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vertical, either up or down. When you finish all the runs of one color, write down the total measurement and add to it the vertical distances as well. This will give you the proper total for this combination of raceway and wire. The correct vertical distances for each project can be calculated by looking at the wall cross sections on the architectural plans and the outlet mounting heights shown on the electrical plans.

After you finish taking off every type of raceway and wire combination shown on the plans, you should have a sheet that looks something like the one in **Figure 1.5**, which can be found on **page 1-21**. All the quantities taken off the plans should be written on a sheet like this and then totaled, as is shown at the bottom of the sheet. When these totals are transferred to an estimate sheet for the final pricing, it is usually best to increase the quantities of the conduit slightly (2 to 4 percent) to account for waste and to increase the quantities of wire about 5 percent to account for the wire that must be left hanging out of boxes or that is wasted.

**6. Do a takeoff of all the special systems.** Most medium- to large-sized electrical installations will require one or more types of special electrical or electronic systems. The estimate will be required to include the cost of these systems. These systems include any unusual type of system, such as fire alarms, lightning protection, sound systems, closed circuit TV, nurse call systems, and so on.

**FIGURE 1.5 — WIRE AND RACEWAY TAKEOFF**

<b>Raceway/Wire</b>	<b>Connector Totals</b>
4,190' ½" EMT – 2 #12	984
2,740' ½" EMT – 3 #12	
3,160' ½" EMT – 4 #12	
910' ¾" EMT – 3 #12	210
720' ¾" EMT – 4 #10	
480' ¾" EMT – 2 #10	
220' ¾" EMT – 3 #10	
1,980' 1" EMT – 3 #8	24
390' 1¼" EMT – 3 #3	10

**Raceway/Wire Totals**

½" EMT – 10,090'	#12 THHN – 31,970'
¾" EMT – 2,330'	#10 THHN – 4,500'
1" EMT – 1,980'	#8 THHN – 5,940'
1¼" EMT – 390'	#3 THHN – 1,170'

**INSTALLATION LABOR UNITS (cont.)****Residential Items and Devices**

<b>Item/Device</b>	<b>Hours per Item/Device</b>
Nail-on box	.05
Ceiling box	.07
Plastic finish plate	.04
Weatherproof plate	.06
Receptacle	.06
GFI receptacle	.12
Flush dryer outlet	.12
1-pole switch	.05
3-way switch	.06
Residential light fixture (simple)	.25
Recessed fixture	.40
Exhaust fan	.30
Smoke detector, 120 V	.20
Surface range outlet	.20
Door chime	.20
Push button	.07
Coaxial cable	.004
Telephone cable	.004