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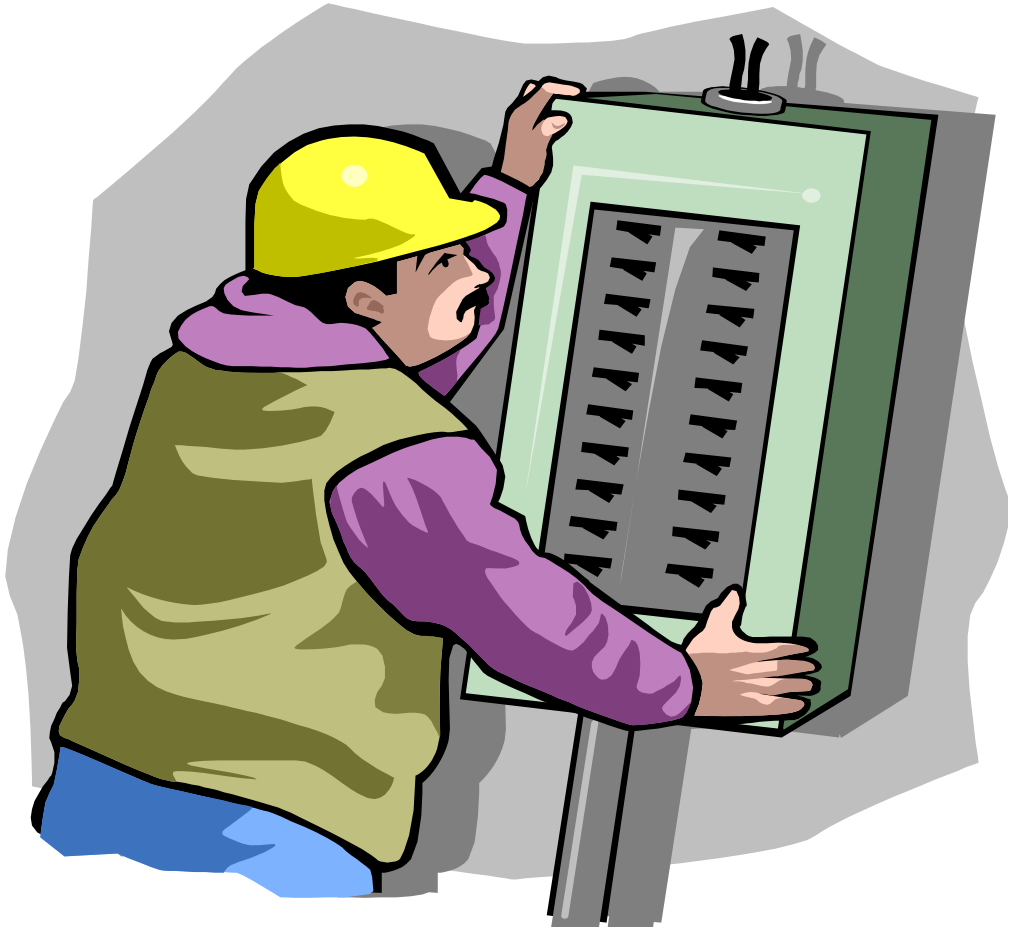
Electrical Safety

LWD



Flexible Cords

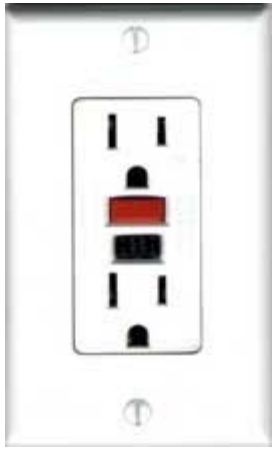
Electrical wire and flexible cord passing through work areas shall be protected from damage (including that caused by foot traffic, vehicles, sharp corners, protections, and pinching).

Flexible Cords (cont.)

