

Estimate Templates



By GraphiTech Computer Systems

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Estimating with Millennium

Introduction

The Millennium Order Entry and Estimating system provides an exceptional platform for quoting virtually any printing job, from simple 1 or 2 color flyers to complex multi-signature, multi-part jobs.

In order to really get to know the power and flexibility of the GraphiTech Millennium Estimator, it is suggested that you spend some time performing the following quotes using the data specified. *See Appendix for a list of the Press, Bindery and Stock data used.*

In general, this documentation applies to sheet fed equipment along with associated bindery, pre-press and inventory items.

We will start out with a review of what items are needed when doing an estimate. Since the OE/Est program requests significantly more information than you could possibly know when doing an estimate (because the program doubles as an Order Entry System), it is a good idea to begin to understand what minimums are required to perform an estimate.

Starting the Estimate

After loading the program, you will be required to access the Orders/Quotes menu bar. Then, for a new quote, simply click on the "Create New" icon and select the item identified as Order or Quote. Note: If retrieving a previous quote or job, click on "Retrieve."

For this example, simply use 1000 for the initial quantity. No additional quantities are required. Note however that up to 4 quantities are available for a quote.

Minimum Information Required

General Information: The "General Information" screen will only require you to enter a description of the job (quote) and, optionally, a company name.

You may be as descriptive as needed in the "Job Description" area but remember that this is, just a job description. It does not need information that would normally be given to production personnel since there are numerous note sections for that purpose.

Pre-Press: For Quick estimates, the top portion of this screen allows you to enter dollar amounts and/or time values for various pre-press operations.

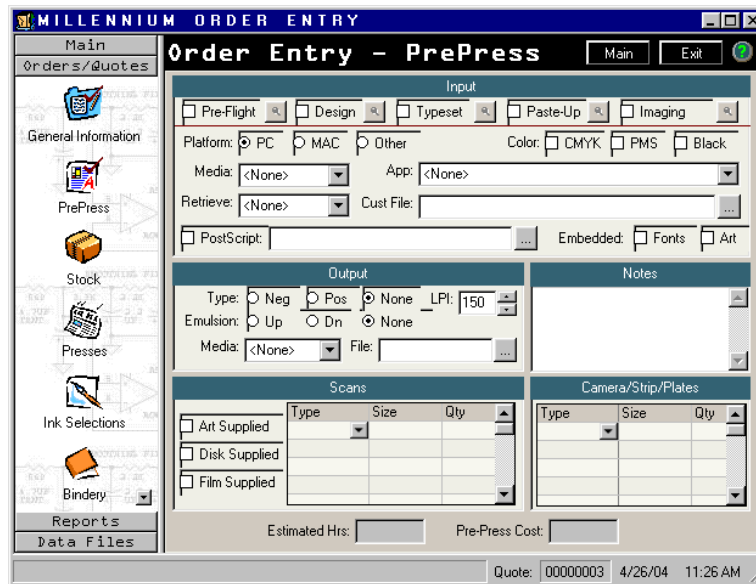


Figure 1 – Pre-Press

For example, if you wish to add a dollar amount for pre-flight cost, check the box next to the left of pre-flight followed by a click of the zoom key to the right.

Values may be entered for Pre-Press, Design, Typeset, Paste-Up and Imaging.

If you are aware of the specific items that will be a part of the estimate, i.e., negatives, color seps, proofs, etc., then the bottom of the screen provides input for both Scans and Camera/Strip/Plates. The database for this area is set up in the Data Files portion of the menu (menu bar to left of program screen).

Stock: The stock screen will usually contain all the stocks you will ever need however, you may also enter or modify a given stock to "Customize" the inventory for this one job. If you do, the stock number will revert to zero.

Press Screen: The only optional information here is the "Notes" section.

Ink Selections: For the purposes of an estimate, many companies will simply assign a "standard" coverage for various colors, usually amounting to 10-20%. It is virtually impossible to know the coverage of a job unless you have a "comprehensive" in front of you. Other companies may even not quote this portion of the job, although that does tend to leave money on the table and results in a lower gross profit when you do get the job. As in all cases, the database is found in the "Data Files" menu selection.

Bindery: Here, the "Notes" section is optional.

Outside Services: If you know what services will be required, they should be entered here. The "Notes" do not need to be filled out.

Summary Screen: This screen has no input other than the small check marks to the right of the page. These are used to identify which sections you have visited during the quote. If you see a section not checked and you needed to enter information there, simply double click the item and you will be shown that screen. Of course, you can always use the menu bar as well.

Sample Estimates

Example 1 – Bindery Input

Start this estimate as described earlier by entering a single quantity of 1000. Use the default stock and default press information (8.5x11 Finished Sheet, 11x17 Press Sheet and 23x35 Stock Sheet).

We will be looking at the following bindery operations: *Fold, Perf, Pad, Cut, Drill, Gather, Multi-Bin Collate, Stitch (Staple), Number and Wrap.*

Bindery Item	Setups	Difficulty	Sheet Size	Additional Runs	% of Run
Fold, Baum	1	5	Press	0	100
Perf, Press	1	5	Finished	0	100
Pad, Press	1	5	Finished	0	100

Figure 2 – Bindery Input

Note that the bindery input area contains the words Setups, Difficulty, Additional Runs, Percent of Run and Sheet Size (Finished, Bleed, Press and Parent). For 90% of all estimates you will only need to enter the number of setups. Use a single setup for each item and accept the default for each item (such as fold which will default to press sheet).

Why are there so many other items there? Suppose a customer came to you and wanted you to estimate the cost of printing 25000 brochures with half of them folded and the other half drilled to 3-hole standard. Or, using the same example, suppose we need to pre-cut the parent sheet (23x35 for example) before running on the press (11x17). If we are cutting the 23x35 parent sheet, we simply indicate that we want two cuts of the parent sheet. The computer will calculate the quantity to be cut along

with the time required to lift the larger sheet into the cutter and maneuver it for the second cut.

Did you know that some estimating programs have no provision for handling different type sheets (they expect you to make the adjustment when entering the information)? One program we know of charged the same price for cutting 25000 sheets of 8.5x11 as it did to cut 25000 sheets of 23x35. The only problem was that in reality, the 23x35 sheet took 3.5 times longer to cut!

Another example for using the "Additional Runs" area would be when you need to score on the folder and then run the folding job. This could all be entered as a single item if desired by adding an additional run and an additional setup.

Looking at the results of using a single setup in Bindery: If you have entered 1000 for the quantity and a stock with a thickness of 0.004 inches, then the following will appear if we go to the "Summary Screen". Click on Estimate and then view the Time Summary of Bindery (Click Time Summary, then click on Bindery Heading).

		1000			
Item	N.SRPD*	MR & Run	PSS Spoil	Cost	Retail
FOLD, BAUM	1.2005	000:24	45	14.09	18.32
PERF, PRESS	1.0005	000:28	26	23.07	29.99
PADDING	1.0005	000:18	0	7.29	9.48
CUTTING	1.0005	000:07	1	4.08	5.31
DRILLING	1.0005	000:09	5	3.74	4.86
GATHERING	1.0005	000:33	0	13.75	17.88
MBCOLATOR	1.0005	000:57	23	28.43	36.96
STAPLER	1.0005	000:47	0	19.52	25.38
NUMBERING	1.0005	000:32	19	13.52	17.58
WRAPPING	1.0005	000:02	0	1.00	1.30
Totals		004:16	119	\$128.51	\$167.06

Total Cost for PP: \$0.00 Bind: \$128.51 Press: \$453.10 Stock: \$15.19 Vend: \$0.00 /1:

Figure 3 – Bindery Time Cost

Note: The N.SRPD* shown is a shorthand way of remembering the significance of entries made. The N=Number of Setups, S=Sheet size (0=Finished, 1=Bleed, 2=Press and 3=Parent), R=Additional Runs, P=Percentage of run (in increments of 10% where 0=100%) and D=Difficulty (0-9 where 5 is average difficulty). In the first line, an entry of 1.2005 means 1 setup, Sheet size(2)=Press, Additional Runs is zero and Percentage of Run is 100% (the meaning of zero there represents the full run). The difficulty is set to 5, which is the normal difficulty.

The MR & Run refer to the time required for the operation and SPOIL refers to the number of Press Sheets wasted during the run. Note that even though we are running the finished sheet in most cases, the number of wasted sheets is converted to Press Sheets and then run through the press to account for any additional time and cost to account for this waste. Cost and Retail are self-explanatory.

Now let's look at how the price for gathering was derived.

Bindery Name: Gathering	Impact Flags
Bindery Type: Gathering	<input type="checkbox"/> Stock <input type="checkbox"/> Carbonless <input type="checkbox"/> Pages
Cost/Hour: 25	<input type="checkbox"/> Length <input type="checkbox"/> Square In. <input type="checkbox"/> Thickness
Min Speed (uph): 2000	<input type="checkbox"/> Multi-Bin <input type="checkbox"/> No Signatures <input type="checkbox"/> Delivery
Max Speed (uph): 2000	<input type="checkbox"/> Linear Padding <input type="checkbox"/> Packaging <input type="checkbox"/> Weight Based
Min Sheet Size:	<input type="checkbox"/> Foil <input type="checkbox"/> Press Sheet <input type="checkbox"/> Die Cut
Max Sheet Size:	Waste/Spoilage
Add'l Run Time %: 10	Sheets: 0
Minimum Cost: 0	Max Run %: 0
Setup Time: 3	Min Run %: 0
Add'l Setup Time: 3	Notes
Spoilage Eff: 50	
Spoilage K-Fact: 5	
Speed Eff: 10	
Speed K-Fact: 5	
<input checked="" type="radio"/> Speed <input type="radio"/> Spoilage	

Figure 4 – File Structure for Gathering

The speed or Units/Hour is set to 2000. This means for gathering that we can gather 2000 units or sheets per hour. Since we are quoting the job for 1000 sheets (gathering does not make much sense here but is used for illustrative purposes), the time required would be $1000/2000 = 0.5$ Hours or 30 minutes. If we add the setup time of 3 minutes to this we get a total of 33 minutes of setup. Multiplying this times our hourly cost gives; $33/60 * 25 = \$13.75$ where 33/60 gives us the number of hours, rather than minutes.

We used gathering because it had a constant speed and did not involve any speed flags.

Now let's look at cutting in which there are several speed flags that must be employed.

Bindery Name: Cutting	Impact Flags
Bindery Type: Cutting	<input type="checkbox"/> Stock <input type="checkbox"/> Carbonless <input checked="" type="checkbox"/> Pages
Cost/Hour: 35	<input checked="" type="checkbox"/> Length <input type="checkbox"/> Square In. <input checked="" type="checkbox"/> Thickness
Min Speed (uph): 60000	<input type="checkbox"/> Multi-Bin <input type="checkbox"/> No Signatures <input type="checkbox"/> Delivery
Max Speed (uph): 60000	<input type="checkbox"/> Linear Padding <input type="checkbox"/> Packaging <input type="checkbox"/> Weight Based
Min Sheet Size:	<input type="checkbox"/> Foil <input type="checkbox"/> Press Sheet <input type="checkbox"/> Die Cut
Max Sheet Size:	Waste/Spoilage
Add'l Run Time %: 25	Sheets: 2
Minimum Cost: 0	Max Run %: 0
Setup Time: 6	Min Run %: 0
Add'l Setup Time: 0.6	Notes
Spoilage Eff: 50	Imported from
Spoilage K-Fact: 5	C:\Millennium\Samp
Speed Eff: 1	e\costfile.dat on
Speed K-Fact: 5	Monday April 3, 2000
<input checked="" type="radio"/> Speed <input type="radio"/> Spoilage	10:02:36 am

Figure 5 – File Structure for Cutting

Cutter Calculations: Again we have 1000 sheets and we plan to make a single cut to the finished size of 8.5x11 (this could be an edge or face cut). The speed with which we can cut is shown as 60,000 sheets per hour. This represents the number of 8.5x11 sheets that may be placed into the cutter, cut and then removed from the cutter. There are several impact flags that are marked, namely Length, Pages and Thickness. In other words, the speed of 60000 would be modified if we were using any size other than 8.5x11 by the ratio of 11 divided by the length of sheet. If we were cutting a 23x35, then the speed would be reduced to $11/35 * 60000 = 18857$ sheets per hour. Often a cutter is expressed as Sheets per Lift and Lifts per Hour. In other words if we can cut 500 sheets per lift and can perform 120 lifts per hour just cutting 8.5x11 sheets in half, then the speed will result as $120 * 500 = 60,000$ sheets per hour. We know from time studies that it takes approximately 1.5- 2.0 minutes per lift (or 30-40 lifts per hour) when cutting 23x35 stock of 0.004 thickness. If we can still place 500 sheets in a lift then the speed will be between 15,000 and 20,000

sheets per hour. In our example above, we calculated the speed to be 18,857 which is in the 1.6 minutes per lift range.

