

Application Summary Application Summary Appl



A GOOD IDEA AND A GOOD MACHINE TEAM UP TO GIVE YOU ACCURATE ESTIMATES

Hoping to alleviate these problems in estimating, a former electrical contractor named Jack Koontz developed the Master Manual System. That was 12 years ago.

Jack, who is president of the Master Service Corporation in Staunton, Virginia, also had the foresight to set up the latest edition of his estimating manual (MCP-5) for eventual computerization. Up to 1976, he had been looking for the right computational system that could offer ease of use, accuracy, and speed for a reasonable price. When he discovered the Hewlett-Packard 9825A Desktop Computing System, he knew he had the complete solution.

Now, through the combined efforts of Jack Koontz and Hewlett-Packard, you can make your estimating jobs a lot easier with the automated version of the Master Manual System—the Master-Matic System.

A NEW APPROACH TO PROCESSING ELECTRICAL CONSTRUCTION ESTIMATES

In recent years the electrical contractor has seen many innovations designed to increase production in his field operations but few to improve production of his office staff. A notable exception to this is the Master-Matic System which enables your estimator to bid more work, more accurately.

How many times have you let an attractive job pass because you just didn't have the time to estimate it?

At best, your choices have included:

- Adding personnel (where can you find another good estimator right away?)
- Working more hours (nights and weekends)

YOU MUST GET WORK AT A POTENTIALLY PROFITABLE PRICE. THAT REQUIRES ACCURATE ESTIMATING.

Where does the money come from to pay for anything left out of the estimate? From profit. Where does the money come from to pay for shortages caused by extending and totaling errors? Again, from profit.

The simple truth is profit pays for all costs the estimator fails to include in his estimate. And even good estimators make mistakes.

PRICING, LABORING, EXTENDING, TOTALING, AND RECAPPING

Regardless of the method that you use to take-off the job, the Master-Matic System takes over when it comes time to price and labor each item and extend and total the figures.

All that the estimator needs to do is fill out the input sheets, transferring information from the MCP-5 manual, and the BOM.

The MCP-5 pricing and laboring reference section contains nearly 15,000 electrical items. They are divided into 6 construction steps called codes, which are:

- Code 1—Complete Empty Raceway
- Code 2—Distribution Apparatus (Switch, Gear, MCC, Panels, Bus Duct, etc.)
- Code 3—Wire and Cable
- Code 4—Interior Fixtures, Exterior Fixtures and Poles, Lamps
- Code 5—Devices, Plates, Dimmers, Motor and Equipment Connections
- Code 6—Special Systems (Hospital, School, Lighting Protection, Heat, Signal, etc.)

These 6 codes are further divided into 98 work groups.

THE FIVE ESSENTIALS OF AN ACCURATE ESTIMATE

Whatever the type or size of job, any estimate that comes up with direct job costs that meet the following 5 requirements is an excellent estimate.

- Complete bill of material (BOM)
- Accurate quantities for each item on the BOM
- Reasonable prices to buy that BOM
- Realistic labor to install each item
- Mistake-free arithmetic

The estimator is responsible for the first 2; the HP 9825A Desktop Computing System provides the other 3.

DEVELOPING THE BILL OF MATERIAL

The Master Manual System shows you how to be more effective in developing the complete BOM and ensures that you have accurate quantities.

It features time-tested forms, designed to prevent you from overlooking any part of the job, and a complete master checklist and section checklist for each type of material in the job.

In addition, it illustrates a time-proven technique for takeoff from the drawings, which means more accurate counts.

Electrical Construction Estimating With the 9825A

HEWLETT  PACKARD

CODE 1. EMPTY RACEWAY.

Section 1. GRC Raceway.

Check List.

