Survey Job Setup for exporting file to ArcMap

The job setup will similar for this type of survey as we do for all surveys. We will use "UTM Coordinates" and set the distance to meters instead of feet. ArcMap uses a UTM data which is meter (x), meter (y), feet (z or elevation).

You will need to locate a USGS/NGS benchmark before you go to survey.   The elevation on this benchmark is what we will be using. The coordinates are not accurate enough to use, so we will get this information from the data collector.

Here is the link to the website most of us use to locate a benchmark.
http://www.ngs.noaa.gov/cgi-bin/datasheet.prl

Below is an example of a datasheet used to write the instructions.

```
DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.88.1
1        National Geodetic Survey,   Retrieval Date = MAY  9, 2012
 RQ0209 ************************************************************
 RQ0209  DESIGNATION -  K 438
 RQ0209  PID         -  RQ0209
 RQ0209  STATE/COUNTY-  ND/STUTSMAN
 RQ0209  COUNTRY     -  US
 RQ0209  USGS QUAD   -  JAMESTOWN (1990)
 RQ0209
 RQ0209                      *CURRENT SURVEY CONTROL
 RQ0209
 RQ0209* NAD 83(1986) POSITION- 46 55 16.      (N) 098 41 29.     (W)   SCALED
 RQ0209* NAVD 88 ORTHO HEIGHT -    453.759  (meters)    1488.71  (feet) ADJUSTED
 RQ0209
 RQ0209  GEOID HEIGHT    -         -24.42  (meters)                     GEOID09
 RQ0209  DYNAMIC HEIGHT  -         453.779  (meters)    1488.77  (feet) COMP
 RQ0209  MODELED GRAVITY -     980,645.0   (mgal)                       NAVD 88
 RQ0209
 RQ0209  VERT ORDER      -  FIRST    CLASS II
 RQ0209
 RQ0209.The horizontal coordinates were scaled from a topographic map and have
 RQ0209.an estimated accuracy of +/- 6 seconds.
 RQ0209.
 RQ0209.The orthometric height was determined by differential leveling and
 RQ0209.adjusted in June 1991.
 RQ0209
 RQ0209.The dynamic height is computed by dividing the NAVD 88
 RQ0209.geopotential number by the normal gravity value computed on the
 RQ0209.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 RQ0209.degrees latitude (g = 980.6199 gals.).
 RQ0209
 RQ0209.The modeled gravity was interpolated from observed gravity values.
 RQ0209
 RQ0209;                  North        East    Units  Estimated Accuracy
 RQ0209;SPC ND S      -  141,030.     737,740.    MT  (+/- 180 meters Scaled)
 RQ0209
 RQ0209                      SUPERSEDED SURVEY CONTROL
 RQ0209
 RQ0209  NGVD 29 (??/??/92) 453.376  (m)         1487.45   (f) ADJ UNCH    1 2
 RQ0209
 RQ0209.Superseded values are not recommended for survey control.
 RQ0209.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 RQ0209.See file dsdata.txt to determine how the superseded data were derived.
 RQ0209
 RQ0209 U.S. NATIONAL GRID SPATIAL ADDRESS: 14TNS234964(NAD 83)
 RQ0209
```

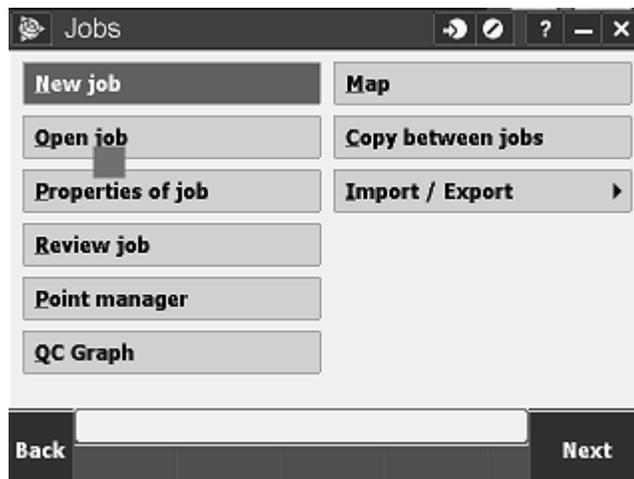# Job setup for UTM Zone coordinate system

