Choosing Estimating Software

by Joe Stoddard

A contractor's livelihood depends on the accuracy of cost estimates. Bid high and you'll have no work; bid low and you'll have plenty of work, but no money. It's no wonder that every year, thousands of contractors trade hard-earned cash for estimating software, hoping to find that magic button they can push to spit out the perfect bid.

Estimating software will help you estimate faster and more accurately, but there's no magic involved. In fact, just the opposite is true. Software is not a substitute for careful estimating work habits and detailed knowledge about the project at hand. Nor will software simplify your life — at least not at first. Even the simplest software takes time to set up and learn, and the more flexible and powerful packages are even more demanding.

Each software developer approaches estimating differently, but there is no one "best" approach. You'll find plenty of features that fit your company and your estimating style, but you'll probably be happiest with a computerized system that mimics what you do by hand. Unfortunately, you're not likely to find a program that works exactly the way you do, so be prepared to adapt your work routine to the software. If you're unwilling to compromise, you're in for some tough sledding.

Tradeoffs. In addition to cost and complexity, the biggest difference among programs is how they make the tradeoff between automation and flexibility. Packages like BidMagic and HomeTech are almost fully automated, plugging basic user input about the size and type of job into predefined formulas that spit out unit pricing for entire phases of construction (see "Automated Takeoff"). By contrast, Precision, eBid98, WinEst, and others permit single- or multiple-item takeoff from a database onto a spreadsheet-like estimate page that keeps a running list of materials, labor, subs, and so on. The more flexible the program, the more likely it is to use both methods in a single estimate.

Common Features

Although all estimating software shares certain core concepts, it is the differences in implementation that make one package better suited to your estimating style than another.

Database. Central to any estimating software is the "price book," or "cost database," which stores all of the components of a job, from individual material items and labor rates to overhead percentages and waste factors. All of the packages collected here allow you to modify and add to the price book, and many offer regular pricing updates and local area modifications to help you stay current. The most sophisticated software provides a way to update existing estimates when costs or conditions change, or if you're going to build the same project in a different part of the country.

Look for a database you're comfortable with, but even if you find you have to change every single item, at least you'll have something to pattern your customized database after. Remember: The tradeoff is between complexity and flexibility. The more information you can attach to individual items, the more flexible the database will be, but the longer it will take to set up initially.

Pricing. Most canned databases use prices taken from national or regional averages. Before you go live with your first estimate, however, it's best to recreate an estimate from a completed project with a price you're sure of. If the database prices are too high or too low, the software should provide an easy way for

you to change them. Since a database can hold 3,000 or more items (some of which hold more than one price), the more streamlined the price updating process is, the better. If you can't afford to pay for automatic annual updates, make sure that the database can be updated manually. In addition to changing individual item prices, you should be able to change the price for a group of similar items in a single step.

Formulas. The quality of an estimate produced using software depends on the skill of the estimator. You still have to accurately enter takeoff data, such as the length of a wall or the area of the roof, and if you don't "tell" the program that the building has a second floor, it has no way to figure it out on its own.

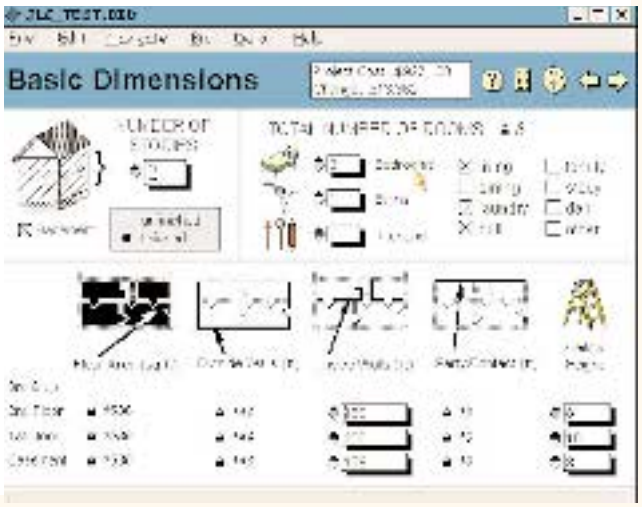
That said, it's important to understand how the software translates your input into a price for the job. Most electronic estimators use predefined formulas to do the math. With your livelihood on the line, look for packages that allow you to review and modify these formulas or, better yet, to design your own formulas to match the way you build (see "Building Formulas").

