BID PROCESS:

Construction estimating consists of three parts:

1. Quantity Survey
2. Price Extension
3. Bidding

Quantity survey is the physical removal of quantities from the working drawings and specifications. This can be done using instruments such as a scale, tape, wheel or a digitizer attached to a computer program.

Price extension is the portion of the estimate in which the contractors "price out" the individual items, such as pricing out labor and material using current labor rates and material prices.

Due to technological advancement and specialization in today's construction world, the prime contractor's work is confined to those trades that the company performs directly, usually without subcontracting. Depending on the type and size of the projects and the bid strategy the prime contractor's portion of the total estimate may be only 5% to 20%.

The amount of direct work contributed to the project reflects the "risk" that the prime contractor determines to take on a certain project. The remainder of the work is them "brokered out" or subcontracted.

Bidding is the process whereby the prime contractor receives subcontractor and vendor prices for labor, material and/or the combination of the two. It is a systematic process of simplifying facts, reducing errors and omissions, relying upon speed and efficiency to produce relatively accurate results. Tensions rise because of the mental concentration required, apprehension over possible errors and anxiety regarding financial success or failure. It has been said that during the construction bid there is more competitive pressure and more performance intensity than in any other industry.

In bidding, one is dealing with many divisions of the specifications, both broad and narrow scope in nature. Subcontractor and vendor quotations are matched to the specifications by the CSI 16 Division format. The various subcontractor and vendor trades, personalities, ambiguities, omissions, contradictions - not to mention having to meet state and federal regulations - make "number crunching" within a few hours of bid time a major feat.

BID TIMELINE & STRATEGIES:

The bidding phase of estimating is probably the most vulnerable, talked about and scrutinized phase of an estimate. There are many reasons for this, a major one being the pressure that is placed on the estimator(s) on bid day.

Conflicts occur when legitimate and non-legitimate opportunities arise with the arrival of the various sub bids or items. Below are some examples:

LEGITIMATE OPPORTUNITIES

1. Special equipment not available to other bidders.
2. Service of expert not available to other bidders.
3. Special material prices found through investigation, presumably not available to other bidders.
4. Holding an exclusive low quotation not available to other bidders and obtained without disclosing other sub bids.
5. Special construction techniques not used by other bidders.
6. Presumably a tighter, more accurate schedule.

NON-LEGITIMATE OPPORTUNITIES

1. Inside information given by the owner, engineer or architect not given to other bidders.
2. Accepting and using low sub bids without obtaining confirmation from sub bidder.
3. Asking a subcontractor for a special price, thus revealing other sub quotations.
4. "Peddling" other sub bids to the advantage of low prices.
5. Reducing one or all sub quotations by a certain percentage to lower the total contract amount without permission.
6. Not revealing obvious or hidden problems on the working drawings or specifications.

Along with legitimate and non-legitimate opportunities are legal responsibilities, which can be vague in meaning and based more on ethical reasoning than on sound interpretation of the law. Whatever the reasoning, the name of the game is to be the successful bidder. When actively bidding on the open market, a successful contractor will only be low on 10% - 15% of all estimates. There are also many inexperienced bidders learning the hard way by "winning" a great number of contracts with unreasonably low bids. Most of these contractors fail because the do not win enough low bids, and/or are too low to make a profit.

OVERVIEW OF THE BID PROCESS:

There are many ways to put a bid together, depending on the type of construction and the personality of the contractor. The following bid procedure is quite simple, straightforward and is fairly typical of most commercial construction estimating.

It is made up of six basic parts using a color coding system. Colors are used to aid the bid team in the final minutes of bid day to describe the various parts of the bid. As the pressure mounts, it is sometimes easier to refer to a "brown" sheet instead of a job summary sheet. The six parts are:

Quotation Sheets	white
General Sheets	white
General Conditions Sheets	yellow
Sub Sheets	white
Job Summary Sheets	brown
Change Sheets	green

Quotation sheets (white) are used to write down the various sub quotes that are often received via telephone or will be the quotations received via fax. This document is probably the most important part of the entire bid system.

Subcontractors either phone or fax in their quotations, section number and a brief description of the items they are submitting. Other information such as exclusions, additions, clarifications, special notes about prices, alternates, unit prices and time constraints are also given. Federal regulations (i.e., WBE or DBE firm) are also included. In addition, if the subcontractor is submitting a proposal via telephone, one must indicate phone numbers, contractor numbers (where applicable), date and time of the call and name of caller.

These items must be written neatly and precisely to make the quotation easily readable, without omitting any information. The prime contractor then reads it back to the subcontractor for clarification. On a typical bid day, well over one hundred quotations can be phoned in or faxed within a 2-3 hour time period (see Bid Timeline). When the quotation sheet is completed, it is placed in a basket to be filed under section numbers and price, usually with the low sub bid on top in a bid file organizer.

On paper this sounds relatively simple, but in reality a good many subcontractors do not know their section numbers, have combination bids (one or more sections), or do not have a complete bid. The person(s) receiving the sub prices must have enough savvy and insight to decipher and translate them in a way that the bid staff can understand and utilize the quotations.

An experienced bidder realizes that the best planned bidding procedure under perfect control can suddenly be thrown into sheer chaos by the quantity of incoming bids, and hasty analyses and omissions on the part of the subcontractors. When the complexity of the incoming data exceeds the capabilities of the bidding staff, a bid can totally collapse.

General sheets (white) consist of items the prime contractor wishes to actually perform on the project. These items usually include demolition, foundation work,

flatwork (S.O.G), framing and miscellaneous construction items that the subcontractors will typically exclude (see Appendix).
The title is clearly written at the top of the sheet. Under "description", a brief description of the item to be performed is written. Note that items are intended to show they belong to the main description directly above (i.e., S.O.G.). To the right is "quantity", which is taken from the take-off sheets. Directly to the right of the quantity numbers is the sign or unit of measure for the type of quantity such as cy, lf, sf, etc.

Under "unit" and before "labor" is the cost per unit of labor. The cost per unit of labor times the quantity is the total cost of labor shown in the "labor" column. The same sequence follows for material costs. These unit costs do not include labor taxes or material mark-up. In the far left margin are comparison price items which include labor taxes. These comparison prices are used in case the prime contractor wishes to deduct their items and use a subcontractor's equivalent quotation (see Change Sheet).

General Conditions (yellow sheet) is a fairly straightforward sheet. It lists the general requirements found in the contract documents and also any equipment, such as compressors, truck cranes, etc. not directly related to individual general items. It also includes items that the subcontractors will exclude such as scaffolding and weather protection. It is best to separate these items since they are usually the ones that get duplicated during bid time.

By no means is this list complete, but it does list the essential items. The key to this sheet is that the total cost of both labor and material should be between 5% - 8% of the total bid amount. If the general conditions are greater than 8%, chances are you are out of the ballgame before it starts. Conversely, if they are less than 4% you bought the ballpark.

Sub Sheets (white) are sometimes referred to as "spread sheets". The Sub Sheets are filled out using the specification as a guide and the specifications are taken from the CSI 16 Division format, and are usually narrow scope in nature. The brief descriptions are the title of each section of the specifications in the contract documents.

Sub Sheets are the heart of the bid procedure. It is where the low prices are recorded for each line item of the specification. The subcontractor names are recorded along with the quotations. If they are bidding on material only, their names are placed with their quotation in the "material" column. This is a very simple concept, except that most subcontractors omit or combine items, in hopes of being low due to an error of omission on the part of the prime contractor. The Sub Sheet(s) must be compiled one hour prior to bid time, usually plug-in figures for sub items not obtained by that time are used (see Bid Timeline).

Job Summary (brown) is where the final numbers are compiled for the bid proposal. The labor and material on both the General Conditions and the

General Sheets, as well as the labor on the sub sheet should be compiled 24 hours before bid time, leaving only the material side of the Sub Sheet to be brought down. This provides more time to compute labor taxes and lessens the number of items to worry about on bid day. One hour before bid time the Job Summary should be completed up to the line labeled "Changes".

Change Sheets (green) are used exclusively during the final hour before bid time. This eliminates a lot of loose papers, although the other sheets are used as references. The purpose of the Change Sheet(s) is to adjust sub prices - especially late prices. Because most of the numbers have already been compiled and carefully checked on the other sheets, they cannot be erased and re-entered freely. Thus, when prices for items need to be changed, a basic accounting add and deduct tactic is used to make the adjustments on the Change Sheet.

It is important to note that all of the number totals must be carefully checked - down the columns, as well as the extensions. Because this checking is so time consuming, it is important to have certain portions of the bid procedure completed well before bid time. All sheets must be checked and initialed by a person not associated with the estimate (i.e., secretary). The person(s) responsible for noting the quantities, prices and extensions must initial these items for recordkeeping purposes.

Sub prices and how they are received can vary greatly depending on the personality and reputation of the general contractor. For example, if a general contractor is noted to be honest, fair and above board, most sub bids will come in early, complete and with little confusion over deletions, or combinations of divisions. On the other hand, if the general contractor is known to or rumored to "shop prices", subcontractors will usually call in their prices late, high and/or in combinations so as to confuse the contractor. This is referred to as "breaking the general contractor". The pressure of competition among subcontractors also makes significant differences in determining prices and how they are received.

Intuitive reasoning and guesswork are great assets for the estimator, along with the ability to use bid strategies to make sound decisions during the process. Bidding has been jokingly referred to as "playing poker", and I find the similarities closer to reality than one may think. You must bid high enough to make a profit, yet low enough to get the job. Instead of being confined to a deck of cards, you are dealing with hundreds of varying personalities and situations.

