

## miniCAD5 QuickStart Tutorial

### Stage: 3

### Transform Field Data and Prepare for Printing

**Aim:** In this stage we will transform the field data, contour the natural surface, create a lot with annotated boundaries and finally, prepare the job for printing.

#### Transform the field information onto the plan information.

Open your Tutorial1.mcd job and zoom in on the field work. Place a selection window around the entire field work, by dragging the mouse diagonally across the area. You will see a box appear on screen. Release the mouse button when the box fully encloses the field work. (You have selected all the field work).

- Select Change>>Transform.
- Type 2 in the Point from (1) field.
- Type 1004 in the Point to (1) field.
- Move the cursor to the Point from (2) field. Now zoom in on the plan information. Right click and select Display>>Numbers to turn them on.
- Select point 101 with the mouse.
- Select point 103 with the mouse.

**Note:** The scale and rotation fields are automatically entered. The scale should be close to 1, which it is. We do not want our survey distances to be scaled.

- The Unity Scale box must be checked. See the figure below.
- Press the OK button to perform the transformation.

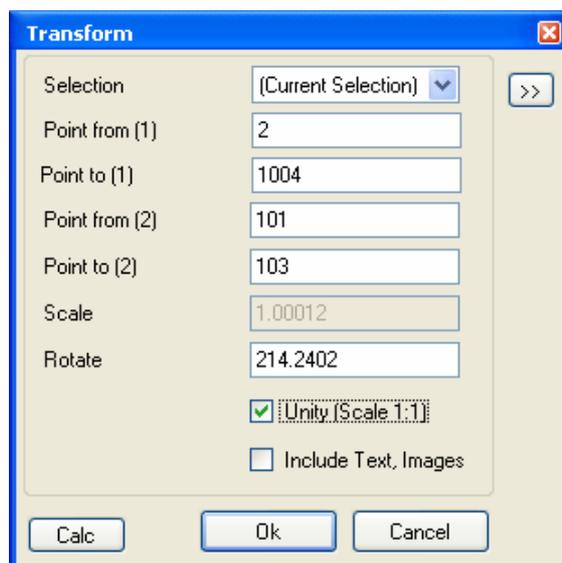


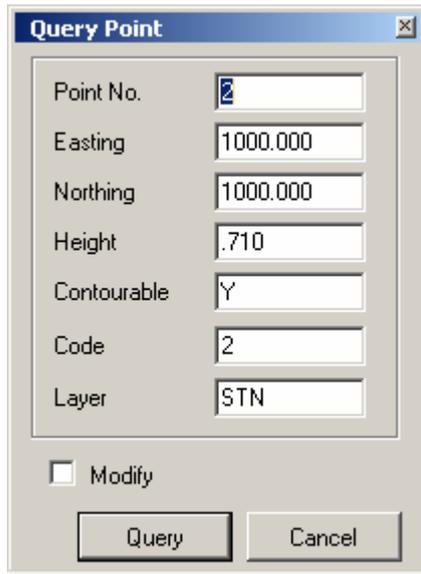
Figure 1 - Transform dialogue

## Set our Heights

Next we need to get our heights onto a correct datum as they are on a local system (station 1 in the data recorder file was arbitrarily set to 0.00). Point 2 is SSM 52301 which has a height of 25.471 on Australian Height Datum (AHD).

- Select Query>>Point and type 2 into the Point No. field and press the QUERY button.

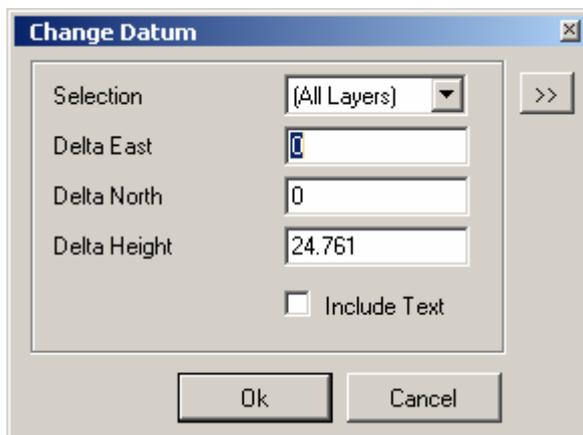
Note the local height of 0.710 shown in the figure below.