The job setup can be done in the office, before you are even on the site. You will want to create a new job.
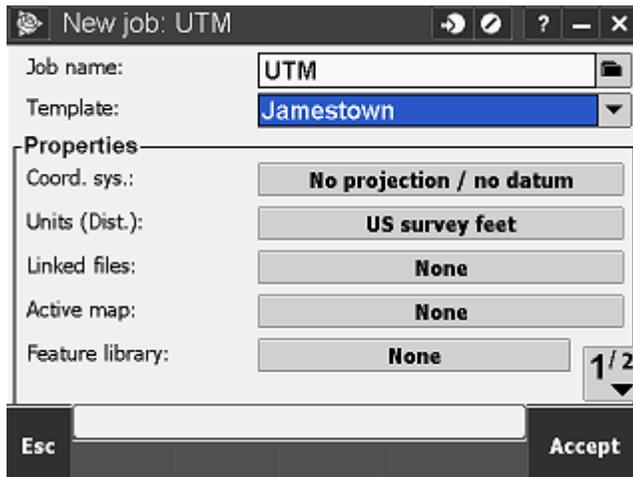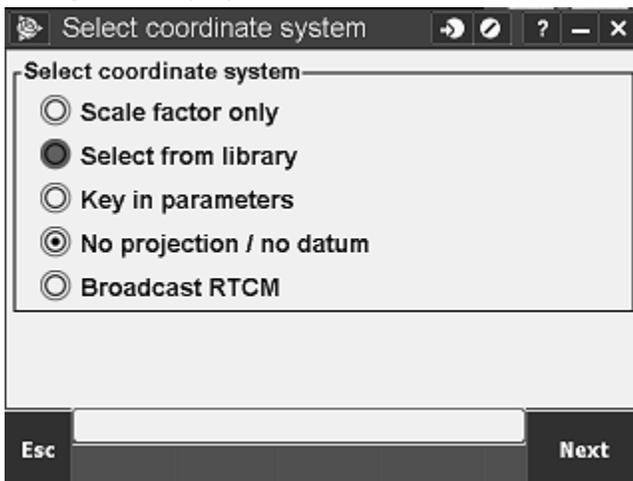

Choose "General Survey".
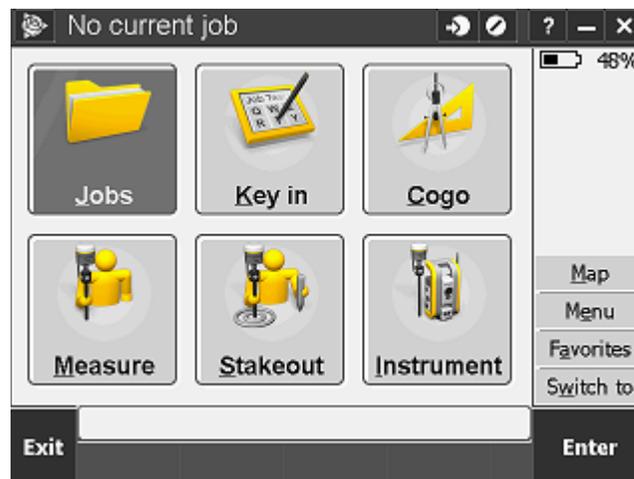
On data collector, select "Jobs"

Select "New Job".

Name the job and save it in the appropriate folder (by clicking on the folder icon to the right of the job name.)
You can setup a template. Example might be no projection/no datum or UTM.