Est. Group

1.1 Heavy Wall Rigid Steel Conduit. (GRC)	1
1.2 Intermediate Rigid Steel Conduit (IGRC)	2
1.3 GRC Fittings. (a) Plastic Bushings	3
(b) Metal Bushings	3
(c) Insulated Metal Bushings	3
(d) Insulated Grounding Bushings	3
1.4 GRC Fittings. (a) Locknuts	3
(b) Grounding Locknuts	3
(c) Straps	3
1.5 GRC Fittings. (a) Pipe Spacers (Clamp Backs)	3
(b) Bushing Pennies	3
(c) GRC Couplings	3
(d) Conduit Sleeves	3
1.6 GRC Fittings. (a) Entrance Caps	3
(b) Entrance Seals	3
1.7 GRC Fittings. (a) Erickson Couplings	3
(b) Pull Elbows	3
(c) Off-Set Nipples	3
1.8 GRC Nipples	3
1.9 GRC Fittings. (a) Expansion Couplings	3
(b) Chase Nipples	3
(c) Myers Hubs	3
1.10 GRC Fittings. (a) Plugs	3
(b) Beam Clamps	3
1.11 GRC Condulets (a) LB Condulets	4
(b) LL Condulets	4
(c) LR Condulets	4
(d) C Condulets	4
1.12 GRC Condulets (a) T Condulets	4
(b) TB Condulets	4
(c) X Condulets	4
(d) Covers	4
(e) Gaskets	4
1.13 GRC Cast Outlet Boxes (a) FS Boxes. 1 Gang	4
(b) FSC Boxes. 1 Gang	4
(c) FSL Boxes. 1 Gang	4
(d) FSR Boxes. 1 Gang	4
(e) FSS Boxes. 1 Gang	4
(f) FSOC Boxes. 1 Gang	4
(g) FST Boxes. 1 Gang	4
(h) FSX Boxes. 1 Gang	4
(i) FSLD Boxes. 1 Gang	4
1.14 GRC Cast Outlet Boxes (a) FS Boxes. 2 Gang	4
(b) FSC Boxes. 2 Gang	4
(c) FSS Boxes. 2 Gang	4
(d) FSD Boxes. 2 Gang	4
(e) FSC Boxes. 2 Gang (Tandem)	4
(f) FS Boxes. 3 Gang	4
(g) FSC Boxes. 3 Gang	4
(h) FSS Boxes. 3 Gang	4
(i) FSD Boxes. 3 Gang	4
1.15 GRC Cast Outlet Boxes. (a) FS Boxes. 1 Gang	4
(b) FDC Boxes. 1 Gang	4
(c) FDL Boxes. 1 Gang	4
(d) FDR Boxes. 1 Gang	4
(e) FDD Boxes. 1 Gang	4
(f) FDOC Boxes. 1 Gang	4
(g) FDT Boxes. 1 Gang	4
(h) FDX Boxes. 1 Gang	4
1.16 GRC Cast Outlet Boxes. (a) FD Boxes. 2 Gang	4
(b) FDC Boxes. 2 Gang	4
(c) FDS Boxes. 2 Gang	4
(d) FDD Boxes. 2 Gang	4
(e) FD Boxes. 3 Gang	4
(f) FDS Boxes. 3 Gang	4
(g) FDD Boxes. 3 Gang	4
1.17 GRC Cast Box Covers	4
1.18 GRC Round Cast Boxes & Covers	4
1.19 GRC Bell Reducers & Reducing Bushings.	4
1.20 GRC Threadless Fittings	3

