



Estimation's CONTRACTOR I in use.

# Computerized Estimating is Really Here

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*Editor's Note: George M. Llewellyn is President and co-founder of Estimation, Inc. and also, over the period of the last fourteen years, has been active in the development and improvement of computerized estimating and job management programs. Mr. Llewellyn, author of many articles on the subject, has served as consultant to workshop programs held by universities and colleges offering construction management.*

In recent years, the microcomputer has revolutionized the contracting industry.

With the computer, contractors can dramatically reduce the time it takes to prepare bid estimates and generate previously unavailable management reports.

In addition to enabling contractors to increase production in estimating, microcomputers provide a more systematic approach to the entire estimating routine.

This new systematic approach provides the wall and ceiling contractor

with more detailed information at bid time, more time to analyze job conditions, and the tools he needs to aid in job management.

A microcomputer can benefit any company which handles estimating, job management, payroll, accounting, purchasing, and billing regardless of the size of the business or the market it serves.

Large contracting firms benefit because the computer enables them to better control their large volume of jobs. Smaller contractors benefit by using the computer to perform a

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## Wall and Ceiling Contractors Can Play Ostrich About Computers If They Wish—But, Truth Is, Computerization Has Arrived at All Levels

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greater number of tasks quickly, without hiring additional employees.

Here are a few words of advice to those planning to add a microcomputer for estimating.

The wall and ceiling contractor should consult a firm familiar with the industry and capable of understanding important subjects such as: (1) takeoff approach, (2) materials, (3) labor, (4) estimate information for computer input, and (5) detail output for analysis by the estimator and management.

The program the computerized estimating firm designs should include: (1) easy takeoff methods, (2) summaries, (3) complete bill of materials (4) details for job management. These considerations will assure that the system used is easy 'to operate and work with.

Training required of the estimator who will operate the system can be minimal and it is important not to change the basic approach to the takeoff.

The program should be designed so that once the quantity takeoff is in the computer, the program does all the work required to accomplish the subjects in the numbers listed above.

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### Easy To Maintain . . .

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In addition, the program must be easy to maintain using current material prices and must be flexible enough to allow the contractor to change labor units when new information and trends make it necessary to do so.

Benefits of the type of computerized estimating system outlined above are many. Discipline and a systematic approach are provided automatically. All that is required of the individual operator is that he get an accurate count; everything else is taken care of.



by **George Llewellyn**  
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Information is the natural byproduct of the operator's effort and the information he gleans makes his firm more productive and more competitive.

With today's highly sophisticated systems it is no longer necessary to sacrifice accuracy and control for speed. No matter how necessary to sacrifice accuracy and control for speed. No matter how many jobs a contractor bids to get one contract, the effort involved is the same.

Best of all, if the contractor is awarded the contract bid, no extra effort is required to set up estimate information for job control. (Note: Control programs should be built into any system, not as additional steps, but as part of the routine.)

When comparing a manual estimating system to a computerized estimating system, keep in mind that

*either* method requires a takeoff. But, whereas some computerized systems are totally automated, the manual approach requires these steps:

- Writing up pricing sheets for quote items.
- Setting up spread sheets for counting, studs, braces, fasteners, etc.
- Transferring quantities to various pricing sheets.
- Pricing labor and extending.
- Checking extensions.
- Recapping for bid summary.

Using a computer and the correct program, the takeoff is made directly into the computer.

Thus, all six steps are done quickly and automatically and with the proper detail. With the computer, the detail which results allows for evaluation at bid time and for job control after the contract is signed.

When considering a computer, contractors are advised to consider a simple system. By gradually building a modular-type system, each module can be designed so that each system provides the information needed for the next.

When evaluating a computer for estimating it is recommended that the costs incurred producing that estimate be considered.

For contractors, estimating represents a large part of overhead. Many estimates are produced, although only about one out of 15 bids is awarded a contract.