How Caliper effects Speed: If we had used a thickness that was 0.008 for example, then the speed of the cutter would be cut in half by the following formula: 0.004 divided by Caliper Used, or $0.004 / 0.008 = 0.5$ times the speed. This is done because if the caliper is 0.008, then we can only get 250 sheets into the cutter for each lift, rather than the original 500 sheets per lift. Of course, all this is fully automatic.

How Pages effect Speed: If we are producing a magazine or book, and we wish to make a final three sided trim, the speed of the operation will be reduced by Pages divided by two. That is because when we place a book into the cutter, every two pages is equivalent to a single sheet of paper, thus a 32 page book (even if the quantity is 1000 books) will result in a time that is identical to cutting 16,000 sheets, or $32 \text{ pages}/2 * 1000 \text{ sheets} = 16,000 \text{ sheets}$.

Cutter Time and Cost: This is done in a manner similar to Gathering except for the above mention Impact Flags. The Quantity is 1000 and the speed is 60,000 thus the time involved is 1000 sheets divided by 60,000 sheets per hour = $1/60^{\text{th}}$ of an hour or 1 minute. Setup time is 6 minutes added to the run time of 1-minute results in a total time of 7 minutes. This calculates out to a cost of $7 / 60 * \$35/\text{hour} = \4.08

Note that a waste factor of 2 sheets was specified in the file, but only one sheet was shown as wasted in Figure 3. Anyone care to answer that? Remember that waste is in Press Sheets and we were cutting Finished Sheets. So, even though we wasted two finished sheets, these were converted to one press sheet.

Looking at Padding: (Please note that the padding file setup will require Impact flags of Thickness and Pages). Padding was entered as a 1. This would only be a correct entry if we were padding Carbonless stock. In effect, we should have entered 50 or 100 to indicate the number of sheets per pad. Using a 1 eliminated the chipboard and stabbing costs of the file. Thus the time for the padding would have been 8.5 inches of face multiplied times the number of sheets (1000) multiplied times the Caliper of the sheet (0.004) = 34 square inches. Since we are padding at the rate of 800+ square inches per hour, the time to actually pad this was 2.55 minutes. The setup time was shown to be 15 minutes thus we have a total time of 17.55 minutes or rounding up, 18 minutes. The cost would be $17.55 / 60 * 25 = 17.31$ (slight error due to speed actually higher than 800)

If you were to go back to the estimate and put in a padding file of 50 setups (actually type the word 50 as you cannot scroll to numbers larger than 5), this then refers to 50 sheets per pad. The result is 20 pads therefore we will have a cost that is \$2 higher than before, due to the 10 cents per pad used for stabbing and chipboard costs. $20 \text{ pads} * \$0.10 = \2.00

Try to experiment with different entries on various bindery operations. For example, look at the costs of both MR and SET UP compared to an additional run. The difference between the two will give you an idea of the cost of just the run time on certain jobs. You will notice that run costs are usually very, very low on small quantities which is why setup costs are so important. Remember, when running small quantities, the cost is primarily that of setup.

Looking at Wrapping:

Generally, wrapping involves a retail price to the customer of between \$0.50 to \$2.00 per package. In our example, each package will cost the customer \$1.30 after the markup. To arrive at a price, the program looks at the number of packages that can be wrapped in an hour (in this case 60, or one per minute). The file is set up so that there are 500 sheets per package of 0.004 thick stock. Since our estimate involved 1000 finished and delivered brochures, there will be 2 packages created.

The time is calculated at 2 packages / 60 packages per hour = 2/60 of an hour. Since our cost is \$30 per hour, we multiply the time (in hours) times the cost per hour to obtain the total cost for the job. 2/60 times \$30 = 60/60 = \$1. The \$1 cost is then mark up by 30% to \$1.30 as shown in figure 3.

Example 2 – 8 page newsletter

Description: Quote an 8-page newsletter printed in black ink with an average of 30% coverage per signature. The press sheet will be 11x17 and the folded newsletter will be 8.5x11. Customer desires a three-hole drill and stitched (stapled) when complete. A final face trim will be made to the newsletter prior to delivery. A \$5 delivery charge is added to cost of job.

Beginning the Estimate: There are two ways to start this estimate. One would be to retrieve a template that you had created earlier (not done yet) or enter the information from scratch.

Cancel Previous Work: If you are entering this information from scratch, and are still at the Summary Screen, click on the Cancel command in order to erase the current quote from memory (does not erase it from the hard drive). Now click on New and select Quote. The General screen only requires the entry of the description, while the pre-press area will need info on the negatives and stripping charges required.

Note: Many companies combine the cost of stripping and negatives into the cost of the plate. In that way, simple plates in which there are no double burns, or tight registration, may be simply entered at the press screen when requested for number of plates. For this quote, we will assume that each plate contains the cost of a negative and stripping charges, thus we will not be entering any information in the Pre-Press area.

The stock screen will be skipped (assuming that we are using the default stock of 23x35 offset with a price of \$55, \$52 and \$49 per thousand based on 1, 4 and 16 carton respectively). If the prices are not as shown, first go to the data files and change the stock to reflect these prices. Then return to the quote and re-select stock Number 1. The stock prices will change to the modified prices just made.

Press Screen: Once we get to the Press screen, review Figure 6 below to be certain you have the same input on your computer. You must start by entering the Press Sheet Size first (assuming that the stock size is large enough. Then proceed to the Finished Size. We will always use <None> on the bleed size unless there actually is a bleed involved. Then select the 1C ABDICK press. If you receive a warning, note that the size given in the Press Size is either at or over the max press sheet for the press. In actuality, a larger press size may actually be used but this illustrates the warning you might see.

Press		Wash Ups		Production		Press Type					
1C ABDICK		1		Book		<input type="radio"/> Web <input type="radio"/> Perfecting <input checked="" type="radio"/> Offset					
Specifications						Difficulty					
<input checked="" type="radio"/> Sheetwise <input type="radio"/> W&T:						5					
Finished Size	8.5x11	Finished Bleed	<None>	Qty	1000	Pages	8	Sides	2		
Press Sheet Size	11x17	Parent Size	23x35	Up	1	Standard	1	On	4		
Signatures	2	Runs	4	Plates	4	Plate Type	LL Metal	Est Hrs	0.000		
								Est Cost	0		
<input checked="" type="radio"/> 1st Dim <input type="radio"/> Area						The values on the right do not include waste or spoilage		Press Count (Imp)	4000	Stock Count	2000
Notes						<input checked="" type="radio"/> Speed <input type="radio"/> Spoilage <input type="radio"/> Details...					

Figure 6 – Press Input

Booklet: Since this is a booklet type job, be sure you have entered Book under Production. With a finished, folded size of 8.5x11 and a press size of 11x17, a single signature will produce 4 pages. In order to get 8 pages, we need an additional signature, so this number becomes 2. Each signature will be run through the press 2 times, so the total runs will then be 4. We will need 4 plates as well since each side of each signature will require 1 plate. Verify that you entered the correct runs, signatures and plates by looking at the Press Count and the Stock Count (both shown without waste for clarity).

Spot Color? Suppose the customer decided that they wanted to add a spot color to the cover of this job. How would you go about it? One thing you know is that an extra plate would be required and you would need to run one side of the signature through the press again (assuming a 1-color press). Thus you have complete latitude as to how many runs, signatures and plates will be used to produce any type of job.

Stock & Press Count: But back to our standard Newsletter. If our customer wants 1000 newsletters, then we will need to run 1 signature through, resulting in 1000 sheets passing through the press. Then we will pass another signature through resulting in another 1000 sheets. The total stock will then be 2000 sheets, but because we need to run the backside of each signature, our total press run will be 4000.

The Press & Stock Count Equations

The following is used to identify both Stock and Press Count:

$$\text{Stock Count} = \text{Quantity} * \text{Signatures} * \text{On} / \text{Up}$$

$$\text{Press Count} = \text{Quantity} * \text{Runs} * \text{On} / \text{Up}$$

Both of these values do not include waste in order to retain a clear picture of required quantities. So far, the values for Up and On have been 1, but later we will look at estimates that involve both Up and On.

Ink Screen: Now let's move on to the Ink Screen. Here we will identify black ink with coverage per signature of 20%. (If desired, review various coverages in the table on Ink in the Appendix). The data files contain the coverage for black ink at a value of 335,000 square inches per pound and a cost of \$7.00 per pound.

When we actually quote this job, we will also look at how the Ink was computed for this example. Below is the input used for this quote.

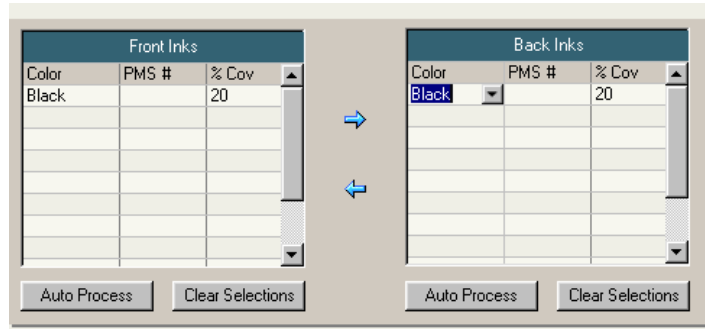


Figure 7 – Ink Coverage

Bindery Screen: Our next screen shows the bindery items that will be used on this quote. They consist of Cutting the Parent Sheet, Folding and Gathering the Press Sheet, Drilling, Stitching and Trimming (cutting) the finished sheet. Note that we selected the Cutting operation for a final three sided trim simply because we do not have two types of cutters identified. For some, it is easier to have two or more identical cutters in the file so that when making a final three-sided trim for example, they can select the bindery item called Trim rather than Cutting. But it will be the same piece of equipment, just named differently.

The drill will require 3 setups for the standard drill while the stapler will require 2 setups. The cutting will consist of 2 bust cuts of the parent sheet followed by a final 3-sided trim of the folded piece. Finally, the job will be wrapped.

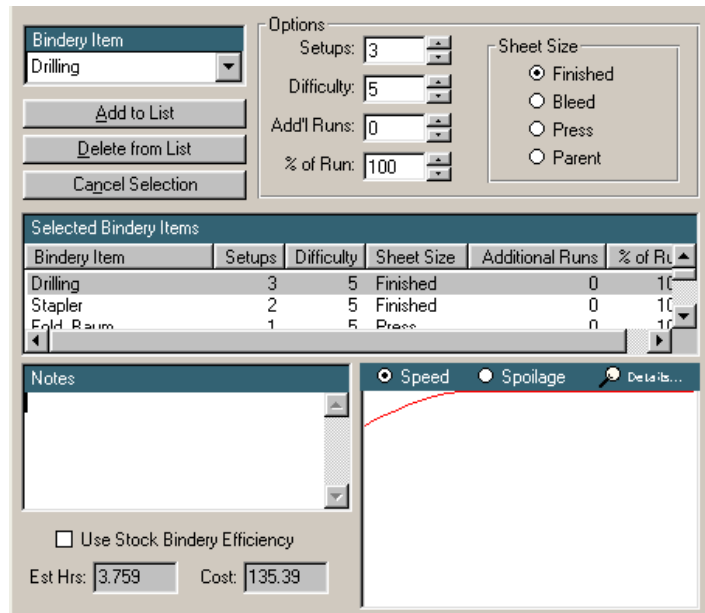


Figure 8 – Bindery Input

Outside Services Screen: Moving to the Outside Services area will allow us to add in the delivery charge. Since a delivery charge is not shown there, we will need to add it to the Vendor Screen first.