Figure 2. Section Index



HEAVY WALL GALVANIZED RIGID STEEL CONDUIT (GRC) & ELBOWS WITH COUPLINGS.										1.1		
MATERIAL										LABOR MAN HOURS		
ILLUSTRATION	CATALOGUE NO	PRICE	CODE NO.	DESCRIPTION						2 GROUND	4 LADDER	6 SCAFFOLD
				GRC								
		.59 ft	1	1/2" Rigid Steel Conduit (GRC)						.03 ft	.04 ft	.05 ft
		.71 ft	3	3/4" Rigid Steel Conduit (GRC)						.04 ft	.05 ft	.06 ft
		.95 ft	5	1" Rigid Steel Conduit (GRC)						.05 ft	.06 ft	.07 ft
		1.24 ft	7	1 1/2" Rigid Steel Conduit (GRC)						.06 ft	.08 ft	.11 ft
		1.46 ft	9	2" Rigid Steel Conduit (GRC)						.07 ft	.09 ft	.13 ft
		1.98 ft	11	2 1/2" Rigid Steel Conduit (GRC)						.08 ft	.10 ft	.15 ft
		3.08 ft	13	3" Rigid Steel Conduit (GRC)						.13 ft	.17 ft	.25 ft
		4.01 ft	15	3 1/2" Rigid Steel Conduit (GRC)						.15 ft	.19 ft	.29 ft
		5.17 ft	17	4" Rigid Steel Conduit (GRC)						.17 ft	.21 ft	.33 ft
		6.11 ft	19	4 1/2" Rigid Steel Conduit (GRC)						.19 ft	.25 ft	.37 ft
		9.98 ft	31	5" Rigid Steel Conduit (GRC)						.25 ft	.33 ft	.49 ft
		13.86 ft	33	6" Rigid Steel Conduit (GRC)						.35 ft	.45 ft	.69 ft
				GRC ELBOWS WITH COUPLINGS								
		1.38 ea	35	1/2" GRC Elbows w/ Couplings						.25 ea	.30 ea	.40 ea
		1.80 ea	37	3/4" GRC Elbows w/ Couplings						.31 ea	.36 ea	.46 ea
		2.64 ea	39	1" GRC Elbows w/ Couplings						.37 ea	.42 ea	.52 ea
		3.37 ea	51	1 1/2" GRC Elbows w/ Couplings						.46 ea	.53 ea	.73 ea
		4.47 ea	53	2" GRC Elbows w/ Couplings						.49 ea	.54 ea	.81 ea
		6.83 ea	55	2 1/2" GRC Elbows w/ Couplings						.55 ea	.60 ea	.92 ea
		13.53 ea	57	3" GRC Elbows w/ Couplings						.75 ea	.85 ea	1.33 ea
		21.17 ea	59	3 1/2" GRC Elbows w/ Couplings						.97 ea	1.07 ea	1.54 ea
		37.22 ea	71	4" GRC Elbows w/ Couplings						1.05 ea	1.15 ea	1.75 ea
		42.68 ea	73	4 1/2" GRC Elbows w/ Couplings						1.20 ea	1.30 ea	2.16 ea
		110.00 ea	75	5" GRC Elbows w/ Couplings						2.40 ea	2.60 ea	4.58 ea
		147.12 ea	77	6" GRC Elbows w/ Couplings						3.30 ea	3.50 ea	6.20 ea
				GRC WEIGHT TABLE								
				1/2" 81 lbs per C. Feet								
				3/4" 106 lbs per C. Feet								
				1" 157 lbs per C. Feet								
			1 1/2" 204 lbs per C. Feet									
			2" 250 lbs per C. Feet									
			2 1/2" 343 lbs per C. Feet									
			3" 553 lbs per C. Feet									
			3 1/2" 707 lbs per C. Feet									
			4" 856 lbs per C. Feet									
			4 1/2" 1012 lbs per C. Feet									
			5" 1410 lbs per C. Feet									
			6" 1879 lbs per C. Feet									

Figure 3. GRC Checklist

MS-1

EST. #761		GRC										GRC 90° ELBOWS W/ COUPLINGS							
GRC	D.O.M.	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	DITCH	
E-3 1ST FLOOR	1040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
E-4 2ND FLOOR	1480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3RD	1480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4TH	1480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5TH	1480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
FEEDERS	220	-	-	310	20	20	20	70	80	-	12	2	4	2	6	6	-	120	
ADDEMDA	-	-	-	-	-	-	180	-	(80)	100	-	-	-	-	-	(6)	8	90	
TOTALS	7180	-	-	310	20	20	200	70	-	100	12	2	4	2	6	-	8	210	

Figure 1. Bill of Material



FEATURES AND BENEFITS

1. The Master-Matic is a complete ready-to-go-estimating system for the profit-conscious electrical contractor.
2. Use your present knowledge and experience in estimating.
3. The system produces a complete report package for the estimate.
4. You control the factors requiring business judgment and knowledge of local conditions.
5. By transferring most of the workload from the estimator to the secretary or clerk, you save a great deal of time.
6. The 9825A System can be leased for about \$250 per month on a 5-year lease. The Master-Matic program and pricing and laboring base is available for a one-time charge of \$500.
7. You bid with confidence.