The screenshot shows a dialog box titled "Query Point". It contains several input fields: "Point No." with the value "2", "Easting" with "1000.000", "Northing" with "1000.000", "Height" with ".710", "Contourable" with "Y", "Code" with "2", and "Layer" with "STN". Below these fields is an unchecked checkbox labeled "Modify". At the bottom are two buttons: "Query" and "Cancel".

Figure 2 - Query Point

- Now select Change>>Datum. We need to increase the height of all points by 24.761. (i.e.  $25.471 - 0.710$ )
- Select (All Layers)
- Enter 24.761 into the Delta Height edit field.
- Press the OK button. (Delta East and North must be 0, See the figure below.)



The screenshot shows a dialog box titled "Change Datum". It contains a "Selection" dropdown menu set to "(All Layers)", a ">>" button, "Delta East" field with "0", "Delta North" field with "0", and "Delta Height" field with "24.761". Below these fields is an unchecked checkbox labeled "Include Text". At the bottom are two buttons: "Ok" and "Cancel".

Figure 3 - Change Datum

## Contouring the site.

We will contour the job twice, first to see what happens and then to see the final result.

- Select Terrain>>Create. Enter the data in the Create Terrain dialogue box as it appears in the figure and press the CREATE button.

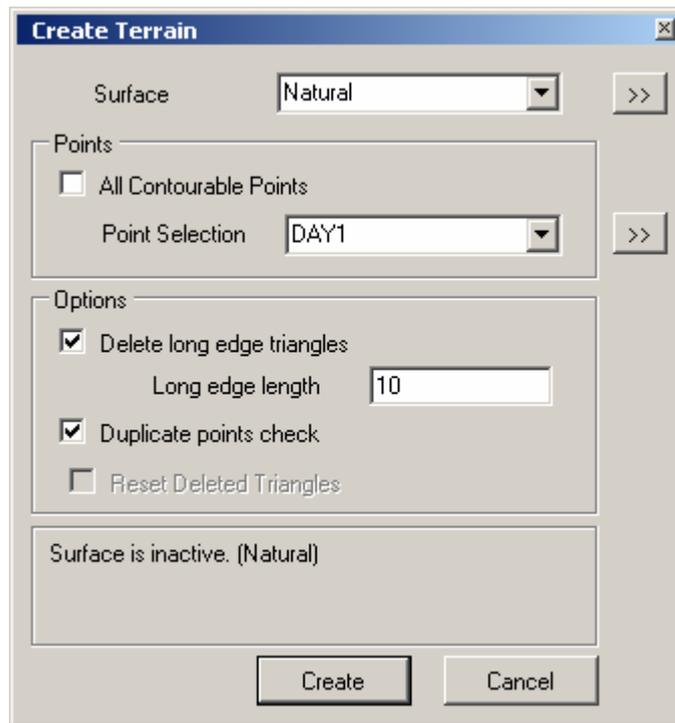


Figure 4 - Create a Surface

You can see that you have contours everywhere, whereas you have only really contoured the subject lot. In order to clean this up, use Query>>Line to check the largest spacing between survey points on the site. It appears to be under 10 metres so that is a good second attempt. Check the Delete long edge triangles box and enter 10 in the Long edge length field. Press the CREATE button.

I think you will agree that the contours now look much better, but where did the other triangles go? If you select Terrain >> Settings, and then the triangles tab, you can scroll down and see that the long edge triangles have been flagged: 'Deleted'. (See the figure below).