Organizational scheme. One of the most important factors to look at is the ease and speed with which you can find an item in the database and, after takeoff, in the estimate itself. Most residential contractors estimate a job chronologically: Start with excavation, then price the concrete, the framing, and so on. Fortunately, all of the software collected here provide an alternative to the 16 divisions of CSI (Construction Specifications Institute), which have little correlation with the logical order of residential construction. Some use a completely different database; others provide a way to search the CSI format for specific items (see "Database Structure").

Higher-end packages also use special user-defined work breakdown structure (WBS) codes to reshuffle takeoff items into almost any conceivable order. In addition, several packages will organize estimate data by location (first floor, second floor, for example, or kitchen, bath, bedroom, and so on).

Assemblies. Several individual items combined into a single mega-item is called an "assembly" (see "Using

A



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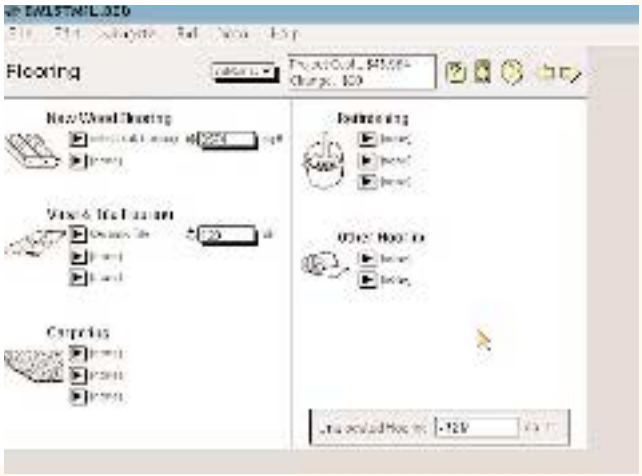
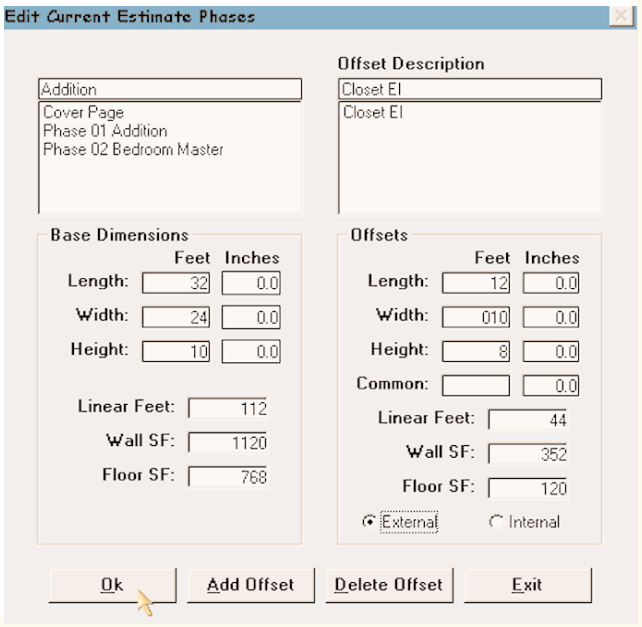


C



Automated Takeoff

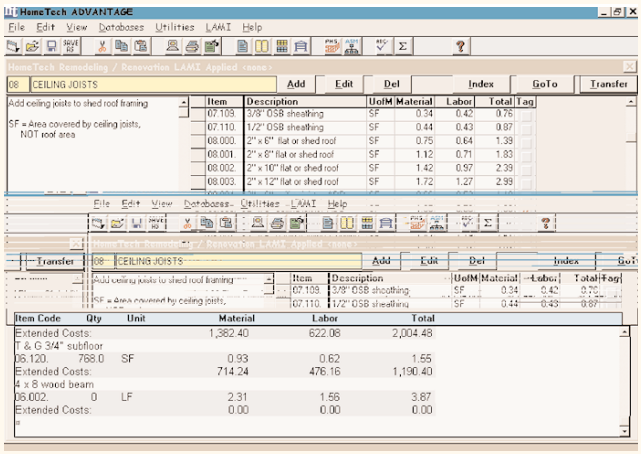
BidMagic's unique graphical interface collects dimensions and specifications for several dozen construction phases, then uses unit-price formulas to build the estimate. For example, icons on the "Basic Dimensions" screen prompt the user for information about the number of stories and rooms, total floor area, and linear footage of walls (A). Similar graphical screens prompt for input about specific finishes.