Strategies in successful competitive bidding are based upon a solid understanding of the rules and elements that make up a bid and using them to formulate a careful plan or method of application. Bid strategies cannot be taught or learned overnight, but are acquired through experience. An excellent book on this subject is "Construction Bidding for Profit" by William Park.

A bid timeline is important for the estimator to follow in order to use bid strategies. By organizing the progression of events, the estimator can better

handle situations as they occur. The following timeline shows the sequence of events on a typical bid day for a general contractor on a commercial construction project. From the beginning of any estimate, the bid opening is the ultimate goal. The majority of all bid openings are at 2:00 p.m. or 4:00 p.m. on a Tuesday or Thursday. The timeline also shows a comparison of what goes on during conventional bid day, and how the same bid process would proceed using a computerized estimating program.

BID TIMELINE & STRATEGIES

The following is a generalization of the time of events. Bid time: 2:00 p.m.

COMPUTER BID PACKAGE		CONVENTIONAL BID PROGRAM
	7:00	
Senior estimator reviews computer to make sure all General Construction Items & General Conditions items are formatted correctly. Bid forms are correctly filled out and addressed. Bid envelope is properly addressed with bid opening clearly typed on the lower right corner. Contact the person who is going to the bid opening to make sure he knows where the bid is opening & time.		Senior estimator reviews all General Sheets & General Conditions to make sure all items are correctly written down and checked. Bid forms are correctly filled out and addressed. Bid envelope is properly addressed with bid opening clearly typed on the lower right corner. Contact the person who is going to the bid opening to make sure he knows where the bid is opening & time.
	8:00	
Make sure the main computer is functioning properly and all receiving terminals are working properly. Meet with bid receivers and go over the questions you wish them to ask the various subs concerning their quotations.		Get the bid organizer labeled correctly & have enough quotation sheets with the proper information at all receiving areas. Meet with bid receivers and go over the questions you wish them to ask the various subs concerning their quotations.
	8:10	
Early sub prices are beginning to arrive, usually adjustments to concrete prices, lumber, etc. which are called in on the previous day. Sub bids from material suppliers, i.e. rebar, wwm & & miscellaneous structural steel are arriving. Many one-man contractors call in early before leaving their offices or homes to work in the field. Inquiring phone calls are made to make sure that you are covered on items that are predominantly excluded, or to find further coverage on items you are questioning.		
	9:00	
Make final adjustments to General Sheets & General Conditions Sheets using the computer screen.		Make final adjustments to General Sheets & General Conditions Sheets using early entries on the change sheet.
Material suppliers, such as Divisions 8, 9 & 10 begin to call or fax in.		
	9:30	
Meet with the bid team. Update them as to bid strategies and whey you may need them.		Meet with the bid team. Update them as to bid strategies and what has occurred to this point. Divide up the bid responsibilities, i.e. alternates, W.B.E & D.B.E, specialty items and breakouts.

	9:40	
Call Architect with final inquiries, if any.		Call Architect with final inquiries, if any.
	10:00	
Four hours before bid time, sub prices start coming in on a regular basis.		
On the main computer screen, all sub items are appearing, with low subs being entered on each item. The head estimator makes inquiries of the computer as to the status of questionable sub items. If needed, head estimator can place calls to various subs inquiring about their quotations.		All incoming prices are placed in the quotation basket to be reviewed when enough items merit reviewing. Inquiring phone calls are made by the bid team.
	11:00	
Between the hours of 11:00 & 12:00 the bulk of the incoming sub prices arrive.		
Low sub prices are appearing on the screen with the computer notifying the estimator as to ambiguities and line items not yet covered.		Sub prices are removed from the quotation basket grouped will low prices on top and filed within the bid organizer. Low sub quotations are being entered on the sub sheet. All members of the team are working.
	12:00	
Alternate prices are being computed, as well as W.B.E & D.B.E. requirements. The computer is notifying the estimator as to all ambiguities and line items not covered. Additional estimator arrives to aid in calling back subs concerning their quotations.		Low sub prices are still being written in on the Sub Sheet. Alternate prices are being computed as well as the W.B.E. & D.B.E requirements. The shuffling of combination pricing is occurring utilizing a bid team member full time.
	1:00	
Larger sub prices begin to come in, as the bulk of the incoming prices begins to drop off.		
Sub Sheet(s) should be fairly complete with plug-in items reviewed and identified. Alternates are being computed. W.B.E. & D.B.E. requirements are being computed. Total cost of project can be attained at any point from now on.		Plug-in items are processed and Sub Sheet(s) should be completed at this time. **<u>Critical Time:</u>** Sub Sheet is filled in and totaled. All line items are scrutinized. Extensions & totals are independently checked. Job Summary Sheet (brown) is filled in completely up to Change Sheet. **On Change Sheet:** All alternates are totaled. W.B.E. & D.B.E. requirements are checked for compliance.
Late sub quotations come in. Mechanical & Electrical prices start to appear.		
	1:15	
Computer is evaluation all late prices with bid team visualizing or manually making changes when alerted.		Making all corrections, additions or deletions on Change Sheet. Reviewing Mechanical & Electrical sub quotes.
	1:20	
		Change Sheet is totaled.

1:30

Determination of Overhead & Profit. Estimator asks for total bid cost. Computer goes to Job Summary. Computer forms Change Sheet. Computer waits for last minute sub quotes. Alternates, W.B.E. & D.B.E. requirements are printed. Dummy bid form is filled in.	Determination of Overhead & Profit. Job Summary is totaled including changes. Job Summary is checked. Overhead & Profit is added. Alternates, W.B.E. & D.B.E. requirements are written on dummy bid form.

Late arriving sub quotations are coming in. The runner at the bid opening calls in reviewing his/her position & stays on phone.

1:50

Computer totals & waits for further changes. Bid total is computed. Bid is given to runner over the phone.	Late changes are made, if needed. Bid total is made. Bid is given to runner over the phone.

2:00

BID TIME

Specifcation Division #: _____

WBE: _____
MBE: _____
Sub-Bid: _____
Material Quote: _____

QUOTATION

PROJECT: _____
FIRM QUOTING: _____
ADDRESS: _____ TELEPHONE: _____
QUOTED BY: _____ F.O.B.: _____
SPEC. DIVISION #: _____ ADDENDA: _____

QUOTING ON:

EXCLUSIONS:

VERBAL QUOTE: _____ TELEPHONE QUOTE: _____ WRITTEN CONFIRMATION: _____
DATE: _____ TIME: _____ RECEIVED BY: _____

Project :	**Estimator:** Page of
Location:	**Architect:**
	Project Size: **SF**
Date: / /	**Sheet Title:** General Sheet

Checked By: Extensions Checked by:

Notes	Description	Quantity		unit	Labor Extension	unit	Material Ext.

SQ. FT. AREA		ARCHITECT:
		DATE:
		JOB NO.:
OUR BID PER SQ. FT.		SHEET NO. OF

QUANTITIES BY: PRICED BY: EXTENSION BY: CHECKED BY:

	GENERAL CONDITIONS	QUANTITY EXTENSION		UNIT COST	LABOR EXTENSION	UNIT COST	MATERIAL EXTENSION
	Time of Completion - Liquidated Damages						
	Project Management						
	Superintendent						
	Project Engineer/Intern						
	Shop Drawing Review						
	Surveying & Layout						
	Outside Engineering						
	Mobilization						
	Contractor Office/Trailer: Move in/Move out						
	Site Barricades & Fencing						
	Signage						
	Safety						
	Dust Partitions						
	Clean-up - Construction						
	Clean-up - Final						
	Trash Disposal						
	Street Cleaning						
	Travel Expense						
	Pick-up/Delivery & Postage						
	Weather Protection - Emergency						
	Weather Protection - Masonry						
	Weather Protection - Concrete						
	Snow Removal						
	Pumping - Water						
	Scaffolding						
	Hoisting Equipment - Cranes & Hoists						
	Equipment & Truck Rental						
	Small Tools & Tarps						
	Equipment Repair & Maintenance						
	Gas & Oil						
	Blue Printing - Shop Drawings						
	Blue Printing - Contract Documents						
	As-Built Drawings & O&M Manuals						
	Progress Photography						
	Temporary Toilet						
	Temporary Power						
	Temporary Lighting						
	Temporary Water						
	Temporary Heat/Ventilation						
	Temporary Phone (Jobsite)						
	Temporary Storage (Jobsite)						
	Sewer Connection Fee						
	Water Connection Fee						
	Soil Testing & Inspection						
	Concrete Testing & Inspection						
	Steel Testing & Inspection						
	Building Permit						
	Local Taxes						
	Owner Move-in						
	Punch List						
	SHEET TOTALS						

Project :	**Estimator:** Page of
Location:	**Architect:**
	Project Size: **SF**
Date: / /	**Sheet Title:** Sub Sheet

Checked By: Extensions Checked by:

Notes	Description	Quantity		unit	Labor Extension	unit	Material Ext.

Project :	**Estimator:**
Location:	**Architect:**
	Project Size: SF
Date: / /	**Sheet No.** of

Quantities By: Priced By: Extension By:

	JOB SUMMARY	Labor	Material
	General Estimate Sheets		
	Subcontractors & Vendors		
	General Conditions		
	Increase in Wages		
	Total Material & Subs		
	Total Labor		
	Labor Burden		
	Sub-Total		
	Insurance		
	Contingency		
	Changes		
	Cost		
	Bond Including Bond on Sales Tax		
	Profit & Overhead		
	Sales Tax		
	Total		

Project :	**Estimator:**
Location:	**Architect:**
	Project Size: SF
Date: / /	**Change Sheet**

Quantities By: Priced By: Extension By:

	Description	ADD		DEDUCT	
		Labor	Material	Labor	Material

BID DAY: Organizing A Stressful Day

By Larry L. Cockrum

BIOGRAPHY

Larry L. Cockrum is manager of estimating for HBG Management, Inc., a Memphis, Tennessee based cost consulting and construction management firm.