Then, under the file properties click in the box to the right of Coord. Sys: where it says No projection/no datum.
Choose "Select from library"
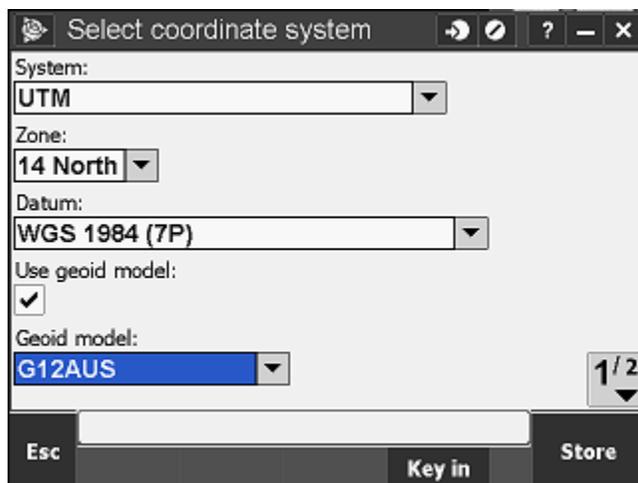
Under System choose "UTM", under Zone choose either "14 North" or "13 North" (western 1/4 of ND), under Datum choose "WGS 1984 (7P)", place a check mark in the box to the right of "Use geoid model", pick the "G12AUS" geoid model. ArcMap and the associated maps uses UTM, WGS 1984 coordinate system. Go to page 2/2.
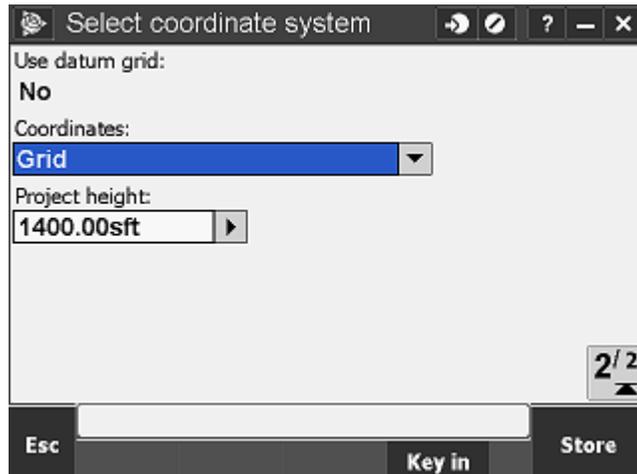
Under coordinates, choose "Grid", input an approximate project height, (based on the Topo Map). Click "Store" in bottom right.
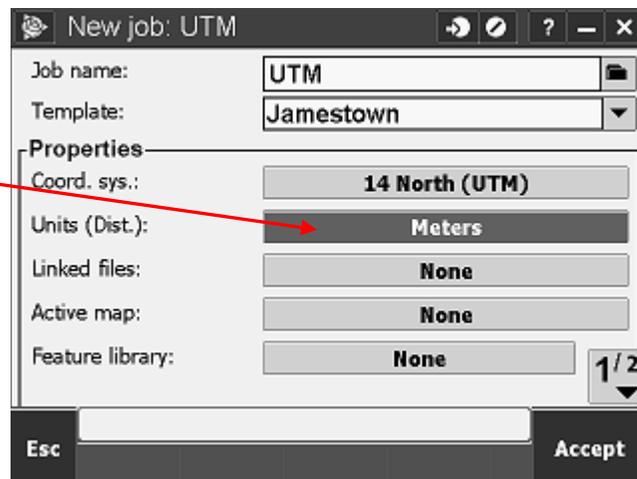
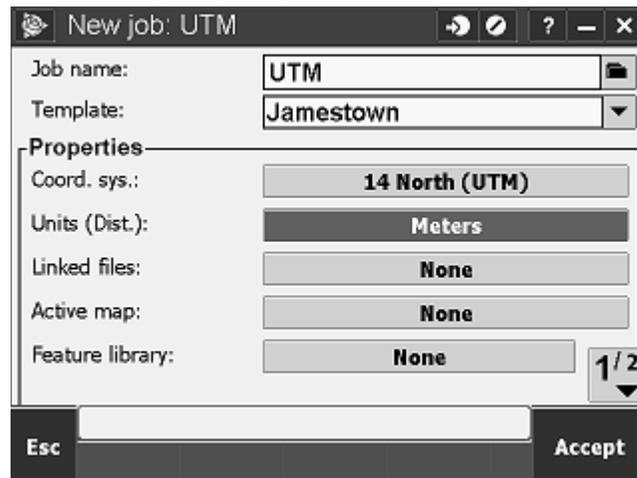In the Units (Dist) box click on "US Survey Feet" or "Meters "to adjust the units.
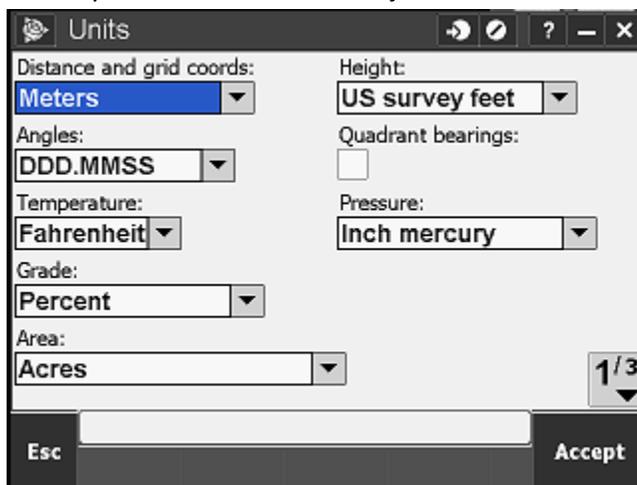
Settings for 1st page. *ArcMap uses a UTM data which is meter (x), meter (y), feet (z or elevation).*
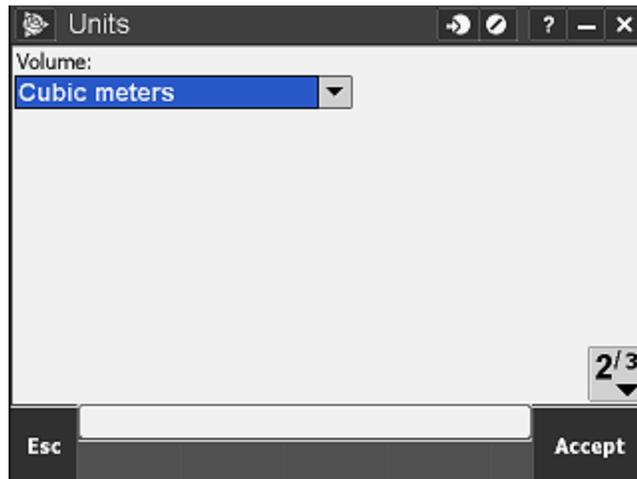
Settings for 2nd page. (Shouldn't have to change anything.)
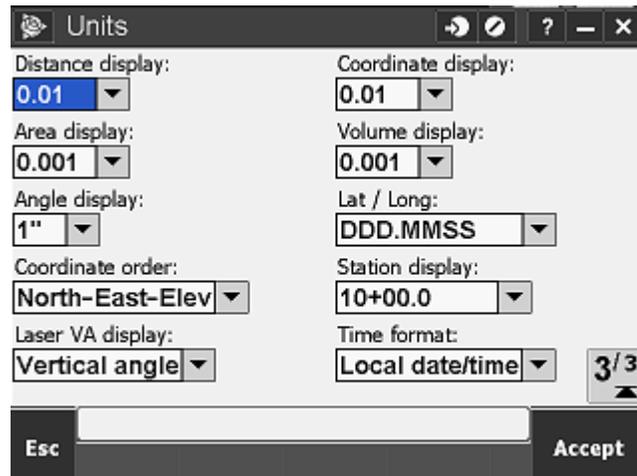
Settings for 3rd page. (Shouldn't have to change anything.)

