Importing La Crosse LIDAR data into AutoCAD

The Light Detection and Ranging (LiDAR) LAS dataset for LaCrosse County is a topographic survey consisting of 654 tiles. Each tile is 5,000 Feet X 5,000 Feet. To give you an idea of how dense the data is, the tile used in our example has over 623,000 elevation points! If we placed the entire tile into AutoCAD our DWG file would be over 20MB! To reduce the file size, and not bog down Cad, we can clip a portion of the tile (our project area) and import only that area into AutoCAD.


This is the 5,000' x 5,000' tile; each black dot is a Lidar point!

- Open ArcMap or Toolkit
  - Make sure to add the following data layer, if it is not already loaded:
    - C:\lacrosse_lidar_2007\LaCrosse_Tiles_STP.shp

  - *Optional data layers include*:
    - If you want to see the 2' contours in ArcMap:
      C:\lacrosse_lidar_2007\05_Contours\LaCrosse_County_Contours.gdb\Contours
    - The LaCrosse Ortho Photo (Hi-Def) can also be added:
      C:\ortho_imagery\ortho_wi063_2007_12in_color_spcs.sid

- Zoom into the area of interest.
- Turn on the "LaCrosse_Tiles_STP" layer to find which XYZ tile you will be using (you may have to turn on the labels, or you can use the information tool).

For this example our project is highlighted in the red circle, and is located in Tile #1540.

- Navigate to C:\geodata\lacrosse_lidar_2007\02_Bare_Earth_XYZ folder.
- Open the appropriate XYZ file in Notepad (*for this example: Tile1540.xyz*)
- Save the file as a Text Document *(Be sure to leave the .TXT in the file name)*
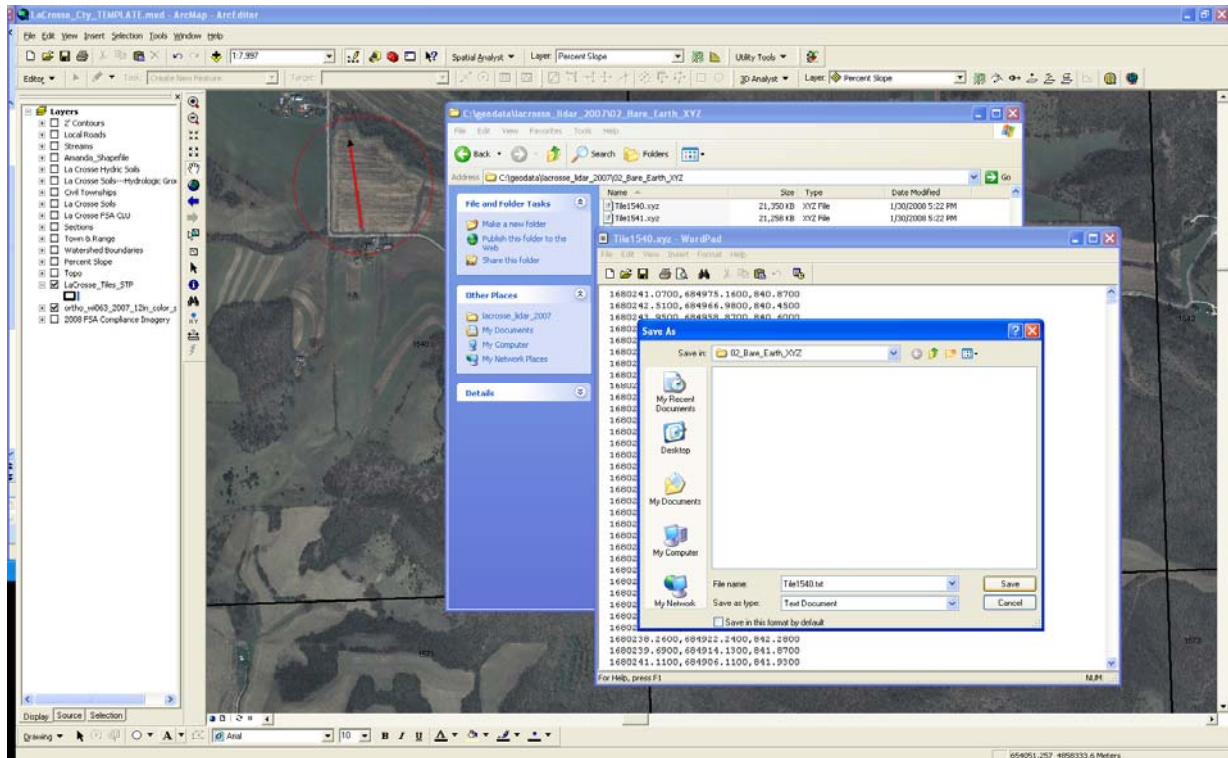
- Open the TXT file.
- Insert a return before the first line and type in the following: Easting, Northing, Elevation
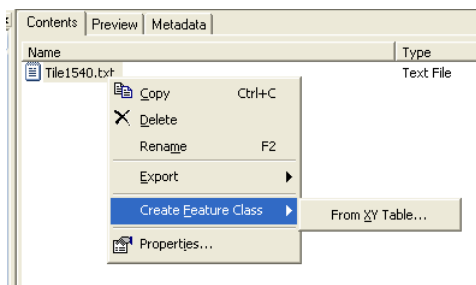- The file will look like this:

- Save your changes and exit Notepad/Wordpad.

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- Open ArcCatalog and navigate to where the TXT file was saved.
- Select the TXT file, right-click and select "Create Feature Class > From XY Table".


This will create a shapefile from the XYZ text file (creating a point for every single LIDAR point).

- Match up the X, Y, and Z field to the Easting, Northing, and Elevation fields you typed into the TXT file. It should look like this when you have them matched:
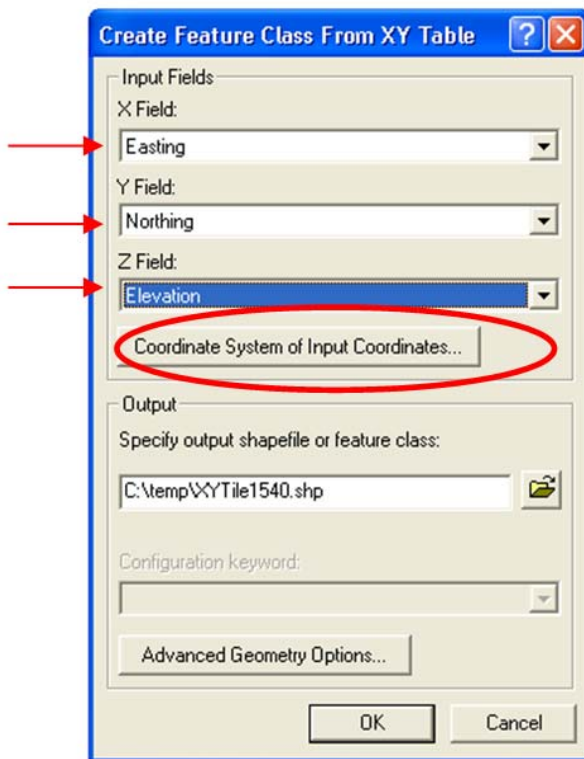
Click on the "*Coordinate System of Input Coordinates*" button to specify what coordinates the Lidar data is in.
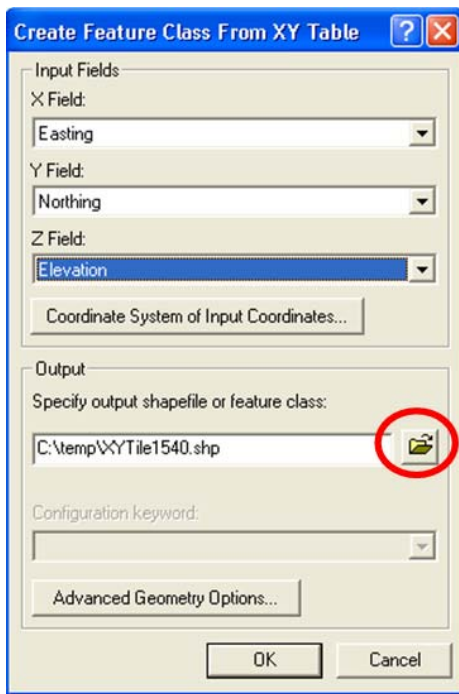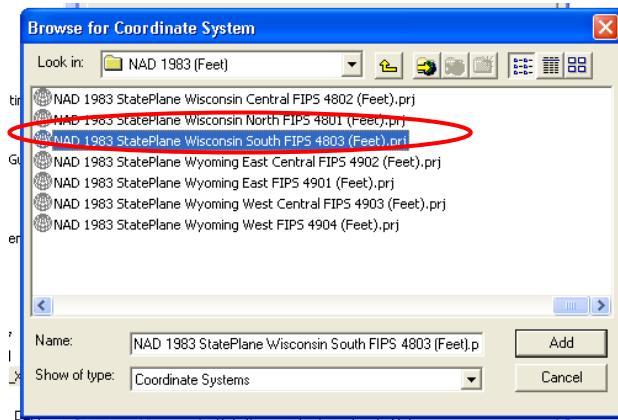
Click the "Select" button …
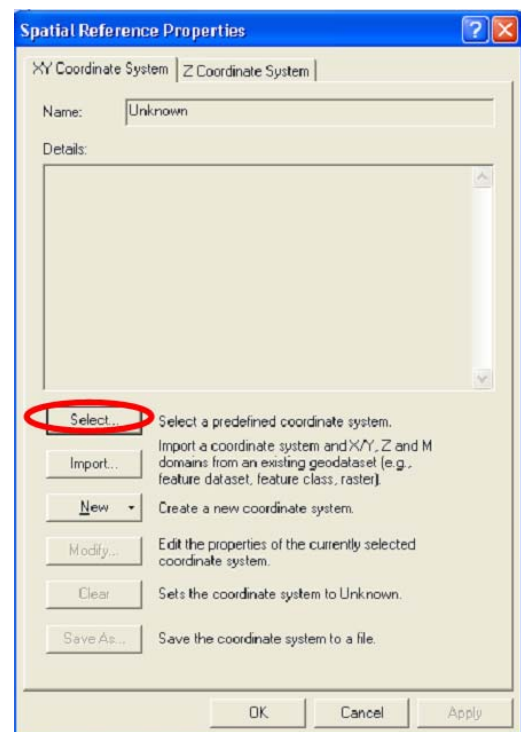
……. then navigate to:

Projected Coordinate Systems >
State Plane >
NAD83 (feet) >
NAD 1983 State Plane Wisconsin
South FIPS 4803 (feet).prj

Click the "Add" button to set the
coordinate system.
and
"OK" on the Spatial Reference
Properties window.

Choose the location and the filename for the shapefile to be created by clicking on the Browse Folder icon.

Once you have given the filename and path, click on the OK button to create the shapefile.

- Add the new shapefile into your ArcMap session.
- Using the *Select Features* button, draw a box around the desired area (your project area).
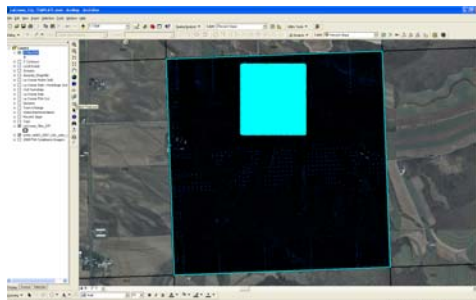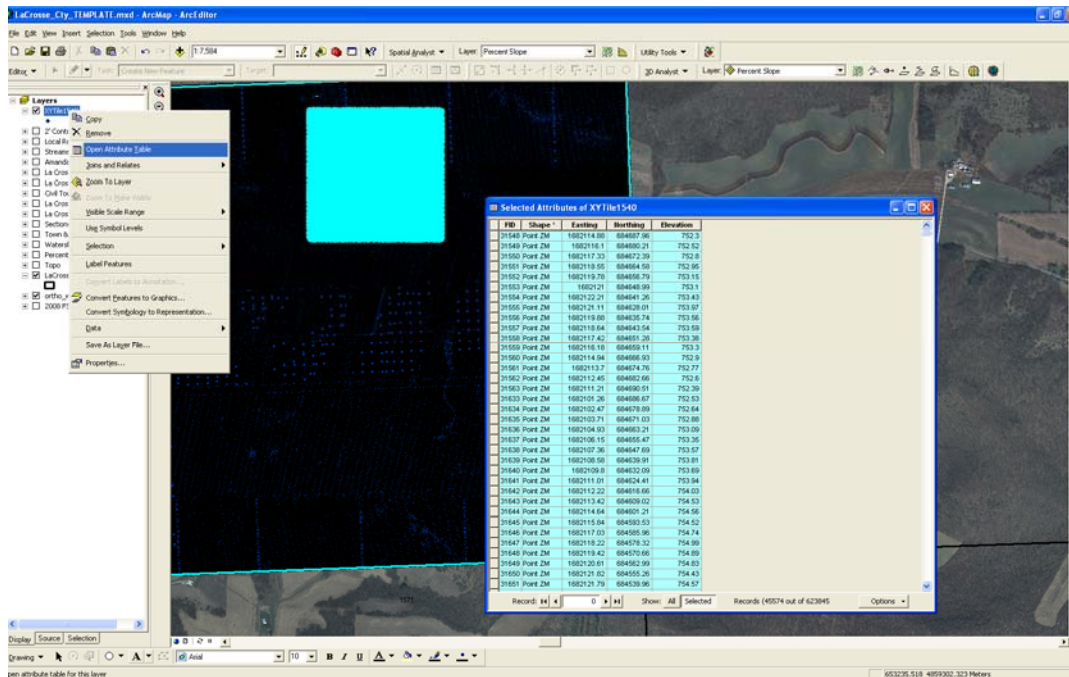