Mr. Cockrum began work in the construction industry in 1962, as an estimating trainee and has gained experience as an estimator, project manager and superintendent. He has been chief estimator for a national construction company and vice-president of construction for a national development firm, developing and building commercial projects throughout the United States.

Since 1988, he has provided computerized cost estimating service for architects/owners/developers/contractors on a variety of major domestic and foreign projects.

He is a charter member of the Memphis Chapter of A.S.P.E., has served as board member and two-term president of the chapter, and achieved Certified Professional Estimator status in 1989.

SYNOPSIS

This essay will present the author's approach to the organization and orderly process required to assemble and compile the cost of a construction project on bid day. The most accurate take-off, the best quantity survey, the tightest general conditions, the lowest unit costs – all go to waste if you make a mistake as the estimate is assembled. The process of bid tabulation is complicated by the time crunch, ringing telephones, the pressure to be low bidder. A systematic approach to bid day can reduce the stress of the situation and the risk of error. The essay assumes a complete set of bid documents is being used by several bidding contractors.

INTRODUCTION

Stress (stres), n. 1. Importance, significance or emphasis placed upon something. 2. Urgency, importance. 3. Tension; strained exertion: as, the stress of war. Synonyms – pressure, tension, strain, burden, weight, bid day.

Bid day is a hectic day. Telephones are ringing, questions are asked and answered, the clock moves relentlessly toward bid time, quotations are reviewed, decisions are made, numbers are posted, minutes pass like seconds. The stakes are high – be the successful bidder with a reasonable profit margin but make no errors to eat into that profit. Bid day and stress are synonymous. An effective stress reducer on bid day is organization, and advance preparation is an important part of organizing bid day.

BODY

A contractor can view his organization as a multi-faceted entity including general administration of the office, estimating, project management and field operations. Each part may visualize their function as most important in the overall operation, but, in truth, none could exist without the support of the others.

The estimating of work will be highlighted in this essay, specifically the work on bid day.

An important part of an organized bid day is advance preparation. Standardization of the forms used in assembling the estimate, systematic steps in tabulation, attention to details all contribute to a successful bid assembly with minimal stress. No bid day is without its unexpected problem or crisis, but experience, preparation and organization will provide a solution.

FORMS & STANDARDIZATION

The standardized telephone quote form can be purchased from companies such as Frank R. Walker Company or a customized form can be drafted and produced for your specific requirements. In either case, the key is familiarization with the form and repeated use. It should provide an orderly progression of information important to the immediate bid and later for follow-up use. Pertinent data would be:

Date
Time
Caller's name
Company name
Telephone number
Address if not known to bid taker
Trade being bid
Description of work
Price for the work
Exclusions
Alternates
Acknowledgement of addenda
Sales tax – included or excluded
Minority status: MB or WB

Attachment 1 was purchased from the Frank R. Walker Company and **Attachments 2-4** were obtained from contractors. Although all are different, they solicit the same information and are effective by continued use.

The advent of computers has greatly improved the production and tabulation of the "Estimate Summary" through the use of on-screen spreadsheets. The computer spreadsheet allows for price changes with immediate readdition, revised totals and recalculation of labor burden, sales tax, bond premium, etc. It negates the need for cut/add columns and revised price columns. Advantageous as the computer may be, for this essay manual calculations will be discussed.

TELEPHONE BID

ESTIMATE NUMBER

DATE

JOB

LOCATION

FIRM BY

ADDRESS PHONE

CLOSE BY HOURS

WORK INCLUDED	AMOUNT OF BID

The "Estimate Summary" or "Estimate Recap" sheet can take many forms. It may be a preprinted form with typical work categories and specification sections listed, a printed form with no line item descriptions which allows for individualized sheets for specific bids, **(Attachments 5, 6, and 7)** or it may be as rudimentary as a handwritten form on columnar paper or note pad. As previously stated, familiarization and consistency are key ingredients in a successful bid. Whatever form is used, attention must be focused on producing a complete bid package without omission or error. The recap sheet should be drawn up in a manner which provides checks and balances to minimize errors or omissions.

A recap sheet with at least six columns works very well to provide basic tabulation with room for corrections. Column 1 takes labor values, column 2 for materials/equipment, column 3 for subcontracts and column 4 for total of that line item. Columns 5 and 6 (and more if desired) provide space for later, better prices and cut/add value. A recap such as this **(Attachment 5)** provides a comprehensive overview of the individual totals for all aspects of the project plus a means for adjusting those values, all on one sheet.

The four column spreadsheet offers several advantages over a single column recap which works only with totals for the various line items. When only totals are being brought forward, sales tax and labor burden must be calculated and added for each line item. With the spreadsheet these are calculated only once at the subtotal line. The four column spreadsheet has a built-in balance mechanism. When the four columns are individually totalled, then the first three column totals are added across, they should equal exactly the total in column 4. Any difference indicates an error. If the difference can be divided by nine and the result is a whole number, there is an error by transposition, i.e. two numbers have been reversed. If 10,672 is mistakenly written 10,276 the difference is 396 which, when divided by nine, gives the whole number forty-four. Any other difference indicates an addition problem. A significant dollar value difference will require review of the sheet to locate the error.

As many item totals as possible should be posted on the recap sheet before bid day. The contractor's labor and material costs for concrete and carpentry related items, for instance, should be completed prior to bid day, as well as general conditions and temporary construction. As prices are posted on the recap sheet, care should be directed to all blank price locations. Each location should be filled with a dollar figure or a dash if no price will be required thus indicating that the particular line item has been reviewed. Where combined prices for two or more items are listed in one location, a margin reference number can be indicated at the dollar location and the same number posted adjacent to other items which are included in the dollar amount **(Attachment 8)**. When the recap sheet is completed, a review for voids in each column will quickly identify any omission of a price.

The recap sheet can be as lengthy as is comfortable to the estimator, but should not be cumbersome. There will be 60 to 75 items involved in a commercial building costing approximately $3,000,000. In many cases, it is advantageous to combine some of the less significant items such as those in specification division 10, 11, 12 or 13 into a single entry for the recap sheet. The total number of entries to consider will not change, but the chief estimator can delegate responsibility for certain bid items to one or more assistants, thus giving him/her additional time to review major, critical items.

Spreadsheets are invaluable in reviewing some of the more intricate bid items to insure complete coverage for the item and eliminate dissimilar lists of materials. The analysis of structural steel/miscellaneous iron material lists can be simplified by taking a columnar pad, listing the materials in the description column, placing each vendor's name above the subsequent columns, then using a check mark or dash to indicate inclusion or exclusion. This checklist comparison will allow quick analysis of total bid and coverage on bid items such as steel/iron and also for millwork **(Attachment 9 on page 24)**.

Miscellaneous Specialties (Division 10) is a portion of the work which can be especially difficult to analyze by the number of items included in this section and the various combinations of bids received. These miscellaneous items are usually quoted by manufacturer's representatives who may bid from one item to ten or more, give one lump sum for many items or individual prices for the various items. Again, a spreadsheet approach will simplify the analysis. A rather wide sheet may be required to list items across the top of each column, the vendor's name in the description column and his/her price for each item in the appropriate column across the page. For the division total the selection of the best price in each column will give the required information. Just as with the general summary sheet, care must be exercised to avoid overlapping coverage or omissions **(Attachment 10 on page 24)**.

BID FILE SYSTEM

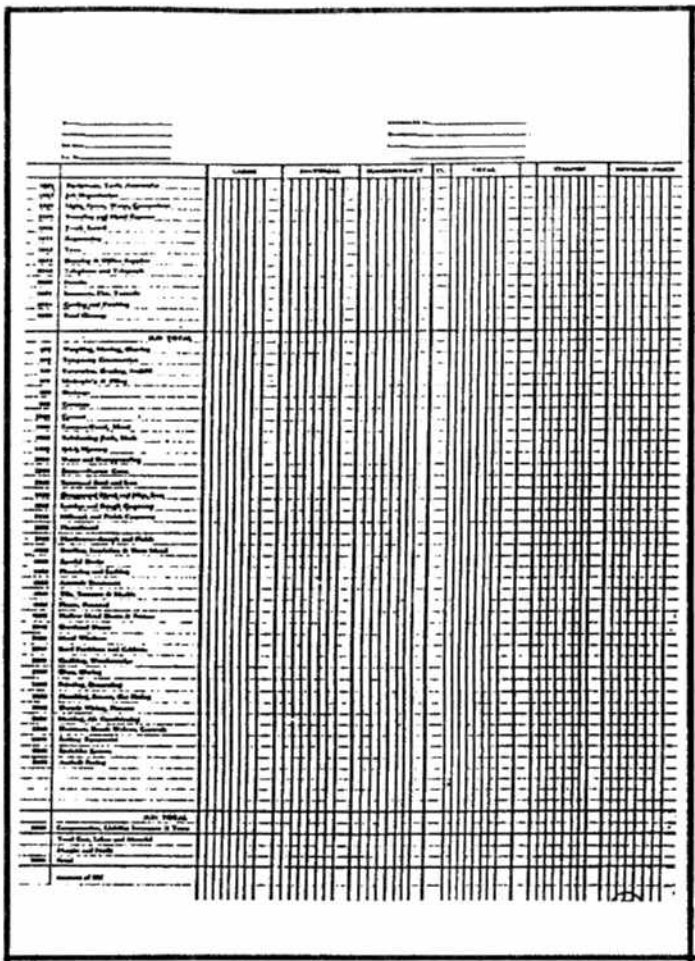
The method of bid recording, analysis and tabulation is varied, but a common system provides a tabulation sheet for each specification section. As bids are received, they are recorded on the appropriate sheet with any pertinent notes **(Attachment 11 on page 24)**. At some pre-determined time, for instance two hours before bids are due, the best prices are carried forward to a recap sheet, the recap is totalled for a pre-bid price. From then until bid-time, changes are made by cut/add column on the recap sheet **(Attachment 8)**.

