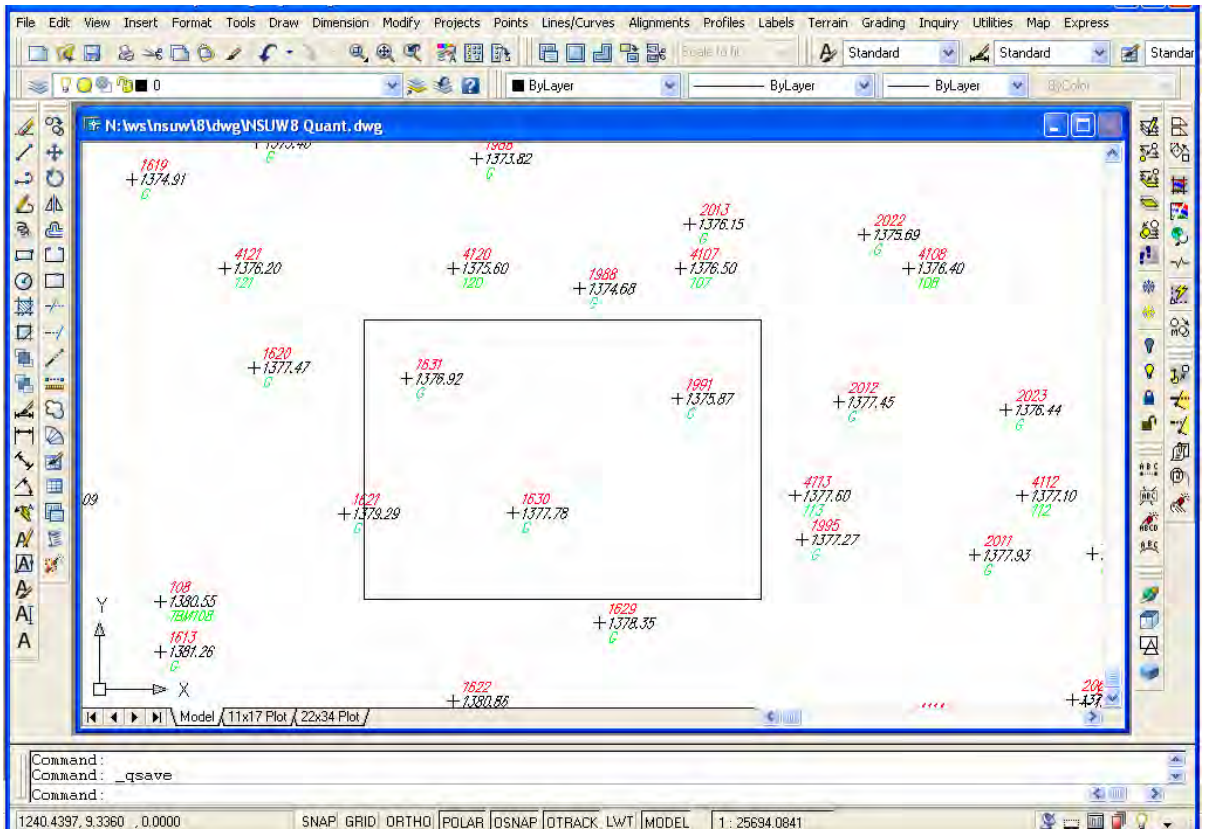
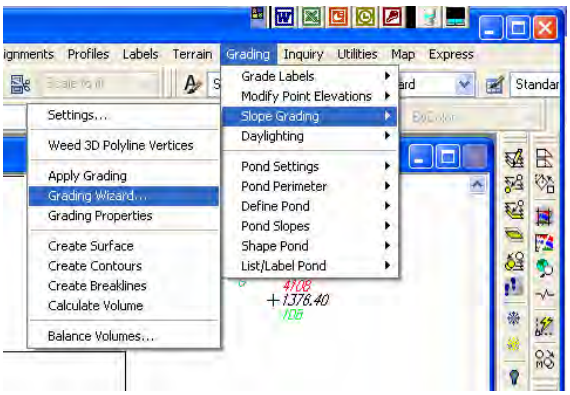
# USING THE GRADING WIZARD