While this system is useful for inexperienced estimators, it can be cumbersome. For example, the "Flooring" screen shown (B) automatically calculated "New Wood Flooring" for the entire house based on total square footage. But because one room will be covered in ceramic tile, the screen shows an excess of "unallocated flooring" of -120 square feet. This amount — and amounts for other types of flooring in other rooms — must be subtracted from the total for wood flooring until the totals balance out.

Hometech Advantage takes a similar approach, but without the graphics. Following the Hometech paper system, the computer version first asks the user to enter basic dimensions for either a predefined job type or phase (such as "one-story addition") or a custom phase, such as this sample closet bumpout in the master bedroom (C). After entering basic dimensions for each phase, the program calculates a price based on a standard set of specs.

Where the project at hand differs from HomeTech's predefined specs, the user can make adjustments by selecting items from the database. For example, if the standard specs call for 2x4 ceiling joists but the project requires 2x8s, you would make the adjustment in the "Ceiling Joists" section of the database (shown in upper half of split screen in D). Selecting item 08.004 "2x8 ceiling joists ADD" would update the estimate price by the difference in cost between 2x4s and 2x8s.

D



Assemblies"). For example, instead of having to take off individual studs, sheathing, drywall, insulation, siding, and trim, you can use an assembly to take off the entire wall at one time based on key information — length, height, on-center stud spacing, and so on. Some assemblies generate a true bill of materials, so when it comes time to place your order, you can print a list of individual items in the required quantities. Assemblies should also be linked to the items they contain so the assembly price is updated automatically whenever the price of one of the items changes.

You'll pay more for software that allows assemblies, but the time you save will quickly make up for the added cost. Most of the packages reviewed here use assemblies, and unless you do a lot of very small jobs, don't even consider a package that doesn't.

Crews. Think of a crew as an assembly for labor, combining individual carpenters, laborers, helpers, and other job classifications into single work units. One big advantage of using crews is that when labor rates or benefits change, you only have to make the change in one place; the new numbers are automatically distributed to every item in the database using that crew. Crews can also be used with scheduling software for "what-if" analysis. This is one place where higher-end packages shine.

Input. Getting takeoff data into your estimate quickly and accurately is the acid test for estimating software. All of the programs in this roundup will take keyboard or mouse entry, and in addition, a few can handle input from a digitizing tablet or an electronic plan wheel, such as the ScaleMaster. Digitizers let you trace parts of a drawing and translate the movement into quantities, such as the length of wall or square footage of a deck. Digitizer hardware will add to the cost of an estimating system, but if you do a lot of estimates, the time savings over the long haul are huge.

Import/export. Fully automated construction offices will want to have the ability to import a bill of materials from a CAD program or spreadsheet, or to export an estimate to an accounting program. Beware: An import/export utility that doesn't work properly is worse than not having one at all. Ideally, there should be a mapping "wizard" to help you sort out what goes where before the items are imported.

Most of the software in this roundup imports and exports simple text files. A better option is a custom export filter, such as those for QuickBooks Pro in HomeTech Advantage and eBid98, or the export to MS Project in eBid98 and Timberline. Some packages (Timberline, Bid Team, and MacNail) are designed to work specifically with accounting, scheduling, or other modules made by the same company.

Import/export capability is of less importance to a small contractor, who can just as easily re-enter summary data from the estimate into a job-cost or accounting program. Unless you really know your way around a computer, put this feature at the bottom of your list.

Output. Finally, make sure you can get the reports you need. At the very least, you should be able to produce nice-looking, easy-to-read estimate summaries and a bill of materials. The best packages produce a lot more, including detailed reports on labor and equipment allocation.

Bonus Features

Add-Ons

If you aren't satisfied with a single percentage markup or "add-on" for the total estimate, look for software that can apply one percentage to materials and another to subs, or different percentages to different phases of construction. Some also allow compound add-ons — for example, sales tax is added to materials only, but overhead is added to the total estimate, and profit goes on top of that.

Hiding Overhead

Some programs allow you to hide your markup in the estimate, either by distributing amounts equally among all items or by applying amounts or percentages to particular phases. This is handy when you'd rather not hand your client a printout that shows a lump sum for overhead and profit, or when you want to front-load a draw schedule.