New Job settings, page 1

New Job settings, page 2

The job setup should look like this.

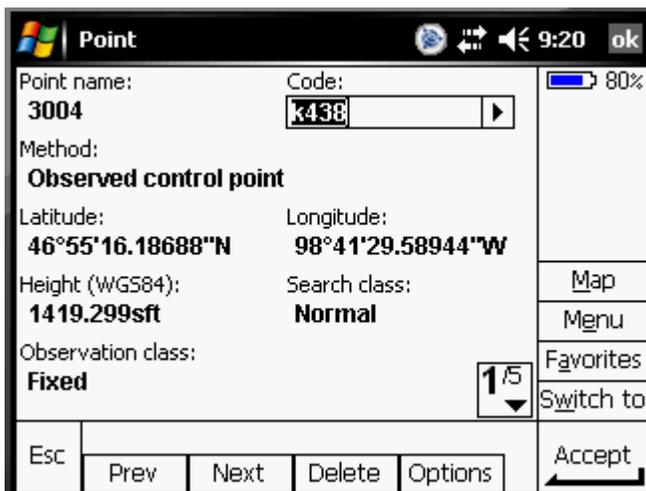# Site Calibration after the Survey is Complete (To Export to ArcMAP)

The UTM coordinates will be found based on the Latitude/Longitude of the point. The Lat/Long can be found be reviewing the point information.
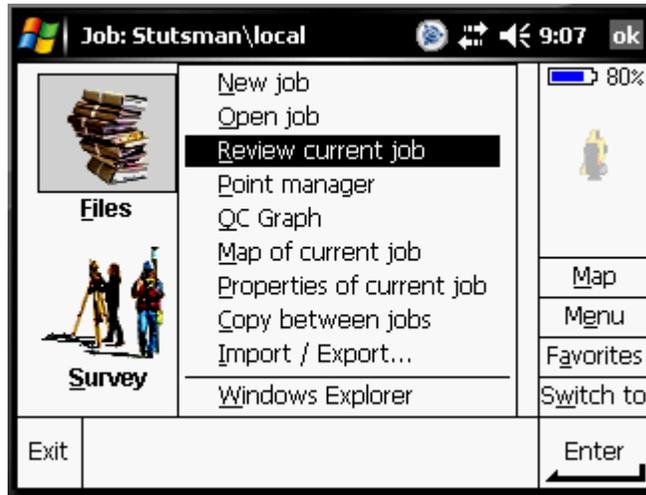
"Files" →"Review current job", navigate to the benchmark point.
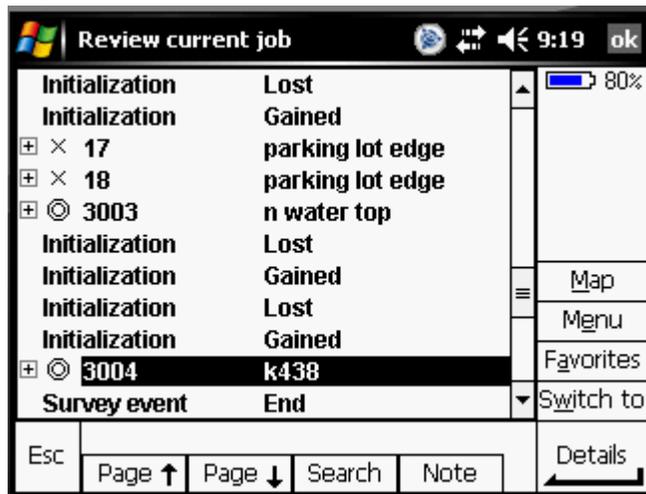
Click on the point you want to view the coordinates of it.

