

Job Description for Inside Wireman

The duties of an inside wireman are listed below. The number in brackets [] next to the duty is the average of the percentage of the journeymen reporting that they perform each task within the duty. Tasks within each of the duties are included in the job description if they were performed by at least 10 percent (%) of the journeymen surveyed. Tasks are described as *daily*, *weekly*, *monthly* or *occasionally* based upon the responses of a majority of journeymen in the position. Tasks that were rated between *very and extremely important* by both journeymen and training directors and instructors have an asterisk (*).

I. Planning and Initiating Projects [92%]

- Daily* When planning a new project and inside wireman must study blueprints and specifications.* Materials, supplies and equipment must be orders to complete the job.*
- Weekly* Materials and supplies must be loaded, hauled and unloaded at the job site. The inside wireman established work areas and assembles tools and equipment. The inside wireman coordinates tool requirements with the contractor. The job schedule must also be coordinated with other crafts.*
- Monthly* At times the inside wireman establishes timetables and/or progress charts for completion of the work.
- Occasionally* An inside wireman may be required to set up a temporary construction trailer or other control center at the site. It may be necessary to obtain clearances, such as for digging.*

II. Establishing Temporary Power During Construction [88%]

- Monthly* An inside wireman may need to maintain and repair a temporary power system as needed during construction.
- Occasionally* An inside wireman may determine temporary power needs by consulting with other crafts. Temporary power needs may need to be coordinated with a local power company. The inside wireman may need to establish a temporary power source, set up temporary panel(s) and run lines for temporary power and lighting throughout the project.

III. Establishing Grounding Systems [87%]

- Occasionally* An inside wireman studies blueprints to determine a plan for the grounding system.* The location of the grounding conductors and connections must be laid out first.* Next, the inside wireman digs trenches or coordinates trench excavation performed by others. The inside wireman positions the ground conductors and welds or mechanically connects them. After the electrodes or rods are established, the system can be tested.* If the system is working properly, the area is backfilled with dirt.

IV. Installing Service to Buildings and Other Structures [86%]

Occasionally An inside wireman studies blueprints to determine where power will feed from the substation.* The local power company may need to be contacted to determine the location of feeders.* The location of other electrical conduit or other structures, such as water mains, must be determined before deciding where to locate the new feeders.* The inside wireman may need to compute the size of service entrance conductors needed for the required service.*

When the locations of the feeders are determined, the inside wireman lays out trenches for the conduit. The wireman digs trenches or coordinates trench excavation performed by others. The trenches must be graded and leveled. The wireman installs raceway supports and lays the conduit in the trenches with spacers if needed. The conduit must be secured, reinforced and the inside swabbed if needed. The location of the conduit stubups may be measured and determined.* The inside wireman then backfills the trench with dirt or other materials. An overhead service entrance may be established.

V. Establishing Power Distribution within Project [88%]

Occasionally An inside wireman studies blueprints to determine the location of the high voltage room or electrical closet.* The transformer equipment, including transformers, breakers and switching gear, may need to be moved in the building. Once in the building, the equipment must be moved from the entry points to the correct position. The inside wireman may install the main service panel, including the circuit breakers and switching gear.* The inside wireman makes all necessary terminations* and hipots the high voltage cables.* If needed, a buss duct may be placed to carry power.

VI. Planning and Installing Raceway Systems [97%]

Daily An inside wireman must calculate the necessary bends, saddles and offsets needed to install conduit. The wireman must determine where to place the junction boxes. He or she measures where the conduit should land and the amount of conduit needed to complete the run. In preparing the conduit for use, the inside wireman must cut it to fit; file or ream the inside to make it smooth; and then bend and thread it. After it is prepared, the conduit must then be transported to the correct location. The conduit can be connected by screwing pieces together or using couplings. The inside wireman plumbs and levels the conduit and places the junction boxes where planned, making holes if needed and making sure the box is plumb and level.

Weekly An inside wireman studies blueprints to determine the placement of the conduit.* The number of wires/cables that can be put into each conduit must be determined.* Sometimes holes must be cut in metal to run the conduit. Hangars and support for conduit must sometimes be built. When completed, the cables may be marked and/or tagged for voltage and identification.

Monthly An inside wireman may be required to cut holes in concrete to run conduit.

Occasionally An inside wireman may sometimes paint the conduit for identification.

VII. Installing New Wiring and Repairing Old Wiring [99%]

Weekly An inside wireman assembles all materials needed at the location for pulling the cable. Small conduit can be fished with fish tape or other means. A string line must first be pulled through the conduit followed by a rope. The length of the wire needed is measured with the pull line or a calibrated tape. The inside wireman cuts the length of wire or cable needed. The rope is pulled through the conduit connected to a pull line. The inside wireman sets up wire/cable reels for pulling. The wire is connected to the pull line and lubricated to facilitate pulling. The inside wireman pulls the wire by hand. After the wire is pulled, the necessary terminations are made and the wire is spliced if needed. An inside wireman may examine and test existing wire.

Monthly An inside wireman may be required to pull wire with a pulling machine.

