ENTERTAINMENT: WORKING SAFELY AROUND ELECTRICITY

INTRODUCTION

Whether it is for film, television, theatre, or live events, electrical power plays an essential role in powering everything from lighting and sound to special effects and set pieces. However, electricity is a powerful force that can injure and kill anyone who comes into contact with it without the proper safety protocols in place. In this lesson, we will cover who should be the ones dealing with electrical equipment during production, the types of electrical equipment that may be found on a production location or set, and the hazards, the personal protective equipment, and the safe work practices that should be utilized by those who handle electrical equipment.

INDIVIDUALS/DEPARTMENTS ON PRODUCTIONS WHO SHOULD HANDLE ELECTRICAL EQUIPMENT

Depending on the size and scope of your production, the people and/or departments who should be the only ones to handle electrical equipment can go by many different names. These include:

- Chief/Master Electrician
- LX (Electrics/Elecs)
- Gaffer (Chief Lighting Technician)
- The Best Boy/Girl Electric
- The Electric Department
- Lighting Techs/Spark
- Rigging Electricians
- Genny Operator
- Electrical Junior/Trainee

Please note that swing members may also assist with electrical departments if they are needed.

TYPES OF ELECTRICAL EQUIPMENT THAT MAY BE FOUND ON A PRODUCTION LOCATION OR SET

There are many different types of electrical equipment that may be used during a production, which can include, but may not be limited to:

- Lights
- Generators
- Extension cords
- Control boards
- Dimmers
- Electrical wiring
- Splitters
- Sound/Audio equipment
- Monitors
- Portable heaters

HAZARDS

Whenever someone is setting up or working around electrical equipment, there is the possibility of exposure to one or more of the following hazards:

- Slipping, tripping, or falling over cords that are in walkways
- Electric shock or electrocution from making contact with live components
- Electrical fires from one or more of the following:
    - Faulty wiring, sockets, and/or outlets
    - Light fixtures and fittings
    - Overloading of electrical equipment
    - Misuse of extension cords
    - Portable heaters
- Explosions from a short circuit or static charge igniting flammable gases or combustible dust

PERSONAL PROTECTIVE EQUIPMENT

Due to the potential of serious injury when working on or with electrical equipment, electrical department personnel should wear the appropriate personal protective equipment for their job tasks. PPE may include:

- Hard hat
- Safety glasses or goggles
- Face shield
- Flame-resistant clothing
- Insulated gloves
- Hearing protection
- Non-conductive footwear

You should inspect all provided PPE for wear or damage before you put it on. Report worn or damaged items to your supervisor. Do NOT wear damaged PPE.

SAFE WORK PRACTICES

Since there will be many different types of electrical equipment on the production site or set, you and others who are in the electrical department should do the following:

OHM’s Law

Make sure that you are familiar with and understand how to apply Ohm’s Law. Ohm’s law is a formula that is commonly used on production sites and sets to calculate the relationship between voltage, current, and resistance in an electrical circuit.

Scouting the Production Location

Make sure to scout the production location prior to the day of the production to identify all available outlets, other sources of electricity, and electrical breakers. You should not exceed the amperage that the breakers can handle, as overloading the circuit could cause the breaker to trip or other issues.

Based off the information from the scouting of the location, you should develop and implement an electrical plan for the location.

Permits and Regulations

In addition to scouting and making plans for the location, you should also make sure that you have the appropriate permits for the set up that you are planning to use, especially if there will be large electrical set-ups.

All planned set-ups should be done in accordance with local, state, and federal laws and regulations. If you have any questions regarding any laws or regulations, please speak with your supervisor.

Equipment Inspection and Set-Up

When you are ready to set-up the electrical equipment, you should do the following:

- Only allow trained and qualified personnel to setup the electrical equipment.
- Inspect all electrical equipment for wear, tears, and damage to wires and other components.
    - Report worn, torn, or damaged equipment to your supervisor.
    - Do NOT use any equipment that has worn, torn, or damaged parts.
        - Please note that electrical equipment should only be repaired by either trained and authorized personnel or by qualified third-party vendors in accordance with the production's policies and procedures.
- Conduct all testing of electrical equipment in accordance with the production's policies and procedures, and where applicable, the manufacturer's instructions.
- Make sure that all cables are appropriately rated for the load that they will carry.
- Only use insulated tools when working on electrical equipment.
- Where applicable, use all tools (like voltage meters) in accordance with the manufacturer's instructions.
- Where feasible, assure that cables are kept out of walkways by running them along the wall in accordance with the production's policies and procedures.
    - Where cables have to cross a walkway, industry experts recommend that it be done at a 90-degree angle, with the cable either taped down or otherwise covered by a cable ramp or mat to help minimize tripping hazards.
    - If you have questions regarding cables that have to cross walkways, please speak with your supervisor.
- Set up all equipment in accordance with the manufacturer's instructions and the production's policies and procedures.
- Where applicable, make sure that generators are placed in well-ventilated areas and away from all flammable materials.
- Where applicable, assure that equipment that generates heat is kept a safe distance away from flammable materials.
- Where equipment will be elevated, make sure that it is kept a safe distance away from overhead powerlines in accordance with applicable OSHA regulations and the production's policies and procedures.

When Working on Electrical Equipment

When working on electrical equipment, you should do the following:

- Only allow trained, qualified, and authorized personnel to work on the electrical equipment.
- Where applicable, make sure that all required lockout/tagout procedures have been completed in accordance with the manufacturer's instructions and the production's policies and procedures.
- Assure that an electrical tester has been used to verify that equipment has been de-energized before working on it.

- Make sure that everyone is warned when equipment is live with “hot set” signs or other visual cues in accordance with the production’s policies and procedures.
- Do NOT use “quick fixes” like using duct tape on frayed wires or overloading outlets with multiple adaptors.

External Electrical Equipment

If cast and crew have brought external electrical equipment, such as hair dryers, phone chargers, portable cooking equipment, and so on, these items should be tested and handled in accordance with the production’s policies and procedures. If you have questions regarding external electrical equipment, please speak with your supervisor.

CONCLUSION

To conclude, whether it is for a television show, film, theatre production, or live event, these productions rely on electricity to power many different types of equipment. However, electrical equipment can expose everyone on the production to harm if certain safety precautions are not in place. To help minimize the danger, only those in the electrical department should be handling or working on electrical equipment. If you have questions regarding the safe handling of electrical equipment on your production, please speak with your supervisor.