

# MineSight Interactive Planner Improved Cut Design

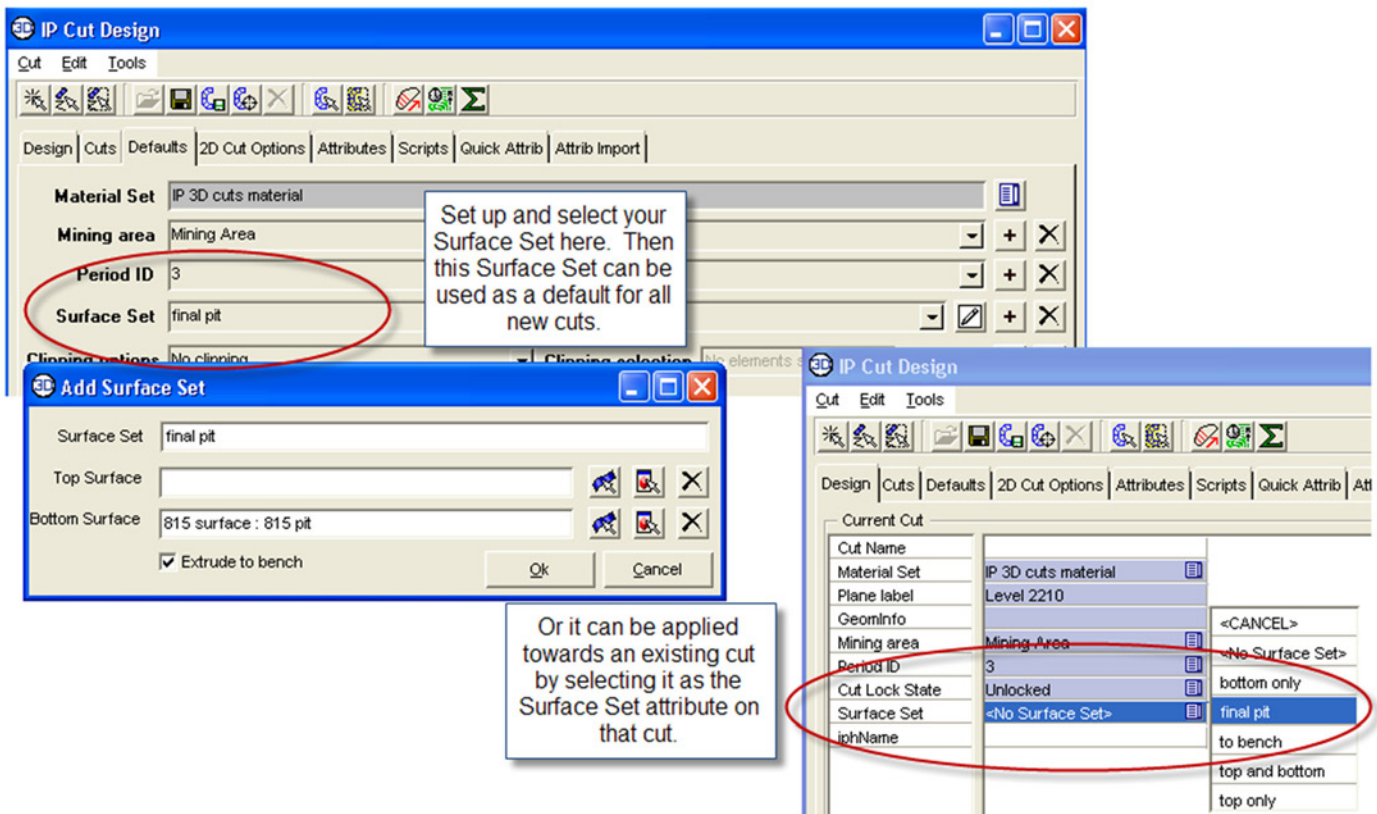
## Automatic 3D Cuts and Cut Clipping

Have you ever over or under-estimated the amount of material in your schedule because of overlapping cuts or gaps between cuts? Odds are that you didn't use point snapping when digitizing your cuts. This usually means going back to remake or edit the cuts, wasting valuable time. The new polygonal and surface clipping features available in version 6.10 of MineSight Interactive Planner (MSIP), allow you to digitize overlapping cuts and cuts that go beyond the pit extents, without negative consequences. And with the new ability to extrude 2D cuts to 3D solids, you can digitize polygonal cuts and build solids from them automatically, based on as-mined surfaces for more accurate volumetrics.

