

ELECTRICAL ESTIMATING TECHNIQUES

by

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Introduction

The purpose of this manual is to introduce an organized method of electrical estimating that will enable the estimator to obtain a complete bill of materials both accurately and quickly.

The methods set forth are not difficult, nor are they technical. They are logical ideas that have been arranged and put into a simple system.

By following this system, the estimator will automatically find any items that may have been missed during the initial take-off. Once found, they can be easily added to the work sheets.

The advantage of this system is that anyone with a basic knowledge of estimating can learn it. Should an estimator using this system begin a take-off and be unable to finish it, another estimator familiar with the system can complete the estimate without having to ask questions. Those who have been estimating for some time will undoubtedly learn new techniques, along with faster and more accurate ways of obtaining materials.

The final result will be an electrical estimate containing a complete bill of materials with extremely accurate quantities for that bill of material. The estimate will be arranged in the same sequence that the job is to be built. This will allow the estimate to serve as a material release schedule, and for the recap sheet of the estimate to check and monitor invoices and labor. All this can be accomplished in less time that it would normally take using present forms of detailed estimating.

Getting Started

In order for a contractor to obtain work, he must first submit a bid price. The bid price that the contractor submits, however, must be low enough to get the job, but high enough to cover all costs and make a profit. For a contractor to accomplish these goals, he must submit the “right” bid price. This “right” bid price will be obtained from estimating; therefore, the estimates must be “right”.

Electrical estimating is fast becoming a profession, performed by professional people. Contractors can no longer look at a job and “guesstimate” a price, or for that matter, even “square-foot” the job. If an electrical contractor is to survive in today’s competitive industry, he must have the capability or resources to prepare accurate estimates without expending a great deal of time.

Review the Drawings

Before any actual estimating begins, you should first become familiar with the job. This is accomplished by first reviewing the architectural, mechanical, and electrical drawings. Once reviewed, you can then determine:

- What the job “looks like” by drawing a mental picture from the plans.

- If there is any electrical work that must be estimated on drawings other than the electrical sheets.

This review will take only a few minutes. Unfortunately, you will not always be blessed with a full set of drawings. Try to obtain structural information and any unusual heights or elevations such as those incurred when building churches, athletic facilities and plants.

Reading the Electrical Specifications

Reading the specifications will determine your scope of work and what your bid price is based upon. It is important that the *General Conditions* of the specifications be read thoroughly. Items of importance will include:

The Bid Form

- How many electrical prices are required?
- Are there any alternates?

Sales Tax Requirements

- Is this project exempt from sales tax?

Allowances

- Should any cash allowances be included in the bid price?

Special Insurance

Retainage

- This may vary from 10% through completion, from 10% to 5% after the job is half complete, or 10% to 0% after the job is half complete.

Temporary Power

- Who furnishes the temporary power?
- Who pays for the temporary power consumed?

Progress Reports and Photographs

Bid Bonds, Security Deposits and Performance Bonds

Minority Clauses and Requirements

Construction Time and Liquidated Damages

Owner Furnished Equipment

Change Orders and Extras

Job Close Out

Once this list has been established, each category can be defined by using a simple code. *For example:*

FBE = Furnished by Electric
IBE = Installed by Electric
FBO = Furnished by Others
IBO = Installed by Others

Example:

- 11. Starters
- 12. Disconnects

Specified Materials

The type and grade of materials to be used for the job will be defined in the electrical specifications, and is to be noted on the *Scope of Work* sheet. *For example:*

1. Devices:

- (a) Switches *20A Spec Grade Gray*
- (b) Receptacles *20A Spec Grade Gray*
- (c) Wall Plates *.302 Stainless Steel*
- (d) Special Outlets *20A Isolated Ground*

2. Branch Wire:

- (a) Type *THHN Copper*
- (b) Separate Ground *With PVC*

3. Feeder Wire:

- (a) Type *THHN Copper*
- (b) Separate Ground *Yes*
- (c) High Voltage *No*

4. Raceways:

- (a) Underground *PVC*
- (b) Slab *GRC*
- (c) Surface *EMT*
- (d) Partitions *EMT*
- (e) Ceilings *EMT*
- (f) Minimum Size *1/2"*
- (g) Fittings *Die Cast Set Screw*

Electrical Specifications

This section of the specifications must be read thoroughly and carefully, as it will define the cost responsibilities of the electrical contract, and also determine the scope of electrical work. As each page of the specifications are read, you should make notes pertaining to the scope of the electrical work. For example:

Quotes that will be required

- Light fixtures.
- Distribution equipment.
- Floor duct.
- Bus duct.
- Cable tray.
- Fire alarm.
- Sound and paging systems.
- UPS systems.
- Special wiring systems.
- Dimming systems.
- Any other special systems.

FBE	IBE	FBO	IBO
	X	X	
X	X		

Responsibility of costs

Determining responsibility of costs (who pays for what) is extremely important. If the specifications do not clarify these areas of costs, submit a list defining what costs your price is based upon along with your bid price.

- Excavation and backfill.
- Pole bases, equipment pads, miscellaneous concrete work.
- Safety switches.
- Motor starters.
- Light fixture support.
- Temperature control wiring.
- Interlock wiring.
- Special system wiring.
- Primary raceway and cable.
- Primary transformer.
- Painting.
- Pitch pockets.
- Cutting and patching.

The Take-Off

After the plans have been reviewed, specifications read, and the *Scope of Work* sheet prepared, you are now ready to begin the take-off. Each step you perform must be done quickly and without hesitation. Accuracy of the take-off is built into the estimating system. Follow these steps to complete the take-off:

Count light fixtures

Count switches and switch plates

Count receptacles, floor boxes, special receptacles, and phone outlets

Count special systems

Count disconnects, motor controllers and one-of-a-kind items

Write up panels and switchgear

Measure feeders

Measure branch circuits

Measure special systems raceways

Counting Light Fixtures _____

On a work sheet, list all of the light fixtures by their designation type, the number and type of lamps in the fixture, and how the fixture is to be mounted.

Example:

R = Recessed
S = Surface
W = Wall
P = Pendant
ST = Stem
RF = Recessed/Flanged

Light Fixtures			Total	E-1	E-2	E-3		
A	4-F40/CW	R						
B	1-100/IF	W						
C	1-75/R40	S						
D	2-F96/HO	P						
E	Included	S						

For estimating purposes, it is not necessary to describe each fixture by manufacturer, catalog number, color or construction. Going into such detail is time consuming, and time is valuable to the estimator. Let the supply companies do what they are paid to do, which is to quote the light fixtures as per plans and specifications.

With your counter set at zero, begin counting the first fixture listed on you work sheet. If it is type **A**, then you will be counting **As**. As each type **A** is counted, completely color in the fixture with a yellow pencil. Do not check it off or half color it. Color the entire fixture. *Count as fast as you possibly can.* Do not go back and look for type **As** that you may have missed. When you have counted the **As** on the first drawing, write in the quantity on your worksheet for type **A** for that drawing number.

Example:

Light Fixtures			Total	E-1	E-2	E-3		
A	4-F40/CW	R		34				
B	1-100/IF	W						
C	1-75/R40	S						
D	2-F96/HO	P						
E	Included	S						

Set your counter back to zero and begin to count and color the type **B** fixtures on the same drawing. *Count and color as fast as you can.* When you think all of the type **Bs** have been counted, write in the total on your worksheet. Reset your counter and begin counting the next fixture type. Should you come across a type **A** or **B** that was missed, stop immediately, color in the fixture, and change the count on your worksheet. *Do it now.* Do not finish your count and then go back to look for that missed fixture. You might spend too much time looking for it, or you just might forget about it altogether.

Do not proceed to the next drawing until you have gone through the entire list of fixtures. If there were fixture types that did not appear on the drawing, indicate that there were none found by placing a dash mark on the worksheet under the drawing number.

Example:

Light Fixtures			Total	E-1	E-2	E-3		
A	4-F40/CW	R		34				
B	1-100/IF	W		31				
C	1-75/R40	S		-				
D	2-F96/HO	P		12				
E	Included	S		6				

By counting light fixtures in this manner, you are repeatedly going over the drawings. This automatically allows you to find any fixtures you may have missed on the first pass. You will also notice that any light fixtures that were not colored in will stand out quite visibly from those that have been colored.

Follow this same procedure for each drawing until all light fixtures have been counted. Don't worry about missing any fixtures. The system will find them for you as you will soon begin to see.

Counting Switches

With your counter set to zero, begin by counting single pole switches. *Remember, you will only be counting single pole switches on your counter.* As each single pole switch is counted, color the switch symbol in a circular motion with a green pencil. When you come across a switch other than a single pole, color the switch with the green pencil, mark the symbol on the bottom right of the drawing, and keep count of that new switch symbol by using hash marks:

Example

S3
||||

S4
|||

Here the estimator has counted five 3-way switches and three 4-way switches.

To count switches in a multi-gang arrangement, mark the symbol on the bottom right of the drawing and use hash marks to keep count.

Example







\$ \$
|

Symbol on drawing

S S
|

1. *Mark the two gang symbol on bottom right of drawing.*
2. *Enter two clicks on the counter for two single pole switches.*
3. *Enter one hash mark for the two gang ring and plate.*






Example

	S_3	S_3	SS	SSS
<i>Symbol on drawing</i>				
				
	<i>(previous count)</i>			

1. Mark the three gang symbol on on bottom right of drawing.
2. Enter two clicks on the counter for two single pole switches.
3. Enter one hash mark for the three-way switch count.
4. Enter hash mark for the three gang

When you have finished counting switches on that drawing, mark the single pole switch symbol on the bottom right of the drawing and enter the amount taken from the counter.

Example

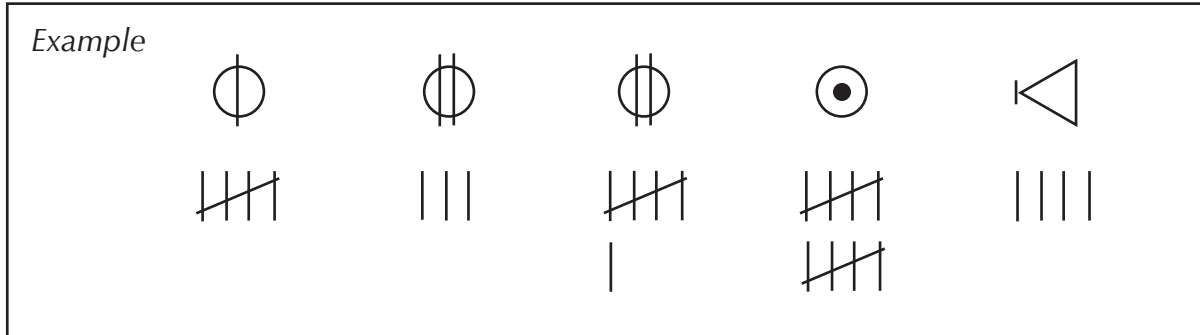
S	S_3	S_3	SS	SSS
32				
				

Count and color switches and their ganged arrangements as fast as you can. *Do not count just single pole switches first and then go back through the drawing and count different switches such as three-ways and four-ways.* If you do not color and count them as you find them; you will spend too much time going back over the drawings looking for the symbols or you may be interrupted and forget them entirely. Don't worry about missing any symbols; any that you miss will be found by the system. The system has also provided you a second opportunity to look for light fixtures.

