Using Project Datum Coordinates in Trimble Survey Controller
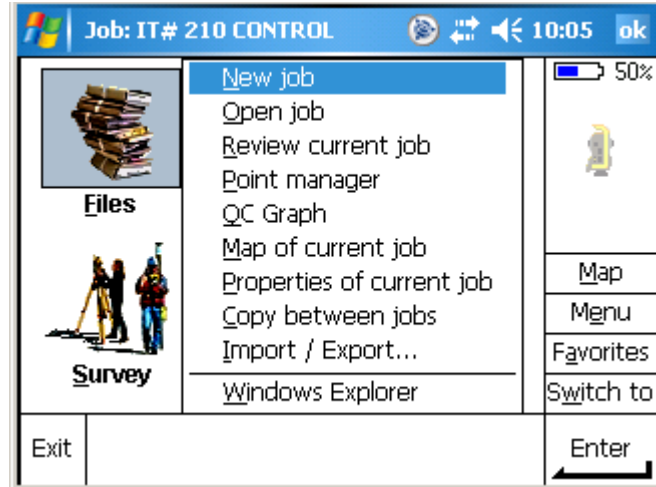
Allen Foley - District 7
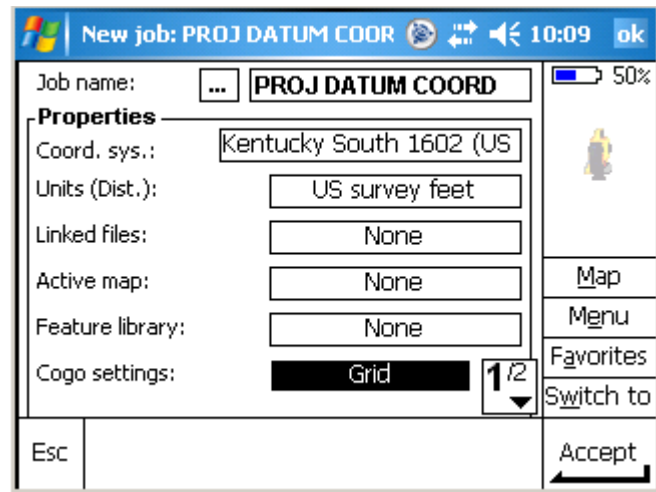
Coordinate control sheet we will be working with

Control Monument Information Sheet
Kentucky Transportation Cabinet
Department of Highways
Division of Design
Survey Coordination

Site/Quad	Station Description (Description is to be complete) (type, size, depth set, etc.)		Station Designation	
US 460 MEANS	3.25" Aluminum Disk Set in a 30" Deep Poured in Place Concrete Cylinder		00 46 14	
Locality/County MEANS MONTGOMERY			Stamping on Mark KTC 00 46 14	

| Date Set or Found (Date, With S or F)	Latitude	Longitude	Horiz. Datum	Zone	Vert. Datum
	37°56'56.72209"	83°46'29.85604"	NAD 83/92	KY. SOUTH	NAVD 88
Set DECEMBER 2000	Northing (State Plane) (US Survey Feet) 2234669.69'US	Easting (State Plane) (US Survey Feet) 2209904.84'US	Elevation 834.68'US	(Underline only one) GPS Derived Diff. Levels	Order Accuracy GPS
Person filling out form J. Mickelson	Northing (Project Datum) (US Survey Feet) 2234740.30'US	Easting (Project Datum) (US Survey Feet) 2209974.66'US	Geoid Model GEOID 03	Ellipsoid Height 727.97'US	Other Info. ITEM # 7-250.00
Established by Agency GRWAS	Project Factor 1.000031596	Back Station I.D. 00 46 13	Ground Azimuth & Distance to back station N 52°14'06"W 886.58'US		
Scale Factor 1.000005643	Elev. Factor 0.999962762	Ahead Station I.D.	Ground Azimuth & Distance to ahead station		
Ky Licensed Professional Land Surveyor In charge of monumentation	E. Rinehart		Ky. Registration No. 2283		

First we need to create a job:

Let's call it "PROJ DATUM COORD"