The recorded bids should not be placed in a single group, but should be filed according to their specification section for handy retrieval if necessary. The file system can be as simple as you make it. If the tabulation sheets are on a ring-post board, quotes could be punched and inserted behind their tab sheet. An accountant's thirty-one day file book or a hanging file rack with tab identifiers make excellent independent file systems. Even the paper clip will work when combined with a section identification slip. Each section slip and a large paper clip separate the quotes into groups and, although the groups may get out of sequence, make retrieval simple.

ADVANCE PREPARATION

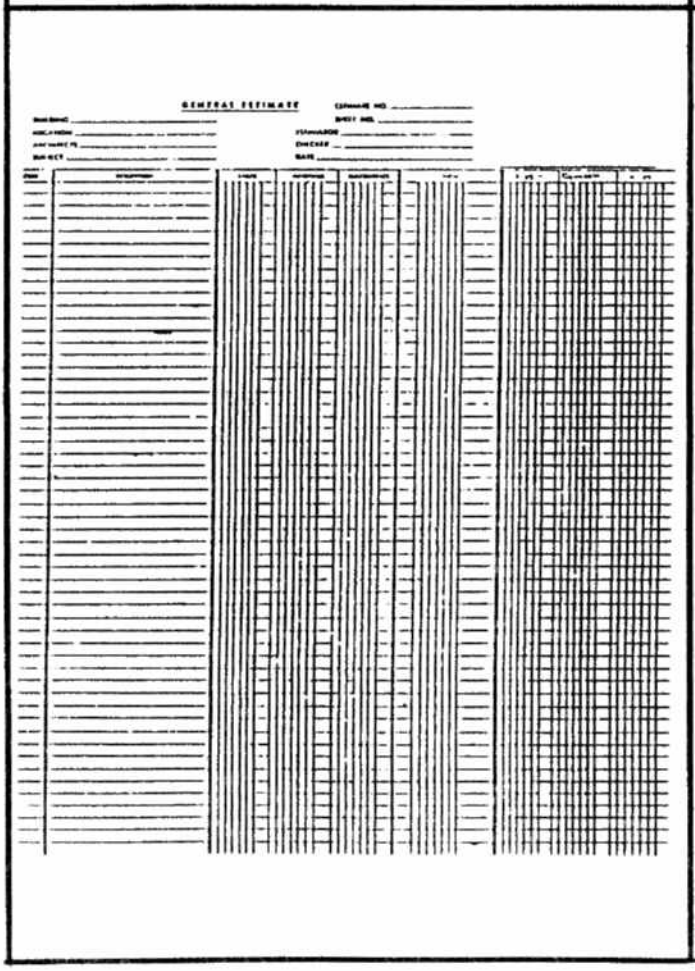
The day before bids are due to be received, each person who will be taking bids should be given a sheet which gives the correct name for the project; bid time; a list of alternates and which subcontractors/suppliers will be affected by the alternate; if minority compliance is required; unit prices that will be required. All bid-takers should be brought together and given a very brief overview of the project to give them a general knowledge of what is being bid.

If staff size will allow, specific portions of the work should be

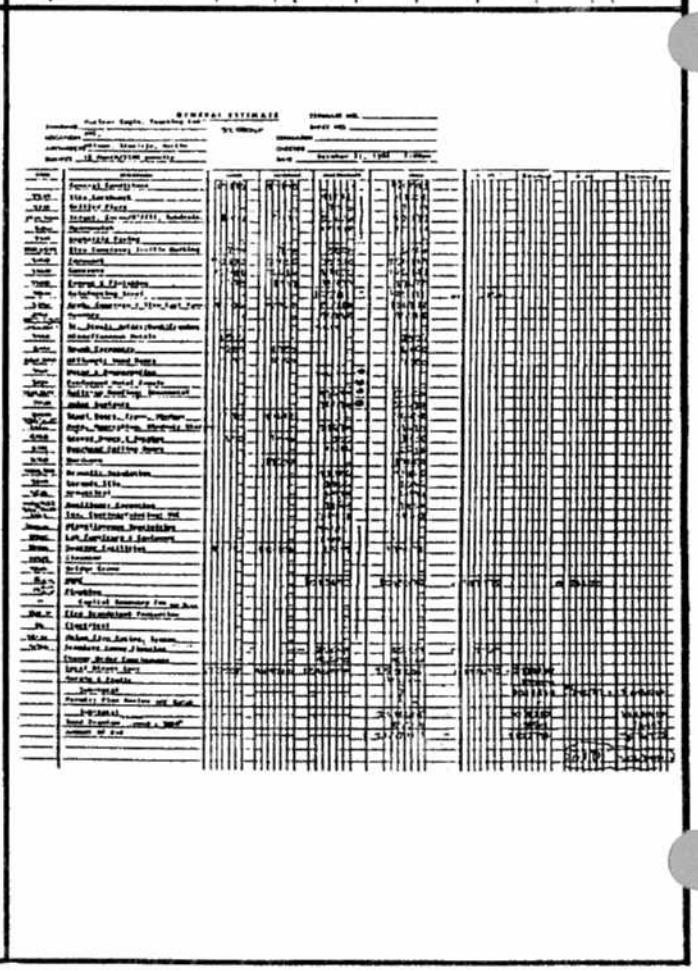


ESTIMATE SUMMARY

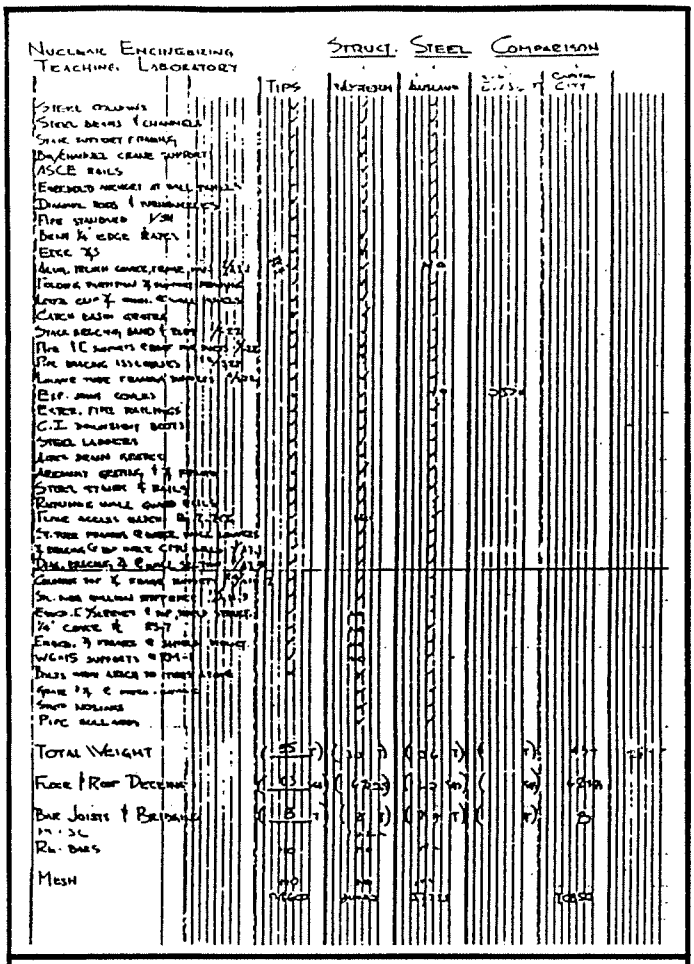
1A	General Overhead		MO						MO
1B	Equipment		MO						MO
2A	Sitework		LS						
2B	Railroad Spur		LF						LF
2C	Landscaping		LS						
2D	Site Utilities		LS						
3A	Piers & Caps		EA						EA
3B	Foundation		CY						CY
3C	Floors		SF						SF
3D	Tilt Wall Panels		SF						SF
3E	Concrete Paving		SF						SF
3F	Concrete Walks		SF						SF
3G	Concrete Curbs		LF						LF
3H	Structural Concrete		CY						CY
3I	Concrete Slabs		CY						CY
3J	Miscellaneous Concrete		CY						CY
3K	Reinforcing Steel		TN						TN
4	Masonry		SF						SF
5	Structural Steel		TN						TN
6	Carpentry		LS						
7A	Roof Deck		SF						SF
7B	Roofing & Sheetmetal		SF						SF
8A	Doors & Hardware		LS						
8B	Glass & Glazing		SF						SF
8A	Lath & Plaster		SY						SY
9B	Drywall Work		LS						
9C	Acoustical Work		SF						SF
9D	Painting & Wall Covering		LS						
9E	Floor Treatment		LS						
10	Specialties		LS						
11	Specialty Equipment		LS						
12	Furnishings		LS						
13	Special Construction		LS						
14	Conveying Systems		LS						
15A	Plumbing		LS						
15B	Fire Protection		LS						
15C	Heat., Vent., A/C		LS						
16	Electrical		LS						
17	DIRECT CONSTRUCTION COST								
18A	Contingency								
18B	Architect & Engineer Fees								
18C	Performance Bond								
19	Sub Total								
20	Fee								
	TOTAL PROJECT COSTS								