- Extension cords or cables shall be supported in place at intervals that ensure that they will be protected from physical damage
- Support shall be in in the form of cable ties, straps or similar type fittings installed so as not to cause damage. They shall not be hung from nails, or suspended by bare wire

GFCI's

- All receptacle outlets that provide temporary electrical power during construction, remodeling, maintenance, repair, or demolition shall have ground-fault circuit-interrupter (GFCI) protection for personnel



Contractor Serious Injury

Description: Electrician working above the ceiling grid, in a facility, terminating wires for the light fixture when he was shocked which threw him off the ladder and fell head first unto the floor causing laceration on his head. EMT arrived on the scene and provided medical assistance and transported the injured personnel to Guam Memorial Hospital.

Root Cause

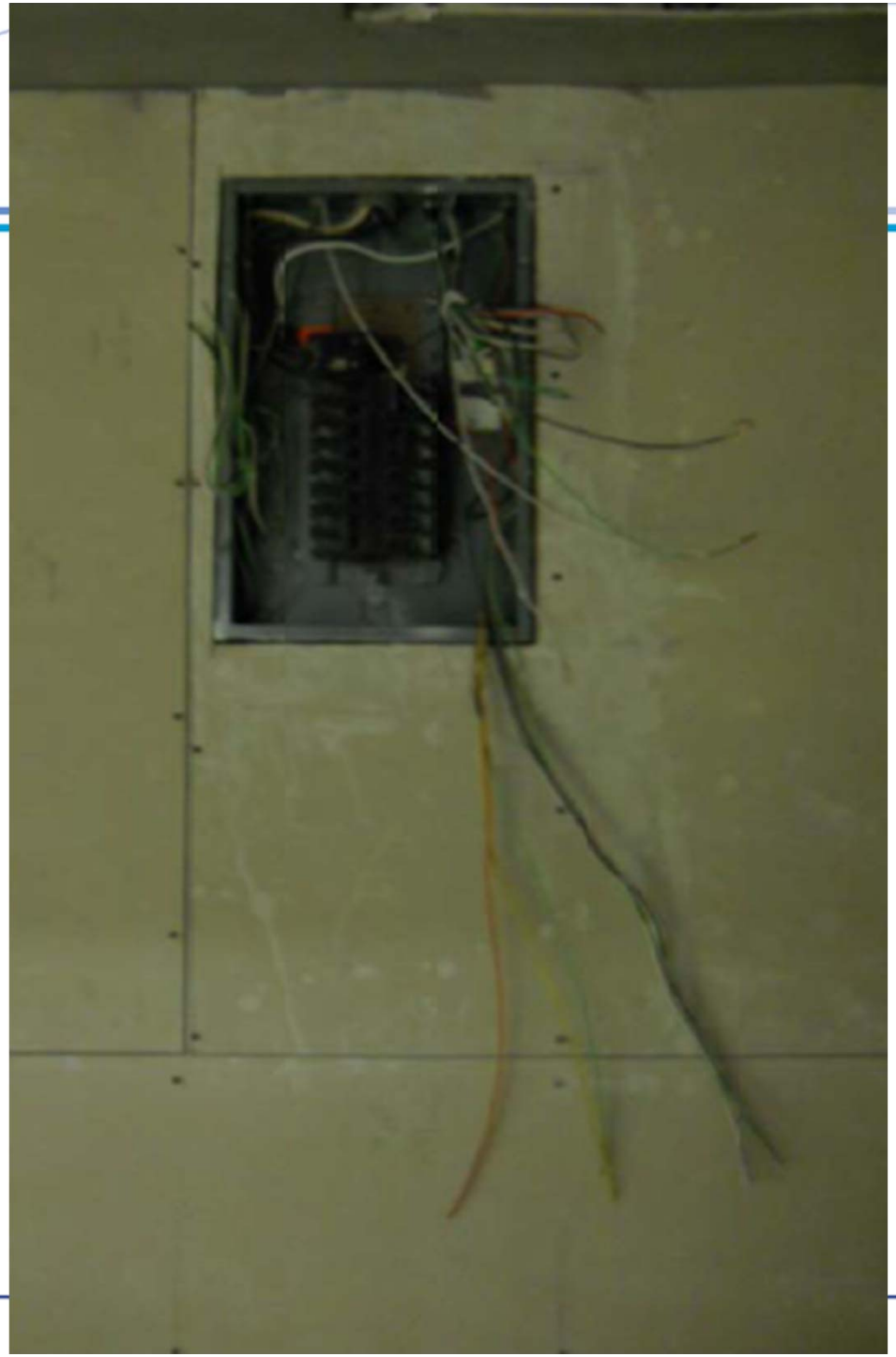
- Working on energized system
- Failure to follow LOTO procedures