Next, click on the **Coord. sys:** button which should bring up the Select coordinate system screen:
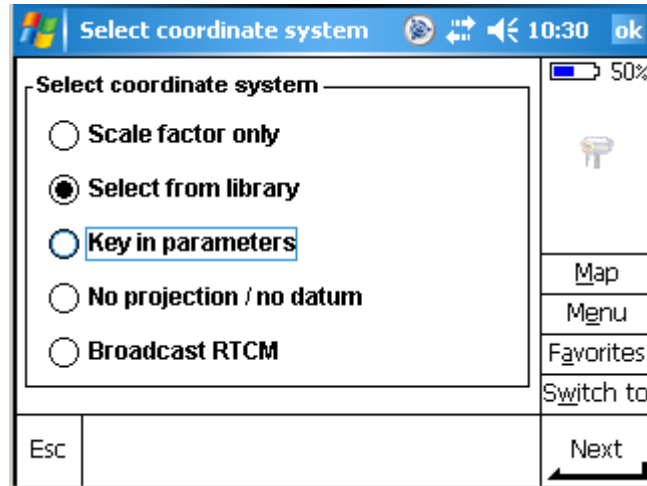
Now click the **Select from library** button. This should bring up the Select coordinate system screen which should similar to this:
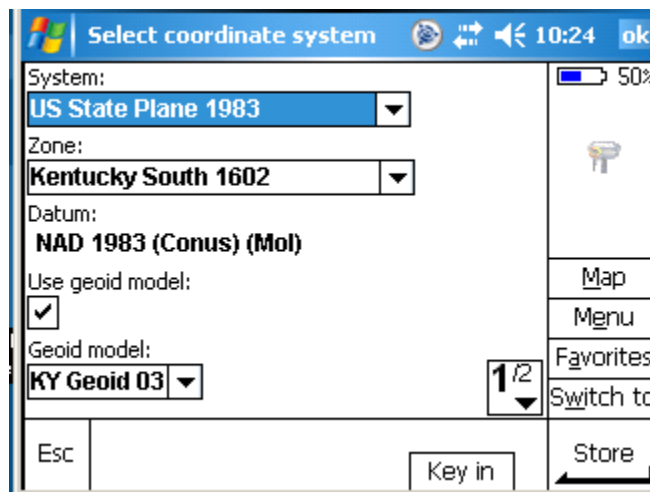

Now look at the coordinate control sheet. It states that the coordinates for the project are based in the KY South zone, the GEOID model is O3, and the System is NAD83. This is important because selecting the correct Coordinate system is key to getting project datum coordinates to work.

Next, click on the page button to go to page 2 which should look like this:
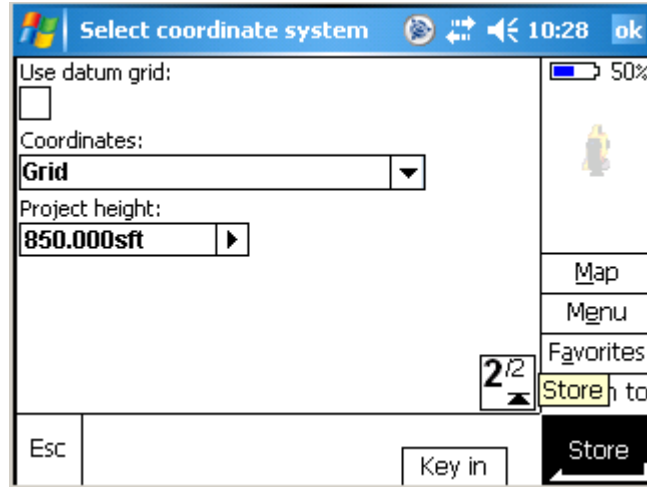