Occasionally An inside wireman may swab the inside of large conduit to remove dirt or debris before pulling the wire.

VIII. Providing Power and Controls to Motors, HVAC and Other Equipment [86%]

Monthly An inside wireman studies blueprints to determine where motors and equipment will be placed and establishes the layout.* The power feed and control wiring system must be installed.*

Occasionally An inside wireman must read the technical manuals describing the functioning of each piece of equipment in order to determine the proper connection.* A control panel may need to be constructed or installed for the motors and equipment. The inside wireman may set the motors in place and secure it with bolts or other equipment. Various starters may be installed, including starters for DC motors, magnetic starters, potential-type motor starters and reduced voltage starters. The inside wireman may locate and connect pilot/control devices for the motor and/or electronic variable speed motor controls. The motor must be connected to run on the appropriate voltages* and at the appropriate speed.* The inside wireman may need to change the direction of rotation of electrical motors. After installation, the inside wireman tests the functioning of the motors.

IX. Installing Receptacles, Lighting Systems and Fixtures. [98%]

Weekly An inside wireman studies blueprints to identify circuits.* At times it may be necessary to work around other systems, such as air conditioning, to find a path for lighting and receptacle wiring. The inside wireman located raceways for carrying the wire. The inside wireman measures the wire needed for various runs. He or she then establishes homeruns from the panel box. The inside wireman must run raceway, cable or wire from the junction box to the lighting fixture. The inside wireman makes electrical connections in the fixtures and receptacles and places lamps in the lighting fixture. Switches must be located to control lighting and receptacles must be installed for power outlets. Plates and covers must be placed on the receptacles and switches. After installation, the inside wireman tests the lights and receptacles.

Monthly An inside wireman may need to balance loads on various circuits.* Other crafts may need to be consulted before making the final determination of locations for lighting systems. The inside wireman may need to establish panel boxes. When installing fixtures, it may be necessary to cut openings in the ceiling. The inside wireman may attach a lighting fixture to the ceiling.

Occasionally An inside wireman may make a panel directory. After the work is complete the wireman complete "as built" drawings.

X. Troubleshooting and Repairing Electrical Systems [94%]

Monthly An inside wireman determines which lighting fixture or piece of equipment is not working properly.* Possible reasons for failure can be reviewed. The problem is analyzed through testing.* The inside wireman then replaces or repairs the faulty component.

Occasionally An inside wireman may discuss the problem with an operator or other witnesses. The faulty section of a circuit may be identified using the split-half method and the faulty unit or component localized.

XI. Installing and Repairing Traffic Signals, Outdoor Lighting and Outdoor Power Feeders [71%]

Occasionally When installing outdoor lighting and signals, the wireman must follow blueprints that show where equipment is to be located.* An inside wireman lays out trenches for the conduit. The inside wireman digs trenches or coordinates trench excavation performed by others. The trenches must be graded and leveled. The inside wireman installs raceway supports and lays the conduit in the trenches with spacers if needed. The conduit must be secured, reinforced and the inside swabbed if needed. The inside wireman lays direct burial cable without the conduit. A hole must be dug for the lighting base. An inside wireman may form the base for the pole, including assembly of reinforcing steel. The base may then be poured with concrete and finished. A ground rod may be driven if required and a ground conductor installed. The ground connection may then be welded or clamped together. When the base is finished, it may be back filled and compacted.

The inside wireman may assemble poles and other hardware, as well as the lighting fixture or traffic light. After the fixture is attached to the pole, the pole can be set and leveled. The pole is set and then attached with anchor bolts. Cable can be pulled and terminated. Direct burial cable may need to be spliced.

For traffic signals, the inside wireman must cut sensor loops in the asphalt and place sensors in the road. Control cabinets must be established and the traffic or signal controller programmed. After installation is complete, power can be connected and tested.

XII. Installing Fire Alarm Systems [82%]

Occasionally The inside wireman studies blueprints to determine fire alarm device locations* and reads the manual on the specific fire alarm system being installed.* The detection and signal devices must be placed and a connection made between these devices and the controller. The inside wireman installs raceways and control panels for the alarm system, as well as manual pull alarm stations. Programmable alarm systems must also be programmed according to requirements.* After installation, the system must be tested to be sure that it is working properly.* The inside wireman then can schedule a test and inspection by State and/or local authorities.

XIII. Supervising Journeyman and Apprentices [92%]

- Daily* On a daily basis, an inside wireman assigns tasks to personnel, including apprentices.* The journeyman may need to teach an apprentice a new task by explaining or demonstrating.* The apprentice's performance must then be observed and feedback given.
- Weekly* At least once a week, tasks must be reviewed to determine personnel scheduling.* A journeyman is required to supervise worker performance and provide feedback.*

The following duties are an important part of the work of an inside wireman, but are not performed as frequently as those duties already described. The duties are listed in order of the average frequency with which they are performed.