The Latitude Longitude should appear. If not, click on "options" and choose "WGS84" from the list, click "Accept".

Now you will use an online converter to convert the Latitude, Longitude coordinates to UTM.   The website I have used is:

http://www.rcn.montana.edu/resources/tools/coordinates.aspx?nav=11

The elevation of the point will be based on the USGS benchmark datasheet.



```
DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.88.1
1          National Geodetic Survey,   Retrieval Date = MAY  9, 2012
 RQ0209 *******************************************************************
 RQ0209  DESIGNATION -  K 438
 RQ0209  PID          -  RQ0209
 RQ0209  STATE/COUNTY-  ND/STUTSMAN
 RQ0209  COUNTRY      -  US
 RQ0209  USGS QUAD    -  JAMESTOWN (1990)
 RQ0209
 RQ0209                     *CURRENT SURVEY CONTROL
 RQ0209
 RQ0209* NAD 83(1986) POSITION- 46 55 16.    (N) 098 41 25.    (W)  SCALED
 RQ0209* NAVD 88 ORTHO HEIGHT -   453.759 (meters)   1488.71 (feet) ADJUSTED
 RQ0209
 RQ0209  GEOID HEIGHT     -         -24.42 (meters)               GEOID09
 RQ0209  DYNAMIC HEIGHT   -         453.779 (meters)   1488.77 (feet) COMP
 RQ0209  MODELED GRAVITY  -     980,645.0   (mgal)                 NAVD 88
 RQ0209
 RQ0209  VERT ORDER       -  FIRST     CLASS II
 RQ0209
 RQ0209.The horizontal coordinates were scaled from a topographic map and have
 RQ0209.an estimated accuracy of +/- 6 seconds.
 RQ0209.
 RQ0209.The orthometric height was determined by differential leveling and
 RQ0209.adjusted in June 1991.
 RQ0209
 RQ0209.The dynamic height is computed by dividing the NAVD 88
 RQ0209.geopotential number by the normal gravity value computed on the
 RQ0209.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 RQ0209.degrees latitude (g = 980.6199 gals.).
 RQ0209
 RQ0209.The modeled gravity was interpolated from observed gravity values.
 RQ0209
 RQ0209;               North        East   Units  Estimated Accuracy
 RQ0209;SPC ND S    -  141,030.    737,740.    MT  (+/- 180 meters Scaled)
 RQ0209
 RQ0209                  SUPERSEDED SURVEY CONTROL
 RQ0209
 RQ0209  NGVD 29 (??/??/92)  453.376  (m)         1487.45  (f) ADJ UNCH    1 2
 RQ0209
 RQ0209.Superseded values are not recommended for survey control.
 RQ0209.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 RQ0209.See file dsdata.txt to determine how the superseded data were derived.
 RQ0209
 RQ0209 U.S. NATIONAL GRID SPATIAL ADDRESS: 14TNS234964(NAD 83)
 RQ0209
```
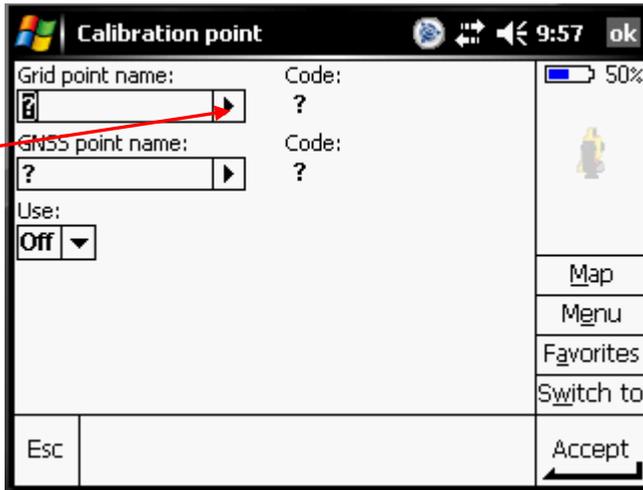
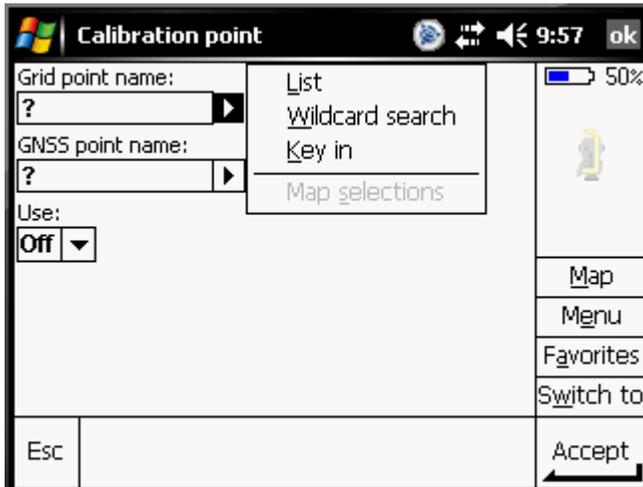Based on the information gathered we will now calibrate the survey
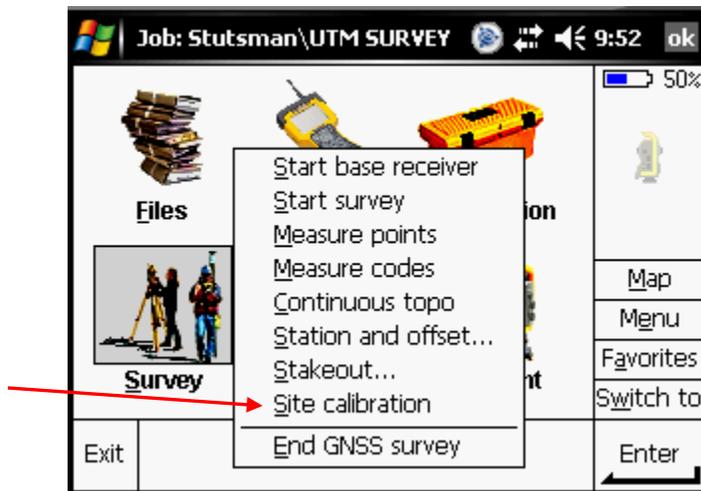
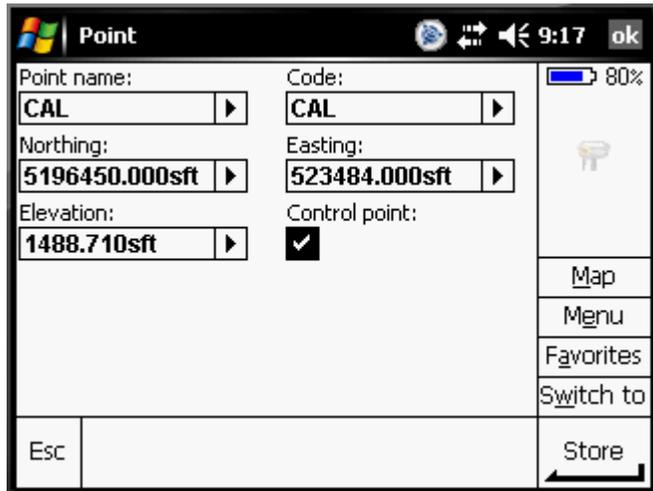Choose "Survey" →"Site Calibration"
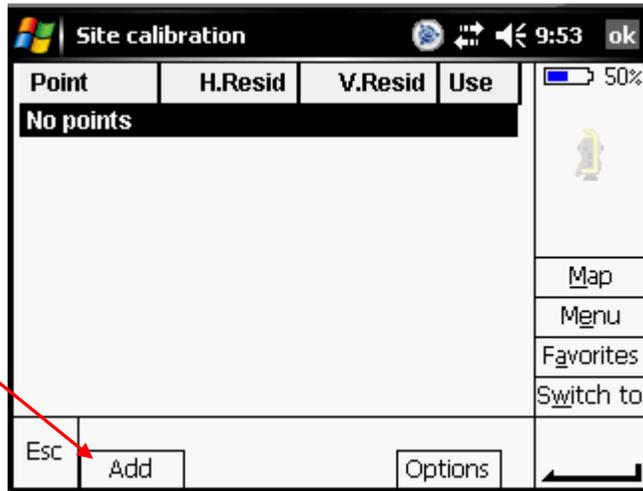
Click "Add" on the bottom left.