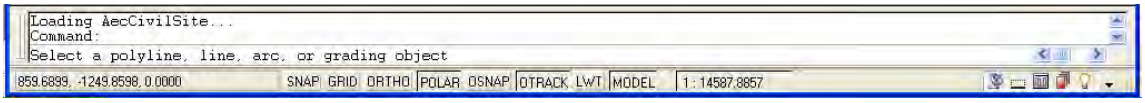
Simple grading objects can be quickly created by using the Grading Wizard feature in Land Desktop. In this example, a rectangular object will be used as a footprint for the grading object that will be created. If you want to tie a grading object into a terrain surface, such as a ground surface model, the terrain surface must be created and the grading object footprint located within that terrain surface.




1. Start the Grading Wizard through the Slope Grading option under the Grading drop-down menu.

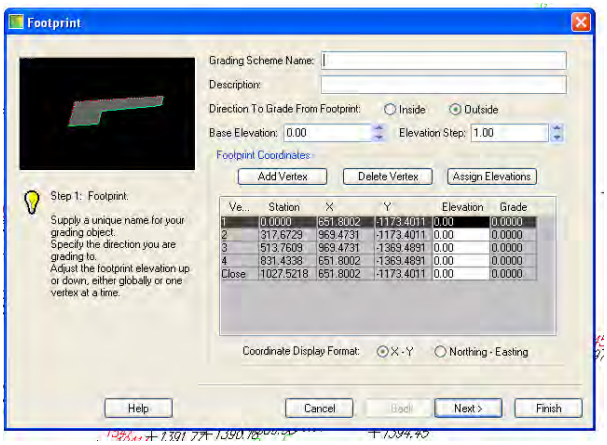



2. At the command line, you will be prompted to select an object to use as the footprint for the grading object.

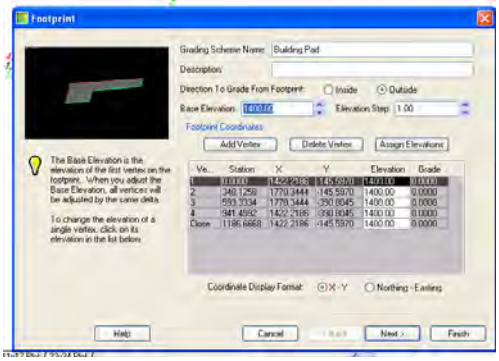


3. Once you select your footprint object, you will be asked to select a side. This controls which side of the object will be graded. If you are grading a level area that will be graded to tie in to original ground such as with a tank or building pad, you will pick a point to the outside of the grading object. If you are grading a pit using the footprint as a top elevation, you would pick a point inside of the grading object. In this example, the grading object represents a building pad so a point outside of the footprint rectangle was selected.

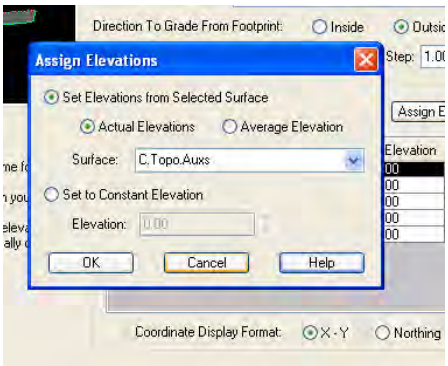
4. The first Grading Wizard window will now appear, with the title Footprint at the top. In this window, you can provide a grading scheme name and a description for the grading object, if you wish. The direction to grade from footprint is indicated at Outside, which is the direction that you chose after selecting the footprint object. You could change the direction to Inside here if you needed to.