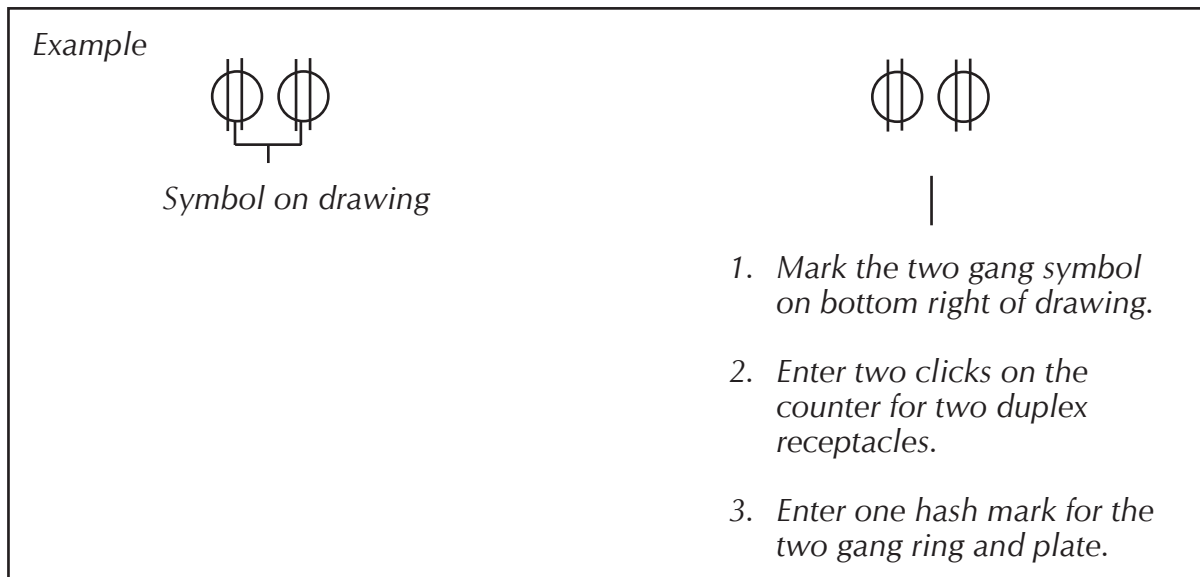
Follow this same procedure for each drawing until all switches have been counted.

Counting Receptacles, Floor Boxes, Special Outlets and Phone Outlets

With your counter set at zero, begin by counting duplex receptacles. As each receptacle is counted, color in the receptacle symbol with a green pencil. As you come across wiring devices other than a duplex receptacle, color in the device with the green pencil, mark the symbol on the bottom right of the drawing, and keep count of that device by using hash marks.

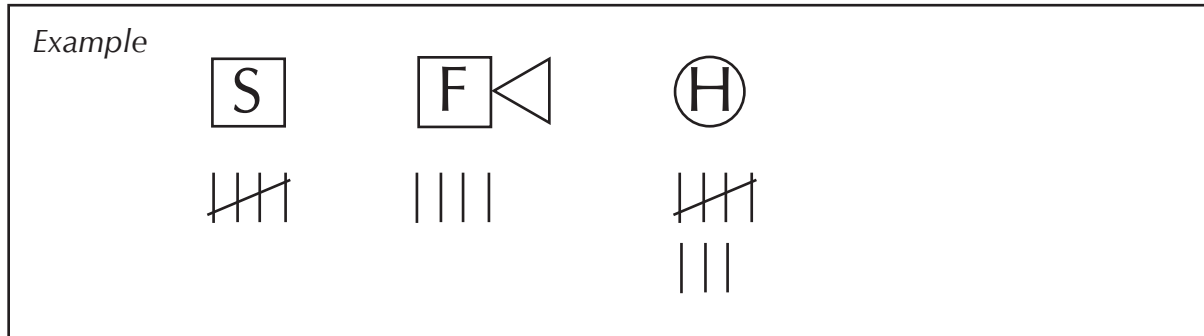


To count receptacles in a multi-gang arrangement, such as a double duplex, mark the symbol on the bottom right of the drawing and use hash marks to keep count.

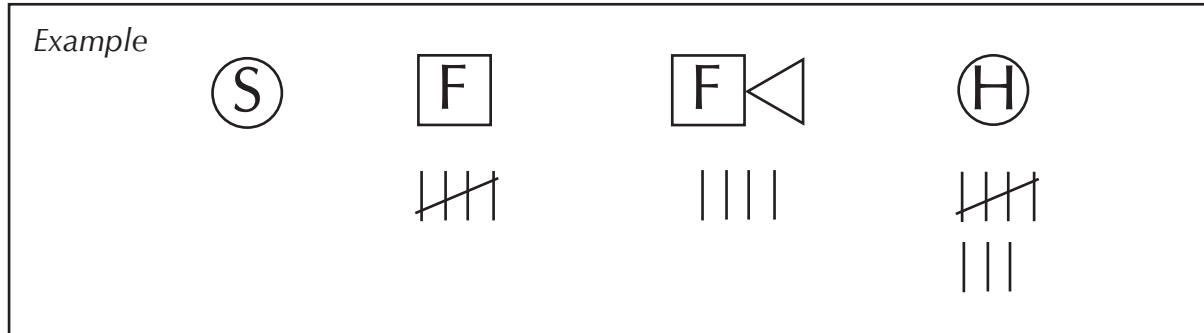


Counting Special Systems _____

Each special system should be treated as a separate entity. When counting special systems, set the counter to count the most predominant item of that system. For example, in a fire alarm system, the most predominant item may be the smoke detectors. As each detector is counted, color in the detector symbol with a red pencil. As you come across other fire alarm devices, mark the symbol on the bottom right of the drawing and keep count of that device by using hash marks.



When you have finished the drawing, mark the smoke detector symbol on the bottom right of the drawing and enter the count taken from the counter.



Follow this same procedure for each drawing until all fire alarm devices have been counted.

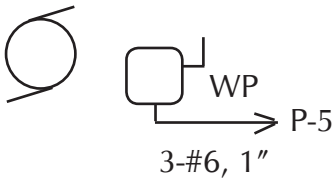
If there are other systems that remain to be counted, return to the beginning of the electrical drawings and follow the same procedure that was used to count the fire alarm system devices. Use a purple pencil to color all other special systems except for fire alarm, which requires a red pencil.

If the drawings contain riser diagrams for the special systems, take the item count from the plans for each system and compare it to the number of system devices shown on the riser diagram. *If there is a discrepancy, use the higher count.*

Counting Disconnects and Motor Controllers _____

Disconnects and motor controllers along with their respective flexible conduit connections are to be written up on a worksheet. As these items are found on the drawings, color in the motor symbol and the controlling device symbol with a blue pencil. On the worksheet, mark the controlling symbol, the size and type of flexible connection to the motor, and the number and size of conductors to the motor.


Example



Symbol on drawing

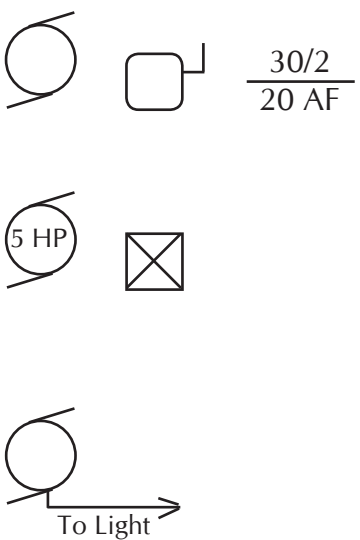
On a work sheet, you will write:



Example

(NEMA Type) 3R  $\frac{100/3}{250V}$ $\frac{3-#6}{1" - ST}$

(Amperage and No. of poles) (Voltage) (No. and size of wire) (Size and type of flex connection)



Example



WORKSHEET		
1		$\frac{30/2}{250V}$ $\frac{2-#12}{1/2" GF}$
1		$\frac{3-#12}{1/2" GF}$
		$\frac{2-#12}{1/2" GF}$

If controlling devices are furnished by others but installed by the electrical contractor, then indicate as such by writing **FBO** (furnished by others) by the controlling device on the worksheet.

Although the same disconnect switch or motor controller may be used more than once on the drawings to control other motors or equipment, it is not necessary to duplicate the symbol and flex connection on the worksheet. For estimating purposes, you are only interested in knowing how many there are of each type and size, not in what the device is controlling. Therefore, use hash marks to keep count as you find and color the devices.

<i>Example</i>	WORKSHEET		
		$\frac{30/3}{250V}$ $\frac{3 - \#10}{3/4" GF}$	
	1		

Counting Miscellaneous Items _____

Other items to be written up on the worksheet are the one of a kind miscellaneous items that you will find as you are counting the disconnects and motor controlling devices.

<i>Example</i>	WORKSHEET	
	Chase Nipples	
	8 x 8 x 4 Pull Box	
	Meter Can	
	Plywood	
	Transformer Pad	
	Pole Bases	
	Ditching	
	Time Clock	
	Photo Cell	
	Thermostats	
	3/4" x 10' Ground Rod	
	On/Off PB Station	

This list is just a sample of the types of miscellaneous items that may be found on the drawings. The most important thing to remember when estimating is to clear all of the miscellaneous items off the plans and transfer them to a worksheet. Be sure to use the hash mark system to keep count of the items. As these items are found, color them in with a blue pencil. If any items on the drawings are not colored in, it will indicate to you or anyone else that these items were missed and yet to be included on the worksheets.

Panels, Switchboards and Motor Control Centers _____

Panels, switchboards and motor control centers are to be written up on a separate pricing sheet. By using the distribution riser diagram and the panelboard schedules, begin by grouping panels by their amperage size (starting with the smallest panel), their voltage and the type of termination (main lug only or main circuit breaker).

<i>Example</i>	DESCRIPTION	QUANTITY	PRICE	LABOR
	60A MLO Panel			
	100A MLO Panel			
	225A MLO Panel			
	150A MCB Panel			
	400A Distribution Panel			

As each panel is counted and written up, color in the panel on the riser diagram with a light green pencil. Also color in the heading of each panel on the panelboard schedule sheet with a light green pencil.

Directly below the listing of the panels, write up the switchboards by their amperage size beginning with the smallest and finishing with the largest. As they are written up, color them in on the riser diagram with a light green pencil.

Follow this same procedure for motor control centers.

<i>Example</i>	DESCRIPTION	QUANTITY	PRICE	LABOR
	600A MCC			
	800A MCC			
	1200A MCC			

Transformers and Capacitors _____

Working from the distribution riser diagram, write up directly on to a pricing sheet all the transformers beginning with the smallest KVA rating. As each transformer is found, color in the symbol with a blue pencil.

<i>Example</i>	DESCRIPTION	QUANTITY	PRICE	LABOR
	15.0 KVA 480-120/208V			
	30.0 KVA 480-120/208V			
	45.0 KVA 480-120/208V			
	75.0 KVA 480-120/208V			

Follow this same procedure for capacitors. Write up the capacitors on the same pricing sheet with the transformers.

<i>Example</i>	DESCRIPTION	QUANTITY	PRICE	LABOR
	15.0 KVA 480-120/208V			
	30.0 KVA 480-120/208V			
	45.0 KVA 480-120/208V			
	75.0 KVA 480-120/208V			
	25.0 KVAR 480V-3PH			
	30.0 KVAR 480V-3PH			

Specialty Items: Floor Duct, Cable Tray, Bus Duct _____

Specialty items along with their associated fittings and accessories are to be measured, counted and written up directly onto pricing sheets. Keep each bill of material for each specialty item on a separate pricing sheet. These individual pricing sheets will allow you to distribute copies to suppliers for quotation purposes. It will also enable you to make fast comparisons of quantities from the suppliers bill of materials against your own count.

As each item is measured and counted, color off the specialty item on the drawings with a green pencil.

<i>Example</i>	DESCRIPTION	QUANTITY	PRICE	LABOR
	7/8" Insert Duct			
	Duct End Plugs			
	Vertical Elbows			
	Cabinet Connector			
	1" Conduit Adapter			
	Support Couplers			
	Single Level Junction Box			
	Closing Caps			
	Afterset markers			

Measuring Feeders _____

Before any actual measuring takes place, the feeders must first be written up onto a feeder take-off sheet. This information will be obtained either from the distribution riser diagram or the panelboard schedule sheets.

