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2024 NATIONAL ELECTRICAL ESTIMATOR

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39th Edition

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How to Use This Book

This manual is a guide to the cost of installing electrical work in buildings. It lists costs to the electrical subcontractor for a wide variety of electrical work.

Before using any estimate in this book, you should understand one important point about estimating electrical construction costs. Estimating is an art, not a science. There's no estimate that fits all work. The manhour estimates in this book will be accurate for many jobs, but remember that no two jobs are identical. And no two crews complete all tasks in exactly the same amount of time. That's why electrical cost estimating requires exercising good judgment. Every estimate has to be custom-made for the specific job, crew and contractor. No estimating reference, computerized cost estimating system or estimating service can take into consideration all the variables that make each job unique.

This book isn't meant to replace well-informed decisions. But when supplemented with an estimator's professional evaluation, the figures in this manual will be a good aid in developing a reliable cost of electrical systems.

This manual is also available by subscription on the Web. *National Estimator Cloud* includes all ten of Craftsman's 2024 construction cost estimating references. Each of these manuals has about 400 pages of current labor and material costs for construction - all neatly organized and indexed. Use these costs to build estimates and bids for nearly any type of project. Your work is kept secret on the Web. For more on using *National Estimator Cloud*, go to:
https://craftsman-book.com/support/tutorials/

Labor Costs

The labor costs listed in this manual will apply to most jobs where the hourly wage in effect is the same or similar to the following rates:

Journeyman Electrician

Base Wage	$34.25 per hr.
Taxable Fringe Benefits at 5.65%	$1.93 per hr.
Taxes & Insurance at 19.34%	$6.99 per hr.
Non-taxable Fringe Benefits at 4.99%	$1.71 per hr.
Total Labor Cost	$44.88 per hr.

The total hourly cost includes the basic wage, taxable fringe benefits (vacation pay), workers' compensation insurance, liability insurance, taxes (state and federal unemployment, Social Security and Medicare), and typical nontaxable fringe benefits such as medical insurance.

If your hourly labor cost is much lower or higher, costs of installation can be expected to be proportionately lower or higher than the installation costs listed in this book. If your total hourly labor cost is 25 percent less, for example, reduce the labor figures in the cost tables by 25 percent to find your local cost.

The Craft@Hrs column shows the recommended crew and manhours per unit for installation. For example, L2 in the Craft@Hrs column means that we recommend a crew of two electricians. L1 means that a crew of one electrician is recommended. Costs in the Labor Cost column are the result of multiplying the manhours per unit by the rate of $44.88 per hour.

For example, if the Craft@Hrs column shows L2@.250, the Labor Cost column will show $11.20. That's .250 manhours multiplied by $44.88 per manhour and rounded to the nearest ten cents.

Divide the manhours per unit into 8 to find the number of units one electrician can install in one 8-hour day: 8 divided by .250 equals 32 units per day. Multiply that amount by the number of crew members to find the number of units the crew is likely to install in an 8-hour day. For example, if the crew is two electricians, multiply 32 by 2 to find that the crew can be expected to install 64 units in an 8-hour day.

Some tasks require less labor under certain conditions. For example, when conduit is run in groups, less labor is required for each 100 linear feet. It's the estimator's responsibility to identify conditions likely to require more or less labor than the standard for the type of work being estimated.

This book lists both the labor cost per installed unit and the manhours required for installation. Manhours are listed in hundredths of an hour rather than minutes, making it easier to calculate units.

Material Costs

Material Costs for each item are listed in the column headed "Material." These are neither retail nor wholesale prices. They are estimates of what most electrical contractors who buy in moderate volume will pay suppliers in early-2024. Discounts may be available for purchases in larger volumes. Material costs can change rapidly. Volume purchases may cost less because many dealers offer quantity discounts to good customers. Expect prices to vary with location, terms demanded, services offered, and competitive conditions.

Prices in this manual are not representative of shelf prices for electrical materials at big box building material retailers – and for good reason. Most electrical contractors don't buy from big box retailers. They buy from specialized electrical material dealers who offer the selection, service and terms that electrical contractors expect. Big box retailers stock limited quantities, no more than a few hundred electrical SKUs, specialize in commodity-grade merchandise and are generally not set up to meet the needs of professional electrical contractors.

Material costs in this book include normal waste. If waste of materials or breakage is expected to exceed 3 to 5 percent of the materials used on the job, include a separate allowance for excessive waste.

Material delivery cost to the job site isn't included in this book. When delivery cost is significant and can be identified, add that cost to these figures.

Please note that the cost of some electrical materials is highly volatile. For example, copper wire prices have been known to jump 10 percent or more in one month. There's no reliable way to forecast price movements like this. If you're bidding on a project that has a quantity of copper products, you may want to add a qualification to your bid proposal which would allow you to pass on a pricing increase (or decrease), based upon the actual materials pricing at the time of purchase. This way, you can use the current price quoted at the time of your bid, but still leave the door open to any major pricing changes. Note that material costs in *National Estimator Cloud* are updated as prices change and may not be the same as in this manual.

Add Sales Tax

No state or local sales tax is included in material prices listed here. Sales tax varies from area to area and may not be applicable on purchases for some types of projects. Add at the appropriate rate when sales tax is charged on materials bought for the job. *National Estimator Cloud* makes it easy to add tax to any estimate.

Add Overhead and Profit

To complete the estimate, add your overhead and expected profit. Many contractors add an additional 10 to 15 percent for profit to yield an acceptable return on the money invested in the business. But no profit percentage fits all jobs and all contractors. Profit should be based on the current market in each user's local area.

For some electrical contractors, overhead may add as little as 10 percent to the labor and material cost. But routinely adding 10 percent for overhead is poor estimating practice. Overhead should be based on each user's built-in costs. It's the estimator's responsibility to identify all overhead costs and include them in the estimate, either as a lump sum or as a percentage of the total labor and material cost. *National Estimator Cloud* makes it easy to add any percentage you select for OH&P. Bids can show as little or as much of estimate detail as you want.

Other Costs to Add

A few other costs are excluded from the figures in this manual: electrical building permits, special hoisting costs, freight costs not absorbed by the supplier, utility company charges for installation and service, special insurance and bonds, power equipment other than small tools, mobilization to remote sites, demobilization, nonproductive labor, and nonworking supervisors. If these costs are significant and can be determined, add them to your estimate. If not, you should exclude them and specify clearly that they're not a part of your bid.

All Tables Assume "Good" Conditions

This means that there are few or no unusual conditions to delay production. Conditions are good when work is performed during usual working hours in relatively clean surroundings and in readily accessible areas not over 12 feet above the finish floor. The temperature is between 50 and 85 degrees F. Electricians are working no more than 8 hours a day, 5 days a week.

Good conditions require that all tools and materials be available on the job site when needed. Tools, including power tools, are assumed to be in good working order. Where power tools are appropriate, it's assumed that temporary power is provided. Add the cost of temporary power when it's furnished at your expense.

Proper supervision makes a big difference in labor productivity. The tables assume there is adequate supervision but make no allowance for nonproductive labor — supervisors who direct but do no installation. If you plan to have nonproductive supervision on the job, add that cost to the figures in this manual.

Conditions are seldom "good" when the work area is confined, or when a short construction schedule makes it necessary for many trades to work at the same time. The usual result will be stacks of material obstructing the work space and several tradesmen competing for access at the point of installation.

If the conditions on the job you're estimating aren't expected to be "good," adjust the labor figures in this book as appropriate. Occasionally, larger jobs can be done faster because specialized equipment or crews can be used to good advantage. This will usually reduce the installation cost. More often, conditions are less than "good." In that case, labor costs will be higher.

There's no accepted way to decide how much "bad" conditions will increase the labor hours needed. But it's accepted estimating practice to assign a cost multiplier of more than 1.0 to a job that can be expected to require more than the usual amount of labor per unit installed. For example, if conditions are less than "good" only in minor respects, you might multiply labor costs by 1.10. If conditions are very poor, a multiplier of 1.50 or more may be appropriate. *National Estimator Cloud* makes it easy to increase or decrease costs by a percentage to reflect conditions at the job site.

Other Factors That Affect Productivity

This book's tables assume that the crew used for the job is the smallest crew appropriate for the work at hand. Usually this means that the crew is one journeyman electrician.

Most experts on the productivity of construction trades agree that the smallest crew that can do the job is usually the most efficient. For example, it's foolish to have two men working together setting duplex receptacles — one handing tools and material to the other as needed. Only one of them would be working at any given time. It's more productive to use two one-man crews, each working independently.

Of course, there are exceptions. Sometimes a crew of one takes twice as long as a crew of two. When pulling feeder cable or setting floor-standing switchboards or motor control centers, more help usually cuts the labor cost per installed unit. Some jobs simply can't be done by a crew of one.

When work is done on a scaffold, someone should be on the ground to chase parts and equipment and prepare lighting fixtures for hanging. It wastes manpower to have an electrician leave the scaffold and return when parts or tools are needed. Scaffold installers should install one fixture while the "grunt" below prepares the next. Conduit should be prefabricated on the ground from measurements taken by the electricians on the scaffold. The assistant should bend the conduit and hand it up to the installer.

These labor savings are obvious to anyone who has done this type of work and are assumed in this book's labor tables.

The Electrician

This book's labor hours are typical of what a trained and motivated journeyman electrician with 5 years of experience will do on most jobs. It's assumed that the installer can read and follow plans and specifications and has the ability to lay out the work to code.

It shouldn't make any difference whether the work is in a hospital, a grocery store, a wood mill or a small convenience store. An experienced journeyman electrician should be able to handle the work at the rates shown here even though the materials and code requirements differ. But you'll have to make allowances if your installers are only familiar with res-idential work, and the job at hand is something else.

Improving Estimating Accuracy & Profits

It's been said that electrical estimators learn by making mistakes. The best estimators are the ones who've made the most mistakes. Once you've made every mistake possible, you're a real expert.

I can't subscribe 100 percent to that theory, but I know that there are plenty of pitfalls for unsuspecting electrical estimators. This section is intended to suggest ways to spot potential problems before they become major losses. It'll also recommend steps you can take to increase the profit on most jobs.

Labor Productivity

Improving output even slightly can result in major cost savings. Cutting only a minute or two off the installation time for each duplex receptacle or handy box can reduce the labor cost by several hundred to a thousand dollars a job. Getting better productivity from your electricians should be a primary concern for every electrical contractor.

Assuming your electricians are experienced, well-trained, and have all the tools and materials they need to complete the work, the most significant increase in productivity will probably be through motivation.

The best form of motivation for most electricians is to encourage pride in the work they do. Every alert supervisor knows the value of recognizing a job well done. Acknowledging good work builds confidence and encourages extra effort in the future.

Labor Availability

Labor in each locale may not always be readily available. Prior to bidding any project, make an evaluation of the available work force. You may need to make staffing or salary adjustments for the duration of that project. Your work force evaluation will help you prepare for adding another workman, or adjusting a current employee's salary and benefits to compete with rates in your area.

Handling Inspections

The on-site supervisor or foreman should be responsible for dealing with all inspectors. Don't let others circumvent the supervisor's or foreman's authority.

An inspector's only job is to see that the installation complies with the code. They aren't supervisors and don't direct the work. They can and do interpret the code and sometimes make mistakes. Encourage the foreman or supervisor to take issue promptly with a questionable interpretation. Ask the inspector to cite a specific code as his reference. If the inspector insists that his interpretation is correct, and if you believe it's wrong, call the building official to initiate

an appeal. Your trade association or the National Electrical Contractors' Association may also be able to persuasively argue in your favor.

Some inspectors have a reputation for being impossible to deal with. Aggressive enforcement of questionable code interpretations can severely hurt project productivity. Following the code carefully will keep you out of most compliance arguments. Every electrician and electrical supervisor must know the code. Code classes are taught at continuation schools in many communities. You can take code classes to both understand how the code is applied and to remain current on code changes.

Mobilization and Demobilization

Many electrical subcontractors have job shacks and lockup boxes that can be moved onto the job for storing tools and materials. Some larger firms have trailers that can be moved from job to job. No matter what type of on-site storage you use, setting up takes time. The bigger the job, the more time will probably be needed.

Usually the first step is getting permission to set up your storage area on the site. Sometimes storage space is at a premium. Some city projects literally have no storage space until parts of the building are completed and can then be used. Occasionally tools and equipment will have to be stored off site. This can require daily mobilization and demobilization, which increases your labor cost substantially. Be sure your estimate includes these costs.

Demobilization usually takes less time and costs less than mobilization. Removing the surplus material, tools and equipment can be done by helpers or material handlers rather than electricians.

One important item in mobilization is temporary electrical service. Be sure you know who pays for installation of temporary power and who pays for power used on site during construction. It's common for the electrical contractor to cover the cost of electrical distribution and service. Installation is usually done by your electricians and will have to pass inspection.

Most communities require temporary electrical permits prior to starting work. Before applying for the permit, contact the electric utility provider and request a meeting with whoever coordinates extensions of service — usually the planner. Before your meeting, determine what size service you need. The planner will tell you what voltage is available and where the point of connection will be. Don't end this meeting with the planner until you've covered every requirement and procedure imposed by the electric utility.

Job Cleanup

Trash and debris that obstructs access to (and on) the job site can make good production next to impossible. That alone should be encouragement to regularly dispose of accumulated waste. Most specifications require that subcontractors remove unused materials, cartons, wrappers and discarded equipment. On many jobs, the general contractor has the right to backcharge subs for removal of their discards if they don't clean the site themselves.

Encourage your crews to do their cleanup while installation is in progress. For example, each time a fixture is removed from a carton, the tradesman should collapse the carton and throw it on the discard pile. It takes slightly more time to dispose of trash this way, but cleanup is less likely to be forgotten.

Some contractors and subcontractors have a reputation for running a dirty job. You've probably seen sites that are so cluttered that you can't understand how anyone could work efficiently. Of course, as the electrical contractor, you can't dictate to the general contractor or the other subcontractors. But the work habits of others affect your productivity, and consequently, your profit.

I believe that if accumulated debris is slowing progress on the job, it's within your rights to discuss it with the general and the other subs. Request a meeting, right in the middle of the clutter. That alone may do the trick.

If you don't insist on a clean site, the fire department probably will. A clean job is more efficient and safer. A cluttered job costs everyone time and money.

Production

No matter how simple and quick you anticipate them to be, most jobs will have some production problems. Every job is unique. Every job brings together skilled tradesmen with varying preferences and habits. Some have never worked together before. Yet each must coordinate the work he does with those who precede him and those who follow. It's normal to expect that some adjustments will be needed before cooperation becomes routine.

Of course, the general contractor is the key to cooperation among the trades. A general who schedules trades properly will have fewer problems and will help all subcontractors earn the profit they're hoping for. This isn't automatic. And some general contractors never learn how to schedule properly. From an estimating prospective, it's more expensive to work for a contractor who has scheduling problems than it is to work for a contractor who's efficient at job coordination. If you anticipate production problems like this on a job, your estimate should reflect it.

Good supervision helps avoid most production problems. Try to schedule material deliveries in a timely manner. Have the right tools on hand when needed. Keep crews as small as possible. Don't work your crews more than 40 hours a week unless absolutely necessary. Too many bodies and too many hours will erode production.

If you're using a larger crew, don't have everyone work at the same time. Instead, break the crew into two units and encourage friendly competition between the two. Offer a reward for the winning crew.

Corrections

This book's tables assume that little or no time is spent making corrections after the work is done. Electrical contractors should have very few callbacks.

If you're called back often to replace faulty materials or correct defective workmanship, one of four things is happening. First, you could be working for some very particular contractors or owners, or handling some very sensitive work. In that case, callbacks could be part of the job and should be included in each estimate. Second, you could be installing substandard materials. Third, your electricians could be doing haphazard work. Finally, your installation procedure could be omitting fixture and circuit tests that could locate problems before the owner finds them.

When qualified electricians install quality materials, the risk of a callback is small. Occasionally a ballast will fail after 10 or 20 hours in use. And sometimes an owner's negligence will damage a circuit or switch. When this happens, accept the service work as routine. Complete it promptly at no extra charge. Consider it cheap advertising — a chance to establish your reputation with the owner. You could turn the service call into some extra work later.

Your Type of Work

Most electrical contractors prefer to handle specific types of work. Only a few have the capital, equipment and skills needed to handle the largest jobs. Most will do residential wiring because that's the most plentiful work available. Some prefer private work with as little government interference as possible. Others bid only government jobs.

The most profitable electrical contractors specialize in one type of work or customer. The electrical construction field is too broad to do everything well. Select an area that you feel comfortable with, and concentrate on doing it as well or better than anyone else. Of course, some of the older and larger electrical shops will do almost any type of work. But nearly every electrical contractor prefers some class of job over all others — and would take only that work if there was enough available to stay busy.

Observe the electrical contractors in your area. Notice the companies that seem to be busiest and most profitable. See what class of customers they service or what type of work they do most. It's probably easier to follow the success of another contractor who's found a winning formula than it is to invent a new formula yourself.

Specialization lets you hire electricians who are specialists, too. That tends to improve productivity, keep costs down, and improve profits — as long as you're handling work that's within your specialty.

Coordination is easier and the profits will usually be higher if you work for a limited number of general contractors. Some contractors seem to be masters at putting a project together. These same contractors probably pay promptly and treat their subs fairly. That makes your job easier and tends to fatten your bottom line. If you've found several contractors who make life more pleasant for you, keep them supplied with competitive bids that'll bring more work into both your shop and theirs.

Most electrical contractors don't bid government work. It's a specialty that requires specific knowledge: complying with detailed general conditions, observing regulations, anticipating inspection criteria and following administrative procedures. And every branch of federal, state and local government has its own requirements. Those who've mastered the procedures usually do quite well when work is plentiful. But government work is a tide that rises and falls just like that of general construction.

Bid Shopping

Many contractors prefer projects that require subcontractor listings. The general contractor must list the subcontractors he plans to use, and has to use the subs he lists. When listing of subs isn't required, in some cases the general contractor shops for lower subcontract bids right up to the time work begins. Even if the general has to list his subs in the contract with the owner, he'll still usually have a month or two to shop bids after the contract is awarded.

When a general contractor uses your bid to land a job, it's normal to expect that your company will get the contract. Giving all your competition a second look at the job is in no one's interest but the general contractor's. It's a waste of time to bid for general contractors who shop their sub bids. Nor is it good practice to undercut another electrical contractor whose estimate was used by the winning general contractor. Support the effort of reputable subcontractors who promote subcontractor listing at bid time.

Need More Help?

This book is concerned primarily with labor and material costs for electrical construction. You'll find only limited information here on how to compile an estimate. If you need a detailed explanation on how to make a material take-off and complete the bid, another book by this publisher may be helpful. *Estimating Electrical Construction Revised* is available from Craftsman Book Company at http:// https://craftsman-book.com/.

Section 1: Conduit and Fittings

Every electrical estimator should be familiar with the *National Electrical Code*®. Nearly all inspection authorities follow *NEC*® recommendations on what is and what is not good electrical construction practice. Most inspection authorities accept electrical materials that comply with *NEC* standards. But some cities and counties have special requirements that supplement the current *NEC*. Others are still following an older edition of the *NEC*. The *NEC* is revised every three years to incorporate changes deemed necessary to keep the code up-to-date.

