



# New Features in TerraScan

What's New in Terrasolid Feb 2018

Webinar

22 February 2018

Darrick Waggs  
GeoCue Group, Inc.  
9668 Madison Blvd., Suite 202  
Madison, AL 35758  
+1 (256) 461-8289  
[support@geocue.com](mailto:support@geocue.com)  
[support.geocue.com](http://support.geocue.com)



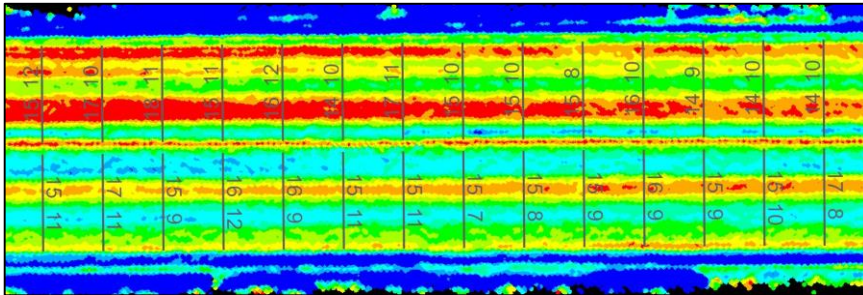
## Import Scanner Positions for Trajectories

- **File / Import scanner positions** menu command in **Manage Trajectories** reads scanner positions from a text file
- Use with standing still scanner data
- Reads space delimited text file(s) which have fields:
  - ScanNumber Easting Northing Elevation
- Makes it possible to use TerraScan tools which require scanner position information
  - Classify / By range
  - Cut overlap



## Slope Coloring in Export Raster Images

- **Output / Export raster image** menu command from **Main window** and **Tools / Export raster images** menu command from project window can produce slope colored raster images



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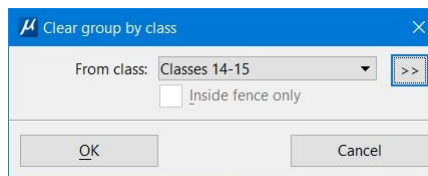
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## Group / Clear by Class

- Routine for zeroing group values of points in selected class(es)
- Example: run after manual classification to make sure:
  - Points in class **14 - Noise** do not belong to any group
  - Points in class **15 - Wire** do not belong to any group



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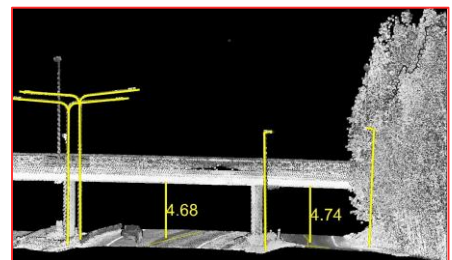
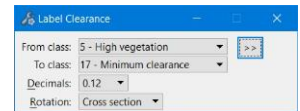
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## Label Clearance

- Tool for labeling clearance of bridges, overhead wires or other features
- Places a label (and optional vertical line) at point which has the smallest distance value inside each selected polygon

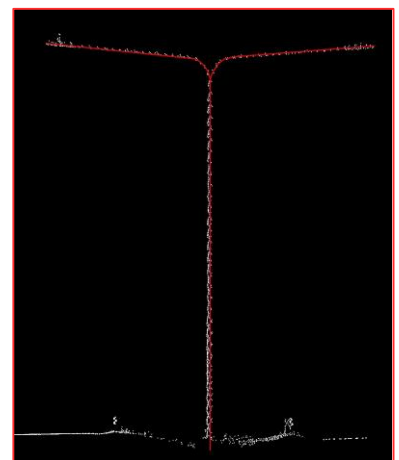
- Workflow:

- Run **Compute distance** to compute height from ground for points
- Draw polygons for places to examine
  - One polygon for each bridge
  - Or one polygon for each lane
- Select polygons and run **Label Clearance**