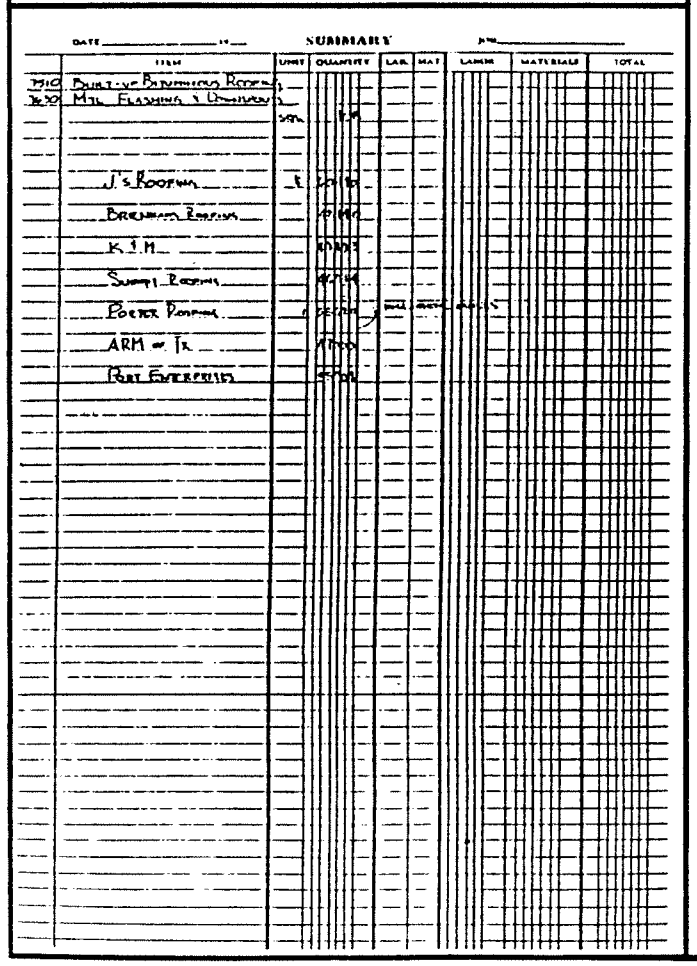


GENERAL ESTIMATE



GENERAL ESTIMATE





assigned to individuals, and they should receive all bids related to that work. This will allow the bid-taker to be more knowledgeable about his specific area of the bid without having to learn the specifics of the entire project. Four bid takers could divide the work as follows:

1. **Specification Divisions 2, 3, 4**
2. **Specification Divisions 5, 6, 7, 8**
3. **Specification Divisions 9, 11, 12, 13, 14**
4. **Specification Divisions 10, 15, 16**

Tabulation and analysis of the bids should be the responsibility of one person (designated chief estimator for this essay). The chief estimator should not be involved in receiving telephone bids, but should devote his entire attention to review, correction and tabulation of bids.

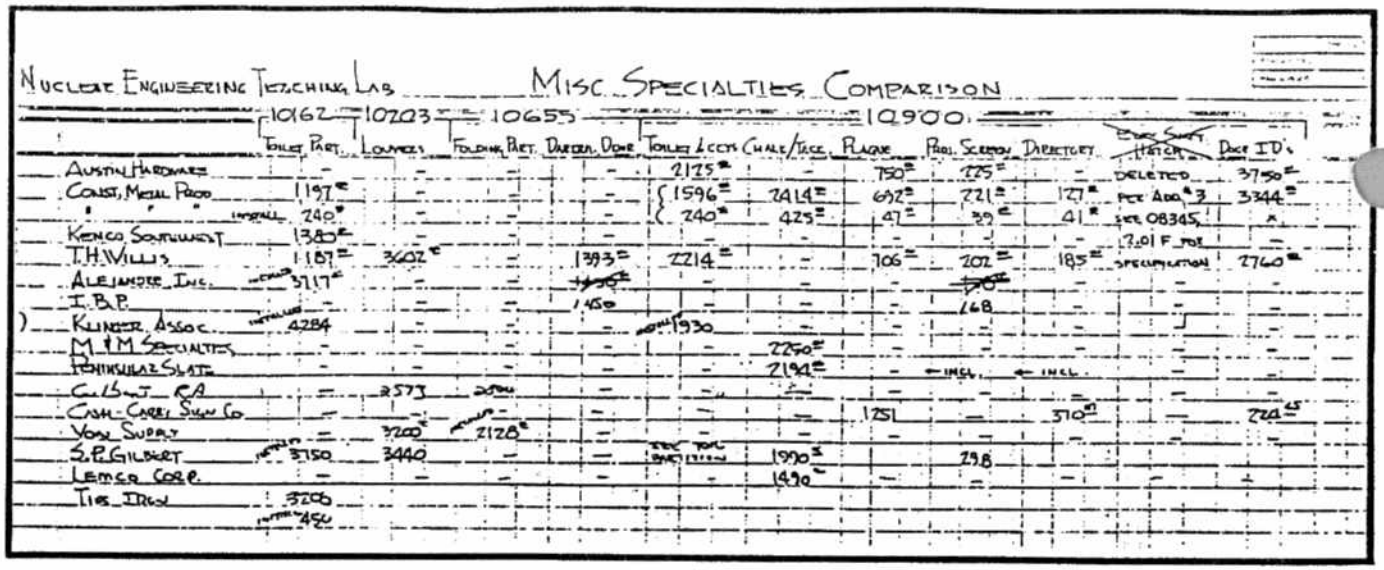
Some contractors prefer to assemble the bid in a "war room" setting with multiple telephones and all participants working together. This has the advantage of intercommunication when questions of overlapping coverages or omissions arise, but it creates stress rather than reducing it. This writer prefers an office or conference room away from the noise and conversation surrounding telephone bid-taking. It serves as a calmer focal point for information gathering.

No matter which assembly area is chosen, it should be cleared of any work not directly related to the project being bid. A telephone should be at hand for last minute calls by the chief estimator to clarify questionable bids. Plans and specifications should be available for quick reference. A receiving box or basket should be provided for deposit of incoming quotes. This will reduce the possibility of a quote being lost in a mound of papers. The use of colored paper, such as yellow or light blue, for printed telephone bid forms also will make them more distinctive.

Discussion should be held prior to bid day regarding the final mark-up to be applied for the particular project. Based on the anticipated cost of the project, a lump sum amount may be designated to meet the company's cash flow requirements for the job's duration. In lieu of this, a percentage of cost figure may be established from previous history and experience. In any case, the margin of profit should be thoroughly considered and agreed upon before the final moments of bid tabulation.

Bid documents should be prepared in advance of bid day. The envelope should be properly addressed in accordance with the instructions to bidders and, if the location is not familiar to the person who will deliver the bid, a map and/or detailed instructions should be attached to the envelope. Bid guarantee should be obtained in advance. The most convenient form is the bid bond issued by the contractor's bonding agent, which specifies the percentage of bid coverage. This must be signed, the corporate seal affixed when appropriate, and signatures witnessed. An alternate guarantee could be a cashier's check for the specified percentage of the bid, but this can be difficult to accomplish in the time allowed. The required number of bid forms, plus one in case of error, should be executed and placed with the envelope.

If the location for bid receipt is unfamiliar, a test drive should be made several days in advance to iden-



tify any potential delaying factors, such as school zones, railroad crossings, construction work, etc. The test drive should be made at the same time of day it will be made on bid day. Locating a convenient telephone is very important for calling to receive the final bid from the office. With the availability of cellular telephones, it would be prudent to consider installation of a car telephone in at least one company vehicle which could be used for bid delivery. Even more convenient, would be the purchase of a portable telephone which could be carried right to the bid location.

DETAILS

Attention to details can reduce the tension on bid day.

> **Does your calculator have sufficient paper on the roll? If not, have a new roll within easy reach.**
>
> **What will you do about lunch? Designate one person to go out for sandwiches, get everyone's order before 10:00 a.m., call ahead and place the order or, better still, make arrangements to have the food delivered.**
>
> **Does the bid representative have change for tolls, parking meter, telephone? Check to be sure.**

The FAX machine makes it possible for the vendor or subcontractor to send a written quote or at least a scope of work description on bid day. The scope sheet will reduce the time spent on the telephone with each caller, verify directly from the bidder his inclusions/exclusions, reduce the probability for misunderstanding. Call major subcontractors in advance and request a FAX scope sheet.

Let subcontractors and vendors know that you will not be available to discuss the project with them on bid day, and that you will not be able to meet with them for any reason on bid day.

COMMUNICATING THE BID

The method of communicating the final bid to the bid representative is most critical. First he/she should arrive at the place of bid opening, confirm that bids are to be received at this exact location, then establish telephone contact with the office well in advance of bid time. Secondly, he/she should endeavor to be at a private location to allow free and open conversation, which will not be heard by another bidder. The chief estimator should read the bid first as a whole unit, such as five million, eight hundred seventy-five thousand, eight hundred dollars, then follow with a numeric repetition – five, comma, eight, seven, five, comma, eight, zero, zero. All numbers, base bid, alternates, unit prices should be given in this manner. The bid representative should, if location permits, repeat the numbers immediately after transcribing them. When the bid form is completely filled out, the chief estimator should go back to the beginning and repeat all entries for final verification. Care must be taken when entering the words and figures on the bid form that they be legible and clearly written.

