
Tutorial Summary

In this tutorial, we will include field stresses in the analysis of an underground wedge. The inclusion of Field Stress in the Unwedge analysis will usually increase the safety factor of a wedge, due to the additional "clamping" normal stress on the wedge planes. *Field stress can never lower the safety factor of a wedge, in the Unwedge implementation.*
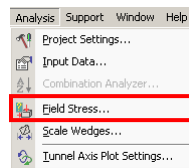
Tutorial Steps

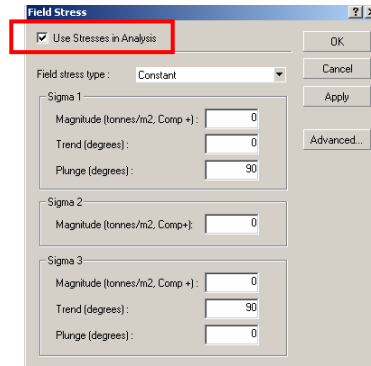1. From the Unwedge Examples folder, open the file (stress.weg)
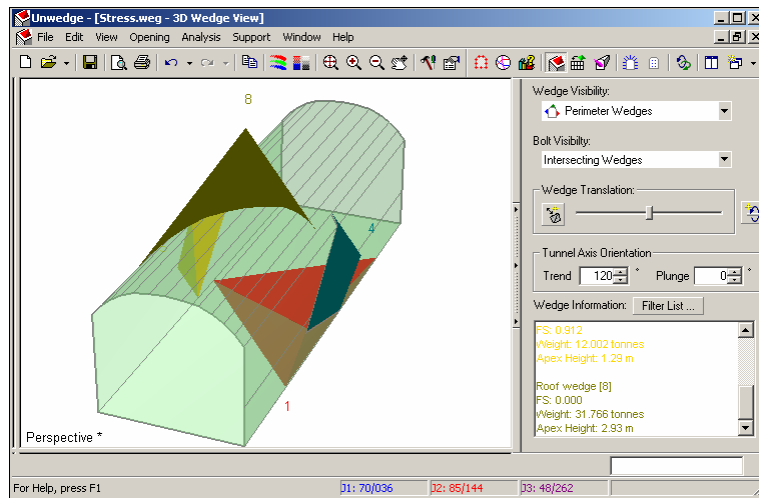
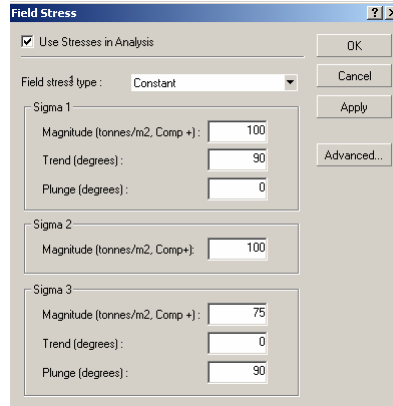Note: The roof wedge (wedge #8) has a Factor of Safety of 0.

2. Select the Field Stress option from the Analysis menu.

3. In the Field Stress dialog, select the checkbox for including stresses in the analysis.

4. Unwedge allows either a Constant or a Gravitational field stress. For this tutorial, select the Constant field stress option.

5. Enter the following field stresses in the dialog:
   Sigma 1 = 100 tonnes/m^2 oriented at 90/0
   Sigma 2 = 100 tonnes/m^2
   Sigma 3 = 75 tonnes/m^2 oriented at 0/90
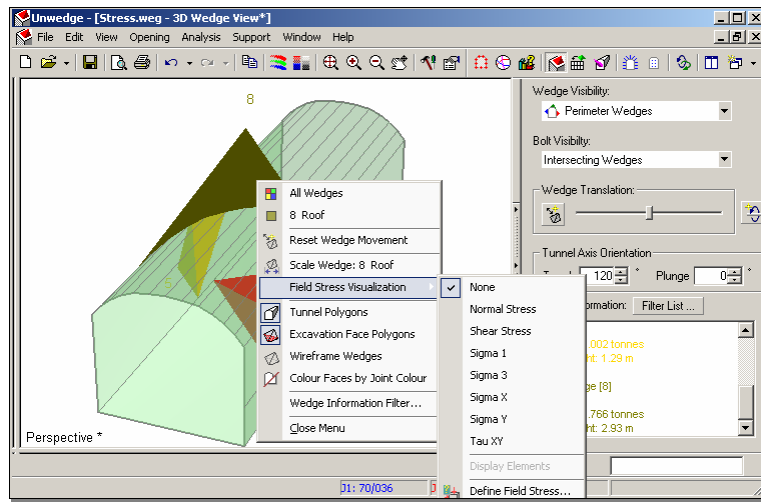   (Stress orientations are entered as Trend and Plunge)