Be aware of the version of the *NEC* that applies at each job you're estimating, and stay current on special requirements that the inspection authority may impose.

Job specifications usually state that all work must comply with the *NEC*. But on many jobs the *NEC* sets only the minimum standard. Job specifications may prohibit what the *NEC* permits. For example, job specs might require specific installation methods or mandate specification grade fixtures.

The *National Electrical Code* classifies all enclosed channels intended to carry electrical conductors as "raceway." This includes conduit, busway and wireway. The most common raceway is electrical conduit. The code identifies the size and number of conductors that can be run through each size of conduit.

Conduit is intended to serve two purposes. First, it's a protective shield for the conductor it carries. It reduces the chance of accidental damage to the wire or insulation. Second, it protects people and property from accidental contact with the conductors. A ground or short is both a safety and a fire hazard.

Conduit is generally required in commercial and industrial buildings, hospitals, hotels, office buildings, stores and underground facilities. It's not generally used in wiring homes and apartments.

Several types of electrical conduit have been approved for electrical construction. Each is designed for a specific purpose or use. All conduit used in electrical construction as a raceway for conductors must bear a label issued by the Underwriter's Laboratories. The UL label indicates that the product has been approved for use under the *National Electrical Code*.

The *NEC* permits a maximum of four bends totaling 360 degrees between terminations in a run of conduit. Exposed conduit should be installed horizontal or vertical and should run parallel to building members. Concealed conduit should be run in the shortest direct line to reduce the length of run. Long runs waste materials, require excessive labor and, if long enough, can reduce the voltage available at the load end.

Electrical Metallic Tubing

EMT is also known as **thin wall** or **steel tube**. EMT conduit is nonferrous steel tubing sold in 10-foot lengths. Unlike water pipe, the ends aren't threaded. The conduit has a corrosion-resistant coating inside and outside. This coating may be hot-dipped galvanizing, electroplating, or some other material. The conduit sizes are ½", ¾", 1", 1¼", 1½", 2", 2½", 3", 3½" and 4".

Many types of EMT fittings are available. There are elbows, compression, set screw, indent and drive-on fittings which may be made of steel or die cast. Couplings and connectors are sold separately and not included in the price of the conduit. Various types of connectors may be purchased with or without insulated throats. The locknuts for the connectors are included in the cost of the connector.

Couplings are available for joining EMT to rigid metal conduit and to flexible conduit. These couplings are available in compression, set screw and drive-on type and are made of steel or die cast.

EMT conduit is sold without couplings. You have to figure the number of couplings needed and price them separately. To figure the number needed, allow one coupling for each 10 feet of conduit. Then add one coupling for each factory-made elbow.

EMT should be bent with a special conduit bender. The bender has a shoe that fits over and around about half of the conduit to keep the conduit from collapsing as it bends. With a bender it's easy to produce smooth, consistent bends up to 90 degrees. Hand benders are used on sizes from ½" to 1¼" . EMT bending machines are available for all sizes of conduit. There are manual, hydraulic and electrically driven machines.

Offsets are made to take EMT conduit around obstructions, and when needed, to align the conduit at a box or cabinet. You can make offsets with a hand bender on sizes up to 1¼". Offsets in EMT conduit over 1¼" should be made with a machine.

In smaller sizes, conduit can be cut with a tubing cutter. Cut larger diameters with a hacksaw or by machine. Cut ends must be reamed to remove the burrs made while cutting. Burrs can damage insulation when wire is pulled through the conduit. Ream with a pocket knife or pliers on smaller sizes and with a metal file or pipe reamer on larger sizes.

EMT must be supported so it doesn't deflect on longer runs. Straps and nailers are the most common way of supporting EMT. Straps usually have one or two holes for securing to the building. Most inspection authorities won't let you support EMT on plumber's perforated metal tape. Straps come in thin steel, heavy duty steel or malleable types. There are special straps made of spring steel for supporting small sizes of EMT to hanger rods or drop ceiling wires.

EMT conduit should be supported at least every 10 feet with a strap or hanger and within 18 inches of every junction box or cabinet.

Other supports include beam clamps for attaching conduit to structural steel members and straps for mounting EMT on steel channel strut. These two-piece straps or clamps are inserted into the strut and bolted together to hold the conduit in place.

EMT can be installed inside or outside, in concrete or masonry, exposed or concealed in walls, floors or ceilings. But be sure to use the correct fittings in wet locations. EMT is not approved for most types of hazardous locations. Some specs limit the use of EMT to dry areas and don't allow placement in masonry or concrete. Conduit placed in concrete floor slab is generally placed below the reinforcing bar curtain or between curtains when two curtains are used. Tie the conduit to the rebar to prevent shifting as the concrete is placed.

Where conduit is turned up above the surface of the concrete, the radius of the turn must be concealed. Part of it can be concealed in a wall, but none should be visible after the building finish has been installed.

As with all types of conduit, EMT should be installed with a minimum of damage to the structure. Keep it clear of heating, ventilating and air conditioning ducts, fire sprinkler systems, plumbing lines, access doors, etc. When necessary, the installer will have to make offsets and bends so the conduit fits into devices, electrical boxes and cabinets.

Flexible Metal Conduit

There are several types of flex conduit: standard wall steel flex, reduced wall steel flex, and aluminum flex. It comes in diameters from $^3/_8$" to 4" and is coiled in rolls of 100 feet in the small sizes and 25 feet in the larger sizes. Flex is usually used in concealed locations but never underground or in concrete. It's cut with a special flex cutter, a hand hacksaw, or with a power cutter such as a portable band saw. The inside cut edge must be reamed to remove cutting burrs which would damage insulation when wire is pulled through conduit.

Flex connectors are available with set screw, screw-in, clamp type, straight, or angled connectors. They're made of steel or die cast. Insulated connectors are also available. Die cast flex couplings are available for joining flex to flex, flex to EMT, or flex to threaded conduit. Support flex with conduit straps or nailers.

Most inspection authorities require that a bonding conductor be installed when electrical wiring is run in flex. Bonding ensures that there's electrical continuity in the flex from one end to the other.

Some specifications restrict the use of flex to short connections to equipment that is subject to vibration (such as motors and machinery) and for built-ins, recessed lighting, and lay-in lighting fixtures.

Flex conduit is popular in remodeling work where wiring in raceway has to be run through an existing cavity wall or in a ceiling cavity. With a little effort, your installer can fish the flex from point to point without opening the wall or ceiling.

Polyvinyl Chloride Conduit

PVC conduit is approved by the *NEC* for many types of applications. But there are some situations where it cannot replace metallic conduit. It's not approved for hazardous locations or in return air plenums. Check with the inspection authority for other restrictions. The standard length is 10 feet and sizes range from ½" to 6". Schedule 40 PVC is the standard weight. Schedule 80 has a heavier wall. PVC can be installed directly underground, concrete encased underground, exposed, in concrete walls, and in unit masonry.

One coupling is furnished with each length of conduit and is usually attached to the conduit. PVC must be bent with a special hot box which heats the conduit until it becomes pliable. Once heated to the right temperature, the tube is bent and then allowed to cool. PVC fittings fit both Schedule 40 and 80 conduit. Couplings, terminal adapters, female adapters, expansion fittings, end bells, caps, conduit bodies, pull boxes, outlet boxes and elbows require a special cement. The glue is air-drying and comes in half-pints, pints, quarts, and gallon containers. The smaller containers have a brush attached to the cap for applying the cement to the conduit or fittings. PVC conduit can join other types of conduit if you use the right fittings to tie the two types together.

PVC is nonconductive. That makes a bonding conductor necessary to ensure electrical continuity

from the device to the service panel. You probably won't need a bonding conductor when PVC is used as communications conduit or in some application that doesn't include electrical wiring. When installed exposed, PVC requires extra support to keep it from sagging.

Some job specs restrict use of PVC to specific locations. One common restriction is to limit PVC to underground installations encased in a concrete envelope. Many specifications restrict its use to certain applications.

PVC conduit can be cut with a hand hacksaw, a wood crosscut saw, or with a power cutting machine. The inside cut edge should be reamed to remove the cutting burr. Use a pocket knife or a file.

Power and communications duct is usually called **P&C duct**. It's made of PVC in 25-foot lengths and in diameters from 1" to 6". There are two types of P&C duct. One is called **EB** for encased burial. The other is **DB** for direct burial. Fittings for P&C duct include couplings (one is furnished with each length), end bells, caps and plugs, terminal adapters, female adapters, elbows, and expansion fittings. The elbows are available in various shapes and with either long or short radii. Fittings can be used either on type EB or DB. Use a special cement to weld the fittings to the conduit.

Bend P&C duct with a hot box. It can be cut with the same tools as PVC conduit. The inside cut edge must be reamed to remove the cutting burr.

P&C duct is used for underground systems only, never above ground.

ABS underground duct is used and installed the same as PVC P&C duct. It requires a special ABS cement to weld the fittings to the conduit. The job specifications or the utility company may require either P&C, ABS or PVC duct, depending on the specific use.

Galvanized Rigid Conduit

GRS or **RSC** (for rigid steel conduit) is made with nonferrous metal and has a corrosion-resistant coating on the inside. The outer coating is either hot-dipped galvanizing or electroplate. It comes in diameters from ½" to 6" and in 10-foot lengths with a thread on each end. A coupling is furnished on one end of each length. GRS can be cut with a hand hacksaw, a pipe cutter, or with a cutting machine. The inner cut edge must be reamed to remove the burr. Use a pipe reamer or a file.

After the pipe has been cut and reamed, it can be threaded. Use a hand die for threading on a small job. Where there's more cutting and threading to be done, use a threading machine. Several types are available. Small portable electric threading tools cut sizes up to 2". Larger threading machines can cut, ream and thread conduit diame-ters up to 6". Another good choice for GRS up to 6" is a threading set that uses a tripod vise stand and a threading head that clamps to the pipe in the vise stand. The threading head is turned with a universal joint connected to a power vise. Another set uses a tripod vise stand to hold the conduit. The threading head clamped on the conduit is turned with a reduction gear assembly powered by an electric drill. This rig works well on diameters over 2".

Use enough cutting oil to keep the die cool and lubricated during thread cutting. Cutting oil comes in clear or dark and in small cans, gallons and barrels. Use an oil can to keep a film of oil ahead of the dies. Commercial oiling units hold about a gallon of cutting oil and recirculate oil back to the cutting teeth as oil drips into the catch basin. Most threading machines have automatic oilers that filter the oil as it's reused.

Elbows are available for all sizes of GRS. Long radius bends are available for the larger sizes. Some specifications require concentric bends for all exposed conduit installed parallel on a common hanging assembly or trapeze.

GRS fittings include couplings, locknuts, bushings, one-hole straps, two-hole straps, heavy duty two-hole straps, expansion fittings, threadless compression couplings, threadless set-screw couplings, threadless compression connectors, threadless set-screw connectors, three-piece union-type couplings, strut clamps, beam clamps, hanger clamps, condulets, split couplings, caps, and plugs.

Galvanized rigid conduit is bent about the same way as EMT except that the bender is made for bending rigid conduit. Hand benders are used on conduit up to 1". There are hand benders for 1¼" and 1½" rigid steel conduit, but it takes a lot of effort to make the bend. Power benders can be used on all sizes of conduit, even the ½".

There are three common types of rigid steel benders: one-shot benders create a single standard radius arc. Segment benders must be moved along the conduit as each few degrees of bend are made. The electric sidewinder bender has up to three bending shoes in place ready to bend any of three sizes of conduit. The sidewinder saves labor on larger rigid conduit jobs.

Supports for rigid conduit must be no more than 10 feet apart from support to support and within 18 inches of junction boxes or cabinets.

Trapeze hangers are often used to carry multiple runs of GRS conduit. Trapeze hangers can be made from strut, angle iron, or channel iron. The trapeze is supported from the structural frame of the building with threaded rod — usually either ⅜" or ½" diameter. The upper part of the rod is attached to beam clamps or concrete anchors. The lower portion of the rod is run through the trapeze and is secured with double nuts and flat washers.

Like other hangers, trapezes have to be placed within 10 feet of each other and should be sized to support the total weight of the conduit and all cable. Trapeze hangers can be stacked one over the other with conduit clamped on each one.

IMC Conduit

Intermediate metal conduit (IMC) has a thinner wall than GRS. It comes in the same sizes and uses the same fittings as GRS. The same tools can be used for cutting, threading, and bending. It's made about the same way as GRS, comes in 10-foot lengths and is galvanized for corrosion resistance. The difference is that IMC is lighter and easier to install than GRS. Some specifications restrict its use to specific applications.

PVC Coated Conduit

Both GRS and IMC conduit come with a PVC coating for use in highly corrosive locations. Aluminum tubing also comes with a PVC coating, but applications are restricted to specific uses. The PVC coating is either 10, 20 or 40 mils thick, and is bonded directly to the conduit wall. Most fittings made for use with GRS are available with a PVC coating.

To thread PVC coated conduit, the PVC coating must be cut back away from the end to be threaded. When PVC coated conduit is put in a vise, be sure the coating is protected from the vise jaws. Also be careful when you're bending PVC coated conduit not to damage the coating. If the coating is damaged, patching material is available to restore the surface. The material comes in a spray can. Apply several thin layers to repair worn spots.

Conduit Take-Off

Here's how to calculate conduit quantities. First, scan the specs that cover conduit and conduit installation. Absorb all the information that relates to conduit. Then review the drawings for anything about conduit. The symbol list may include the engineer's design notations. Notes on the drawings or in the specs may set specific minimum conduit sizes. It's common for an engineer to require a minimum size conduit in the home run to the panel or cabinets or to specify a minimum size of ¾" throughout the job. It's also common practice to limit the maximum size of EMT to 2". Ignoring a note like that can be expensive.

For your quantity take-off, use any ruled 8½" by 11" tablet. Draw a pencil line down the left side of the sheet about an inch from the edge. Begin by looking for the smallest diameter of EMT. Write "EMT" at the top left of your take-off sheet. On the next line down, to the left of the vertical line, list the smallest EMT size found in the project — probably ½". To the right of the vertical line and on the same horizontal line as the size, you're going to list lengths of EMT of that diameter. Then you'll go to the next larger diameter, listing quantities until all EMT on the plans has been covered.

Check the plan scale before you start measuring conduit. If the plan has been reduced photographically to save paper, the scale will be inaccurate. Once you're sure of the correct scale, select the appropriate map measure or rule to compute conduit lengths.

Measure the length of each run of ½" EMT. Add enough conduit to include the run down to the wall switch, receptacle or panel. Write down the calculated length. As each run is listed on your take-off sheet, put a check mark on the plan over the line you just measured. Use an erasable color pencil and let each color stand for a particular conduit type. For example, red might be for GRS conduit. Follow the same color code on all estimates to avoid mistakes.

If there are more than two or three plan sheets, it's good practice to calculate the length of ½" EMT on each plan sheet and list that number separately on your take-off form. When you've finished taking off ½" EMT on the first plan sheet, list that quantity, and at the top of the column write in the plan sheet number. Then draw a vertical line to the right of that column and start accumulating lengths from the next plan sheet. As each plan page is taken off, enter the total and write the plan sheet number at the top of the column. Figure 1-1 shows what your take-off might look like if conduit and fittings are found on plan sheets E3 to E11.

When all of the smallest-diameter EMT has been listed, go on to the next larger size. Follow the same procedure.

After listing all EMT, begin with the fittings. Below the last horizontal line used for conduit, and to the left of the vertical line, write the word "Connectors." Below that, list all sizes of connectors needed for the job, again working from the smallest size to the largest. Don't bother to list the couplings. They'll be figured later from the total conduit length — one for each 10 feet and one for each elbow.

Count each connector needed for each conduit run on each plan sheet. Enter the total on your take-off form. When all connectors are counted, count EMT elbows from 1¼" to the largest size needed.

Follow this system for all estimates and for each item on every estimate. Keep it simple and uniform to avoid mistakes and omissions. When finished, your conduit and fitting take-off form might look like Figure 1-1. The right column is the sum of the columns to the left.

Work Sheet					Estimate No.: M351					
Conduit / Fittings										
	E3	E4	E5	E6	E7	E8	E9	E10	E11	Total
½" EMT	550	420	200	90	290	130	190	320		2190
¾"	20		30	20	80					150
1"			3		5		50			58
1¼"			30							30
1½"									90	90
2"					4				16	20
½" Conn	76	52	124	47	48	16	14	18		395
¾"	4		26	4	19	2				55
1"			4		5	2	2			13
1¼"			2							2
1½"									4	4
2"					2				4	6
1¼" Elb			2							2
1½"									3	3
2"									3	3
½" PVC			310	380	50					740
¾"			120	100	220	50				490
1"			40		320	40				400
1¼"						180				180
1½"				60					75	135
2"				10	25			70	75	180
4"								150		150
½" FA			45	30	4					79
¾"			4	4	12	2				22
1"			2		17	2				21
1¼"										0
1½"				4					2	6
2"				2	2				2	6
½" TA			5							5
¾"					4					4
1"					1					1
½" Elb			50	30	4					84
¾"			2	2	16	2				22

Figure 1-1

Many jobs limit the use of EMT to dry locations. So your EMT take-off will probably start with the lighting plans or the lighting portion of the plan.

Taking Off the Wire

Next, compute the quantity of wire needed. Head up another take-off form with the word “Wire” at the top. Put a vertical line down the left side of the page about an inch from the left edge. In this margin, list wire sizes from the smallest to the largest. To the right of the vertical line you’ll list lengths for each wire gauge, on each plan sheet.

Start by measuring the length of ½" EMT with two #12 wires. Multiply by 2 to find the wire length. Then measure the length of ½" EMT with three #12 wires and multiply by 3. Keep following this procedure until the wire needed in all EMT has been computed. But watch for changes in the wire size on long runs. Sometimes the engineer will decide that a larger wire size is needed in the first portion of a run to reduce the voltage drop at the end of the line. This is common where the last device or fixture on a circuit is a long way from the panel.

Follow the same procedure for all conduit and wire. Record all of the measurements on the work sheets. Don’t worry about waste of conduit or wire at this point. We’ll include an allowance for waste after the totals are added and before figures are transferred to the pricing sheets.

Sometimes the specifications or a note on the plans will allow the use of aluminum feeder wire over a certain size, providing the ampacity of the

wire is maintained and the conduit size is increased to accommodate the larger wire size. Be sure to observe these restrictions.

Taking Off Other Conduit

Some specifications permit the use of aluminum conduit in certain locations. The aluminum conduit is made in the same sizes as GRS. The fittings are identical except that they're made of aluminum instead of steel. Most specs prohibit the use of dissimilar metals in a conduit run and don't allow placing of aluminum conduit in concrete. Aluminum conduit saves time because it's lighter and easier to handle. But large wire sizes may be a little more difficult to pull in aluminum conduit. The insulation of the wire, the length of the conduit run, and the pulling lubricant used have an effect on pulling resistance.

When taking off the underground conduit, start a separate work sheet for trenching, surface cutting, breaking, and patching. List all excavation for underground pull boxes, handholes, manholes, poles, and light pole bases. Be sure the trenches are big enough for the number of duct they have to carry. If the specifications require concrete or sand encasement around underground duct, calculate the amount of concrete or sand as you compute measurements for each trench.