Example:

FEEDER SCHEDULE														
ROUTING		RACEWAY									WIRE			
FROM	TO	SIZE	NO.	LENGTH	FOOTAGE	TYPE	90s	TERMS	STRAPS	TRENCH	NO.	SIZE	LENGTH	FOOTAGE
MDP	LP	3"	2			GRC	4	4			8	#350		

The example shows that the feeder from **MDP** to panel **LP** is a parallel run of 2-3" conduits. The type of conduit is a galvanized rigid steel with four elbows and four bushings. The total number of conductors in the run is eight (2x4 per run) and the size of the conductors is #350 MCM.

As each feeder is listed on the **FEEDER SCHEDULE**, color the feeder on the riser diagram with an orange pencil.

With the completed **FEEDER SCHEDULE** sheet and a measuring scale, turn to the floor plans and begin measuring the feeders. As each feeder is measured, additional footage of pipe must be added for "turning up" or for "dropping down". When the distance is determined, write that distance in the **Length** column; this will be the length of the feeder run. The actual footage of conduit in that particular run will be determined by multiplying the number of conduits in the run by the length of the run.

Example:

FEEDER SCHEDULE														
ROUTING		RACEWAY									WIRE			
FROM	TO	SIZE	NO.	LENGTH	FOOTAGE	TYPE	90s	TERMS	STRAPS	TRENCH	NO.	SIZE	LENGTH	FOOTAGE
MDP	LP	3"	2	60	120	GRC	4	4			8	#350		

If the feeder is overhead, write the number of straps or clamps that will be required to support the conduit. If the feeder run is underground, write in the length of trench. Be sure to fill in these columns; if the straps are not used, indicate this by putting a dash mark (-) in the **Strap** column.

Example:

FEEDER SCHEDULE														
ROUTING		RACEWAY									WIRE			
FROM	TO	SIZE	NO.	LENGTH	FOOTAGE	TYPE	90s	TERMS	STRAPS	TRENCH	NO.	SIZE	LENGTH	FOOTAGE
MDP	LP	3"	2	60	120	GRC	4	4	-	55	8	#350		

Add the necessary make-up and waste to the length of the feeder run to find the wire length. Obtain the total wire footage by multiplying the number of conductors in the run by the length of the feeder run.

Example:

FEEDER SCHEDULE														
ROUTING		RACEWAY									WIRE			
FROM	TO	SIZE	NO.	LENGTH	FOOTAGE	TYPE	90s	TERMS	STRAPS	TRENCH	NO.	SIZE	LENGTH	FOOTAGE
MDP	LP	3"	2	60	120	GRC	4	4	-	55	8	#350	75	600

Measuring Branch Circuits

Measuring branch circuits is the final step of the take-off prior to recapping worksheets and writing up the estimate. It is also the most important part of estimating in that it will also check the existing take-off.

Measuring branch circuits is not a difficult task. Although it is time consuming, it is essential not to take any short cuts in this step of the take-off. Feeder conduit and wire, combined with branch circuit conduit and wire, can represent as much as 70 percent of the total labor on a job. If you are short on your measurements, you will be short not only in material, but in labor as well. Labor and material overruns are your worst enemy because they must be paid for, and the money to pay for these overruns will be taken out of your profit. Spending time to be accurate is but a small price to pay to prevent costly overruns.

A separate worksheet will be used for each drawing containing branch circuit pipe and wire. The headings of each worksheet will depend on the type and size of conduit specified.

The Branch Circuit Legend

Begin by setting up a legend of colored lines on the first drawing that will represent conduit and wire fill.

Example

—————	(Red)	=	3#12 - 1/2" EMT
—————	(Green)	=	4#12 - 1/2" EMT
—————	(Blue)	=	5#12 - 1/2" EMT

If underslab work is also on the same drawing and galvanized rigid conduit is specified, continue with your color code.

Example

—————	(Red)	=	3#12 - 1/2" EMT
—————	(Green)	=	4#12 - 1/2" EMT
—————	(Blue)	=	5#12 - 1/2" EMT
—————	(Purple)	=	3#12 - 1/2" GRC
—————	(Brown)	=	4#12 - 1/2" GRC
—————	(Black)	=	5#12 - 1/2" GRC

Example

_____	(Red)	=	3#12 - 1/2" EMT
_____	(Green)	=	4#12 - 1/2" EMT
_____	(Blue)	=	5#12 - 1/2" EMT
_____	(Purple)	=	3#12 - 1/2" GRC
_____	(Brown)	=	4#12 - 1/2" GRC
_____	(Black)	=	5#12 - 1/2" GRC

If the specifications call for 3/4" minimum conduit, then change the 1/2" to 3/4".

Example

_____	(Red)	=	3#12 - 3/4" EMT
_____	(Green)	=	4#12 - 3/4" EMT
_____	(Blue)	=	5#12 - 3/4" EMT
_____	(Purple)	=	3#12 - 3/4" GRC
_____	(Brown)	=	4#12 - 3/4" GRC
_____	(Black)	=	5#12 - 3/4" GRC

You may use any colors of your choice as long as your branch circuit legend is the same throughout the drawings.

The legend is set up to indicate the predominant conduit on the drawings. In most cases it will be 1/2"; however, for any other conduit and wire fill, use an orange pencil.

Note: *In the case of increase wire fill, check the specifications for the type of wire insulation specified. Consult the National Electric Code for maximum wire fill allowed.*

Color Coding the Branch Circuits

With your counter in one hand set at zero, begin in the upper left of the drawing by color coding the branch EMT. Color 1/2" EMT circuit with 3#12 red and hit your counter twice. The two counts represent two 1/2" EMT connectors. If the next 1/2" EMT circuit contains 4#12, put the red pencil down and color that circuit with a green pencil. Again, hit your counter twice for two more 1/2" EMT connectors. Although this circuit contains 3#12, it is still 1/2" EMT and will require 1/2" connectors.

Do not attempt to color only the 3#12 circuits and then return to look for 4#12 and 5#12 circuits. Color the circuits with the appropriate colors as you find them.

Setting UP the Worksheet

When you have completed the color coding of the 1/2" EMT, take a blank worksheet and fill in the headings as shown.

Example

WORKSHEET E-1	1/2"	WIRE	CONN							
	EMT									
		3#12								
		4#12								
		5#12								

Under the **CONN** (connector) column, write in the number of 1/2" EMT connectors that is shown on your counter.

Example

WORKSHEET E-1	1/2"	WIRE	CONN							
	EMT									
		3#12	134							
		4#12	↓							
		5#12	↓							

Measuring the Color Coded Branch Circuits

With the counter set at zero and a measuring wheel in your other hand, return to the upper left of the drawing. Working back and forth from left to right, measure all the red (3-#12) branch circuits. Each time a 3#12 switch leg or a 3#12 homerun is measured, click your counter once. This count will represent the total number of 3#12 “drops”.

Do not attempt to “over measure” or “overrun” the drawing with the measuring wheel to compensate for switch drops or panel drops. After you have measured all of the red (3#12) branch circuits, enter the total footage on your measuring wheel into a calculator. Next, take the total count of “drops” from your counter and multiply it by the appropriate length of the drop. Add the total footage of drops to the 3#12 footage in the calculator. The result will be the total footage of 3#12-1/2” EMT for that drawing. Write the total footage next to the **3#12** under the **1/2” EMT** column on your worksheet.

Example

WORKSHEET E-1	1/2"	WIRE	CONN							
	EMT									
	820	3#12	134							
		4#12	↓							
		5#12	↓							

Repeat the same procedure used for measuring 3#12-1/2" EMT branch circuits to measure the remaining 1/2" EMT circuits on the drawing.

Example

WORKSHEET E-1	1/2"	WIRE	CONN							
	EMT									
	820	3#12	134							
	410	4#12	↓							
	160	5#12	↓							

For conduits other than 1/2" EMT, continue the heading on the worksheet as shown in the example, and follow the same color coding, connector counting and circuit measuring procedures that were used for the 1/2" EMT circuits.

Example

WORKSHEET E-1	1/2"	WIRE	CONN	3/4"	WIRE	CONN				
	EMT			EMT						
	820	3#12	134	70	3#8	8				
	410	4#12	↓	120	PW	↓				
	160	5#12	↓							

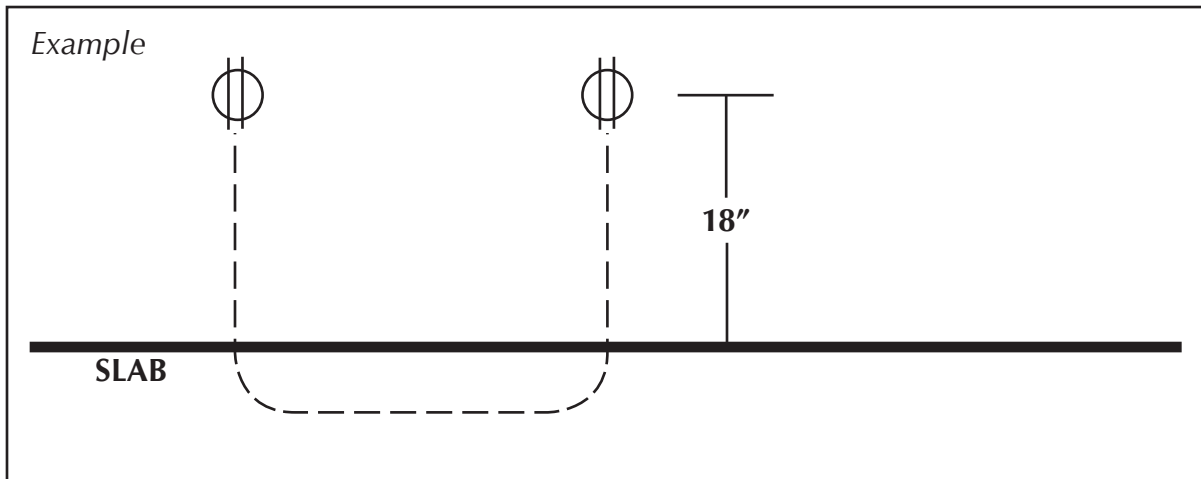
When color coding galvanized rigid conduit or intermediate metal conduit, the counter will be used exactly as it was to count EMT connectors. However, now it will represent bushings.

After the drawing has been color coded for the slab work, continue the heading on the worksheet as shown.

Example

WORKSHEET E-1	1/2"	WIRE	CONN	3/4"	WIRE	CONN	1/2"	WIRE	BUSH	
	EMT			EMT			GRC			
	820	3#12	134	70	3#8	8		3#12	24	
	410	4#12	↓	120	PW	↓				
	160	5#12	↓							

With your counter reset to zero, begin measuring the 3#12-1/2" GRC circuits. As each 3#12 circuit is measured between outlets, enter one click on the counter. Each click on the counter represents the additional conduit and wire needed to "turn-up" out of the slab. In most cases, each receptacle will be installed 18" above the finished floor. Since $18" + 18" = 36"$, one click is equal to three additional feet of conduit and wire. For homeruns to panels, enter two clicks on the counter (six feet).



Do not attempt to “over measure” or “over run” the drawing with the measuring wheel to compensate for turning-up out of the slab or for homeruns to panels. After you have measured all of the purple (3#12) branch circuits, enter the total footage on your measuring wheel into a calculator. Next, take the total count of “turn-ups” from your counter and multiply it by the appropriate length. Add the total footage of turn-ups to the 3#12 footage in the calculator. The result will be the total footage of 3#12-1/2” GRC for that drawing. Write the total footage next to the **3#12** under the **1/2” GRC** column on your worksheet.