The system includes:

- All required computational and report-generating equipment.
- The computer program that controls the entire computational process. It retrieves the price and labor information, extends, totals and performs error checking automatically.
- Complete pricing and laboring information on more than 14,000 items of electrical material and equipment.

Compile and format the information in your own way. Your secretary or clerk can then enter the data from your input sheets into the 9825.

The reports include:

- A separate pricing and laboring sheet for each group of material showing the units and extensions for material and labor and the totals for that group.
- A 1-page summary of the estimate that has a line for the totals from each pricing and laboring sheet and shows the material group, the total cost for that material, and total man-hours to install that material. A grand total of the material cost and labor hours is seen on the last line.
- A DOC summary that divides the job into 6 basic construction steps. For each step the material, labor hours, and their percentage of the total is shown. This report is an important mistake-detecting final check of the estimate. It gives you the information necessary to compare the estimate just completed to an established model of a similar profitable job.
- A man-loading and supervision analysis form for use in determining how many people the job will require. This enables you to accurately estimate supervision costs, job expense, and the amount of cash required to finance the job.

The computer program looks up all pricing and laboring units, calculates extensions and totals, cross checks arithmetic, and produces easy-to-read reports. But it leaves the decisions to you.

In a matter of minutes, you can review the reports and factor the labor, using guides provided to adjust estimated labor to local productivity. Then you can adjust the material costs according to the competitive situation. You can better handle the problems caused by quotations with escalation clauses or 'price in effect at time of delivery'.

One case study of a \$120,000 estimate showed that it took an experienced estimator 10 hours and 6 minutes to price, labor, extend total, and check his estimate by traditional methods. The same estimator, again working from the material takeoff, took 25 minutes to code the job for a secretary. The secretary then entered the information into the 9825 System and within 55 minutes the estimate was complete.

The estimator thoroughly checked the work and reviewed the entire estimate in only 30 minutes.

Master-Matic saved the estimator 9 hours and 11 minutes at the cost of 55 minutes of secretarial time. The 9 hours could then be applied to bidding other jobs; or it could be used to more thoroughly oversee scheduling, supply, and control of jobs under construction to improve profitability.

In this case, approximately \$90 of estimating overhead was saved and only \$5 of secretarial time added—a net savings of \$85 per estimate.

Once you've submitted your Master-Matic bid, you can relax because it's accurate, but you can, at the same time, dramatically increase estimating volume and obtain more contracts. This generates profits far in excess of system and software investment. With an average monthly bid volume of three 120,000 jobs, for example, the case study savings of \$85 per job in bid preparation alone justifies this cost.

Your confidence is based on verifiable facts. Your estimation provides a complete bill of material with accurate quantities. The HP 9825A System and Master-Matic process the information rapidly to produce the reports that enable you to prove the accuracy of the estimate or catch and correct mistakes.

ESTIMATED BY: Kemper
CODED BY: Martin
CHECKED BY: Morrison

EST.NO. 1977
PAGE 1

EXTENSION	UNIT	EXTENSION	NEED REC.
4236.20	0.030	215.40	
294.50	0.050	15.50	
24.80	0.060	1.20	
29.20	0.070	1.40	
396.00	0.080	16.00	
215.60	0.130	9.10	
517.00	0.170	17.00	
31.68	0.370	4.44	
6.74	0.460	0.92	
17.88	0.490	1.96	
13.66	0.550	1.10	
81.18	0.750	4.50	
297.76	1.050	8.40	
6162.20		296.92HRS	

iled-Down Material Sheet

For instance, Figure 8 shows that the Code 1 percentages for material and labor are both low when compared with the model for a conduit- and -wire office building shown in Table 1. Further checking shows that this is to be expected because the lighting consists of continuous rows of fixtures that are used as a raceway. The body of the fixture replaces conduit. Furthermore, in this job, the telephones are only stubbing in the ceiling. Telephone cable is enclosed in the ceiling space, instead of in a raceway.