Start by clicking on the down arrow under "Vendor Service". Then click on "Add New". Type in the name "Delivery" and click OK. Under the title "Vendor Name",

click the down arrow there as well. Click Add New and enter "Local" or "Our Truck" or something similar. **Please note that you can only have one Vendor Name per Vendor Service!**

Vendor Service		Vendor Name		Service Description	
Delivery		Our Truck			
Qty 1	Qty 2	Qty 3	Qty 4	% Markup	
1000	2000	3000	4000	30	
Cost 1	Cost 2	Cost 3	Cost 4	Outside Services Total	
5	5	5	5	\$5.00	

Selected Services				
Service Type	Vendor	Description	Cost	% Markup
Delivery	Our Truck		5	30

General Comments

Figure 9 – Outside Services

Summary Screen: The Summary Screen provides a quick review of the input for the estimate. It is only intended as a quick review since other screens are employed for more detailed reviews.

Press Summary Press Used: 1C ABDICK Press Runs: 4 Number of Pages: 8 Imaging: None Camera/Strip: None Total Plates: 4 Press Type: Offset No. of Wash-Ups: None Stock: 23x35 20# white bond		Shipping Information Ship to: GraphiTech Computer Sys 4174 Larch Avenue Suite 107 Palm Beach Gardens, FL 33418 Description: 8 page newsletter, 11x17 folded to 8.5x11, black ink, 3-hole drill Qty: 1000 Ship Via:																												
Bindery Operations Drilling Stapler Fold, Baum Gathering Cutting Wrapping	<table border="1"> <thead> <tr> <th>Parts</th> <th>Pricing</th> <th>Change</th> </tr> </thead> <tbody> <tr> <td>Pre-Press:</td> <td>\$0.00</td> <td></td> </tr> <tr> <td>Stock:</td> <td>\$39.96</td> <td></td> </tr> <tr> <td>Press:</td> <td>\$189.48</td> <td></td> </tr> <tr> <td>Bindery:</td> <td>\$135.39</td> <td></td> </tr> <tr> <td>Services:</td> <td>\$6.50</td> <td></td> </tr> <tr> <td>Sub-Total:</td> <td>\$371.33</td> <td></td> </tr> <tr> <td>MU/Disc:</td> <td>\$0.00</td> <td></td> </tr> <tr> <td>Total:</td> <td>\$371.33</td> <td></td> </tr> </tbody> </table>	Parts	Pricing	Change	Pre-Press:	\$0.00		Stock:	\$39.96		Press:	\$189.48		Bindery:	\$135.39		Services:	\$6.50		Sub-Total:	\$371.33		MU/Disc:	\$0.00		Total:	\$371.33		To Do <input checked="" type="checkbox"/> General Information <input type="checkbox"/> Pre-Press <input checked="" type="checkbox"/> Stock <input checked="" type="checkbox"/> Press <input type="checkbox"/> Ink Selections <input checked="" type="checkbox"/> Bindery Work <input type="checkbox"/> Outside Services	
Parts	Pricing	Change																												
Pre-Press:	\$0.00																													
Stock:	\$39.96																													
Press:	\$189.48																													
Bindery:	\$135.39																													
Services:	\$6.50																													
Sub-Total:	\$371.33																													
MU/Disc:	\$0.00																													
Total:	\$371.33																													

Print pricing with Work Order
 Print Work Order after saving

Figure 10 – Summary Screen

The Press Summary in the upper left is a quick way of determining that you have entered the correct parameters for the job.

Below that is the Bindery Operations, again giving you a quick review of the bindery items used with the job.

The far right is a "To Do" list. Each checked item represents an area of the quote you visited in preparing the quote. If Pre-Press was required and you noticed that no "Check Mark" was present for that area, you would know instantly that you forgot to include that item in the quote.

Another function of the "To Do" list is to allow you to Double-Click on any of the lines and be taken to that area of the quote.

The bottom center section identifies the selling price for the job. An overall markup area is provided to allow you to mark up or discount the job based on the circumstances. Remember however, that internal mark-ups are used to produce the final price and that the markup shown above is on top of those internal markups. Note that to use a discount you would enter a negative value.

Time Summary Screen: After you have estimated this quote (the program automatically saves the quote when you click on Estimate), click on the Time Summary command button to review all aspects of the job.

In this quote, we elected to go ahead and quote 4 different quantities so that you would be able to see how the program varies the speed and waste for each quantity. The first section below each quantity shows effective and modified Impressions per hour. The difference between these two values is as follows: The Modified value of speed is based on the speed curve you see when you are in the press section of the quote. The Effective value is the value of speed when factors such as shutting down the press to reload or wearing out plates are taken into consideration.

Total Run & Makeready Waste may often show a fairly high number in the small run area and may in some cases cause you to think the program is in error. But remember that on a short run, you will usually have high makeready amounts per plate as well as high run waste.

For example, in this quote we are showing almost a 12% waste for the 1000 quantity. Also note that you DO NOT add the press and bindery run waste to determine the total waste. Let's look at how the ~12% was arrived at.

The press required 5 sheets per plate. With 4 plates that amounts to 20 sheets. The run waste was 2.7% for the press and since there are 4000 sheets passing through the press, this amounts to approximately 108 sheets for a total of 128 press sheets.

The bindery requires 2 sheets for the cutter (8 press sheets), 2 sheets for the trim, and 35 setup sheets for the folder and 5 sheets for the drill. This accounts for 50 press sheets.

The folder also will have a run waste of 1.8%. Since 2000 sheets will pass through the folder, this amounts to 36 sheets. The drill requires a run waste of 0.45%. Again with 2000 sheets being drilled, this amounts to 9 sheets for a total of 45 sheets.

Total bindery waste is 95 sheets. Total press waste is 128 sheets. Therefore total waste is equal to 223 sheets. This value is somewhat shy of the value the computer calculated (236) due to rounding of percentages, etc.

Print Operations Time/Cost Summary							
Quote No:	D000004	Job No:	N/A	Date:	03/22/2005	Press:	TC-ABDICK
Acct Name:	GraphiTech Computer Sys	Color:	Black	Due:	03/24/2005	Sides Up:	2 / 1
Phone:	800-634-8324	Color:	Black	Production:	Book Mode	PSS/FSS:	11x17 / 8.5x11
Stock:	0001-23x35-20# white bond	Caliper:	0.004				
Desc:	9 page newsletter, 11x17 folded to 8.5x11, black ink, 3-hole drill						
Pre-Press Summary							
Item	Time	Cost	Item	Time	Cost	Item	Time
Typeset	000.00 000.00	\$0.00	Imaging	000.00 000.00	\$0.00		
Paste-Up	000.00 000.00	\$0.00	Camera	000.00 000.00	\$0.00		
Design	000.00 000.00	\$0.00	Scans	000.00 000.00	\$0.00		
Pre-Flight	000.00 000.00	\$0.00	Wash-Up	000.00 000.00	\$0.00		
Item	1000	2000	3000	4000			
Effective ImpHr:	6198	5209	5416	5575			
Modified ImpHr:	6198	5381	6641	5875			
Reduced Press Run Waste:	002.70	002.43	002.19	001.99			
Add'l Run Waste/Bindery:	002.25	002.02	001.82	001.66			
Total Run + Mkrdy Waste:	011.70	009.02	007.87	006.75			
Press Time (less waste):	000.46 000.77	001.29 001.49	002.10 002.17	002.49 002.82			
Press Time (waste):	000.05 000.08	000.07 000.11	000.09 000.14	000.09 000.10			
Total Setup Time:	000.43 000.72	000.46 000.77	000.48 000.82	000.52 000.87			
Pre-Press Time:	000.00 000.00	000.00 000.00	000.00 000.00	000.00 000.00			
Wash-Up Time:	000.00 000.00	000.00 000.00	000.00 000.00	000.00 000.00			
Bindery Time:	003.46 003.76	006.21 006.51	009.15 009.25	011.58 011.97			
Press Cost (less waste):	\$34.63	\$66.90	\$97.46	\$126.87			
Press Cost (waste):	\$3.38	\$5.00	\$6.19	\$7.09			
Total Setup Cost:	\$32.25	\$34.60	\$36.75	\$38.00			
Pre-Press Cost:	\$0.00	\$0.00	\$0.00	\$0.00			
Our Truck:	\$5.00	\$5.00	\$5.00	\$5.00			
Stock Cost (less waste):	\$27.50	\$55.00	\$82.50	\$110.00			
Stock Cost (waste):	\$3.24	\$4.96	\$6.33	\$7.42			
WashUp Cost:	\$0.00	\$0.00	\$0.00	\$0.00			
Plate Cost:	\$72.00	\$72.00	\$72.00	\$72.00			
Total Bindery Operations:	\$104.14	\$177.30	\$250.08	\$322.49			
Cost of Black Ink:	\$3.46	\$8.62	\$10.10	\$13.35			
Cost of Color Ink:	\$0.00	\$0.00	\$0.00	\$0.00			
Total Plates Required:	4	4	4	4			
Stock Waste:	236	361	460	540			
Press Sheets to Order:	2236	4361	6400	8540			
Lbs of Stock to Order:	34	65	97	128			
Delivered Weight of Order:	28	56	84	112			
Press Count:	4000	8000	12000	16000			
Lbs of Black Ink Used:	000.50	000.97	001.44	001.91			
Lbs of Color Ink Used:	000.00	000.00	000.00	000.00			
Total Time Required:	005:19 005:32	008:53 008:88	012:22 012:37	015:49 016:81			
Total Cost for Job:	\$285.64	\$427.48	\$566.40	\$709.15			
Additional Cost/1000:	\$155.99	\$160.04	\$149.92	\$144.73			
Selling Price for Job:	\$371.53	\$555.72	\$733.32	\$914.10			
Additional Price/1000:	\$202.74	\$105.05	\$100.00	\$188.14			
Price/1000:	\$371.33	\$277.86	\$246.44	\$228.52			
Modified Selling Price:	\$0.00	\$0.00	\$0.00	\$0.00			

Figure 11 – Time Cost Summary of Newsletter

Example 3 – 2/2 Sales Brochure

Description: Quote a 2/2 brochure by running this job 2 up. Brochure size is 5.5x8.5 after folding. Run as an 8.5x11 finished size on an 11x17 press sheet using 20# offset (stock #1). Job will need to be folded and cut.

Explaining the Estimate: There are several ways you could actually estimate this job.

1. The first would be to enter the 5.5x8.5 as the finished size and the 11x17 as the press size. Then specify how many up we plan to run the job. We would also need to run this job in BOOK mode because the press sheet will need to be folded after it is cut in half. This particular exercise is much more difficult at this time so we will look at estimating the job based on the method of item 2.
2. In this case, we will quote the job as a SHEET mode rather than BOOK. Enter the 8.5x11 into the finished size and the 11x17 into the press size. Be sure to specify that we will be in SHEET mode. By doing this, the computer will set number UP to be equal to 2. That means we will have 2 finished 8.5x11 brochures for each press sheet that is printed. When we get to specifying the folding, we must be sure to identify the folded piece as the FINISHED rather than the default PRESS sheet. In this way, the computer will know that it is the 8.5x11 that will be folded and not the 11x17.

Fill out the General Information screen and select stock number 1 (if not already as the default). Be sure to set 1000 as the beginning quantity.

Press Screen: When you get to the press screen, be sure to specify the press as the 2C ABDick. Also, be sure the press sheet is set to 11x17 first. Then set the finished sheet to 8.5x11.

Press	Wash Ups	Production	Press Type	
2C AB DICK	2	Sheet	<input type="radio"/> Web	<input type="radio"/> Perfecting
			<input checked="" type="radio"/> Offset	
Specifications		Difficulty		
<input checked="" type="radio"/> Sheetwise	<input type="radio"/> W&T:			5
Finished Size	Finished Bleed	Qty	Pages	Sides
8.5x11	<None>	1000		1
Press Sheet Size	Parent Size	Up	Standard	On
11x17	23x35	2	1	4
Signatures	Runs	Plates	Plate Type	Est Hrs
1	2	4	LL Metal	
<input checked="" type="radio"/> 1st Dim <input type="radio"/> Area		The values on the right do not include waste or spoilage		<input type="radio"/> Press Count (Imp) 1000
				<input type="radio"/> Stock Count 500
Notes		<input checked="" type="radio"/> Speed <input type="radio"/> Spoilage <input type="radio"/> Details...		