**About Triangle Deletion:** You may delete triangles in a number of ways. To delete individual triangles use Command: Erase >> Triangle or Command Terrain >> Settings. You may delete by length (Long edge) or use a boundary to delete those that fall outside a region. In each case you may use Command Terrain >> Settings to reinstate individual triangle (or all triangles).

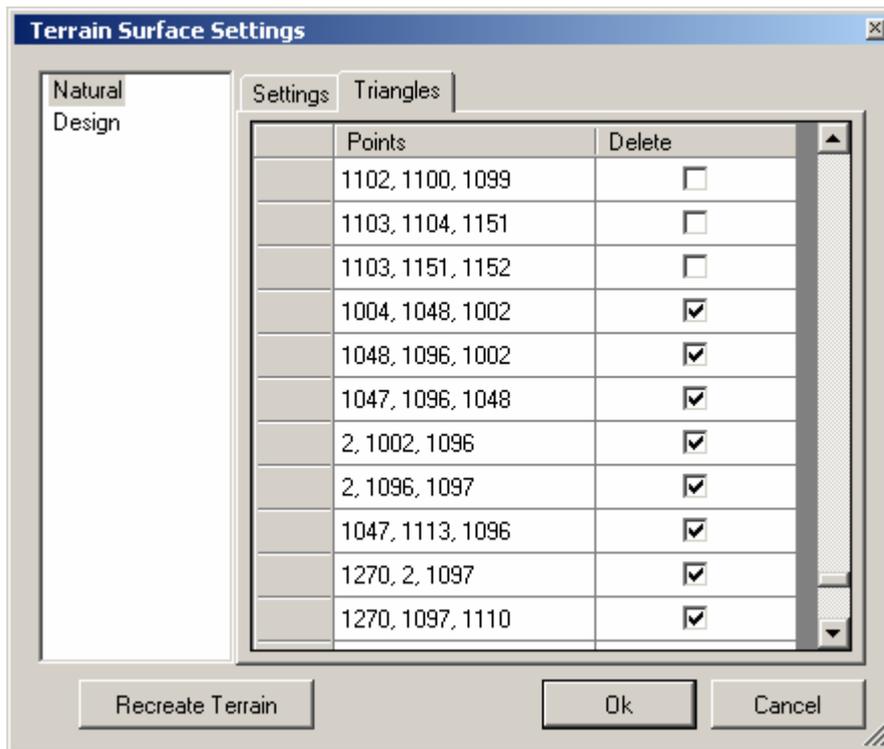


Figure 5 - Terrain settings after the second attempt.

### Cleanup Line Work.

On a job like this there would be much cleanup of the line work. There are a number of sheds on this site, where the lines have not been joined. In the interests of keeping this tutorial manageable, only one shed will be completed.

- Select Draw>>Angle + Distance.
- Snap to line 1243 to 1242 near the point 1243. Now to make sure you are drawing in the shed layer, right click in the drawing area and select Layer>>Set Current. The layer name in the bottom left corner should now read SHED. Then return to the Angle + Distance dialogue.

**About Finding Points:** The Command Zoom >> Scale can be used to find points and strings. Press Ctrl-F to open the tool. Enter a scale of 2 and the point you wish to find. Press scale (or the enter key) as many times as you need to set the zoom at the correct level for your current task. Zoomed in to far ? Press F8 to zoom out a bit.

- Enter the angle as 90.
- Right click on the drawing screen and make sure **Focus on distance** is checked. This means we will use only 1 angle as the building is a shed, we will assume all angles are 90 degrees. If you were drawing a bay window (where you need to change the angle constantly), you would uncheck **Focus on distance**.
- Enter the distance 4.27. Note that this distance is positive, so the line will go to the right of point 1243 at right angles to the line 1243 – 1242. If a negative distance is entered then the line would go to the left instead. See the figure below.

- Press the STORE button.

Then use Draw>>Line to join a line from the new point created to 1238.