This selection has ~45,000 points, which is about 7% of the points in the tile!!!
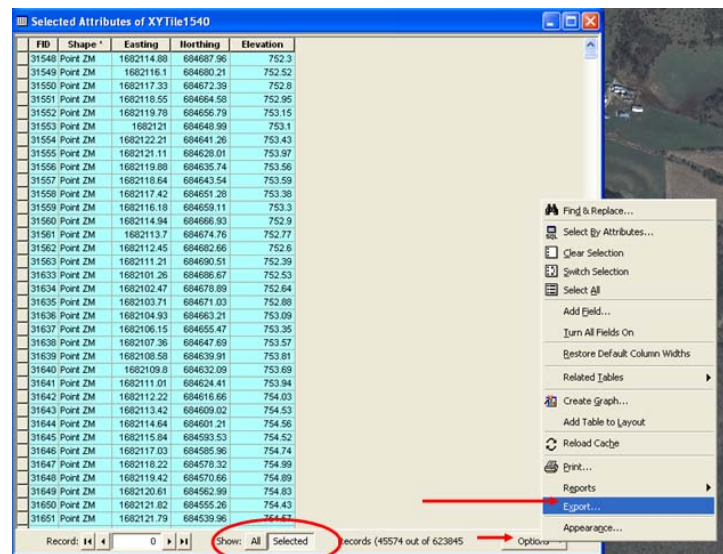
Now we will create a text file to be used in AutoCAD!

Text File Creation
- With the XYZ shapefile selected in the Data Frame, and your project area points selected, right-click and select "Open Attribute Table".


- At the bottom of the Attribute Table be sure to select "Show—Selected"
- Select the "Options" button in the lower right, and then select "Export".

- Select "Text File" in the "Save as Type" box. Choose the file path and type in a file name. Click the "Save" button when you are done.

*** Be sure to save this file in a location that will not change, because it will be *referenced* in AutoCad (i.e. the landowners Design Data folder on the shared drive, DO NOT save in the Toolkit folder!)
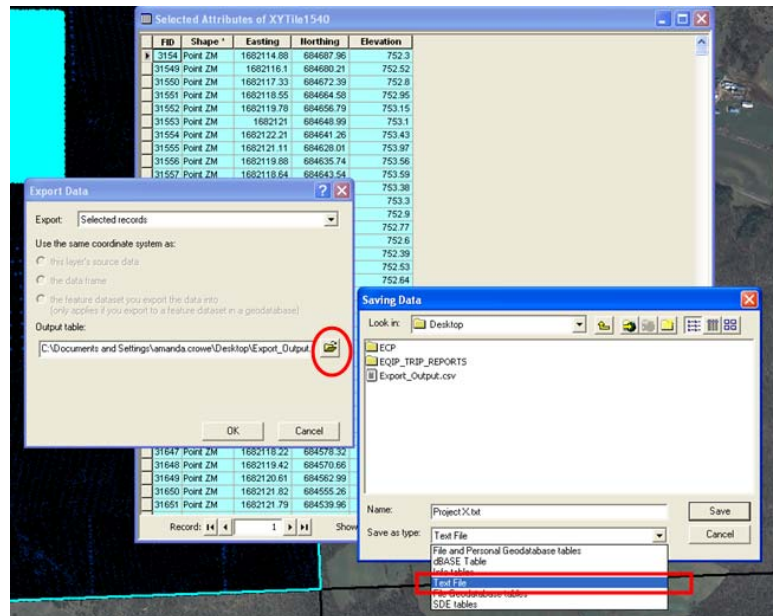
- Click OK on the Export Data window. This will then export the selected records into a new TXT file.