Figure 12 – Press Sheet for Brochure

Since this job will be entered as a simple 2 up job running on a 2-color press, let's first determine the number of runs we will have. Since this is a 2/2 (2 color, 2 sides), and we can print 2 colors per run (or pass), we will be running the job once, turn it over and run it again. Since we are also running this as a straight 2 up job (no W&T), we will need 4 plates. We are only using a single signature for the job (remember that signatures represents the number of different 2-sided press sheets that are to be printed).

Note that the press count is 1000 and the stock count is 500 (both assuming no waste for clarity – actual press count is higher as is stock count).

Bindery Screen: In this example, we need to specify that we wish to fold the job and we wish to cut the press sheet in half. The folding will require a single gate setup of the finished sheet. (Note that we do not need to specify the finished size of the fold because the folder acts on the finished size of 8.5x11, not the 5.5x8.5). We will also need to make 2 face trims plus 2 bust cuts of the parent sheet. Also a single cut of the press sheet will be required.

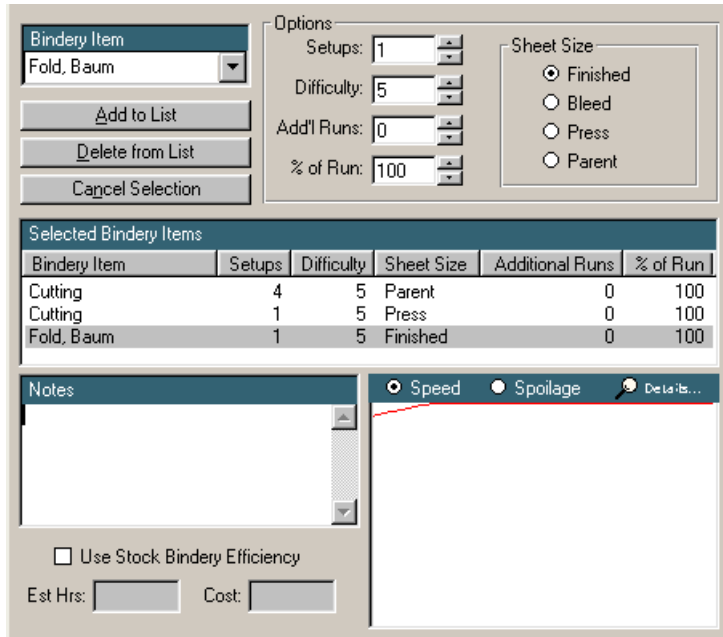


Figure 13 – Bindery

These are the primary focus of this quote. To show how you can fold a job even when in sheet mode. Just remember that the flat folded piece must be showing in either the finished or press sheet windows of the press screen and you must specify which size you want to fold.

What if we ran this as W&T? Let's look at how this job would be different. First, the press screen would have how many plates? You would also need to click the W&T button and possibly specify the type of W&T you will be using. Now how many runs will be used?

Remember that runs is equal to the number of times a sheet passes through the press. Since you will be turning off the press, reloading the paper and running the job through again, you will need to specify 2 runs. How many plates again? The answer is 2 because the same plates are used to print the backside as well.

What are the Press Count and the Stock Count? Are they the same as before? Let's analyze the problem. We are still running 2 up. That means that we need to have 500 sheets of stock for the job (again assuming no waste for clarity). We will be running the stock through the press 1 time, turning it over and running it through again. Press count will then be 1000. So yes, the press and stock counts are the same. Our biggest savings will be in the number of plates and makeready times, thus our customer will save about \$40 by our thoughtfulness. And we will probably win the bid as well.

One final thought: Suppose the customer had two different brochures and the customer still wanted 1000 of each. This example brings up a new method of estimating a job in which you have more than 1 form on a press sheet. (Previously, we looked at the same form on the press sheet whereas now, we want to look at two different forms on the press sheet).

Press	Wash Ups	Production	Press Type		
2C AB DICK	2	Sheet	<input type="radio"/> Web	<input type="radio"/> Perfecting	<input checked="" type="radio"/> Offset
Specifications			Difficulty		
<input checked="" type="radio"/> Sheetwise <input type="radio"/> W&T:			5		
Finished Size	Finished Bleed	Qty	Pages	Sides	
8.5x11	<None>	1000		1	
Press Sheet Size	Parent Size	Up	Standard	On	Out
11x17	23x35	2		2	4
Signatures	Runs	Plates	Plate Type	Est Hrs	Est Cost
1	2	4	LL Metal	0.961	88.45
<input checked="" type="radio"/> 1st Dim <input type="radio"/> Area			The values on the right do not include waste or spoilage		
			Press Count (Imp)	Stock Count	
			2000	1000	
Notes			<input checked="" type="radio"/> Speed	<input type="radio"/> Spoilage	<input type="radio"/> Details...

Figure 14 – Different Forms

The way to enter that type of job is fairly straightforward. In fact it differs in only one way from our original quote of this section.

Note the word "On" above. Previously it was either 0 or 1. The definition of this word is that **On = the number of forms that are different**. It can also never be greater than the number Up.

Well then, how does the press and stock count change as a result of this seemingly insignificant entry? Note that the press count is now 2000 and the stock count is now 1000. If we were to quote the job, we would find that it cost approximately \$30 additional to produce two different forms for this customer as opposed to the single brochure.

Now for the big question. How would we go about making this job (with two different forms) a W&T?

The answer: Same as before. See above.

Example 4 – 4 up business cards

This next example is rather simple, but is used to describe procedure rather than providing a rigorous exercise.

Description: This particular job will be printed 4 up on an oversize card (5x7) with a finished size of 2x3.5 (business card size). We will be using a card stock #8 which is a 26x40 stock. If you have our cutting program, you may enter the appropriate quote number, click search and see the type of layout shown below in Figure 16.

Press Screen: Once we have selected our stock (#8 from the stock screen) we will be entering the required information into the press screen. Look over Figure 15 and be sure you have similar results.

Press	Wash Ups	Production	Press Type		
1C ABDICK	0	Sheet	<input type="radio"/> Web	<input type="radio"/> Perfecting	<input checked="" type="radio"/> Offset
Specifications			Difficulty		
<input checked="" type="radio"/> Sheetwise	<input type="radio"/> W&T:				5
Finished Size	Finished Bleed	Qty	Pages	Sides	
2x3.5	<None>	1000		1	
Press Sheet Size	Parent Size	Up	Standard	On	Out
5x7	26x40	4		1	29
Signatures	Runs	Plates	Plate Type	Est Hrs	Est Cost
1	1	1	LL Metal		
<input checked="" type="radio"/> 1st Dim			The values on the right do not include waste or spoilage		
<input type="radio"/> Area			Press Count (Imp)	Stock Count	
			250	250	
Notes			<input checked="" type="radio"/> Speed	<input type="radio"/> Spoilage	Details...

Figure 15 – 4 Up Business Cards Press Screen

Note that the computer specified that we will be running the job 4 Up but that we can get 29 5x7 sheets out of the 26x40 sheet. Just exactly how we are to specify the cutting for such a layout is easily found from the cutting diagram.

In some cases you will need to close the job before the cutting program will be able to locate the correct data.

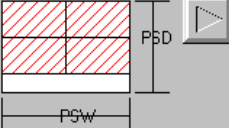
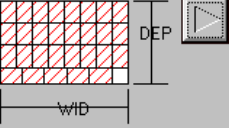
GraphiTech Layout Program Version: 1.2.9	
File Help	
Number Up: Finished Forms on Press Sheet	Number Out: Press Sheets on Parent Sheet
	
FRAME # 1 STANDARD OUT 4 MAXIMUM OUT 4 PSW-SHT WIDTH 7.0000 PSD-SHT DEPTH 5.0000 X=FIN SHT DIM 3.5000 Y=FIN SHT DIM 2.0000 % STOCK WASTE 20 %	FRAME # 4 STANDARD OUT 24 STAGGER OUT 5 TOTAL OUT 29 MAXIMUM OUT 29 WID-SHT WIDTH 40.0000 DEP-SHT DEPTH 26.0000 X=PRS SHT DIM 5.0000 Y=PRS SHT DIM 7.0000 x=SWING CUT 7.0000 y=SWING CUT 5.0000 % STOCK WASTE 2 %
Gripper <input checked="" type="radio"/> Width <input type="radio"/> Depth Gripper 0 Gutter 0	Clear Print Layouts Exit Finished Sheet 2x3.5 Press Sheet 5x7 Parent Sheet 26x40
Job/Quote Information <input type="radio"/> Job <input checked="" type="radio"/> Quote 00000006 Search Stock: 80# Coated Cover Company: GraphiTech Computer Sys Quote #: 00000006 Job #: Description: 4 up business cards, printed 1 color with both pre-cut and post cut analysis.	

Figure 16 – Number Out from Cutting Diagram

The diagram on the left illustrates how the 4 up is to be run while the diagram on the right shows the 29 up problem. Figuring out the number of cuts on the press sheet is easy... just 2. Now let's look at the cuts for the Press Sheet.

If we look at the layout, you will notice that it includes a dutch cut along the bottom in order to achieve the 29 out. Both the vertical and the horizontal dimensions are exactly matched with the width and depth of the cards. There is no waste there but there is a small amount of waste on the dutch portion on the right side.

Number of Cuts: Let's look at how to go about figuring the number of cuts of the parent sheet. This will be approximate however since there may be more than one solution.

Starting at the top (there is no face trim due to exact fit), we will make 3 horizontal cuts. We then swing the dutch portion out of the way and make 7 cuts of each smaller 7x40 inch segment. These three segments may be placed into the cutter on the left, center and right side so that we are left with only the 7 cuts and not 21! Next place the smaller dutch portion and make the 5 cuts to get the remaining cards. All total, we will have approximately 15 cuts of the parent sheet and 2 cuts of the 5x7 press sheet.

General Rule of Cutting: A fast and dirty method of calculating the number of cuts is to divide the number out by 2. The method is most often very close (plus or minus 1 or 2 cuts for large number out examples) but becomes less accurate for smaller number outs such as 3-7 involving dutch cuts.

The bindery section would like Figure 18.

Selected Bindery Items					
Bindery Item	Setups	Difficulty	Sheet Size	Additional Runs	% of Run
Cutting	2	5	Press	0	100
Cutting	15	5	Parent	0	100

Figure 18 – Cutting Input

Now let's move to a new type of estimate called "Split Signature".

Example 5 – 12 page booklet (split sigs)

In this example, we will be looking at the concept of **Split Signatures**. The GraphiTech Millennium software has been designed to allow the estimator to input two or more different signatures on the same part of the estimate. In other words, we will be running 2 signatures, one of them an 8-page signature and the other a 2 Up W&T (1/2 Signature) of 4 pages resulting in a total of 12 pages. Note that to use this method, you must be using the same stock for both signatures, or you must use an average cost for the two different stocks.

The customer desired an estimate for a 12 Page 8.5x11 booklet in quantities of 1M, 2M, 3M and 4M printed on Enamel stock in 2 colors per side (2/2).

We plan to run this on a 40" press with a press sheet of 17.5x22.5. To start, enter a short description and a customer account. Then select the stock (in this case stock number 6). Now move to the Press Screen and select the Press and the Production method (Book).

The first thing you must do is to enter the known sheet sizes you will be working with. We know we want an 8.5x11 finished size so that is entered first. We also want to run this on our 2-color 40" press (or any other 2 color press), so we enter a 17.5x22.5 as our press sheet.

Press	Wash Ups	Production	Press Type
2/C-40	2	Book	<input type="radio"/> Web <input type="radio"/> Perfecting <input checked="" type="radio"/> Offset

Specifications	Difficulty
<input checked="" type="radio"/> Sheetwise <input type="radio"/> W&T	5

Finished Size	Finished Bleed	Qty	Pages	Sides
8.5x11	<None>	1000	12	2

Press Sheet Size	Parent Size	Up	Standard	On	Out
17.5x22.5	17.5x22.5	1			1

Signatures	Runs	Plates	Plate Type	Est Hrs	Est Cost
1.5	3	6	LL Metal		

Press Count (Imp)	Stock Count
3000	1500

Figure 19 – Split Signature Input

Immediately that will show an 8-page signature. With a 2-color press, we know that we need 2 runs (one front and one back) for the job. Also, we will need 4 plates.