Allowances and Add/Deduct Alternates

If your estimates include a lot of add/deduct alternates or allowances, consider a package that offers WBS codes. Using a code for allowance items, for example, means that later — after your clients make their final product selections — you can retrieve all affected items and adjust the pricing. Similarly, you can code add/deduct alternate items for easy deletion if the option is rejected by the owner.

Markup Mixup

Most estimating software uses a straight multiplier to add gross profit to the estimate, but if you're not careful, you'll be short-changed every time. For example, if you tell the program to add 33%, it does exactly that: It multiplies your estimate subtotals by 1.33. But if you want the estimate to reflect a full 33% gross profit margin, you'll have to tell the program to add 50%.

Price Update Routines

If you're uncomfortable using a price service like R. S. Means, you'll have to enter item prices individually for every item in the database. But keeping those prices current shouldn't be such a chore. Look for packages that offer alternative methods for changing prices, either by adding a percentage to every item in the database, or better yet, to a particular class of items — "spruce lumber," for example, or "plywood." And if an item appears in more than one place in the database, you should be able to update all occurrences by making a single change.

Estimating Software: Selected Features

Product Name	Bid Magic	MacNail	Bid Team Windows	eBid98 LT	eBid98 Pro	eBid98 SF	HomeTech Advantage	Hummingbird Cost Estimate	ProEST Basic	ProEST Intermed
	Mac & PC		PC only							
Base Price	$295	$195-$495	$3,495	$599	$1,495	$2,495	$495	$600	$695	$1,195
Tech Support	free phone	free phone	free phone	1 yr. free	free w/ updates		free phone	free phone	free w/ updates	
OPTIONS										
Service Agreement	varies	varies	varies	n/a	$625	$1,200	$250	$380	$375	$375
Add'l Cost Books	N	N	RSMeans	N	RSMeans		$150	N	$495	$495
RSMeans pricing	N	N	Y	Y (1 included)			N [5]	N	Y	Y
Digitizer [1]	Operating System only		graphical (incl.)	ScaleX, ScaleMaster			N	N	N	optional
Integrated modules (optional) [2]	n/a	A, S, JC	A	n/a	n/a	n/a	n/a	n/a	n/a	n/a
DATABASE [3]										
No. Included	1	1	1	1	1	1	1+ Speedy Reckoner	1	1	1
Assemblies Incl.	n/a [4]	N (optional)	Y	N	N	Y	n/a [4]	N	n/a	N
Import Pricing	Y	Y	Y	N	N	N	N	Y	Y	Y
Crew codes	N	optional	Y	Y	Y	Y	N	N	N	N
WBS codes	N	N	Y	Y	Y	Y	N	Y	N	N
Location codes	Y	Y	Y	Y	Y	Y	n/a	Y	N	Y
Import/Export [6]	MacNail	BidMagic	MS Project	QuickBooks Pro, MS Project			QuickBooks Pro	N	ASCII only	

Estimating Software: Selected Features *(continued from column above)*

Product Name	ProEST Advanced	Quantum Leap	Timberline Precision Standard	Timberline Precision Extended	WinEST LT	WinEST Pro	WinEST Pro Plus
Base Price	$1,995	$495	$3,500	$5,900	$279	$1,195	$1,495
Tech Support	free w/ updates	Free phone	free Web/phone			free phone	
OPTIONS							
Service Agreement	$375	n/a	custom	custom	n/a	varies	varies
Add'l Cost Books	$495	N	$795 - $3,500		$150 - $450		
RSMeans pricing	Y	N	Y	Y	N	Y (1 included)	
Digitizer [1]	optional	optional	graphical (incl.)		non-graphical (incl.)		
Integrated modules (optional) [2]	B	S, I, PM, L (incl.)	A, B, C, I, JC, PO, TM, S		n/a	B (optional)	B (incl.)
No. Included	1	3 (1blank)	1	1	1	1	1
Assemblies Incl.	N	n/a [4]	Y	Y	Y	Y	Y
Import Pricing	Y	Y	Y	Y	N	N	N
Crew codes	Y	N	N	Y	N	Y	Y
WBS codes	N	N	Y	Y	N	N	Y
Location codes	Y	Y	Y	Y	N	N	N
Import/Export [6]	ASCII only	Chief Arch.	ArchT & APDesign (AutoCAD), Primavera			ASCII only	

[1] Software only; digitizer pad/stylus purchased from separate vendor.