If your project height is blank then you will need to enter a height. The average height of the project is typically used. After you have entered the height, you will have to press the enter button and then the store button to save your settings. After storing your settings, the interface should go back to the project properties screen which should look similar to this:
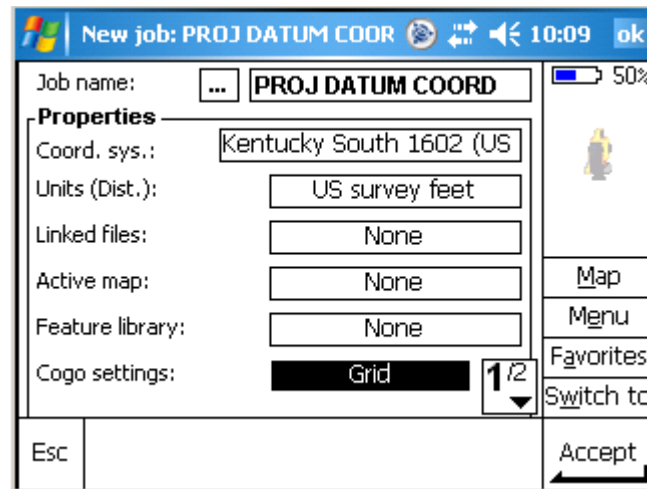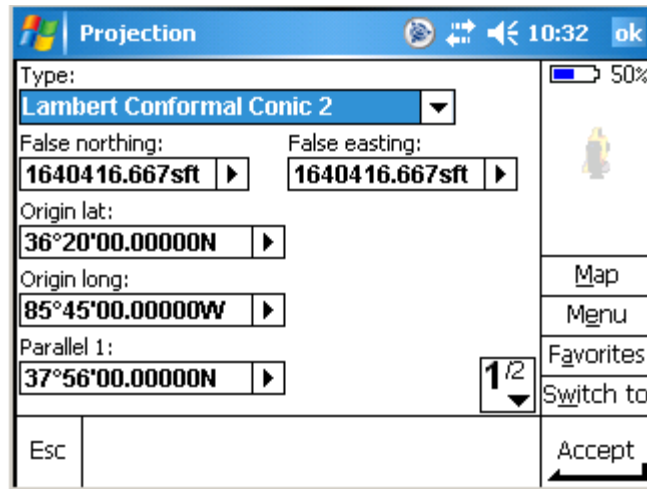
Now that the zone is set, you will need to click the **Coord. Sys:** button again which will bring you back to this screen:
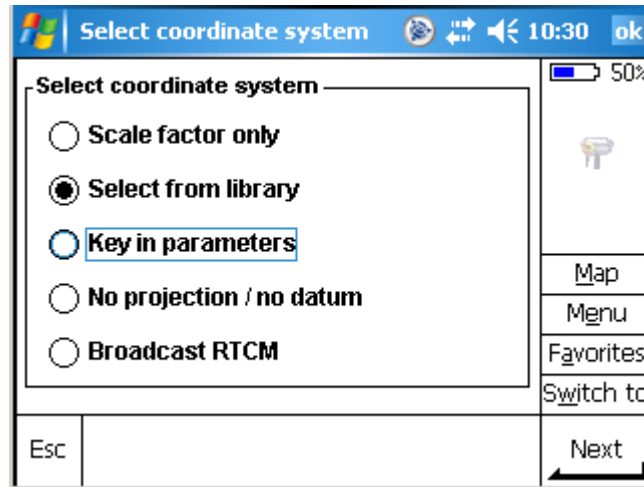
Select **Key in parameters** which should bring you to the screen below:
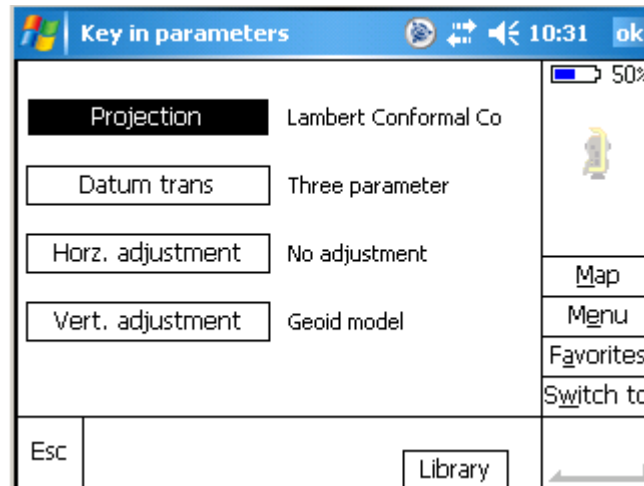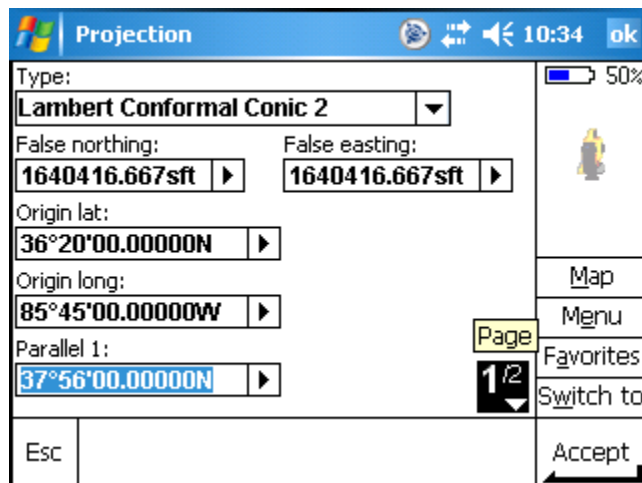

