

# CM 352 – Electrical Construction Estimating

## Accubid Activity #6

### Accubid Office Building - SYS 04 Feeder Takeoff

#### Procedure:

1. Prepare the SYS 04 FEEDER TAKEOFF SHEET and measure and record the length of each Feeder shown on drawing E5.1 ELECTRICAL ONE-LINE DIAGRAM.
2. Start Accubid and open the Job: Accubid Office Building – *your initials*
3. Turn on the CAPS Lock

#### Accubid Takeoff Screen

The first Feeder to Take Off will be the 3x4" PVC PRIMARY SERVICE TO XFMR (Utility Company's Primary Service Entrance Feeders).

4. Make the following changes to the Takeoff Screen:

#### Takeoff

Takeoff: FEEDER CONDUIT AND WIRE

#### Breakdown

DRAWING: E5.1 ELECTRICAL ONE LINE DIAGRAM

PHASE: SITE

SYSTEM: 04 FEEDERS

Lb FACTOR: TRENCH 4 RUNS

Place a check in all of the Breakdown filter boxes as shown.

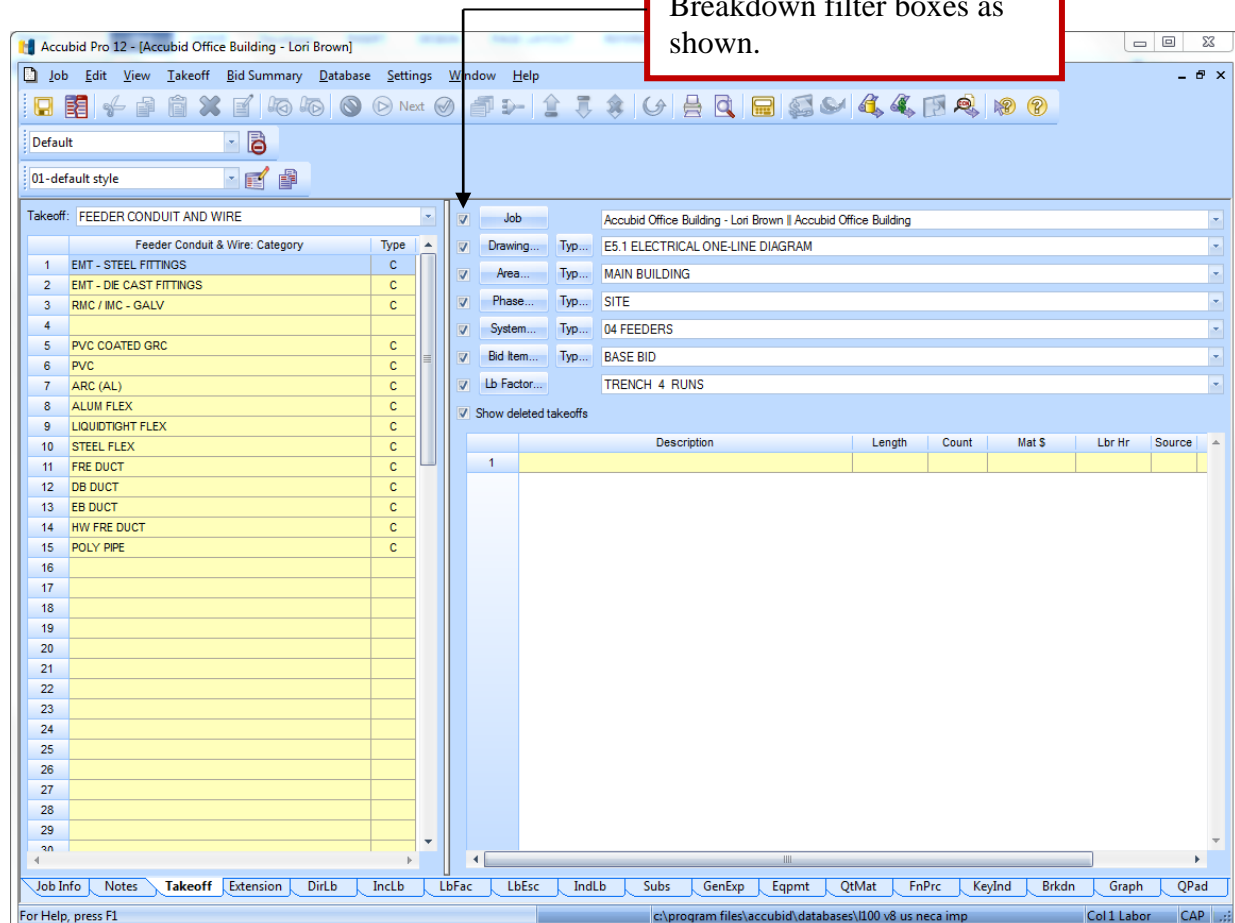


Fig. 1

5. In the Takeoff: FEEDER CONDUIT AND WIRE Window Double click on:

[Line 6] PVC

[Line 10] 4" PVC (TRENCH)

