



FieldWorks by XYZworks

Joe Bell, LS

It is very seldom that I see a brand new program from a brand new company that shows this much maturity. The documentation is clear and free of sales fluff that contaminates so much documentation these days.

This program has data collection, COGO, stakeout, and full road staking capabilities. FieldWorks runs on any handheld or pocket computer that runs Windows CE 2.11 or higher. The model I used was a Compaq Aero Pocket PC. The screen captures are actually from a desktop demo version which I downloaded for free off of their Website: <http://www.xyzworks.com> The screens are exactly the same screens that are displayed on the Pocket PC and are operated by touch.

Figures 1a and 1b show the opening screen and the Options screen. Notice how uncluttered the screen is. I selected Options and there on one screen are all of the functions needed to customize the program to a particular job. The user can set options such as whether to store elevations (and automatically bring up all the prompts for measuring elevations.) Point Protect keeps the user from acci-

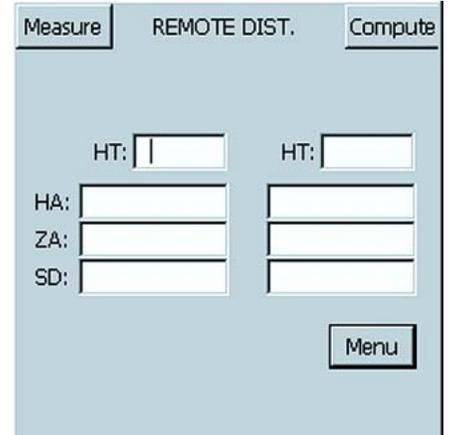
dentally erasing points. Field data (raw data) can be saved as well as coordinates. Activating StakeSounds will cause the Pocket PC to beep at different frequencies when the user approaches a point to be staked.

The next item is a complete selection of total station, laser ranger, level, GPS, and robotic total station options (there are 25 choices in all). From this same screen the user can select feet or meters, grads or degrees, bearings, north or south azimuths, and set in a scale factor for ground to grid in order to work directly in State Plane Coordinates. It is possible to set the number of decimal places to be displayed (all numbers are actually 16-digit precision).

Generating Field Data

This program makes it possible to generate field data in several different ASCII formats: generic, SMI, TDS, SDR, CadZone and Maptech. Coordinates can be transferred to and from most any other software using ASCII files. Figure 2 shows the screen for measuring between two remote points without having to put the instrument on either

Figure 2



point. This could be used for locating points on the other side of a fence. Figure 3 displays the screen for remote elevations. A typical case is measuring overhead power lines. Other situations might require finding the height of an overpass or the height of a spire. Figures 4a and 4b show the selection of stakeout routines. There is the usual sequential radial stakeout. The screen for data collection is very similar. The interesting feature is the use of sound beeps to guide the rodman to the correct position for staking. The beeps are useful since it is not necessary to look

Figure 1a

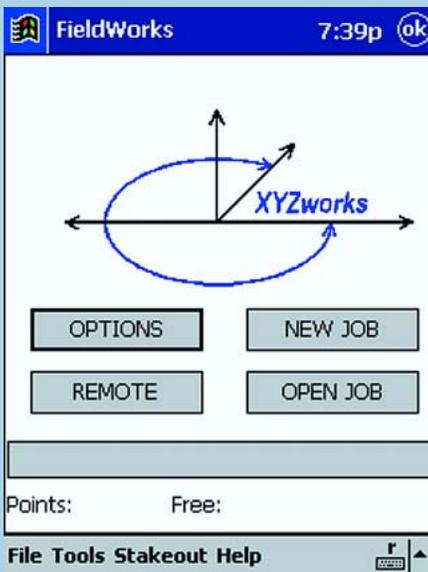


Figure 1b

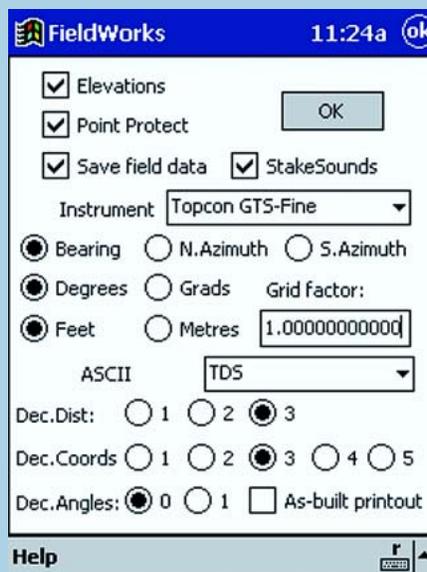
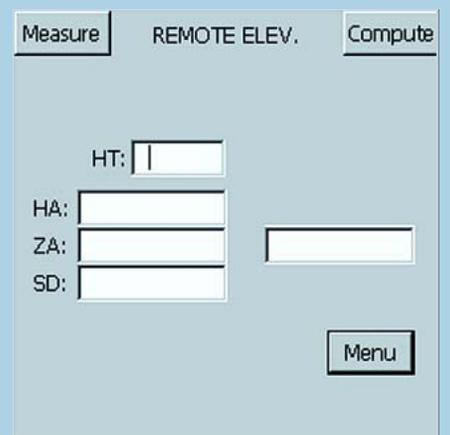