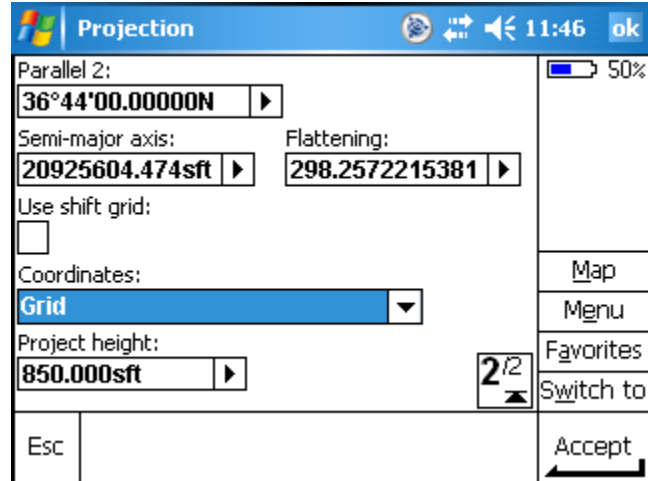Next select **Projection** and which brings up the Projection screen:

As you can see the false northing and easting are set for the KY South Zone. The KY North Zone's false northing is totally different, which is why it is important, to select the proper zone first.
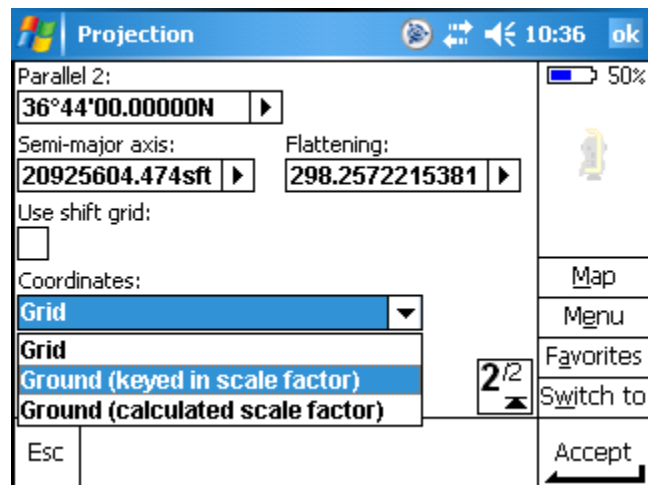
Next, click the page button to take you to page 2:
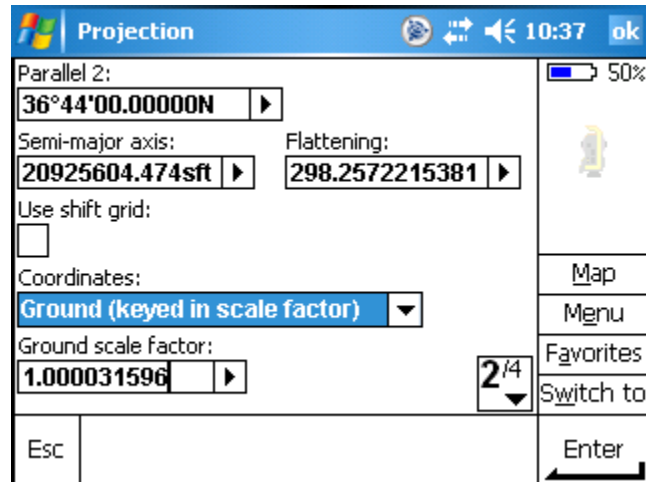
Page 2 should look like this or similar:

Click the down arrow on the **Coordinates box**. This shows the coordinate options available.
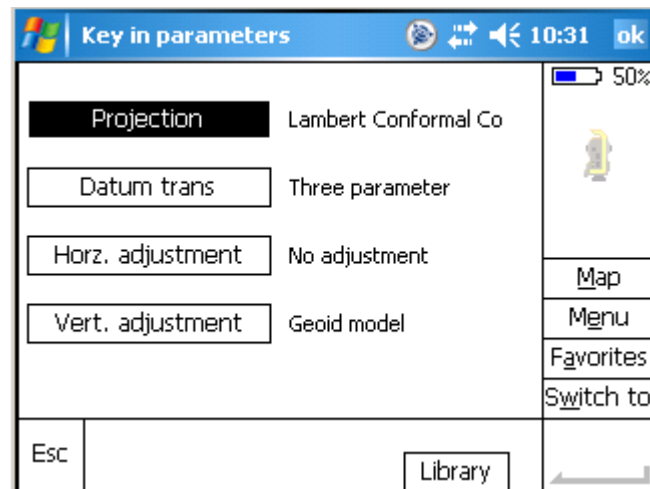

Select **Ground (keyed in scale factor)** then move to the **Ground scale factor box.**

Key in the project datum factor from the coordinate control sheet. After doing that your screen should look similar to this:


Make sure you entered the factor correctly, then press enter and accept the data. After you have done that you should be back at Key in parameters screen:


Make sure the **Datum trans has Three parameter** to the right of it and the **Horiz. Adjustment has No adjustment** beside of it. After checking those, click the **Vert. Adjustment** and verify that the correct geoid model is being used.
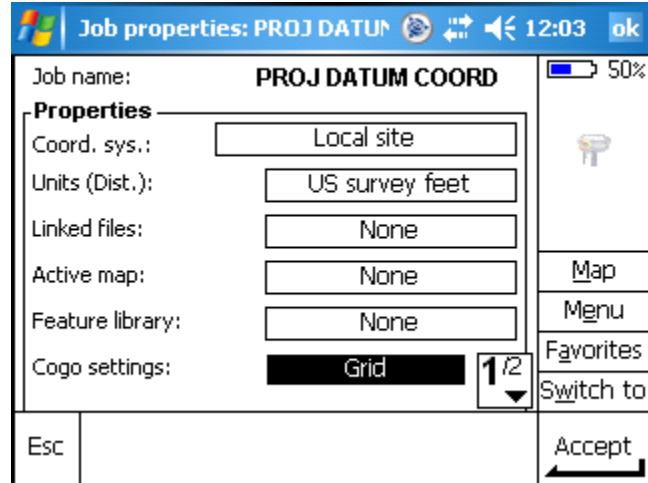
It should look something like this:
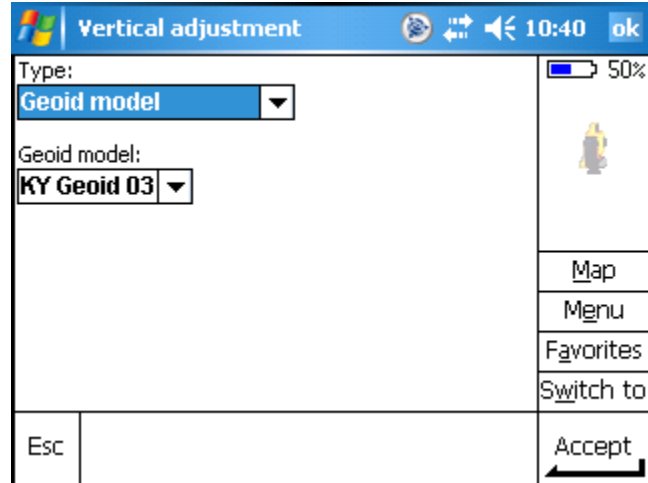
If the Geoid Model is correct (this information is on the coordinate data sheet) then you can accept, if it is not correct then change it to match the geoid on the data sheet. After you have verified the information is correct press accept which should send you back to this screen:
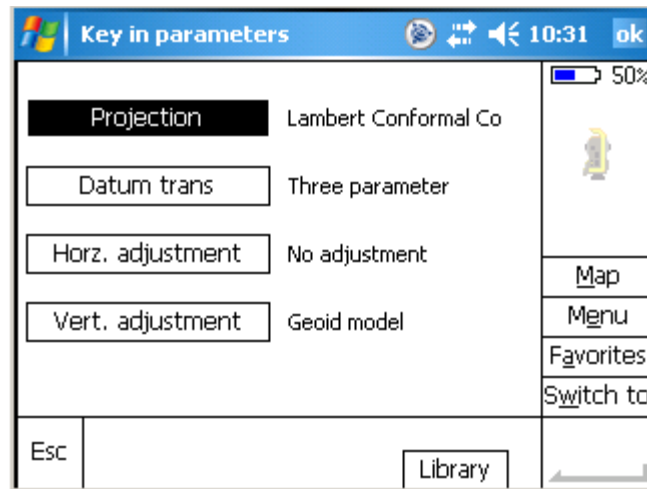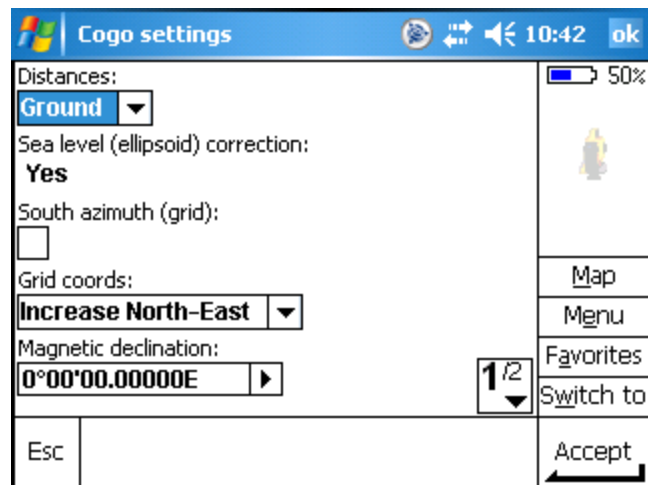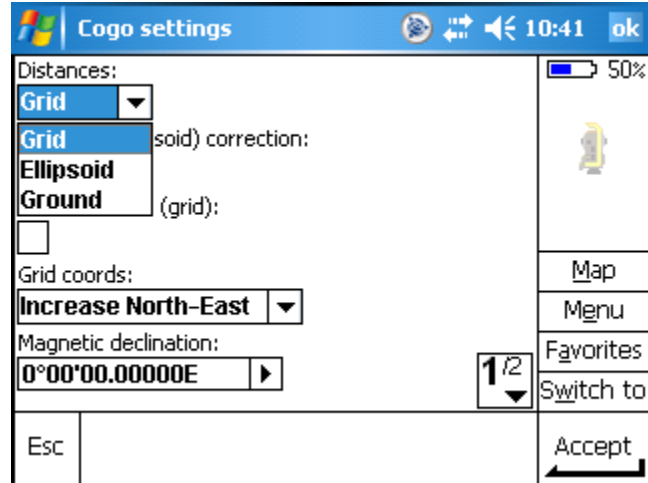
Now tap the ESC button to take you back to here:

The **Coord. Sys. is now set to local site** which is what we are looking for. Your units should be set to **US survey feet**. If they are not, change them. Next the controller will be set to ground coordinates. Click the **Cogo settings** button which should bring you to here:
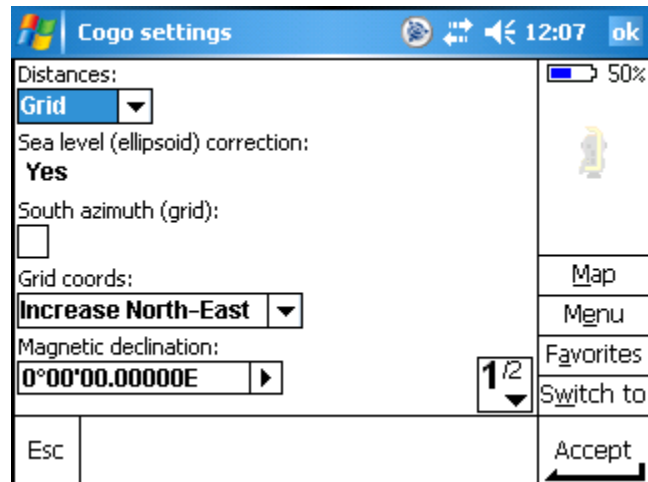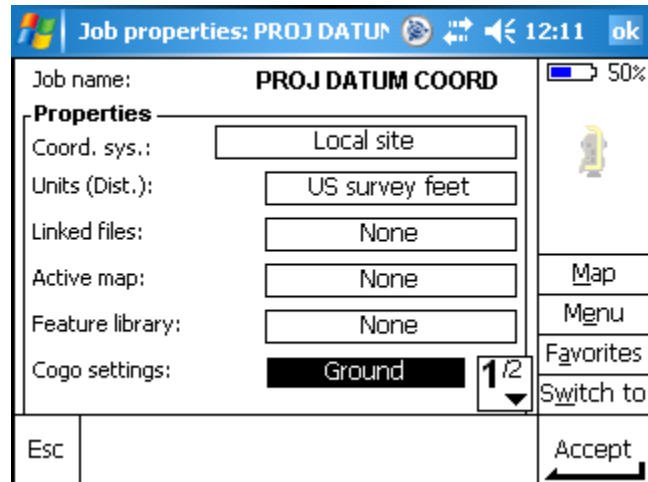
Click the arrow next to the distances box and select ground:
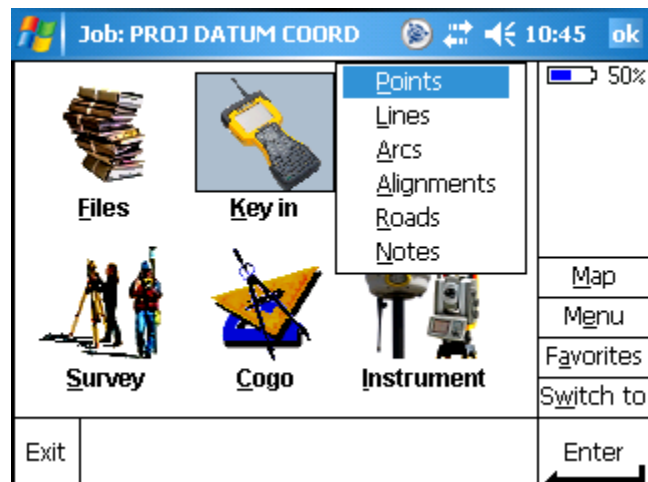

Now click **Accept** which should you back to Job properties screen.

If everything is correct your screen should look exactly like this.

If all that is correct go ahead and click accept which should take you to the main screen in survey controller:

Select Points which will bring up the Point screen.

Click on the **Options** tab at the bottom and make sure the **Coordinate view is set to grid**. Although we are working in ground, the software requires this to be set to Grid.

You are now ready to key in your **project datum coordinates**. Key in the rest of your control and begin surveying.

I have been using this procedure for several years and it has always worked for me. Just make sure you always check\stake out a known point or two before you begin any actual work to verify that everything is working properly.