

Capturing accurate Z data (sub-foot) using Trimble GeoXH, cell phone, and MNDOT VRS base station data

Introduction: Utilizing a cell phone with a data plan and one of Trimble's new H-star technology GPS it is now possible to get sub-foot Z data real-time.

Hardware/Software Requirements:

- Cell phone with Bluetooth and Data plan with Dial-Up networking service
- Trimble H series GPS and TerraSync
Note: It may be possible to use other software on the GPS such as ArcPad, but I haven't tried doing it.
- Pathfinder Office to create Local Site
- Username and Password to MNDOT's VRS server (available for free at http://www.olmweb.dot.state.mn.us/CORS.GPS/cors_faq.html#Q4)

Summary:

A Bluetooth connection is established between the GPS unit and the cell phone. Once established a new modem connection is created on the GPS utilizing the Dial-up Networking service of the phone. To open the new modem connection you can either click and hold on the connection on the GPS and select connect, or alternatively launch Internet Explorer and refresh a web page. Now TerraSync is configured to accept real-time corrections from the MNDOT VRS data by completing the following steps

1. Click the Setup Menu – Click Real-time Settings button
2. Choose External Source – Click the Wrench button
3. Choose VRS from the Type menu – Internet for connection type
4. Type 156.98.4.214 for Address – Port 2101
5. Click the Wrench for Source and select MNDOT_GPS_RTCM_23
6. Type in username obtained from MNDOT
7. Type in password obtained from MNDOT
8. Click OK's until your back at the Setup Menu
9. Click the External Source button if it isn't already depressed

To further increase the accuracy of the GPS a Local Site needs to be created in Pathfinder office and is uploaded to the GPS. Initial GPS shots of some known benchmarks are needed to create the Local Site. Be sure that the initial shots cover the extent of the area you're planning on collecting future GPS data. For example if you're collect data on a county wide basis you'd want to shoot points for the local site setup that have an even distribution throughout the county. This data will be used to as input for the Local Site.

Excerpt from Trimble's Pathfinder Office document (look up Local Site in the index)

“A local site is an adjustment to the zone of a coordinate system. The adjustment consists of a translation, scaling, rotation about an origin, and an optional height adjustment. Creating a local site is for advanced users only.

Pathfinder RTK system users will usually want to create a local site in order to calibrate GPS positions they have collected against existing survey marks to derive a vertical and horizontal plane adjustment.

A local site is applied in order to shift GPS positions by a certain value. You may, for example, create a local site because your GPS positions do not overlay perfectly with data in an existing geographic database, or because the coordinate system you use differs slightly from a coordinate system supported by the GPS Pathfinder Office software.”

For more information:

Contact Del Stewart at Compass Tools for detailed instructions with screen shots

Business (612) 331-4256

Mobile (507) 993-1669

<mailto:dstewart@compasstoolsinc.com>