Once the bid is given to the bid representative and the communication line severed, it is time to get up, move around, relax and unwind. The flow of adrenaline slows, the intensity and concentration slacken, idle conversation and small talk are allowed. The final rush of bids can now be placed in their proper file, notes and loose papers clipped together and order reestablished. No matter how well organized your system may be, the last hour before bid time will test that system.

CONCLUSIONS

Bid day is the climax to thousands of manhours of work by general contractors, subcontractors and suppliers. Each contributes his best effort for an accurate bid with reasonable profit, yet knows that, probably, only the low bidder will receive a contract. The lowest bid is not always the correct or most accurate estimate of cost. Errors, omissions, poor judgment under pressure can negate the accuracy of any estimate.

Minimizing stress during the bid assembly is an important factor in producing an accurate bid. Every step in the bid day process needs to be addressed, analyzed, adapted and practiced to achieve a smooth, orderly accumulation of information. Repetition of the same bid process will reduce the stress of an otherwise hectic event. Advance preparation, attention to detail and accurate communication are all essential to the entire bid program. A flawless estimate is rare but achievable. E

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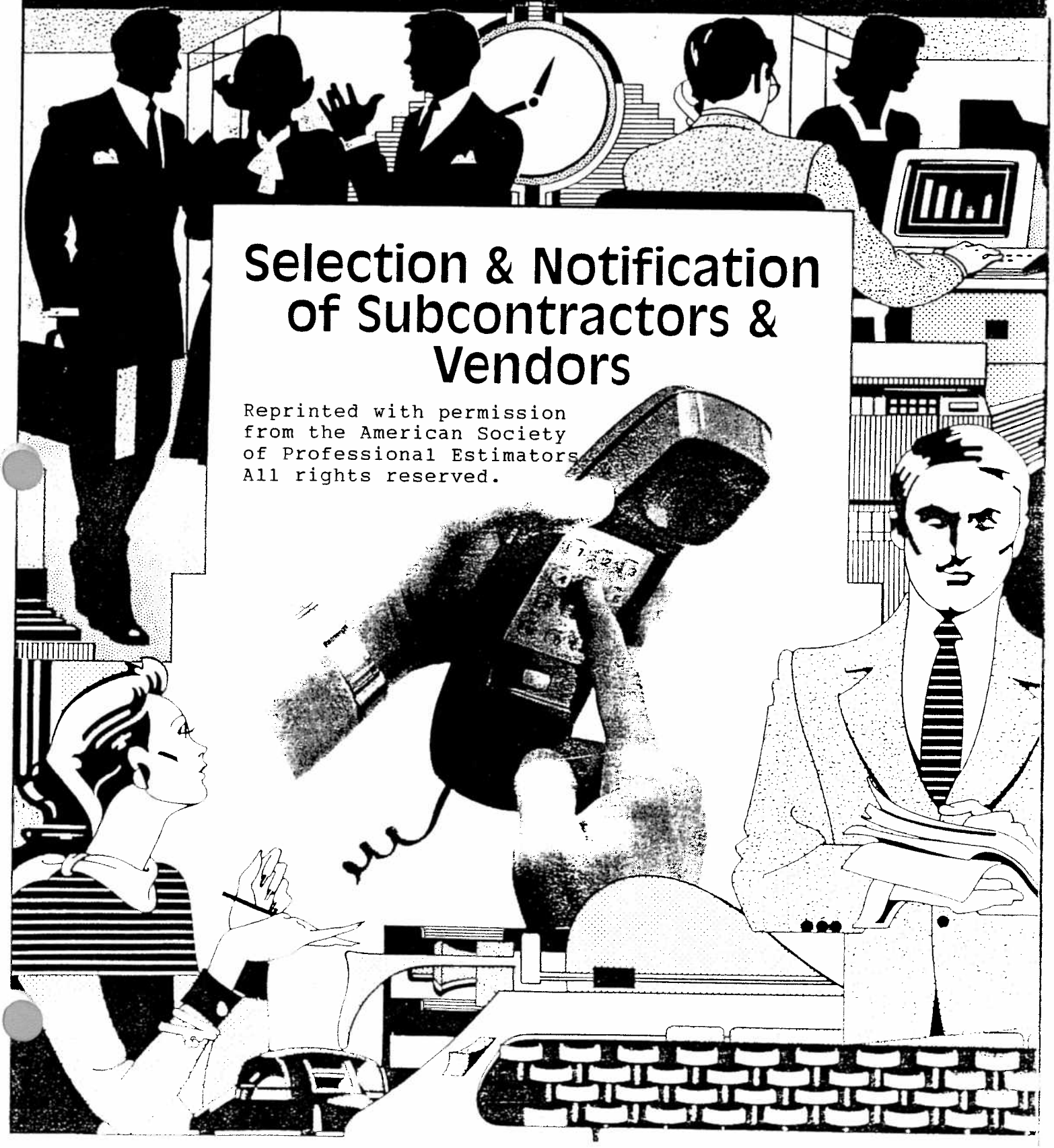

Selection & Notification of Subcontractors & Vendors

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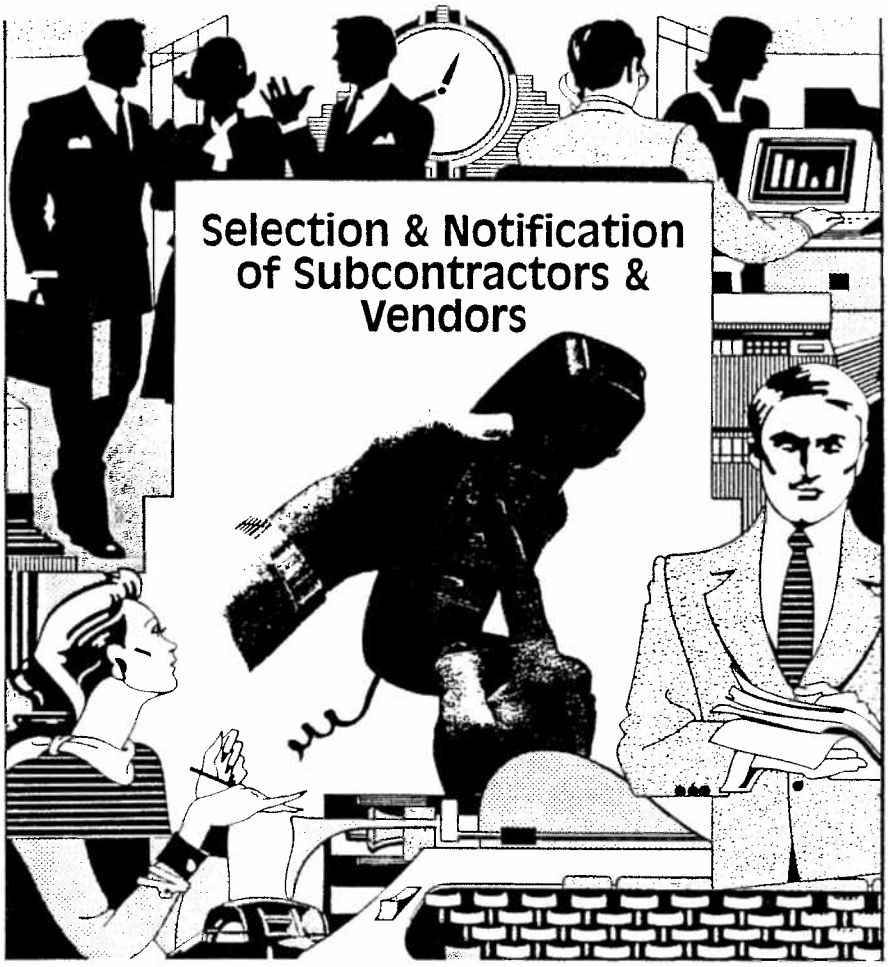

By Michael Phillips

BIOGRAPHY

Michael Phillips is vice president and chief estimator of a large mechanical contractor in a major metropolitan area. During his seventeen years in the mechanical contracting business, he has been active in all facets of the industry, including estimating, purchasing, project management, marketing and sales. He has successfully bid projects in the commercial, institutional and industrial areas of the mechanical contracting industry, including hospitals, museums, schools, libraries, office buildings, sewage treatment plants, airport terminals, commuter rail terminals, transit maintenance facilities, etc.

Michael has taught a course for five years entitled "Project Management for Mechanical Contractors," as part of the continuing education program of a large state related university.

He earned both bachelor of science and master of science degrees in mechanical engineering.

SYNOPSIS

This document is a procedure for the selection and notification of subcontractors and vendors whose pricing is required to complete the estimate. This procedure is based on the personal practices of the author and has been refined during the past seventeen years to reflect changes in technology, methodology and theory. The principles of selecting the subcontractors and vendors, notifying, and securing the subcontractors' and vendors' pricing are addressed in this document.

Reference material on this subject is limited because it is based on a procedure developed and implemented by the author. However, a list of references supporting this paper is presented at the end.

INTRODUCTION

This document presents procedures for the mechanical estimator to solicit subcontractor and vendor pricing required to complete the estimate.

The basic requirements of the estimate require notification of subcontractors and vendors, performance of the quantity survey, securing subcontractor and vendor pricing and summarization of all of the information necessary to produce a complete estimate.

The estimator is dependent on the support of his subcontractors and vendors to provide him with competitive pricing at bid time for those items which he cannot price himself. If the subcontractors and vendors are unaware of the estimator's need for pricing, then the estimator has no one to fault but himself.

The methods commonly employed for notification include the personal phone call, the postcard or letter and most recently, the "FAX" message.