### 3D CUT SOLIDS FROM 2D POLYGONAL CUTS

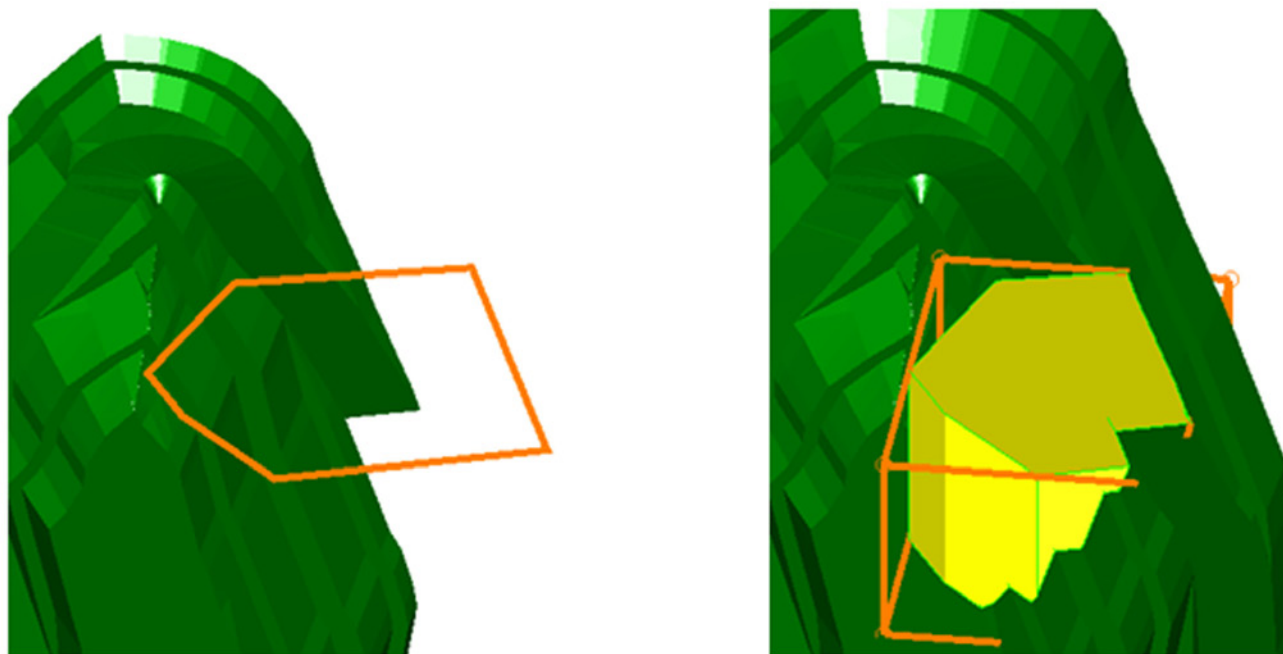
On the **Design Cuts | Defaults** tab, there is a new **Surface Set** field to define the top and/or bottom surfaces to use for cut solid formation (Figure 1).

The new system attribute "Surface Set" enables defined Surface Sets to be applied to cuts. Simply define a Surface Set, containing either a Top Surface or Bottom Surface, or both, and these surfaces can be used as extrude boundaries for any new or existing cut. Just apply a defined Surface Set to the Surface Set attribute for a cut and it will be automatically extruded into a 3D solid. A Surface Set can also be set as a default and will then be applied to all new polygonal cuts, creating solid cuts on-the-fly as you digitize.