[2] A = accounting
B = bid analysis
C = CAD
CM = contact management
I = invoicing
JC = job cost
L = lead tracking
PO = purchase order
TM = time & materials billing
S = scheduling

[3] All databases can be customized by user

[4] Program is assembly-based

[5] Proprietary pricing system

[6] Only custom links are listed. All programs can exchange text/ASCII files

Building Formulas

Virtually all estimating software employs formulas during takeoff to translate user input about dimensions and specs into quantities and prices. When the predefined formulas don't match the way you build, however, you'll have to modify the formulas or build your own.

In ProEst, for example, all of the user-defined components in the assembly formula for "Stud Wall - 2 Sides" are unique to that formula (E). The first three lines ask for dimensions; the next three lines plug those dimensions into "expressions" that calculate quantities. But the variable LEN, which stands for "wall length" here, may be designated LNTH or LENGTH in another formula. This means that what the user sees on the screen at time of takeoff may be inconsistent from assembly to assembly. ProEst formulas also can't be nested — in other words, a formula can't use another formula in its expression. ProEst also limits expression operators to simple math symbols (+,-,/,*), plus six special functions: SQRT, INT, MAX, MIN, ABS, and ROUND.

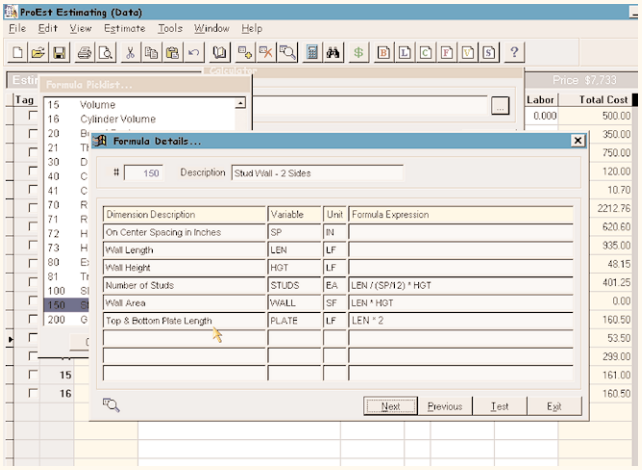
WinEst formulas are a bit more versatile (F). Variables are still unique to each formula, but you can provide default, minimum and maximum values in separate columns (Init, Min, and Max). The expression or "argument" of the formula is displayed in a separate window at the bottom of the screen.

Unlike ProEst, which will test the way the formula works using sample input while still within the formula edit screen, WinEst only provides a "check syntax" button, which looks for holes in the logic of the expression. To test the formula with sample values, you have to do an actual takeoff. WinEst does, however, offer 58 standard "unit names," such as lsum, sfca (square foot contact area), and days (8-hr. day).

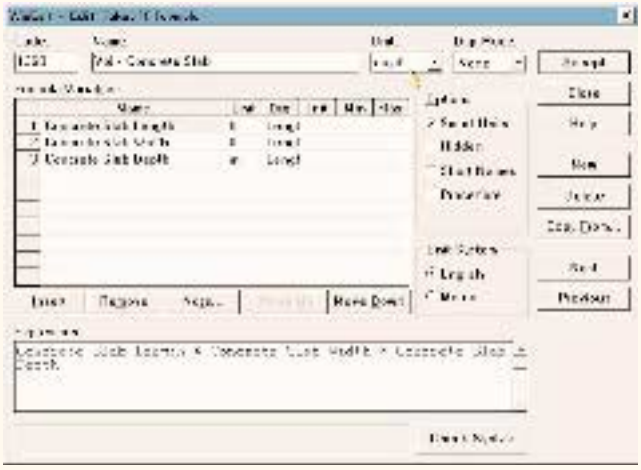
Formulas in Timberline's Precision Estimating are the most versatile of all (G). User-defined variables are created independently, then selected from a list, ensuring that variable names are consistent throughout the program. Similarly, users can minimize mistakes by selecting from a full list of predefined functions. In addition, formulas can nest other formulas within them, which are again selected from a list. The expression, which can be fully tested in the editing screen, also makes good use of color to distinguish between operators (black), variables (blue) and nested formulas (green).