Example

WORKSHEET E-1	1/2"	WIRE	CONN	3/4"	WIRE	CONN	1/2"	WIRE	BUSH	
	EMT			EMT			GRC			
	820	3#12	134	70	3#8	8	340	3#12	24	
	410	4#12	↓	120	PW	↓				
	160	5#12	↓							

On drawings that show continuous rows of fixtures, underfloor duct, cable tray, wireways, wiremold or any other special raceways, you must remember to measure the wire that will be installed within these raceways. After measuring, enter the footage of wire in a separate column on the worksheet.

Example

WORKSHEET E-1	1/2"	WIRE	CONN	3/4"	WIRE	CONN	1/2"	WIRE	BUSH	#12
	EMT			EMT			GRC			FIXT
	820	3#12	134	70	3#8	8	340	3#12	24	330
	410	4#12	↓	120	PW	↓				
	160	5#12	↓							

Repeat these same procedures to measure branch circuits on all drawings. As each color is measured, put a check mark next to the same color on the branch circuit legend to show that it has been measured. Any color that has not been checked off will indicate that it has not yet been measured.

Color coding enables you to find any items that may have been missed during the prior stages of the take-off. Should an item be found that was not colored and counted, immediately stop the branch circuit color coding and count that item. **Do not overlook that item and continue to color code circuits. You may either forget or be interrupted and not count the item.** Counting the items as they are found results in accurate estimates and prevents cost overruns. These essentials are important for profitable jobs.

Color coding also lays the job out for the men in the field. Your estimate does not include time for the electricians to stop working and lay out circuits on the drawings. Color coding lets the field know how the job was estimated. And when the office and the field both have the same information, the job can then be installed within the estimated material dollars and estimated labor hours.

Special Note on Color Coding

Color coding allows you to easily combine branch circuits that the architect or engineer may not have otherwise done. Some specifications will specifically state that circuits must be installed as shown on drawings. If the specifications do not state this, then combine circuits to reduce material and labor.

Re-Capping Branch Circuit Worksheets

To re-cap worksheets, begin by adding the columns of conduit and the columns of conduit fittings.

Example

WORKSHEET E-1	1/2"	WIRE	CONN	3/4"	WIRE	CONN	1/2"	WIRE	BUSH	#12
	EMT			EMT			GRC			FIXT
	820	3#12	134	70	3#8	8	340	3#12	24	330
	410	4#12	↓	120	PW	↓				
	160	5#12	↓							
TOTALS	1390		134	190		8	340		24	

On the left side of the worksheet, list the sizes of wire shown in the wire columns, beginning with the smallest size.

Example

WORKSHEET E-1	1/2"	WIRE	CONN	3/4"	WIRE	CONN	1/2"	WIRE	BUSH	#12
	EMT			EMT			GRC			FIXT
#12	820	3#12	134	70	3#8	8	340	3#12	24	330
#8	410	4#12	↓	120	PW	↓				
PW (Pull Wire)	160	5#12	↓							
TOTALS	1390		134	190		8	340		24	

To find the total footage of wire on each worksheet, begin by add-multiplying the number of wires times the footage of pipe that the wire is contained in.

Starting with the #12 wire, the first entry will be the 3-#12 in 820 feet of conduit. On your calculator, multiply 3 x 820. The total will be 2,460. Enter 2,460 into the memory of the calculator. The next entry will be 4-#12 in 410 feet of conduit. Multiply 4 x 410 and enter the total of 1,640 feet into the memory of the calculator. At this time you are accumulating the footage of #12 wire. Next multiply the 5-#12 x 160 feet of conduit and enter the total of 800 feet into the memory. The next entry will be the 3-#12 in 340 feet of GRC. Enter that total of 1,020 feet into the memory. The last entry into the memory will be the 330 feet of #12 wire that will be pulled into the continuous rows of light fixtures.

Now that all the #12 wire has been entered, hit the memory total of the calculator to display the total footage of #12 wire. The answer will be 6,250 feet of #12 wire. This, however, is the total footage of wire from end to end of conduit. Make-up and waste must be added so that terminations can be made to devices and equipment.

Most estimators use a figure of 15 percent for make-up and waste. By multiplying 6,250 feet of wire by 1.15, the answer will be 7,187. A common rule is to round off to the nearest ten, which will bring the total footage of #12 wire for worksheet E-1 to 7,190 feet. Write this total next to the **#12** on your worksheet.

Example

WORKSHEET E-1	1/2"	WIRE	CONN	3/4"	WIRE	CONN	1/2"	WIRE	BUSH	#12
	EMT			EMT			GRC			FIXT
#12 7,190	820	3#12	134	70	3#8	8	340	3#12	24	330
#8	410	4#12	↓	120	PW	↓				
PW	160	5#12	↓							
TOTALS	1390		134	190		8	340		24	

Repeat this same procedure for re-capping the remaining wire types.

Example

WORKSHEET E-1	1/2"	WIRE	CONN	3/4"	WIRE	CONN	1/2"	WIRE	BUSH	#12
	EMT			EMT			GRC			FIXT
#12 7,190	820	3#12	134	70	3#8	8	340	3#12	24	330
#8 240	410	4#12	↓	120	PW	↓				
PW	160	5#12	↓							
TOTALS	1390		134	190		8	340		24	

Example

WORKSHEET E-1	1/2"	WIRE	CONN	3/4"	WIRE	CONN	1/2"	WIRE	BUSH	#12
	EMT			EMT			GRC			FIXT
#12 7,190	820	3#12	134	70	3#8	8	340	3#12	24	330
#8 240	410	4#12	↓	120	PW	↓				
PW 140	160	5#12	↓							
TOTALS	1390		134	190		8	340		24	

Follow this same procedure for re-capping all branch circuit worksheets.

Note: Re-capping branch circuit worksheets is an operation that can be performed by an office clerk.

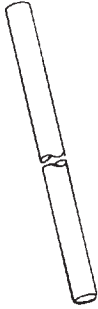
Writing Up the Estimate

The estimate will be written up in the order that materials will be purchased, released and installed. The purpose of preparing the estimate in this sequence provides the means to control and monitor the job from start to finish.

It is during the write-up that other materials will be derived from materials that have been counted. This method of obtaining quantities from quantities adds the necessary materials for a detailed and accurate estimate.

As each item is written-up, place a check mark by the item on the worksheet or under the item on the drawing to show that it has been transferred to a pricing sheet. When listing materials such as pipe, fittings and wire, always start with the smallest size.

Rigid Metal Conduit_____

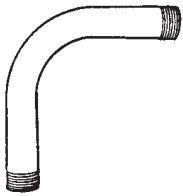


Galvanized Rigid Conduit and Elbows

- Use a separate pricing sheet. Head the sheet *Rigid Conduit and Elbows*.
- List all sizes and quantities shown on the Feeder Schedules and Branch Circuit Worksheets.

Intermediate Metal Conduit and Elbows

- List IMC on the *Rigid Conduit and Elbows* pricing sheet.
- Obtain all sizes and quantities shown on the Feeder Schedules and Branch Circuit Worksheets.



Aluminum Rigid Conduit and Elbows

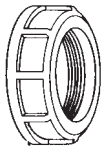
- List ARC on the *Rigid Conduit and Elbows* pricing sheet.
- Obtain all sizes and quantities shown on the Feeder Schedules and Branch Circuit Worksheets.

Rigid Conduit Fittings _____



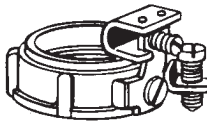
Nipples

- Use a separate pricing sheet. Head the sheet *Rigid Conduit Fittings*.
- List all sizes and quantities of nipples shown on the Feeder Schedules and Branch Circuit Worksheets.

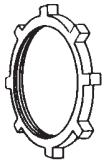


Bushings

- List bushings on the *Rigid Conduit Fittings* pricing sheet.
- Refer to the Scope of Work sheet for types of bushings specified.



- List all sizes and quantities of bushings shown on the Feeder Schedules and Branch Circuit Worksheets.



Locknuts

- List locknuts on the *Rigid Conduit Fittings* pricing sheet.
- For single locknut installation, provide one locknut for each rigid conduit bushing.
- For double locknut installation, provide two locknuts for each rigid conduit bushing.
- Provide one locknut for each chase nipple.



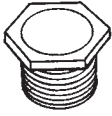
Conduit Pennies and Plugs

- List pennies and plugs on the *Rigid Conduit Fittings* pricing sheet.



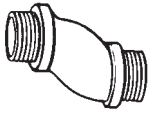
- Provide one penny or plug for each underground or under-slab bushing.

Chase Nipples



- List chase nipples on the *Rigid Conduit Fittings* sheet.
- Provide chase nipples for light fixtures mounted in continuous rows.

Off-Set Nipples



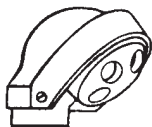
- List off-set nipples on the *Rigid Conduit Fittings* pricing sheet.
- Provide off-set nipples for time clocks, contactors, etc, mounted adjacent to panels.

Straps, Clamp Backs and Beam Clamps



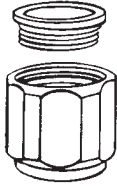
- List straps, clamp backs and beam clamps on the *Rigid Conduit Fittings* pricing sheet.
- Refer to Construction Information on Scope of Work sheet for type of supports to be used.
- Provide supports at required spacings for overhead or wall mounted rigid conduits.

Weatherheads



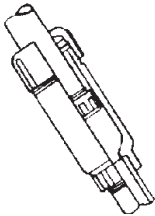
- List weatherheads on the *Rigid Conduit Fittings* pricing sheet.
- List all sizes and quantities shown on the Miscellaneous Items Worksheets.

Rigid Conduit Hubs



- List rigid conduit hubs on the *Rigid Conduit Fittings* pricing sheet.
- Provide rigid conduit hubs at necessary weatherproof locations.

Expansion Couplings



- List expansion couplings on the *Rigid Conduit Fittings* pricing sheet.
- Refer to floor plans for building construction joints.
- Provide necessary sizes and quantities of expansion couplings.

Pipe Caps



- List pipe caps on the *Rigid Conduit Fittings* pricing sheet.
- Obtain sizes and quantities from the Miscellaneous Items Worksheets.

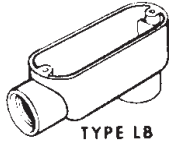
Reducing Bushings



- List reducing bushings on the *Rigid Conduit Fittings* pricing sheet.
- Obtain sizes and quantities from the Miscellaneous Items Worksheets.

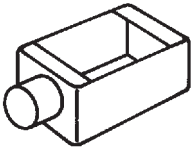
Condulets and Covers _____

Condulet Fittings and Covers



- Use a separate pricing sheet. Head the sheet *Condulets and Covers*.
- Obtain sizes and quantities from the Miscellaneous Items Worksheets.

FS Boxes and Covers

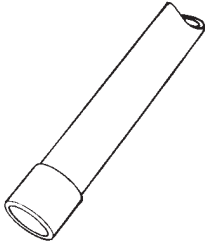


FS

- List FS boxes on the *Condulets and Covers* pricing sheet.
- Obtain sizes and quantities from the Miscellaneous Items Worksheets and symbol counts on drawings that require FS boxes.

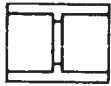
PVC Conduit and Fittings _____

PVC Conduit and Elbows



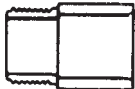
- Use a separate pricing sheet. Head the sheet *PVC Conduit*.
- Obtain sizes and quantities from the Feeder Schedules and Branch Circuit Worksheets.
- List PVC by schedule type.

PVC Couplings



- List PVC couplings on the *PVC Conduit* pricing sheet.
- Provide one coupling for each PVC elbow.

