

Speeding up TBC

Sometimes working with large data sets, especially those provided by third parties, can seriously slow processing times. Below is an excerpt from a document put out by Trimble on how to speed TBC up when working with point cloud data and surface models.

1. CAD Points vs Point Clouds can also be a huge graphics regeneration time saver. CAD Points are all stored, selected and displayed individually. When you have a large quantity of CAD points this can have a strong impact on graphics regeneration and also time taken to select all the points e.g. to re-layer them or to make a surface out of them etc.). Sometimes the source data that you are provided in a CAD file may have started out as a Point Cloud, however when saved into a DWG file it has become CAD Points. If you open a DWG file with a large number of CAD Points, we recommend that you take the time to convert the CAD Points into a Point Cloud and then use the Point Cloud in place of the CAD Points. The following is the best way to achieve this.
 - a. Select all of the CAD points in the project that you want to make a point cloud
 - b. Run the Export command to export the CAD points as a CSV file in the following format (E,N,Z,D note E before N as this is the file format for a .PTS file that we will read back in as a Point Cloud file.). You can set up a Custom Export format that has this data order and an extension of .PTS, or you can export as a CSV using the E,N,Z,D exporter and then rename the file created to have the .PTS extension.

- c. Import the .PTS file, select the Units of the project (that was written to the CSV file e.g. US Feet or Metric etc.) and the data will be imported and indexed and stored in an external Point Cloud Database in the project folder. Now you can benefit from the Point Cloud working methods which will allow you to
 - i. Select all of the point cloud as 1 object – selection is much faster
 - ii. Zoom in and out and graphics regeneration is much faster
2. Once you have a Point Cloud you will find the following improvements
 - a. Faster selection of all the point data
 - b. Faster Zoom in and Out
 - c. The ability to only display a percentage of the entire point cloud (Support – Options – Point Cloud – Maximum Number of Points in spatial sampling algorithm) (displaying every point in a point cloud at large zoom scales is pointless), as you zoom in, the Point Cloud settings control how much of the point cloud data is displayed and dynamically adjusts as you zoom in and out
 - d. The ability to control how much of your graphics memory is used to display point cloud data (Support – Options – Point Clouds – Rendering memory cache size in GB (limited to half of physical RAM size))
3. During the testing carried out to create this document, we discovered that in certain scenarios, using a Point Cloud vs CAD point data to form surface models would slow down volume computations when there are a large number of points in the point cloud that lie outside the boundary of the finished grade surface model (second surface model). This is caused by the way that we index the point data in a point cloud to generate the benefits of working with point clouds, so that when trying to work out which points in the Original Ground (first surface model) fall inside / outside the design (second surface model) is significantly slower when working with Point Cloud based data. Where the Point Cloud is constrained to the limits of the design model (thereby excluding points outside the design surface), the speed is comparable to CAD point data.