Be systematic. Follow the same procedure consistently on every take-off. If there are other estimators in your office, be sure they are using the same procedures. Being consistent reduces errors, minimizes omissions, and makes the work easier for others to check.

We've covered all common conduit. But some other types are used occasionally for special purposes:

Fiber duct is a paper and creosote duct. Type 1 is intended for concrete encasement and Type 2 is used for direct burial. Sizes range from 2" to 5". Lengths can be 5, 8 or 10 feet. End fittings are tapered. Ends that have been cut must be tapered with a duct lathe.

Transite duct is cement asbestos duct. Type 1 is for concrete encasement and Type 2 is for direct burial. Sizes range from 2" to 6". It's made in 5, 8 and 10-foot lengths. Transite is harder to cut and must have tapered ends for fittings.

Soapstone duct is made from a soapstone-like material in sizes from 2" to 4".

Wrought iron pipe comes in sizes from 2" to 4". It's used only for certain types of underground communications lines and has to be threaded on each end to accept fittings.

Clay conduit comes in sizes from 2" to 4". It's used for underground communication runs only.

These types of conduit are seldom specified today. You'll see them used only when an old duct line has to be extended. It may be hard to find a fitting that will join an existing duct system made with one type of duct to a new run of duct made from some other material. Sometimes an oversize plastic coupling can be used. In some cases an inside plastic coupling can be inserted into the old conduit. Then new conduit can be joined to start the new run.

Before extending an old underground duct system, check the old conduit with a mandrel to be sure the line is clean and clear. Old fiber duct that's been under water for a long time will swell, making the inside diameter too small to pull new cable.

Silicon-bronze conduit comes in sizes from ½" to 4". It's threaded like GRS and uses similar fittings, except that fittings are silicon-bronze also. It's used in extremely corrosive locations. This type of conduit will be available from your dealer on special request only. It's harder to bend, but can be bent with standard rigid bending tools. It threads very well with the standard threading tools and cutting oil.

Liquid-tight flexible metal conduit comes in sizes from ½" to 4". It's used to extend conduit to electrical equipment in damp or wet locations. Special fittings are available for connecting electrical systems and devices with this conduit. Your dealer probably stocks a limited supply of liquid-tight flex and will quote prices on request. The conduit can be cut with a hacksaw. Be sure to remove the cutting burr. Special connectors with grips are available to support the conduit and prevent any pulling strain.

Liquid-tight flexible non-metallic conduit comes in sizes from ½" to 1½". It's used in place of flexible metal conduit in concealed locations. Special fittings are available for making connections. Your dealer may have a limited supply in stock.

Flexible metallic tubing is available only in sizes from 3/8" to ¾". Special fittings are available for making connections. The tubing can be bent by hand and is cut with a hacksaw. The cutting burr must be removed before connectors are installed.

Other UL-approved raceways for electrical systems are covered in other sections of this book. See the sections on surface metal raceway, underfloor ducts, header ducts, cable tray, and wireway.

Using the Conduit Tables

The labor tables that follow are for conduit runs that average 50 feet. You'll note that there is no modification in the tables for shorter runs or longer runs of conduit. I agree that it takes more time per linear foot to install a 5-foot run of conduit than it does to install a 95-foot run of conduit. But I don't

recommend that you tally shorter runs and longer runs separately and then compute labor separately for each. There's an easier way.

On most jobs the conduit runs average 50 feet. There will usually be about as many runs under 50 feet as there are runs over 50 feet. It's safe then, to use a 50-foot run as our benchmark. As long as the conduit runs on a job average close to 50 feet, there's no need to modify the figures in these tables. If conduit runs average well over 50 feet, consider reducing the cost per linear foot slightly. Increase the cost slightly if conduit runs average less than 50 feet.

The labor costs that follow include the labor needed to bore holes in wood stud walls. Where holes have to be cut through concrete or unit masonry, add these costs separately.

Typical conduit bending is included in the tables that follow. Usually you will have a bend or offset about every 20 feet. Labor needed to make bends and offsets is minor when installing the smaller sizes of conduit.

Concealed conduit is installed where it will be inaccessible once the structure or finish of the building is completed. ***Exposed conduit*** is attached to the surface where access is possible even after the building is completed. It's usually faster to run concealed conduit through wall and ceiling cavities that will be covered later by finish materials. Installing conduit on surfaces that won't be covered later usually takes more time.

If only a small percentage of the conduit is to be installed exposed, the cost difference will be minor and probably can be ignored. But if most of the job is exposed, add about 20 percent to the labor cost.

The conduit tables that follow assume that electricians are working from ladders and lifts up to 12 feet above the floor. Add to the labor cost for heights beyond 12 feet. If a large quantity of conduit has to be installed at 18 feet above the floor, for example, add 15 percent to the labor cost.

If there are conduit runs over 20 feet above the floor, check your labor contract for a ***high time clause***. Some agreements require that electricians be paid time and one-half for heights from 20 to 50 feet and double time for heights beyond 50 feet. If high time must be paid, be sure the extra cost is covered in your bid.

Job Size Modifiers

It's seldom necessary to estimate lower productivity just because the job is small. If you're figuring a very small job with only four or five conduit runs, each with only a strap or two, you might want to use a higher hourly labor rate. On any other job that takes from two days to several years, you can use the labor units in the tables that follow. Of course, you'll still have to modify the figures for other than "good" conditions. And if you have long runs of feeder conduit with parallel runs on a common trapeze, you can reduce those labor units by as much as 40 percent.

Pitfalls

The most common error when estimating conduit is failing to read the plans and specs. Read carefully! Your profit depends on it. It's easy to miss a little note where the designer sets the minimum size for conduit at ¾" and 1" for all home runs to the panel. Look for a note on the plans that requires stub ups to ceiling cavities from power and lighting panels. The designer may require one ¾" conduit run for each three spare circuit breakers in a panel.

It's common for rigid conduit to be installed in a concrete floor slab. Where GRS is stubbed up out of the concrete for a wall switch, it's easier and cheaper to use EMT for the wall extension. The *NEC* permits making that extension in EMT. But some specs don't! Others require that a junction box be used to separate the two types of conduit. Failing to catch that note can be an expensive mistake.

You'll find all sorts of restrictions in specs and notes on the plans. That's why it's so important to read the plans and specs carefully. It's elementary, but it's so often overlooked.

Waste of Material

There will always be some waste on a job. Rounding off the conduit and wire needed to the next even 100 feet will usually allow enough extra material to cover all waste. But there are some cases where you can anticipate a waste problem. For example, suppose there will be 2 feet of waste for every 20 feet of conduit installed because of an unusual lighting pattern. Or suppose a row of junction boxes is spaced at 9 feet. Then a 10 percent waste allowance may be called for. That's almost certainly true if your job is installing the lighting only. There may be no chance to use waste materials on another part of the job.

Allowances

Be sure to make allowances for the vertical portion of every conduit run that stubs up or down in a wall. The floor plan doesn't show the 4 or 5 feet needed to run from the slab to the wall switch or panel. Even worse, if the job is a warehouse, the stub up to a switch or panel may be 15 to 20 feet. That's a wide miss! Watch for stub up.

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
EMT conduit in floor slab or multiple runs on a trapeze					
1/2"	L1@3.25	CLF	39.90	146.00	185.90
3/4"	L1@3.50	CLF	75.30	157.00	232.30
1"	L1@4.00	CLF	127.00	180.00	307.00
1-1/4"	L1@4.50	CLF	192.00	202.00	394.00
1-1/2"	L1@5.50	CLF	237.00	247.00	484.00
2"	L1@7.00	CLF	289.00	314.00	603.00
2-1/2"	L1@9.00	CLF	472.00	404.00	876.00
3"	L1@10.0	CLF	579.00	449.00	1,028.00
3-1/2"	L1@11.0	CLF	840.00	494.00	1,334.00
4"	L1@12.0	CLF	853.00	539.00	1,392.00
EMT conduit in concealed areas, walls and closed ceilings					
1/2"	L1@3.50	CLF	39.90	157.00	196.90
3/4"	L1@3.75	CLF	75.30	168.00	243.30
1"	L1@4.25	CLF	127.00	191.00	318.00
1-1/4"	L1@5.00	CLF	192.00	224.00	416.00
1-1/2"	L1@6.00	CLF	237.00	269.00	506.00
2"	L1@8.00	CLF	289.00	359.00	648.00
2-1/2"	L1@10.0	CLF	472.00	449.00	921.00
3"	L1@12.0	CLF	579.00	539.00	1,118.00
3-1/2"	L1@14.0	CLF	840.00	628.00	1,468.00
4"	L1@16.0	CLF	853.00	718.00	1,571.00
EMT conduit installed in exposed areas					
1/2"	L1@3.75	CLF	39.90	168.00	207.90
3/4"	L1@4.00	CLF	75.30	180.00	255.30
1"	L1@4.50	CLF	127.00	202.00	329.00
1-1/4"	L1@6.00	CLF	192.00	269.00	461.00
1-1/2"	L1@8.00	CLF	237.00	359.00	596.00
2"	L1@10.0	CLF	289.00	449.00	738.00
2-1/2"	L1@12.0	CLF	472.00	539.00	1,011.00
3"	L1@14.0	CLF	579.00	628.00	1,207.00
3-1/2"	L1@16.0	CLF	840.00	718.00	1,558.00
4"	L1@18.0	CLF	853.00	808.00	1,661.00

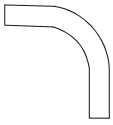
Use these figures to estimate the cost of EMT conduit installed in a building under the conditions described on pages 5 and 6. Costs listed are for each 100 linear feet installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include typical bending, boring out wood studs and joists (in concealed locations only), layout, material handling, and normal waste. Add for connectors, couplings, straps, boxes, wire, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Conduit runs are assumed to be 50' long. Shorter runs will take more labor and longer runs will take less labor per linear foot.

EMT Hand Benders are on page 27.

EMT Fittings

EMT 45 degree elbows

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
1"	L1@0.06	Ea	5.79	2.69	8.48
1-1/4"	L1@0.08	Ea	7.27	3.59	10.86
1-1/2"	L1@0.08	Ea	12.30	3.59	15.89
2"	L1@0.10	Ea	15.60	4.49	20.09
2-1/2"	L1@0.15	Ea	38.00	6.73	44.73
3"	L1@0.20	Ea	56.80	8.98	65.78
3-1/2"	L1@0.20	Ea	75.30	8.98	84.28
4"	L1@0.25	Ea	89.30	11.20	100.50



EMT 90 degree elbows

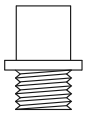
Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
1"	L1@0.08	Ea	7.40	3.59	10.99
1-1/4"	L1@0.10	Ea	9.20	4.49	13.69
1-1/2"	L1@0.10	Ea	10.60	4.49	15.09
2"	L1@0.15	Ea	15.60	6.73	22.33
2-/2"	L1@0.15	Ea	38.00	6.73	44.73
3"	L1@0.20	Ea	56.80	8.98	65.78
3-1/2"	L1@0.20	Ea	75.30	8.98	84.28
4"	L1@0.25	Ea	89.30	11.20	100.50

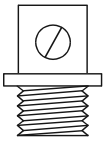
Use these figures to estimate the cost of EMT elbows installed on EMT conduit in a building under the conditions described on pages 5 and 6. Costs listed are for each elbow installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs are for factory-made elbows and include layout, material handling, and normal waste. Add for field bending, couplings and connectors at the end of the run, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

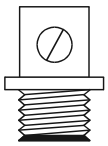
Conduit weight per 100 feet (in pounds)

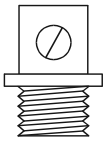
Diameter	EMT steel	ENT plastic	PVC 40	Rigid steel	Intermediate rigid steel	Rigid aluminum
1/2"	30	11	18	79	57	30
3/4"	46	14	23	105	78	40
1"	66	20	35	153	112	59
1-1/4"	96	—	48	201	114	80
1-1/2"	112	—	57	249	176	96
2"	142	—	76	334	230	129
2-1/2"	230	—	125	527	393	205
3"	270	—	164	690	483	268
3-1/2"	350	—	198	831	561	321
4"	400	—	234	982	625	382
5"	—	—	317	1344	—	522
6"	—	—	412	1770	—	678

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Indent EMT connectors					
1/2"	L1@0.05	Ea	.49	2.24	2.73
3/4"	L1@0.06	Ea	.89	2.69	3.58
Die cast set screw EMT connectors					
1/2"	L1@0.05	Ea	.31	2.24	2.55
3/4"	L1@0.06	Ea	.49	2.69	3.18
1"	L1@0.08	Ea	.95	3.59	4.54
1-1/4"	L1@0.10	Ea	1.65	4.49	6.14
1-1/2"	L1@0.10	Ea	2.25	4.49	6.74
2"	L1@0.15	Ea	3.00	6.73	9.73
2-1/2"	L1@0.15	Ea	6.80	6.73	13.53
3"	L1@0.20	Ea	8.27	8.98	17.25
3-1/2"	L1@0.20	Ea	9.80	8.98	18.78
4"	L1@0.25	Ea	12.30	11.20	23.50
Insulated die cast set screw EMT connectors					
1/2"	L1@0.05	Ea	.49	2.24	2.73
3/4"	L1@0.06	Ea	.76	2.69	3.45
1"	L1@0.08	Ea	1.37	3.59	4.96
1-1/4"	L1@0.10	Ea	2.75	4.49	7.24
1-1/2"	L1@0.10	Ea	3.35	4.49	7.84
2"	L1@0.15	Ea	4.49	6.73	11.22
2-1/2"	L1@0.15	Ea	12.20	6.73	18.93
3"	L1@0.20	Ea	14.30	8.98	23.28
3-1/2"	L1@0.20	Ea	18.10	8.98	27.08
4"	L1@0.25	Ea	20.00	11.20	31.20
Steel set screw EMT connectors					
1/2"	L1@0.05	Ea	.75	2.24	2.99
3/4"	L1@0.06	Ea	1.23	2.69	3.92
1"	L1@0.08	Ea	2.13	3.59	5.72
1-1/4"	L1@0.10	Ea	4.45	4.49	8.94
1-1/2"	L1@0.10	Ea	6.48	4.49	10.97
2"	L1@0.15	Ea	9.20	6.73	15.93
2-1/2"	L1@0.15	Ea	30.30	6.73	37.03
3"	L1@0.20	Ea	35.60	8.98	44.58
3-1/2"	L1@0.20	Ea	46.70	8.98	55.68
4"	L1@0.25	Ea	53.60	11.20	64.80





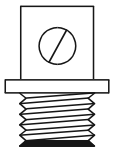




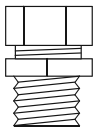
Use these figures to estimate the cost of EMT connectors installed on EMT conduit under the conditions described on pages 5 and 6. Costs listed are for each connector or expanded elbow installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include the connector locknut, removing the knockout, layout, material handling, and normal waste. Add for insulated bushings, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

Indenter tools are on page 22.

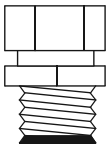
EMT Connectors



Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Insulated steel set screw EMT connectors					
1/2"	L1@0.05	Ea	1.00	2.24	3.24
3/4"	L1@0.06	Ea	1.61	2.69	4.30
1"	L1@0.08	Ea	2.68	3.59	6.27
1-1/4"	L1@0.10	Ea	5.36	4.49	9.85
1-1/2"	L1@0.10	Ea	7.87	4.49	12.36
2"	L1@0.15	Ea	11.40	6.73	18.13
2-1/2"	L1@0.15	Ea	51.10	6.73	57.83
3"	L1@0.20	Ea	63.60	8.98	72.58
3-1/2"	L1@0.20	Ea	85.30	8.98	94.28
4"	L1@0.25	Ea	93.30	11.20	104.50



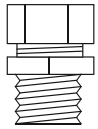
Die cast compression EMT connectors, raintight					
1/2"	L1@0.05	Ea	.49	2.24	2.73
3/4"	L1@0.06	Ea	.88	2.69	3.57
1"	L1@0.08	Ea	1.44	3.59	5.03
1-1/4"	L1@0.10	Ea	2.37	4.49	6.86
1-1/2"	L1@0.10	Ea	3.11	4.49	7.60
2"	L1@0.15	Ea	4.93	6.73	11.66
2-1/2"	L1@0.15	Ea	10.50	6.73	17.23
3"	L1@0.20	Ea	12.80	8.98	21.78
3-1/2"	L1@0.20	Ea	16.90	8.98	25.88
4"	L1@0.25	Ea	19.90	11.20	31.10

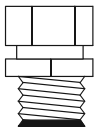


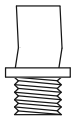
Insulated die cast compression EMT connectors, raintight					
1/2"	L1@0.05	Ea	.65	2.24	2.89
3/4"	L1@0.06	Ea	1.15	2.69	3.84
1"	L1@0.08	Ea	1.79	3.59	5.38
1-1/4"	L1@0.10	Ea	3.33	4.49	7.82
1-1/2"	L1@0.10	Ea	4.12	4.49	8.61
2"	L1@0.15	Ea	6.07	6.73	12.80
2-1/2"	L1@0.15	Ea	17.90	6.73	24.63
3"	L1@0.20	Ea	21.10	8.98	30.08
3-1/2"	L1@0.20	Ea	26.30	8.98	35.28
4"	L1@0.25	Ea	30.70	11.20	41.90

Use these figures to estimate the cost of EMT connectors installed on EMT conduit under the conditions described on pages 5 and 6. Costs listed are for each connector installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include the connector locknut, removing the knockout, layout, material handling, and normal waste. Add for insulated bushings, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Steel compression EMT connectors, raintight					
1/2"	L1@0.05	Ea	.09	2.24	2.33
3/4"	L1@0.06	Ea	.15	2.69	2.84
1"	L1@0.08	Ea	.20	3.59	3.79
1-1/4"	L1@0.10	Ea	.44	4.49	4.93
1-1/2"	L1@0.10	Ea	.63	4.49	5.12
2"	L1@0.15	Ea	.89	6.73	7.62
2-1/2"	L1@0.15	Ea	4.32	6.73	11.05
3"	L1@0.20	Ea	6.00	8.98	14.98
3-1/2"	L1@0.20	Ea	9.07	8.98	18.05
4"	L1@0.25	Ea	9.27	11.20	20.47
Insulated steel compression EMT connectors, raintight					
1/2"	L1@0.05	Ea	.11	2.24	2.35
3/4"	L1@0.06	Ea	.16	2.69	2.85
1"	L1@0.08	Ea	.27	3.59	3.86
1-1/4"	L1@0.10	Ea	.56	4.49	5.05
1-1/2"	L1@0.10	Ea	.81	4.49	5.30
2"	L1@0.15	Ea	1.17	6.73	7.90
2-1/2"	L1@0.15	Ea	7.27	6.73	14.00
3"	L1@0.20	Ea	9.40	8.98	18.38
3-1/2"	L1@0.20	Ea	13.70	8.98	22.68
4"	L1@0.25	Ea	14.10	11.20	25.30
Die cast indent offset EMT connectors					
1/2"	L1@0.10	Ea	1.55	4.49	6.04
3/4"	L1@0.10	Ea	2.12	4.49	6.61
Die cast set screw offset EMT connectors					
1/2"	L1@0.10	Ea	1.93	4.49	6.42
3/4"	L1@0.10	Ea	2.80	4.49	7.29
1"	L1@0.15	Ea	4.04	6.73	10.77



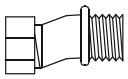




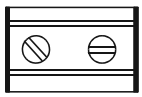
Use these figures to estimate the cost of EMT connectors installed on EMT conduit under the conditions described on pages 5 and 6. Costs listed are for each connector installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include the connector locknut, removing the knockout, layout, material handling, and normal waste. Add for insulated bushings, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

Indenter tools are on page 22.