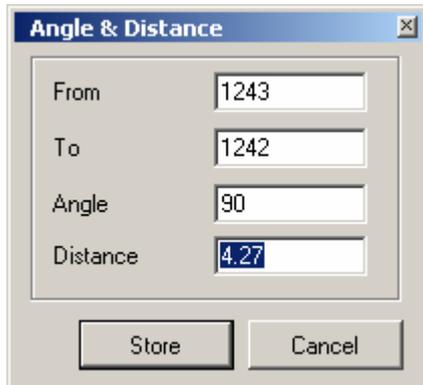


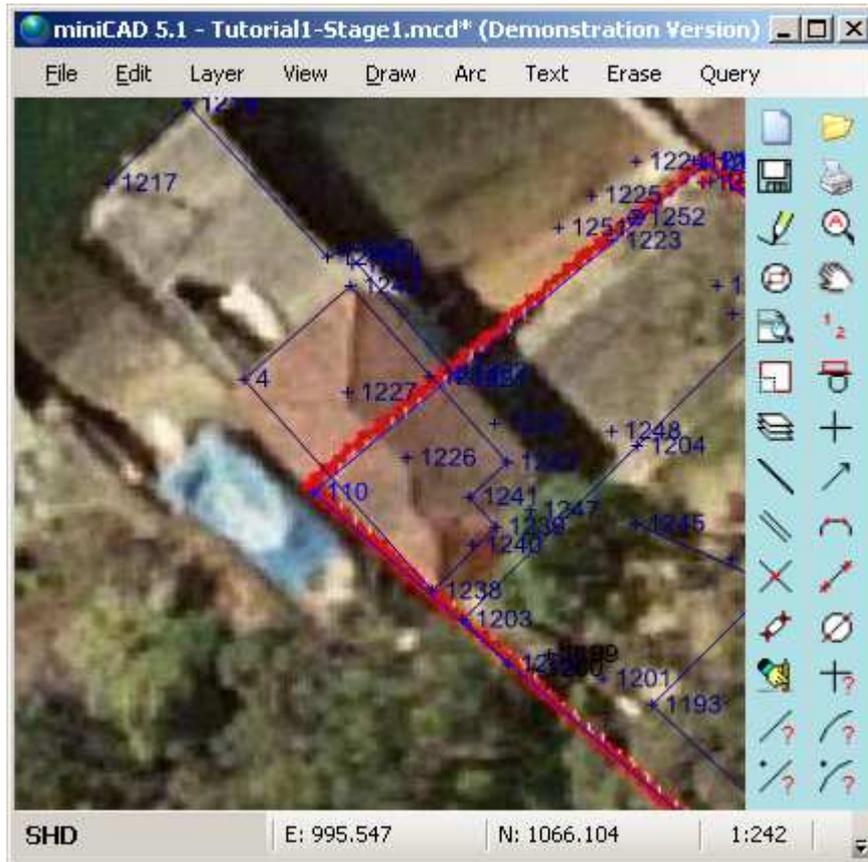
Figure 6 - Angle & Distance dialogue

### Geo-Referencing an image.

miniCAD provides a simple way to geo-reference an aerial photograph to a job. It is also possible to insert photographs of elevations. For instance if a client was interested in the location and height of all the window positions on the neighbouring residences, you could include a photograph of these then use Add>>Text to annotate the heights and dimensions of the windows. You could also possibly geo-reference this photo and calculate the corner coordinates of the windows more accurately.

- Select Draw>>Insert Image. Drag a rectangle of a reasonable size on the miniCAD job work area to place the image.
- At the File>>Open prompt open the file Tutorial1.jpg.
- Select the inserted image and right click. Select **Geo Reference image**. Follow the prompts in the message bar on the status line. Steps 1 and 2 are to select two points in the image and Steps 3 and 4 are to select the same two points in the miniCAD job. After completing Step 4 the image is automatically shifted, scaled and rotated. The red lines in the image represent the boundaries, so I suggest you use 2 diagonal corners of the lot to perform the geo referencing. Once complete the image is locked in position. If you have made a mistake, you can select the image again, right click and reselect Geo Reference image.

