

## Survey Grade GPS Setup with SurvCE One Point Localization

### Tripod – Setup

- 1) Drive the hub flush with the ground. Put tack at the center or mark the center of the hub.
- 2) Unlock the center leg of the tripod, and set the leg to desired height by tightening the handscrew and inserting pegs into holes in the leg. Heights that are used are 1.5 meters, 1.8 meters, and 2.0 meters. \*Usually you want the height to be 2.0 meters which is the tallest the tripod will go.
- 3) Put the center leg on top of the tack in the hub. Unlock the legs with the hand releases. Release the bottom portion of the legs all the way out using the handscrew. Once the legs are all the way out tighten the handscrews.
- 4) Now use the hand releases to lengthen legs down to ground level, and level the tripod bubble.
- 5) Release the remaining leg that has the brass screw. Start with extending the bottom portion of the leg all the way and lock. Use the brass screw to release the leg the rest of the way to the ground. Do not tighten the brass screw yet.
- 6) Insert all of the tripod feet into the ground and level the tripod using the hand releases. Turn leveling bubble around the tripod to make sure it is level on all sides.
- 7) Once the tripod is completely level, tighten the brass screw on the last leg.
- 8) Now, on the base plate, loosen the brass screw on the side of the plate. Not all the way.
- 9) Take out brass stub in the center of the plate.
- 10) Screw the brass stub into the bottom of the GPS Base unit with the antenna attached to the top. Make sure that the GPS Receiver is labeled Base and **not** Rover.
- 11) Put the stub and the GPS Base into the center of the base plate and tighten the brass screw.
- 12) Turn the base unit on by pressing the green button in the top left corner of the unit.

## Carlson Explorer II - Initial SurvCE Setup using the Survey Grade GPS

- 1) To start SurvCE Double – Tap SuvCE Icon
- 2) Tap “**Select New/Existing Job**”
- 3) Type in the name of the job. Put your job in your respective folder for your county. Tap “**OK**”.
- 4) The Job Settings Box will appear.
- 5) Double check the Units tab to make sure the readings are configured to your liking
  - a. Recommended:
    - i. Zero Azimuth: **North**
    - ii. Vertical Obs: **Zenith**
    - iii. Distance Obs: **Slope**
    - iv. Angle: **Azimuth**
- 6) Once this screen is set, you will not have to change anything in it again.
- 7) Tap the New Job tab. Here the Pt ID, Coordinates, Elevation and Descriptions are grayed out. You will be able to enter your 1<sup>st</sup> point later.
- 8) Tap the GPS tab. To change the map projection, if you plan to survey in Maryland state plane Tap “**Edit Projection List**”
- 9) Tap “**Add Predefined**”. Country: **USA/NAD83**
- 10) Scroll down and highlight “**MD**”, Tap “**OK**”
- 11) Tap the Options tab. This based on your preference as the user.
- 12) The Stakeout tab is only used if you are doing any type of stakeout work.
- 13) Once you have completed these tabs, tap “**OK**”
- 14) The Bluetooth Receiver screen will come up.
- 15) If there are no receiver names in the list. Tap “**Find Receivers**”. When you do that the base should appear as **Base XXX-XXXX**. The X’s represent the serial number of the unit. The serial number is located on the bottom of the GPS Base. Highlight the base in list based on your serial number. Tap “**Connect**”
- 16) If done properly, it will tell you that it is connected
- 17) Go to the Equip tab. Tap Instrument. The instrument type should be: **Topcon GPS +**
- 18) Tap Configure Base. (Note: This is whenever you are starting from a new position.)
- 19) Go to the Station tab
  - a. Receiver Type: **Hiper Lite Plus**
  - b. Antenna Type: **Hiper Lite**
  - c. Enter Antenna Height: **Either 1.5m, 1.8m, or 2.0m**. Make sure that when you type in the height that you put the “m” for meters behind it. Once you tap outside of that box, it will convert to feet automatically. This will be a vertical height. (Note: This is the height of the base)
  - d. Elevation Mask: **10**