TABLE 1

Code	Material	Labor
1	22%	64%
2	25%	7%
3	18%	14%
4	33%	13%
5	1%	1%
6	1%	1%

If the design does not justify the percentage difference, then the mistake lies in the pricing sheets or the takeoff. It is an easy matter to verify the input to check the pricing sheets. If the error isn't there, then it is in the takeoff.

Using the DOC gives you the confidence that your estimate is right. When your job has passed all the checks, you know the book costs are right. You will then want to adjust the totals on the recap sheet for materials from codes 1, 3, and 5 to be consistent with recent costs for these materials. The MCP-5 manual details the simple procedure for determining the discount that should be applied. They are written into the percentage deducts column of the recap sheet (see Figure 7). Materials from codes 2, 4, and 6 go for quotes.

Book labor units automatically provide more labor for high density of outlets (complex installations) and less for low density. But labor still should be adjusted for other job factors and situations.

Also required is a knowledge of people as well as physical conditions. One example may be that some work must be installed 35-40 feet from the floor. Although Code 3 labor is meant to indicate scaffold installation, it only applies to a maximum of 15 feet above the floor. Obviously, the greater height requires a substantial adjustment in labor. The MCP-5 manual lists a number of such job factors with suggested adjustment percentages.

JOB NAME: Wells Building
ESTIMATED BY: Kemper
CHECKED BY: Morrison

RECAP SHEET NO. 1
ESTIMATE NO. 1977
DATE: 4 January 1977

PGNO	WORK	CODE	MATERIAL	DEDUCTS	LABORHRS	ADJUST
1	GRC	1	6162.20		296.92	
2	GRC FITTINGS	1	400.42		225.03	
3	SITE WORK	1	44.10		2.10	
4	EMT	1	2007.36		347.67	
5	EMT FITTINGS	1	1071.00		217.65	
6	FLEX CONDUIT	1	817.72		81.98	
7	FLEX FITTINGS	1	594.14		85.56	
8	FLOOR BOXES	1	1115.00		40.00	
9	STAMPED METAL BOXES	1	1176.97		255.04	
10	SHEET METAL ENCLOSURE	1	32.50		0.75	
11	MISCELLANEOUS	1	1546.80		186.40	
12	SAFETY SWITCHES	2	525.00		11.60	
13	DIST. APPARATUS (22.0)	2	14355.00		210.60	
14	TRANSFORMERS	2	8561.55		79.00	
15	CONTROLLERS	2	0.00		24.35	
16	FUSES	2	819.29		1.60	
17	COPPER WIRE 600V	3	8915.96		409.73	
18	FIXTURES, INTERIOR	4	32410.00		712.80	
19	LAMPS	4	6189.57		183.05	
20	DEVICES & PLATES	5	2403.05		154.49	
21	EQUIPMENT CONN.	5	0.00		11.57	
22	FIRE ALARM	6	2500.00		43.90	

SHEET NO. 1 TOTALS \$ 91647.63 3581.79HR

Figure 7. Recap of Work Group Totals

Figure 8. Distribution-of-Cost Analysis

JOB NAME:	Wells Building	EST.BY	Kemper		
EST.NO.:	1977	DATE:	4 January 1977		
DISTRIBUTION OF COST REPORT					
MATERIAL DOLLARS	%OF MATERIAL	CODE	DESCRIPTION	LABOR HOURS	%OF HOURS
14968.21	16	1	Empty Raceway	1739	49
24260.84	26	2	DistributionApparatus	327	9
8915.96	10	3	wire	410	11
38599.57	42	4	Fixtures & Lamps	896	25
2403.05	3	5	Devices & Equip.Conn.	166	5
2500.00	3	6	Systems Equipment	44	1
91647.63	100		TOTALS	3582	100