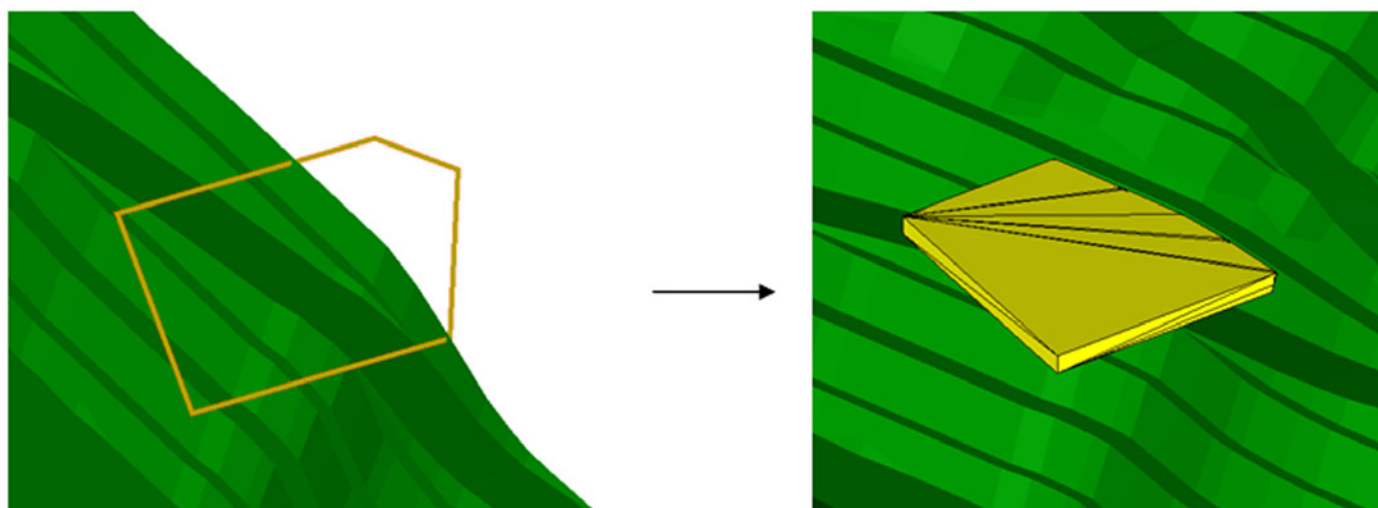
↑ Figure 1 Surface Sets allow 2D cuts to be automatically extruded to selected surfaces.

Here are a few examples. A cut can be extruded down or up to a single surface (Figure 2). This provides a quick way to determine what reserves are left in a pit by digitizing around a pit shell, and making a solid to the base of the pit.



*Figure 2* Result of a 2D cut extruded down and clipped to a bottom surface to form a 3D cut solid.

Cuts can also be extruded to a bench toe and crest, and then clipped against a pit shell (Figure 3). This provides a more accurate representation of mined material than can be achieved using 2D polygonal cuts, as it takes into account the batter/face slope.



*Figure 3* Result of a 2D cut extruded to bench and then clipped to surface.

Cut solids can also be created from a polygonal cut between two surfaces (Figure 4). This can be used to get the material between a current as-mined surface and a planned surface on the next bench, or for inclined benches.

