

## SVDESIGNER™

### Rapid 3D Geotechnical Prototyping for Geotechnical Engineers

Merging and analyzing data can be a challenge. As a geotechnical engineer, your expertise is working with topology, boreholes, piezometers, and other field instrumentation data, as well as engineering staged construction and design. The challenge lies in organizing the data and utilizing simple and complex geometry to create conceptual models. With Bentley's open modeling environment, you gain the ability to visualize and manipulate geotechnical site data.

#### 3D Conceptual Modeling and Visualization

One of the most difficult aspects of designing 3D models is manipulating 3D geometry. Whether it is the representation of complex geostrata or the representation of geotechnical designs such as roads, embankments, or tailing dams – these structures are often most suited for 3D analysis but are difficult to describe to the computer. This 3D conceptual design application has been specifically built for geotechnical engineers and will bridge the gap between raw data and conceptual models.

#### Import Digitally Faster

Geostrata can be imported based on borehole data, or from one of many different file formats. Surfaces can be represented as grids or as triangulated surfaces (TINs). Once 3D geometry is created, it can be exported to numerical models in the form of 2D slices or as full 3D models. Overall design and prototyping time are reduced in this system. Creating 3D numerical models doesn't have to be complicated. They can be created in a short time frame simply and efficiently. Your time and expertise are valuable – spend it analyzing for better solutions, not designing geometry.

An interface that allows the import of lithology data from a CSV file or a borehole database has recently been incorporated into SVDESIGNER. The new interface is comprehensive, and it allows boreholes to be located on a site, visualized in 3D and integrated with design or topology data, while allowing the development of fence diagrams and 3D interpolation of geostrata layers. The import feature provides an ability to transition borehole data into a full 3D conceptual model of a site for subsequent numerical modeling. The most common 3D file storage types are supported to ensure easy import. This allows SVDESIGNER to provide an amalgamated 3D site view of relevant data on a consistent coordinate system.

#### Design 3D Conceptual Models

A rich variety of functionality is implemented into SVDESIGNER to allow editing of existing geometry to represent the integration of new

geotechnical designs with existing topology. There are also advanced features in SVDESIGNER to handle intersections of various surfaces, so 3D geometry can be represented accurately. Users can produce exact meshes when objects overlap, and pitchouts become easily handled in this robust application. In addition, you can simplify geometry by filtering out unwanted or unneeded sections. The following surface cuts and excavations can be handled efficiently with SVDESIGNER:

- Define a road cut into the side of a hill, or the shape of an open pit.
- Construction sequences can be built by building layers of material from primitives to create roads, embankments, earth dams, or user-defined shapes.
- Generate a set of slurried depositional surfaces for a user-defined filling scenario.
- Volumes of material can be calculated to aid in construction activities.
- Multiple 3D model-building methodologies are available, including extrusions, 2D cross-section stitching, 3D layer cake or the material volume method.

SVDESIGNER conceptual models can be exported to any of the SoilVision® numerical modeling modules for analysis or to other applications to be used for subsequent visualization and analysis in the areas of slope stability, stress/strain or seepage.

#### Produce Visually Appealing Models

Access state-of-the-art, report-ready graphical presentation of results with no additional manipulation required. The 3D immersive graphics engine provides performance advantages and responsiveness in the creation and manipulation of simple to large and complex models. Present high-quality digital twin/model visualizations of designs to share your sustainable solutions. Your data interoperates with other Bentley analysis and design applications. Win bids with image draping of aerial site photos or fly-bys of sites that can be created and exported as animations.

We are taking 3D geotechnical analysis to new levels and broader interoperability. We see the big picture – from subsurface imports, through design, to FOS analysis – so YOU see the big picture.

## System Requirements

### Operating System

Windows 7 (SP1 or later),  
Windows 8, Windows 10

### Processor

Intel Pentium-based or AMD  
Athlon-based PC or workstation

### Memory

4 GB minimum, 8 GB recommended,  
(more memory typically results in  
better performance)

### Display Resolution

1024 px by 768 px or better

### Hard Disk

2 GB free disk space

### Video

256 MB VRAM minimum,  
with full support for OpenGL 3.3



### Find out more at:

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## SVDESIGNER At-A-Glance

### Display

- 2D and 3D views
- Cross-sectional views
- Configurable display features
- MSAA (antialiasing) support

### Geometry

- Define regions
- Define surface grids
- Define surface meshes (TINs)
- Define polygons, polylines, scatter points
- Define piezometers
- Define boreholes and fence diagrams
- CAD drawing functions available
- Customizable display features available
- Elevation and thickness contouring
- Reality modeling/image draping
- Live sensors
- Slurried deposition
- Advanced construction features available

### Import

- Import boreholes from gINT
- Import boreholes from CSV
- Import block models from CSV
- Import from OBJ
- Import from 3DS
- Import from DAT (TecPlot format)
- Import from Plain ASCII/CSV
- Import from DEM
- Import from DTM
- Import from DXF
- Import from Esri grid
- Import from STL
- Import from LandXML

### Export

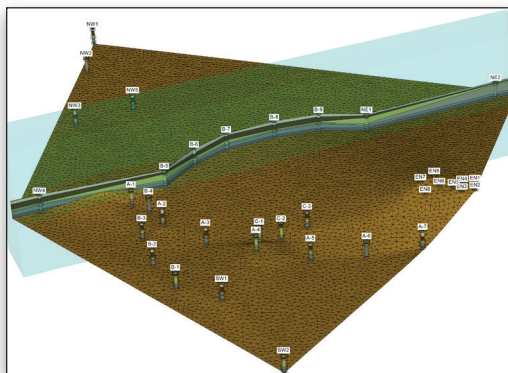
- Export data to flat file (CSV)
- Export data to OBJ
- Export data to STL

### Calculations

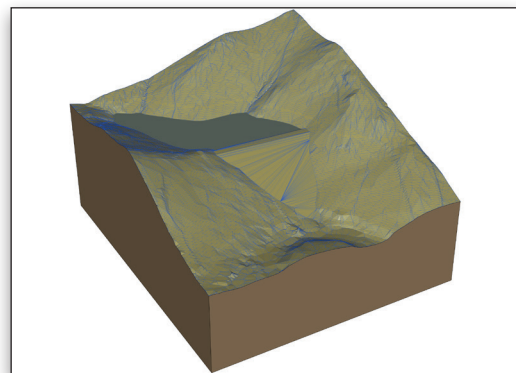
- Manual data input/editing
- Data transformations (translation, rotation, scaling)
- Surface adjustment (planar calculations, overlap testing)
- Kriging (for generating grids)
- Extrusion (generate surfaces from cross-sections)
- Set operations (union, xor, subtraction)
- Surface intersections
- Surface clean up and repair
- Mesh refinement
- Surface remeshing
- Merge operations (combine surfaces, regions, polygons)
- Boundary calculations
- Volume calculations
- Filling curve
- Slicing
- Surface cuts and excavations
- Build surfaces from boreholes and fence diagrams
- Depositional surfaces

### 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



*Quickly and easily create meshes from your borehole data.*



*Accurately represent your site data in 3D.*