- 20) The Radio Tab (Default)
  - a. Radio Type: **Sp Spectrum**
  - b. Radio Port: **C**
  - c. Radio Baud: **38400**
  - d. RTK Message Type: **CMR+**
- 21) Tap **“OK”**
- 22) It will come back to the Bluetooth Receiver screen again. Tap **“Connect”**
- 23) Tap **“Read from GPS”**
  - a. Number of samples: **1**
- 24) Tap **“OK”**
- 25) Continue with Base Setup
- 26) The approximate state plane coordinates for the base
- 27) Tap **“Yes”** to continue
- 28) Save Base Configuration. Tap **“Yes”**. It will name the file with the job name .ref as the extension. Tap **“OK”**
- 29) Tap Configure Rover
  - a. The Radio and Station tabs will be the same as they were for the base unit.
- 30) Tap **“OK”**
- 31) The Receiver Screen will appear again. Now you want to add the receiver that you plan have with your collector. Make sure the rover is turned on. If the rover is not in your list tab **“Find Receiver”**. Highlight the correct rover that has the serial number that you plan to work with. Tap **“Connect”**
- 32) Now go back to the file tab. We are now going to input the information for our 1<sup>st</sup> point.
- 33) Tap List Points. The list points screen will appear with no points in the list. This is your opportunity to add point number 1.
- 34) Tap **“Add Points”**
- 35) Input the information for Point #1
  - a. Point ID: **1**
  - b. Northing: **5000**
  - c. Easting: **5000**
  - d. Elevation: **100.00** (Whatever elevation that you want to use for a benchmark.)
  - e. Description: TBM or Start
- 36) Tap **“OK”**
- 37) This returns you to the list point screen with point #1 shown in the list. Tap **“Close”**
- 38) Go Back to the Equip Tab.
- 39) Tap Localization. Localization creates your own coordinate plane, if you are not planning to use state plane or any other type of coordinate system.
- 40) The GPS Localization Screen comes up. Tap **“Add”**
- 41) Local Point screen appears
- 42) Tap grey box to the right of the point from file box.
- 43) Highlight point #1 from the list and tap **“OK”**
- 44) The Local Point screen returns with the information for point #1 filled in. Tap **“OK”**
- 45) The GPS Coordinates screen appears. Make sure the **“Read GPS”** is highlighted and Tap **“OK”**
- 46) The Localization screen appears.
  - a. Number of Samples to Read: **10**
- 47) Before you tap OK, setup your rod over your point that you will be using for localization. Using the bi-pod, make sure that the bubble is level on your point, and tap **“OK”**.

- 48) The data collector will cycle through the 10 samples. It will show the approximate state plane coordinates of the base and the rover. Tap “**OK**”.
- 49) Now save your localization file (e.g. Jobname.dat) .dat is the extension used for localization files. You only have to localize one data collector and 1 rover.
- 50) If you are only using one data collector, you now are ready to begin taking shots by going to the Surv tab and tap, Store Points. The triangle on the screen represents the rover. When you move then you will see the triangle move.

### Transferring between 2 Data Collectors and 2 Rovers

- 1) Go to File tab on both data collectors.
- 2) Tap Data Transfer
- 3) For the type of transfer, you want to select “**Kermit Transfer**” on both collectors.
- 4) You have the option to send or receive files
- 5) Plug the data transfer cable into the data port at the bottom of each collector.
- 6) The collector receiving the files must tap “**Receive**” before the Send button is tapped on the other collector.
- 7) On the collector that you are sending from, tap “**Send**”, and select the files that you would like to transfer. The files that you want to transfer have the extensions (.ref & .dat). You can not send them at the same time. When using 2 data collectors, you have to adjust your point numbers accordingly. You have to use 2 sets of numbers so you will not overwrite points once you are ready to combine the data into one file. (Ex. On data collector #1 – 1000, 1001 or on data collector #2 – 2000, 2001) or vice versa.
- 8) Now you are ready to survey
- 9) Tap the Surv tab
- 10) Tap Store Points. The map view will appear. To take shots tap “**S**” or hit the green enter button on the keypad.

### Downloading Survey from 2 Data Collectors

- 1) Once you are back in the office, download both of your data collectors and as you normally would. The files that you need to download are as follows: .crd, .rw5
- 2) In SurvCadd, go to the Cogo Module & then select the **Points** menu.
- 3) Once in the point menu, click “**Set Coordinate File**”.
- 4) Select one of the downloaded crd files. This will make whatever coordinate file you pick the active one in your drawing.
- 5) Next, click “**Coordinate File Utilities**”, under the file utilities column click “**Copy/Merge CRD File**”.
- 6) In the command line, it will ask do you want to copy a crd file **From** another file or do you want to copy the crd file that you set earlier **To** another file. You want to select **From**, then you select the file from that you want to merge into the current crd file.
- 7) Now, it wants to know which point numbers that you want to copy. Here you can type all, to copy all the points.
- 8) Then it will ask if you want to renumber the points. Type **no** if you used different numbering when you were in the field. If you used the same numbering you will have to renumber your points.
- 9) You have to print the raw files out separately.

## File Storage on the Data Collector

- 1) Double – click “**My Computer**” on your desktop screen.
- 2) Double – click the “**SystemCF**” folder.
- 3) Double – click the “**Data**” folder.
- 4) The location **My Computer\SystemCF\Data** is where all your data will be stored. If data is stored anywhere else such as in My Documents, the data will be lost if the collector were to crash.
- 5) Here you can create sub – directories such as folders for each county.
- 6) You go here and delete jobs if they are no longer needed on the data collector.