JOB DESCRIPTION
ICI JOURNEYMAN WIREMAN - ELECTRICIAN

JOB OBJECTIVE:

To lay out, assemble, install, repair, maintain, connect or test electrical fixtures, apparatus, control equipment and wiring for systems of alarm, communication, light, heat or power in building or other structures.

DUTIES:

ESSENTIAL:

1. Install Underground Supply Lines:

- to do this, a heavy equipment operator digs a trench which can be up to 50 meters long
- the electrician has to occasionally pick and shovel work to lay cable in this underground trench
- following the laying of the cable, the heavy equipment operator would cover over the pipes or wires with the dirt

2. Material Handling:

- various supplies and devices brought to the site have to be unloaded
- this includes panels, transformers, conduits and spools of wire which may be transported using wire carriers if available

3. Install Boxes and Conduits During Block Wall Construction:

- this is essentially working one step ahead of bricklayers installing electrical conduit and boxes prior to them being bricked in by the bricklayers
- may involve working on top of scaffolds or working on ladders

4. Install Branch Conduit Feeders:

- laying of conduits from panel to terminal boards or junction boxes
- may also involve installing conduits used for telephone and television systems
- majority of this work is performed overhead on a ladder or scaffold
- bending of conduits is generally relatively easy up to 1 inch in diameter and more difficult above this, performed using a hickey
- usually use hacksaw and small electric drill

5. Rough-in Suites:

- this involves using a chisel to cut holes using a hammer, drill holes in walls in order to pass wire through them
- also done for the main home runs as mentioned above in duty #4
- particular to this duty, it is done in suites, which is highly repetitive aspect of the job

6. Wire Pulling/Cable Laying:

- this involves feeding wires through conduits
- sometimes involves using fish lines in order to feed wires through
- involves a lot of whole body movement and tugging on wires in order to have them pass through conduits and other channels and to overcome the resistance of wire being pulled from spools
  - small branch circuit wiring – small gauge wire-usually light work if short runs
  - large feeder cable – large wire – usually heavier work

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7. Distribution Systems:

- once the main power feed comes into the building, it has to be distributed through the system
- this involves from the multiple transformers and then through distribution panels
- installation of these devices may involve a lot of whole body pushing and pulling in order to fine tune placement of such equipment
- generally performed by two men working in pairs, sometimes with the assistance of a portable crank
- bending of tech cables can rather difficult for wire diameter which can approximately 3 inches in the case of major apartment buildings and commercial structures
- considered heavy work

8. Mount Panels:

- various panels in electrical rooms weighing approximately 25-35 kg, approximately 16" x 60" in height
- the electrician would initially lay out the holes and then drill them using a small electric drill
- he would fit plugs into the holes and with the assistance of another worker, he would position the panel over the pilot holes
- use screw gun to attach panel to wall
- this may be repeated several times depending upon the distribution system being used:

a) small residential or date gathering panels – light weight
b) large distribution type panels – heavy weight

9. Fire Alarm Systems:

- this involves laying of conduit and distribution of wires
- wires have to be tested for conductivity
- wire devices on sprinkler systems as well as tamper switches
- various types of devices including auditory speakers, bells, whistles, lights, heat and smoke detectors
- involves handling various types of small wires
- most of this work occurs at chest height
- the connection of such systems to their panel
- the testing of such systems as well

10. Terminating:

- once cables have been fed into a panel, the electrician makes the appropriate connections to a central junction box or panel
- the electrician strips the insulation from the wire and then fits it into the appropriate terminal
- uses screw driver to fasten at the appropriate location
- repeat the above steps until the panel has been completely terminated
- this can be a very repetitive job in which an electrician can spend all day performing jus this duty
- joining wires using wire connectors (marrs)
- very light work

11. Install Pot Lights:

- these are round circular lights installed into overhead ceiling panels
- the electrician would cut a round hole in the ceiling tile
- he would unpackage the pot light
- fit the pot light into the tile
- he would make a connection to the junction box using Bx wire
- he would repeat this many times until all the pot lights were connected
- he would then connect the system to the central distribution box
- repeat the above steps until assigned alternative duties

12. Fluorescent Fixtures:

- unpack fluorescent fixtures from boxes
- there may be some sub-assembly requires which would occur at ground level
- make series/panel connections between various fixtures
- fixtures are installed into a fixture assembly
- install the fixture into suspension grid of ceiling
- make appropriate connection to the terminal box or to the adjacent fixture
- this requires an extensive amount of ladder work for the electrician making these connections and doing the actual installation
- occasionally fixtures are suspended from chains where the hanger is preinstalled by another electrician

13. Tenant Work (Interior Wall Rough-In):

- often there are temporary type walls installed in offices
- these are currently constructed out of pre-fabricated metal studs
- prior to the drywall going up, electrical wires would be run-in between these studs may involve drilling holes through the studs
- attach boxes to the studs
- run lines of Bx cable between these boxes
- involve the use of a screw gun and a light drill
- strip and make connections to various terminations
- light duty task

14. Under Floor Duct:

- under floor duct in large office buildings
- there is an under floor duct which runs around the periphery of the central core
- at regular intervals, there are approximately 2" to 3" diameter holes through which cable is distributed around the central power source or communication center of the floor
- these cylindrical concrete holes are broken into using a hammer and chisel to take out turret plug or drilled with diamond drill
- fish wire is used to feed through to the turret and a connection is made to go off in a different direction
- once connection is made, install turret plugs
- continued down channel to termination of wire feed
- fish wire up through the next turret hole
- make connection to floor receptacle or other terminal device
- this is very repetitive low level work
- light duty – no heavy lifting