Click on the arrow to the right of Grid Point Name.
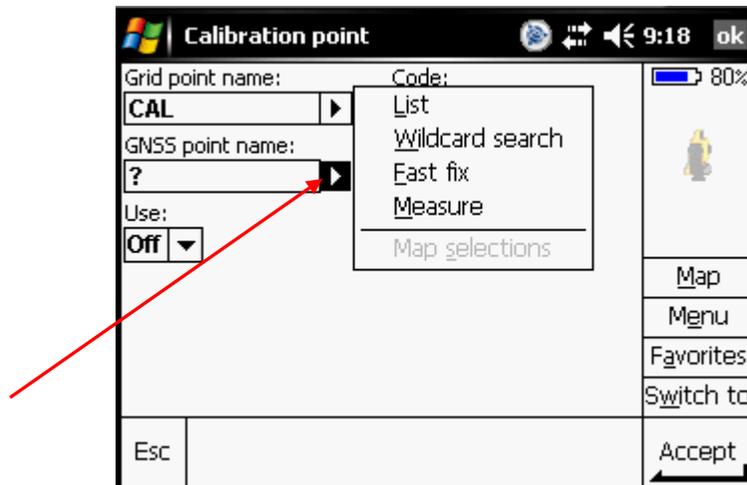

Choose "Key In"

Type a point name, like "CAL". Type "CAL" in the Code entry box.