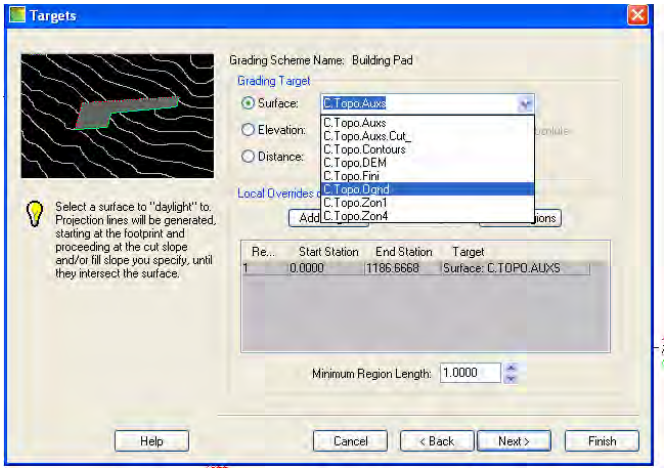

Notice that the Base Elevation has a value of zero, along with all of the elevations in the footprint coordinates table. Changing the base elevation in the Base Elevation window at the upper portion of the Footprint Coordinates area will change all of the elevation values in the table below. You can either type in a base elevation directly or use the up and down arrows at the right side of the Base Elevation window to cycle up or down by the value that is specified in the Elevation Step window. Elevations can also be assigned to each vertex separately by clicking in the cell in the Footprint Coordinates window and typing the elevation for each vertex. For this example, the base elevation will be changed to 1400, which will assign that elevation to the pad that will represent the top of the building pad.




Vertices can be manually changed by using the Add Vertex and Delete Vertex buttons in the Footprint Coordinates window area. Clicking on the Assign Elevations button will open the Assign Elevations window. In this window, you can choose the surface from the Surface list and assign elevations to all vertices from that specified surface. If you select Actual Elevations, then all footprint elevations are raised or lowered to match the surface grade. If you select Average Elevation, the elevation of each vertex on the surface is calculated and averaged. The Reset to Constant Elevation option allows you to enter an elevation that will be applied to all vertices.

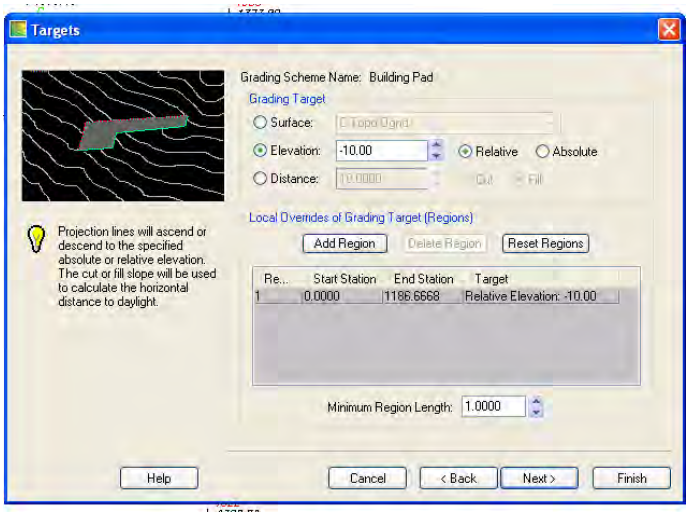


5. After you are finished with the Footprint window, click on the Next button to bring up the Targets window. In this window, you will specify the grading object's target--which surface, elevation or distance the grading object will extend to.

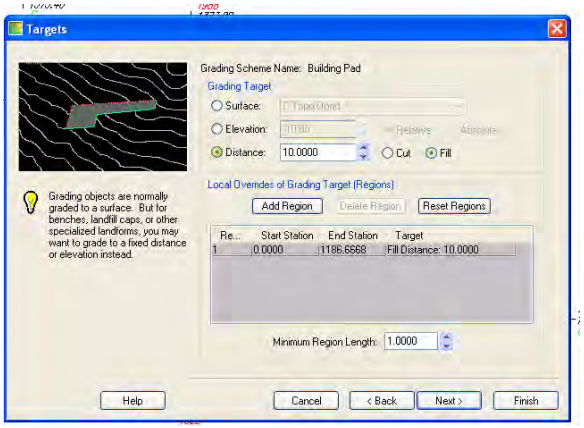



The Surface grading target option allows you to tie in to a terrain surface that exists within your project. Select the Surface button and click on the down arrow to the right of the terrain name window to display a list of all the terrains that you can grade to. In this example, we will grade to the original ground surface.