6. In the Create/Modify Takeoff Description box enter: 3x4" PVC PRIMARY SERVICE TO XFMR and click OK

7. Complete steps 1-4 shown in Fig. 3

**1** Change the Item Description

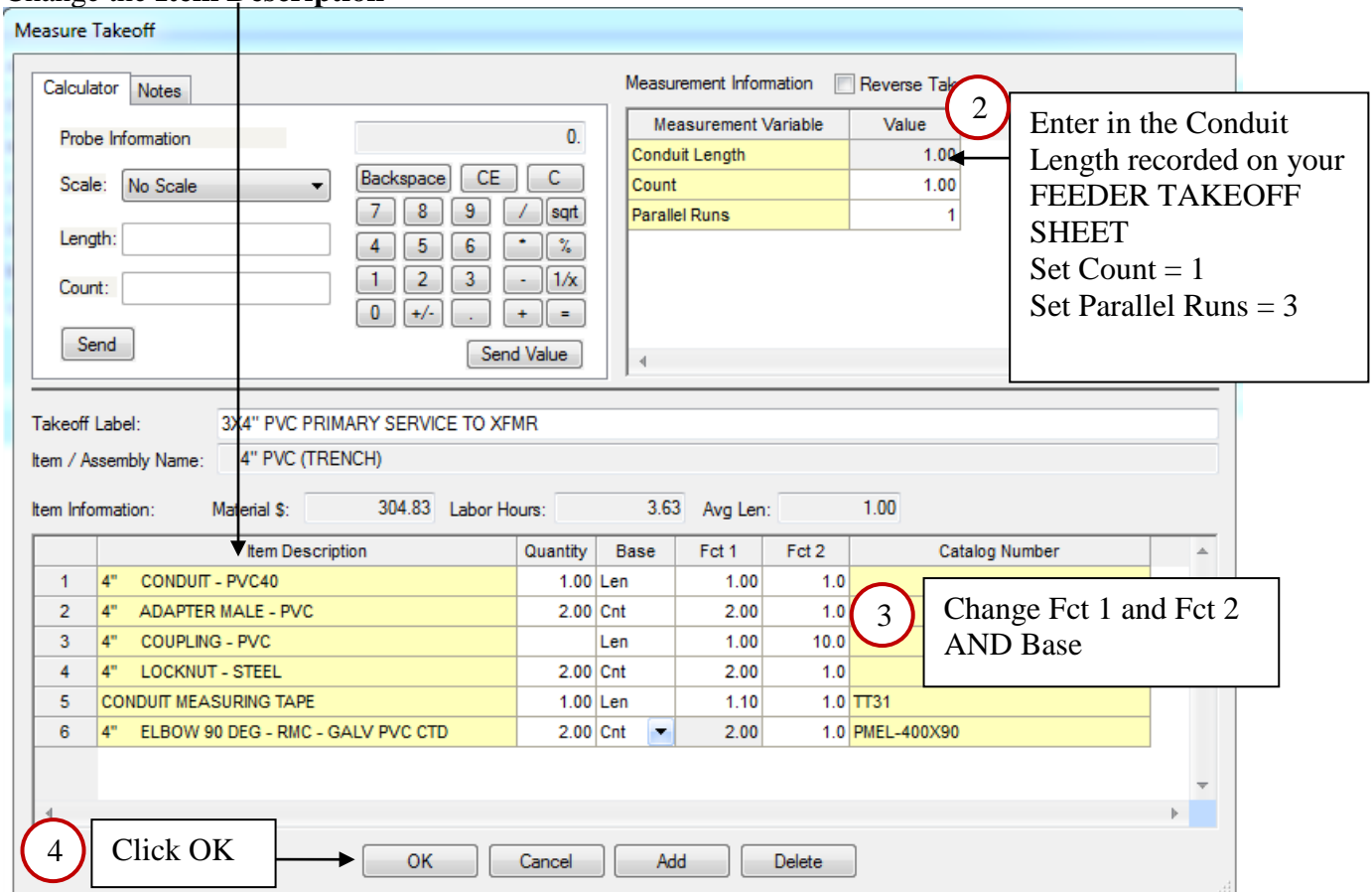


Fig. 3

The Takeoff window now displays:  
Takeoff: FEEDER CONDUIT FITTINGS

8. Double click:

[Line 2] 4" ADAPTER FEM – PVC

In the Measure Takeoff window change:

Count 2

# runs to fill 3

Click on OK

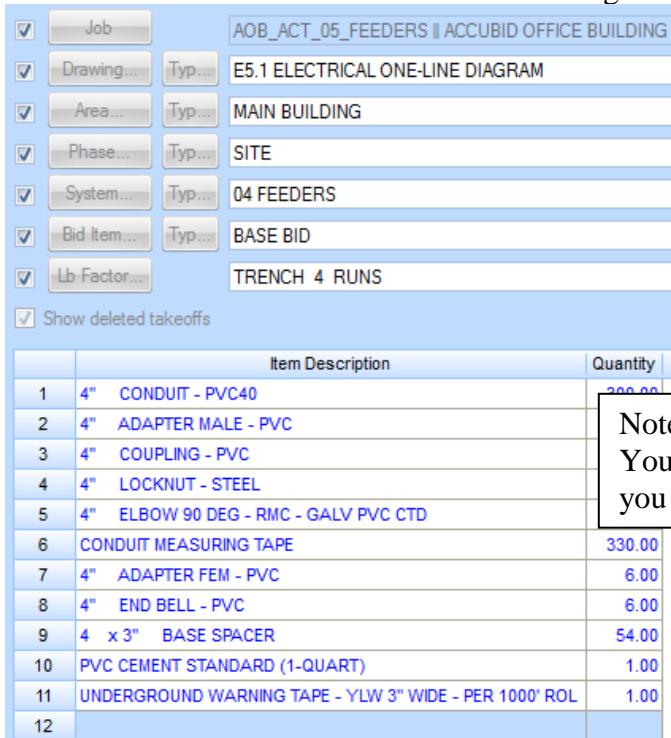
9. Double click:  
 [Line 8] 4" END BELL – PVC  
 In the Measure Takeoff window change:  
 Count 2  
 # runs to fill 3  
 Click on OK

10. Double click:  
 [Line 41] BASE SPACERS (see Ductbank detail E6.2)  
 In the Measure Takeoff window change:  
 Count 18  
 # runs to fill 3  
 Click on OK

11. Take off the items shown below from the Takeoff: ITEM DATABASE

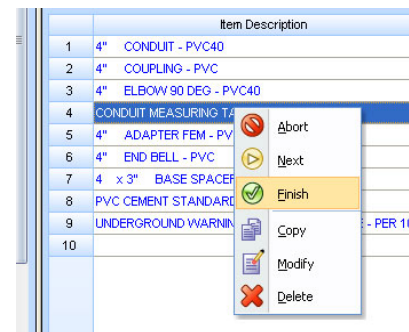
<u>Item</u>	<u>Qty</u>	<u>Traverse Code</u>
PVC CEMENT STANDARD (1-QUART)	1.00	1 – 16 – 19 – 3
UNDERGROUND WARNING TAPE - YLW 3" WIDE - PER 1000' ROLL	1.00	4 – 11 – 1– 14

Your Takeoff should now contain the following items:



Note:  
 Your quantities will depend on what you entered for the feeder's length.

Fig. 4



12. Right Click in the Item Description area and select Finish

13. On the Feeder Take Off Sheet Place a **Red Pencil Line** through the LFT/T/90° for this feeder to indicate it has been added to the estimate.

To takeoff the Building Service Entrance, copy the 3x4" PVC PRIMARY SERVICE TO XFMR takeoff to your estimate and modify it as follows:

14. In the Audit Trail Description box right click on 3x4" PVC PRIMARY SERVICE TO XFMR and select Copy.
15. Right Click in the Audit Trail Description box empty line and select Paste.
16. Click OK to retain all settings.
17. Right Click on the pasted takeoff and click Change Breakdown. Change the Lb FACTOR breakdown label to:  
**Breakdown**  
 Lb FACTOR: TRENCH 6 RUNS  
 Note: All other Breakdown labels will remain the same
18. In the Breakdown screen area change the Lb FACTOR breakdown label to: TRENCH 6 RUNS
19. Right Click on the 3x4" PVC PRIMARY SERVICE TO XFMR takeoff and select Modify.
20. Double Click: [Line 1] 4" CONDUIT - PVC40 and make the following changes:

**Measurement Information**

Measurement Variable	Value
Conduit Length	1
Count	1.00
Parallel Runs	5

**Item Information:** Material \$: 4033.39 Labor Hours: 44.56 Avg Len: 75.00

	Item Description	Quantity	Base	Fct 1	Fct 2	Catalog Number
1	4" CONDUIT - PVC40	375.00	Len	1.00	1.0	
2	4" ADAPTER MALE - PVC	10.00	Cnt	2.00	1.0	
3	4" COUPLING - PVC	38.00	Len	1.00	10.0	
4	4" LOCKNUT - STEEL	10.00	Cnt	2.00	1.0	
5	4" ELBOW 90 DEG - RMC - GALV PVC CTD	10.00	Cnt	2.00	1.0	PMEL-400X90
6	CONDUIT MEASURING TAPE	413.00	Len	1.10	1.0	TT31