EMT Connectors and Couplings

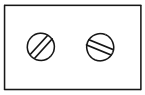


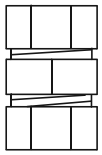
Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Steel compression offset EMT connectors, raintight					
1/2"	L1@0.10	Ea	2.96	4.49	7.45
3/4"	L1@0.10	Ea	4.28	4.49	8.77
1"	L1@0.15	Ea	4.76	6.73	11.49
Indent EMT couplings					
1/2"	L1@0.05	Ea	.52	2.24	2.76
3/4"	L1@0.06	Ea	1.00	2.69	3.69
Die cast set screw EMT couplings					
1/2"	L1@0.05	Ea	.33	2.24	2.57
3/4"	L1@0.06	Ea	.52	2.69	3.21
1"	L1@0.08	Ea	.88	3.59	4.47
1-1/4"	L1@0.10	Ea	1.53	4.49	6.02
1-1/2"	L1@0.10	Ea	2.33	4.49	6.82
2"	L1@0.15	Ea	3.11	6.73	9.84
2-1/2"	L1@0.15	Ea	5.95	6.73	12.68
3"	L1@0.20	Ea	6.80	8.98	15.78
3-1/2"	L1@0.20	Ea	7.87	8.98	16.85
4"	L1@0.25	Ea	9.60	11.20	20.80
Indenter tools					
With jaws for 1/2" EMT	—	Ea	28.20	-	28.20
With jaws for 3/4" EMT	—	Ea	39.20	-	39.20
Replacement points, 1/2" EMT	—	Ea	2.13	—	2.13
Replacement points, 3/4" EMT	—	Ea	2.22	—	2.22

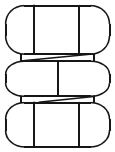


Use these figures to estimate the cost of EMT connectors and couplings installed on EMT conduit under the conditions described on pages 5 and 6. Costs listed are for each coupling or connector installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include the connector or coupling, layout, material handling, and normal waste. Add for conduit, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Drive-on EMT fittings are rated as raintight and are also concrete tight. They are threaded with a standard electrical pipe thread and can be adapted easily to rigid conduit or other threaded fittings. Material costs assume purchase of full box quantities.

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Set screw steel EMT couplings					
1/2"	L1@0.05	Ea	.19	2.24	2.43
3/4"	L1@0.06	Ea	.24	2.69	2.93
1"	L1@0.08	Ea	.37	3.59	3.96
1-1/4"	L1@0.10	Ea	.76	4.49	5.25
1-1/2"	L1@0.10	Ea	1.15	4.49	5.64
2"	L1@0.15	Ea	1.51	6.73	8.24
2-1/2"	L1@0.15	Ea	3.28	6.73	10.01
3"	L1@0.20	Ea	3.67	8.98	12.65
3-1/2"	L1@0.20	Ea	4.49	8.98	13.47
4"	L1@0.25	Ea	4.89	11.20	16.09
Die cast compression EMT couplings, raintight					
1/2"	L1@0.05	Ea	.28	2.24	2.52
3/4"	L1@0.06	Ea	.36	2.69	3.05
1"	L1@0.08	Ea	.57	3.59	4.16
1-1/4"	L1@0.10	Ea	1.07	4.49	5.56
1-1/2"	L1@0.10	Ea	1.65	4.49	6.14
2"	L1@0.15	Ea	2.03	6.73	8.76
2-1/2"	L1@0.15	Ea	7.87	6.73	14.60
3"	L1@0.20	Ea	8.40	8.98	17.38
3-1/2"	L1@0.20	Ea	10.30	8.98	19.28
4"	L1@0.25	Ea	10.70	11.20	21.90
Steel compression EMT couplings, raintight					
1/2"	L1@0.05	Ea	.28	2.24	2.52
3/4"	L1@0.06	Ea	.40	2.69	3.09
1"	L1@0.08	Ea	.60	3.59	4.19
1-1/4"	L1@0.10	Ea	1.09	4.49	5.58
1-1/2"	L1@0.10	Ea	1.59	4.49	6.08
2"	L1@0.15	Ea	2.17	6.73	8.90
2-1/2"	L1@0.15	Ea	8.93	6.73	15.66
3"	L1@0.20	Ea	11.40	8.98	20.38
3-1/2"	L1@0.20	Ea	16.40	8.98	25.38
4"	L1@0.25	Ea	16.80	11.20	28.00

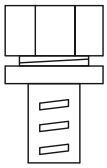




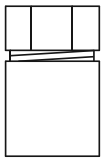


Use these figures to estimate the cost of EMT couplings installed on EMT conduit under the conditions described on pages 5 and 6. Costs listed are for each coupling installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include the coupling, layout, material handling, and normal waste. Add for conduit, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Compression fittings are raintight and can be used in concrete. Material costs assume purchase of full box quantities.

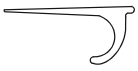
EMT Couplings and Straps



Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Die cast EMT to flex couplings					
1/2"	L1@0.05	Ea	1.43	2.24	3.67
3/4"	L1@0.05	Ea	1.91	2.24	4.15
1"	L1@0.06	Ea	2.67	2.69	5.36



Steel EMT to GRS compression couplings, raintight					
1/2"	L1@0.05	Ea	2.19	2.24	4.43
3/4"	L1@0.06	Ea	3.11	2.69	5.80
1"	L1@0.08	Ea	4.72	3.59	8.31
1-1/4"	L1@0.10	Ea	8.20	4.49	12.69
1-1/2"	L1@0.10	Ea	10.10	4.49	14.59
2"	L1@0.15	Ea	20.00	6.73	26.73



Steel EMT nail straps					
1/2"	L1@0.02	Ea	.08	.90	.98
3/4"	L1@0.03	Ea	.08	1.35	1.43
1"	L1@0.05	Ea	.11	2.24	2.35

Steel one hole EMT straps					
1/2"	L1@0.03	Ea	.04	1.35	1.39
3/4"	L1@0.04	Ea	.06	1.80	1.86
1"	L1@0.05	Ea	.10	2.24	2.34
1-1/4"	L1@0.06	Ea	.16	2.69	2.85
1-1/2"	L1@0.06	Ea	.24	2.69	2.93
2"	L1@0.10	Ea	.29	4.49	4.78
2-1/2"	L1@0.10	Ea	1.09	4.49	5.58
3"	L1@0.15	Ea	1.32	6.73	8.05
3-1/2"	L1@0.15	Ea	2.06	6.73	8.79
4"	L1@0.15	Ea	2.61	6.73	9.34

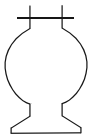
Use these figures to estimate the cost of EMT couplings and EMT straps installed on EMT conduit under the conditions described on pages 5 and 6. Costs listed are for each coupling and strap installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include cutting the EMT conduit, layout, material handling, and normal waste. Add the cost of conduit, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
One hole heavy duty steel EMT straps					
1/2"	L1@0.03	Ea	.14	1.35	1.49
3/4"	L1@0.04	Ea	.18	1.80	1.98
1"	L1@0.05	Ea	.32	2.24	2.56
1-1/4"	L1@0.06	Ea	.43	2.69	3.12
1-1/2"	L1@0.06	Ea	.66	2.69	3.35
2"	L1@0.10	Ea	.99	4.49	5.48
One hole malleable EMT straps					
1/2"	L1@0.03	Ea	.20	1.35	1.55
3/4"	L1@0.04	Ea	.30	1.80	2.10
1"	L1@0.05	Ea	.42	2.24	2.66
1-1/4"	L1@0.06	Ea	.84	2.69	3.53
1-1/2"	L1@0.06	Ea	.95	2.69	3.64
2"	L1@0.10	Ea	1.88	4.49	6.37
2-1/2"	L1@0.10	Ea	4.06	4.49	8.55
3"	L1@0.15	Ea	5.13	6.73	11.86
3-1/2"	L1@0.15	Ea	6.68	6.73	13.41
4"	L1@0.15	Ea	14.80	6.73	21.53
Two hole steel EMT straps					
1/2"	L1@0.03	Ea	.13	1.35	1.48
3/4"	L1@0.04	Ea	.18	1.80	1.98
1"	L1@0.05	Ea	.29	2.24	2.53
1-1/4"	L1@0.06	Ea	.41	2.69	3.10
1-1/2"	L1@0.06	Ea	.49	2.69	3.18
2"	L1@0.10	Ea	.82	4.49	5.31
2-1/2"	L1@0.10	Ea	1.22	4.49	5.71
3"	L1@0.15	Ea	1.43	6.73	8.16
3-1/2"	L1@0.15	Ea	1.48	6.73	8.21
4"	L1@0.15	Ea	1.77	6.73	8.50

Use these figures to estimate the cost of EMT straps installed on EMT conduit under the conditions described on pages 5 and 6. Costs listed are for each strap installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include cutting the EMT conduit, layout, material handling, and normal waste. Add the cost of conduit, screws or nails to hold the straps, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

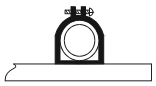
EMT Straps, Hangers and Clips

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Two hole heavy duty steel EMT straps					
1"	L1@0.05	Ea	.13	2.24	2.37
1-1/4"	L1@0.06	Ea	.18	2.69	2.87
1-1/2"	L1@0.06	Ea	.26	2.69	2.95
2"	L1@0.10	Ea	.42	4.49	4.91
2-1/2"	L1@0.10	Ea	.49	4.49	4.98
3"	L1@0.10	Ea	.70	4.49	5.19
3-1/2"	L1@0.15	Ea	1.05	6.73	7.78
4"	L1@0.15	Ea	1.79	6.73	8.52



Steel EMT conduit hangers with bolt					
1/2"	L1@0.03	Ea	.32	1.35	1.67
3/4"	L1@0.04	Ea	.36	1.80	2.16
1"	L1@0.05	Ea	.42	2.24	2.66
1-1/4"	L1@0.06	Ea	.51	2.69	3.20
1-1/2"	L1@0.06	Ea	.63	2.69	3.32
2"	L1@0.10	Ea	.79	4.49	5.28
2-1/2"	L1@0.10	Ea	.89	4.49	5.38
3"	L1@0.15	Ea	1.18	6.73	7.91
3-1/2"	L1@0.15	Ea	1.38	6.73	8.11
4"	L1@0.15	Ea	3.69	6.73	10.42

Beam clamp EMT conduit hanger assembly					
1/2"	L1@0.05	Ea	.63	2.24	2.87
3/4"	L1@0.06	Ea	.73	2.69	3.42
1"	L1@0.08	Ea	.85	3.59	4.44
1-1/4"	L1@0.10	Ea	1.01	4.49	5.50
1-1/2"	L1@0.10	Ea	1.26	4.49	5.75
2"	L1@0.15	Ea	1.56	6.73	8.29

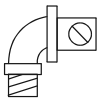


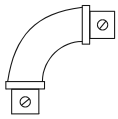
EMT Strut Clamp					
1/2"	L1@0.06	Ea	.47	2.69	3.16
3/4"	L1@0.08	Ea	.48	3.59	4.07
1"	L1@0.10	Ea	.55	4.49	5.04
1-1/4"	L1@0.10	Ea	.62	4.49	5.11
1-1/2"	L1@0.10	Ea	.75	4.49	5.24
2"	L1@0.15	Ea	.79	6.73	7.52

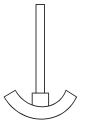
Use these figures to estimate the cost of EMT straps, hangers and clips installed on EMT conduit under the conditions described on pages 5 and 6. Costs listed are for each strap, hanger or clip installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include cutting the EMT conduit, layout, material handling, and normal waste. Add the cost of conduit, screws or nails to hold the straps, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

EMT Clips, Adapters, Elbows, Caps and Benders

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
EMT clips for rod, wire, or steel flange					
1/2"	L1@0.04	Ea	.16	1.80	1.96
3/4"	L1@0.05	Ea	.17	2.24	2.41
1"	L1@0.06	Ea	.19	2.69	2.88
1-1/4"	L1@0.08	Ea	.24	3.59	3.83
EMT split adapters					
1/2"	L1@0.08	Ea	1.34	3.59	4.93
3/4"	L1@0.10	Ea	1.19	4.49	5.68
1"	L1@0.15	Ea	1.65	6.73	8.38
Die cast 90 degree EMT elbows					
1/2"	L1@0.10	Ea	2.93	4.49	7.42
3/4"	L1@0.10	Ea	4.59	4.49	9.08
1"	L1@0.15	Ea	6.36	6.73	13.09
1-1/4"	L1@0.15	Ea	31.60	6.73	38.33
1-1/2"	L1@0.15	Ea	41.20	6.73	47.93
90 degree EMT short elbows					
1/2"	L1@0.10	Ea	2.61	4.49	7.10
3/4"	L1@0.10	Ea	3.65	4.49	8.14
1"	L1@0.15	Ea	6.43	6.73	13.16
1-1/4"	L1@0.15	Ea	25.50	6.73	32.23
Slip-fitter EMT entrance caps					
1/2"	L1@0.10	Ea	4.32	4.49	8.81
3/4"	L1@0.10	Ea	5.05	4.49	9.54
1"	L1@0.15	Ea	5.95	6.73	12.68
1-1/4"	L1@0.15	Ea	6.67	6.73	13.40
EMT hand benders					
1/2"	—	Ea	19.50	—	19.50
3/4"	—	Ea	42.40	—	42.40
1"	—	Ea	47.30	—	47.30

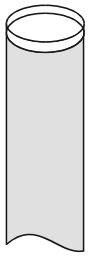


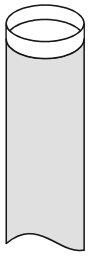


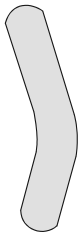


Use these figures to estimate the cost of items shown above installed on EMT conduit under the conditions described on pages 5 and 6. Costs listed are for each item installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include the connector locknut, removing the knockout when required, layout, material handling, and normal waste. Add for conduit boxes, insulated bushings, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Schedule 40 PVC conduit, 10' lengths with coupling					
1/2"	L1@3.10	CLF	32.40	139.00	171.40
3/4"	L1@3.20	CLF	37.90	144.00	181.90
1"	L1@3.30	CLF	57.80	148.00	205.80
1-1/4"	L1@3.40	CLF	83.20	153.00	236.20
1-1/2"	L1@3.45	CLF	94.40	155.00	249.40
2"	L1@3.50	CLF	116.00	157.00	273.00
2-1/2"	L2@3.60	CLF	193.00	162.00	355.00
3"	L2@3.75	CLF	232.00	168.00	400.00
4"	L2@4.00	CLF	323.00	180.00	503.00
5"	L2@4.25	CLF	484.00	191.00	675.00
6"	L2@4.50	CLF	572.00	202.00	774.00
Schedule 80 heavy wall PVC conduit, 10' lengths with coupling					
1/2"	L1@3.20	CLF	60.70	144.00	204.70
3/4"	L1@3.30	CLF	82.70	148.00	230.70
1"	L1@3.40	CLF	104.00	153.00	257.00
1-1/4"	L1@3.50	CLF	138.00	157.00	295.00
1-1/2"	L1@3.60	CLF	173.00	162.00	335.00
2"	L1@3.70	CLF	213.00	166.00	379.00
2-1/2"	L2@3.90	CLF	331.00	175.00	506.00
3"	L2@4.00	CLF	407.00	180.00	587.00
4"	L2@4.50	CLF	632.00	202.00	834.00
5"	L2@5.00	CLF	849.00	224.00	1,073.00
6”	L2@6.00	CLF	1,200.00	269.00	1,469.00
30 degree Schedule 40 PVC elbows					
1/2"	L1@0.05	Ea	3.72	2.24	5.96
3/4"	L1@0.06	Ea	3.84	2.69	6.53
1"	L1@0.08	Ea	4.60	3.59	8.19
1-1/4"	L1@0.10	Ea	6.59	4.49	11.08
1-1/2"	L1@0.10	Ea	9.07	4.49	13.56
2"	L1@0.15	Ea	13.30	6.73	20.03
2-1/2"	L2@0.15	Ea	25.10	6.73	31.83
3"	L2@0.20	Ea	42.80	8.98	51.78
4"	L2@0.25	Ea	71.10	11.20	82.30
5"	L2@0.30	Ea	115.00	13.50	128.50
6"	L2@0.50	Ea	133.00	22.40	155.40

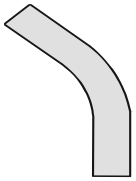




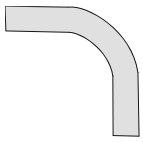


Use these figures to estimate the cost of PVC conduit and elbows installed underground or in a building under the conditions described on pages 5 and 6. Costs listed are for 100 linear feet of conduit installed or for each elbow installed. The crew is one electrician for diameters to 2" and two electricians for 2-1/2" and larger conduit. The labor cost is $44.88 per manhour. These costs include making up joints with cement (glue), layout, material handling, and normal waste. Add for bends, connectors, end bell, spacers, wire, trenching, encasement, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Conduit runs are assumed to be 50' long. Shorter runs will take more labor and longer runs will take less labor per linear foot.