**More About Images:** Images may be locked, to avoid accidental selection, and they may also be displayed at 50% transparency to make the line work easier to see. The lock applies to all images in the job. (You can also hide them).



**Figure 19 Geo-referenced image.**

The figure above shows clearly the location of the boatshed walls in relation to the plan and the aerial photo of the boatshed roof. (Yes!. The Boatshed extends off the property onto Crown Land, so this owner will be paying rental fees to lease this land from Council and additional rental fees for the water and foreshore payable to Maritime Services ! Half your luck.).

### Freehand sketching.

Let's assume for some reason your client wants the waterline shown on the drawing as well. (You could create a new layer called WATERLINE.) Select Draw>>Pencil. Place the mouse cursor over the waterline in the photo, left click and drag the mouse along the waterline. You can use Right click to set the step. The speed of the mouse and the zoom level also influence the step. (Step controls the number of points that are created whilst tracing.) The smaller the step, the greater the number of points.

It is also possible to sketch more regular objects as well, such as the rectangular swimming pool two lots north east of the subject lot.

- Make POOL the current layer.

**About Current Layers:** There are three ways to make a layer current. Use the SET CURRENT button in the layer dialogue, right click on the Current Layer in the status bar or select an object on screen that is already in that layer, right click and use Layer>>Set Current.

- Select Draw>>Line from the menu bar. Right click and make sure **Allow new Points** is selected. Make sure the check box for Join 2 points is not selected. Left click on each of the pool corners to trace out the line of the pool and close the pool by snapping back on the first point created.

**Adding Text** – Select Text>>Add. Create a new layer and select Colour 3 – Blue. Left click a point in the bay where you would like the middle of your text to be. Type Sailors Bay, set the Rotation angle to 50 degrees, the Height to 5mm the font to Arial. Centre the text in both horizontal and vertical directions and select the OK button. Then close down the dialogue by clicking the cross in the top right corner. If you make any mistakes you can select the text using Text>>Modify.

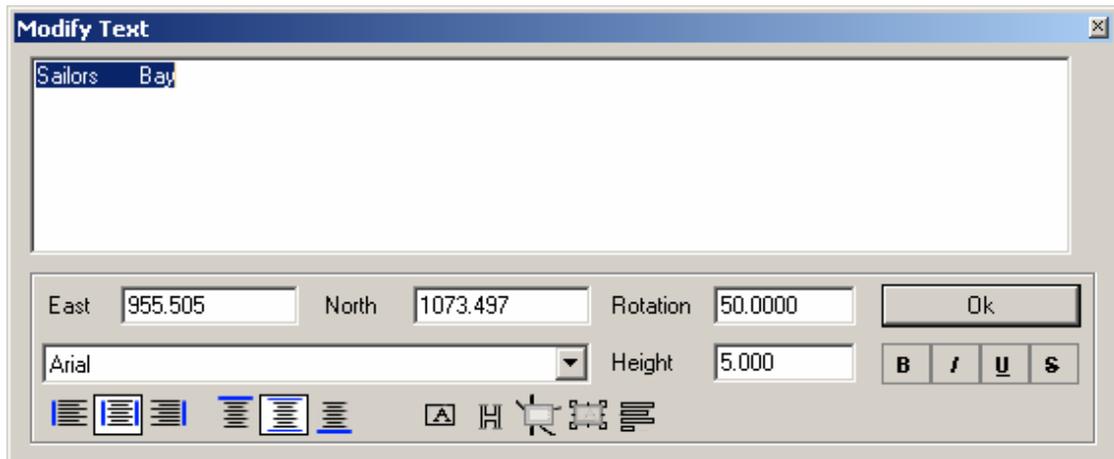


Figure 7 - Add / Modify Text

**Saving and loading views** – This is a powerful tool for navigating around large jobs. Zoom in on one of the many swimming pools in the aerial photo, so that the pool fills the screen. Select View>>Save from the menu bar. Now do the same for a different pool. You should now have 2 saved views. To see them select View>>Load from the menu bar. Zoom in on yet a third pool and select the ADD VIEW button. Now click on the view you require in the Load Saved Views dialogue box shown in figure 19 below. You can easily jump from one view to the next using this feature by clicking on the image in the Load Saved Views dialogue. You can delete views (and resize the thumbnail image).