We are now done using ArcMap

- Open the text file you just created (that contains only our project area data).
- You will need to delete the first row
  - *Delete the text* ("FID_","Easting","Northing","Elevation") *and the "blank row"*
- Save the file.
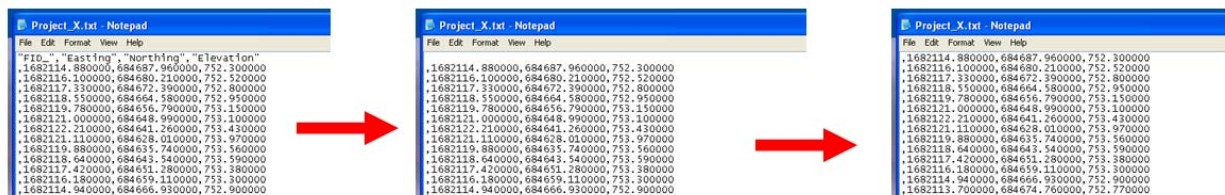
Now open AutoCad Civil 3D

Start with a new project <u>with your appropriate template open</u>.

- Toolspace > Prospector > Right Click on Surfaces > Create Surface (change any settings you want in the dialog box) > OK.
- +EG (or your new surface name) + Definition
- Right Click on "Point FILES" > Add

Check to see if "LaCrosse_Lidar" is a Point File Format. If it is not listed you will need to create this format. This is a "one time deal," *if you save the changes in your template*. We will create a Point File Format, so that inserting Lidar data on a regular basis will be easy!

