

GUIDE TO SETTING UP CONTROL POINTS

Using Topcon or Trimble including Expert Tips



In any project, you need a minimum of 3 Control Points surrounding the site. To get the full site calibration/localization, you need to have at least 4 points—this allows the software to calculate the inclined plane correction component of the calibration. The more control points you have, the better results you will have. Here is the step-by-step process for localizing/calibrating your site with either Topcon or Trimble rovers.






Topcon Pocket 3D Localization

1. Open or Create a Project
2. Go to Data > Control > Control Points > Add > Name the Point
3. Enter the Northing, Easting, & Elevation information that the surveyor provided
4. Now that you can see where the control points are surrounding the site, you can now localize
5. Place your rover rod precisely on the control point, making sure your rod is plumb
6. Go to Data > Control > Control Points > Select the Point > Select Edit > GPS Tab Select > Measure
7. It is a best practice to measure the point for 15 to 30 seconds to ensure the most accurate position from the satellites. Repeat until all the points are localized.
8. Make sure you check that the residual vertical and horizontal error is within tolerance. If a residual is not within tolerance, you can uncheck either the horizontal or vertical component of that control point measurement.

Trimble Siteworks Site Calibration

1. Open or Create a Project
2. Click on the top left 'hamburger' symbol and choose Project Setup->Project Calibration
3. To add a control point, click on the "+" symbol
4. Enter the Northing, Easting, & Elevation information that the surveyor provided
5. Choose the control point that you want to use from the screen and select it
6. Place your rover rod precisely on the control point, making sure your rod is plumb
7. The static mode settings window will appear. Verify that your measurement settings are correct and hit "start."
8. Repeat step 5 until all your control points are measured. Verify that all your residuals are within tolerance. Save your calibration. If a residual is not within tolerance, you can uncheck either the horizontal or vertical component of that control point measurement.

Tips from the ECI Experts:

-  Use your job specs to find where the horizontal and vertical residuals (errors in latitude and longitude) range should be, as these vary from job to job.
-  To exclude bad points (in red) from your data set, uncheck them. Once excluding some, be sure to have enough points coverage surrounding the site.
-  When measuring the control points using a network base, conduct it within a relatively short time frame so that accuracy is not affected from satellite/GPS changes.
-  After your localization/calibration is done, verify that it is correct by checking rim elevations, existing curbs, tie-in points, etc. This confirms the scale, translation, rotation, and tilt that the site calibration applied to the linework, and surface files were correct. You are now ready to start moving dirt.
-  It is a best practice to check in with your control points often to verify that your system is working correctly and to catch any problems with your corrections source. Often, your base station may not be set up correctly, or your network base gives you erroneous data.