# Dirt-Cheap Digitizer

by Craig Savage

Every estimate has two major components: the task breakdown and the quantity survey. The task breakdown is a list of all the discrete items — materials, labor, subcontracts, and equipment — needed to build the project. Commonly, these are listed in the order of construction — from foundation to framing to finish. The quantity survey, or takeoff, records the amount of each item needed. The units of measure depend on the type of task: Material is measured in square feet and cubic yards, labor in man-hours, and subcontracts as a lump sum.

Computerized estimating programs have automated the process of listing items by providing quick access to databases. Applications previously reviewed in this column (such as Win-Est, Quantum Leap, Construction Mac, and MacNail), as well as many others (Precision Estimating, Master Builder, and Soft Build, to name a few) each offer a unique way to make a list of tasks. But regardless of which estimating program you use, the next step after making a list of items is assigning the proper quantities.

Manual quantity takeoff involves the use of pencil and paper, and an architect's scale, engineer's rule, or a mechanical planimeter — a hand-held device that records distances as you roll it over the plans. With the advent of computers, however, some companies hooked up electronic digitizers that input takeoff quantities directly from the plans into an estimating program. The equipment is expensive, but companies who could afford the initial investment saved lots of time because the estimator no longer had to do the arithmetic to calculate quantities.

The digitizers in these systems consist of tablets, some as large as a drafting table, that can sense the movement of an electronic pen or stylus as it moves over the drawings. When you move the pen from one point on the plans to another, an embedded grid of wires tracks the start and end points. Using trigonometric formulas, the software translates the movements of the pen into accurate distances, areas, and item counts.

Other schemes put a twist on the same theme. Some digitizers use a form of sonar, and one uses a string and angle finder to monitor the movement of the stylus. In all cases, however, the digitized result is the same: A change in the position of the stylus is translated into a user-selected unit of quantity.

**Figure 1.** *The Scalex works like an electronic planimeter. As you roll the wheel over a set of plans, the stylus electronically translates the travel distance into a dimension, which is displayed on the built-in LED. The Scalex can also be hooked to a computer, and works with several estimating programs and spreadsheets.*

The biggest drawback to these systems has been their cost and their size. Until recently, I was unaware of any digitizing system that costs under $1,000. And to be useful, the tablet needs to be at least 24x36, which is too big for a small office, and too bulky to carry to the job site easily.

**Less Is More**

But times are changing. "Smaller, faster, cheaper" are the technological buzz words of the '90s, and digitizers are now available to the small builder at a reasonable price. One affordable solution is the *Scalex 1000 Digital Plan Scaler*, a stand-alone pen digitizer that also plugs into the back of a computer. The Scalex I tested was bundled in a Macintosh software package called *Scaler-Mac* that is a real bargain at $199. (*Scale-Link*, a PC version, works with DOS and Windows.)

Like an electronic planimeter, as you roll the Scalex over the prints, it digitally takes off dimensions (see Figure 1). A couple of buttons on the tip work like the ENTER key on your keyboard, and can be used for counting and adding constant lengths during takeoff.

The Scalex supports 52 preprogrammed scales for architectural, engineering, and metric dimensions, all of which can also be set using the Scaler-Mac Control Panel (Figure 2, page 66). If you're working with an enlarged or reduced drawing, the Scalex will determine the scale: Just roll the pen along a known distance and input the length. The Scalex also calculates areas, provided that the corners intersect at right angles.

When the Scalex is used without a computer, the data is displayed on the built-in LED screen. And if you don't have the Scaler-Mac software, you can input directly into any program that accepts digital data, including Construction Mac and a host of other estimating programs, as well as

spreadsheets like Lotus, and Quattro. I tested the Scalex on my Apple Powerbook 160 notebook, using an estimating template I created in Microsoft Excel spreadsheet (Figure 3).

The Scalex is small and lightweight, and makes a perfect addition to the estimator's toolbox. It's battery operated, so it's great for on-site estimating, too. The Scaler-Mac package includes the Scalex digitizer pen, Scaler-Mac software, and cables. An even better deal is to purchase Revelar's Construction Mac Estimating software for $395, which includes the Scaler-Mac package.

## Quick Measure

A Windows program called *QuickMeasure for Windows* also accepts input from Scalex and most other digitizers (such as GTCO and Summagraphics). QuickMeasure is very visual, as Windows programs should be. Buttons along the top of the screen define the object to be digitized, including line segments, areas, and simple counts (Figure 4). Clicking on the Calculator button launches a Foot-and-Inch Calculator, which is very handy for unit conversions.

One interesting feature of QuickMeasure is called Digitized Graphics. As you do your takeoff, the program "connects the dots," creating on the computer screen a drawing of the plans being taken off. The result is a graphic reminder of all the lines and areas that you have already worked on, and more important, those you have missed.

