

Guidelines – Electricity at Site

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1.0 Introduction

Electricity is the set of physical phenomena associated with the presence and flow of electric charge. Electricity gives a wide variety of well-known effects, such as lightning, static electricity, electromagnetic induction and electrical current.

2.0 Scope: -

This guideline addresses electrical safety requirements that are necessary for the practical safeguarding of employees involved in construction work.

This Guideline contains implementation of safety requirements for electrical equipment and installations used to provide electric power and light at the jobsite. These sections apply to installations, both temporary and permanent, used on the construction site.

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3.0 Guidelines:-

3.1 General requirements:

All electrical conductors and equipment shall be as per DEWA specifications.

The contractor shall ensure that electrical equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees.

Suitability of equipment for an identified purpose may be evidenced by listing, labelling, or certification for that identified purpose.

All equipment's must be inspected to see that they are in good condition. Damaged or deteriorated equipment's should be reported and replaced.

Electrical installations that are open to unqualified persons shall be made with metal-enclosed equipment or shall be enclosed in a vault or in an area, access to which is controlled by a lock. Metal-enclosed switchgear, unit substations, transformers, pull boxes, connection boxes, Distribution boards and other similar associated equipment shall be marked with appropriate caution signs. If equipment is exposed to physical damage from vehicular traffic, guards shall be provided to prevent such damage. Ventilating or similar openings in metal-enclosed equipment shall be designed so that foreign objects inserted through these openings will be deflected from energized parts

Sufficient space shall be provided and maintained about electric equipment to permit ready and safe operation and maintenance of such equipment

3.2 Wiring design & Protection:

- The employer shall use Residual Current Device (RCD) with 30mA trip to protect employees on construction sites from electrical hazards. These requirements are in addition to any other requirements for equipment grounding conductors. (See Figure # 01)



Fig. 01

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3.3 Lockout & tagging of Circuits:

- Controls that are to be deactivated during the course of work on energized or de-energized equipment or circuits shall be tagged
- Equipment or circuits that are de-energized shall be rendered inoperative and shall have tags attached at all points where such equipment or circuits can be energized
- Tags shall be placed to identify plainly the equipment or circuits being worked on. (see Figure # 02)



Fig. 02

3.4 Competent Electricians:

All persons employed as electricians must be competent and be in possession of a recognized electrical qualification. The main contractor must ensure that any persons working on electrical installations including temporary electrical installation are competent

3.5 Maintenance of Equipment:

The employer shall ensure that all wiring components and utilization equipment in hazardous locations are maintained in a dust-tight, dust-ignition-proof, or explosion-proof condition, as appropriate. There shall be no loose or missing screws, gaskets, threaded connections, seals, or other impairments to a tight condition

3.6 Extension Cords:

Electrical extension cords are numerous on construction sites and become damaged because of the rough conditions in which they are used.

The following conditions to be checked during regular inspection

- All extension cords are three-wire cords;
- The ground pin is on a male plug;
- There is no unbroken insulation on the cord;
- End appliances (plug and receptacle) are gripped to insulation;
- All wires are continuous and unbroken;
- All cords are protected from damage, likely to occur when passing through a door or window;
- Metal boxes with knockouts are not used on extension cords;
- Plugs are dead-front (moulded or screwed in place);
- Romex (non-metallic sheathed cable) is not used as flexible cord;
- Cords are not stapled or hung from nails;
- Bushing is passing through holes in covers or outlet boxes.

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A more General Hierarchy of Hazards control is depicted below (see figure # 3)

HIERARCHY OF HAZARDS CONTROL

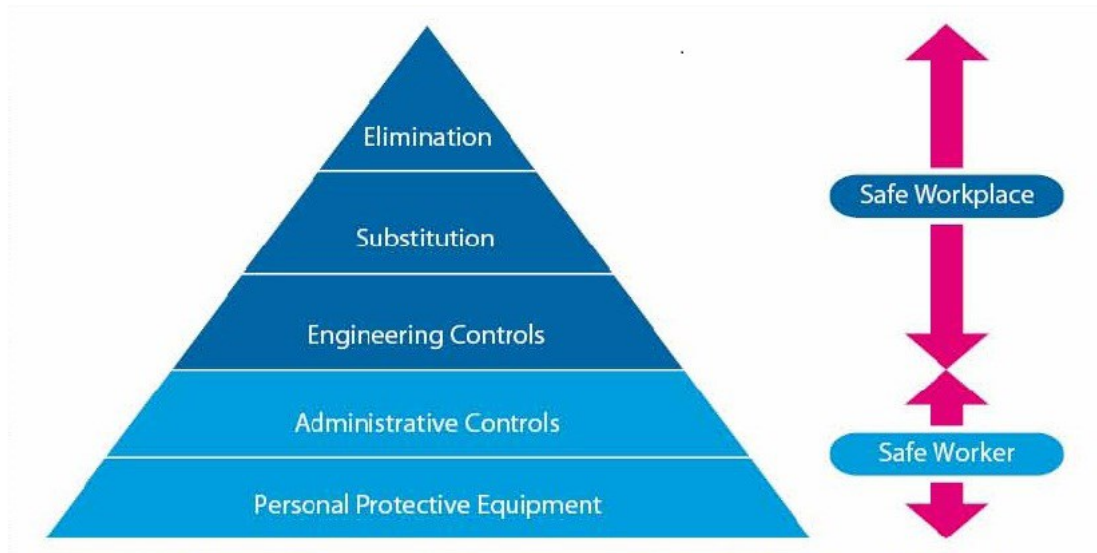


Fig. 03

4.0 Do's and Don'ts:

4.1 Do:

- ✓ DO cover all electrical outlets and wall switches with cover plates, and replace any that are damaged.
- ✓ Do protect the distribution board by using plastic safety covers during rainy conditions.
- ✓ Do make sure all electrical equipment's are free from defects
- ✓ Do use extension cords only on a temporary basis.
- ✓ Do use a 30mA trip rated RCD for power outlets.
- ✓ Do keep all electrical cables away from water sources.
- ✓ Do use lockout-tag out system while working on electrical installations

4.2 Don't:

- ✗ Take chances.
- ✗ Overload a circuit.
- ✗ Do not use domestic plug and sockets.
- ✗ Don't use in wet/damp conditions
- ✗ Don't carry a tool by the cord
- ✗ Don't yank the cord to disconnect it.



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- × Do not connect to power when changing accessories such as blades & bits.
- × Do not work in low light condition.

5.0 References:

- DM Regulations, Code of Construction Safety Practice
- Occupational Safety and Health Administration-US www.osha.gov
- Health and Safety Executive UK www.hse.gov.uk
- Trakhees – Construction Safety Regulations