Now how do we enter the other 4 pages? First, we know we will need a half signature (1/2 of an 8 page sig will result in a 4 page sig). And since this will be a W&T, we know that we will only need 2 plates (they will be used for both front and back side).

And because we will be running this 4 pager as a W&T, our total run length will be only 1 run of a full signature resulting in a total runs of 3 runs will be only 1 because

we are making a half of a full run on one side and a half run on the other side resulting in a full run if it were a full signature. Remember that Runs covers the Press count and Signatures cover the Stock count.

By looking at the computer generated stock and press count, we see that we have the correct entry. Our press will be running 1000 on one side of the full sheet followed by another run of 1000 on the back side. The W&T signature (which is actually full size but is run W&T resulting in only a half run per side). Since only 500 sheets will be run on the front and then on the back, the result is a total of 1000 (or 1 run of a normal signature). Thus our RUN is 3 and our press count is 3000 plus waste.

The stock count on the other hand includes the 1000 for the first signature and the 500 used for the W&T. This is why the result of the stock count is 1500 and why we used 1.5 signatures.

Note that in general, you do not need to determine half runs and half sigs when working with a W&T by itself. The case above is a special one in which we are telling the computer that we are running two different types of jobs.

Note: An update to the program will be available in late 2005 that will allow you to enter the desired number of pages and, based on the press you have selected along with the desired finished and press sizes, will display the correct number of plates, RUNS and SIGS to complete the job.

What Other Operations will be needed? First, we will need to specify the correct number of line negatives and flats in the Pre-Press area (unless we have opted to include those in the cost of the plate within the press file). Second we will need to specify the number of cuts required for this job. In this example, we are running the same press sheet as the Parent (Inventory) sheet, thus no cuts are required to obtain the press sheets. We will need to make a final three sided trim however, so we need to enter that and to be certain to specify the Finished Sheet that will be cut.

		1000			
		MR &	PSS		
Description	N.SRPD*	Run	Spoil	Cost	Retail
CUTTING	3.0005	000:16	2	9.46	12.29
FOLD, BAUM	3.2005	000:49	62	28.72	37.33
GATHERING	2.0005	000:56	0	23.13	30.06
STAPLER	2.0005	000:57	0	23.87	31.03
WRAPPING	1.0005	000:12	0	6.00	7.80
Totals		003:10	64	\$91.17	\$118.52

Stock: 0006-17.5x22.5-70# Wan
 Desc: 12 age booklet 2/2 with 1

Total Cost for PP: \$0.00 Bind: \$91.17 Press: \$872.80 Stock: \$144.18 Vend: \$0.00 4/11/05

Figure 20 – 12 Page Bindery

Note: The program will (because we are in book production) automatically specify the correct number of books that can be loaded to the cutter and will assume we are placing the final folded booklets into the cutter for these trims.

In addition, we will be making 3 setups for the folder; 2 for the sheetwise fold and 1 for the W&T. The folder will not, however, compensate for the smaller size of the W&T, thus the cost displayed will be slightly higher than what would actually be calculated taking these items separately. For example, we could specify 2 folders,

one with 2 setups folding 60% of the stock (for the 1000 sheets of sheetwise) and another with 1 setup folding 30% of the stock (for the 500 sheets of W&T). We should get approximately the same answer as we did when entering a 3 above using just the one entry.

In Gathering, we could enter a 2 to indicate that we will have 2 stations to setup and for stapling we have entered a 2 for the 2 staples.

Wrapping was also indicated with the use of a 1 which means only that we will be using the default number of sheets (converted to pages) that is found in the bindery file for wrapping.

Example 6 – 3-Part Carbonless

In this example we will estimate 1M, 2M, 3M and 4M 3-part carbonless printed in black ink on one side only. We will be padding and fan-apart the sets. The first example will use a pre-collated, 3-part stock. In the next example, we will discuss how you may use three different stocks rather than using pre-collated stock.

Again, start the estimate and enter the quantities desired by the customer. These quantities will be the number of sets the customer wants, not the total number of sheets. For example, when the customer requests 1000 3-part carbonless, they will receive 1000 sets, therefore we enter the quantity as 1000.

Select the required stock from the list (stock #12) but make sure the number of parts is identified as 3.

Press	Wash Ups	Production	Press Type
1C.ABDICK	1	Sheet	<input type="radio"/> Web <input type="radio"/> Perfecting <input checked="" type="radio"/> Offset

Specifications		Difficulty	
<input checked="" type="radio"/> Sheetwise <input type="radio"/> W&T:			5

Finished Size	Finished Bleed	Qty	Pages	Sides
8.5x11	<None>	1000		1

Press Sheet Size	Parent Size	Up	Standard	On	Out
8.5x11	8.5x11	1		1	1

Signatures	Runs	Plates	Plate Type	Est Hrs	Est Cost
1	1	1	LL Metal		

<input checked="" type="radio"/> 1st Dim <input type="radio"/> Area		The values on the right do not include waste or spoilage	Press Count (Imp)	Stock Count
			3000	3000

Notes	Speed	Spoilage	Details...

Figure 21 – 3-part carbonless

Note that although the Qty shows as 1000, the stock count shows 3000 as does the press count.

Bindery will be entered as 1 setup for padding. This should result in a time of 22 minutes (see the time cost summary screen and select Bindery at top). The time is arrived at in the following manner.

First there is a setup time of 15 minutes. The actual run time is found by looking at the bindery curves and noting the speed at a quantity of 1000. The speed will be approximately 845 sq. inches per hour. Since we have 1000 times 8.5 inches times

0.004 inches of thickness, we have 102 square inches we need to pad. The time that this will take is 102 divided by 845 = 0.1207 hours or multiplying by 60minutes/hour results in 7.24 minutes. Adding the 7.24 minutes to the 15 minutes setup provides the 22 minutes (rounded off) for padding.

Example 7 – Bank Book of 3 part with chipboard cover

In this example, we will estimate the cost to produce 100 bank deposit books. Each book consists of 50 sets of 3 part carbonless with a single chipboard cover wrapped around the bank book.

The top 2 sheets consists of a 16 lb stock, 1 coated back (cb), the second coated front and back (cfb) and a third stock of 24 lb. coated front (cf). The procedure is to create a stock that actually is priced based on the average of all three stocks. In other words, add up the cost per thousand sheets for each stock and divide by three to obtain the average cost per thousand sheets. As for the caliper, add up each stock's thickness and also divide by three to obtain the average caliper (needed for padding).

After creating the stock (similar to the one shown below where we modified stock # 84) in the data files, we start to enter the data into the press screen.

Stock ID	Description	Size	Color	Location
0084	3/P-11 ncr 1 cb,1 cfb,1 tag of white,canary,pink	8.5x11	WhChPk	B1
0085	3/P-14 ncr p/c rv blk	8.5x14	WHITE	B1
0086	3/P-17 ncr p/c rv blk	11x17	WHITE	B1

Stock Number:	0084	(0001 to 0898)
Description:	3/P-11 ncr 1 cb,1 cfb,1 tag of white,canary,pink	
Stock Size:	8.5x11	
Weight/M sheets of PARS:	10	MTD Carton Usage: 0.00
Basis Weight of Stock:	15	YTD Carton Usage: 0.00
Optional % Markup:	0	Color: WhChPk
Bindery Running Efficiency %:	95	Coat: 0
Min. Cartons for Re-Order:	0	Brand: SLOAN/DILL
Press Running Efficiency %:	95	Type: pt3
Caliper (.004, etc.):	0.0047	Vendor Code: 01
Thousands/Cartron:	5	Code2: 02
Cost/M at 1 Ctn Rate:	13.81	Location: B1
Cost/M at 4 Ctn Rate:	12.44	Cartons on Order: 0
Cost/M at 16 Ctn Rate:	11.96	Cartons Unallocated: 0
Cartons On Hand:	0	Parts: 3
		Qty Efficiency: 20
		Qty K-Factor: 5

Figure 22 – 3 part stock of different sheets (1 cb, 1cfb, 1cf)

For review, we need to stitch and cover every 50 sets with unprinted tag, stitch it at the top, and glue a cover in position around the 50 sets. Since the customer wanted 100 books, we will need to wrap, stitch and glue 100 books, as well as produce 100 sets of the 3-part, 50 per book NCR forms.

There are a couple of ways to actually perform this quote.

Procedure One: In one method, we would actually perform 2 quotes. The first would include the 3 part carbonless and knowing that we needed to have a total of 100 books of 50 sets each (of 3-part), this would result in printing 5000 sets of 3-part

(50 times 100). Since the first part of the quote only involves a single press run, a single signature and a single plate, we may simply enter it as a quantity of 5000 sets of 3-part! That will provide us with the correct number for press runs and stock.

Second Part of Job: This involves the use of the tag stock.

Create a New Press (For No Press Work): For No Press Work, we will need to create a new press in the Data Files that would account for no press time. To do this, Click on NEW in the Press Area of Data Files and create a press similar to the one shown in Figure 23.

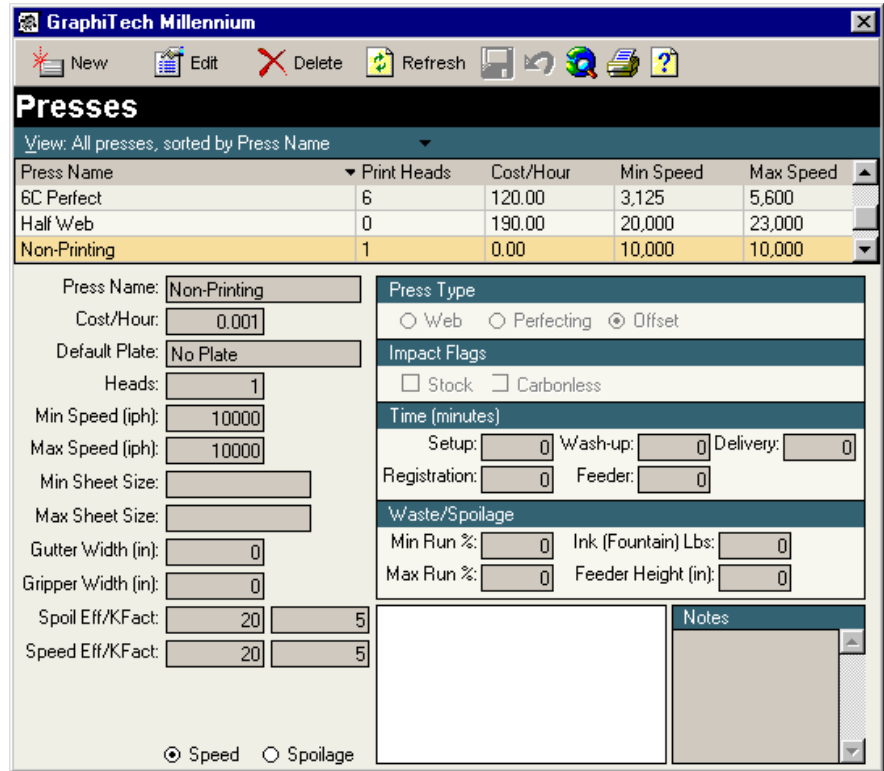


Figure 23 – New, non-pricing press

After you save the above information, click on the EDIT button to add a No Plate item to your plate selections. By using this press when in the second part of the job, you would not incur any costs for press work up to 100,000 impressions but if you want even greater range, change the cost per hour to 0.00001 and the speed to 100000. Do Not Set Cost Per Hour To Zero or an Error Will Result.

For the Bindery Operations, we will need to stitch or staple 100 books which is the reason we specify a 1 in setups for stapling. Although in reality, we will be stapling through the tag cover into the 50 sets of 3-part carbonless, we will get the correct answer simply by stating that we have 1 staple in each of the 100 tag sheets.

New Tag Wrap Bindery File: Now for the wrap of the tag stock around the previously printed books, we will create a new bindery file called Tag Wrap.

Figure 24 illustrates how to build that particular file. To arrive at the numbers shown, we decided that we could wrap individual booklets at the rate of one every 20 seconds or 3 per minute. Converting that to number per hour results in the rate of 180. Because when using this tag wrap, we only want to include 1 tag per book so the sheets per package or wraps per book will be one (1). And because this does not involve any machinery, a BHR analysis concluded that \$15 per hour was sufficient for the labor involved.