- Click on the "Add Point File Format" Icon
- Click "New" in the dialog box
- Select "Use Point File"
- Click "OK"
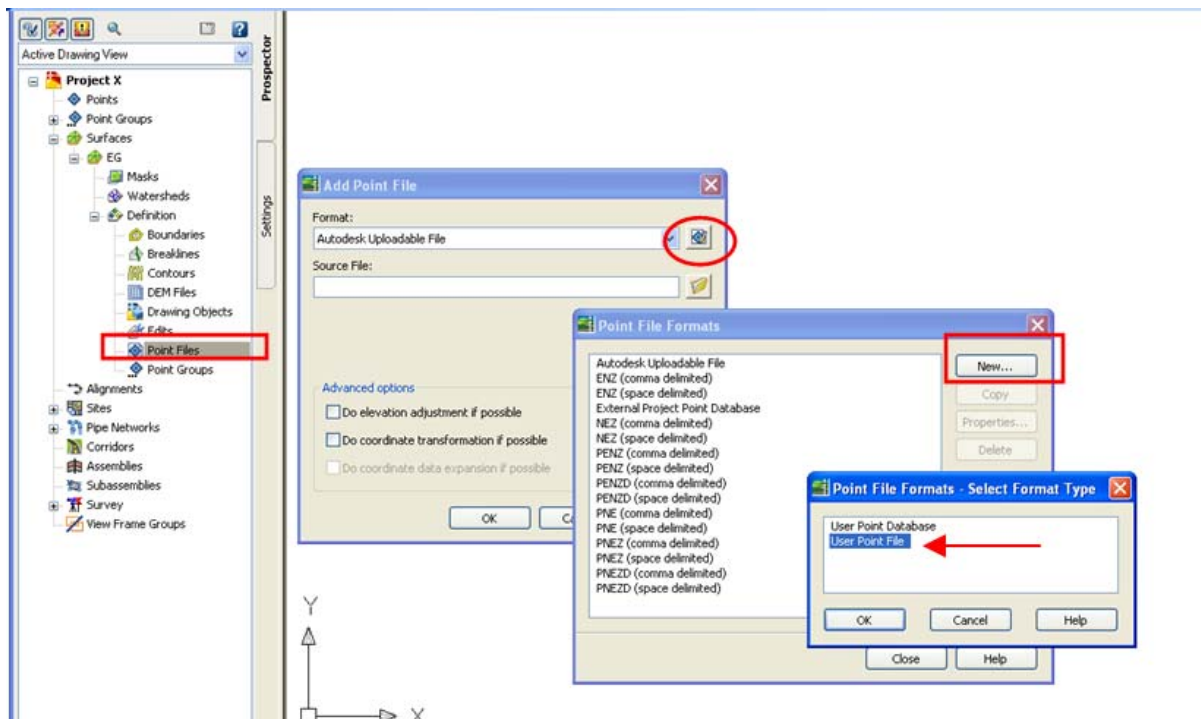
- Give the Format a name (don't use spaces or symbols as part of the name)
- Under "Format Options" Select "Delineated By" and type in a **,** in the box
- On the boxes at the bottom click on the words <unused> and select the appropriate choice from the list so it matches the picture below. (*notice the first column is unused*)
- Click "OK"
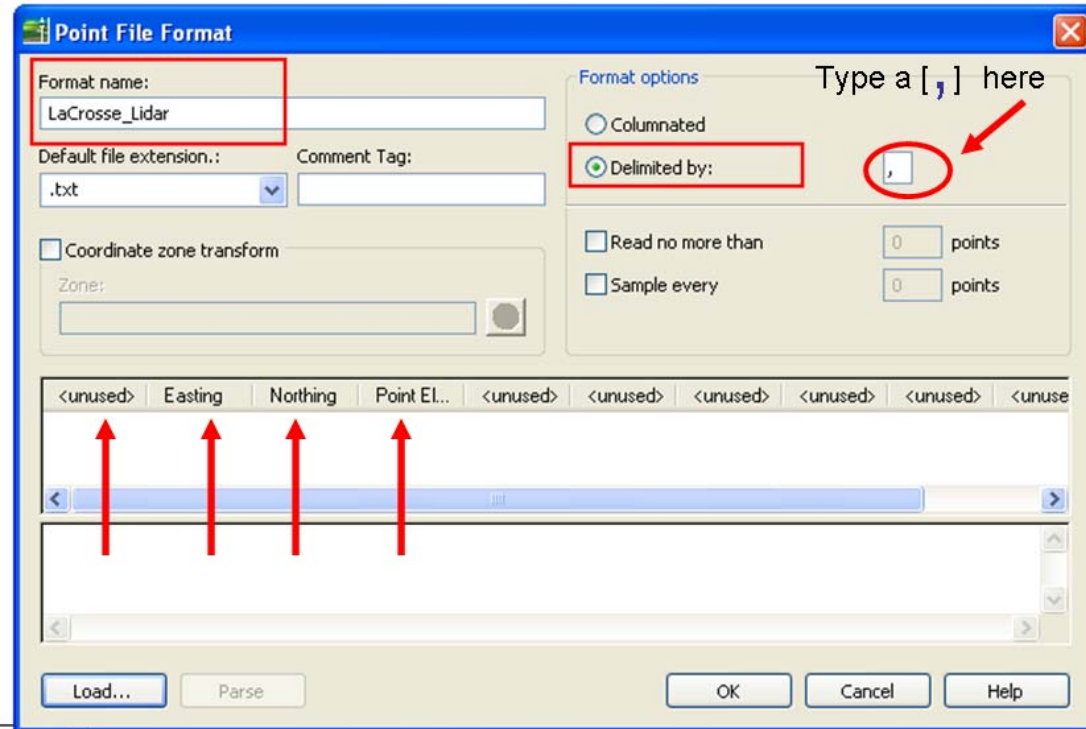
- Choose your new Point File format from the list.
- Browse to find your "Source file" (the text file with just the project area points)
- Click "OK"
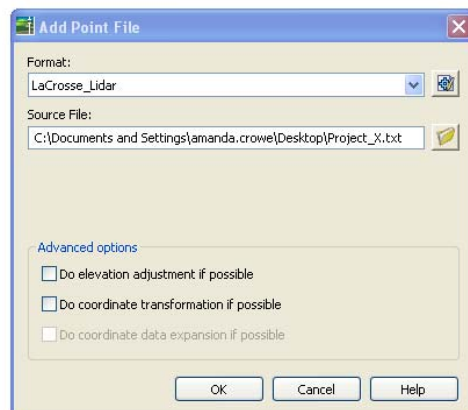
- You may have to type in "ZE" to zoom to your data
- The surface should be automatically created!