PVC Adapters



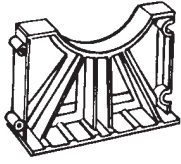
- List PVC adapters on the *PVC Conduit* pricing sheet.
- Obtain sizes and quantities of PVC male adapters from the Feeder Schedules and Branch Circuit Worksheets.
- Provide a PVC female adapter for every rigid conduit elbow installed onto PVC conduit.

PVC Plugs and Caps



- List PVC plugs and caps on the *PVC Conduit* pricing sheet.
- Obtain sizes and quantities from the Miscellaneous Items Worksheets.

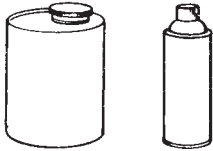
PVC Base and Intermediate Spacers



BASE SPACER

- List PVC spacers on the *PVC Conduit* pricing sheet.
- Provide necessary spacers as required.

PVC Cement



- List PVC cement on the *PVC Conduit* pricing sheet.
- Provide necessary cement for PVC terminations.

Site Work _____

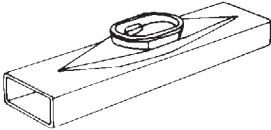
Site Work



- Use a separate pricing sheet. Head the sheet *Site Work*.
- List all trenching, excavation, concrete work, pole bases, equipment pads, manholes, etc.
- Obtain sizes and quantities from the Miscellaneous Worksheets.

Underfloor Duct and Fittings _____

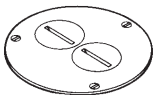
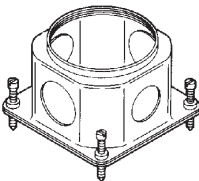
Underfloor Duct and Fittings



- Underfloor duct and fittings were previously written up on a separate pricing sheet directly from the drawings during the take-off.

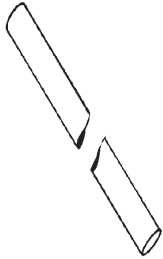
Floor Boxes _____

Floor Boxes



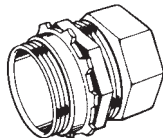
- Use a separate pricing sheet. Head the sheet *Floor Boxes*.
- Obtain quantities from the symbol counts on drawings.

EMT and Fittings _____



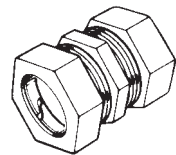
EMT and Elbows

- Use a separate pricing sheet. Head the sheet *EMT and Fittings*.
- Obtain sizes and quantities from the Feeder Schedules and Branch Circuit Worksheets.



EMT Connectors

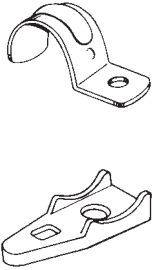
- List EMT connectors on the *EMT and Fittings* pricing sheet.
- Refer to the Scope of Work sheet for types of EMT connectors specified.
- Obtain sizes and quantities of EMT connectors from the Feeder Schedules and Branch Circuit Worksheets.



EMT Couplings

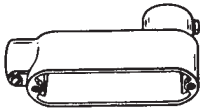
- List EMT couplings on the *EMT and Fittings* pricing sheet.
- Refer to the Scope of Work sheet for types of EMT couplings specified.
- Allow one EMT coupling for every ten feet of each size of EMT.
- Allow one EMT coupling for every EMT elbow of each size.

EMT Straps, Clamp Backs and Beam Clamps



- List straps, clamp backs and beam clamps on the *EMT and Fittings* pricing sheet.
- Refer to Construction Information on the Scope of Work sheet for the type of supports to be used.
- Provide necessary supports at required spacing for overhead and wall mounted EMT.

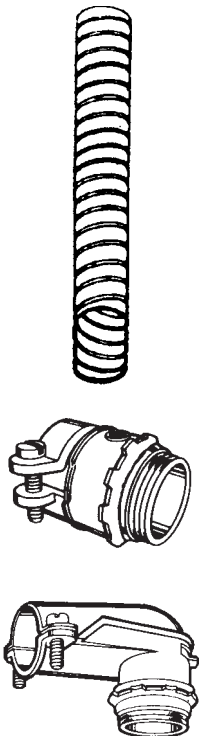
EMT Condulets



- List EMT condulets on the *EMT and Fittings* pricing sheet.
- Obtain sizes and quantities of EMT condulets from the Miscellaneous Worksheets.

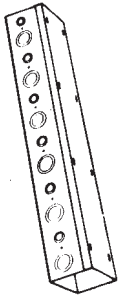
Flexible Metal Conduit and Fittings _____

Flexible Metal Conduit and Fittings



- Use a separate pricing sheet. Head the sheet *Flex Conduit and Fittings*.
- Obtain sizes and quantities from the Feeder Schedules, Miscellaneous Worksheets and Light Fixture take-off sheets.
- Allow three feet of flex conduit with one straight connector and one 90 degree connector for each motor and equipment connection.
- Allow five feet of flex conduit with one straight connector and one 90 degree connector for each transformer connection.
- Allow six feet of flex conduit with two straight connectors for each recessed fluorescent light fixture.

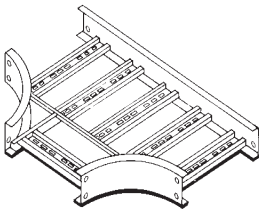
Wireways _____



Wireways

- Use a separate pricing sheet. Head the sheet *Wireways*.
- Obtain sizes and quantities of wireways from the Miscellaneous Worksheets.

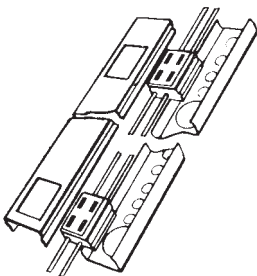
Cable Trays _____



Cable Tray and Fittings

- Cable tray and fittings were previously written up on a separate pricing sheet directly from the drawings during the take-off.

Surface Raceway _____



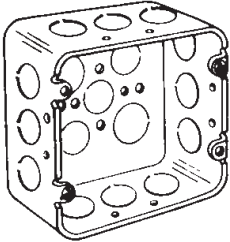
Surface Raceway

- Use a separate pricing sheet. Head the sheet *Surface Raceway*.
- Obtain sizes and quantities of surface raceway from the Branch Circuit Worksheets and Miscellaneous Worksheets.
- Obtain types and quantities of power poles from symbol counts on drawings.

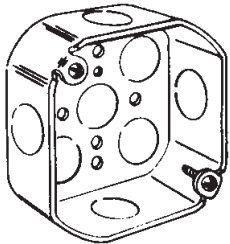
Outlet Boxes _____

Outlet Boxes

- Use a separate pricing sheet. Head the sheet *Boxes*.
- On the pricing sheet in the following order, write:



4" sq boxes
4" blank covers
1G rings
2G rings



- To obtain 4" blank covers, allow one 4" blank cover for every two recessed fluorescent light fixtures. Check the Miscellaneous Worksheet for 4" square boxes that require blank covers. Enter the total of blank covers next to **4" sq boxes** on the pricing sheet.
- To obtain 1G rings, add up all the wiring devices and special systems equipment that require 1G rings, such as switches, receptacles, phone outlets, fire alarms, etc.
- From the total quantity of 1G rings, subtract the number of devices installed under multi-gang rings. For example, a 2G ring will hold two devices, therefore, two 1G rings will not be required.

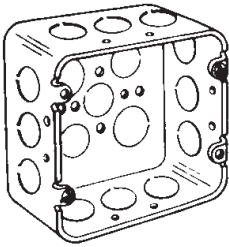
Total 1G rings	238
Total 2G rings	24
Total 3G rings	6
Total 4G rings	2

24 2G rings will hold **48** devices
6 3G rings will hold **18** devices
2 4G rings will hold **8** devices

Total number of devices installed in multi-gang rings is **74**

238 1G rings
-74 devices
164 total number of 1G rings required

- Each 4" square blank cover, 1G ring and 2G ring will have to be mounted onto a 4" square box. Add the total number of 4" blank covers, 1G rings and 2G rings to find the total of 4" square boxes required.

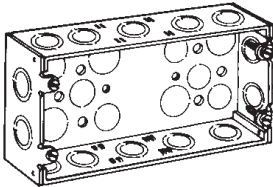


4" blank covers	67	
1G rings	164	
2G rings	24	
	<u>255</u>	4" square boxes

- Follow steps 1-7 for 4-11/16" square boxes.
- Allow either 4" octagon boxes or 4" round rings for surface or wall mounted fixtures.

Multi-Gang Outlet Boxes _____

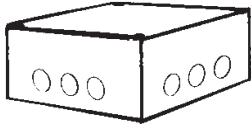
Multi-Gang Boxes



- List multi-gang boxes on the BOXES pricing sheet.
- Obtain sizes and quantities of multi-gang boxes from symbol counts on the drawings.

Pull Boxes and Equipment Cabinets _____

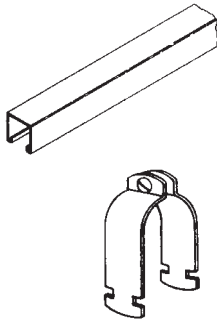
Pull Boxes and Equipment Cabinets



- Use a separate pricing sheet. Head the sheet *Pull Boxes*.
- Obtain sizes and quantities of pull boxes and equipment cabinets from the Miscellaneous Worksheets.

U-Channel _____

U-Channel



- Use a separate pricing sheet. Head the sheet *U-Channel*.
- Obtain quantities of U-Channel from the Miscellaneous Worksheets.
- Provide necessary sizes and quantities of conduit clamps for trapeze or U-Channel mounted conduits.

Miscellaneous Items _____

Use a separate pricing sheet for all miscellaneous items. Head the sheet Miscellaneous.

Wirenuts



- Add up all the boxes on the Boxes pricing sheet. Allow three wirenuts for each box.

Wiremarkers

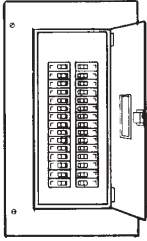
- Allow 30 wiremarkers for each panelboard, switchboard and motor control center.
- Add up all the wire terminations for special systems (fire alarm, sound, TV, etc.). Allow one wiremarker for each wire termination.

Provide the following accordingly:



- Pigtails
- Plastic Tape
- Insulation Putty
- Wire Lube
- Ductseal
- Plywood
- Spray Paint
- Name Plates
- Pitchpockets
- Cadwelds
- Tackwelds
- Fasteners
- Fixture Clips
- Meter Can
- C.T. Cabinet
- Bituminous Paint
- Fire seal Compound
- Ground Rods and Clamps
- Ground Clamps
- Wall and Floor Sleeves
- Core Drilling

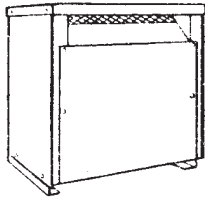
Panels, Switchboards and Motor Control Centers _____



Panels, Switchboards and Motor Control Centers

- Panels, switchboards and motor control centers were previously written up on a separate pricing sheet directly from the drawings during the take-off.

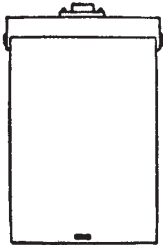
Transformers and Capacitors _____



Transformers and Capacitors

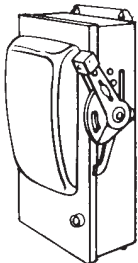
- Transformers and capacitors were previously written up on a separate pricing sheet directly from the drawings during the take-off.

Enclosed Circuit Breakers and Disconnects _____



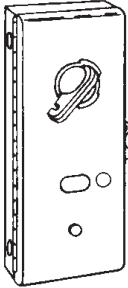
Enclosed Circuit Breakers and Disconnects

- Use a separate pricing sheet. Head the sheet *Enclosed Circuit Breakers and Disconnects*.
- Obtain sizes and quantities of breakers and disconnects from the Miscellaneous Worksheets.



