

GeoCue Group Support
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Revision 1.0

A new tool has recently been added to the TerraScan Road toolbox (beginning with v017.024) called **Label Clearance** (Figure 1). This tool builds upon the set of tools using the distance attribute and adds more automation to extracting information from point clouds. The Label Clearance tool enables the quick and easy measurement and display of the value of the closest approach of one object to another, for example: the clearance of overhead objects such as bridges, wires, or signs to a road surface; the shortest distance of obstructions to wire vector elements; distance of buildings to a pipeline route, etc.



Figure 1: Road Toolbox

This tool has three requirements:

1. The data needs to be classified. Specifically, the objects that need to have clearances labeled need to be separately classified from the comparison objects. For example, if the ground clearances of wires need to be labeled, then the ground and wires need to be in their own respective classifications.
2. Distances need to be calculated between the objects of interest using the [Compute Distance](#) tool. The distance is stored as an attribute on each point (savable to the Fast Binary format only) and allows for the view by distance coloring display option.
3. The software needs to know where to label these distances, which is accomplished using 2D polygons that cover the desired area for each clearance label.

Once these three prerequisites are accomplished, the clearance labeling can begin. It can be helpful to set font size prior to initiating the Label Clearance command. Select the created shapes and then select the Label Clearance tool, which opens the Label Clearance dialog (Figure 2).

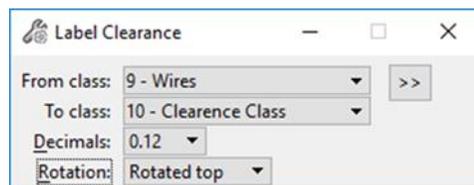


Figure 2: Label Clearance dialog

The 'From Class' should be the class of points representing the objects to be labeled (i.e. overhead wires). The 'To Class' can be a user-defined obstruction class, or it can remain the same as the 'From Class'. Matching the to and from classes will prevent a change in classification for the closest points,

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making it easier to create multiple labels in different views using the same point for the clearance. There are also several options for the orientation of the label: Top, Rotated Top, or Cross Section. The cross section option displays the labels vertically, which can be viewed in profile. After a data click, the labeling will be executed. This results not only in labels of the closest clearances but also in dimension lines showing the positions of closest approach.

Example: Road with Overhead Objects

For mobile applications, the ground should be classified using the [Hard Surface](#) routine with cars removed using the [moving objects routine](#) and/or other means. The overhead objects can be classified using a variety of methods. For instance, crossing wires can be classified using the [Find Wires](#) tool (more flexible than the [Detect Wires](#) tool for this application). Bridges and signs can be classified [By Height from Ground](#) or using the various [manual classification](#) tools (Figure 3).

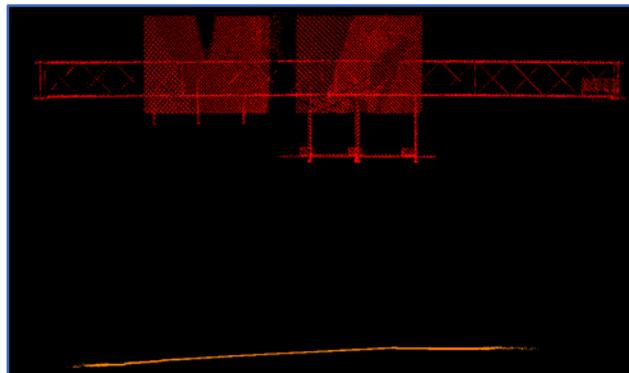


Figure 3: Classified points. Red is the overhead sign, and orange is the ground.

The distances between the points of the overhead objects and the ground then are calculated using the [Compute Distance](#) tool and can be reviewed using the [Display by Distance](#) (Figure 4).

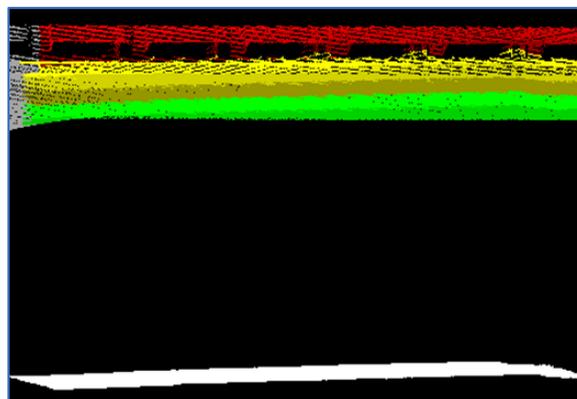


Figure 4: Compute distance. Road and overhead bridge colored by distance.