Fig. 5

21. Double click on the following items in the Item Description and change the # of runs to fill to 5:  
 4" ADAPTER FEM - PVC  
 4" END BELL - PVC
22. Change the BASE SPACERS quantity to Count = 8 and # of runs to fill to 5
23. Delete the following items:  
 PVC CEMENT STANDARD (1-QUART)  
 UNDERGROUND WARNING TAPE - YLW 3" WIDE - PER 1000' ROL

24. Add the following items:

Takeoff: FEEDER CONDUIT FITTINGS  
[Line 42] 4 x 3" INTERMEDIATE SPACER

In the Measure Takeoff window change:

Count 6

# runs to fill 5

Click on OK

Takeoff: FEEDER WIRE

[Line 1] THHN WIRE

[Line 22] #600 THHN BLACK

25. Edit the Measure Takeoff window as shown:

The screenshot shows the 'Measure Takeoff' window. At the top left is a calculator with a numeric keypad and buttons for 'Send' and 'Send Value'. The 'Measurement Information' table is highlighted in yellow and has a red circle around the '1' in the 'Value' column. Below the calculator is a 'Takeoff Label' field containing '5x4" PVC XFMR TO MDB' and an 'Item / Assembly Name' field containing '4" PVC (TRENCH)'. Below that is an 'Item Information' section with fields for 'Material \$: 23303.20', 'Labor Hours: 61.06', and 'Avg Len: 75.00'. A table below shows item details:

	Item Description	Quantity	Base	Fct 1	Fct 2	Catalog Number
1	#600 THHN BLACK	1800.00	Len	1.00	1.0	THHN-600-BLK-61STR-CU-500

At the bottom, there are buttons for 'OK', 'Cancel', 'Add', and 'Delete'. A red circle around the number '2' points to the 'Click OK' text, which has an arrow pointing to the 'OK' button. A separate text box on the right contains the following instructions:

If necessary enter in the Conduit Length recorded on your FEEDER TAKEOFF SHEET  
# conductors = 4  
# runs to fill = 5  
Wire makeup length = 15 ft

Fig. 6

SEE NEXT PAGE

<input checked="" type="checkbox"/>	Job	AOB_ACT_05_FEEDERS II ACCUBID OFFICE BUILDING
<input checked="" type="checkbox"/>	Drawing...	Typ... E5.1 ELECTRICAL ONE-LINE DIAGRAM
<input checked="" type="checkbox"/>	Area...	Typ... MAIN BUILDING
<input checked="" type="checkbox"/>	Phase...	Typ... SITE
<input checked="" type="checkbox"/>	System...	Typ... 04 FEEDERS
<input checked="" type="checkbox"/>	Bid Item...	Typ... BASE BID
<input checked="" type="checkbox"/>	Lb Factor...	TRENCH 6 RUNS
<input checked="" type="checkbox"/>	Show deleted takeoffs	
	Item Description	Quantity
1	4" CONDUIT - PVC40	375.00
2	4" ADAPTER MALE - PVC	10.00
3	4" COUPLING - PVC	38.00
4	4" LOCKNUT - STEEL	10.00
5	4" ELBOW 90 DEG - RMC - GALV PVC CTD	10.00
6	CONDUIT MEASURING TAPE	413.00
7	4" ADAPTER FEM - PVC	10.00
8	4" END BELL - PVC	10.00
9	4 x 3" BASE SPACER	40.00
10	PVC CEMENT STANDARD (1 QUART)	1.00
11	UNDERGROUND WARNING TAPE - YLW 3" WIDE PER 1000' ROL	1.00
12	4 x 3" INTERMEDIATE SPACER	30.00
13	#600 THHN BLACK	1,800.00
14		

26. To complete takeoff, Right Click in the Item Description area and select Finish

27. Right click in the Takeoff area to go back to Level 1: Feeder Conduit & Wire: Category

28. Continue taking off the Feeders as shown on Pages 7 - 15

## Takeoff

Takeoff: FEEDER CONDUIT AND WIRE

## Breakdown

DRAWING: E5.1 ELECTRICAL ONE LINE DIAGRAM  
PHASE: BASEMENT  
SYSTEM: 04 FEEDERS  
Lb FACTOR: STANDARD

In the Takeoff Window Double click on:

[Line 1] EMT – STEEL FITTINGS  
[Line 6] 2" EMT - STEEL SS  
[Line 6] 2" EMT STRUT MOUNT

In the Create/Modify Takeoff Description box enter: 2" EMT MDB TO TVSS 4#2, #1G  
And click OK

1 Edit the Measure Takeoff window as shown:

The screenshot shows the 'Measure Takeoff' window. At the top right, the 'Measurement Information' table is highlighted with a red circle 2. Below it, a text box explains the values. At the bottom left, a red circle 3 points to the 'OK' button. At the bottom right, another red circle 3 points to the 'Fct 1' and 'Fct 2' columns in the item list table.