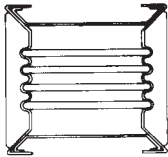
Controlling Devices _____

Controlling Devices



- Use a separate pricing sheet. Head the sheet *Controllers*.
- List starters, contractors, relays, push buttons, shunt trips, limit switches, solenoids, time clocks, photocells, etc.
- Provide thermal overload elements for starters.
- Obtain sizes and quantities from the Miscellaneous Worksheets.

Bus Duct _____



Bus Duct

- Bus Duct was previously written up on a separate pricing sheet directly from the drawings during the take-off.

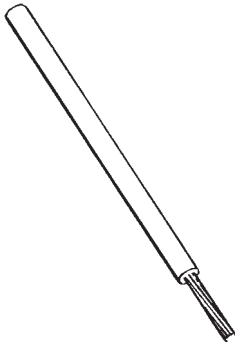
Fuses _____

Fuses



- Use a separate pricing sheet. Head the sheet *Fuses*.
- Obtain sizes and quantities of fuses from the Miscellaneous Worksheets.
- Provide spare fuses and fuse cabinet if specified.

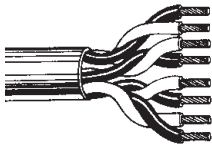
Wire _____



Wire

- Use a separate pricing sheet. Head the sheet *Wire*.
- List wire according to insulation type.
- Obtain sizes and quantities from the Feeder Schedules and Branch Circuit Worksheets.

Special Cables _____



Special Cables

- List special cables on the *Wire* pricing sheet.
- Obtain sizes and quantities of special cables from the Feeder Schedules and Branch Circuit Worksheets.

Equipment Connections _____

Equipment Connections

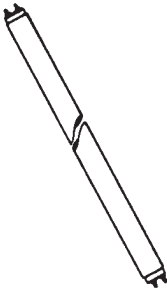
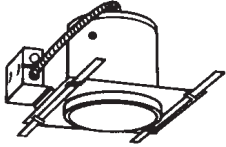
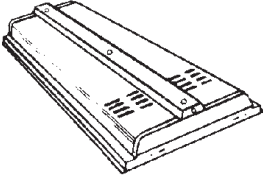
- Use a separate pricing sheet. Head the sheet *Equipment Connections*.
- List the following categories of wire terminations:

#14 - #6
#4 - #1
#1/0 - #4/0
#250 - #500

- Obtain sizes and quantities of equipment connections from the Miscellaneous Worksheets.

Light Fixtures and Lamps _____

Light Fixtures and Lamps



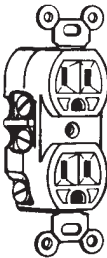
- Use a separate pricing sheet. Head the sheet *Light Fixtures and Lamps*.
- Transfer types of light fixture and quantities from the Light Fixture Worksheets to the pricing sheet.
- Obtain sizes and quantities of lamps from the Light Fixture Worksheet.

Wiring Devices and Plates _____



Wiring Devices and Plates

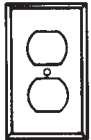
- Use a separate pricing sheet. Head the sheet *Wiring Devices*.
- Obtain types and quantities of wiring devices from the symbol count on the drawings.
- Provide plates for receptacles, special outlets and telephone outlets.
- To obtain the correct gang arrangement of switch plates, begin by listing on the price sheet the types of multi-gang switch plates that will be used:



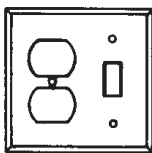
S (plates)
SS (plates)
SSS (plates)
SSSS (plates)



- Enter the quantities of multi-gang plates from the symbol count on the drawings:



S
SS 24
SSS 6
SSSS 2

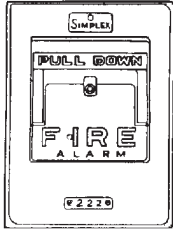


- Add up all switches that are shown from the symbol count on the drawings.
- Subtract the number of switches that will be used in multi-gang arrangements. For example, two switches will be used for a two gang plate, three switches for a three gang plate, etc. The end result will be the total number of one gang switch plates required:

Total switches	98	
SS	24	-48 switches
SSS	6	-18 switches
SSSS	2	-8 switches
Total 1G plates	24	

Fire Alarm Systems _____

Fire Alarm



- Use a separate pricing sheet. Head the sheet *Fire Alarm*.
- Obtain quantities of fire alarm equipment from the symbol count on the drawings.
- Consult the specifications for any additional fire alarm equipment not shown on the drawings.

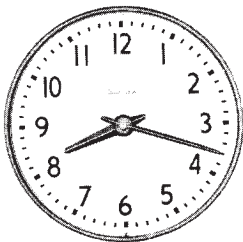
Sound Systems _____

Sound Systems

- Use a separate pricing sheet. Head the sheet *Sound Systems*.
- Obtain quantities of sound system equipment from the symbol count on the drawings.
- Consult the specifications for any additional sound system equipment not shown on the drawings.

Clock Systems _____

Clock Systems



- Use a separate pricing sheet. Head the sheet *Clock Systems*.
- Obtain quantities of clock system equipment from the symbol count on the drawings.
- Consult the specifications for any additional clock system equipment not shown on the drawings.

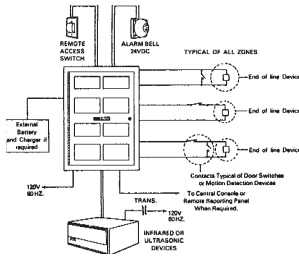
MATV _____

MATV and CCTV Systems

- Use a separate pricing sheet. Head the sheet *TV Systems*.
- Obtain quantities of TV equipment from the symbol count on the drawings.
- Consult the specifications for any additional TV equipment not shown on the drawings.

Security Systems _____

Security Systems



- Use a separate pricing sheet. Head the sheet *Security Systems*.
- Obtain quantities of security system equipment from the symbol count on the drawings.
- Consult the specifications for any additional security system equipment not shown on the drawings.

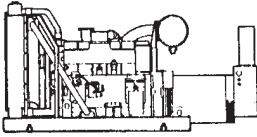
Nurse Call and Code Blue _____

Nurse Call and Code Blue

- Use a separate pricing sheet. Head the sheet *Nurse Call*.
- Obtain quantities of nurse call equipment from the symbol count on the drawings.
- Consult the specifications for any additional nurse call equipment not shown on the drawings.

Emergency Generators and Transfer Switches _____

Emergency Generators and Transfer Switches



- Use a separate pricing sheet. Head the sheet *Emergency Generators*.
- Obtain sizes and quantities of generators and transfer switches from the Miscellaneous Worksheets.
- Consult the specifications for any additional generator equipment not shown on the drawings.

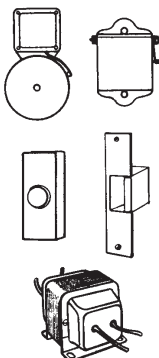
UPS Systems _____

UPS Systems

- Use a separate pricing sheet. Head the sheet *UPS Systems*.
- Obtain sizes and quantities of UPS systems from the Miscellaneous Worksheets.
- Consult the specifications for any additional UPS equipment not shown on the drawings.

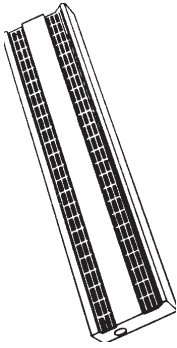
Signaling Systems _____

Signaling Systems



- Use a separate pricing sheet. Head the sheet *Signal Systems*.
- Obtain quantities of signal equipment from the symbol count on the drawings.
- Consult the specifications for any additional signal equipment not shown on the drawings.

Electric Heat _____



Electric Heat

- Use a separate pricing sheet. Head the sheet *Electric Heat*.
- Obtain sizes and quantities of electrical heating equipment from the Miscellaneous Worksheets.

Central Inverter Systems _____

Central Inverter Systems

- Use a separate pricing sheet. Head the sheet *Inverter Systems*.
- Obtain sizes and quantities of central inverter systems from the Miscellaneous Worksheets.
- Consult the specifications for any additional central inverter equipment not shown on the drawings.

Additional Special Systems _____

Special Systems

- Use a separate pricing sheet for any other special systems that may be required.

Sample Estimate

The following sample estimate illustrates the order in which materials are organized, allowing the estimate to act as a material release schedule to monitor and control the job.

If a job can be estimated, it can be organized.

If it can be organized, it can be controlled.

If it can be controlled, it can be profitable.

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

Material and Labor Distribution

Material	%	Level	Description	Labor Hours	%
13,191.73	10.1	1	Raceway Systems	1,332	55.7
27,554.36	21.1	2	Distribution Equipment	161	6.7
9,555.36	7.3	3	Wire	445	18.6
48,250.00	36.9	4	Fixtures and Lamps	393	16.4
902.51	0.7	5	Wiring Devices	38	1.6
31,371.00	24.00	6	Special Systems	20	0.8
\$130,824.80	100		Totals	2,390	100

Man-Loading and Supervision Analysis

1. Number of Man Days	298
2. Number of Work Days	74
3. Man Load	3
4. Non-working Foreman Hours	0
5. Non-working General Foreman Hours	0
6. Total Man Hours With Supervision	2,390

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

Bid Summary		Adjustments
2,390.80 Hours @ 15.25	36,459.70	_____
0.00 Foreman Hours @ 17.80	0.00	_____
0.00 General Foreman Hours @ 20.00	0.00	_____
Taxes & Insurance At 0.28	10,208.72	_____
Double Time Hours 0.00	0.00	_____
Triple Time Hours 0.00	0.00	_____
Taxes & Insurance on OT Hours	0.00	_____
Travel & Misc	0.00	_____
Sales Tax on Labor	0.00	_____
Total Labor Cost	46,668.42	_____
Material	130,824.80	_____
Sales Tax on Material	7,849.49	_____
Job Expense	8,540.00	_____
Contractor Cost	193,882.73	_____
Overhead @ 10.00%	19,388.25	_____
Cost with Overhead	223,934.51	_____
Profit @ 5.00%	10,663.53	_____
Cost with O.H. + Profit	223,934.51	_____
Bid Security % 0.22		
Allowances	0.00	_____
Sub-contracts	0.00	_____
Bond Premium 0.000	0.00	_____
Preliminary Bid Price	223,934.52	_____

Square Footage Analysis based on 48,824 Square Feet

4.58	Bid Price per Square Foot
2.84	Material Cost with Tax per Square Foot
.04	Labor Hours per Square Foot
2.32	Quoted Material per Square Foot
.51	Non-quoted Material per Square Foot

	Bid Price Submitted To	Amount
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

Recap		Material	Labor	
Page	Description	Level	Dollars	Hours
1	Galvanized Rigid Conduit	1	4,050.56	132.6
2	GRC Fittings	1	120.62	23.2
3	GRC Condulets	1	12.84	0.2
4	PVC Conduit	1	332.93	31.6
5	PVC Conduit Fittings	1	25.56	4.0
6	Site Work	1	2,090.00	33.0
7	EMT	1	2,483.57	520.4
8	EMT Fittings	1	637.38	185.2
9	Flexible Conduit	1	49.93	3.3
10	Flex Conduit Fittings	1	196.79	4.8
11	Outlet Boxes	1	427.30	121.0
12	U-Channel	1	1,740.50	86.9
13	Suspension Hangers	1	474.93	37.0
14	Miscellaneous	1	548.82	149.3
15	Loadcenters and Panels	2	11,767.35	77.8
16	Transformers	2	2,920.90	21.2
17	Safety Switches	2	2,090.90	19.5
18	Motor Controllers	2	10,740.15	34.8
19	Time Clocks and Photocells	2	34.98	8.0
20	Copper Wire 600V	3	9,060.07	422.6
21	Wire and Equipment Connections	3	0.00	12.4
22	Special Cables	3	495.17	10.1
23	Light Fixtures	4	48,250.00	393.1
24	Wiring Devices and Plates	5	902.51	38.5
25	Fire Alram	6	2,898.00	19.9
26	Security Systems	6	61.00	0.4
27	Lightning Protection	6	28,412.00	0.0
Totals			\$130,824.80	2,390.80Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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GRC Fittings