Input the UTM coordinates for the point from the converter based on the Lat/Long of the point.
Input the elevation from the data sheet.

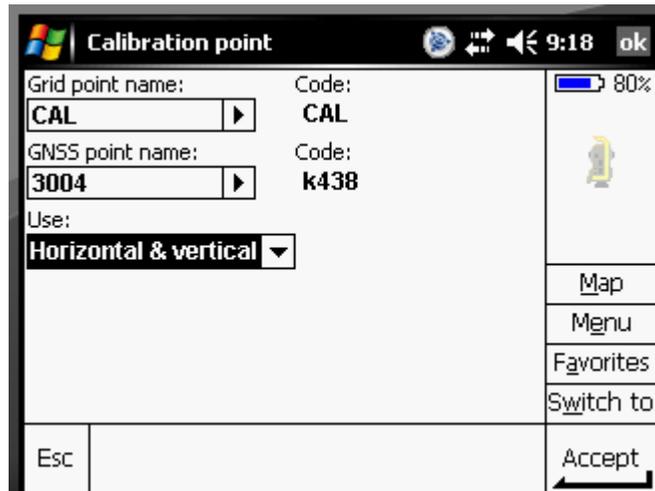Put a check mark in the "Control point" box.
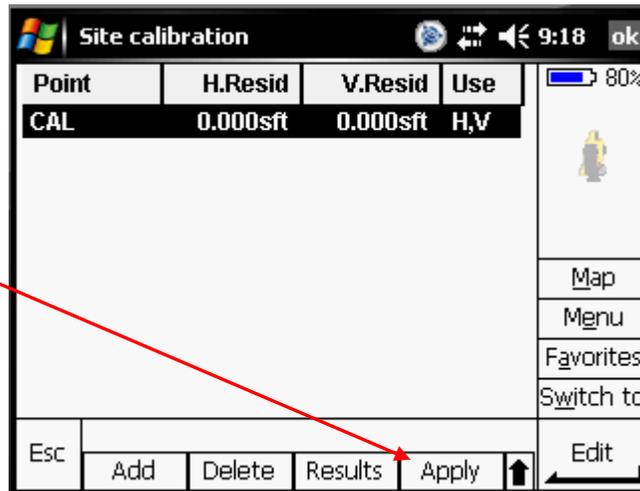Click "Store" in the bottom right hand corner.

Now choose the survey point from the list by clicking on the arrow to the right of GNSS point Name. Pick "List"
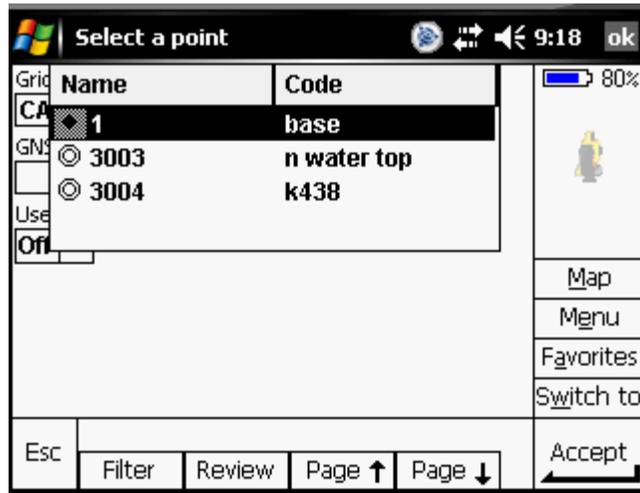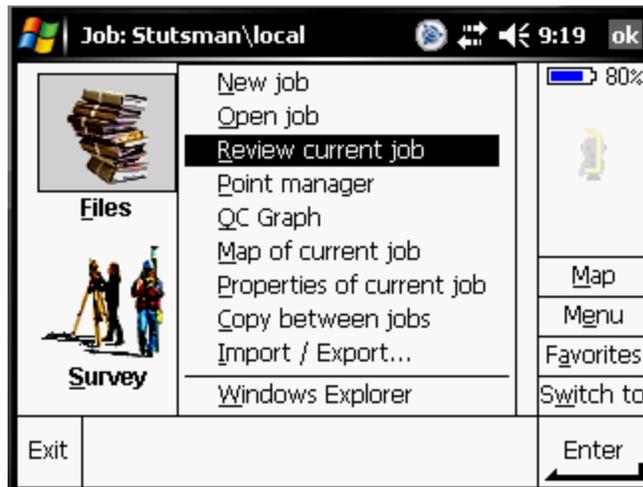
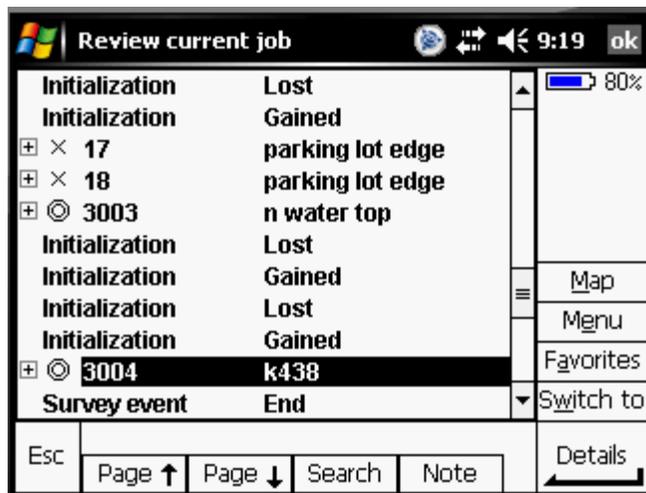Then you can choose the shot from the list.