QuickMeasure exports to Excel with a click of the SEND button, and a QuickMeasure icon can be embedded in an Excel spreadsheet using OLE (Object Linking and Embedding). A click on the icon launches QuickMeasure from within Excel. ■

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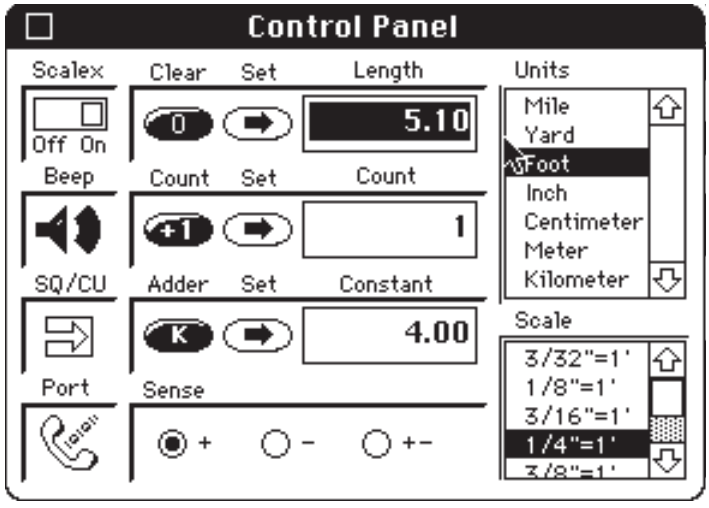


**Figure 2.** *The Control Panel in the Scaler-Mac software configures the Scalex digitizer pen for use with a computer, and sets units of measure and one of 52 pre-programmed scales. If you're working with plans that have been enlarged or reduced, the Scalex can calculate the scale from a known dimension.*

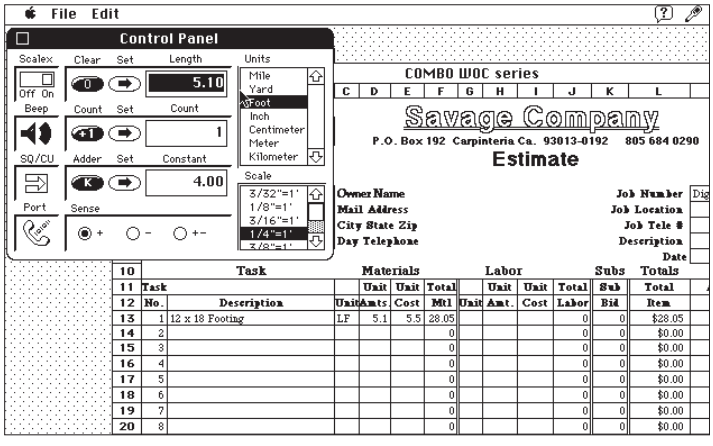


**Figure 3.** *The author tested Scaler-Mac using an estimating template he created on the Microsoft Excel spreadsheet. A click of one of the Scalex buttons automatically transfers the digitized unit of measure to the active cell.*

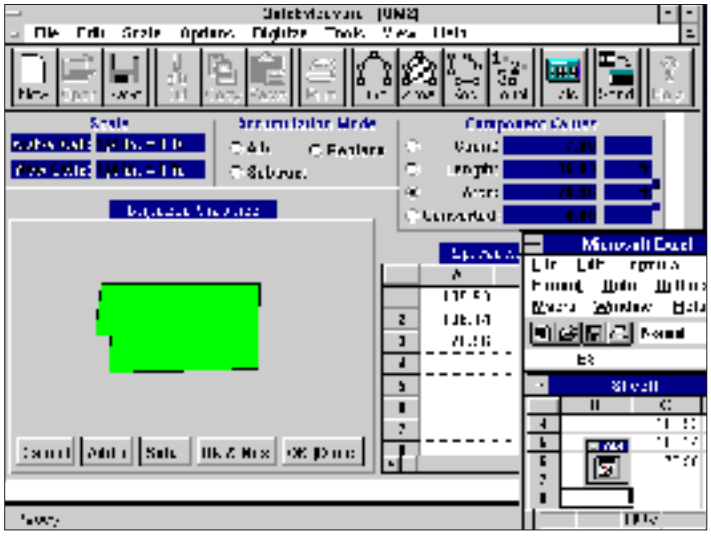

**Figure 4.** *A Windows digitizer program called Quick Measure graphically displays the shape of the object being digitized (lower left of screen), providing a visual reminder of those parts of the plans that have already been taken off. QuickMeasure works with the Scalex as well as with many digitizer tablets.*

## Sources of Supply

*For the Macintosh:*
***Scaler-Mac*** *($199 from Revelar Software, 2350 Parleys Way, Salt Lake City, UT 84109; 800/669-5191) includes the Scalex 1000 Digital Plan Scaler, Revelar's digitizer software, and cables. Scaler-Mac is also bundled with Revelar's Construction Mac estimating software ($395).*

For the PC:
***Scale-Link*** *($179 from Scalex Corp., 2794 Loker Ave. West, Suite 105, Carlsbad, CA 92008; 800/653-3532) includes the Scalex 1000 Digital Plan Scaler (can be purchased separately for $99), Take-Off Manager (a simple DOS-based estimating program), and Take-Off and Take-Off for Windows (digitizer interface software).*

***Quick Measure*** *is a Windows program that works with the Scalex and with many digitizer tablets. To find a dealer in your area, contact Tally Systems, 9373 Hazard Way, Suite 102, San Diego, CA 92123; 800/748-6636.*