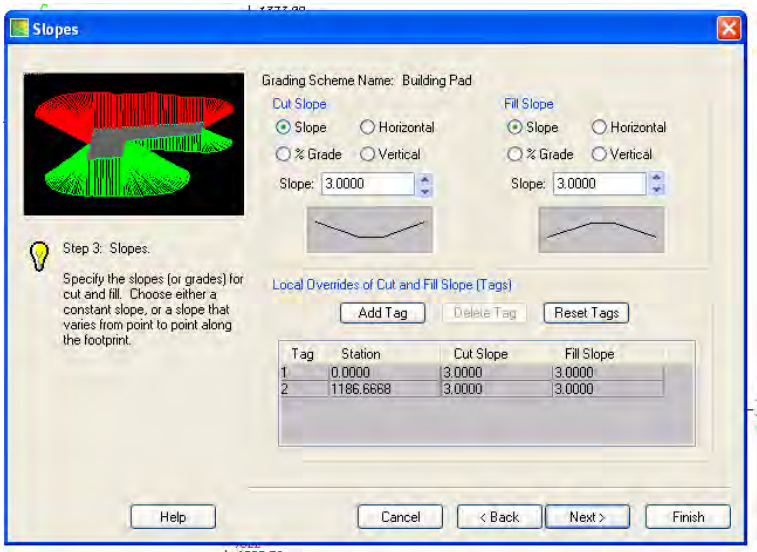
The Elevation grading target option allows you to grade to a specific elevation. You have the choice of grading to either a relative or an absolute elevation. Choosing to grade to a relative elevation will cause the grading wizard to grade to an elevation that is above or below the base elevation of the footprint object, based on the value that you provide in the Elevation window. In this example, the wizard would grade to an elevation that is 10 units lower (because of the negative sign) than the base elevation of the footprint. Since the base elevation of the footprint was set to 1400 in the Footprint window, this means that the grading wizard would grade down to an elevation of 1300. Another method of grading to an elevation is to use the Absolute option. If you select Absolute next to the Elevation grading target, you type in the actual elevation that you want to grade to (in this case, 1300).



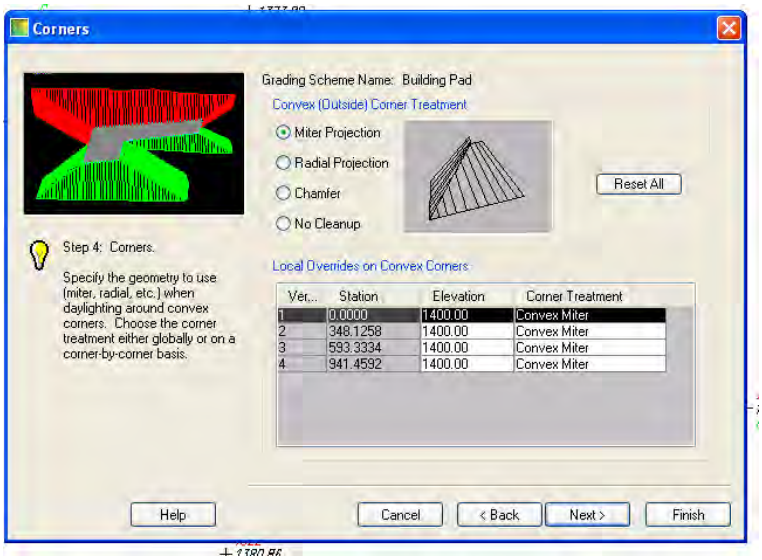

The final option that you have is the Distance grading target option. This allows you to grade a set distance from the footprint object. In the example on the right, the grading wizard would grade a distance of 10 units outside of the footprint. The Cut or Fill buttons control whether the grading object will slope up or down following the slope that you will specify in the next window. The Local Overrides of Grading Target are advanced grading options and are covered in Grading Wizard – Advanced Options.

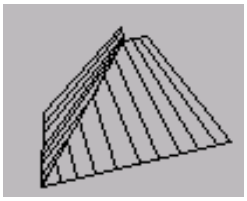


6. The next window is the Slopes window. Here, you can specify the cut and fill slope--either by a slope ratio (here, 3:1) or by the percent grade, or you can grade horizontally or vertically. The Local Overrides of Cut and Fill Slope are advanced grading options and are covered in Grading Wizard – Advanced Options.