Measurement Variable	Value
Conduit Length	10.00
Count	1.00
Parallel Runs	1

Enter in the Conduit Length recorded on your FEEDER TAKEOFF SHEET  
Count = 1  
Parallel Runs = 1

Item	Description	Quantity	Base	Fct 1	Fct 2	Catalog Number
1	2" CONDUIT - EMT	10.00	Len	1.00	1.0	
2	2" COUPLING SS STL - EMT	1.00	Len	1.00	10.0	
3	2" CONN SS STL - EMT	2.00	Cnt	2.00	1.0	
4	2" BUSHING - PLASTIC	2.00	Cnt	2.00	1.0	
5	2" 1-PC CONDUIT STRUT CLAMP - PLTD	1.00	Len	1.00	9.8	B1079-2

3 Click OK

3 If necessary, Change Fct 1 and Fct 2 AND Base

Fig. 7

In the Toolbar click the **Next Step** button 

Add the FEEDER WIRE (HOT AND NEUTRAL CONDUCTORS)

[Line 1] THHN

[Line 11] #2 THHN BLACK

Edit the Measure Takeoff window as shown:

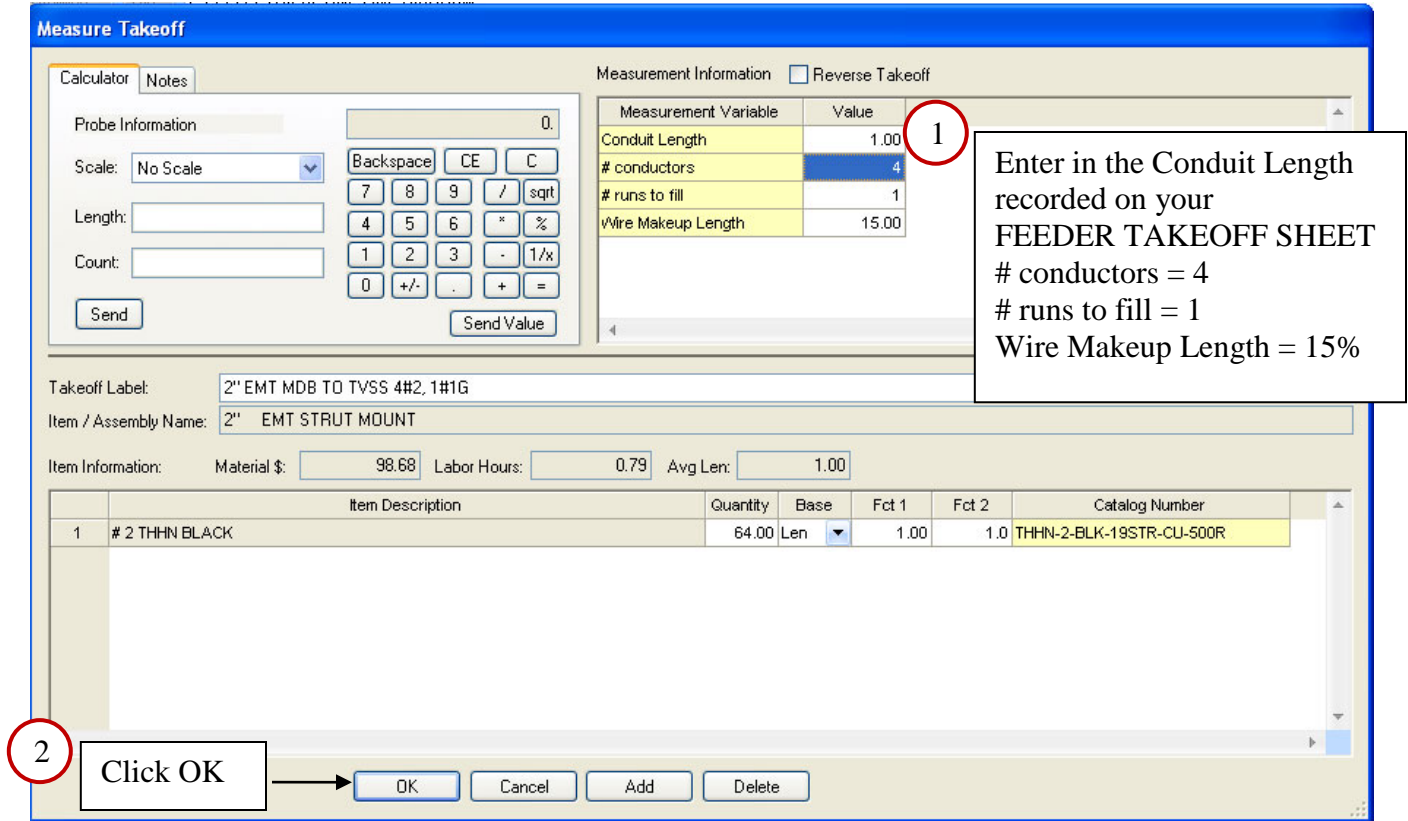


Fig. 8

Add the FEEDER WIRE (GROUND CONDUCTOR)

Double Click on:

[Line 36] #2 THHN GREEN

Change the # of conductors to 1 and click OK

To complete the takeoff right click and select Finish.

**Right Click in the Takeoff window to go back to Level 1 and continue the FEEDER Takeoff for this Breakdown.**



**FEEDER: 1 1/4" EMT MDB TO PNL HB1 4#3, #8G**

**Conduit**

**Measurement Information**  Reverse Takeoff

Measurement Variable	Value
Conduit Length	1.00
Count	1.00
Parallel Runs	1