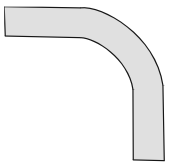
PVC Elbows and Couplings



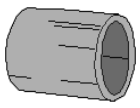
Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
45 degree Schedule 40 PVC elbows					
1/2"	L1@0.05	Ea	2.76	2.24	5.00
3/4"	L1@0.06	Ea	2.92	2.69	5.61
1"	L1@0.08	Ea	4.59	3.59	8.18
1-1/4"	L1@0.10	Ea	6.48	4.49	10.97
1-1/2"	L1@0.10	Ea	8.84	4.49	13.33
2"	L1@0.15	Ea	12.20	6.73	18.93
2-1/2"	L1@0.15	Ea	21.10	6.73	27.83
3"	L1@0.20	Ea	29.50	8.98	38.48
4"	L1@0.25	Ea	64.80	11.20	76.00
5"	L1@0.35	Ea	62.40	15.70	78.10
6"	L1@0.50	Ea	106.00	22.40	128.40



90 degree Schedule 40 PVC elbows					
1/2"	L1@0.05	Ea	2.80	2.24	5.04
3/4"	L1@0.06	Ea	3.19	2.69	5.88
1"	L1@0.08	Ea	5.36	3.59	8.95
1-1/4"	L1@0.10	Ea	7.11	4.49	11.60
1-1/2"	L1@0.10	Ea	9.47	4.49	13.96
2"	L1@0.15	Ea	9.99	6.73	16.72
2-1/2"	L1@0.15	Ea	22.40	6.73	29.13
3"	L1@0.20	Ea	40.00	8.98	48.98
4"	L1@0.25	Ea	68.40	11.20	79.60
5"	L1@0.35	Ea	121.00	15.70	136.70
6"	L1@0.50	Ea	203.00	22.40	225.40



90 degree Schedule 80 PVC elbows					
1/2"	L1@0.06	Ea	3.11	2.69	5.80
3/4"	L1@0.08	Ea	3.39	3.59	6.98
1"	L1@0.10	Ea	5.07	4.49	9.56
1-1/4"	L1@0.15	Ea	6.84	6.73	13.57
1-1/2"	L1@0.15	Ea	10.30	6.73	17.03
2"	L1@0.20	Ea	11.60	8.98	20.58
2-1/2"	L1@0.20	Ea	25.90	8.98	34.88
3"	L1@0.25	Ea	70.70	11.20	81.90
4"	L1@0.30	Ea	105.00	13.50	118.50

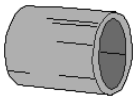


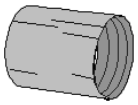
Schedule 40 PVC couplings					
1/2"	L1@0.02	Ea	.72	.90	1.62
3/4"	L1@0.03	Ea	.87	1.35	2.22
1"	L1@0.05	Ea	1.36	2.24	3.60
1-1/4"	L1@0.06	Ea	1.80	2.69	4.49
1-1/2"	L1@0.08	Ea	2.51	3.59	6.10

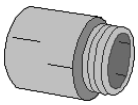
Use these figures to estimate the cost of PVC elbows and couplings installed on PVC conduit under the conditions described on pages 5 and 6. Costs listed are for each elbow or coupling installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include applying cement (glue), layout, material handling, and normal waste. Add for conduit, couplings, connectors, end bells, spacers, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Material costs assume purchase of full box quantities.

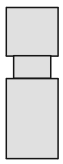
PVC Couplings, Adapters and Expansion Couplings

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Schedule 40 PVC couplings					
2"	L1@0.10	Ea	3.28	4.49	7.77
2-1/2"	L1@0.10	Ea	5.79	4.49	10.28
3"	L1@0.15	Ea	9.55	6.73	16.28
4"	L1@0.15	Ea	14.80	6.73	21.53
5"	L1@0.20	Ea	37.50	8.98	46.48
6"	L1@0.25	Ea	47.90	11.20	59.10
Type FA female PVC adapters					
1/2"	L1@0.05	Ea	1.12	2.24	3.36
3/4"	L1@0.06	Ea	1.80	2.69	4.49
1"	L1@0.08	Ea	2.44	3.59	6.03
1-1/4"	L1@0.10	Ea	3.23	4.49	7.72
1-1/2"	L1@0.10	Ea	3.47	4.49	7.96
2"	L1@0.15	Ea	4.72	6.73	11.45
2-1/2"	L1@0.15	Ea	10.40	6.73	17.13
3"	L1@0.20	Ea	13.00	8.98	21.98
4"	L1@0.25	Ea	17.30	11.20	28.50
5"	L1@0.30	Ea	43.50	13.50	57.00
6"	L1@0.40	Ea	57.10	18.00	75.10
Type TA terminal PVC adapters					
1/2"	L1@0.05	Ea	.99	2.24	3.23
3/4"	L1@0.06	Ea	1.71	2.69	4.40
1"	L1@0.08	Ea	2.12	3.59	5.71
1-1/4"	L1@0.10	Ea	2.72	4.49	7.21
1-1/2"	L1@0.10	Ea	3.28	4.49	7.77
2"	L1@0.15	Ea	4.75	6.73	11.48
2-1/2"	L1@0.15	Ea	8.07	6.73	14.80
3"	L1@0.20	Ea	11.80	8.98	20.78
4"	L1@0.25	Ea	20.30	11.20	31.50
5"	L1@0.30	Ea	43.50	13.50	57.00
6"	L1@0.40	Ea	57.10	18.00	75.10
2" range expansion PVC couplings					
1/2"	L1@0.15	Ea	39.20	6.73	45.93
3/4"	L1@0.20	Ea	39.90	8.98	48.88
1"	L1@0.25	Ea	57.10	11.20	68.30
1-1/4"	L1@0.30	Ea	84.70	13.50	98.20
1-1/2"	L1@0.30	Ea	107.00	13.50	120.50
2"	L1@0.40	Ea	132.00	18.00	150.00





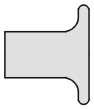


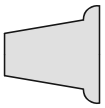


Use these figures to estimate the cost of PVC fittings installed on PVC conduit under the conditions described on pages 5 and 6. Costs listed are for each fitting installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include applying cement (glue), removal of knockouts, layout, material handling, and normal waste. Add for conduit, couplings, connectors, end bells, spacers, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

PVC Expansion Couplings, End Bells, Caps and Plugs

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
6" range expansion PVC couplings					
1/2"	L1@0.15	Ea	77.90	6.73	84.63
3/4"	L1@0.20	Ea	79.50	8.98	88.48
1"	L1@0.25	Ea	84.00	11.20	95.20
1-1/4"	L1@0.30	Ea	85.90	13.50	99.40
1-1/2"	L1@0.30	Ea	90.70	13.50	104.20
2"	L1@0.40	Ea	98.30	18.00	116.30
2-1/2"	L1@0.40	Ea	101.00	18.00	119.00
3"	L1@0.50	Ea	115.00	22.40	137.40
4"	L1@0.60	Ea	169.00	26.90	195.90
5"	L1@0.70	Ea	211.00	31.40	242.40
6"	L1@0.75	Ea	267.00	33.70	300.70
PVC end bells					
1"	L1@0.10	Ea	13.90	4.49	18.39
1-1/4"	L1@0.15	Ea	17.10	6.73	23.83
1-1/2"	L1@0.15	Ea	17.20	6.73	23.93
2"	L1@0.20	Ea	25.60	8.98	34.58
2-1/2"	L1@0.20	Ea	28.00	8.98	36.98
3"	L1@0.25	Ea	29.60	11.20	40.80
4"	L1@0.30	Ea	35.50	13.50	49.00
5"	L1@0.35	Ea	55.90	15.70	71.60
6"	L1@0.40	Ea	61.10	18.00	79.10
PVC caps and plugs					
1/2" caps	L1@0.05	Ea	4.31	2.24	6.55
3/4" caps	L1@0.06	Ea	5.31	2.69	8.00
1" caps	L1@0.08	Ea	5.64	3.59	9.23
1-1/4" caps	L1@0.10	Ea	7.72	4.49	12.21
1-1/2" plugs	L1@0.10	Ea	9.16	4.49	13.65
2" plugs	L1@0.10	Ea	9.91	4.49	14.40
2-1/2" plugs	L1@0.10	Ea	10.60	4.49	15.09
3" plugs	L1@0.15	Ea	7.80	6.73	14.53
4" plugs	L1@0.15	Ea	16.30	6.73	23.03
5" plugs	L1@0.20	Ea	73.10	8.98	82.08
6" plugs	L1@0.20	Ea	122.00	8.98	130.98

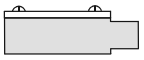


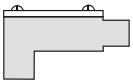


Use these figures to estimate the cost of PVC fittings installed on PVC conduit under the conditions described on pages 5 and 6. Costs listed are for each fitting installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include applying cement (glue), removal of knockouts, layout, material handling, and normal waste. Add for conduit, locknuts, insulated bushings, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

PVC Reducing Bushings and Conduit Bodies

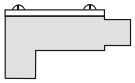
Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
PVC reducing bushings					
3/4" to 1/2"	L1@0.03	Ea	5.23	1.35	6.58
1" to 1/2"	L1@0.03	Ea	5.76	1.35	7.11
1" to 3/4"	L1@0.03	Ea	5.99	1.35	7.34
1-1/4" to 3/4"	L1@0.05	Ea	6.28	2.24	8.52
1-1/4" to 1"	L1@0.05	Ea	6.39	2.24	8.63
1-1/2" to 1"	L1@0.10	Ea	6.68	4.49	11.17
1-1/2" to 1-1/4"	L1@0.10	Ea	7.11	4.49	11.60
2" to 1-1/4"	L1@0.15	Ea	7.39	6.73	14.12
2-1/2" to 2"	L1@0.15	Ea	8.28	6.73	15.01
3" to 2"	L1@0.20	Ea	24.80	8.98	33.78
4" to 3"	L1@0.25	Ea	29.20	11.20	40.40
Type C PVC conduit bodies					
C 1/2"	L1@0.10	Ea	24.80	4.49	29.29
C 3/4"	L1@0.10	Ea	30.40	4.49	34.89
C 1"	L1@0.15	Ea	31.90	6.73	38.63
C 1-1/4"	L1@0.15	Ea	51.60	6.73	58.33
C 1-1/2"	L1@0.20	Ea	68.00	8.98	76.98
C 2"	L1@0.25	Ea	96.40	11.20	107.60
Type E PVC conduit bodies					
E 1/2"	L1@0.10	Ea	20.00	4.49	24.49
E 3/4"	L1@0.10	Ea	29.50	4.49	33.99
E 1"	L1@0.15	Ea	34.80	6.73	41.53
E 1-1/4"	L1@0.15	Ea	43.10	6.73	49.83
E 1-1/2"	L1@0.20	Ea	51.60	8.98	60.58
E 2"	L1@0.25	Ea	91.50	11.20	102.70
Type LB PVC conduit bodies					
LB 1/2"	L1@0.10	Ea	19.10	4.49	23.59
LB 3/4"	L1@0.10	Ea	24.80	4.49	29.29
LB 1"	L1@0.15	Ea	27.20	6.73	33.93
LB 1-1/4"	L1@0.15	Ea	41.20	6.73	47.93





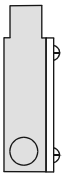
Use these figures to estimate the cost of PVC fittings installed on PVC conduit under the conditions described on pages 5 and 6. Costs listed are for each fitting installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include applying cement (glue), removal of knockouts, layout, material handling, and normal waste. Add for conduit, locknuts, insulated bushings, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

PVC Conduit Bodies and Service Entrance Caps



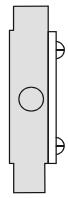
Type LB PVC conduit bodies

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
LB 1-1/2"	L1@0.20	Ea	49.60	8.98	58.58
LB 2"	L1@0.25	Ea	87.90	11.20	99.10
LB 2-1/2"	L1@0.30	Ea	320.00	13.50	333.50
LB 3"	L1@0.30	Ea	328.00	13.50	341.50
LB 4"	L1@0.40	Ea	359.00	18.00	377.00



Type LL PVC conduit bodies

LL 1/2"	L1@0.10	Ea	19.70	4.49	24.19
LL 3/4"	L1@0.10	Ea	29.50	4.49	33.99
LL 1"	L1@0.15	Ea	30.40	6.73	37.13
LL 1-1/4"	L1@0.15	Ea	43.90	6.73	50.63
LL 1-1/2"	L1@0.20	Ea	51.60	8.98	60.58
LL 2"	L1@0.25	Ea	89.50	11.20	100.70

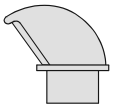


Type LR PVC conduit bodies

LR 1/2"	L1@0.10	Ea	19.70	4.49	24.19
LR 3/4"	L1@0.10	Ea	29.50	4.49	33.99
LR 1"	L1@0.15	Ea	30.40	6.73	37.13
LR 1-1/4"	L1@0.15	Ea	43.90	6.73	50.63
LR 1-1/2"	L1@0.20	Ea	51.60	8.98	60.58
LR 2"	L1@0.25	Ea	89.50	11.20	100.70

Type T PVC conduit bodies

T 1/2"	L1@0.10	Ea	24.80	4.49	29.29
T 3/4"	L1@0.15	Ea	30.40	6.73	37.13
T 1"	L1@0.15	Ea	31.90	6.73	38.63
T 1-1/4"	L1@0.20	Ea	53.20	8.98	62.18
T 1-1/2"	L1@0.25	Ea	68.00	11.20	79.20
T 2"	L1@0.30	Ea	96.40	13.50	109.90



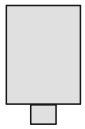
PVC slip-fitter entrance caps

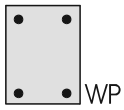
3/4"	L1@0.15	Ea	22.30	6.73	29.03
1"	L1@0.15	Ea	29.60	6.73	36.33
1-1/4"	L1@0.25	Ea	36.80	11.20	48.00
1-1/2"	L1@0.30	Ea	44.40	13.50	57.90
2"	L1@0.50	Ea	74.70	22.40	97.10
2-1/2"	L1@0.60	Ea	384.00	26.90	410.90
3"	L1@0.60	Ea	403.00	26.90	429.90
4"	L1@0.75	Ea	1,120.00	33.70	1,153.70

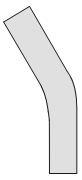
Use these figures to estimate the cost of PVC fittings installed on PVC conduit under the conditions described on pages 5 and 6. Costs listed are for each fitting installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include applying cement (glue), removal of knockouts, layout, material handling, and normal waste. Add for conduit, locknuts, insulated bushings, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

PVC Boxes, Covers and Elbows

Material		Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Type FS PVC boxes						
FS1	1/2"	L1@0.20	Ea	42.50	8.98	51.48
FS2	3/4"	L1@0.20	Ea	42.50	8.98	51.48
FS3	1"	L1@0.25	Ea	42.50	11.20	53.70
FSC1	1/2"	L1@0.25	Ea	46.40	11.20	57.60
FSC2	3/4"	L1@0.25	Ea	46.40	11.20	57.60
FSC3	1"	L1@0.30	Ea	46.40	13.50	59.90
FSS1	1/2"	L1@0.25	Ea	46.40	11.20	57.60
FSS2	3/4"	L1@0.25	Ea	46.40	11.20	57.60
FSS3	1"	L1@0.30	Ea	46.40	13.50	59.90
FCSS1	1/2"	L1@0.30	Ea	47.60	13.50	61.10
FCSS2	3/4"	L1@0.30	Ea	47.60	13.50	61.10
FCSS3	1"	L1@0.35	Ea	47.60	15.70	63.30
Type FS, WP PVC box covers						
1 gang blank		L1@0.10	Ea	8.79	4.49	13.28
1 gang single outlet		L1@0.10	Ea	11.50	4.49	15.99
1 gang duplex outlet		L1@0.10	Ea	18.50	4.49	22.99
1 gang single switch		L1@0.10	Ea	18.50	4.49	22.99
1 gang GFCI		L1@0.10	Ea	18.50	4.49	22.99
PVC junction boxes						
4" x 4" x 2"		L1@0.25	Ea	58.60	11.20	69.80
4" x 4" x 4"		L1@0.25	Ea	95.90	11.20	107.10
4" x 4" x 6"		L1@0.30	Ea	111.00	13.50	124.50
5" x 5" x 2"		L1@0.30	Ea	115.00	13.50	128.50
6" x 6" x 4"		L1@0.35	Ea	117.00	15.70	132.70
6" x 6" x 6"		L1@0.40	Ea	137.00	18.00	155.00
8" x 8" x 4"		L1@0.40	Ea	224.00	18.00	242.00
8" x 8" x 7"		L1@0.50	Ea	329.00	22.40	351.40
12" x 12" x 4"		L1@0.70	Ea	344.00	31.40	375.40
12" x 12" x 6"		L1@0.75	Ea	351.00	33.70	384.70
30 degree sweeping PVC elbows						
2"	24" radius	L1@0.15	Ea	85.90	6.73	92.63
2"	36" radius	L1@0.20	Ea	96.70	8.98	105.68
2"	48" radius	L1@0.25	Ea	107.00	11.20	118.20
3"	24" radius	L1@0.20	Ea	171.00	8.98	179.98
3"	36" radius	L1@0.25	Ea	184.00	11.20	195.20
3"	48" radius	L1@0.30	Ea	197.00	13.50	210.50
4"	24" radius	L1@0.25	Ea	248.00	11.20	259.20
4"	36" radius	L1@0.30	Ea	292.00	13.50	305.50
4"	48" radius	L1@0.40	Ea	336.00	18.00	354.00

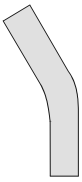






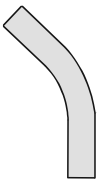
Use these figures to estimate the cost of PVC fittings installed on PVC conduit under the conditions described on pages 5 and 6. Costs listed are for each fitting installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include applying cement (glue), removal of knockouts, layout, material handling, and normal waste. Add for conduit, locknuts, insulated bushings, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full box quantities.

PVC Elbows



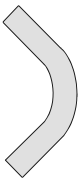
30 degree sweeping PVC elbows

Material		Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
5"	36" radius	L1@0.40	Ea	439.00	18.00	457.00
5"	48" radius	L1@0.50	Ea	504.00	22.40	526.40
6"	36" radius	L1@0.75	Ea	711.00	33.70	744.70
6"	48" radius	L1@1.00	Ea	764.00	44.90	808.90



45 degree sweeping PVC elbows

2"	24" radius	L1@0.15	Ea	85.90	6.73	92.63
2"	30" radius	L1@0.15	Ea	91.50	6.73	98.23
2"	36" radius	L1@0.20	Ea	96.70	8.98	105.68
2"	48" radius	L1@0.30	Ea	107.00	13.50	120.50
2-1/2"	30" radius	L1@0.20	Ea	128.00	8.98	136.98
2-1/2"	36" radius	L1@0.25	Ea	140.00	11.20	151.20
2-1/2"	48" radius	L1@0.30	Ea	152.00	13.50	165.50
3"	24" radius	L1@0.25	Ea	171.00	11.20	182.20
3"	30" radius	L1@0.30	Ea	177.00	13.50	190.50
3"	36" radius	L1@0.30	Ea	184.00	13.50	197.50
3"	48" radius	L1@0.40	Ea	197.00	18.00	215.00
4"	24" radius	L1@0.30	Ea	248.00	13.50	261.50
4"	30" radius	L1@0.30	Ea	271.00	13.50	284.50
4"	36" radius	L1@0.35	Ea	292.00	15.70	307.70
4"	48" radius	L1@0.40	Ea	336.00	18.00	354.00
5"	30" radius	L1@0.35	Ea	399.00	15.70	414.70
5"	36" radius	L1@0.40	Ea	439.00	18.00	457.00
5"	48" radius	L1@0.50	Ea	504.00	22.40	526.40
6"	36" radius	L1@0.75	Ea	711.00	33.70	744.70
6"	48" radius	L1@1.00	Ea	764.00	44.90	808.90

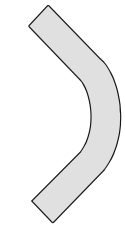


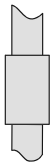
90 degree sweeping PVC elbows

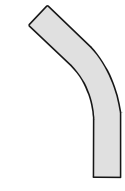
2"	24" radius	L1@0.20	Ea	91.50	8.98	100.48
2"	30" radius	L1@0.25	Ea	96.70	11.20	107.90
2"	36" radius	L1@0.30	Ea	107.00	13.50	120.50
2"	48" radius	L1@0.35	Ea	113.00	15.70	128.70
2-1/2"	30" radius	L1@0.30	Ea	99.10	13.50	112.60
2-1/2"	36" radius	L1@0.35	Ea	106.00	15.70	121.70
2-1/2"	48" radius	L1@0.40	Ea	115.00	18.00	133.00

Use these figures and the table at the top of the next page to estimate the cost of PVC sweeps installed on PVC conduit under the conditions described on pages 5 and 6. Costs listed are for each sweep installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include applying cement (glue), layout, material handling, and normal waste. Add for couplings, connectors, end bells, spacers, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume purchase of full packages.