Precision can also employ formula tables — grids that permit the user to select from a group of possible materials during takeoff. For example, a "joist size" table makes it easy to choose between 2x8s, 2x10s, and 2x12s, depending on the length of the variable "SPAN" (H).

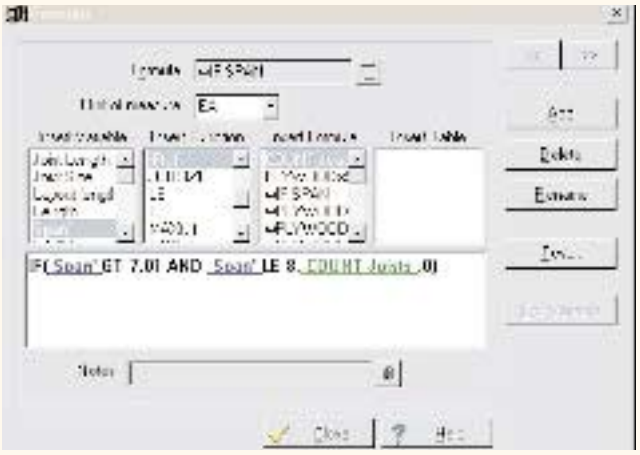
E



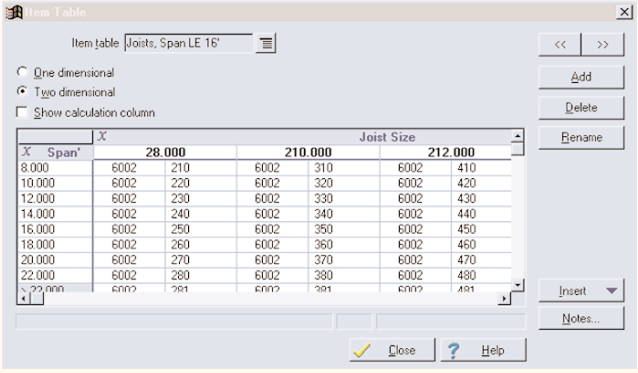
F



G



H



Estimating Software Sources

BidMagic
MacNail
Turtle Creek Software
102 W. State St.
Ithaca, NY 14850
607/272-1008

Both packages are available for PC and Mac.

BidMagic obtains square- and linear-foot dimensions and construction specs through a series of graphical "cards," then calculates total cost based on unit-price formulas. Produces quick estimates well-suited to stopping tire-kickers in their tracks. Less useful for detailed stick-by-stick estimating, but exports to, and can be purchased as a package with, MacNail.

MacNail is essentially a set of templates for MS Excel (not included). Optional modules add assemblies and create reports and specs (in standard MS Word format). Integrates with company's accounting and scheduling packages. Together, all modules provide complete job-management system suited to small- to medium-sized companies.

Bid Team
CDCI
3980 DeKalb Technology Pkwy.
Atlanta, GA 30340
800/285-3929

"Remembers" values for global variables (for example, square feet of first floor) to reduce need to reenter takeoff dimensions. Unique multimedia interface enables use of scanned photos or drawings. Voice annotations attached to estimates are less likely to be overlooked than written notes. Graphical digitizer interface. Integrates with CDCI's Profit Builder accounting and job-control software.

eBid98 (LT, Pro & SF)
Pyxis Technologies
215 Briarwood Dr
Somers, NY 10589
888/841-0004

Assemblies allowed in LT version, but not provided. Mid-priced Pro version includes one of 30 R. S. Means cost books. High-end SF version adds several thousand Means-priced assemblies. All versions support crews, WBS, and other sophisticated features, such as stepped markups based on project size. Accepts input from standard digitizer or ScaleMaster. Links to QuickBooks Pro and MS Project. Flexible reporting based on MS Access. Version 1.1 is a good first effort.

(continued on page 9)

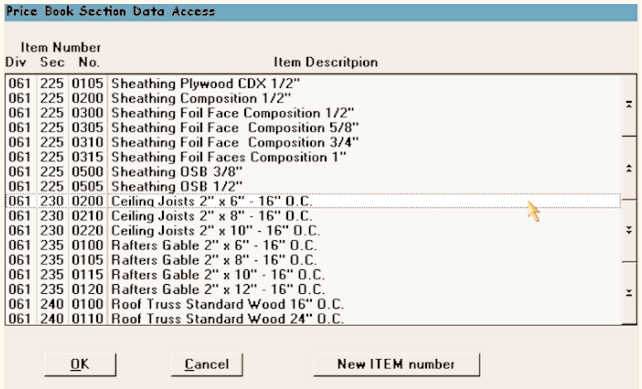
Database Structure

How fast you can find an item during takeoff depends on how the database is organized and displayed.