Takeoff Label: 1 1/4" EMT MDB TO PNL HB1 4#3, #8G  
 Item / Assembly Name: 1 1/4" EMT STRUT MOUNT  
 Item Information: Material \$: 44.19 Labor Hours: 1.23 Avg Len: 1.00

	Item Description	Quantity	Base	Fct 1	Fct 2	Catalog Number
1	1 1/4" CONDUIT - EMT	1.00	Len	1.00	1.0	
2	1 1/4" COUPLING SS STL - EMT		Len	1.00	10.0	
3	1 1/4" CONN SS STL - EMT	2.00	Cnt	2.00	1.0	
4	1 1/4" EMT & 1" RMC 1-PC STRUT CLAMP - PLTD		Len	1.00	9.8	B1076-1-1/4EMT
5	1 1/4" ELBOW 90 DEG - EMT	3.00	Crt	3.00	1.0	

Fig. 9

**Wire**

- (4) #3 THHN BLACK
- (1) #8 THHN GREEN

**FEEDER: 4" EMT MDB TO PNL H1 4#500 KCMIL, 1#3G**

**Conduit**

**Measurement Information**  Reverse Takeoff

Measurement Variable	Value
Conduit Length	1.00
Count	1.00
Parallel Runs	1

Takeoff Label: 4" EMT MDB TO PNL H1 4#500 KCMIL, 1#3G  
 Item / Assembly Name: 4" EMT STRUT MOUNT  
 Item Information: Material \$: 446.82 Labor Hours: 2.41 Avg Len: 1.00

	Item Description	Quantity	Base	Fct 1	Fct 2	Catalog Number
1	4" CONDUIT - EMT	1.00	Len	1.00	1.0	
2	4" COUPLING SS STL - EMT		Len	1.00	10.0	
3	4" CONN SS STL - EMT	2.00	Cnt	2.00	1.0	
4	4" ELBOW 90 DEG - EMT	2.00	Abs	2.00	1.0	
5	4" COUPLING SS STL - EMT	2.00	Abs	2.00	1.0	
6	4" 1-PC CONDUIT STRUT CLAMP - PLTD		Len	1.00	9.8	B1084-4