Notice that after applying field stress, the Factor of Safety for the roof wedge (wedge #8) has changed from 0 to 5 (see the Wedge Information panel in the sidebar).

6. To view induced stress contours on wedges, click the right mouse button ON a wedge, and choose the Field Stress Visualization option from the popup menu.


7. To view induced normal stress contours on the wedges select the Normal Stress option.
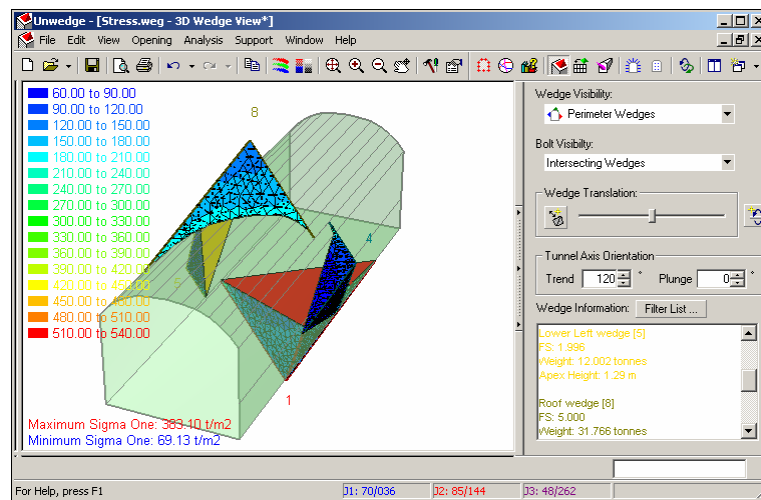
The Field Stress legend in the upper left corner indicates the values of the stress contours. The display of the field stress legend can be toggled on or off in the Display Options dialog.

Values of stress at any point can also be obtained by hovering the mouse over the Field Stress contours on a wedge plane. The stress at that point will be displayed in a popup data tip.

8. As an additional exercise, view some of the other induced stresses such as shear stress (as shown in the following image).
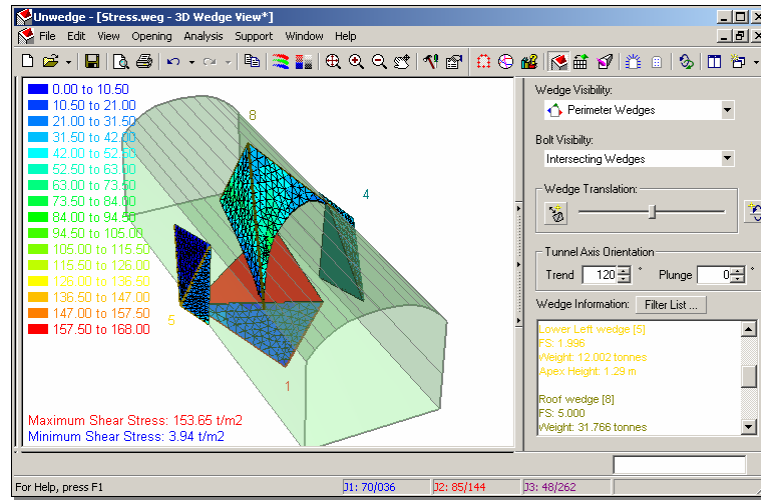
This concludes our Field Stress Tutorial