MAN-LOADING AND SUPERVISION ANALYSIS

1. Divide total man hours by hours in normal day. -----/----- MAN DAYS
2. Multiply normal work days in one month by number of construction months in contract. -----X----- WORK DAYS
3. Divide man days by work days. -----/----- MAN LOAD
4. Divide man load by crew size permissible. -----/----- NO. OF CREWS
5. Calculate hours for supervisory people paid by the hour who will not work with tools. (FOREMAN) (DAILY HRS) (WORK DAYS) FOREMAN HRS
-----X-----X-----
(GEN.FORE.) (DAILY HRS) (WORK DAYS) GEN.FOR.HRS
6. Enter hours determined from #5 on Summary. -----



PAGE NO.	I.D. NO.	MAT. CODE	LAB. CODE	QUANTITY
1.1	1	1	2	7180
		5	2	310
		7	2	20
		9	2	20
		11	2	200
		13	2	70
		17	2	100
		39	2	12
		51	2	2
		53	2	4
		55	2	2
		57	2	6
		71	2	8
		389	26	7934
1.3	3	1	2	986
		3	2	1
		5	2	21
		7	2	2
		9	2	4
		11	2	4
		13	2	6
		17	2	14
		66	16	1038

PAGE NO.	I.D. NO.	MAT. CODE	LAB. CODE	QUANTITY
1.4	4	1	2	1972
		3	2	2
		5	2	42
		7	2	4
		9	2	8
		11	2	8
		13	2	12
		17	2	28
		105	4	1
		109	4	1
		280	24	2078
1.8	8	1	2	6
		19	2	1
		39	2	2
		117	2	3
		184	8	12
1.16	16	11	2	2
		11	2	2
6.1	39	1	2	210
		1	2	210

PAGE	I.D.	QUAN
1.1	1	7180
MC	LC	310
1	2	20
5	2	20
7	2	200
9	2	70
11	2	100
13	2	2
17	2	12
39	2	2
51	2	4
53	2	2
55	2	6
57	2	8
71	2	
389	26	7934

Figure 5. Reduced Version of 9825's Audit Tape



Figure 4. Input Sheet

PREPARING THE ESTIMATE

Starting with the BOM, a portion of which is shown in Figure 1, the estimator reviews the section index (Figure 2). Line by line, he checks to make sure that he has counted the items on the checklist, if they are required for the job. When he comes to a line for which he has material to be written up on the input sheets, he turns to that page in the manual. For instance, since the first item in Code 1 Section 1, which is GRC, appears in the BOM, he writes up GRC.

To do this, he turns to page 1.1. There, he finds a complete checklist for all sizes of GRC and GRC elbows with couplings (Figure 3). It is a simple matter then to go down this page carefully, using it as a checklist to verify that all items were taken off. When he comes to an item which appears on the BOM, the estimator notes the material code and labor code and the quantity of the item on the input sheet (Figure 4). For instance, 3-in. GRC installed from a ladder has a material code of 15 and a labor code of 4.

The estimator continues the process, working through the checklists for each section, a page at a time, to catch any overlooked items and writing up those items that appear on the BOM. Thus, this writing up of the job for input and reviewing the work-group indexes, as a checklist, serve as one more check along the way to ensure that nothing is left out.

PROCESSING THE ESTIMATE

Once the input sheets have been written up by the estimator, typically, the job is turned over to a clerk for data entry into the 9825A Desktop Computer. This lets the estimator start the next estimate or do other work requiring his talents and skills.

Of course, you, as the contractor, are concerned about the quality of the estimate—you want to be sure that what the estimator wrote on the input sheets is actually entered. For this, another system of checks is employed.

Each page from the pricing and laboring reference is considered as a unit. For instance, treating page 1.1 as a unit, the estimator can see the accuracy check comes from totaling the material codes, the labor codes, and quantities for 1.1. These totals appear underneath the last line for page 1.1. Each of the pages on the input sheets is totaled in this way.