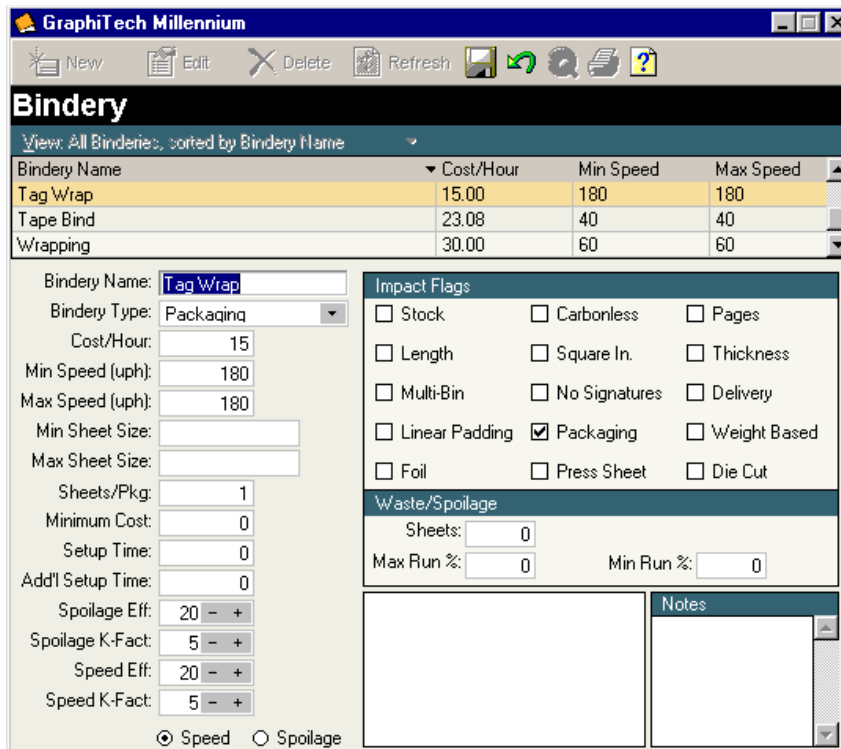


Figure 24 – A New File called Tag Wrap

Now, we return to our estimate and quote the second part of the job using our new stock and files. This is done by going back to the "General Information" page but not cancelling anything we have done for the first part.

The small word "New" just to the right of the "Parts" in the General Information Screen will allow you to enter a new part. Just don't hit it unless you really want a new part to the job as it cannot be undone. See Figure 25 for location of "New".



Figure 25 – New Part

After selecting the tag from the stock inventory screen (stock # 92), we begin filling out the changes to the press screen.

Note: Whenever you select a new part, the older information is retained in order to make it easier to see what was done previously and to avoid having to re-enter too much information. In some cases however, you will need to delete some bindery or pre-press info that applies only to the first part.

Note2: Whenever you decide to delete a bindery item from the bindery input screen, be aware that the program currently requires that you first ADD a bindery item BEFORE you DELETE a bindery item. Although this is a known problem, we have not discovered the cause of the problem as yet. So, to be safe, be sure to follow this suggestion.

Press	Wash Ups	Production	Press Type
Non-Printing	1	Sheet	<input type="radio"/> Web <input type="radio"/> Perfecting <input checked="" type="radio"/> Offset
Specifications		Difficulty	
<input checked="" type="radio"/> Sheetwise	<input type="radio"/> W&T: Work & Tumble	Head to Foot	5
Finished Size	Finished Bleed	Qty	Pages
8.5x11	<None>	100	1
Press Sheet Size	Parent Size	Up	Standard
8.5x11	8.5x11	1	1
Signatures	Runs	Plates	Plate Type
1	1	1	No Plate
<input checked="" type="radio"/> 1st Dim <input type="radio"/> Area		The values on the right do not include waste or spoilage	
		Press Count (Imp)	Stock Count
		100	100
Notes		<input checked="" type="radio"/> Speed	<input type="radio"/> Spoilage

Figure 26 – A Press that incurs no Press Costs or Time

The press screen for this portion of the job should look like the one shown in Figure 26. We have changed the quantity to 100 to indicate that we will be using 100 of these tag wraps. We have selected a press that generates no time or costs (rather than selecting the word <None> which will also perform a similar function but will tend to skip stock costs).

Note: No care has been taken in this quote to discern the actual sizes required for this job, but rather the underlying technique involved. If you wanted to be precise in this estimate, then you would have entered the finished size as the size of the bank book (probably 3x6), but for this exercise it would have increased the difficulty of understanding the concepts due to the additional complexity.

Now let's look at the bindery input screen.

Bindery Item	Options		Sheet Size		
Padding	Setups: 1	Difficulty: 5	<input checked="" type="radio"/> Finished <input type="radio"/> Bleed <input type="radio"/> Press <input type="radio"/> Parent		
<input type="button" value="Add to List"/> <input type="button" value="Delete from List"/> <input type="button" value="Cancel Selection"/>	Add'l Runs: 0	% of Run: 100			
Selected Bindery Items					
Bindery Item	Setups	Difficulty	Sheet Size	Additional Runs	% of Run
Padding	1	5	Finished	0	100
Tag Wrap	1	5	Finished	0	100
Stapler	1	5	Finished	0	100
Notes		<input checked="" type="radio"/> Speed	<input type="radio"/> Spoilage	Details...	
<input type="checkbox"/> Use Stock Bindery Efficiency Est Hrs: <input type="text"/> Cost: <input type="text"/>					

Figure 27 – Bindery Input for Tag Stock

The padding was used to provide a glue backing for the tag wrap. The stapling was used to stitch the tag to the 50 set flat booklet. The tag wrap was the actual operation of wrapping itself.

In the following bindery operations display, we can see the costs associated with the above. In some cases, the totals may be slightly different than the sum of the individual times or costs due to rounding errors. But please note that the totals are correct and not in error. To see how this occurs, note that padding could have been 0:154, tag wrap could have been 0:333 and stapler could have been :0:084 which when rounded off would be 0:15, 0:33 and 0:08 respectively. But if you add the time you get a total of 0:571 that rounds off to 0:57, not 0:56!

Quote NO: 0000028 Job NO: [blank]
 Acct Name: GraphiTech Computer Sys
 Phone: 800-634-8324 Colors: [blank]
 Stock: 0092-8.5x11-11tag ncr tag
 Desc: Tag Cover on 3-part bank boo

Item	N.SRPD*	MR & Run	PSS Spoil	Cost	Retail	MF
PADDING	1.0005	000:15	0	6.45	8.38	000
TAG WRAP	1.0005	000:33	0	8.33	10.83	001
STAPLER	1.0005	000:08	0	3.45	4.49	000
Totals		000:57	0	\$18.23	\$23.71	001

Total Cost for PP: \$0.00 Bind: \$18.23 Press: \$0.00 Stock: \$2.84 Vend: \$0.00 4/12/05

Figure 28 – Bindery Time Cost Summary

A Multi-Part Bid

Now let's look at the two types of bids that are available to you. By clicking on the Fax/Print bid button of the Summary Screen, you will see the following.

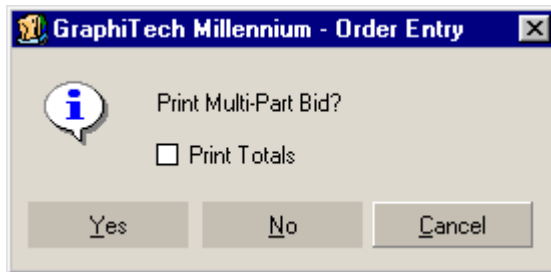


Figure 29 – Multi-part bid

Please note that unless you have created the default values for your bid, you should not use this bid at this time but rather answer NO and continue to the main bid (used for detailed, single part bids).

For now, we are going to look at the bid for this job to show how it would appear when printed. Note that the heading is showing as well as each individual part of the job. If you need to change the specs for this print-out, and have available to you the

MicroSoft Word application, you may export this data in an RTF output and manipulate the quantities and the prices.

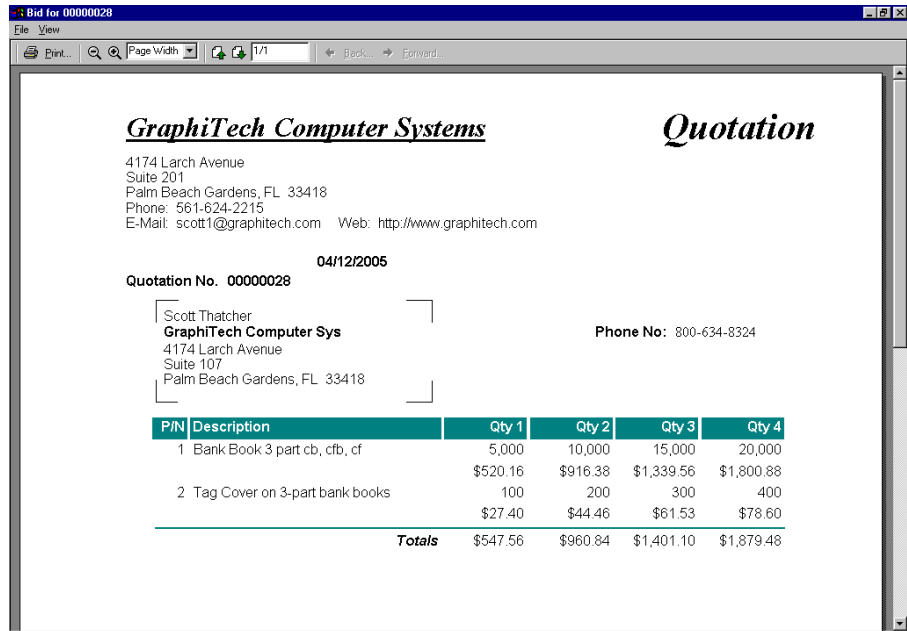


Figure 30 – Multi-part bid

This bid provides both the individual part prices as well as the totals, if desired. It does not include sales tax.

Detailed Single-Part Bid

When you answer NO to Figure 29, the next screen you see would be as shown in Figure 31.



Figure 31 – Default Template

The Multi-Part bid uses the default template information when creating the disclaimers, etc.

To add your company name to the Default Template, you would click on the box to the right of the word Default.

Note also that you are able to change the prices shown here, to the combined price of the job but this is not recommended as it will skew the overall prices in the actual quote considerably.

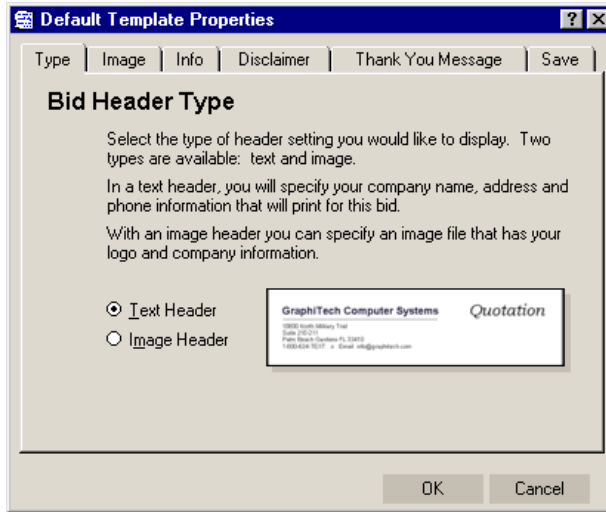


Figure 32 – Template Properties

Select the Text Header radio button and then click on the "Info" tab at the top. Then fill out the required information. When finished, click on the OK at bottom of page. **DO NOT CLICK ON THE TAB CALLED SAVE AT THIS TIME.**

If necessary, you may change the Disclaimer and Thank You Messages but be cautious of changing the tab indents in the Disclaimer as they may not be recovered once changed.

Note also, that while proceeding through the bid, you may also change any of the items that appear for this one quote without affecting the template itself. For example, the following portion of the bid has been modified with not resulting change in the Default Template itself.

