Electrical Safety

CONTENTS

1.0 PURPOSE

The Electrical Safety program establishes proper guidelines for employees working on or near, (a) electrical wiring, (b) power supplies, (c) optical fiber cable, or (d) other energy sources.

2.0 APPLICABILITY AND SCOPE

This program applies to all employees and contractors working at USC.

3.0 APPLICABLE REGULATIONS AND STANDARDS

California: Title 8, General Industry Safety Orders
Federal: Title 29, Code of Federal Regulations, 29 CFR 1910.269 and 1910.301 through 1910.399).
National Electric Code
NFPA 70

4.0 DEFINITIONS

PPE Personal Protective Equipment

Electrical Safety

5.0 RESPONSIBILITIES

5.1 Employee Responsibilities

Only qualified employees are permitted to work on or near exposed energized components. The work conducted by a Qualified Employee may involve either direct contact or contact by means of tools and materials.

Qualified employees will abide by the following provisions when working on energized components:

- Wear appropriate PPE such as approved insulating gloves, steel-toed boots for electrical work, and safety glasses; and
- Use insulated tools or handling equipment if there is a possibility of contact with conductors or energized components.

5.2 Supervisor Responsibilities

- Verify that electrical equipment is installed in accordance with applicable codes and is properly maintained;
- Qualify employees prior to assignment per applicable regulatory requirements.
- Provide awareness training to all employees on recognizing and reporting electrical hazards.
- Document all training; and
- Observe that safe electrical practices are being used by employees authorized and qualified for such work.

6.0 PROCEDURE

- Ensure all wiring and electrical equipment conforms to all the applicable codes, laws, regulations, and good practices.
    - Install electrical equipment in accordance with area restrictions based on real or potential hazards (for example, explosion-proof fixtures, hazardous location classifications, size, voltage, type, etc.);
    - Ensure grounding of all electrical equipment, including powered hand tools. Equip all electrical equipment used outdoors, inside any type of confined spaces (permit or non-permitted), laboratory applications, adjacent to internal and or external doorways and/or in wet or damp locations with a ground fault circuit interrupter (GFCI) (Note: not to be confused with a ground fault interrupter (GFI), which is used only for protection of the equipment, not personnel);
    - Use extension cords only on a temporary basis where fixed wiring is not available. Ensure that they are free from defects, used only in dry areas, and do not present a tripping hazard. Extension cords plugged together must be of the same wiring size and circuitry to maintain proper grounding and safety measures;
    - Do not use extension cords to lift or pull equipment. Never tie extension cords or knot them together as this increases the rated resistance and places undue stress upon the insulation and or insulators; and
    - Do not use flexible wiring, cables, or extension cords as substitutes for fixed wiring of a structure. Never attach to building surfaces; do not conceal or run through holes in walls,

Electrical Safety

ceilings, or floors; or run through doorways, windows, or similar openings. When flexible cords are allowed, use only in continuous lengths without a splice or tap.

- Label electrical equipment.
  - All circuitry must be accurately and clearly labeled;
  - Mark all disconnecting means, circuitry and/or overcurrent devices to indicate their purpose;
  - Electrical panels, main switches, and transformers must be labeled as to their voltage, current, wattage or other ratings as necessary; and
  - 600 volt equipment or greater must have controlled access for qualified personnel only.
- Guard and secure live electrical equipment.
  - Guard live parts of electrical equipment operating at fifty volts or more against accidental contact by the use of approved cabinets or other methods of isolation to which only qualified persons have access (refer to Lockout/Blockout document);
  - Do not work on live equipment unless a specific procedure is developed to ensure employee protection;
  - Special consideration must be followed for hazardous location classification, follow 1910.307 for the proper classification and division designations; and
  - Hazardous locations must be marked as such and clearly state that entry is restricted to qualified individuals.
- Maintain electrical equipment and systems.
  - Inspect electrical equipment on a periodic basis;
  - Repair or replace exposed wires, frayed cords, and deteriorated insulation;
  - Keep junction boxes, outlets, switches, and fittings covered;
  - Ensure cord and plug-connected equipment have grounded connections (for example, electrical appliances, vacuums, blowers, and vending machines);
  - Ensure portable electric hand tools are either double insulated or grounded. Do not remove the third grounding prong or use adapters that do not connect with it; and
  - Exposed non-current-carrying metal parts of fixed equipment which may become energized, when within eight feet vertically or five feet horizontally of ground or grounded metal objects; subject to employee contact; located in a wet or damp location and not isolated; in electrical contact with metal, or if in a hazardous location must be grounded.

7.0 TRAINING AND COMMUNICATION

USC employees require annual awareness training to recognize and report electrical hazards.

Document all training.

8.0 PROGRAM APPROVAL AND REVIEW

Date prepared:	12/12/2005	By: Alfred M. Bouziane