Figure 8 - Load Saved Views

Congratulations. Apart from printing your job out, you have now finished it. See figure 20 below to see what it should look like. Waterfront bliss. Only your yacht is missing!

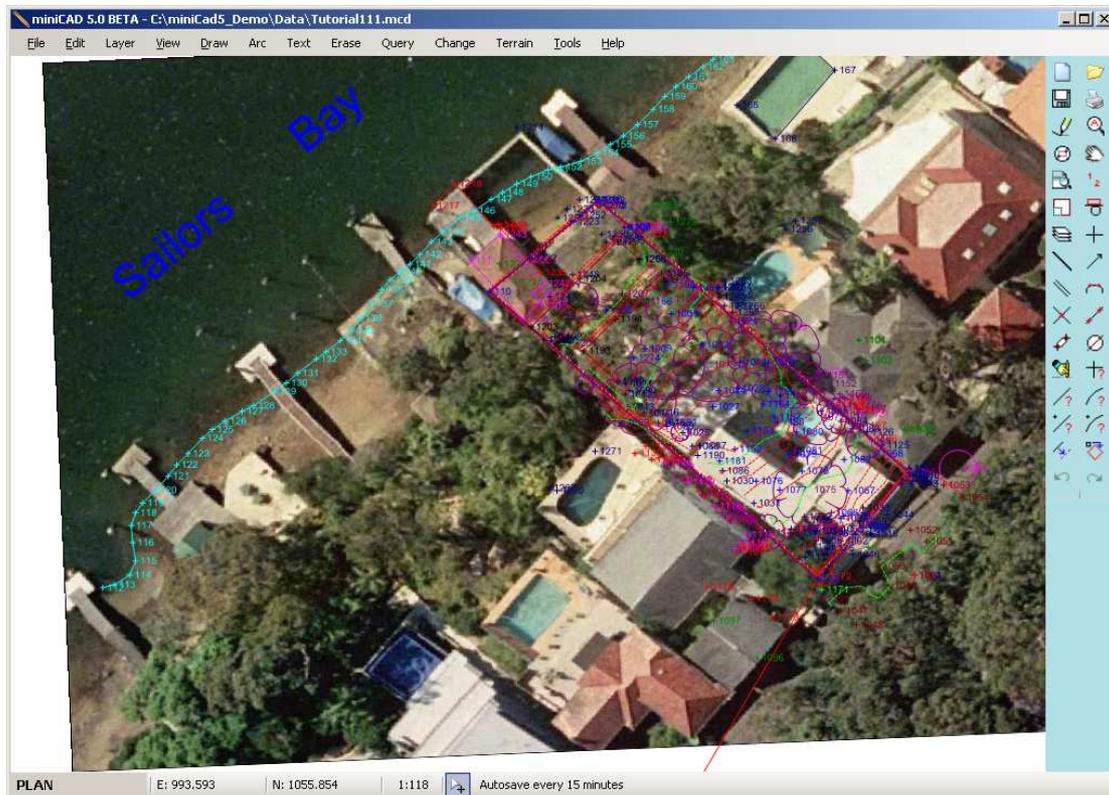


Figure 9 - The finished product

Congratulations on reaching the end of this tutorial. By now you will have a feel as to how easy miniCAD5 is to use. You are encouraged to explore the extensive help files associated with the program and found online. Should you have further queries, don't hesitate to contact us directly.

We endeavour to take on board as many user suggestions as possible. I think you will find us a very responsive and responsible company. Enjoy!

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