SELECTION OF SUBCONTRACTORS

The estimator must review the specifications and plans to determine subcontractors and vendors to be notified. Typically, the subcontractors required for a mechanical project include:

Automatic Temperature Controls

Sheetmetal Work

Insulation

Testing, Balancing and Adjusting

Water Treatment

Fire Protection

Excavation

Asbestos Removal

The estimator must review the project in detail to determine the level of expertise, financial strength, and similar characteristics which qualify those subcontractors to be selected for the project. The estimator should avoid the shotgun approach in notifying subcontractors and take steps to deliberately eliminate those subcontractors which are known to be unqualified or unsuitable for the project.

The estimator's personal knowledge of the subcontractor should be the first criteria in selection, supplemented by the subcontractor's "track record." Just as in hiring a new employee, a new subcontractor's resume including references of previously completed projects identifying owners, professionals, GCs, CMs, etc., who may be consulted for verification of the subcontractor's ability to perform should be requested.

Financial information including banking, insurance, bonding, industry suppliers, Dunn & Bradstreet Reports, etc., provide a picture of the subcontractor's strength. Ask the questions to protect your com-

pany; a weak subcontractor on a major project could result in not only the failure of the subcontractor, but your own company as well.

Current information is essential; a strong subcontractor could be in bankruptcy tomorrow by one event. Listen to the scuttlebutt on the street, but exercise cautious judgement before reacting.

Visit the subcontractor's plant or shop. Does it reflect a well run business, are the employees active, morale high or is doom impending? Beware the subcontractor who must have this job to pay for the last one.

SELECTION OF VENDORS

Equipment manufacturers and their representatives should be selected based on the manufacturers specified, except in certain limited cases, manufacturers which may qualify as approved equals based on the estimator's experience. Prudent judgement should be exercised in the selection of manufacturers to bid the project deliberately, avoiding those manufacturers who are neither qualified nor acceptable to the engineer.

Typically, the following major categories of equipment will be required in the mechanical estimate:

Air conditioning equipment

Heat generation equipment

Hydronic distribution equipment

Air distribution equipment

Plumbing fixtures and drains

Hydronic and steam specialties

Evaluation of the vendor's ability to perform should be determined. The same techniques cited above for subcontractors apply to vendors particularly the track record. Avoid the so called "trail blazer" who has never built the equipment previously, but wants the opportunity to try at your expense. Ability to perform must include not only the manufacture but the warranty and guarantee after delivery to assure performance and service, correcting any defects that may arise.

LOCATING MANUFACTURERS AND THEIR REPRESENTATIVES

Generally, the majority of equipment manufacturers and their local representatives are already known to the estimator. However, occasionally the need will arise to locate a particular manufacturer and its representative, which had not been previously known to the estimator. These include the design professional, contractors' services, trade publications, business directories, telephone directories, etc.

Consulting the professional initially to locate the hard-to-find manufacturer and its representative is probably the easiest and most direct solution to the problem. The professional has probably used the services of the manufacturer during the preparation for the construction document, and therefore has the information readily at hand. Additionally, this affords the estimator an opportunity to develop a relationship with the professional which, if properly handled, may result in the professional sharing information with the estimator which he might not otherwise be able to obtain. This information may spell the difference between winning and losing the bid. The estimator must capitalize on every opportunity to obtain information. Information is one of the key elements to preparing successful bids. The more you know about a project, the more likely you are to be successful.

Contractors' services, such as the *Dodge Bulletin*, published by the McGraw-Hill organization, routinely publish information about local projects being bid. The information usually is obtained from the architect or the owner. This information includes date of bid, addenda, availability of documentation, and bidders who have obtained plans from either the architect or the owner. The estimator should list his firm as a bidder with the local contractors' service if it has not been previously listed by the architect or the owner. This listing will serve notice on all organizations having an interest in the project that your firm is bidding the project. Manufacturers subscribe to these services to obtain the names of bidders and thus will be sure to provide a bid to all listed bidders. There is no charge to list your company as a bidder, however there is a fee to subscribe to the service.

Trade publications and periodicals available to the estimator, usually on a free subscription basis, carry advertising particular to the industry. The advertising usually carries with it a reader information service, which may be used to obtain additional information regarding the products of the manufacturer. Requesting additional information through the readers' information service usually results in additional catalogue information and the name, address and phone number of the local manufacturer's representative for the product. This advertising is particularly useful in helping the estimator to identify additional bidders for unique products, thus encouraging competition and thereby obtaining the lowest possible price. Trade publications and periodicals serving the mechanical construction industry include **Heating, Piping and Air Conditioning**, the **ASHRAE Journal, Plumbing and Mechanical** and **Domestic Engineering**.

Heating, Piping and Air Conditioning magazine is free to members of the industy and is available by contacting:

Heating, Piping and Air Conditioning
1100 Superior Avenue
Cleveland, OH 44197-8016

This particular magazine is cited because the June issue is the annual Desk Reference to Mechanical Systems. The annual Desk Reference includes a listing of manufacturers, products, trade names, recent HVAC articles, societies and associations, classified advertising, manufacturers data and advertisers' index and sales offices. This particular issue is invaluable in that it contains the most conclusive listing of manufacturers and products with the mechanical contracting industry. It is a must for any mechanical estimator. Similar directories are published by the periodicals serving other industries such as fire protection, hospital supplies and equipment, architectural products, etc.

The **Sweet's Catalogue File,** published by the McGraw-Hill Information Services Company, is a permanently bound file of building product manufacturers' catalogues organized on the industry-accepted 16 division format for data filing and construction specification used by the American Institute of Architects Service Corporation's master spec and the Construction Specification Institute's spec text. Additionally, there are indexes by firm names, by products and by trade names. The **Sweet's Catalogue** offers an additional service called "Sweet's Automated Byline." The Sweet's Automated Byline phone number is 1-800-521-2737. Calling the number will connect the estimator with a computerized infor-

mation system, which will instruct the estimator to enter specific information associated with the manufacturer's catalogue, as well as his local post office zip code. After entering the requested information, the system will respond with the name, address and telephone number of the local manufacturer's sales representative serving the estimator's area. The **Thomas Register of American Manufacturers** is published annually by the Thomas Publishing Company and is available for a fee by contacting:

Circulation Department
THOMAS REGISTER
Thomas Publishing Company
1 Penn Plaza
New York, NY 10117-0562

The **Thomas Register** is a directory of products and services, company profiles and catalogue files. It is similar to the **Sweet's Catalogue File,** but much larger in scope in that it lists all American manufacturers for all industries who choose to subscribe to the register. The 1989 edition of the **Thomas Register** includes 23 volumes. Volumes 15 and 16 contain company profiles of more than 145,000 U.S. companies. These companies are listed alphabetically. The information on them includes addresses, phone numbers, locations of sales offices, distributors, plants, service and engineering offices, and usually an 800 number by which to contact them toll-free.

AT&T publishes a toll-free 800 directory. The directory contains two listings, one alphabetically by subscriber's name and the other is a "Business Yellow Pages" similar to the standard yellow pages found in any local phone directory. The toll-free 800 number provides a low-cost expedient method of locating manufacturers and their local representatives.

The local phone directory, particularly the yellow pages section, contains listings of manufacturers, representatives and products.

Local professional organizations, such as the American Society of Heating, Refrigeration and Air Conditioning Engineers chapter, may publish a directory of local manufacturers' representatives operating in the area served. The Philadelphia chapter **ASHRAE Directory** is prepared locally by the members and is available for a fee from the chapter. This directory is the most complete listing of local manufacturers available in the Philadelphia area within the heating, ventilating and air conditioning industry. Similar type directories in other geographical areas may also be available.

NOTIFICATION OF SUBCONTRACTORS & VENDORS

Subcontractors and vendors may be notified by a personal phone call, a postcard or FAX. Any one or a combination of the methods will suffice, however, all three should be employed in the case of major subcontractors and proprietary vendors.

The personal phone call sets the stage for the "Event." "Hi! This is John Doe of ABC Mechanical Contractors. We are bidding the Jones job and want your firm on our team. The plans and specs are in our office and can be purchased at XYZ's Reproduction Services." The personal phone call establishes the line of communication between yourself and the other estimator. The relationship of mutual cooperation and support starts to develop the trust which is essential at bid time to obtain the best price rather than the "street price." The call confirms positively the subcontractor's participation. All too often we find ourselves at bid time lacking a major subcontract price resulting in hours of our own work wasted since we are unable to complete the estimate without a reliable, bona fide subcontract price.

The initial call should be followed up periodically; particularly when any addendum are issued, a change in the bid date and immediately prior to bid date to again confirm the subcontractor's support. Discussions regarding coordination of the work to eliminate duplication and identify possible omissions are essential. Additionally, those bids with a multitude of alternate prices require close coordination.

The postcard affords the largest volume, but least selective method of notification at the minimum cost in terms of time and money. Occasionally, a formal letter is recommended over the postcard.

The most common form of postcard is available from stationers preprinted with the company's return address, blank on the reverse side and prepared for tractor feed through a dot-matrix printer driven by a micro computer.

Figure 1 is a sample of a return postcard with a typical message.

Micro computer programs, commonly referred to as "databases" are available to maintain the listing of subcontractors and vendors. The database at a minimum should afford the estimator the ability to select recipients by groups and eliminate individuals within a selected group. **Figure 2** is a listing of subcontractors and vendors prepared on Lotus 1-2-3, however, any comparable database such as PF/Professional File, DB 4, Rolodex, PC-File, etc., will serve equally well. **Figure 3 (Page 6)** is the documentation for the code and structure which drives the program.