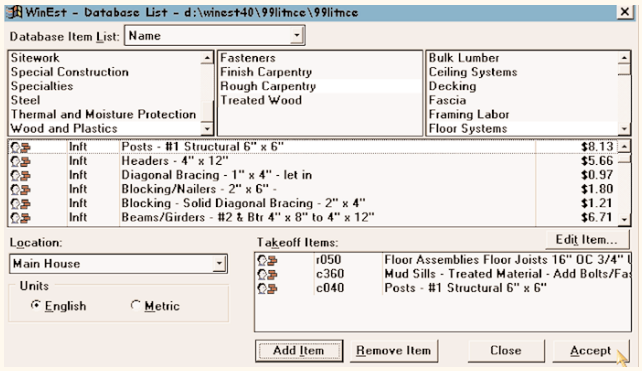
Hummingbird's database display is difficult to use because the item list can't be collapsed into subheadings or other organizational subdivisions (I). Although you can scroll through the list using the buttons along the right side, it's slow going and can be confusing.

WinEst's four-part database hierarchy is much better (J). From left to right, the three scrollable windows across the top of the takeoff screen display divisions, subdivisions and item categories. The wide box in the middle of the display holds individual items. Takeoff items are "stored" in the box on the bottom right, then transferred to the estimate screen by clicking the Accept button. Unfortunately, this takeoff window can't be resized, and you can't view the spreadsheet until you close the takeoff window completely.

I

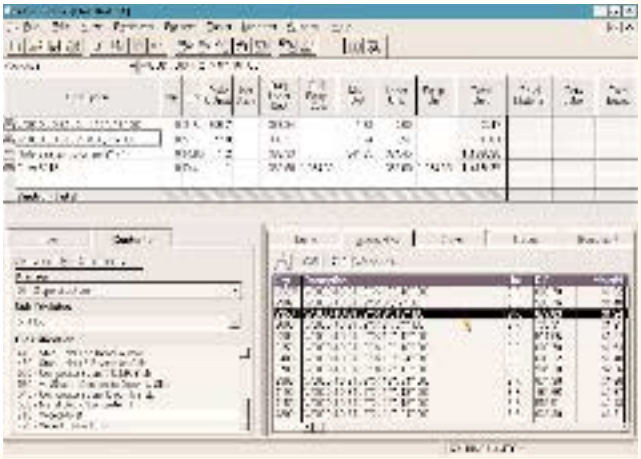


J

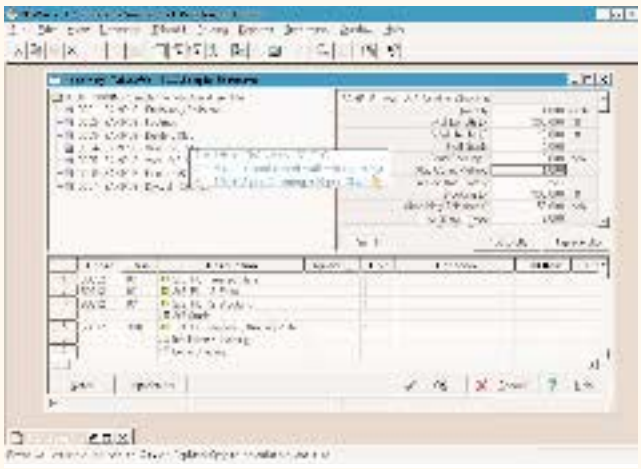


K

L



M



Using Assemblies

In Quantum Leap's standard assembly takeoff view (K), two small, scrollable boxes at the bottom of the split screen show a highlighted main division (DOORS) and subdivision (FLUSH DOORS - HOLLOW CORE). In the larger box on the right, a particular door assembly (2'8"W) at the item level is highlighted. In the top half of the split screen, the door assembly has been added to the estimate, and the three lines below it have filled in automatically, adding the appropriate hinges and locksets.