Figure 3





HANDS ON

at the data collector to know the rod is getting closer to the stakeout point. It can also be used with an inexpensive Garmin handheld GPS receiver to search for monuments or lost corners. The user should be able to get close enough to see the monument. Now that Selective Availability is turned off and the new Garmin Receivers do cycle averaging, it should be possible to get within 10-15 feet. In the future, it can only get better—the predictions are one meter in Navigation mode. The U.S. D.O.T. is adding more inland sta-

tions with beacons that transmit corrections around the clock.

This program allows the user to stake out a remote line if the points on the end of the line are known. One can also stake offsets to a line. There is a nifty routine that allows the user to put in a design elevation and shoot a point, and read the cut or fill. The program has the ability to stake out sets of points in any sequence by creating a plot file with the points in the order desired. Of course, you can check that file by plotting on the handheld screen. I was most interested in the Road Stakeout program. I used the unit for eight miles of centerline of construction in meters along with control points and culverts. This was a true 3D centerline of construction. It is possible to stake anything on the plans with this information in the Pocket PC.

Useful Everyday Functions

Figures 5a and 5b present road stakeout in more detail. There is a horizontal control file, which can be used with or without a vertical control file. If a vertical control file has been defined, it is automatically used. Templates can also be defined and there is no limit to how many can be used. All that is necessary is to define a template by segments, mirror it if it is symmetrical, and

put in the starting station. This is also automatically added to the alignment. These are useful everyday functions and make the vertical offsets for subgrade to finish grade (offset=0) and whatever horizontal offset to avoid the big yellow machines. This is a sophisticated program. A box appears if the point is in fill area and your catch point is above the ditch bottom. FieldWorks is designed to let the user stake a second catch point farther out. If a second catch point is not desired, FieldWorks proceeds to the staking of the reference point. This makes slope staking a breeze. Once the template is defined, FieldWorks will calculate the hinge point and catch point for any station based on very few trial-shots. It also displays the station and offset, cut/fill, and distances to move, while updating quickly as the rodman moves around.

Figure 6 shows the COGO screen. Here we find the inverse, intersections, pre-determined areas, and curves. Notice again how simple the screen appears. Those few inputs are all that the program requires in order to calculate which solution is needed, and it is integrated with the measuring capability. Within the coordinates program is translation, rotation, and scale, and also entering, moving, and listing points. Also under the file