A computer with the proper system or program can enable the contractor to get more out of his estimating efforts, especially in the area of job control. An estimate should be set up so that all the estimator has to do is count and identify material, automatically feed this information into the computer, and have the program do the rest.

**“Benefits of the type of computerized estimating system outlined above are many. Discipline and a systematic approach are provided automatically. All that is required of the individual operator is that he get an accurate count; everything else is taken care of.”**

The program should collect the takeoff prices and labor and sort material costs and labor hours into

work groups or construction groups. In this way, not only is the information completely ready for manage-

ment reports for job control, but it also affords more detailed information at bid time.

Because the computer forces the contractor to do things in an organized, systematic way, he is assured of accuracy and becomes more competitive in today's marketplace.

Another important factor to consider is the amount of time necessary to get a computer system in working order so that the contractor can realize its benefits.

### Brief Training . . .

Although designing one's own program may seem ideal, it is recommended that the contractor seek a system that is ready to use after a brief training period.

Ideally, the program selected should be easily modifiable to suit specific needs. It should allow con-



Estimation's CONTRACTOR I.

		ESTIMATED			ACTUAL			PROJECTED		
CODE	PHASE	HOURS	ADJUSTMENT	% OF JOB	HRS THIS PERIOD	HOURS TO DATE	% USED	EST. % COMPL	GAIN OR LOSS	PROJ HRS AT COMPL
<b>PRODUCTIVE LABOR</b>										
1	RF	160.00	0.00	9.09	40.00	120.00	75.0	80.0	8.00	152.00
2	RB-U	320.00	20.00	18.18	60.00	160.00	47.1	55.0	27.00	313.00
3	RB	600.00	0.00	34.09	120.00	320.00	53.3	55.0	10.00	590.00
4	HC	400.00	0.00	22.73	150.00	250.00	62.5	50.0	-50.00	450.00
<b>SUB-TOTAL</b>		<b>1,480.00</b>	<b>20.00</b>	<b>84.09</b>	<b>370.00</b>	<b>850.00</b>	<b>56.7</b>	<b>40.0</b>	<b>-5.00</b>	<b>1,505.00</b>
<b>NON-PRODUCTIVE LABOR</b>										
91	START-UP	120.00	30.00	6.82	0.00	110.00	73.3	100.0	40.00	110.00
92	TRAVEL	80.00	0.00	4.55	20.00	60.00	75.0	80.0	4.00	76.00
93	MEETING	80.00	30.00	4.55	12.00	82.00	74.5	40.0	-16.00	126.00
<b>SUB-TOTAL</b>		<b>280.00</b>	<b>60.00</b>	<b>15.91</b>	<b>32.00</b>	<b>252.00</b>	<b>74.1</b>	<b>80.0</b>	<b>28.00</b>	<b>312.00</b>
<b>TOTAL</b>		<b>1,760.00</b>	<b>80.00</b>	<b>100.00</b>	<b>402.00</b>	<b>1,102.00</b>	<b>59.9</b>	<b>70.0</b>	<b>23.00</b>	<b>1,817.00</b>

**“The entire computerized estimating program selected should tie in all information from the estimate through job completion.”**

trol of material prices to reflect the current market, and, more importantly, its labor units should be easily changeable.

The best computer program, after a few months, should provide the contractor with a system of his own material and labor values.

Computerized estimating should increase productivity, organize the effort of the contractor and provide product consistency and accuracy. To increase estimating productivity, the computer should eliminate 90-100% of the contractor's write-up and all of his extension work.

An ideal program will organize one's effort because it will use the takeoff (count) and sort material and labor into groups or categories for evaluation. The same program produces consistency because it will detail and sort information the same way each time (so the takeoff sequence does not matter).

Accuracy will result because the computer will make all extensions and can be programmed to remind the contractor of important considerations.

As a byproduct of the estimate, a computerized estimating program

should provide information (with no extra effort) for management control. Labor reports should provide the ability to break down estimated hours into work categories and compare them to actual hours used.