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
1-1/2" Plastic Bushing	42	E	0.05	2.10	0.10	4.20
2" Plastic Bushing	2	E	0.31	0.62	0.25	0.50
3" Plastic Bushing	2	E	0.78	1.56	0.55	1.10
1-1/4" Insulated Grounding Bushing	2	E	2.12	4.24	0.25	0.50
1-1/2" Insulated Grounding Bushing	2	E	2.33	9.32	0.30	1.20
2" Insulated Grounding Bushing	2	E	2.89	11.56	0.35	1.40
2-1/2" Insulated Grounding Bushing	2	E	5.09	10.18	0.55	1.10
3" Insulated Grounding Bushing	2	E	6.89	55.12	0.65	5.20
1/2" Locknut	92	E	0.04	3.68	0.04	3.68
1-1/2" Locknut	92	E	0.14	1.12	0.05	0.40
2-1/2" Locknut	92	E	0.45	1.80	0.06	0.24
3" Locknut	92	E	0.57	6.84	0.06	0.72
1/2" Steel Chase Nipple	8	E	0.16	1.28	0.05	0.40
1/2" Metal Conduit Penny	42	E	0.08	3.36	0.04	1.68
1-1/2" Metal Conduit Penny	4	E	0.37	1.48	0.06	0.24
2" Metal Conduit Penny	2	E	0.43	0.86	0.06	0.12
2-1/2" Metal Conduit Penny	2	E	0.59	1.18	0.07	0.14
3" Metal Conduit Penny	6	E	0.72	4.32	0.07	0.42

Total Extended

\$120.62

23.24Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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GRC Condulets

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
Cast Box GFI Cover-1G Vert	3	E	4.28	12.84	0.06	0.18

Total Extended

\$12.84

0.18Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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PVC Conduit

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
1/2" PVC Schedule 40	780	C	11.21	87.44	2.00	15.60
2" PVC Schedule 40	150	C	42.98	64.47	4.00	6.00
3" PVC Schedule 40	200	C	90.51	181.02	5.00	10.00

Total Extended

\$332.93

31.60Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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PVC Conduit Fittings

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
1/2" PVC Female Adapter	42	E	0.14	5.88	0.08	3.36
2" PVC Female Adapter	2	E	0.63	1.26	0.13	0.26
3" PVC Female Adapter	2	E	1.82	3.64	0.18	0.36
1 Quart PVC WP Cement	2	E	7.39	14.78	0.00	0.00

Total Extended

\$25.56

3.98Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Site Work

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
18"x36" Backhoe Trench	550	E	3.80	2,090.00	0.06	33.00

Total Extended

\$2,090.00

33.00Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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EMT				Material Dollars		Labor Hours
-----	--	--	--	------------------	--	-------------

Description	Quantity	Per	Price	Total	Labor	Total
1/2" EMT	15,380	C	14.12	2,171.66	3.00	461.40
3/4" EMT	1,310	C	23.81	311.91	4.50	58.95

Total Extended				\$2,483.57		520.35Hrs
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Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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EMT Fittings

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
1/2" EMT Cast Compr Conn	1,092	E	0.18	196.56	0.06	65.52
3/4" EMT Cast Compr Conn	48	E	0.30	14.40	0.06	2.88
1/2" EMT Cast Compr Coupling	1,538	E	0.25	384.50	0.07	107.66
3/4" EMT Cast Compr Coupling	131	E	0.32	41.92	0.07	9.17

Total Extended

\$637.38

185.23Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Flexible Conduit	Material Dollars	Labor Hours
------------------	------------------	-------------

Description	Quantity	Per	Price	Total	Labor	Total
1/2" Flexible Steel Conduit	39	E	0.16	6.24	0.02	0.78
3/4" Flexible Steel Conduit	6	E	0.22	1.32	0.03	0.18
1-1/4" Flexible Steel Conduit	5	E	0.60	3.00	0.04	0.20
2" Flexible Steel Conduit	10	E	1.13	11.30	0.06	0.60
3" Flexible Steel Conduit	5	E	1.69	8.45	0.09	0.45
1/2" Flex Liquid Tight Conduit	48	E	0.38	18.24	0.02	0.96
3/4" Flex Liquid Tight Conduit	3	E	0.46	1.38	0.03	0.09

Total Extended	\$49.93	3.26Hrs
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Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Outlet Boxes		Material Dollars			Labor Hours	
Description	Quantity	Per	Price	Total	Labor	Total
1/2" KO 4"x1-1/2" Oct Box	420	E	0.45	189.00	0.17	71.40
1/2" KO 4"x1-1/2" Sq Drawn Box	154	E	0.49	75.46	0.10	15.40
1/2"&3/4" KO 4"x1-1/2" Sq Dr Box	14	E	0.52	7.28	0.10	1.40
1/2"&3/4" KO 4"x1-1/2" Sq Dr Box	118	E	0.52	61.36	0.12	14.16
1/2"&3/4" KO 4"x2-1/8" Sq Box	20	E	0.75	15.00	0.10	2.00
Flat Blank 4" Sq Box Cover	74	E	0.18	13.32	0.06	4.44
5/8" Rise 4" Sq Plaster Ring	43	E	0.27	11.61	0.06	2.58
5/8" Rise 4" Sq 1G Device Ring	3	E	0.28	0.84	0.05	0.15
5/8" Rise 4" Sq 1G Device Ring	180	E	0.28	50.40	0.05	9.00
5/8" Rise 4" Sq 1G Device Ring	1	E	0.28	0.28	0.05	0.05
5/8" Rise 4" Sq 2G Device Ring	1	E	0.51	0.51	0.05	0.05
4" Sq 1-Duplex Box Cover	4	E	0.56	2.24	0.08	0.32
Total Extended				\$427.30	120.95Hrs	

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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U-Channel Material Dollars Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
Plain 12GA 1-5/8" Slotted Channel	240	E	1.27	304.80	0.08	19.20
1/2" Flat Washer	320	E	0.05	16.00	0.00	0.00
1/2" Hex Nut	320	E	0.09	28.80	0.02	6.40
1/2" Rod Beam Clamp	80	E	7.54	603.20	0.07	5.60
1/2" Threaded Rod	480	E	0.54	259.20	0.01	4.80
1/2" EMT Channel Clamp	769	E	0.53	407.57	0.05	38.45
3/4" EMT Channel Clamp	66	E	0.58	38.28	0.05	3.30
1-1/2" GRC Channel Clamp	30	E	0.91	27.30	0.08	2.40
3" GRC Channel Clamp	45	E	1.23	55.35	0.15	6.75

Total Extended \$1,740.50 86.90Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Suspension Hangers

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
Tap-on Box to Stud Clip	181	E	0.31	56.11	0.02	3.62
1/2" EMT 1/4" Beam Bottom Clip	769	E	0.50	384.50	0.04	30.76
3/4" EMT 1/4" Beam Bottom Clip	66	E	0.52	34.32	0.04	2.64

Total Extended

\$474.93

37.02Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Miscellaneous

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
4'x8' Plywood	2	E	27.15	54.30	0.80	1.60
1 Can Spray Paint	2	E	11.99	23.98	0.50	1.00
Engraved Name Plate	26	E	1.47	38.22	0.05	1.30
Engraved Name Plate	22	E	1.475	32.34	0.05	1.10
Average Fastener	192	E	0.09	17.28	0.01	1.92
Average Fastener	375	E	0.16	60.00	0.05	18.75
Lay-In Fixture Clip	276	E	0.18	49.68	0.02	5.52
Sealant	1	E	85.00	85.00	8.00	8.00
1-1/2" Hole Punching	2	E	0.00	0.00	0.50	1.00
3" Hole Punching	3	E	0.00	0.00	0.75	2.25
#12-#10 Red Wire Nut	933	E	0.08	74.64	0.00	0.00
#14-#8 Gray Wire Nut	7	E	0.16	1.12	0.00	0.00
4" Ty-Rap	40	E	0.10	4.00	0.01	0.40
1 Wire Marker	28	E	0.05	1.40	0.01	0.28
1 Wire Marker	150	E	0.05	7.50	0.01	1.50
6" #12 Pigtail	155	E	0.15	23.25	0.02	3.10
3/4"x66Ft 7Mil Electrical Tape	12	E	2.78	33.36	0.00	0.00
5 Gallon Wire Pulling Compound	1	E	36.99	36.99	0.00	0.00
Remove Fixtures	2	E	0.00	0.00	0.20	0.40
Relocate TV Camera	1	E	0.00	0.00	2.80	2.80
Raise Light Fixture	25	E	0.00	0.00	1.60	40.00
Relocate Receptacle	1	E	0.00	0.00	0.80	0.80
Relocate Speaker	3	E	0.00	0.00	1.20	3.60
Relocate Unit Heater	6	E	0.00	0.00	4.00	24.00
Relocate Exterior Fixture	6	E	0.00	0.00	1.60	9.60
Disconnect Louver	16	E	0.00	0.00	0.50	8.00
7/8" Plastic Anchor	8	E	0.03	0.24	0.06	0.48
7/8" Plastic Anchor	88	E	0.03	2.64	0.07	6.16
10-12 x 1" Fluted Screw Anchor	96	E	0.03	2.88	0.06	5.76
Total Extended				\$548.82		149.32Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Loadcenters and Panels

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
150A MCB 3 Ph 240V Panel - N1	1	E	773.00	773.00	10.00	10.00
250A MCB 3 Ph 240V Panel - N1	1	E	1,128.50	1,128.50	10.00	10.00
100A MLO 3 Ph 480V Panel - N1	2	E	486.00	972.00	8.00	16.00
400A MLO 3 Ph 480V Panel - N1	1	E	771.00	771.50	12.00	12.00
225A MCB 3 Ph 480V Panel - N1	1	E	1,346.50	1,346.50	10.00	10.00
600A MCB 3 Ph 480V Dist Panel - N1	1	E	3,229.00	3,229.00	16.00	16.00
100A-3P 480V 100A Frame S/I Brkr	1	E	284.40	284.40	0.55	0.55
225A-3P 600V 250A Frame S/I Brkr	1	E	779.85	779.85	0.70	0.70
600A-3P 600V 600A Frame H/I Brkr	1	E	2,483.10	2,483.10	2.55	2.55

Total Extended

\$11,767.35

77.80Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Transformers				Material Dollars		Labor Hours	
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Description	Quantity	Per	Price	Total	Labor	Total
45 KVA 480V-208Y/120V 3Ph Xfmr	1	E	1,208.02	1,208.02	10.20	10.20
75 KVA 480V-208Y/120V 3Ph Xfmr	1	E	1,712.96	1,712.96	11.00	11.00

Total Extended				\$2,920.98		21.20Hrs
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Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Motor Controllers	Material Dollars	Labor Hours
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Description	Quantity	Per	Price	Total	Labor	Total
#0 480V-3P Non-Fuse Combo Str-N1	6	E	369.92	2,219.52	1.50	9.00
#0 480V-3P Non-Fuse Com Str-N4/4X11		E	735.32	8,088.52	2.09	22.99
20A-4P Elec Held Contactor-N1	1	E	175.36	175.36	1.20	1.20
20A-6P Elec Held Contactor-N1	1	E	256.75	256.75	1.60	1.60

Total Extended		\$10,740.15	34.79Hrs
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Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Time Clocks and Photocells