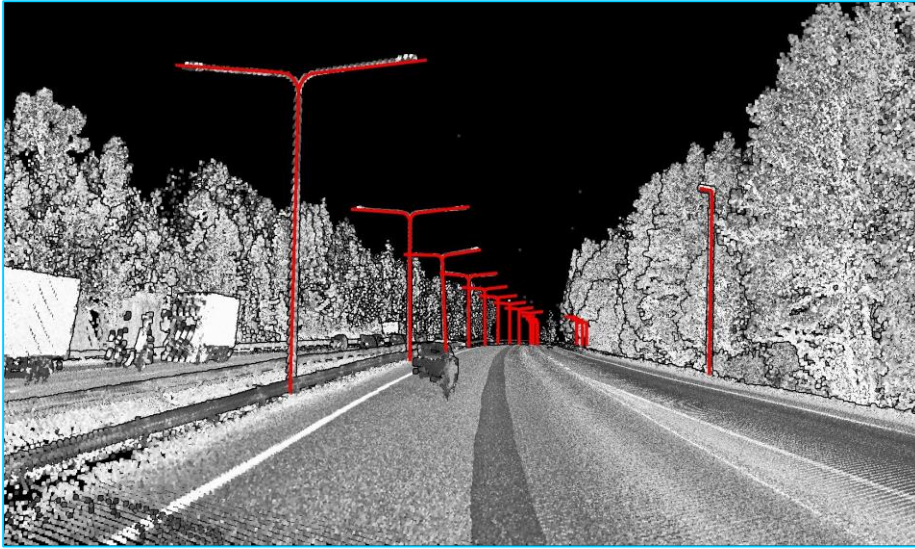


## Find Poles

- Automatic search for constant shape poles
- Classifies and places a vector cell
- User creates pole type using:
  - example point group
  - vector cell to be placed at pole location
- Tool compares point groups in data set to object library example point groups trying different 3D rotations
- If finds a good match, classifies points and places vector cell with given rotation
- Requires:
  - Points have distance values (height from ground)
  - Grouping has been done



## Find Poles



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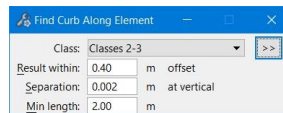
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## Find Curb Along Element

- Requires an approximate 2D line string running along curb stone
- Creates longitudinal breakline vectors along sharp edges

- Workflow:

- Classify model keypoints from ground
- Create TIN model and display as shaded surface
- Place approximate 2D line strings along curb stones
- Select approximate line strings and run **Find Curb Along Element**



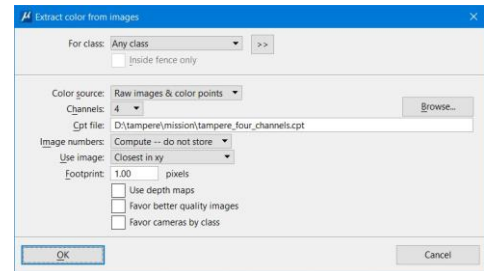
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## Up to Ten Color Channels

- Extract color from images can now extract up to 10 channels of color information
- Color storage:
  - TerraScan binary can store 3\*8 bits
  - LAS 1.2 can store 3\*16 bits
  - LAS 1.4 can store 3\*16 or 4\*16 bits
  - Fast binary can store 3\*8 or 3-10\*16 bits



## Vegetation Index

- TerraScan supports two types of vegetation index:

- Normalized Difference Vegetation Index = 
$$\frac{\text{NIR} - \text{R}}{\text{NIR} + \text{R}}$$

- Visual Band Difference Vegetation Index = 
$$\frac{2 * \text{G} - \text{R} - \text{B}}{2 * \text{G} + \text{R} + \text{B}}$$

## Vegetation Index

- Both indexes give values between -1.0 and +1.0
- NDVI requires near infrared color information but gives very good separation between green vegetation and other objects
- Visual Band Difference works with normal visible RGB channels

## Vegetation Index

- Display mode supports **Vegetation index** coloring
- **Classify / By vegetation index** classifies points by vegetation index



Classify by vegetation index

From class: Classes 4-5 >>

To class: 21 - Vegetation

Inside fence only

Index type: Normalized difference

Min value: 0.0000

Max value: 1.0000

Copy dominant result from neighbours

Limit: 85 %

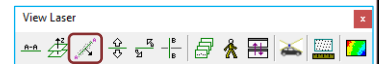
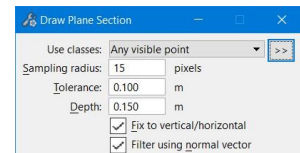
OK Cancel