Figure 4a

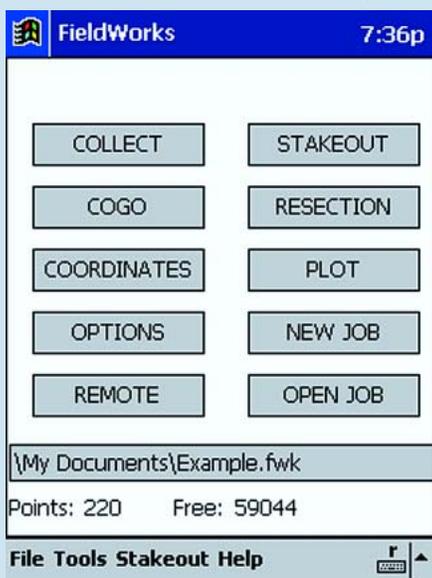


Figure 4b



Figure 5a

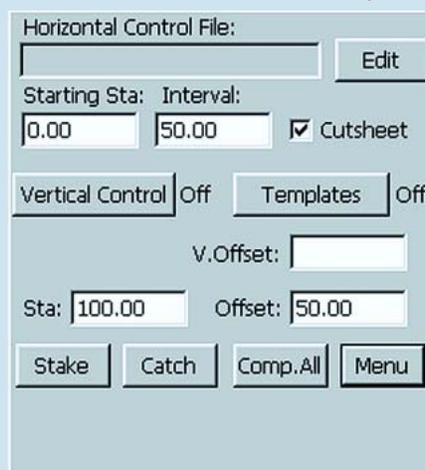
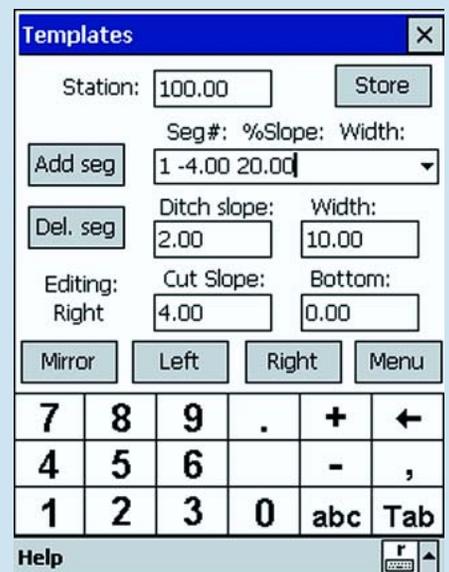


Figure 5b





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menu the user is able to read from or send points to the instrument via RS232 in ASCII format or in native code to the Geodimeter 600.

FieldWorks also has an additional capability. It can be used with any NMEA 183 GPS receiver from the smallest Garmin to the Trimble 4800. Working in WGS84, it can automatically convert from latitude/longitude to UTM meters (grid), grid to ground, and meters to U.S. feet so that all that is seen is feet on the ground. This is great for corner searches and for location mapping.

Actually, it is not a surprise that this is such a "mature" program, since its designers, Curt Busby and Larry Worley, have been program-

Figure 6

Traverse	Sideshot	Area	Inverse
From: <input type="text"/>	De: <input type="text"/>		
To: <input type="text"/>	De: <input type="text"/>		
Bearing: <input type="text"/>	Code: <input type="text"/>	Distance: <input type="text"/>	
N: <input type="text"/>	E: <input type="text"/>		
H: <input type="text"/>			
Inv.Curve	Create	P.O.C.	Menu

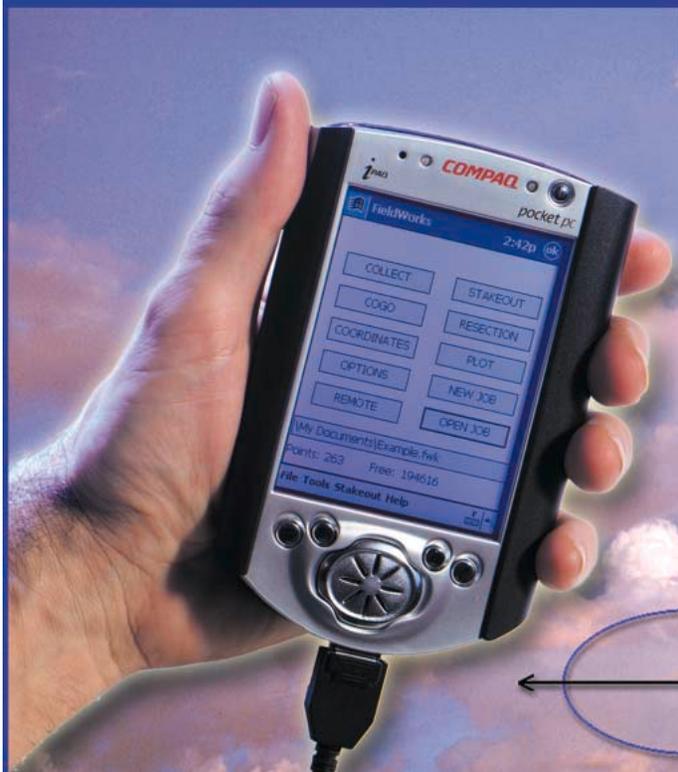
ming since Hewlett-Packard had a Civil Engineering Division (1978). Why do I think FieldWorks is so hot? Because it is very powerful, easy to learn, easy to use, and one-sixth to one-tenth of the cost of other data collectors. The documentation and technical support are exceptional and if you have been using the HP 48GX, this program will seem lightning fast. ▼

JOE BELL is the owner of SCJ GPS/GIS Consultants in Las Cruces, New Mexico, and the Software Review Editor for the magazine.



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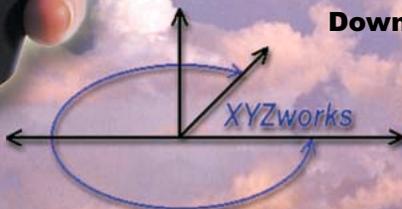


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Fieldworks is the next generation software for Land Surveying and Construction featuring simple and fast data collection, stakeout, and full roading features. Runs on all the latest handheld and pocket computers. Integrates your existing Total Stations with the latest Robotic instruments and GPS.

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