This results in a built-in projection which can show trends. Trend prediction is invaluable in making future job decisions as well as allowing the contractor to identify problems and get them under control immediately.

Another byproduct of a computerized estimate are status reports which let the contractor compare estimated material costs, labor costs, and direct

January 12, 1984 PERIOD: 1/1/84 TO 1/31/84		COST STATUS REPORT FOR JOB 12345678			
		SAMPLE JOB JOB ADDRESS ADDRESS 2 CITY, ST ZIP			
ITEM =====	ADJ. EST. =====	THIS PERIOD =====	TO DATE =====	BALANCE =====	% USED =====
MATERIAL TOTAL	6,200.00	1,850.00	3,750.00	2,450.00	60.5
LABOR					
STRAIGHT HOURS	1,840.00	402.00	1,102.00	738.00	59.9
PAY HOURS	0.00	0.00	10.00	-10.00	0.0
LABOR COST	17,600.00	0.00	10,500.00	7,100.00	59.7
AVG. RATE	9.57	0.00	9.44		
DJE					
1 PAYROLL INS.	900.00	240.00	480.00	420.00	53.3
16 PERMIT & INSPEC FEE	500.00	0.00	250.00	250.00	50.0
33 DRAWING/ENGINEERING	1,200.00	0.00	1,100.00	100.00	91.7
34 TEMP POWER	600.00	250.00	500.00	100.00	83.3
DJE TOTAL	3,200.00	490.00	2,330.00	870.00	72.8
TOTALS	27,000.00	2,340.00	16,580.00	10,420.00	61.4
PROJECTED STRAIGHT HOURS AT COMPLETION		1,817.00			
PROJECTED PAY HOURS AT COMPLETION		10.00			
AVERAGE LABOR RATE		9.57			
PROJECTED LABOR COST			17,484.39		
PROJECTED MATERIAL COST			6,200.00		
PROJECTED DIRECT JOB EXPENSE			3,200.00		
PROJECTED PRIME COST			26,884.39		
ESTIMATED PRIME COST			27,000.00		
PROJECTED GAIN OR LOSS vs ORIGINAL ESTIMATE				115.61	

## WHAT TO LOOK FOR IN A COMPUTER SYSTEM

A contractor can save much time and money in his search for a computer system if he looks for the following:

1. A standard program, put together by someone who has an understanding of wall and ceiling contracting estimating and job management.

2. A program that can be used after a few days of training covering the use of the computer and the contents of its program.

3. A program so comprehensive and flexible that it can handle any problem that the estimator may face.

4. A program that allows the contractor to change prices as often as necessary, or, as an option, through automatic price update.

5. A program that allows the contractor to change any labor unit he disagrees with to his own value.

6. A program that provides the contractor with a complete bid summary at the end of takeoff so that he benefits from a question-and-answer approach, so as not to miss any items that could affect his bid. (The computer makes all extensions for more accuracy.)

7. A program where all the estimate information automatically provides the contractor with the information necessary for management control.

8. A program that as a byproduct of the estimate will give the contractor management reports and labor status.

9. A vendor that has the reputation, financial strength, technical and human resources, to insure that the system chosen will provide for one's goals today, tomorrow, next year, or even five years from now.

10. A vendor that has the resources, as well as the commitment, to develop new and advanced software enhancements as well as new hardware peripherals.

By finding such a computer system, a contractor can save months of precious time.

job expenses to actual expenditures. The estimate really becomes a summary.

Finally, the entire computerized estimating program selected should tie in all information from the estimate through job completion.

For the time and money spent, the estimate should provide more than a means of being a low bidder. It should provide information and de-

tail to purchase for and control the job.

Therefore, the percentage of jobs bid that are awarded contracts makes no difference, because the one-time effort for takeoff provides all the information required.

This method not only will ensure the wall and ceiling contractor of accurate bids, it will do much to ensure his business success.