When the clerk enters page 1.1, the 9825A will print the "audit tape", shown in Figure 5, on its built-in, 16-characters-per-line printer. The items on this tape should be identical to the items written on the input sheet.

The 9825A stops operation when the clerk indicates the page is complete. It then prints totals for each of the 3 columns. These totals are then compared with those written on the input sheet. If they are the same, the data has been entered properly. If not, built-in, error-correction routines allow the clerk to quickly correct the mistake; then new totals are printed for comparison.

DESCRIPTION	QUANTITY	UNIT
GRC		
1 1/2"	7180	0.590
1"	310	0.950
1 1/4"	20	1.240
1 1/2"	20	1.460
2"	200	1.980
2 1/2"	70	3.080
3 1/2"	100	5.170
GRC ELBOWS WITH COUPLINGS		
1"	12	2.640
1 1/4"	2	3.370
1 1/2"	4	4.470
2"	2	6.830
2 1/2"	6	13.530
3 1/2"	8	37.220

TOTALS [TRANSFER TO MS-3] ----->\$

Figure 6. Sca

Figure 6 is a scaled-down version of the standard size sheet (8 1/2 x 11 in.), printed by the HP 9871A Character Impact Printer, which details the material. It shows the material description, quantity, price per unit, extended price, labor hours per unit, and extended labor hours. It also shows the need and received columns that can be used when it comes time to buy out the job.

After all items in a particular work group are entered, work-group totals are printed for material dollars and labor hours. These totals later appear as one line on the recap sheet, which is printed after all items in the estimate have been entered. Figure 7 shows a recap sheet for the example job.

The final sheet printed is a distribution-of-cost (DOC) sheet. To complete this, the 9825 calculates the percentage of cost of material, which is determined from each of the codes. It also does the same for labor hours.

USING THE DOC

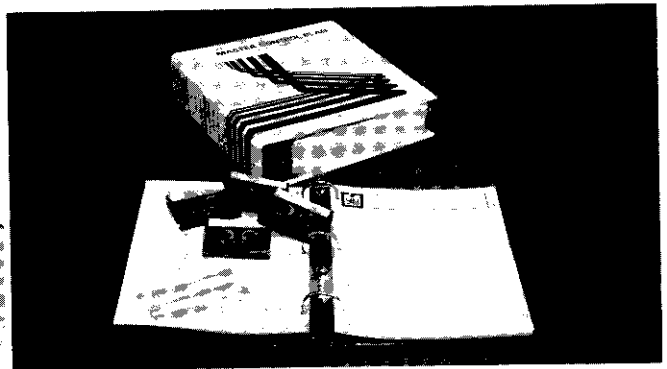
The DOC sheet is the biggest advance in modern estimating. It breaks your big job down into money and labor for each construction step (code).

The 9825A builds the DOC, using "book" prices to get material percentage and "book" labor to get labor percentage. This enables the DOC to serve its primary purpose as a master estimate check. It catches any mistake that would throw the estimate off by comparing your estimate with a known good estimate for that type of job.

DOC MODEL COMPARISON

The MCP-5 manual contains 36 different models of jobs that are proven money makers. The models range from amphitheatres and power plants to industrial facilities, hospitals, and libraries.

By comparing the estimate with the appropriate model, you can find even the smallest oversights. When the estimate shows a lower percentage than the model for Code 1, that means something was left out of Code 1. Sometimes the difference will be due to design, such as an office building that uses bus duct risers instead of conduit-and-wire risers.



EQUIPMENT AND PROGRAM REQUIREMENTS

- 9825A Desktop Computer
- Strings-Advanced Programming Read-Only Memory (ROM)—HP Part No. 98210A
- 9862 Plotter - General I/O ROM—HP Part No. 98212A
- 9871 Character Impact Printer with form-feed mechanism or 9866B Thermal Printer
- Electrical Construction Estimate Program (includes 4 tape cartridges, the Master-Matic manual, and an operating manual)—HP Part No. 09825-12750

Optional

- for larger memories and more speed, order Opt. 001, 002, or 003



Sales and service from 172 offices in 65 countries.
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