Material		Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
90 degree sweeping PVC elbows						
3"	24" radius	L2@0.30	Ea	171.00	13.50	184.50
3"	30" radius	L2@0.35	Ea	177.00	15.70	192.70
3"	36" radius	L2@0.40	Ea	184.00	18.00	202.00
3"	48" radius	L2@0.50	Ea	189.00	22.40	211.40
4"	24" radius	L2@0.35	Ea	248.00	15.70	263.70
4"	30" radius	L2@0.40	Ea	271.00	18.00	289.00
4"	36" radius	L2@0.45	Ea	292.00	20.20	312.20
4"	48" radius	L2@0.55	Ea	336.00	24.70	360.70
5"	30" radius	L2@0.45	Ea	399.00	20.20	419.20
5"	36" radius	L2@0.50	Ea	439.00	22.40	461.40
5"	48" radius	L2@0.60	Ea	504.00	26.90	530.90
6"	36" radius	L2@0.60	Ea	711.00	26.90	737.90
6"	48" radius	L2@0.75	Ea	764.00	33.70	797.70
Type EB power and communication duct						
2"		L2@3.30	CLF	356.00	148.00	504.00
3"		L2@3.50	CLF	519.00	157.00	676.00
4"		L2@4.00	CLF	847.00	180.00	1,027.00
5"		L2@4.50	CLF	1,280.00	202.00	1,482.00
6"		L2@5.00	CLF	1,840.00	224.00	2,064.00
Type DB power and communication duct						
2"		L2@3.30	CLF	399.00	148.00	547.00
4"		L2@4.00	CLF	1,180.00	180.00	1,360.00
5"		L2@4.50	CLF	1,290.00	202.00	1,492.00
6"		L2@5.00	CLF	1,970.00	224.00	2,194.00
Type EB or DB power and communication duct couplings						
2"		L1@0.05	Ea	5.32	2.24	7.56
3"		L1@0.10	Ea	12.20	4.49	16.69
4"		L1@0.10	Ea	19.10	4.49	23.59
5"		L1@0.15	Ea	35.10	6.73	41.83
6"		L1@0.15	Ea	107.00	6.73	113.73
45 degree Type EB or DB power and communication duct elbows						
2"	24" radius	L1@0.15	Ea	36.40	6.73	43.13
3"	36" radius	L1@0.30	Ea	50.40	13.50	63.90
3"	48" radius	L1@0.40	Ea	82.70	18.00	100.70
4"	36" radius	L1@0.40	Ea	66.30	18.00	84.30
4"	48" radius	L1@0.75	Ea	93.10	33.70	126.80
5"	48" radius	L1@0.50	Ea	120.00	22.40	142.40

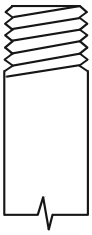




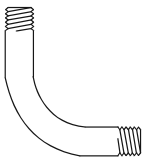


Use these figures to estimate the cost of PVC elbows (top table) and power and communication duct couplings and elbows (bottom tables). The footnote on the previous page applies to PVC sweep elbows. P&C duct is installed underground under the conditions described on pages 5 and 6. Costs listed are for each 100 linear feet installed. The crew is two electricians working at a labor cost of $44.88 per manhour. These costs include one coupling, applying cement (glue), multiple runs in the same trench, layout, material handling, and normal waste. Add for trenching, encasement, spacers and chairs, single duct runs, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Encased burial requires spacers or chairs every 5 feet. Costs for spacers, chairs, encasement and trenching are listed elsewhere in this manual.

Aluminum Rigid Conduit (ARC), Elbows and Nipples

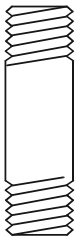


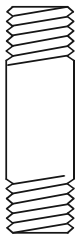
Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Aluminum rigid conduit					
1/2"	L1@3.75	CLF	273.00	168.00	441.00
3/4"	L1@4.00	CLF	367.00	180.00	547.00
1"	L1@4.50	CLF	520.00	202.00	722.00
1-1/4"	L1@6.00	CLF	725.00	269.00	994.00
1-1/2"	L1@7.00	CLF	664.00	314.00	978.00
2"	L1@8.50	CLF	1,130.00	381.00	1,511.00
2-1/2"	L2@10.0	CLF	1,530.00	449.00	1,979.00
3"	L2@12.0	CLF	1,930.00	539.00	2,469.00
3-1/2"	L2@14.0	CLF	2,310.00	628.00	2,938.00
4"	L2@16.0	CLF	2,730.00	718.00	3,448.00
5"	L2@20.0	CLF	4,160.00	898.00	5,058.00
6"	L2@25.0	CLF	5,730.00	1,120.00	6,850.00
90 degree aluminum rigid conduit elbows					
1/2"	L1@0.10	Ea	19.20	4.49	23.69
3/4"	L1@0.10	Ea	24.70	4.49	29.19
1"	L1@0.10	Ea	40.70	4.49	45.19
1-1/4"	L1@0.15	Ea	42.30	6.73	49.03
1-1/2"	L1@0.15	Ea	161.00	6.73	167.73
2"	L1@0.20	Ea	239.00	8.98	247.98
2-1/2"	L2@0.20	Ea	403.00	8.98	411.98
3"	L2@0.25	Ea	621.00	11.20	632.20
3-1/2"	L2@0.25	Ea	972.00	11.20	983.20
4"	L2@0.30	Ea	1,640.00	13.50	1,653.50
5"	L2@0.40	Ea	3,400.00	18.00	3,418.00
6"	L2@0.70	Ea	4,690.00	31.40	4,721.40
Aluminum rigid conduit nipples					
1/2" x close	L1@0.05	Ea	21.10	2.24	23.34
1/2" x 1-1/2"	L1@0.05	Ea	16.00	2.24	18.24
1/2" x 2"	L1@0.05	Ea	17.30	2.24	19.54
1/2" x 2-1/2"	L1@0.05	Ea	20.50	2.24	22.74
1/2" x 3"	L1@0.05	Ea	21.50	2.24	23.74
1/2" x 3-1/2"	L1@0.05	Ea	23.30	2.24	25.54
1/2" x 4"	L1@0.05	Ea	25.20	2.24	27.44
1/2" x 5"	L1@0.05	Ea	28.50	2.24	30.74
1/2" x 6"	L1@0.05	Ea	30.30	2.24	32.54
1/2" x 8"	L1@0.05	Ea	40.50	2.24	42.74
1/2" x 10"	L1@0.05	Ea	49.10	2.24	51.34
1/2" x 12"	L1@0.05	Ea	57.10	2.24	59.34
3/4" x close	L1@0.06	Ea	21.10	2.69	23.79
3/4" x 2"	L1@0.06	Ea	22.70	2.69	25.39
3/4" x 2-1/2"	L1@0.06	Ea	24.30	2.69	26.99

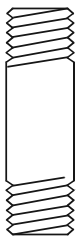


Use these figures to estimate the cost of aluminum rigid conduit, elbows and nipples installed in a building under the conditions described on pages 5 and 6. Costs listed are for each 100 linear feet of conduit or each fitting installed. The crew is one electrician for conduit sizes to 2" and two electricians for conduit over 2". The labor cost is $44.88 per manhour. These costs include conduit bending, one coupling for each length of conduit, layout, material handling, and normal waste. Add for extra couplings, straps, terminations, wire, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Elbows and nipples are factory made. Do not install ARC in concrete or masonry construction. Conduit runs are assumed to be 50' long. Installation costs per linear foot will be less on longer runs and more on shorter runs.

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Aluminum rigid conduit nipples					
3/4" x 3"	L1@0.06	Ea	26.10	2.69	28.79
3/4" x 3-1/2"	L1@0.06	Ea	26.90	2.69	29.59
3/4" x 4"	L1@0.06	Ea	28.40	2.69	31.09
3/4" x 5"	L1@0.06	Ea	34.10	2.69	36.79
3/4" x 6"	L1@0.06	Ea	38.80	2.69	41.49
3/4" x 8"	L1@0.06	Ea	51.20	2.69	53.89
3/4" x 10"	L1@0.06	Ea	60.00	2.69	62.69
3/4" x 12"	L1@0.06	Ea	73.30	2.69	75.99
1" x close	L1@0.08	Ea	25.60	3.59	29.19
1" x 2"	L1@0.08	Ea	28.40	3.59	31.99
1" x 2-1/2"	L1@0.08	Ea	31.10	3.59	34.69
1" x 3"	L1@0.08	Ea	33.60	3.59	37.19
1" x 3-1/2"	L1@0.08	Ea	37.50	3.59	41.09
1" x 4"	L1@0.08	Ea	41.50	3.59	45.09
1" x 5"	L1@0.08	Ea	48.90	3.59	52.49
1" x 6"	L1@0.08	Ea	57.60	3.59	61.19
1" x 8"	L1@0.08	Ea	71.70	3.59	75.29
1" x 10"	L1@0.08	Ea	90.10	3.59	93.69
1" x 12"	L1@0.08	Ea	107.00	3.59	110.59
1-1/4" x close	L1@0.10	Ea	34.40	4.49	38.89
1-1/4" x 2"	L1@0.10	Ea	35.30	4.49	39.79
1-1/4" x 2-1/2"	L1@0.10	Ea	38.70	4.49	43.19
1-1/4" x 3"	L1@0.10	Ea	43.60	4.49	48.09
1-1/4" x 3-1/2"	L1@0.10	Ea	49.90	4.49	54.39
1-1/4" x 4"	L1@0.10	Ea	64.30	4.49	68.79
1-1/4" x 5"	L1@0.10	Ea	74.80	4.49	79.29
1-1/4" x 6"	L1@0.10	Ea	74.80	4.49	79.29
1-1/4" x 8"	L1@0.10	Ea	95.10	4.49	99.59
1-1/4" x 10"	L1@0.10	Ea	116.00	4.49	120.49
1-1/4" x 12"	L1@0.10	Ea	136.00	4.49	140.49
1-1/2" x close	L1@0.10	Ea	42.80	4.49	47.29
1-1/2" x 2"	L1@0.10	Ea	43.90	4.49	48.39
1-1/2" x 2-1/2"	L1@0.10	Ea	46.80	4.49	51.29
1-1/2" x 3"	L1@0.10	Ea	53.20	4.49	57.69
1-1/2" x 3-1/2"	L1@0.10	Ea	67.10	4.49	71.59
1-1/2" x 4"	L1@0.10	Ea	67.20	4.49	71.69
1-1/2" x 5"	L1@0.10	Ea	77.10	4.49	81.59
1-1/2" x 6"	L1@0.10	Ea	89.10	4.49	93.59
1-1/2" x 8"	L1@0.10	Ea	115.00	4.49	119.49
1-1/2" x 10"	L1@0.10	Ea	140.00	4.49	144.49
1-1/2" x 12"	L1@0.10	Ea	163.00	4.49	167.49







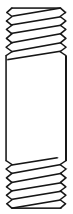
Use these figures to estimate the cost of ARC nipples installed on ARC conduit under the conditions described on pages 5 and 6. Costs listed are for each nipple installed. The crew is one electrician at a labor cost of $44.88 per manhour. These costs include removing the knockout, layout, material handling, and normal waste. Add for extra couplings, straps, boxes, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume the purchase of full packages.

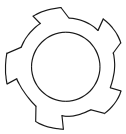
ARC Nipples

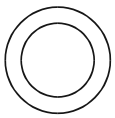
Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Aluminum rigid conduit nipples (continued)					
2" x close	L1@0.15	Ea	43.90	6.73	50.63
2" x 2-1/2"	L1@0.15	Ea	60.90	6.73	67.63
2" x 3"	L1@0.15	Ea	68.10	6.73	74.83
2" x 3-1/2"	L1@0.15	Ea	80.40	6.73	87.13
2" x 4"	L1@0.15	Ea	83.90	6.73	90.63
2" x 5"	L1@0.15	Ea	83.90	6.73	90.63
2" x 6"	L1@0.15	Ea	115.00	6.73	121.73
2" x 8"	L1@0.15	Ea	147.00	6.73	153.73
2" x 10"	L1@0.15	Ea	177.00	6.73	183.73
2" x 12"	L1@0.15	Ea	212.00	6.73	218.73
2-1/2" x close	L1@0.15	Ea	120.00	6.73	126.73
2-1/2" x 3"	L1@0.15	Ea	124.00	6.73	130.73
2-1/2" x 3-1/2"	L1@0.15	Ea	137.00	6.73	143.73
2-1/2" x 4"	L1@0.15	Ea	145.00	6.73	151.73
2-1/2" x 5"	L1@0.15	Ea	163.00	6.73	169.73
2-1/2" x 6"	L1@0.15	Ea	177.00	6.73	183.73
2-1/2" x 8"	L1@0.15	Ea	227.00	6.73	233.73
2-1/2" x 10"	L1@0.15	Ea	275.00	6.73	281.73
2-1/2" x 12"	L1@0.15	Ea	308.00	6.73	314.73
3" x close	L1@0.20	Ea	78.30	8.98	87.28
3" x 3-1/2"	L1@0.20	Ea	105.00	8.98	113.98
3" x 4"	L1@0.20	Ea	109.00	8.98	117.98
3" x 5"	L1@0.20	Ea	125.00	8.98	133.98
3" x 6"	L1@0.20	Ea	143.00	8.98	151.98
3" x 8"	L1@0.20	Ea	183.00	8.98	191.98
3" x 10"	L1@0.20	Ea	221.00	8.98	229.98
3" x 12"	L1@0.20	Ea	261.00	8.98	269.98
3-1/2" x close	L1@0.25	Ea	99.90	11.20	111.10
3-1/2" x 4"	L1@0.25	Ea	126.00	11.20	137.20
3-1/2" x 5"	L1@0.25	Ea	151.00	11.20	162.20
3-1/2" x 6"	L1@0.25	Ea	175.00	11.20	186.20
3-1/2" x 8"	L1@0.25	Ea	217.00	11.20	228.20
3-1/2" x 10"	L1@0.25	Ea	269.00	11.20	280.20
3-1/2" x 12"	L1@0.25	Ea	315.00	11.20	326.20

Use these figures to estimate the cost of ARC nipples installed on ARC conduit under the conditions described on pages 5 and 6. Costs listed are for each nipple installed. The crew is one electrician at a labor cost of $44.88 per manhour. These costs include removing the knockout, layout, material handling, and normal waste. Add for extra couplings, straps, boxes, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs assume the purchase of full packages. Nipples are factory made, not field made. In many cases a coupling will be needed with each nipple. Do not install aluminum fittings in concrete or masonry. The bending, cutting and threading tools for aluminum conduit are the same as used for GRS. Don't mix aluminum fittings with other types of fittings.

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Aluminum rigid conduit nipples (continued)					
4" x close	L1@0.25	Ea	105.00	11.20	116.20
4" x 4"	L1@0.25	Ea	131.00	11.20	142.20
4" x 5"	L1@0.25	Ea	151.00	11.20	162.20
4" x 6"	L1@0.25	Ea	175.00	11.20	186.20
4" x 8"	L1@0.25	Ea	221.00	11.20	232.20
4" x 10"	L1@0.25	Ea	269.00	11.20	280.20
4" x 12"	L1@0.25	Ea	317.00	11.20	328.20
5" x close	L1@0.40	Ea	244.00	18.00	262.00
5" x 5"	L1@0.40	Ea	287.00	18.00	305.00
5" x 6"	L1@0.40	Ea	299.00	18.00	317.00
5" x 8"	L1@0.40	Ea	381.00	18.00	399.00
5" x 10"	L1@0.40	Ea	460.00	18.00	478.00
5" x 12"	L1@0.40	Ea	529.00	18.00	547.00
6" x close	L1@0.60	Ea	295.00	26.90	321.90
6" x 5"	L1@0.60	Ea	344.00	26.90	370.90
6" x 6"	L1@0.60	Ea	376.00	26.90	402.90
6" x 8"	L1@0.60	Ea	512.00	26.90	538.90
6" x 10"	L1@0.60	Ea	615.00	26.90	641.90
6" x 12"	L1@0.60	Ea	677.00	26.90	703.90
Aluminum locknuts					
1/2"	L1@0.02	Ea	.75	.90	1.65
3/4"	L1@0.02	Ea	1.37	.90	2.27
1"	L1@0.02	Ea	2.04	.90	2.94
1-1/4"	L1@0.03	Ea	2.71	1.35	4.06
1-1/2"	L1@0.03	Ea	3.84	1.35	5.19
2"	L1@0.05	Ea	6.13	2.24	8.37
2-1/2"	L1@0.05	Ea	11.70	2.24	13.94
3"	L1@0.07	Ea	12.90	3.14	16.04
3-1/2"	L1@0.07	Ea	36.40	3.14	39.54
4"	L1@0.09	Ea	39.90	4.04	43.94
5"	L1@0.10	Ea	102.00	4.49	106.49
6"	L1@0.20	Ea	180.00	8.98	188.98
Aluminum bushings					
1/2"	L1@0.02	Ea	7.56	.90	8.46
3/4"	L1@0.02	Ea	13.90	.90	14.80
1"	L1@0.03	Ea	18.30	1.35	19.65

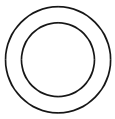




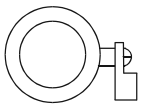


Use these figures to estimate the cost of ARC nipples, locknuts and bushings installed on ARC conduit under the conditions described on pages 5 and 6. Costs listed are for each fitting installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include removing the knockout, layout, material handling, and normal waste. Add for extra couplings, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs are based on purchase of full packages. Nipples are factory made, not field made. In many cases a coupling will be needed with each nipple. Do not install aluminum fittings in concrete or masonry.