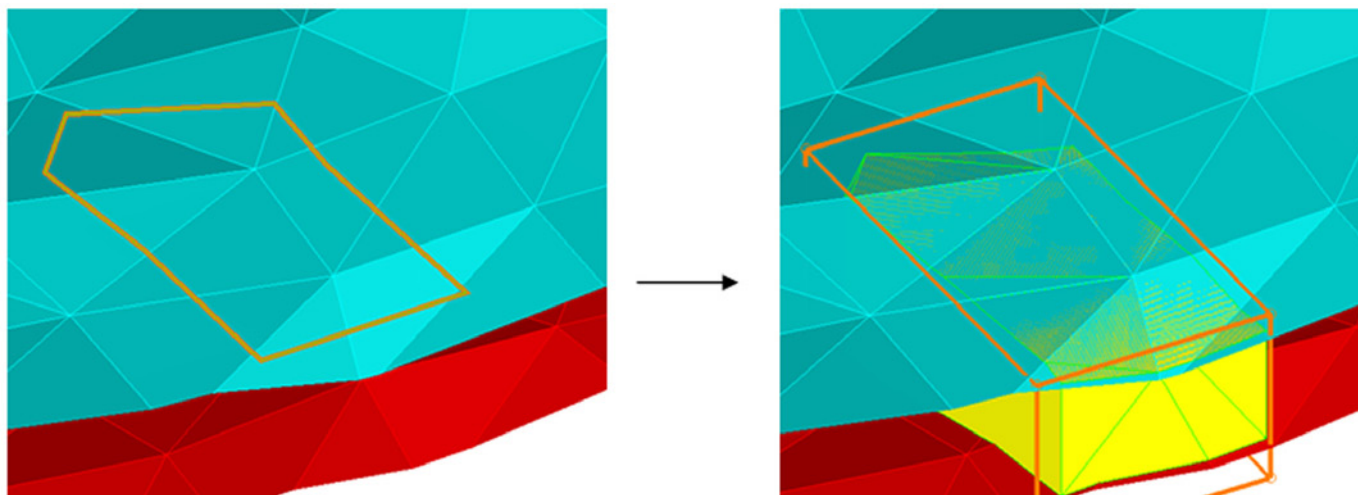


Figure 4 Solid produced from a 2D cut extruded to upper and lower surfaces.

The original polygon digitized by the user, the defined Surface Set, and the resulting cut solid are all stored in the MineSight Planning Database (MSPD). This allows the Surface Set to be changed at any time, and a new cut solid to be generated from the original polygon with updated surface geometry.

## CUT CLIPPING

There are three new clipping options on the **Design Cuts | Defaults** tab that can be automatically applied when digitizing polygonal cuts (Figure 5). Newly digitized cuts can be clipped inside of existing cuts, clipped outside of selected geometry, or both. With these new options, your painstakingly precise snapping days are over.

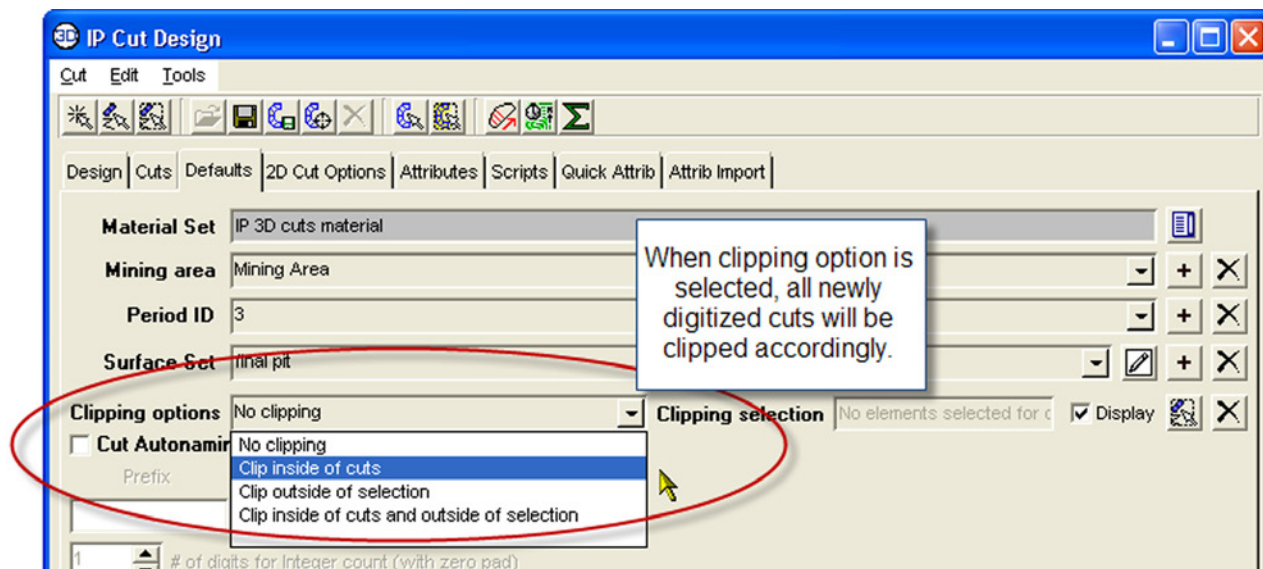
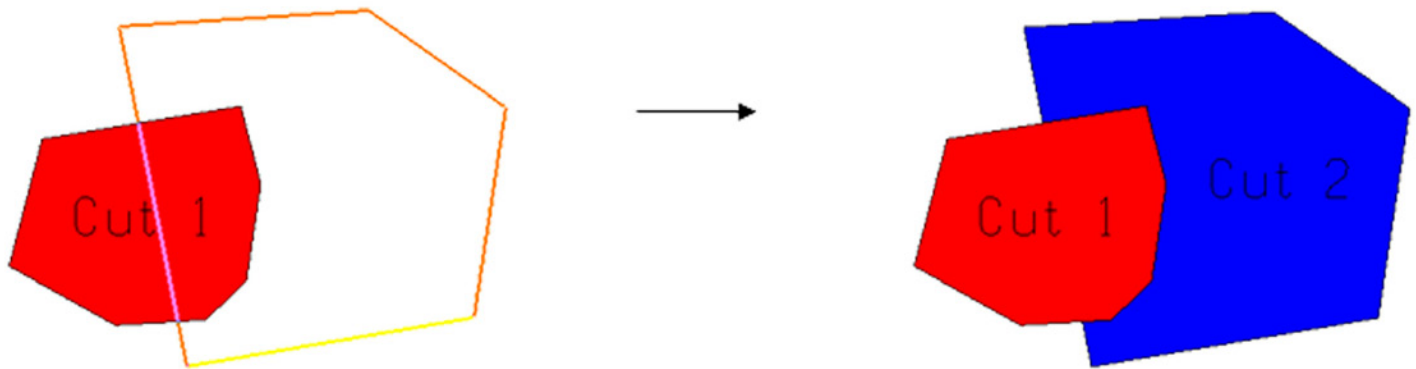