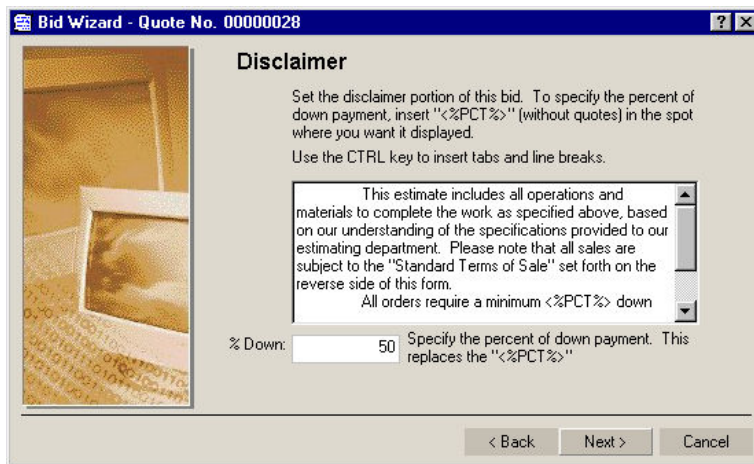


Figure 33 – Bid Disclaimer

Any of the disclaimer or percent down payment may be changed for this one bid in this screen. That also is true of any of the screens that follow this, up until you reach the final displayed bid itself. Remember though, this bid is designed for single-part bids.

Appendix

Bindery Files

In these examples, we were using the bindery files shown below. It is recommended that you modify the existing bindery files to those shown below so that consistency can be maintained. This will provide you with experience in changing various files as well as give you correctly established bindery files for later modifications.

Folder

This file (Fold, Baum) contains an Impact Flag that identifies "Press Sheet" as being used when performing the calculations. You may modify this when performing the actual quote however.

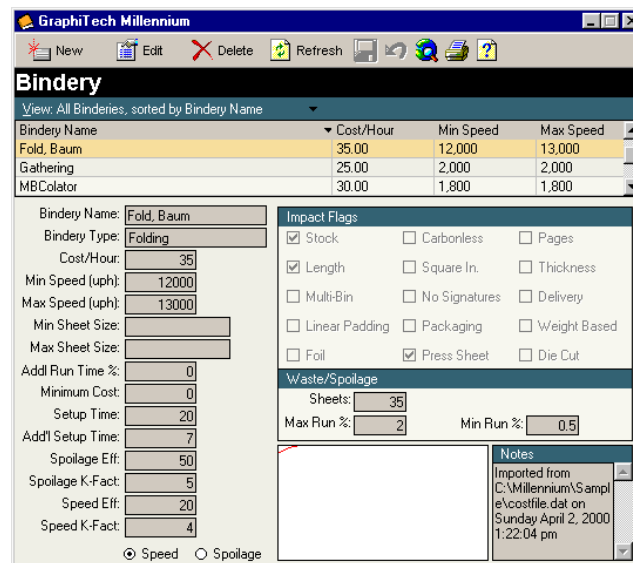


Figure 1-Folder

Note that the other flags are "Stock" and "Length". The Stock Flag will result in a review of the stock file to see if there is a reduction in speed as a result of using a particular stock while the Length Flag results in the speed of the folder being set to a ratio of 11 divided by the length of the sheet passing through the folder. Some people, when setting up a tabletop folder, prefer to have the "Length" flag unchecked. In other words, they do not want to obtain any change in speed,

regardless of the sheet size. Usually this is done when you are folding sheets of 8.5x11 or 11x17 exclusively.

Perforator

The perforator shown above is "Press Based". In other words, we will be using a blanket to hold the perfs and be running the stock through the press to obtain the desired perf marks on the sheet.

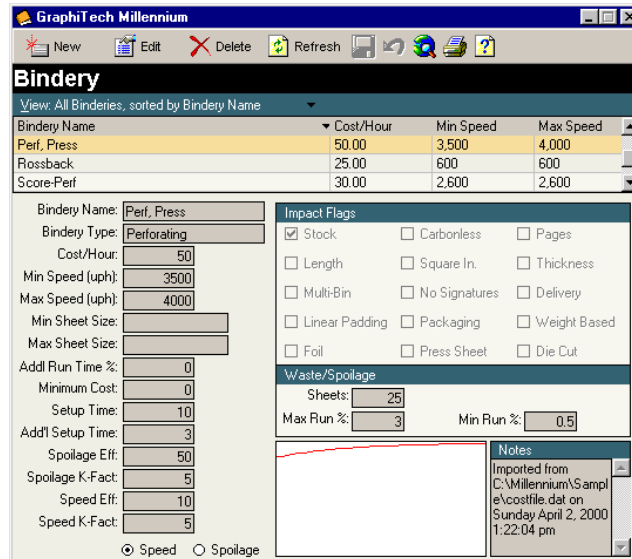


Figure 2-Perforator

The only flag in place is one of "Stock", although possibly the "Carbonless" flag could be employed as well.

Padding

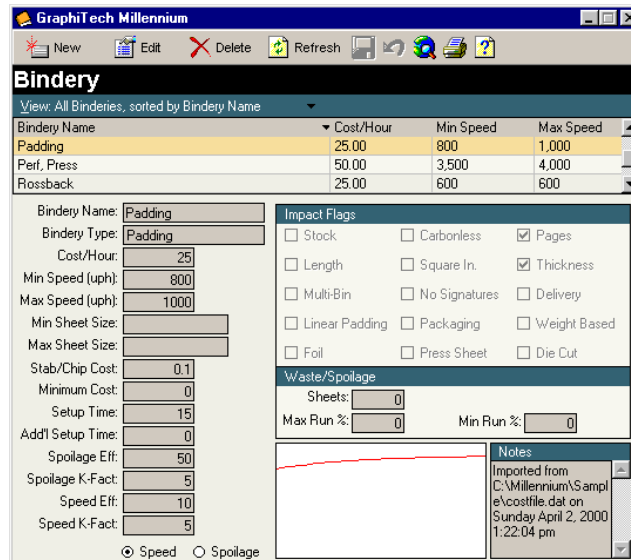


Figure 3-Padding

The Padding file employs several flags; Pages and Thickness. Since the Padding file utilizes the face of the pad (i.e., the actual edge or caliper of the sheet times the number of sheets provides the length while the sheet width provides the width of the face), both pages and thickness will affect the face dimensions directly. Now why you would actually pad anything that was folded is an unknown and may never occur in your quotes.

By having the speed vary between 800 and 1000 sq. inches per hour, we are stating that as the person performs the painting of the pad, they will become more efficient and thus operate faster as the quantity of the job becomes higher.

Chipboard Cost: When working with the Padding file, the cost used for the chipboard is based on 8.5x11 along with stabbing cost. If using smaller pads, the chipboard and stabbing cost will be reduced by the ratio of pad size (3*5=15) divided by 93.5sq inches (8.5x11). So, for example, a 5.5x8.5 pad (46.75 sq inches) will have a cost one half of the 8.5x11 chipboard. The cost of padding the face (quantity x caliper x length or width of sheet being padded) will result in total square inches. The file should have a pad rate of about 400-800 sq inches per hour. To determine the number of sheets per pad, go to the bindery section of the estimate and select padding. In the setup area, enter the number of sheets per pad (this will have to be entered manually as the scroll bar will only go from 1 to 9). The program will determine the number of actual pads that will be used and calculate the cost of the chipboard based on that calculation.

Carbonless: When not using chipboard, as in carbonless, just use a 1 for setups in the Bindery section of estimate and no chipboard will be used, just the fan apart glue required for the sets.

Finding Rates from known cost per pad: If you wish to reverse calculate the actual painting rate, etc., first determine how much you charge for a given pad. Let's say that a 5.5x8.5 pad will be sold for 25 cents. The cost of the pad would be 0.25/1.3 if we use a 30% markup, or \$0.1923 per pad. Of this amount, we have a 2-cent cost for the chipboard, leaving \$0.1723 per pad. Let's also assume that this pad contains 50 sheets of 0.004 thickness paper (20# bond or offset). We will also assume that we set the padding hourly rate at \$30 per hour. To determine the number of square inches per hour we can pad, we will calculate that this one pad will have a face of $5.5 * 0.004 * 50$ sheets = 1.1 square inches. We also know that we have spent (or should have) a time of $0.1723/30 = 0.00574$ hours painting this one pad (or 60 minutes/hour * 0.00574 hours = 0.3446 minutes per pad). Now we know that there are 60 minutes in an hour and so we could produce $60 \text{ Minutes/hour} / 0.2446$ Minutes/Pad = 174 pads/hour. Since each pad had a face of 1.1 square inches, then the total square inches we can paint in one hour will equal $174 * 1.1 = 191.4$ square inches per hour. Thus the rate we would use in the file would be 191 at \$30 per hour with a 4 cent cost per chipboard.

Note: *Prior to version 1.50.0270, the program will double the cost of padding as a result of an error. To fix this problem, simply half the cost per hour in the file along with half the cost of the chipboard. If you are on maintenance, you will receive an update that fixes this problem.*

Cutting and Trimming

In this piece of equipment we are able to identify many more characteristics. Flags employed care Pages, Thickness and Length. The Pages and Thickness flags will affect the speed of cutting by limiting the number of sheets per lift. The Length will affect the speed of the cutting by either making it more or less difficult to load the stock into the cutter.

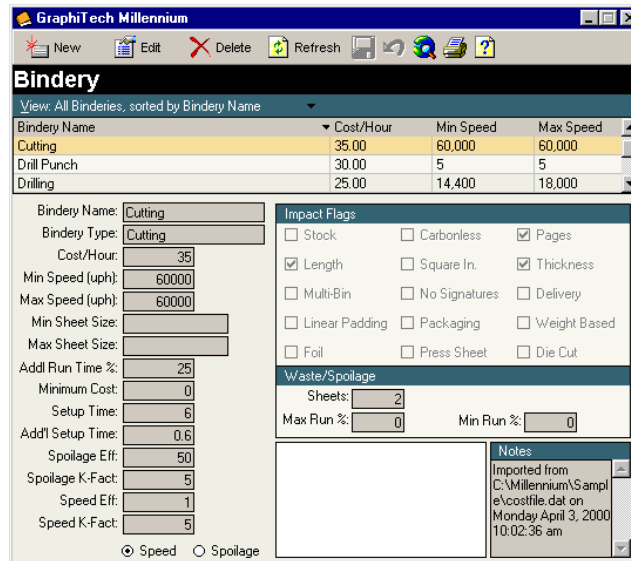


Figure 4-Trimming and/or Cutting

As discussed previously in the first example of estimating, the start-up speed of 60,000 was chosen based on the fact that our cutter can accept 500 sheets per lift of 8.5x11 20# bond (caliper of 0.004). In addition, the operator was timed and found to be able to make a single cut to that lift in about 30 seconds, thus they are able to make two cuts per minute or 120 cuts per hour. By multiplying Sheets/Lift times Lifts/Hour we arrive at Sheets/Hour.

But because the value of 60,000 is true only for an 8.5x11 sheet of 0.004 thickness, we need to adjust this speed for larger and/or thicker or thinner sheets, such as onionskin or index, thus the need for the impact flags as specified.

Now you may want to calculate the speed for 23x35 first and work backwards since the more critical time is really for the larger sheet. Suppose you have clocked the time to lift 500 sheets of 23x35 60# offset into the cutter as 2 minutes. That includes jogging and loading approximately 50-100 sheets at a time until the throat of the cutter is approximately full. So we are then only able to make 1 lift per 2 minutes or 30 lifts per hour. If we placed 500 sheets in each lift, our actual rate would be $500 * 30 = 15000$ sheets per hour. But we cannot just put this number into the file. We need to back it down to 8.5x11, thus we need to increase our speed by a ratio of $35/11$ or $3.182 * 15000 = 47727$. This is the number that is then entered into the file under rate for 8.5x11 stock of 0.004 thickness.

The waste for cutting is really only 1 or 2 marking sheets. There is no running waste except in the classic example of making the wrong cut on the entire job!

As for setup, usually we identify a few minutes for the operator to read the job jacket and set up the initial cut. The additional setup time is based on how long it takes to make succeeding adjustments for each additional cut.

Note that the additional run time is specified as 25%. This means that each time we turn the lift to make another cut, we will be using 25% of the amount of time it took to lift the stock into the cutter, make the first cut and drop it to the floor. This value varies depending on the type of cutter, manual or automated with airbed.