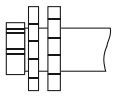
Aluminum Bushings and Terminations



Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Aluminum bushings (continued)					
1-1/4"	L1@0.04	Ea	28.70	1.80	30.50
1-1/2"	L1@0.04	Ea	36.20	1.80	38.00
2"	L1@0.05	Ea	44.70	2.24	46.94
2-1/2"	L1@0.05	Ea	60.10	2.24	62.34
3"	L1@0.07	Ea	63.70	3.14	66.84
3-1/2"	L1@0.07	Ea	127.00	3.14	130.14
4"	L1@0.09	Ea	148.00	4.04	152.04
5"	L1@0.10	Ea	246.00	4.49	250.49
6"	L1@0.20	Ea	377.00	8.98	385.98



Insulated aluminum ground bushings					
1/2"	L1@0.10	Ea	18.30	4.49	22.79
3/4"	L1@0.10	Ea	20.50	4.49	24.99
1"	L1@0.10	Ea	29.90	4.49	34.39
1-1/4"	L1@0.15	Ea	30.20	6.73	36.93
1-1/2"	L1@0.15	Ea	38.30	6.73	45.03
2"	L1@0.20	Ea	51.60	8.98	60.58
2-1/2"	L1@0.20	Ea	92.70	8.98	101.68
3"	L1@0.25	Ea	141.00	11.20	152.20
3-1/2"	L1@0.25	Ea	169.00	11.20	180.20
4"	L1@0.30	Ea	228.00	13.50	241.50
5"	L1@0.40	Ea	359.00	18.00	377.00
6"	L1@0.50	Ea	554.00	22.40	576.40

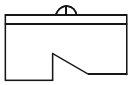


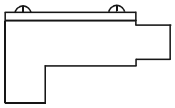
Conduit termination, two aluminum locknuts & one plastic bushing					
1/2"	L1@0.05	Ea	1.87	2.24	4.11
3/4"	L1@0.06	Ea	3.40	2.69	6.09
1"	L1@0.08	Ea	5.15	3.59	8.74
1-1/4"	L1@0.10	Ea	6.96	4.49	11.45
1-1/2"	L1@0.10	Ea	9.78	4.49	14.27
2"	L1@0.15	Ea	16.20	6.73	22.93
2-1/2"	L1@0.15	Ea	32.60	6.73	39.33
3"	L1@0.20	Ea	35.10	8.98	44.08
3-1/2"	L1@0.20	Ea	85.90	8.98	94.88
4"	L1@0.25	Ea	93.80	11.20	105.00
5"	L1@0.40	Ea	230.00	18.00	248.00
6"	L1@0.60	Ea	407.00	26.90	433.90

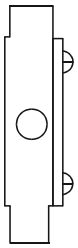
Use these figures to estimate the cost of aluminum bushings, ground bushings, and terminations under the conditions described on pages 5 and 6. Costs listed are for each fitting installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include removal of knockouts, layout, material handling, and normal waste. Add for sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material costs are based on purchase of full boxes. One locknut is used outside the box and inside the box on each conduit termination. A bushing is needed at each conduit end to protect the wire.

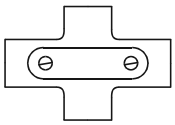
Cast Metal Entrance Elbows and Conduit Bodies

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Cast metal Type SLB entrance elbows					
1/2"	L1@0.10	Ea	8.30	4.49	12.79
3/4"	L1@0.15	Ea	10.20	6.73	16.93
1"	L1@0.15	Ea	18.60	6.73	25.33
1-1/4"	L1@0.20	Ea	28.50	8.98	37.48
1-1/2"	L1@0.20	Ea	51.20	8.98	60.18
2"	L1@0.25	Ea	58.30	11.20	69.50
2-1/2"	L1@0.30	Ea	207.00	13.50	220.50
3"	L1@0.40	Ea	266.00	18.00	284.00
Galvanized cast metal Types LB, LL or LR conduit bodies					
1/2"	L1@0.10	Ea	13.30	4.49	17.79
3/4"	L1@0.15	Ea	15.70	6.73	22.43
1"	L1@0.20	Ea	23.50	8.98	32.48
1-1/4"	L1@0.25	Ea	40.60	11.20	51.80
1-1/2"	L1@0.25	Ea	53.00	11.20	64.20
2"	L1@0.30	Ea	88.60	13.50	102.10
2-1/2"	L1@0.40	Ea	178.00	18.00	196.00
3"	L1@0.50	Ea	235.00	22.40	257.40
3-1/2"	L1@0.70	Ea	400.00	31.40	431.40
4"	L1@1.00	Ea	451.00	44.90	495.90
Galvanized cast metal Type T conduit bodies					
1/2"	L1@0.15	Ea	11.50	6.73	18.23
3/4"	L1@0.20	Ea	15.80	8.98	24.78
1"	L1@0.25	Ea	23.20	11.20	34.40
1-1/4"	L1@0.30	Ea	34.70	13.50	48.20
1-1/2"	L1@0.30	Ea	52.10	13.50	65.60
2"	L1@0.40	Ea	80.30	18.00	98.30
2-1/2"	L1@0.50	Ea	160.00	22.40	182.40
3"	L1@0.70	Ea	211.00	31.40	242.40
3-1/2"	L1@0.90	Ea	548.00	40.40	588.40
4"	L1@1.25	Ea	703.00	56.10	759.10
Galvanized cast metal Type X conduit bodies					
1/2"	L1@0.20	Ea	38.50	8.98	47.48
3/4"	L1@0.25	Ea	45.10	11.20	56.30
1"	L1@0.30	Ea	62.30	13.50	75.80
1-1/4"	L1@0.40	Ea	87.20	18.00	105.20
1-1/2"	L1@0.40	Ea	110.00	18.00	128.00
2"	L1@0.50	Ea	195.00	22.40	217.40









Use these figures to estimate the cost of conduit bodies installed on EMT or GRS conduit under the conditions described on pages 5 and 6. Costs listed are for each body installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include layout, material handling, and normal waste. Add for conduit, nipples, boxes, covers, gaskets, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Using a larger conduit body or a mogul size can reduce the installation time when wire sizes are larger.

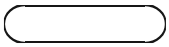
Blank Conduit Body Covers

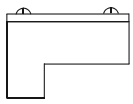
Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Steel blank conduit body covers					
1/2"	L1@0.05	Ea	1.93	2.24	4.17
3/4"	L1@0.05	Ea	4.29	2.24	6.53
1"	L1@0.05	Ea	3.52	2.24	5.76
1-1/4"	L1@0.10	Ea	5.04	4.49	9.53
1-1/2"	L1@0.10	Ea	6.16	4.49	10.65
2"	L1@0.10	Ea	9.25	4.49	13.74
2-1/2" - 3"	L1@0.15	Ea	13.20	6.73	19.93
2-1/2" - 4"	L1@0.20	Ea	23.80	8.98	32.78
Malleable blank conduit body covers					
1/2"	L1@0.05	Ea	7.20	2.24	9.44
3/4"	L1@0.05	Ea	5.99	2.24	8.23
1"	L1@0.10	Ea	9.62	4.49	14.11
1-1/4"	L1@0.10	Ea	11.60	4.49	16.09
1-1/2"	L1@0.10	Ea	13.60	4.49	18.09
2"	L1@0.15	Ea	26.90	6.73	33.63
2-1/2" - 3"	L1@0.20	Ea	43.00	8.98	51.98
2-1/2" - 4"	L1@0.25	Ea	61.70	11.20	72.90
Aluminum blank conduit body covers					
1/2"	L1@0.05	Ea	3.12	2.24	5.36
3/4"	L1@0.05	Ea	4.29	2.24	6.53
1"	L1@0.05	Ea	5.18	2.24	7.42
1-1/4"	L1@0.10	Ea	6.94	4.49	11.43
1-1/2"	L1@0.10	Ea	10.30	4.49	14.79
2"	L1@0.10	Ea	13.60	4.49	18.09
2-1/2" - 3"	L1@0.15	Ea	20.80	6.73	27.53
2-1/2" - 4"	L1@0.20	Ea	25.20	8.98	34.18

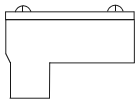
Use these figures to estimate the cost of blank conduit body covers installed on conduit bodies under the conditions described on pages 5 and 6. Costs listed are for each cover installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include layout, material handling, and normal waste. Add for conduit bodies, other fittings, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: These figures assume that the conduit body is readily accessible.

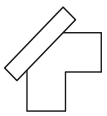
Conduit Body Gaskets, Conduit Bodies and Capped Elbows

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Conduit body gaskets					
1/2"	L1@0.02	Ea	3.47	.90	4.37
3/4"	L1@0.02	Ea	3.89	.90	4.79
1"	L1@0.03	Ea	4.29	1.35	5.64
1-1/4"	L1@0.05	Ea	4.71	2.24	6.95
1-1/2"	L1@0.05	Ea	5.48	2.24	7.72
2"	L1@0.07	Ea	5.78	3.14	8.92
2-1/2" - 3"	L1@0.10	Ea	10.80	4.49	15.29
2-1/2" - 4"	L1@0.15	Ea	12.80	6.73	19.53
Type LB, LL or LR aluminum conduit bodies with covers					
1/2"	L1@0.10	Ea	18.60	4.49	23.09
3/4"	L1@0.15	Ea	22.00	6.73	28.73
1"	L1@0.15	Ea	32.60	6.73	39.33
1-1/4"	L1@0.20	Ea	51.80	8.98	60.78
1-1/2"	L1@0.20	Ea	67.20	8.98	76.18
2"	L1@0.25	Ea	111.00	11.20	122.20
2-1/2"	L1@0.30	Ea	231.00	13.50	244.50
3"	L1@0.40	Ea	309.00	18.00	327.00
Type LB, LL or LR mogul aluminum conduit bodies with covers & gaskets					
1"	L1@0.25	Ea	140.00	11.20	151.20
1-1/4"	L1@0.30	Ea	147.00	13.50	160.50
1-1/2"	L1@0.30	Ea	261.00	13.50	274.50
2"	L1@0.50	Ea	402.00	22.40	424.40
2-1/2"	L1@0.70	Ea	614.00	31.40	645.40
3"	L1@0.75	Ea	934.00	33.70	967.70
3-1/2"	L1@1.00	Ea	1,080.00	44.90	1,124.90
4"	L1@1.00	Ea	1,200.00	44.90	1,244.90
Galvanized capped elbows					
1/2"	L1@0.10	Ea	18.40	4.49	22.89
3/4"	L1@0.15	Ea	27.60	6.73	34.33
1"	L1@0.20	Ea	34.30	8.98	43.28
1-1/4"	L1@0.25	Ea	41.70	11.20	52.90
1-1/2"	L1@0.25	Ea	54.30	11.20	65.50



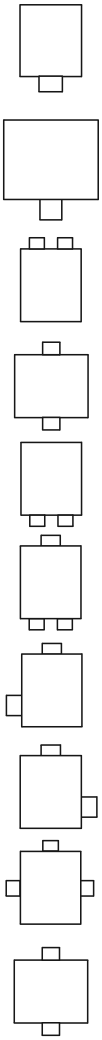






Use these figures to estimate the cost of conduit body gaskets, aluminum conduit bodies and capped elbows installed with covers and aluminum conduit under the conditions described on pages 5 and 6. Costs listed are for each fitting installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include layout, material handling, and normal waste. Add for covers, conduit, nipples, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Standard conduit bodies do not include covers and gaskets. Cost of mogul bodies includes covers and gaskets.

Galvanized Cast Boxes

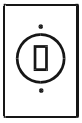


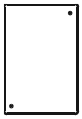
Material		Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Galvanized cast boxes with threaded hubs						
FS-1	1/2" one gang	L1@0.20	Ea	19.00	8.98	27.98
FS-2	3/4" one gang	L1@0.25	Ea	18.80	11.20	30.00
FS-3	1" one gang	L1@0.30	Ea	21.60	13.50	35.10
FS-12	1/2" two gang	L1@0.25	Ea	32.30	11.20	43.50
FS-22	3/4" two gang	L1@0.30	Ea	34.70	13.50	48.20
FS-32	1" two gang	L1@0.35	Ea	36.50	15.70	52.20
FSC-1	1/2" one gang	L1@0.25	Ea	32.70	11.20	43.90
FSC-2	3/4" one gang	L1@0.30	Ea	35.70	13.50	49.20
FSC-3	1" one gang	L1@0.35	Ea	44.30	15.70	60.00
FSC-12	1/2" two gang	L1@0.30	Ea	39.80	13.50	53.30
FSC-22	3/4" two gang	L1@0.35	Ea	35.70	15.70	51.40
FSC-32	1" two gang	L1@0.40	Ea	47.50	18.00	65.50
FSCC-1	1/2" one gang	L1@0.35	Ea	25.90	15.70	41.60
FSCC-2	3/4" one gang	L1@0.40	Ea	43.90	18.00	61.90
FSCT-1	1/2" one gang	L1@0.35	Ea	28.30	15.70	44.00
FSCT-2	3/4" one gang	L1@0.40	Ea	35.30	18.00	53.30
FSL-1	1/2" one gang	L1@0.30	Ea	21.80	13.50	35.30
FSL-2	3/4" one gang	L1@0.35	Ea	24.30	15.70	40.00
FSR-1	1/2" one gang	L1@0.30	Ea	24.60	13.50	38.10
FSR-2	3/4" one gang	L1@0.35	Ea	26.60	15.70	42.30
FSS-1	1/2" one gang	L1@0.35	Ea	23.10	15.70	38.80
FSS-2	3/4" one gang	L1@0.40	Ea	25.10	18.00	43.10
FST-1	1/2" one gang	L1@0.35	Ea	23.10	15.70	38.80
FST-2	3/4" one gang	L1@0.40	Ea	25.10	18.00	43.10
FSX-1	1/2" one gang	L1@0.40	Ea	21.80	18.00	39.80
FSX-2	3/4" one gang	L1@0.45	Ea	24.30	20.20	44.50
FD-1	1/2" one gang	L1@0.25	Ea	30.80	11.20	42.00
FD-2	3/4" one gang	L1@0.30	Ea	23.90	13.50	37.40
FD-3	1" one gang	L1@0.35	Ea	25.50	15.70	41.20
FDC-1	1/2" one gang	L1@0.30	Ea	28.60	13.50	42.10
FDC-2	3/4" one gang	L1@0.35	Ea	31.00	15.70	46.70
FDC-3	1" one gang	L1@0.40	Ea	36.60	18.00	54.60

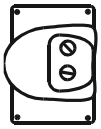
Use these figures to estimate the cost of galvanized cast boxes installed on conduit under the conditions described on pages 5 and 6. Costs listed are for each box installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include box mounting, layout, material handling, and normal waste. Add for covers, gaskets, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Boxes are raintight or weatherproof when fitted with the proper cover. These figures assume that the boxes are surface mounted in accessible locations.

Covers for Galvanized Cast Boxes

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Single gang stamped metal covers					
DS21 single receptacle	L1@0.05	Ea	5.24	2.24	7.48
DS23 duplex receptacle	L1@0.05	Ea	5.24	2.24	7.48
DS32 switch	L1@0.05	Ea	5.24	2.24	7.48
DS100 blank	L1@0.05	Ea	4.18	2.24	6.42
Two gang stamped metal covers					
S322 2 switches	L1@0.06	Ea	9.52	2.69	12.21
S1002 blank	L1@0.06	Ea	9.52	2.69	12.21
S32212 duplex	L1@0.06	Ea	9.52	2.69	12.21
S32232 Sw & duplex	L1@0.06	Ea	9.52	2.69	12.21
Single gang cast metal covers					
DS100G switch	L1@0.05	Ea	11.40	2.24	13.64
DS100G blank	L1@0.05	Ea	12.80	2.24	15.04
Two gang cast metal covers					
S322G 2 switches	L1@0.06	Ea	37.60	2.69	40.29
S1002G blank	L1@0.06	Ea	34.10	2.69	36.79
Single gang cast weatherproof covers					
DS128 Sw rod type	L1@0.10	Ea	43.80	4.49	48.29
DS181 Sw rocker type	L1@0.10	Ea	47.20	4.49	51.69
Two gang cast weatherproof covers					
DS1282 2 Sw rod type	L1@0.15	Ea	79.90	6.73	86.63
Single gang cast with hinged cover weatherproof					
WLRS-1 single recept	L1@0.10	Ea	45.30	4.49	49.79
WLRD-1 duplex recept	L1@0.10	Ea	49.70	4.49	54.19

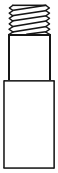






Use these figures to estimate the cost of covers installed on galvanized boxes under the conditions described on pages 5 and 6. Costs listed are for each cover installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include the cover, mounting, layout, material handling, and normal waste. Add for sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. These figures assume that the boxes for the covers are surface mounted in accessible locations.

Galvanized Cast Expansion Fittings and Jumpers

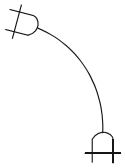


Galvanized 4" cast expansion fitting

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
1/2"	L1@0.25	Ea	78.60	11.20	89.80
3/4"	L1@0.30	Ea	80.60	13.50	94.10
1"	L1@0.40	Ea	98.40	18.00	116.40
1-1/4"	L1@0.50	Ea	131.00	22.40	153.40
1-1/2"	L1@0.50	Ea	145.00	22.40	167.40
2"	L1@0.60	Ea	216.00	26.90	242.90
2-1/2"	L1@0.70	Ea	427.00	31.40	458.40
3"	L1@0.70	Ea	426.00	31.40	457.40
3-1/2"	L1@0.80	Ea	670.00	35.90	705.90
4"	L1@1.00	Ea	912.00	44.90	956.90

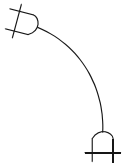
Galvanized 8" cast expansion fitting

1/2"	L1@0.30	Ea	160.00	13.50	173.50
3/4"	L1@0.40	Ea	175.00	18.00	193.00
1"	L1@0.50	Ea	234.00	22.40	256.40
1-1/4"	L1@0.60	Ea	284.00	26.90	310.90
1-1/2"	L1@0.60	Ea	432.00	26.90	458.90
2"	L1@0.70	Ea	604.00	31.40	635.40
2-1/2"	L1@0.80	Ea	1,020.00	35.90	1,055.90
3"	L1@1.00	Ea	1,250.00	44.90	1,294.90
3-1/2"	L1@1.25	Ea	1,710.00	56.10	1,766.10
4"	L1@1.30	Ea	1,890.00	58.30	1,948.30



4" bonding jumpers for galvanized cast expansion fitting

1/2" - 3/4"	L1@0.15	Ea	71.60	6.73	78.33
1" - 1-1/4"	L1@0.20	Ea	72.70	8.98	81.68
1-1/2" - 2"	L1@0.30	Ea	89.80	13.50	103.30
2-1/2" - 3"	L1@0.40	Ea	95.20	18.00	113.20
3-1/2" - 4"	L1@0.50	Ea	196.00	22.40	218.40



8" bonding jumpers for galvanized cast expansion fitting

1/2" - 3/4"	L1@0.15	Ea	74.80	6.73	81.53
1" - 1-1/4"	L1@0.25	Ea	86.80	11.20	98.00
1-1/2" - 2"	L1@0.35	Ea	104.00	15.70	119.70
2-1/2" - 3"	L1@0.45	Ea	142.00	20.20	162.20
3-1/2" - 4"	L1@0.60	Ea	146.00	26.90	172.90
5"	L1@0.80	Ea	208.00	35.90	243.90

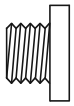
Use these figures to estimate the cost of expansion fittings and bonding jumpers installed on conduit under the conditions described on pages 5 and 6. Costs listed are for each fitting installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include layout, material handling, and normal waste. Add for conduit, supports, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: These fittings are installed at construction expansion joints and are suitable for installation in concrete. The bonding jumper provides grounding continuity.