Fig. 10

**Wire**

- (4) #500 THHN BLACK
- (1) #3 THHN GREEN

FEEDER: 2 1/2" EMT MDB TO PNL H2 4#4/0, 1#4G

Conduit

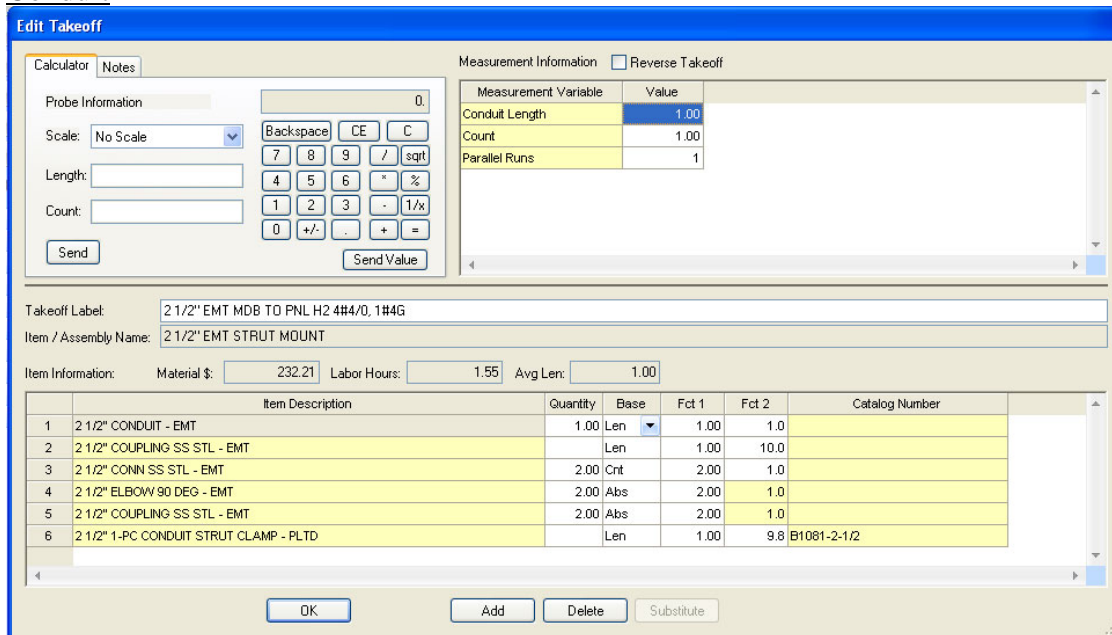


Fig. 11

Wire

(4) #4/0 THHN BLACK

(1) #4 THHN GREEN

Copy and paste the 2 1/2" EMT MDB TO PNL H2 4#4/0, 1#4G takeoff into the audit trail.

Rename the Takeoff Label to 2 1/2" EMT MDB TO PNL H3 4#4/0, 1#4G and change the conduit length to the length recorded on your FEEDER TAKE OFF SHEET.

Be sure to **Finish** the Takeoff.

Copy and paste the 2 1/2" EMT MDB TO PNL H2 4#4/0, 1#4G takeoff into the audit trail.

Rename the Takeoff Label to 2 1/2" EMT MDB TO PNL H4 4#4/0, 1#4G and change the conduit length to the length recorded on your FEEDER TAKE OFF SHEET.

Be sure to **Finish** the Takeoff.

**Change the Breakdown as follows:**

**Breakdown**

DRAWING: E5.1 ELECTRICAL ONE LINE DIAGRAM

PHASE: FIRST FLOOR

SYSTEM: 04 FEEDERS

Lb FACTOR: STANDARD

**Continue the FEEDER Takeoff for this Breakdown (next page).**

## FEEDER: 1 1/2" LT FLEX PNL H1 TO TL1 PRIMARY

### Conduit

**Calculator** | Notes

Probe Information: 0.

Scale: No Scale

Length:

Count:

Buttons: Backspace, CE, C, 7-9, /, sqrt, 4-6, \*, %, 1-3, -, 1/x, 0, +/-, ., +, =

Measurement Information  Reverse Takeoff

Measurement Variable	Value
Conduit Length	5.00
Count	1.00
Parallel Runs	1

Takeoff Label: 1 1/2" LT FLEX PNL H1 TO TL1 PRIMARY

Item / Assembly Name: 1 1/2" LT FLEX

Item Information: Material \$: 45.94 Labor Hours: 1.19 Avg Len: 5.00

	Item Description	Quantity	Base	Fct 1	Fct 2	Catalog Number
1	1 1/2" FLEX - LIQUIDTIGHT METALLIC - GRAY	5.00	Len	1.00	1.0	
2	1 1/2" CONN STRAIGHT - LIQUIDTIGHT DIECAST	2.00	Cnt	2.00	1.0	
3	1 1/2" 2-H STRAP - RMC - STEEL	1.00	Len	1.00	4.5	
4	#10x1 FH SELF-TAP SCREW	2.00	Len	2.00	4.5	

Buttons: OK, Add, Delete, Substitute

Fig. 12

### Wire

(3) #2 THHN BLACK

(1) #8 THHN GREEN

## FEEDER: 2 1/2" LT FLEX TL1 TO PNL L1 SECONDARY

### Conduit

**Calculator** | Notes

Probe Information: 0.