SOLICITATION OF SUBCONTRACTOR AND VENDOR PRICING

The estimator must contact all subcontractors and vendors to obtain pricing which has otherwise not been received in written form prior to bid time. The mailing list notifying subcontractors and vendors should also contain a telephone list. **Figure 4 (Page 6)** is a typical telephone list.

Figure 5 is a typical telephone quotation form. This form has provision for pertinent information required by the estimator. The estimator should attempt to obtain as much information as possible and record it on the form. He should also request a written confirming quote either by mail or FAX.

An assistant or clerk may make the initial phone contact with the

FIGURE 1
Message Side of Postcard

ABC MECHANICAL, INC. REQUESTS YOUR QUOTATION FOR THE FOLLOWING PROJECTS:

	DUE DATE	ESTR
Johnson Dormitory State College	11/7/89	John
1st National Bank Interior Renovations Fifth & Main Sts. Howard	10/31/89	

Phone 555-4800; FAX 555-4991.
1234 Main St., Anytown, USA.
MINORITY CONTRACTORS ARE ENCOURAGED TO BID.

FIGURE 2
Database Listing of Subcontractors and Vendors

"C" ELIMINATES ENTIRE GROUP — ALT S PRINTS POSTCARD ADDRESSES
"1" SELECTS ENTIRE GROUP — ALT E INDEXES GROUP CODES
"1" ELIMINATES INDIVIDUAL NAME

GROUP CODE	IND'VL CODE	TRADE / NAME	STREET ADDRESS	P.O. BOX OR CITY; STATE	CITY, STATE, ZIP CODE
1		AUTOMATIC TEMP CONTROLS			
		BARBER COLMAN CO.	4667 "C" SOMERTON RD.	TREVOSE, PA. 19047	
		HONEYWELL, INC.	VALLEY FORGE CORP. CENTER	P.O. BOX 516	VALLEY FORGE, PA. 19406
		JOHNSON CONTROLS	10541 DRUMMOND RD.	P.O. BOX 21098	PHILA., PA. 19154
		MCC POWERS	1400 MILLOW AVE	MELROSE PARK, PA 19126	
		ROBERTSHAW CONTROLS CO.	705 GENERAL WASHINGTON AVE.	SUITE 201	NORRISTOWN, PA. 19403
	-1	END OF GROUP			
1		SHEETMETAL CONTRACTORS			
		ORELAND SHEET METAL	P.O. BOX 510	CONSHOHOCKEN, PA. 19428	
		QUALITY SHEETMETAL CORP.	ONE SCHUYLKILL PARKWAY	BRIDGEPORT, PA. 19405	BRIDGEPORT, PA. 19405
		WILLIARD SHEETMETAL DIV.	ATTN: JACK HUGHES	375 HIGHLAND AVE.	JENKINTOWN, PA. 19046
	-1	END OF GROUP			
1		INSULATION			
		A C & S INC.	I-95 INDUSTRIAL PARK	30 MacDonald Blvd.	Aston, PA. 19014
		B J D S, INC.	5034 MULBERRY ST.	PHILA., PA. 19129	
		BRAND INSULATION, INC.	216 POMMATTAN AVE.	ESSINGTON, PA. 19029	
		CARROLL INSULATION, INC.	330 BARBARA DR.	CLARKSBORO, NJ 08020	
	-1	END OF GROUP			
1		BALANCING			
		AIR SYSTEMS INC.	3310 So. 20th st.	PHILA., PA. 19145	
		EASTERN AIR BALANCE	ONE SCHUYKILL PKWY	BRIDGEPORT, PA. 19405	
		ENERGY TESTING & BALANCIN	5954 GANTRY RD.	PHILA., PA. 19115	
	-1	END OF GROUP			
1		A/C MFRS			
		AMERICAN AIR FILTER	1003 W. 9TH AVE.	SUITE "D"	KING OF PRUSSIA, PA. 19406
		CARRIER AIR CONDITIONING	SUITE 105	521 PLYMOUTH RD.	PLYMOUTH MTG, PA. 19462
		TRANE COMPANY	P.O. BOX 279	801 MANCILL ROAD	KING OF PRUSSIA, PA. 19406
		YORK CORPORATION	75 Great Valley Parkway	P.O. BOX 377	Malvern, PA 19355-0377
	-1	END OF GROUP			
0		PLUMBING FIXTURES			
		ERDODY PLUMBING SUPPLY	CO25TH & YORK STREETS	PHILA., PA. 19132	
		FISHER BROTHERS	7900 ROCKWELL AVE.	PHILA., PA. 19111	
		WEINSTEIN PLBG SUPPLY	MORELAND & DAVISVILLE RDS.	WILLOW GROVE, PA. 19090	
	-1	END OF GROUP			
	-1				

FIGURE 5
Telephone Quotation Form

PAGE ____ OF ____

TELEPHONE QUOTATION	DATE:	
PROJECT OR BID NO.	CALLER:	
CONTRACTOR OR SUPPLIER.	PHONE NO.:	

ACKNOWLEDGE RECEIPT OF ADDENDUM/BULLETIN NO.	*	*	*	*	*	*	QUOTE TAKEN BY:

TRADE/EQUIPMENT ITEM _____ SPECIFICATION SECTION _____

DESCRIPTION:

IS ALL WORK OR MATERIAL IN ACCORDANCE WITH PLANS & SPECS? YES ____ NO ____

LABOR ONLY		MATERIAL ONLY		LABOR & MATERIAL	

WORK NOT INCLUDED:	NOTES OR COMMENTS

BASE BID	$	FOB: ____	PLUS TAX ____	TAX INCLUDED ____

ALT #		ALT #	
ALT #		ALT #	

$? (ATTACH EXTRA SHEET IF MORE SPACE IS NEEDED)

vendors followed by the estimator to clarify details, pricing and obtain any additional information to enable the estimator to evaluate all the variables influencing his bidding strategy.

The estimator should make the initial contact with the major vendors and subcontractors. Nothing is more frustrating at bid time than a conversation with someone who has only a vague knowledge of the job and worse, limited authority to deal. The estimator must exercise discipline and judgement at bid time to secure the best possible price with the most favorable terms. He must be thorough in his discussion to identify all the factors affecting the subcontractor's scope of work. The written scope prior to bid time is essential; a faxed confirming scope immediately after the phone conversation should be requested.

CONCLUSION

The estimator's responsibility to produce a professional quality estimate requires coordination of all products of his efforts, including selecting and communicating with his subcontractors and vendors. Implementation of the techniques and methods presented herein for selection, notification and communication will help to improve this vital part of the estimating process. E

REFERENCES

1. *Standard Estimating Practice*. The American Society of Professional Estimators, 6911 Richmond Highway, Suite 230, Alexandria, Virginia, 22306.

2. *Construction Dictionary*. National Association of Women in Construction, Greater Phoenix, Arizona Chapter #98, P.O. Box 6142, Phoenix, Arizona, 85005.

3. *Ottaviano Plumbing Estimator*. Victor B. Ottaviano and Sheldon T. Greene, Ottaviano Technical Services, Inc., 150 Broad Hollow Road, Melville, New York, 11747.

4. *Using 1 2 3*. Geoffrey T. LeBlond and Douglas Ford Cobb, Que Corporation, 7999 Knue Road, Indianapolis, Indiana, 46250.

SUBCONTRACTOR PROPOSAL ANALYSIS & SELECTION

After the contractor's own work has been taken off and priced and the general conditions have been determined, the estimator can turn his attention to the sub-bids received in answer to the requests sent out when starting to figure the job. All bids should be separated according to classifications or work and each should be carefully read and thoroughly analyzed - especially those which are apparently the low bidders.

In analyzing each sub-bid, the first thing to determine is whether the bid is complete. That is, does it have all of the work in its classification called for on the plans and in the specifications? This is doubly important where the architect has lumped several classifications of work under one section heading of the specification. Special attention should also be paid to these sub-bids on which the subcontractor has made exceptions by listing the items he has or has not included.

When subcontract bids are extraordinarily low, the best course of action is to contact the subcontractor advising him of this condition and ask him to check his quotation. This will give him a chance to retain, revise or withdraw his figure from the bidding. Whatever the subcontractor decides to do, he should take the same action with all other general contractors who have his bid. By notifying the subcontractor that his bid seems too low, the estimator is really protecting himself. If he uses the bid in making up his final figures, and the subcontractor discovers a serious mistake in his estimate, he may refuse to take the job at the price quoted. Then the estimate will contain a losing item before the work is even started. On the other hand, if the subcontractor accepts the job at he low figure and then finds an error in his estimate, in many cases he will try to get more money for his work. If he does not succeed, he will probably make every effort to reduce his cost by cutting every corner he can - using cheap materials, doing poor work, and in general, turning out an inferior job. This usually results in a loss for the general contractor.

Subcontract bids form the largest part of the estimate, usually ranging from 2/3 to ¾ of the total cost of the job. This fact alone should impress you as to the importance of good sub coverage and accurate analysis of each quotation. To be a successful contractor, having a good following of reliable subcontractors in all classifications of work is essential and the only way to gain this is to deal fairly with then and earn a reputation for doing so.

When all the preceding steps are finished, the next step is the completion of the summary sheets set up at the beginning of the estimate. The estimator now enters on the summary sheet the material and labor totals for each classification of work the contractor intends to do with his own forces. He also enters the amount figured for job overhead and general conditions, permits, taxes and insurance. In addition, he enters the amount of each sub-bid he is going to use. All columns are totaled and cross-totaled to arrive at the total estimated job cost.