Electrical Safety Guide for Temporary Setups at Field Locations

Introduction

It is Desert Research Institute policy that all electrical work and wiring comply with Federal, State and Local requirements. Before conducting any work yourself, check with the local owner, lead agency, or local authority to determine whether there are requirements to use a licensed electrician. Any work that requires a permit and/or licensed contractor will be done in that manner. Even though testing and experiments may use "Temporary Wiring" it should be done in such a manner that it complies as best as possible with any/all required codes (per Article 527 of NEC).

Best Management Practices

To ensure the safest worksite possible, common sense and safe work practices should be followed. Here are some recommended procedures and practices that will help in achieving this goal.

- Know your 'Load' requirements before starting the project. As the distance increases to your site so does the resistance and voltage drop. You may need to over size the conductors to maintain proper voltage.

- Verify that the Supply Line Voltage is sufficient to handle the existing load in addition to your added load.

- Follow the DRI Lockout/Tag out/De-energizing procedures. Make sure any other affected personnel are aware of these procedures.

- All wiring needs to be supported properly and at recommended intervals. Any time wires enter a box or panel they need to be protected from abrasion and tension.

- All wiring needs to have over current protection that is easily accessible and properly sized and labeled.

- When working around water or other grounding sources, it is recommended that you install Ground Fault Interrupter (GFI) Protection or use a dedicated circuit, as appropriate for the situation.

- Proper grounding must be used when required. This includes but is not limited to; conduit, boxes, panels, devices and fixtures.

- If there is a possibility of an accidental disconnection, use twist-lock plugs and receptacles. They should be rated for and matched to the voltage and amperage that you are working with.

- Avoid using lamp cord for wiring unless it is an integral part of an appliance.

- Allow for heat dissipation as this may affect your project.

- Do not daisy chain extension cords.

- If lighting is required, all fixtures should have some type of lamp protection installed. Lighting should NOT be on a GFI circuit, but should be on a dedicated circuit so you do not lose your lighting when the GFI trips.

- Splices should not be “Twist and tape” but of an approved type and method.

- Most low voltage work should have the same type of precautions that you would use in working on the electrical system of a car. Fortunately with DC and 12v or less, you're most likely to just blow something out, so make sure you have over current protection installed. Also, a car battery can cause significant damage if the posts are shorted so it is a good idea to disconnect the ground at the battery before doing any modifications.

- If using a generator to supply power, follow all recommended safety instructions (found in the owner’s manual and/or printed on the generator) regarding fueling, load limits, etc. Be especially mindful of exhaust manifolds, which can become extremely hot. Keep cords and other combustible materials well away. Inadvertent bodily contact may result in severe burns. Use thermal protection if you need to work in this area of the generator before it has adequately cooled.

- The use of batteries (lead/acid or gel) in parallel as a power supply can present additional hazards.