XIV. Establishing OSHA and Customer Safety Requirements [67%]

- Daily* On a daily basis, an inside wireman must use proper tools and equipment in order to perform work safely.*
- Weekly* Job-site safety meetings are conducted at least once a week. The inside wireman must inspect and maintain personal protective equipment.*
- Monthly* An inside wireman must review applicable OSHA safety standards and customer safety requirements. These are used to develop and on-site safety program.* Sometime the inside wireman must use protective devices when working with live conductors.* An inside wireman may need to check materials data safety sheets for materials used to the job.
- Occasionally* An inside wireman may need to keep the public away from the working area. A traffic control plan may need to be set up and maintained. At times, a journeyman is required to administer first aid to an injured victim.* The inside wireman may need to perform an emergency rescue* or administer CPR to a victim.*

XV. Installing Instrumentation and Process Control Systems, Including Energy Management Systems [67%]

- Occasionally* When installing an instrumentation or process control system, the inside wireman studies the blueprints and schematic diagrams for the system* and reads the manual on the system.* The layout for various devices must be determined, including: temperature, lighting, pressure-sensitive, level, flow measuring or chemical sensors.* The inside wireman locates the instrumentation devices and builds raceways to hold the cables. Control panels must be installed, as well as conductors and tubing. The inside wireman makes the electrical or pneumatic connections between the sensors and the controller. A central processing unit may need to be established. The inside wireman programs the computer or other programmable control devices.* The instruments must be tested and calibrated.* The inside wireman performs a loop check and prepares loop sheets documenting the system as installed.

XVI. Erecting and Assembling Power Generation Equipment [64%]

Occasionally The inside wireman may install batteries to provide a back-up power source. The batteries may be installed in series or in parallel. At times an inside wireman may be required to assemble a generator. The generator may then be installed and tested to be sure it is operating properly.*

XVII. Installing Security Systems [57%]

Occasionally The inside wireman studies blueprints to determine the locations of security system components* and reads the manual on the specific security system being installed.* A control panel for the system must be located and installed. The initiating and detection devices must be positioned. The inside wireman established raceways and wires for the alarm system. Video equipment, including cameras and other monitors, may be positioned. Doors and windows may be wired to detect opening and closing. Motion detectors may also be placed. The system is tested and adjusted to be sure it is operating as planned. He or she distributes access codes to the appropriate persons. Building personnel may need to be trained on the use of the system.

XVIII. Installing and Repairing Lightning Protection Systems [56%]

Occasionally An inside wireman determines the layout of the lightning protection system. Rods are driven and tested if required. Conductors are established between the grounded structures, and the rods are bolted or welded together. Cable can be laid on the roof deck and fastened to the deck and walls. Any exposed cable is sealed by the inside wireman. Rods or points with brackets are mounted and connected to the grounding cable.

XIX. Installing and Repairing Telephone and Data Systems [36%]

Occasionally An inside wireman may need to design a new telephone or data system while keeping the old system operational. The inside wireman works with the customer to determine their requirements. The installation manual for a computer control system may need to be read and applied. The inside wireman may need to consult with the company about specific application being used. The telephone, data control panel, and/or distribution frame may be built by the inside wireman. Cable trays may need to be positioned to hold the wires. The inside wireman may install jacks, patch panels, telephones, data system hubs and devices, and telephone and data switch plates consistent with system design. Fiber optic, coaxial, and/or twisted pair cable can be pulled to individual work stations throughout the building. The wires can be terminated in the control panel or central processing unit. Fiber optic cable may need to be spliced and terminated.* Wires are tagged to match the intended system. The inside wireman programs the telephone control computer to handle the phone service as planned. The completed system can be tested using special test equipment. The fiber optic cable may be tested and certified.* If errors appear upon testing, the system must be adjusted and then retested.

Use of Tools

Journeyman wiremen use a broad array of tools. Using the same procedures as above, we classified tools by frequency in the same manner.

- Daily* Hand tools: level, pliers, needle nose pliers, slip joint pliers, hammer, wire cutters, screw driver, fish tape, measuring tape, ruler, wrench, hacksaw, wire stripper, hand bender, ladder, knife.
- Power-assisted tools: hand drill.
- Meters: voltmeter.
- Weekly* Hand tools: file, punch, socket set, allen wrench, keyhole saw, crimping tools, hand drill, hand reamer, knock out sets, tap and dies.
- Power-assisted tools: electric screw gun, hydraulic bender, power cutting and threading machine, electric roto hammer drill.
- Meters: ammeter.
- Monthly* Hand tools: plumb bob, fuse pullers, clamps, pipe wrench, hoist cum-a-long.
- Power-assisted tools: electric saber saw, wire tugger.
- Occasionally* Hand tools: torque wrench, architect scale, handsaw, wood chisel, shovel, transit, block and tackle, adapter cables, caliper, tamp tool.
- Power-assisted tools: soldering iron, drill press, gas-operated auger, air hammer, coring machine to drill through concrete, roto stripper, water pump, fiber optic fusion splicer.
- Meters: oscilloscope, wattmeter, optical power meter, MEGGER, dielectric test set to hipot cable, dynamometer, optical time-domain reflectometers.
- Heavy equipment: trencher, electric lift, bucket truck, crane, power borer, derrick, auger, dozer, back hoe, caterpillar