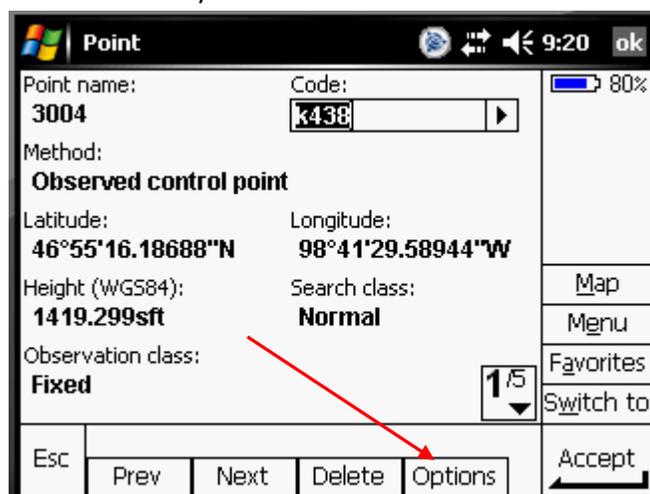This is what the screen will look like with the inputs. Click "Accept".

Click "Apply" to apply the calibration to the survey. The screen will look like this when complete.
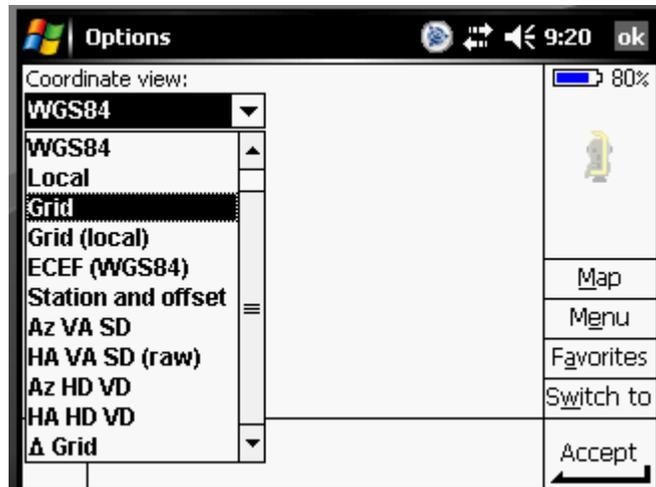
To make sure that the calibration was applied and works go to the "main menu". Choose "Files" → "Review Current job".
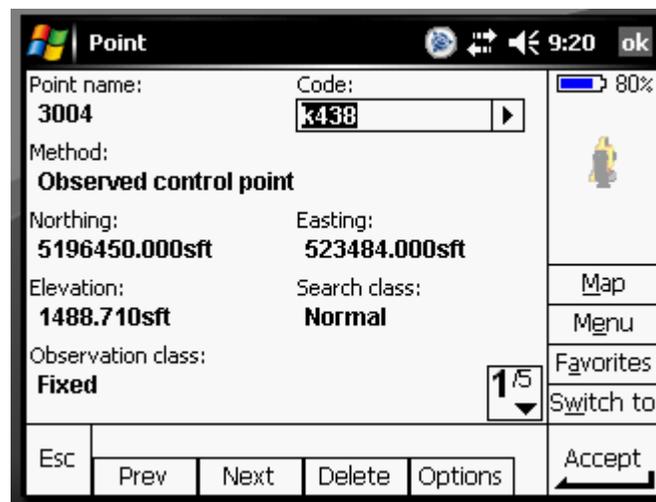

Find the point on the list that you took the survey shot on the benchmark.

View the point data, by clicking on the Point Name from the list. It will be in Latitude/Longitude. Click on "Options" on the bottom right hand part of the screen.

Choose "Grid" from the list.

The point now should be displayed in UTM coordinates that you inputted in the calibration. You can check other points if you like.

Instruction put together by: Erica Althoff, Area Eng 5-9-12, with help from Andrew Wilhelmi. Updated 3-4-13. Updated 2-18-15.