Contributing Factors

- Failure to test electrical lines prior to working
- Failure to notify SSHO and supervisor on works involving energized system
- Working overhead using step ladder
- Complacency

Isolation

- Whenever possible, all equipment and circuits to be worked on shall be de-energized before work is started and personnel protected by clearance procedures, lockout/tagout, and grounding
- Energized work may never be performed without prior authorization. If it is determined that equipment must be worked in an energized condition, an energized work permit shall be submitted to GDA for acceptance
- Justification for why the work must be performed in an energized condition



- Contractor working on live wires during construction work
- Electrical wires are energized
- No Lockout/Tagout


• Contractor splicing electrical wires directly into power strip

Arc Flash

- Whenever it is necessary to work on energized parts greater than 50 volts to ground, a risk/hazard analysis/arc flash hazard analysis will be conducted in accordance with NFPA 70E
- The flash protection boundary, approach distances, hazard/risk category and PPE requirements shall all be identified

Arc Flash PPE

- PPE that provides appropriate arc flash protection is required for all personnel working on or near exposed energized electrical equipment operating at 50 volts or more

Contractor Arc Flash Mishap

THIS MISHAP IS STILL UNDER INVESTIGATION

Activity: During a planned electrical outage, an electrician removed the back cover of a switch gear cabinet and was testing a 4160 volt, line side buss bar of a main breaker. He was not wearing full arc flash protection gear and was using a Fluke 179 True-rms low voltage meter to test the buss bar. Arc flash occurred and the Fluke 179 Multimeter exploded causing 2nd and 3rd degree burns on his face, upper arms, chest/stomach area, and he suffered smoke inhalation to his lungs. The employee was wearing medium voltage, high voltage gloves which prevented burns to his hands and lower arms, and safety glasses which averted damage to his eyes.

Possible Contributing Factors:

- Employee did not wear required arc flash clothing
- Employee did not read or understand safety instruction of users manual for fluke meter which stated do not use meter on voltages >1000 volts
- Employee was not a trained high voltage electrician
- AHA did not state level of voltage employees would be working on

Communication Points:

- **ALWAYS** follow manufactures safety instructions for use of electrical testing meters
- Employees must be qualified to work on the voltages they will be exposed to i.e. high voltage training for anyone working on circuits above 600 volts
- Required level Arc flash safety gear must be worn at all times when working on or near energized electrical equipment
- All employees working on or near energized equipment must be authorized and trained to the level of electrical voltage to which they will be exposed
- Employees must know voltage of system they are preparing to work on before attempting to work on system
- Tailgate or pre-work brief must clearly state what the potential voltage they could be exposed to is know and understood by all workers

What can go wrong? **What can I do about it?** **If I can't do anything about it, whom do I tell?**

Summary

- Extension cords must be protected from damage
- All receptacle outlets that provide temporary electrical power shall have ground-fault circuit-interrupter (GFCI) protection for personnel
- All electrical equipment & circuits must be de-energized before work is started
- Lockout/Tagout procedures must be applied
- Arc flash protection is required for all personnel working on or near exposed energized electrical