The assembly takeoff scheme in eBid98 uses a four-part database display at the bottom of a split screen (L). The left side displays main headings and two subheading levels. The individual assemblies displayed on the right side are organized under separate tabs for Items, Assemblies, Crews, and so on, making it even easier to find what you want.

Timberline's database structure follows the familiar Win95 directory tree layout (M). Group phase folders open to reveal phase folders, and stemming from these are categories and finally individual items or assemblies. Again, Timberline makes good use of color to help the user recognize different database entry types.

The bottom half of the screen displays the items in the open assembly, including some "tables." For example, the table "2x6 studs" allows the user to choose one of three calculation methods during takeoff, as shown in the upper right half of the screen.

Estimating Software Sources (continued from page 7)

HomeTech Advantage
HomeTech Information Systems
5161 River Rd.
Bethesda, MD 20816
800/638-8292

Proprietary unit-price system automatically generates estimate, specifications, and proposal. Tailored to on-the-spot estimating of "repeatable" remodeling projects and "standard" new construction. User-modifiable database organized according to 30 custom construction phases; additional databases available. Provides quarterly pricing updates and regional price adjustments. Imports from Chief Architect and 3-D Home Architect. Includes "Speedy Reckoner" mini-database for quick ballpark pricing of entire job.

Hummingbird Cost Estimate
Signet Group, Inc
6151 28th St.
Grand Rapids, MI 49546
616/949-5502

Three takeoff methods: General-purpose "Detail Cost Estimate" uses items or assemblies; remodeling-based "Apartment-Room Cost Estimate" organizes estimate by location (room, floor level, etc.); "Sq. Ft. Comparable Costs" method uses historical data or archived estimates for quick ballpark pricing. Database contains no prices and is difficult to navigate because it cannot be "collapsed" into subdivisions. But user can create items with up to five different cost categories (for example, material, labor, sub, etc.) attached.

ProEST (Basic, Intermediate, & Advanced)
Computerized Micro Solutions
7966 Arjons Dr., Suite 220
San Diego, CA 92126
800/255-7407

Item-by-item or assembly takeoff. Optional R. S. Means databases available. "Bid Day" add-on module sorts subcontractor quotes to find best combination. Best suited for commercial work or new construction. Basic version lacks assemblies and many reporting and import/export features.

Quantum Leap Estimator
Lantron Technologies, Inc.
818 Emerald Dr.
Powder Springs, GA 30127
800/573-2303

In addition to estimating, package includes cradle-to-grave lead, employee, and vendor tracking; contract, cover letter, and change-order generation; project scheduling; daily activity manager; plus accident and weather logs, tool inventory tracking, and more. Ships with CSI commercial and proprietary residential databases, and one blank user database, plus a few sample assemblies. Generates purchase orders and invoices; imports from Chief Architect, and exports to QuickBooks Pro for financial accounting.

Precision Estimating (Standard & Extended)
Timberline Software Corp.
15195 NW Greenbrier Pkwy
Beaverton, OR 97006
503/690-6775

Cadillac of high-end estimators. Ships with one of more than a dozen proprietary, fully-customizable databases; others, including R. S. Means, available at extra cost. Most sophisticated formula-editing routines available. Spreadsheet-based takeoff of individual or multiple items. "Smart" assembly takeoff in top-end Precision Extended version uses built-in logic to select appropriate material specs from item "tables." Streamlines labor takeoff using "crews." Spreadsheet-based estimate can be sorted according to five alternate "views"; twelve additional sorting options available through WBS codes. Long-standing graphical digitizer interface is among the best.

Integrates with other Timberline modules (accounting, job-cost, bid analysis, etc.); with Microsoft and Primavera products for document control and scheduling, and with Autodesk/KETIV or CADSoft for CAD-assisted estimating. Complete onscreen documentation and context-sensitive help.

WinEstimator (LT, Pro, & Pro Plus)
Construct Software
320 108th Ave., Suite 600
Bellevue WA, 98004
888/866-5328

LT version includes customized version of Craftsman residential cost data with predefined assemblies, plus paper Craftsman manual and multimedia CD tutorial. Specialized cost books available at extra cost. Pro version adds crews and R. S. Means pricing; Pro Plus adds a module to sort subcontractor quotes. All items, formulas, and prices can be changed by user; good onscreen help for building assemblies. Exports (with some effort) to job-cost and CAD programs.