Drilling

In the Drilling operation, the additional run time % is 20, and refers to the percentage of original time to move the lift when using a single head spindle. If using a multi-head spindle, then the run time percentage would be 0%.

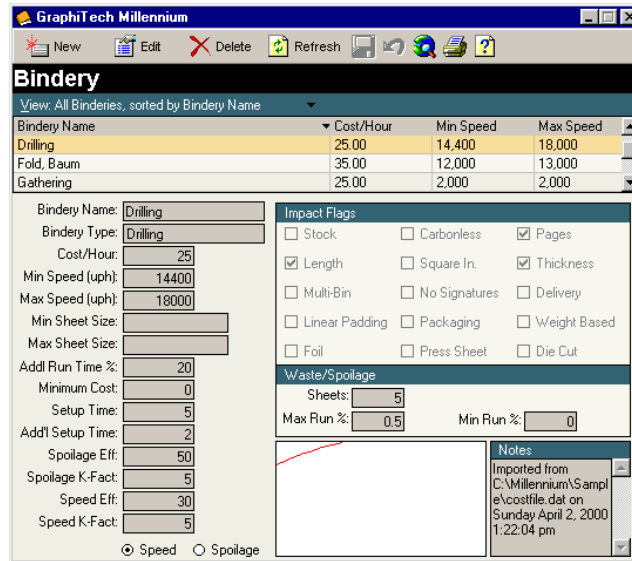


Figure 5-Drilling

Gathering

Gathering is another one of those manual operations in which there is seldom an increase in speed due to increased efficiencies. People generally tend to become less efficient with time rather than more efficient. Thus the speed is set to a constant value of 2000 and represents the number of sheets per hour (not sets per hour!). If we have a job that requires 4 stations of 1000 sheets then our total quantity

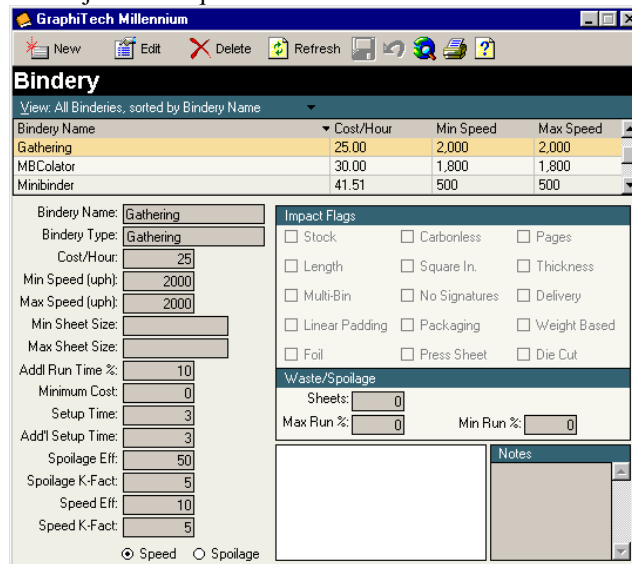


Figure 6-Gathering

will be 4000 sheets. If 2000 sheets per hour can be accomplished, then the job will take 2 hours to collate. But because the user now needs to walk down a table to gather, there is a 10% penalty per station to account for that short walk.

When you specify in the quote that you will be setting up 4 stations, there will be 3 minutes per station plus a run time penalty of 10% for each additional station or a total run time of 130% of a single station.

MultiBinder

A Multi-bin collator basically performs gathering, 3-knife trimming, and stitching all in one operation. There are usually a limited number of bins that may be used to load stock. Note that the Flags for this type of file are identified as Pages, Thickness and Multi-Bin.

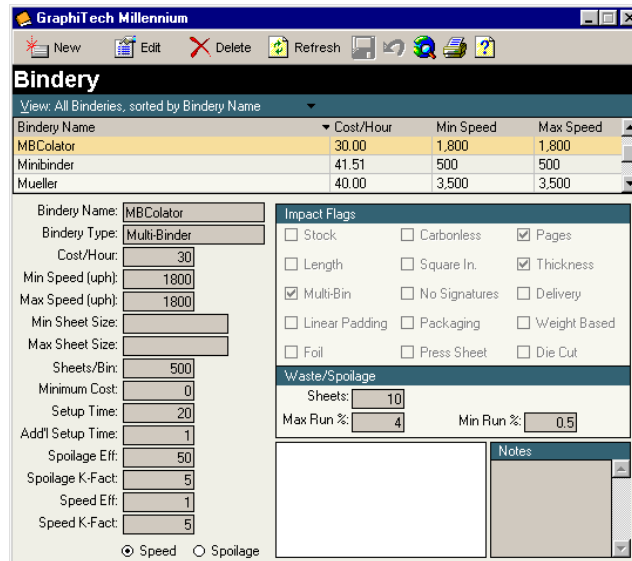


Figure 7-Multi-bin Collator (Rossback, Mueller, etc)

Now if you actually were to enter this into the estimate (just add another bindery item to the first estimate example only use 4 setups and change the press screen to reflect 4 signatures), you will find that the time to complete the job will be 1:03... not much different than when you had entered a 1. In other words, the speed of the equipment is based on sets, and consequently as long as we are able to fill each bin, the basic time will remain the same except for setup times added based on the additional bins being loaded (in this case another 5-6 minutes).

One of the most interesting aspects to this bindery operation is the following: Suppose you have a job that requires 8 signatures but your equipment will only handle 5 bins! As long as you enter only 4 or 5 bins when you quote the job, the bindery file will automatically reload the job for the remaining 3-4 signatures, and charge for a second run through the equipment. You don't have to do anything except remember that you don't want to enter a value in the estimate that will exceed the number of bins you have available.

Stapler/Stitcher

This operation is used to combine multiple signatures (either flat or folded) into a flat manual or booklet. The equipment operates on the quantity of the jobs but does not include signatures in determining the total amount of paper passing through the

equipment. In other words, a booklet of 8 signatures and a quantity of 1000 finished booklets, would only be concerned with the 1000 booklets, not with the 8000 total sheets of paper used to construct the booklet. The flag that is used to achieve this result is shown as "No Signatures".

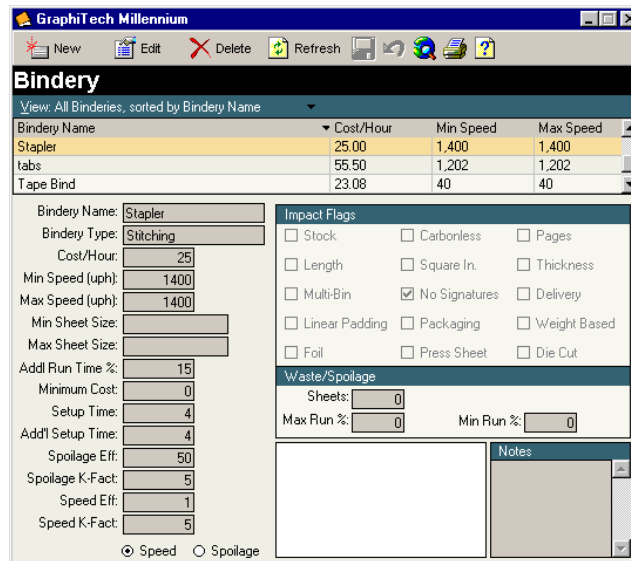


Figure 8-Stapler/Stitcher

Note that there is no set up waste or running waste attributed to this operation.

Numbering

Numbering may be performed using a hand numbering unit, a letterpress or on some offset and web presses. In general, it is an operation that is done on the press sheet, but that is entirely left to the estimator to determine the sheet size that will be used.

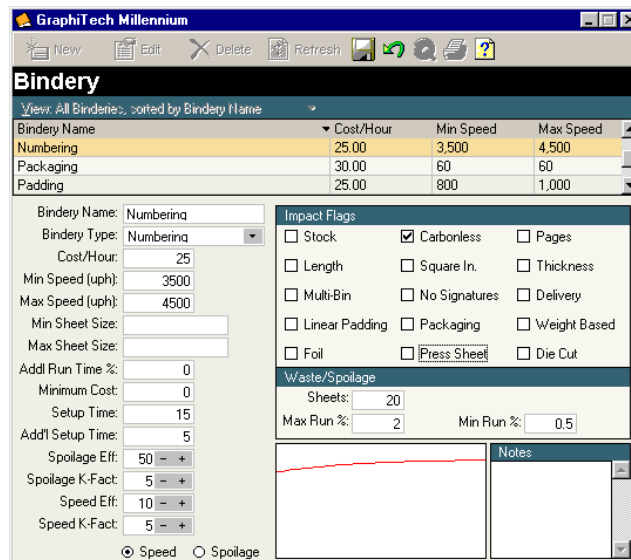


Figure 9-Numbering

Wrapping or Packaging

This file is another one that generally requires no waste. The 60 stated below is indicating that we feel that our bindery people can wrap 60 packages/boxes an hour. By using the Impact Flags of Pages and Thickness, an adjustment in the numbers of sheets that occupy this package will be made.

The screenshot shows the GraphiTech Millennium software interface. The main window is titled 'Bindery' and displays a table of bindery configurations. The 'Wrapping' configuration is highlighted in yellow. Below the table, there are several input fields and checkboxes for configuring the 'Wrapping' bindery.

Bindery Name	Cost/Hour	Min Speed	Max Speed
Tape Bind	23.08	40	40
Wrapping	30.00	60	60

Bindery Name: Wrapping
Bindery Type: Wrapping
Cost/Hour: 30
Min Speed (uph): 60
Max Speed (uph): 60
Min Sheet Size:
Max Sheet Size:
Sheets/Pkg: 500
Minimum Cost: 0
Setup Time: 0
Add'l Setup Time: 0
Spoilage Eff: 50
Spoilage K-Fact: 5
Speed Eff: 1
Speed K-Fact: 5

Impact Flags:
 Stock Carbonless Pages
 Length Square In. Thickness
 Multi-Bin No Signatures Delivery
 Linear Padding Packaging Weight Based
 Foil Press Sheet Die Cut

Waste/Spoilage
Sheets: 0
Max Run %: 0
Min Run %: 0

Notes

Figure 10-Wrapping or Packaging

If desired, a minimum cost can be placed into the file to account for smaller jobs. Note that we specify the number of sheets per package in this file. Therefore, you may want to create a number of different wrapping files, each with a different number of sheets per package.

Glossary of Terms

Caliper

This is the thickness of a stock. It is used to automatically adjust lift heights in various bindery operations and is used to artificially modify speed of certain equipment.

Makeready (MR)

Makeready consists of the time required to mount plates, adjust registration, feeder and delivery tables, as defined in the Press and Bindery files.

N.SRPD

A Shorthand method of describing the data entry for bindery. N=Setups, S=Sheet Size (0=Finished, 1=Bleed, 2=Press and 3=Parent), R=Additional Runs, P=Percentage of Run (in 10% increments) and D=Difficulty (1-9 with 5 being average and no entry as default of 5)

Plates

When specifying plates, we are actually telling the computer the amount of makeready time we will have for each plate. In addition, any costs associated with the plate will be included as well.

Quantity

The quantity entered for a quote is always the finished size quantity desired by the customer.

Run

In the Press Screen, this is the total number of press passes (Runs) for the job. If running a 2 color press in which we desire a 4/3 job, the runs will be equal to 4. If we have 2 different signatures (in other words 2 different forms desired by the customer) where one is 4/3 and the other is 2/2, we will have a total of 6 runs. This term also is a factor in calculating the Press Count.

Signature

A Signature is the front and back Press Form of a job or partial job. An 8 page Signature contains 4 different forms on the front and 4 different forms on the back. If running in Sheet Production, the form layout might consist of identical fronts and backs resulting in 4 Up rather than 8 pages. This term also is a factor in calculating the Stock Count.

Units/Hour

A generic term to describe the speed or rate of an operation. It may be Inches per hour, cutoffs per hour, sheets per hour, etc.

W&T

This term refers to a signature (Press Sheet) that is run 2 up with the front and back side of the form printed on the same side of the sheet. The result of this type of run is to reduce the number of plates required since both front and back are on the same plate. The actual terminalogy may be to Work & Tumble or Work & Turn.

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