## Draw Plane Section



- Tool for setting up a section view looking at a plane derived from point cloud
- User enters one or several circular sampling locations from which to derive a plane equation
- Plane can be any 3D plane
- If **Fix to vertical/horizontal** is on, software forces the plane to be exactly vertical or horizontal if points give a plane within 2 degrees of vertical/horizontal



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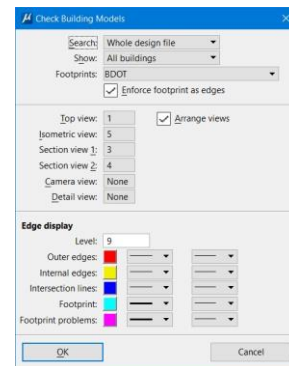
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## Check Building Models & Section Views

- **Check Building Models** can automatically set up sections viewing looking at active building
- Important when editing vector models without images
- **Draw Building Section** tool can show section view looking at one planar patch



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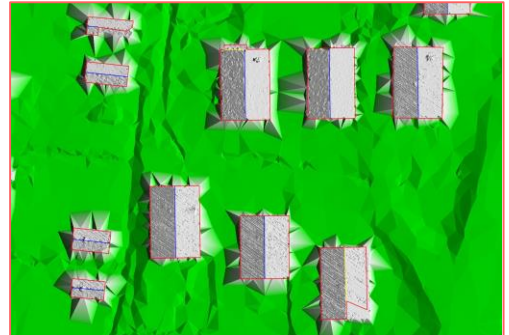
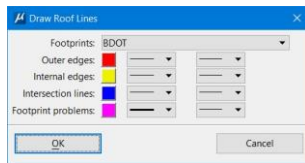
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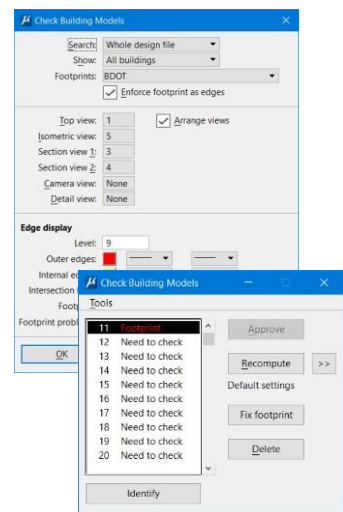
## Draw Roof Lines

- Draws relevant roof lines of selected building vector models as permanent elements in the design file
- Useful when doing quality checking of vector models – operator can look at several buildings at the same time



## Enforce Footprint as Edges

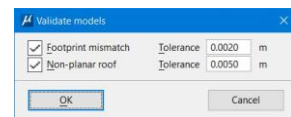
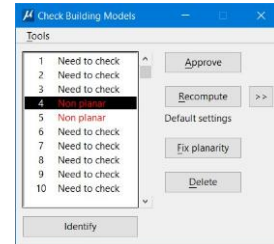
- Use if roof edges must match footprint polygons
- Disables **Approve** if roof edges are inside footprint polygon
- Enables **Fix footprint** button if roof edges inside footprint • Clips roof edges automatically using footprint polygon – OK to draw roof edges outside footprint
- Hilites footprint polygon vertices with a circle





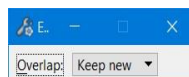
## Validate Models

- Checks vector models for footprint or planarity issues
- Checking for non-planar roof polygons is needed if:
  - Customer wants roof polygons to be planar
  - Vectorization has been run with non-zero **Average elevations** setting in **Settings** and **Building vectorization / Model** category



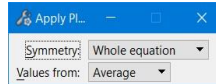
## Extrude Building Improvement

- **Extrude Building** can now add planar patches to an existing model
- **Keep new** replaces old polygons with new ones in overlap area
- **Keep old** option adds new roof polygons only outside old ones



## Apply Plane Symmetry

- Forces plane equations, base directions and/or slope angles of planar patches to match



## Various Improvements in Editing Buildings

- **Set All Edges** can modify a single patch
- **Modify Edge** has new options **Along Closest Line**, **To base 90 deg angle** and **To intersection**
- **Insert Edge Vertex** has new option **Base 90 degree angle** and **To intersection**