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
Control Panel FBO/IBE	1	E	0.00	0.00	4.80	4.80
2Kw 277V Conduit Wired Photo Cell	3	E	11.66	34.98	1.05	3.15

Total Extended

\$34.98

7.95Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Copper Wire 600V

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
#12 THHN Solid Copper	370	M	41.08	15.20	4.00	1.48
#10 THHN Solid Copper	55	M	64.55	3.55	5.00	0.28
#14 THHN Stranded Copper	2,260	M	31.41	70.99	3.00	6.78
#12 THHN Stranded Copper	49,290	M	45.32	2,233.82	5.00	246.45
#10 THHN Stranded Copper	7,390	M	68.42	505.62	6.25	46.19
#8 THHN Stranded Copper	30	M	109.56	3.29	6.00	0.18
#8 THHN Stranded Copper	1,190	M	109.56	130.38	6.00	7.14
#6 THHN Stranded Copper	210	M	158.98	33.39	7.00	1.47
#4 THHN Stranded Copper	220	M	257.43	56.64	8.00	1.76
#3 THHN Stranded Copper	200	M	301.57	60.32	8.00	1.60
#2 THHN Stranded Copper	1,330	M	379.62	504.90	10.00	13.30
#1 THHN Stranded Copper	330	M	479.96	158.39	11.00	3.63
#1/0 THHN Stranded Copper	70	M	579.57	40.57	13.00	0.91
#4/0 THHN Stranded Copper	860	M	1,114.65	958.60	22.00	18.92
#250 THHN Stranded Copper	40	M	1,370.22	54.81	24.00	0.96
#350 THHN Stranded Copper	1,320	M	1,879.00	2,480.28	32.00	42.24
#500 THHN Stranded Copper	660	M	2,631.53	1,736.81	42.00	27.72
Solid Pull Wire	530	M	23.60	12.51	3.00	1.59

Total Extended

\$9,060.07

422.59Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Wire and Equipment Connections

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
(2) #14-#6 Equipment Conn	3	M	0.00	0.00	0.25	0.75
(2) #14-#6 Equipment Conn	29	M	0.00	0.00	0.40	11.60

Total Extended

\$0.00

12.35Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Special Cable

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
Speaker Cable	110	M	102.90	11.32	3.75	0.41
Telephone Cable	810	M	146.28	118.49	10.00	8.10
Fiber Optic Cable	170	M	2,103.13	357.53	7.00	1.19
RG-59/U Broadcast Cable	80	M	97.92	7.83	5.00	0.40

Total Extended

\$495.17

10.10Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Light Fixtures

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
A	112	E	0.00	0.00	1.20	134.40
A1	59	E	0.00	0.00	1.00	59.00
B	5	E	0.00	0.00	0.55	2.75
B1	66	E	0.00	0.00	0.65	42.90
B2	0	E	0.00	0.00	0.55	0.00
B3	0	E	0.00	0.00	0.65	0.00
B4	3	E	0.00	0.00	0.55	1.65
C	2	E	0.00	0.00	0.80	1.60
C1	0	E	0.00	0.00	0.70	0.00
D	8	E	0.00	0.00	1.20	9.60
F	14	E	0.00	0.00	1.40	19.60
G	78	E	0.00	0.00	1.40	109.20
Exit	13	E	0.00	0.00	0.80	10.40
Match Existing	2	E	0.00	0.00	1.00	2.00
Quote	1	E	48,250.00	48,250.00	0.00	0.00

Total Extended

\$48,250.00

393.10Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Wiring Devices and Plates

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
Duplex Gry 20A 125V Spec Recpt	115	E	4.83	555.45	0.20	23.00
SP Gry 20A Back Wired Spec Switch	30	E	4.00	120.00	0.15	4.50
SP Gry 20A Back Wired Spec Switch	1	E	4.00	4.00	0.15	0.15
3W Gry 20A Back Wired Spec Switch	2	E	4.55	9.10	0.20	0.40
SP Brn 20A Back Wired Spec Key Sw	1	E	10.25	10.25	0.15	0.15
Brown 20A Momentary Spec Switch	1	E	16.30	16.30	0.20	0.20
Gry 20A GFI Recpt no Indicator	6	E	8.95	53.70	0.20	1.20
1G Dup Recp 302 St Steel Plate	111	E	0.77	85.47	0.05	5.55
1G Switch 302 St Steel Plate	32	E	0.77	24.64	0.06	1.92
2G Switch 302 St Steel Plate	1	E	1.54	1.54	0.08	0.08
1G Phone 302 St Steel Plate	20	E	0.95	19.00	0.06	1.20
1G 302 St Steel DECORA Plate	3	E	1.02	3.06	0.06	0.18

Total Extended

\$902.51

38.53Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Security Systems

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
Security System Door Opener	1	E	61.00	61.00	0.45	0.45

Total Extended

\$61.00

0.45Hrs

Job Name: Coleman Armory
Bid Date: Feb. 11, 2018
Bid Item: Base Bid

Location: Coleman, FL
Type Job: Armory
File Name: 200205

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Lightning Protection

Material Dollars

Labor Hours

Description	Quantity	Per	Price	Total	Labor	Total
Lightning Protection	1	E	28,412.00	28,412.00	0.00	0.00

Total Extended

\$28,412.00

0.00Hrs

Quantum Estimating Software

The estimators at Electrical Resources use Quantum daily to quickly price and labor estimates for contractors around the country.

Quantum integrates our estimating software with job management features such as request for quote, purchase orders, stock orders, change orders, and time and material billing - all in one, easy-to-use package.

It includes our 60,000-item database featuring the most accurate price and labor units in the industry, 9,000 pre-built assemblies, monthly updates, unlimited technical support and free program upgrades.

Quantity	Manufacturer	Catalog No.	Description	UOM	Cost	Est. Cost	Labor	Est. Labor	Phase/Area	Cost Center
21			Light Fixtures	E	\$0.00	\$0.00	1.00	21.00		
6			Light Fixtures	E	\$0.00	\$0.00	0.75	4.50		
6			Switch	E	\$0.00	\$0.00	0.00	0.00		
6			Panel	E	\$0.41	\$0.00	0.00	0.00		
6			Panel	E	\$0.21	\$0.00	0.00	0.00		
6			Panel	E	\$0.19	\$0.00	0.00	0.00		
6			Panel	E	\$0.07	\$0.00	0.00	0.00		
6			Panel	E	\$0.00	\$0.00	0.75	4.50		
6			Panel	E	\$0.00	\$0.00	0.00	0.00		
6			Panel	E	\$0.41	\$0.00	0.00	0.00		
6			Panel	E	\$0.21	\$1.26	0.00	0.00		
12			Panel	E	\$0.19	\$2.28	0.00	0.00		
12			Panel	E	\$0.07	\$0.84	0.00	0.00		
36			Panel	E	\$0.07	\$2.52	0.00	0.00		
					Total	\$1,088.41		94.50		

Quantity	Category	Sub-Category	Description	Cost	Est. Cost	Labor	Est. Labor	Phase/Area	Cost Center
0	Headphones	AV Sub-Grp	AV Sub-Grp	\$59.81	\$0.00	0.00	0.00		
0	Headphones	Desk Sub-Grp	Desk Sub-Grp	\$5.41	\$0.00	0.00	0.00		
0	Headphones	On 4 Box with Recess Cover	Double Duplex Ports	\$4.66	\$0.00	0.00	0.00		
6	Headphones	On 4 Box with Recess Cover	UPS Filter	\$33.15	\$0.00	0.00	0.00		
21	Headphones	On 4 Box with Recess Cover	Switch	\$5.70	\$12.30	0.00	0.00		
0	Headphones	On 4 Box with Recess Cover	13 Jury	\$6.41	\$0.00	0.00	0.00		
36	Headphones	On 4 Box with Recess Cover	Double Inlet	\$3.11	\$94.50	0.00	0.00		
0	Headphones	2-127776-01	Feeder	\$22.00	\$0.00	0.00	0.00		

Use Quantum to create estimates, POs, stock orders, change orders and T&M Billing.

Price Updating Service

If you currently estimate with Accubid, BHS, Cobra, ConEst, Deneb, Estimation, Estmat, Excel, Forefront, Jade, McCormick, Sirius, Timberline, TRF Certom or any other estimating and billing systems, Electrical Resources can provide you with the most realistic prices available.

Unlike other price services, our updates are realistic contractor-level buy prices - providing information you can use to create accurate estimates every time. Don't take chances with your estimates - rely on Electrical Resources' 42 years of electrical estimating experience.



National Electrical Price Guide

National Electrical Price Guide™ Online

Now you can have access to 30,000 individual price and labored items and 9,000 assemblies in seconds on your desktop, tablet and smart phone with the NEPG online. We continually update prices as they change and included for your Windows 10 devices is our EPS + Software that can link to your estimating software to update your material prices in your estimating program.

Indexed, tabbed and fully illustrated, the NEPG online arranges materials in the same manner jobs are built. Creating an estimate using the NEPG results in more than just a bid price; it allows the estimate to act as a schedule in purchasing, releasing and installing the materials.

Monthly updates keep pace with price changes, and comparative listings even give you a choice of manufacturers.

Our EPS + links to Jaffe, Timberline/Masterbuilder, Estimation, Mc2, Deneb, Forefront, Conest, Accubid, BHS, Estmat 2000,

*Creating an estimate using the NEPG Online results in more than just a bid price;
it allows the estimate to act as a schedule in purchasing, releasing and installing the materials.*



Professional Estimating

For the past 42 years, *Electrical Resources, Inc.* has quietly helped contractors grow and become profitable by using our professional estimating service. Why? Because you only pay us when you use us. We are not a full-time overhead expense.

All estimates are prepared on a first-come, first-served basis. No copies are made or sold, and all work is confidential.

Quoted items are priced but must be adjusted against final supplier quotes. The balance of materials is priced at a realistic buy-level. All labor is in productive man-hours only. Supervision or nonworking foremen must be added to total estimated labor hours.

The estimate is arranged in the same order that materials are to be purchased, released and installed. The top Distribution of Material sheet is checked against our model jobs to ensure the accuracy of the estimate.

For further information regarding our service, please call our estimating department at 321-385-3005.

Electrical Estimating Fee Schedule

Bid Range		Fee
\$0	- \$25,000	\$375
25,000	- 50,000	475
50,000	- 100,000	725
100,000	- 200,000	850
200,000	- 300,000	975
300,000	- 400,000	1,250
400,000	- 500,000	1,650
500,000	- 750,000	1,975
750,000	- 1,000,000	2,350
1,000,000	- 1,500,000	2,750
1,500,000	- 2,000,000	3,675
2,000,000	- 2,500,000	4,575
2,500,000	- 3,000,000	4,950
3,000,000	- 3,500,000	5,875
3,500,000	- 4,000,000	6,950
4,000,000	- 4,500,000	7,750
4,500,000	- 5,000,000	8,850
5,000,000 and Up		Call for fee

Conditions

Adequate time must be reserved for each estimate. Estimates sent on short notice that require work after normal hours, weekends or holidays will be billed accordingly above the published fees.

A 50 percent deposit is required with each set of plans and specifications. **The estimate and plans will be returned C.O.D.**

Each bid item that requires an estimate (base bid, alternate, break-outs) will be billed per the fee schedule.

Equipment and materials by others that require counts and measurements for installation by *Electrical Contractor* will be given a value, but not added to the bid price. The estimate will then be billed per the fee schedule.

Addenda received while the estimate is in progress, or after the estimate is completed, will be processed and billed at the rate of \$85 an hour.

The client is responsible for obtaining all quotes required, reviewing the job conditions and reviewing all material prices and labor units.

Estimating Forms

Copy and use these forms to help create your estimates:

Scope of Work

Feeder Schedule

Distribution of Material

Miscellaneous Items

Worksheet