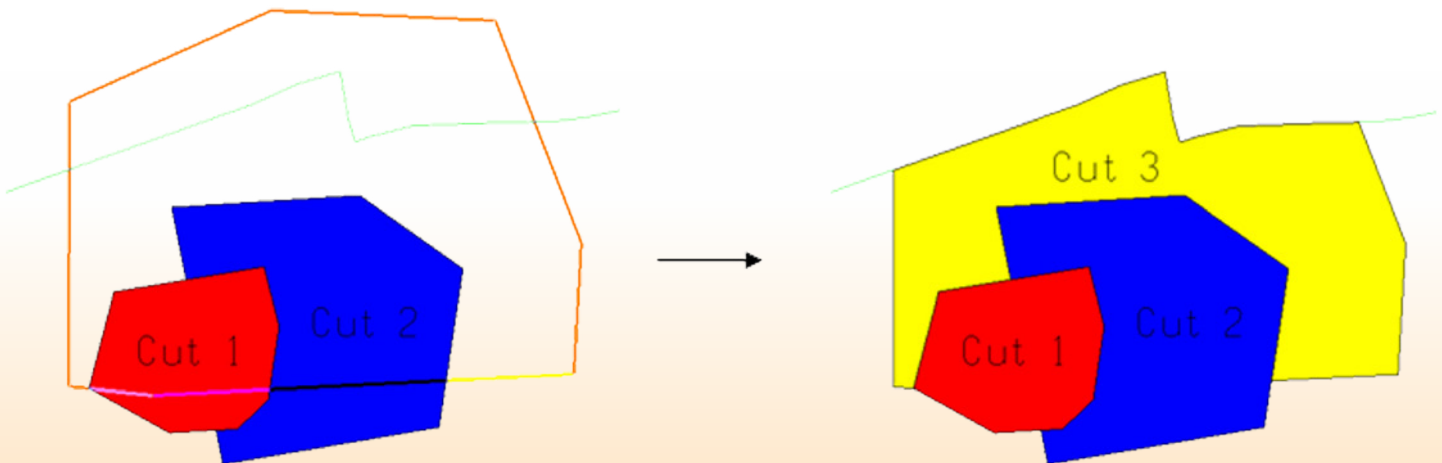
Figure 5 The new cut Clipping options.

For example, cuts can be clipped to existing cuts (Figure 6), removing the need to snap the points of neighboring cuts together.



*Figure 6 Showing a new cut (Cut 2) being digitized and then clipped to an existing cut (Cut 1).*

Cuts may also be clipped to other external geometry not in the IP Set, such as a pit shell, using a combination of clipping against cuts and selected geometry (Figure 7).



*Figure 7 Showing a new cut (Cut 3) being digitized and then clipped to existing cuts (Cut 1 and Cut 2), and a pit shell (green).*

These new clipping options can also be used in conjunction with the Surface Set attribute to create clipped solids.

These enhancements remove a lot of the manual work required when designing cuts in MSIP, and allow you to do your job more quickly and efficiently.