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Next, create individual polygons that cover each lane near each overhead object. For roads, clearances are typically reported on a by-lane basis, so shapes covering each lane for each object should be created (Figure 5).

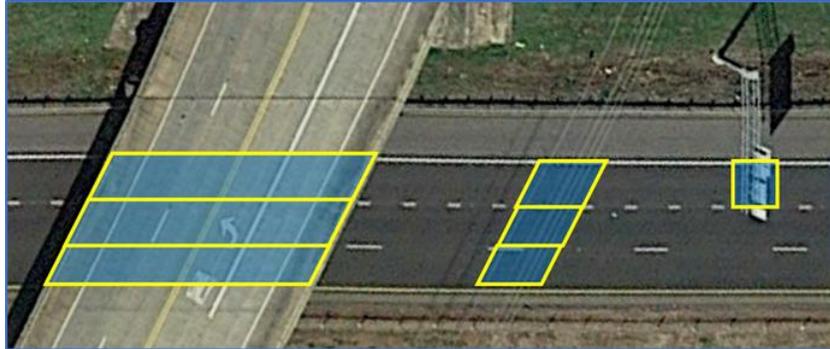


Figure 5: One shape per lane per overhead object.

There are many ways to create these 2D lane boxes (Figure 6) using Terrasolid and/or MicroStation tools. One could simply use the MicroStation Place Shape tool to draw in these shapes manually, or one could use the TerraScan [Design Block Boundaries](#) tool in combination with existing line work, such as edge-of-pavement and centerlines, to create the necessary shapes from the intersecting line work in a semi-automated manner.

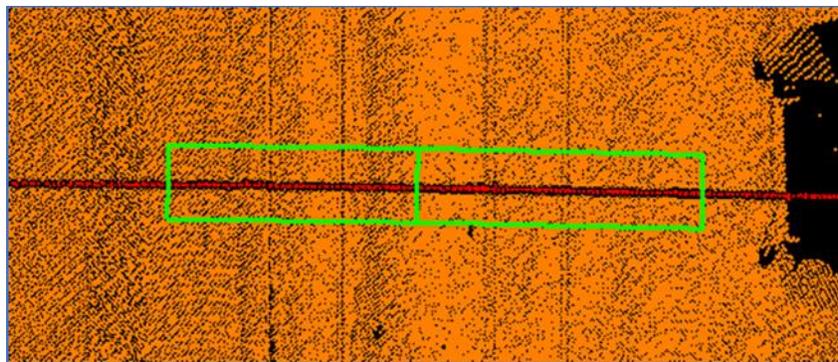


Figure 6: Example resulting shapes

After selecting those lane boxes and starting the Label Clearance command, the labeling can begin. The 'From Class' should be the class of points representing the overhead objects. This results in labels of the lowest clearances, as well as dimension lines showing the positions of closest approach between the overhead object and the ground (Figure 7).

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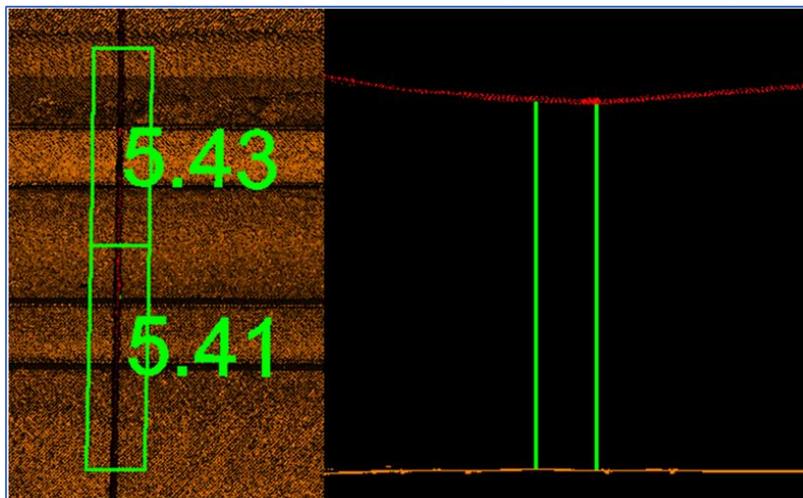


Figure 7: Example labeling results for a two-lane road and an overhead wire

The **Label Clearance** provides a means to quickly extract the distance values from a group of points. A similar workflow for labeling other types of clearances can be followed for labeling for vegetation management or pipeline proximity. If you have any questions on this new tool or associated workflow please do not hesitate to contact us at support@geocue.com.