imprint. These operations provide the necessary tools for creating 3D geometries from scratch or modifying geometries imported from STEP files.
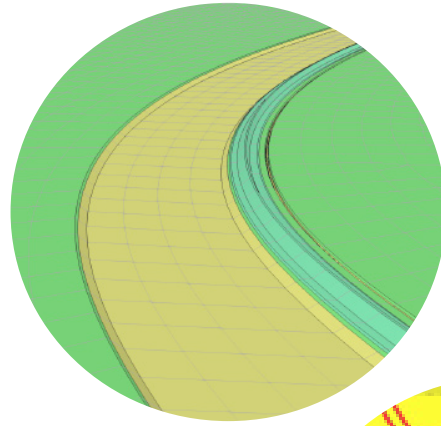
CLEAN MESH GENERATION

Generate the finite element mesh throughout your 3D domain with the click of a button. BUILD3D automatically produces a clean mesh, removing the need to spend hours on manual mesh adjustments and material and boundary condition assignments.

BUILD3D provides the tools to create any geometry

DAMS AND LEVEES

Import complex surface topography or stratigraphic boundaries from CAD files and use the imported surfaces to generate regions. Import the dam geometry or use the plane and sketch tools to generate a dam in BUILD3D. Use the Sweep feature to sweep a levee cross-section along a natural river path.
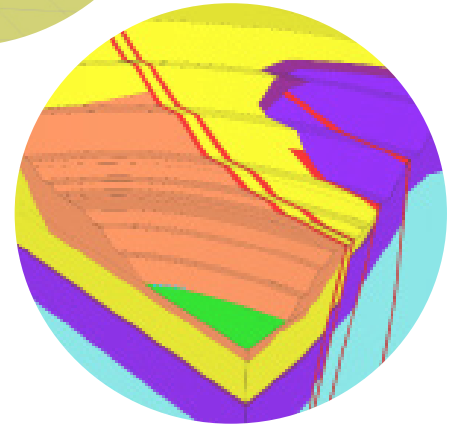
ROADS, BRIDGES, AND EMBANKMENTS

Use BUILD3D's plane and sketch features to generate road and embankment geometries, or import these from CAD files. Sweep a road and embankment cross-section along a defined path.
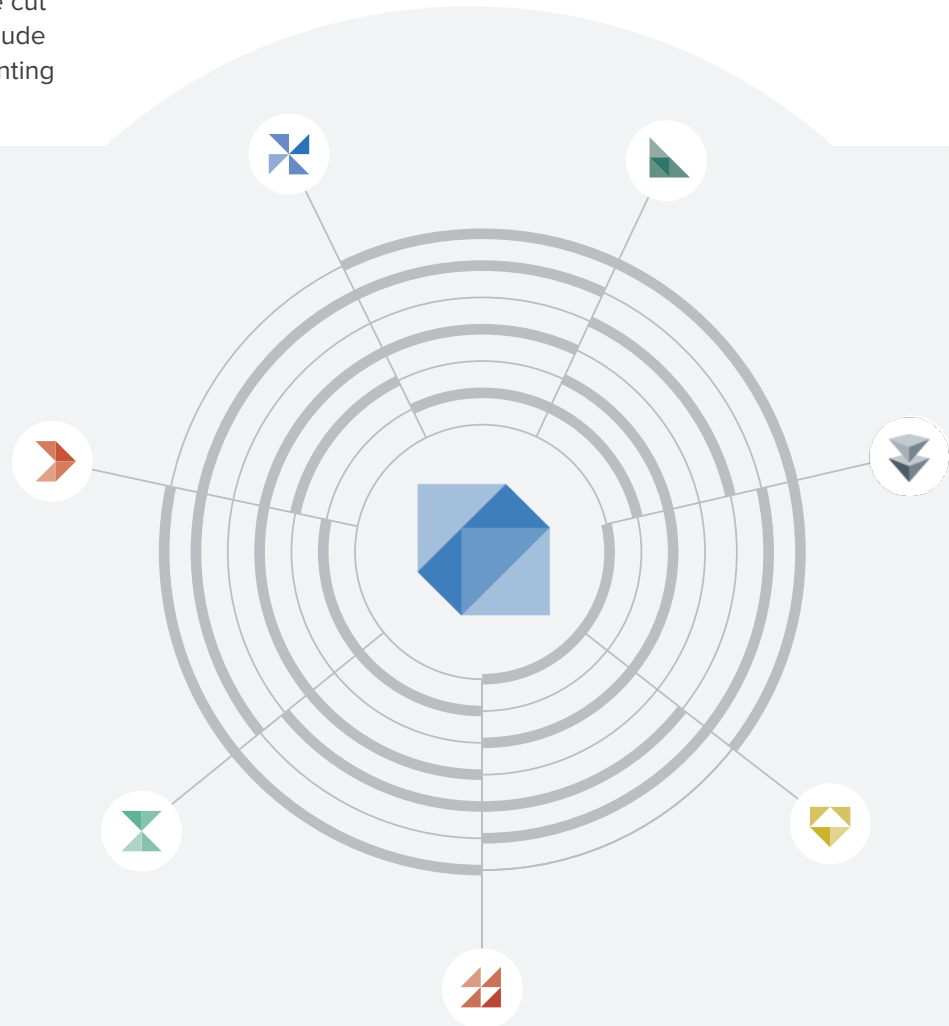
OPEN PIT MINES