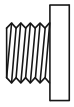
Reducing Bushings and Reducing Washers

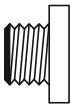
Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Aluminum reducing bushings					
2-1/2" - 1"	L1@0.15	Ea	22.80	6.73	29.53
2-1/2" - 1-1/4"	L1@0.15	Ea	22.80	6.73	29.53
2-1/2" - 1-1/2"	L1@0.15	Ea	22.80	6.73	29.53
2-1/2" - 2"	L1@0.15	Ea	22.80	6.73	29.53
3" - 1-1/4"	L1@0.20	Ea	47.10	8.98	56.08
3" - 1-1/2"	L1@0.20	Ea	47.10	8.98	56.08
3" - 2"	L1@0.20	Ea	47.10	8.98	56.08
3" - 2-1/2"	L1@0.20	Ea	47.10	8.98	56.08
3-1/2" - 2"	L1@0.25	Ea	52.20	11.20	63.40
3-1/2" - 2-1/2"	L1@0.25	Ea	52.20	11.20	63.40
3-1/2" - 3"	L1@0.25	Ea	52.20	11.20	63.40
4" - 2"	L1@0.30	Ea	80.60	13.50	94.10
4" - 2-1/2"	L1@0.30	Ea	80.60	13.50	94.10
4" - 3"	L1@0.30	Ea	80.60	13.50	94.10
4" - 3-1/2"	L1@0.30	Ea	80.60	13.50	94.10
Steel reducing washers, set of 2					
3/4" - 1/2"	L1@0.05	Pr	.59	2.24	2.83
1" - 1/2"	L1@0.06	Pr	.91	2.69	3.60
1" - 3/4"	L1@0.06	Pr	.84	2.69	3.53
1-1/4" - 1/2"	L1@0.08	Pr	1.62	3.59	5.21
1-1/4" - 3/4"	L1@0.08	Pr	1.46	3.59	5.05
1-1/4" - 1"	L1@0.08	Pr	1.50	3.59	5.09
1-1/2" - 1/2"	L1@0.10	Pr	1.86	4.49	6.35
1-1/2" - 3/4"	L1@0.10	Pr	2.09	4.49	6.58
1-1/2" - 1"	L1@0.10	Pr	1.75	4.49	6.24
1-1/2" - 1-1/4"	L1@0.10	Pr	1.79	4.49	6.28
2" - 1/2"	L1@0.15	Pr	3.06	6.73	9.79
2" - 3/4"	L1@0.15	Pr	2.70	6.73	9.43
2" - 1"	L1@0.15	Pr	2.53	6.73	9.26
2" - 1-1/4"	L1@0.15	Pr	2.53	6.73	9.26
2" - 1-1/2"	L1@0.15	Pr	2.53	6.73	9.26
2-1/2" - 1"	L1@0.20	Pr	3.33	8.98	12.31
2-1/2" - 1-1/4"	L1@0.20	Pr	3.33	8.98	12.31
2-1/2" - 1-1/2"	L1@0.20	Pr	3.33	8.98	12.31
2-1/2" - 2"	L1@0.20	Pr	3.33	8.98	12.31
3" - 1-1/4"	L1@0.25	Pr	4.20	11.20	15.40
3" - 1-1/2"	L1@0.25	Pr	4.20	11.20	15.40
3" - 2"	L1@0.25	Pr	4.20	11.20	15.40
3" - 2-1/2"	L1@0.25	Pr	4.20	11.20	15.40
3-1/2" - 2"	L1@0.30	Pr	12.10	13.50	25.60
3-1/2" - 2-1/2"	L1@0.30	Pr	12.10	13.50	25.60
3-1/2" - 3"	L1@0.30	Pr	12.10	13.50	25.60
4" - 2"	L1@0.35	Pr	34.20	15.70	49.90
4" - 2-1/2"	L1@0.35	Pr	34.20	15.70	49.90
4" - 3"	L1@0.35	Pr	34.20	15.70	49.90
4" - 3-1/2"	L1@0.35	Pr	34.20	15.70	49.90

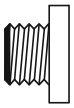
Use these figures to estimate the cost of reducing bushings and reducing washers installed on conduit under the conditions described on pages 5 and 6. Costs for bushings are for each bushing installed. Costs for reducing washers are per pair of washers installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include layout, material handling, and normal waste. Add for sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material cost is based on purchase of full boxes. These bushings are used to reduce the threaded hub size in cast boxes when smaller conduit is used.

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Die cast bushed nipples					
1/2"	L1@0.05	Ea	.42	2.24	2.66
3/4"	L1@0.06	Ea	.75	2.69	3.44
1"	L1@0.08	Ea	1.43	3.59	5.02
1-1/4"	L1@0.10	Ea	2.19	4.49	6.68
1-1/2"	L1@0.10	Ea	3.08	4.49	7.57
2"	L1@0.15	Ea	4.78	6.73	11.51
2-1/2"	L1@0.20	Ea	7.79	8.98	16.77
3"	L1@0.20	Ea	12.70	8.98	21.68
3-1/2"	L1@0.25	Ea	21.70	11.20	32.90
4"	L1@0.25	Ea	22.80	11.20	34.00
Malleable bushed nipples					
1/2"	L1@0.05	Ea	1.06	2.24	3.30
3/4"	L1@0.06	Ea	2.01	2.69	4.70
1"	L1@0.08	Ea	3.64	3.59	7.23
1-1/4"	L1@0.10	Ea	3.55	4.49	8.04
1-1/2"	L1@0.10	Ea	3.79	4.49	8.28
2"	L1@0.15	Ea	5.01	6.73	11.74
2-1/2"	L1@0.20	Ea	9.18	8.98	18.16
3"	L1@0.20	Ea	18.90	8.98	27.88
3-1/2"	L1@0.25	Ea	29.30	11.20	40.50
4"	L1@0.25	Ea	47.40	11.20	58.60
Insulated die cast bushed nipples					
1/2"	L1@0.05	Ea	.47	2.24	2.71
3/4"	L1@0.06	Ea	.88	2.69	3.57
1"	L1@0.08	Ea	1.62	3.59	5.21
1-1/4"	L1@0.10	Ea	2.45	4.49	6.94
1-1/2"	L1@0.10	Ea	3.43	4.49	7.92
2"	L1@0.15	Ea	5.34	6.73	12.07
2-1/2"	L1@0.20	Ea	8.63	8.98	17.61
3"	L1@0.20	Ea	14.10	8.98	23.08
3-1/2"	L1@0.25	Ea	24.30	11.20	35.50
4"	L1@0.25	Ea	27.20	11.20	38.40
Insulated malleable bushed nipples					
1/2"	L1@0.05	Ea	.97	2.24	3.21
3/4"	L1@0.06	Ea	1.80	2.69	4.49
1"	L1@0.08	Ea	3.34	3.59	6.93
1-1/4"	L1@0.10	Ea	5.01	4.49	9.50
1-1/2"	L1@0.10	Ea	6.67	4.49	11.16
2"	L1@0.15	Ea	8.85	6.73	15.58



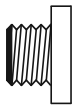






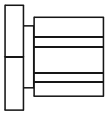
Use these figures to estimate the cost of bushed nipples installed on conduit under the conditions described on pages 5 and 6. Costs listed are for each nipple installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include layout, material handling, and normal waste. Add for locknut, bushing, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material cost is based on purchase of full boxes. Bushed nipples are often used in threaded hubs.

Bushed Nipples, Couplings and Offset Nipples



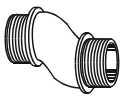
Insulated malleable bushed nipples

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
2-1/2"	L1@0.20	Ea	11.50	8.98	20.48
3"	L1@0.20	Ea	36.40	8.98	45.38
3-1/2"	L1@0.25	Ea	51.30	11.20	62.50
4"	L1@0.25	Ea	80.60	11.20	91.80
5"	L1@0.30	Ea	245.00	13.50	258.50
6"	L1@0.40	Ea	370.00	18.00	388.00



Malleable three-piece couplings or unions

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
1/2"	L1@0.10	Ea	5.46	4.49	9.95
3/4"	L1@0.10	Ea	8.91	4.49	13.40
1"	L1@0.15	Ea	13.60	6.73	20.33
1-1/4"	L1@0.20	Ea	24.50	8.98	33.48
1-1/2"	L1@0.20	Ea	30.20	8.98	39.18
2"	L1@0.25	Ea	59.60	11.20	70.80
2-1/2"	L1@0.30	Ea	144.00	13.50	157.50
3"	L1@0.30	Ea	198.00	13.50	211.50
3-1/2"	L1@0.50	Ea	334.00	22.40	356.40
4"	L1@0.50	Ea	408.00	22.40	430.40
5"	L1@1.00	Ea	596.00	44.90	640.90
6"	L1@1.25	Ea	909.00	56.10	965.10



Malleable offset nipples

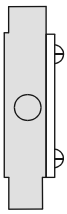
Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
1/2"	L1@0.10	Ea	11.10	4.49	15.59
3/4"	L1@0.10	Ea	11.80	4.49	16.29
1"	L1@0.15	Ea	14.60	6.73	21.33
1-1/4"	L1@0.20	Ea	32.80	8.98	41.78
1-1/2"	L1@0.20	Ea	40.20	8.98	49.18
2"	L1@0.25	Ea	63.70	11.20	74.90

Die cast offset nipples

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
1/2"	L1@0.10	Ea	4.06	4.49	8.55
3/4"	L1@0.15	Ea	5.69	6.73	12.42
1"	L1@0.20	Ea	7.28	8.98	16.26
1-1/4"	L1@0.25	Ea	10.50	11.20	21.70
1-1/2"	L1@0.25	Ea	13.10	11.20	24.30
2"	L1@0.30	Ea	27.90	13.50	41.40

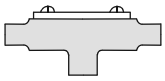
Use these figures to estimate the cost of bushed nipples, unions, and offset nipples installed on conduit under the conditions described on pages 5 and 6. Costs listed are for each fitting installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include layout, material handling, and normal waste. Add for locknut, bushing, sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: Material cost is based on purchase of full boxes. Three-piece couplings are made to fit the flat thread used on electrical fittings. Unions made for plumbing pipe should not be used in electrical systems.

PVC Coated Conduit Bodies



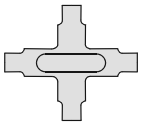
PVC coated Type T conduit bodies

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
T-17 1/2"	L1@0.25	Ea	67.60	11.20	78.80
T-27 3/4"	L1@0.30	Ea	76.70	13.50	90.20
T-37 1"	L1@0.35	Ea	110.00	15.70	125.70
T-47 1-1/4"	L1@0.40	Ea	185.00	18.00	203.00
T-57 1-1/2"	L1@0.40	Ea	196.00	18.00	214.00
T-67 2"	L1@0.45	Ea	355.00	20.20	375.20
T-77 2-1/2"	L1@0.60	Ea	601.00	26.90	627.90
T-87 3"	L1@0.70	Ea	804.00	31.40	835.40
T-97 3-1/2"	L1@1.00	Ea	1,150.00	44.90	1,194.90
T-107 4"	L1@1.50	Ea	1,260.00	67.30	1,327.30



PVC coated Type TB conduit bodies

TB-17 1/2"	L1@0.25	Ea	76.70	11.20	87.90
TB-27 3/4"	L1@0.30	Ea	93.40	13.50	106.90
TB-37 1"	L1@0.35	Ea	101.00	15.70	116.70
TB-47 1-1/4"	L1@0.40	Ea	185.00	18.00	203.00
TB-57 1-1/2"	L1@0.40	Ea	196.00	18.00	214.00
TB-67 2"	L1@0.45	Ea	355.00	20.20	375.20



PVC coated Type X conduit bodies

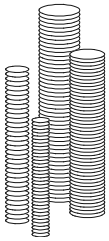
X-17 1/2"	L1@0.30	Ea	79.80	13.50	93.30
X-27 3/4"	L1@0.35	Ea	90.70	15.70	106.40
X-37 1"	L1@0.40	Ea	103.00	18.00	121.00
X-47 1-1/4"	L1@0.45	Ea	246.00	20.20	266.20
X-57 1-1/2"	L1@0.45	Ea	320.00	20.20	340.20
X-67 2"	L1@0.50	Ea	460.00	22.40	482.40

PVC coated steel conduit body covers

1/2"	L1@0.05	Ea	21.10	2.24	23.34
3/4"	L1@0.06	Ea	23.10	2.69	25.79
1"	L1@0.08	Ea	30.40	3.59	33.99
1-1/4"	L1@0.10	Ea	40.10	4.49	44.59
1-1/2"	L1@0.10	Ea	43.90	4.49	48.39
2"	L1@0.10	Ea	55.70	4.49	60.19
2-1/2" - 3"	L1@0.15	Ea	75.30	6.73	82.03
2-1/2" - 4"	L1@0.15	Ea	148.00	6.73	154.73

Use these figures to estimate the cost of PVC coated conduit bodies installed on PVC coated conduit and PVC coated body covers installed on conduit bodies under the conditions described on pages 5 and 6. Costs listed are for each fitting installed. The crew is one electrician working at a labor cost of $44.88 per manhour. These costs include layout, material handling, and normal waste. Add for sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit. Note: PVC patching material is available in spray cans for repairing any damaged PVC coating.

Hanger Fittings

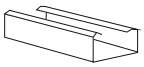


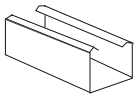
Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
Plated threaded rod					
1/4-20 x 6'	L1@1.25	CLF	281.00	56.10	337.10
1/4-20 x 10'	L1@1.25	CLF	450.00	56.10	506.10
1/4-20 x 12'	L1@1.15	CLF	543.00	51.60	594.60
3/8-16 x 6'	L1@1.30	CLF	309.00	58.30	367.30
3/8-16 x 10'	L1@1.30	CLF	757.00	58.30	815.30
3/8-16 x 12'	L1@1.30	CLF	948.00	58.30	1,006.30
1/2-13 x 6'	L1@1.50	CLF	524.00	67.30	591.30
1/2-13 x 10'	L1@1.50	CLF	1,360.00	67.30	1,427.30
1/2-13 x 12'	L1@1.50	CLF	1,630.00	67.30	1,697.30
5/8-11 x 6'	L1@1.75	CLF	1,420.00	78.50	1,498.50
5/8-11 x 10'	L1@1.75	CLF	2,010.00	78.50	2,088.50
5/8-11 x 12'	L1@1.75	CLF	2,490.00	78.50	2,568.50
Rod couplings					
1/4-20	L1@0.05	Ea	2.47	2.24	4.71
3/8-16	L1@0.05	Ea	5.00	2.24	7.24
1/2-13	L1@0.08	Ea	5.12	3.59	8.71
5/8-11	L1@0.10	Ea	12.00	4.49	16.49
Toggle bolts, wing nuts					
1/8 x 3"	L1@0.10	Ea	.22	4.49	4.71
3/16 x 3"	L1@0.10	Ea	.35	4.49	4.84
1/4 x 4"	L1@0.15	Ea	.53	6.73	7.26
3/8 x 4"	L1@0.20	Ea	.64	8.98	9.62
Expansion anchors, flush type					
1/4-20	L1@0.15	Ea	.54	6.73	7.27
3/8-16	L1@0.15	Ea	.88	6.73	7.61
1/2-13	L1@0.25	Ea	2.39	11.20	13.59
5/8-11	L1@0.30	Ea	3.42	13.50	16.92
Steel hex nuts					
1/4-20	L1@0.02	Ea	.35	.90	1.25
3/8-16	L1@0.03	Ea	.36	1.35	1.71
1/2-13	L1@0.05	Ea	.46	2.24	2.70
5/8-11	L1@0.10	Ea	.53	4.49	5.02
Fender washers, 1-1/2" diameter					
1/4"	L1@0.02	Ea	.04	.90	.94
3/8"	L1@0.03	Ea	.08	1.35	1.43
1/2"	L1@0.04	Ea	.13	1.80	1.93

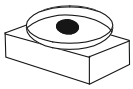
Use these figures to estimate the cost of installing steel hanger fittings for hanging or mounting conduit or electrical equipment under the conditions described on pages 5 and 6. Costs listed are for each 100 linear feet or steel channel strut, or each fitting installed. The crew is one electrical working at a labor cost of $44.88 per manhour. These costs include layout, material handling, and normal waste. Add for sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit.

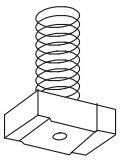
Steel Channel (Strut) and Fittings

Material	Craft@Hrs	Unit	Material Cost	Labor Cost	Installed Cost
14 gauge steel channel					
13/16" x 1-5/8" plated	L1@4.00	CLF	658.00	180.00	838.00
13/16" x 1-5/8" galvanized	L1@4.00	CLF	817.00	180.00	997.00
1-5/8" x 1-5/8" plated	L1@6.00	CLF	939.00	269.00	1,208.00
1-5/8" x 1-5/8" galvanized	L1@6.00	CLF	1,000.00	269.00	1,269.00
14 gauge steel channel with 9/16" holes, 1-7/8" oc					
13/16" x 1-5/8" plated	L1@4.00	CLF	661.00	180.00	841.00
13/16" x 1-5/8" galvanized	L1@4.00	CLF	871.00	180.00	1,051.00
1-5/8" x 1-5/8" plated	L1@6.00	CLF	890.00	269.00	1,159.00
1-5/8" x 1-5/8" galvanized	L1@6.00	CLF	1,140.00	269.00	1,409.00
12 gauge steel channel					
13/16" x 1-5/8" plated	L1@4.00	CLF	658.00	180.00	838.00
13/16" x 1-5/8" galvanized	L1@4.00	CLF	786.00	180.00	966.00
1-5/8" x 1-5/8" plated	L1@6.00	CLF	939.00	269.00	1,208.00
1-5/8" x 1-5/8" galvanized	L1@6.00	CLF	1,130.00	269.00	1,399.00
12 gauge steel channel with 9/16" holes, 1-7/8" oc					
13/16" x 1-5/8" plated	L1@4.00	CLF	780.00	180.00	960.00
13/16" x 1-5/8" galvanized	L1@4.00	CLF	812.00	180.00	992.00
1-5/8" x 1-5/8" plated	L1@6.00	CLF	856.00	269.00	1,125.00
1-5/8" x 1-5/8" galvanized	L1@6.00	CLF	856.00	269.00	1,125.00
Channel nuts					
1/4-20 13/16" strut	L1@0.05	Ea	1.68	2.24	3.92
3/8-16 13/16" strut	L1@0.05	Ea	1.70	2.24	3.94
1/2-13 13/16" strut	L1@0.05	Ea	1.72	2.24	3.96
1/4-20 1-5/8" strut	L1@0.05	Ea	1.91	2.24	4.15
3/8-16 1-5/8" strut	L1@0.05	Ea	2.22	2.24	4.46
1/2-13 1-5/8" strut	L1@0.05	Ea	2.43	2.24	4.67
Channel spring nuts					
1/4-20 13/16" strut	L1@0.06	Ea	2.04	2.69	4.73
3/8-16 13/16" strut	L1@0.06	Ea	2.04	2.69	4.73
1/2-13 13/16" strut	L1@0.06	Ea	2.21	2.69	4.90
1/4-20 1-5/8" strut	L1@0.06	Ea	2.81	2.69	5.50
3/8-16 1-5/8" strut	L1@0.06	Ea	2.97	2.69	5.66
1/2-13 1-5/8" strut	L1@0.06	Ea	3.23	2.69	5.92









Use these figures to estimate the cost of installing steel channel strut and fittings for hanging or mounting conduit or electrical equipment under the conditions described on pages 5 and 6. Costs listed are for each 100 linear feet or steel channel strut, or each fitting installed. The crew is one electrical working at a labor cost of $44.88 per manhour. These costs include layout, material handling, and normal waste. Add for sales tax, delivery, supervision, mobilization, demobilization, cleanup, overhead and profit.

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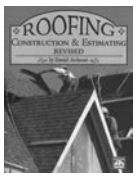

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