15. Install Receptacles/Switches:

- after drywall has been installed
- make connection to boxes and terminal receptacles
- this can be at various heights but generally between ground and chest level
- this can be repetitive work as well
- very light work

16. Communications Systems (punching down – usually done by communication electrician)

- in the electrical room of a large building, there are panels where the telephone system is distributed from
- this is dealing with very small coded wire
- some wire has to be stripped and a connection is made with a small punch similar to a hammer and chisel type of action
- again, this can be very repetitive type of work and could take up to an entire day for an electrician
  extremely light work

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17. Pre-Fab Assembly:

- stock keeper
- generally with a very large job there is a small pre-fab shop
- there is unpackaging and assembling of fixtures done at bench level work
- the job is relatively light in nature and easy to accommodate
- cutting material to desired lengths

18. Install Wire Way/Cable Tray:

- often coming out of major transformer rooms
- 10 foot lengths of tray various widths
- multiple hangers have to be installed from the concrete ceiling
- hammer drill punches hole into concrete
- hangers are suspended from the ceiling
- sometimes pre-fab racks are pre-assembled in the assembly shop installed at site
- overhead work

19. Install Tech/Coreflex Cables:

- these are the very large main power leads into buildings
- often 1" to 3" in diameter
- they are very heavy and require lots of slugging
- generally they are pulled with a tugger which is an electrical device
- often a 4 man job
- these spools may be placed upon a carrier if available or spool jack
- these are the main lines or feed which energize the entire building
- this cable has to be stripped and cut these wire using a hacksaw
- sometimes they are placed in the ground
- sometimes they are fed through conduits set-up on actual mounts

20. Process Work/Motor Control:

- more occurring in the industrial sectors
- such things as making connections for devices such as conveyor belts
- installing such things as trip switches, photo cells etc.
- mainly conduit and wire

21. Repair/Replacements:

- Changing fixtures and bulbs to make systems more energy efficient
- Normal repair caused by wear and tear on systems

22. Reading Blueprints, Drawing and/or Supervision:

- Work is assigned to an electrician to follow a certain type of schematic or drawing
- Interpret drawings and retrieve materials from available stock
- Perform installation
- Test installation to ensure that it is operational and safe

23. Bus Duct:

- Heavy work
- Install and connecting cooper bars encased in steel cladding
- Requires climbing and lifting

24. Slab Work:

- install electrical boxes and conduit on top of plywood after placement of steel rebars
- all work done bending over
- light work but required to walk on uneven surfaces

25. Temporary Power:

- installation of electrical receptacles and "strings" of temporary lights (wires with light bulb holders)
- maintaining changing of light bulbs

RELEVANT ACTIVITY DEMANDS:

Standing:

- for up to 60 minutes at a time
- may be in conjunction with standing on ladders or walking
- total accumulation in an 8 hour shift approximately 8 hours
- rarely does a whole day involving 8 hours of static work
- standing can be accommodated in various ways

Sitting:

- not a regularly occurring job demand except during pre-fab assembly when sitting is possible
- low level sitting may occur on small benches or stools when working for prolonged periods at low level

Crouching/Squatting/Kneeling:

- a regular job demand while installing terminal receptacles
- also occurs regularly when working on floor ducts and at various other times throughout the job
- for approximately 10 minutes at a time
- variable frequency and duration
- total accumulation may exceed 4 hours per shift

Walking:

- for the majority of time it is over smooth concrete surfaces
- occasionally it could be on rough ground around construction sites, especially when required to install under ground supply lines
- total accumulation in an 8-hours shift approximately 6 km

Bending/Twisting:

- this would occur at various times throughout all duties in this job
- variable intensity and duration
- by attention to good body mechanics, it is hopefully possible to limit the extent of this activity

Climbing:

- climbing up ladders and scaffolds
- a frequent job demand throughout this duty
- approximately 100 times up and down per shift
- baker's scaffold approximately 5 vertical steps in height

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Lifting:

- Bundles of conduit, 10/bundle
- ½", 20 lbs.
- ¾", 25 lbs.
- 1", 40 lbs.
- lifting heavy panels and generators up to 150 lbs. for a 2-man shared load
- spool jacks, 2 per set, 80 lbs. a piece
- tool belt weighing approximately 13kg
- note that there is sometime mechanical assistance available of the assistance in the form of a helper to share the load
- variable intensity and duration

Pushing/Pulling:

- Pulling a heavy cable while passing cable through a conduit and other enclosures
- Pushing and pulling on hickey (pipe bender) utilizing long-handled tools
- Repeated approximately 100 times/shift
- Variable intensity and duration

Shoulder Positions:

- There is frequent work at above shoulder level
- Variable intensity and duration, approximately 5 minutes at a time

Low Percentage:

- Install underground supply lines
- Install boxes and conduits during block wall construction
- Rough-in suites
- Distribution systems
- Mount panels
- Terminating
- Communication systems (punching down)
- Install wireway/cable tray
- Cable runs
- Process work/motor control
- Repair, replacement
- Blueprint reading and supervision
- Bus duct
- Temporary power/light

Medium Percentage:

- Material handling
- Wire pulling
- Fire alarm systems
- Pot lights
- Fluorescent fixtures
- Underfloor duct
- Install receptacles/switches
- Pre-fabbing

High Percentage:

- Small conduit feeders
- Interior wall rough-in
- Slab work

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Document Created 1992 - Ainsworth & IBEW Local & Union 353