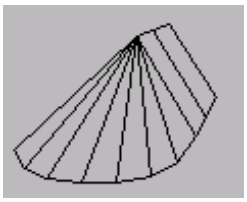



7. The next window is the Corners window, where you can specify a corner treatment for the grading object. You have four options for corner treatments, which are summarized below.

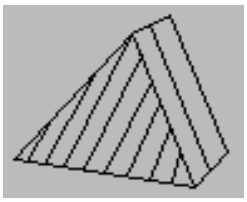


Miter Projection



Radial Projection



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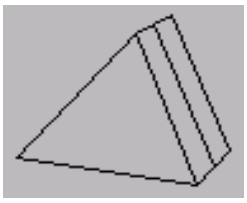
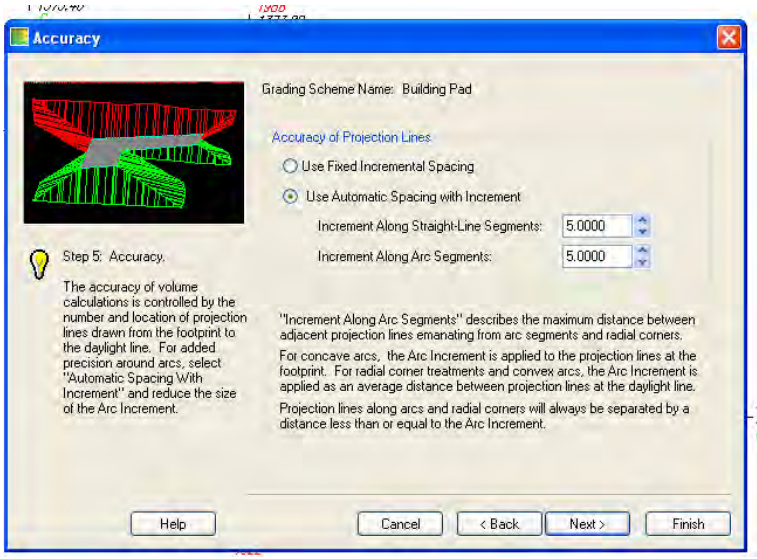
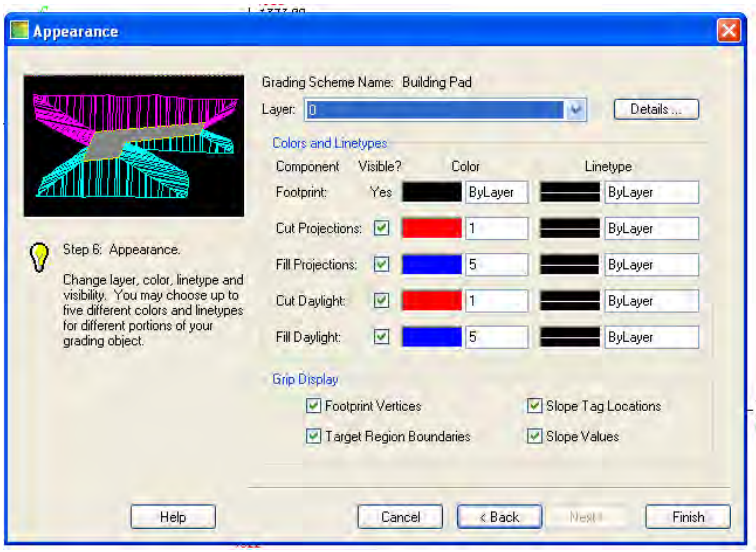


No Cleanup

8. The next window is the Accuracy window. In this window, you control the spacing of the projections lines that the grading wizard will draw when generating the grading object. A smaller projection line spacing will more accurately represent the tie-in line of the grading object with a terrain surface. The Use Fixed Incremental Spacing option will place project lines at specific intervals, ignoring the accuracy of how the grading object ties in with a terrain surface. The Use Automatic Spacing with Increment will place projection lines at the same intervals as with the Use Fixed Incremental Spacing option but will also add projection lines as needed to tie in the surface model which allows for a more accurate tie-in line with the terrain surface.




9. The last window is the Appearance window. Here, you will specify the layer that the grading object will be placed on and the appearance of cut and fill projection lines and cut and fill daylight lines. You can also control the display of grips on the grading object.