Import pit shell surfaces and geological formations from CAD files. Use the cut features to remove material in the pit, and set up multiple analyses to model pit excavation. These analyses can be used to assess groundwater seepage and stability over time.
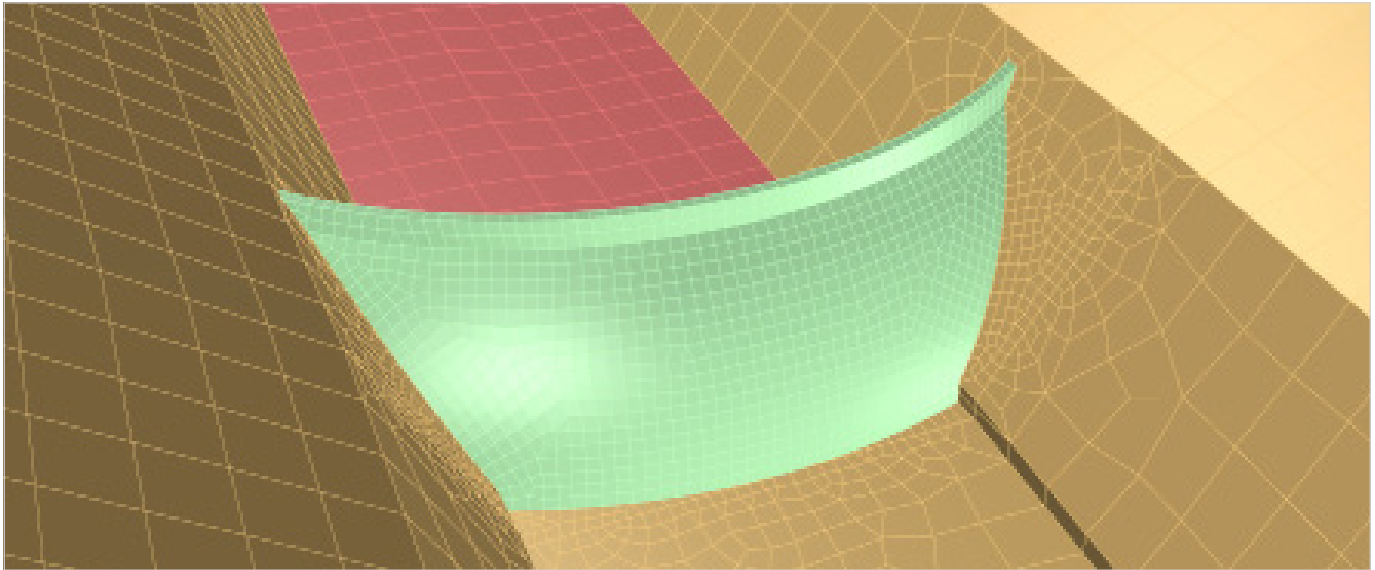
UNDERGROUND EXCAVATIONS

Use the Sweep tool to generate a body representing a tunnel cutting through soil or rock regions. Use the cut operations to remove material from the tunnel. Include multiple geometries in a single project file representing tunnel construction over time.

BUILD3D creates complex geometric models that can be used with all GeoStudio 3D analysis products

BUILD3D comprehensive feature set

- ✓ Feature-based geometry creation offers significant time-savings
- ✓ NURBS-based geometry for greater flexibility and precision
- ✓ Import 2D GeoStudio analyses with materials and boundary conditions

- ✓ Import/export STEP (CAD) files
- ✓ Intuitive sketch tools including sketch, plane, sweep, extrude
- ✓ Easy Boolean operations: intersect, cut, merge and imprint
- ✓ Materials, boundary conditions applied to geometry objects

- ✓ Large model support
- ✓ Clean mesh generation
- ✓ Tetrahedral and hexahedral options for mesh definition
- ✓ Powerful results visualization including surface contours and isosurfaces

FEATURE	BUILD3D	BUILD3D LITE[1]	DESCRIPTION
Sketch	✓	✓	Sketch on redefined construction planes
Plane	✓		Create arbitrarily defined planes
Edit Plane	✓		Translate, rotate construction planes
Fit Plane	✓		Create irregular surfaces (e.g. topography)
Extrude	✓	✓	Extrude a 2D section into 3D with specified slice positions
Sweep	✓		Sweep a 2D section along an arbitrary path
Merge	✓	✓	Merge geometry to produce better meshes
Cut	✓		Five powerful Boolean cutting operations
Imprint	✓		Boundary condition definition at locations on 3D surfaces
Section	✓	✓	Create 2D analyses by taking sections through 3D model
Make Bodies	✓		Create 3D surfaces and polylines directly from sketches
Delete Body	✓	✓	Remove body to simulate excavations or simplify model
Import/Export File	✓		Exchange STEP geometry with CAD
Import Analysis	✓	✓	Create a 3D analysis from 2D analysis

1 BUILD3D Lite is provided with GeoStudio at no cost.

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