Scale: No Scale

Length:

Count:

Buttons: Backspace, CE, C, 7-9, /, sqrt, 4-6, \*, %, 1-3, -, 1/x, 0, +/-, ., +, =

Measurement Information  Reverse Takeoff

Measurement Variable	Value
Conduit Length	5.00
Count	1.00
Parallel Runs	1

Takeoff Label: 2 1/2" LT FLEX TL1 TO PNL L1 SECONDARY

Item / Assembly Name: 2 1/2" LT FLEX

Item Information: Material \$: 285.44 Labor Hours: 1.68 Avg Len: 5.00

	Item Description	Quantity	Base	Fct 1	Fct 2	Catalog Number
1	2 1/2" FLEX - LIQUIDTIGHT METALLIC - GRAY	5.00	Len	1.00	1.0	
2	2 1/2" CONN STRAIGHT - LIQUIDTIGHT DIECAST	2.00	Cnt	2.00	1.0	
3	2 1/2" 2-PC STRUT CLAMP RMC / IMC - STEEL	1.00	Len	1.00	4.5	B2014-2-1/2

Buttons: OK, Add, Delete, Substitute

Fig. 13

### Wire

(4) #4/0 THHN BLACK

(1) #4 THHN GREEN

Change the Breakdown as follows:

**Breakdown**

DRAWING: E5.1 ELECTRICAL ONE LINE DIAGRAM  
 PHASE: Typical FLOORS 2-4  
 SYSTEM: 04 FEEDERS  
 Lb FACTOR: STANDARD

FEEDER: 1 1/4" LT FLEX PNL HT TO TLT PRIMARY

Conduit

Measurement Information  Reverse Takeoff

Measurement Variable	Value
Conduit Length	5.00
Count	1.00
Parallel Runs	1

Takeoff Label: 1 1/4" LT FLEX PNL HT TO TLT PRIMARY  
 Item / Assembly Name: 1 1/4" LT FLEX

Item Information: Material \$: 35.89 Labor Hours: 0.98 Avg Len: 5.00

Item Description	Quantity	Base	Fct 1	Fct 2	Catalog Number
1 1 1/4" FLEX - LIQUIDTIGHT METALLIC - GRAY	5.00	Len	1.00	1.0	
1 1/4" CONN STRAIGHT - LIQUIDTIGHT DIECAST	2.00	Cnt	2.00	1.0	
1 1/4" 2-H STRAP - EMT - STEEL	1.00	Len	1.00	4.5	
#10x 1 FH SELF-TAP SCREW	2.00	Len	2.00	4.5	

Fig. 14

Wire

- (3) #4 THHN BLACK
- (1) #8 THHN GREEN

FEEDER: 2" LT FLEX TLT TO LT SECONDARY

Conduit

Measurement Information  Reverse Takeoff

Measurement Variable	Value
Conduit Length	5.00
Count	1.00
Parallel Runs	1

Takeoff Label: 2" LT FLEX TLT TO LT SECONDARY  
 Item / Assembly Name: 2" LT FLEX

Item Information: Material \$: 72.55 Labor Hours: 1.55 Avg Len: 5.00

Item Description	Quantity	Base	Fct 1	Fct 2	Catalog Number
2" FLEX - LIQUIDTIGHT METALLIC - GRAY	5.00	Len	1.00	1.0	
2" CONN STRAIGHT - LIQUIDTIGHT DIECAST	2.00	Cnt	2.00	1.0	
2" 2-H STRAP - EMT - STEEL	1.00	Len	1.00	4.5	
#10x 1 FH SELF-TAP SCREW	2.00	Len	2.00	4.5	

Fig. 15

Wire

(4) #1/0 THHN BLACK

(1) #6 THHN GREEN

29. Modify the following takeoffs:

**Breakdown**

DRAWING: E5.1 ELECTRICAL ONE LINE DIAGRAM

PHASE: SITE

SYSTEM: 04 FEEDERS

Lb FACTOR: TRENCH 4-RUNS

3x4" PVC PRIMARY SERVICE TO XFMR

Add a 1/4" POLYROPE (M) (1 per conduit + 15%)

**Breakdown**

DRAWING: E5.1 ELECTRICAL ONE LINE DIAGRAM

PHASE: SITE

SYSTEM: 04 FEEDERS

Lb FACTOR: TRENCH 6-RUNS

5x4" PVC XFMR TO MDB

Add a 1/4" POLYROPE (M) (1 per conduit + 15%)

Add (5) 4" DIAM CORE 6" THICK WALL

Add (5) 4" Sleeve and Seal

**Breakdown**

DRAWING: E5.1 ELECTRICAL ONE LINE DIAGRAM

PHASE: BASEMENT

SYSTEM: 04 FEEDERS

Lb FACTOR: STANDARD

4" EMT MDB TO PNL H1 4#500 KCMIL, 1#3G

Add a 4" Sleeve and Seal

2 1/2" EMT MDB TO PNL H2 4#4/0, 1#4G

Add a 2 1/2 " Sleeve and Seal

2 1/2" EMT MDB TO PNL H3 4#4/0, 1#4G

Add a 2 1/2 " Sleeve and Seal

2 1/2" EMT MDB TO PNL H4 4#4/0, 1#4G

Add a 2 1/2 " Sleeve and Seal

30. SAVE your estimate!

31. Don't forget to COLOR YOUR PLANS and RED LINE the feeder take off sheet!