TerranearPMC Safety Share

Week of October 31, 2016 – Assured Grounding Program

An electrical safety program covers a wide range of topics. Notable subjects that fall within electrical safety include overhead power lines, battery charging stations, wiring design and installations, lockout/tagout procedures, as well as personal protective equipment. Something that has recently been recognized as its own stand-alone area-of discipline has been *assured grounding*. This topic focuses on the proper set-up and configuration of electrical equipment (such as hand tools) and extension cords. Information on assured grounding can be found in the OSHA regulations for the Construction Industry, 29 CFR 1926 Subpart K (Section 404) and General Industry Standard, 29 CFR 1910, and Subpart S (Section 304). While there are other OSHA regulations that reference an assured grounding program, these two sections specify the safety requirements necessary for wiring design and protection.

OSHA describes this program:

“The employer shall establish and implement an assured equipment grounding conductor program on construction sites covering all cord sets, receptacles which are not a part of the building or structure, and equipment connected by cord and plug which are available for use by employees."

Assured grounding must have the following minimum requirements:

- A written description of the program, including the special procedures adopted by the employer. This program needs to be available at the jobsite for inspection and available for copying by any affected employee.

- Employer shall designate one or more **competent persons** to implement the program.

  OSHA has defined a *Competent Person* as “one who, by virtue of their industry background, experience and training, is capable of recognizing jobsite hazards, and has the authority to deal with same.” Therefore, depending on the work tasks, a project may have a competent person for excavations, fall protection, asbestos abatement projects, as well as for electrical safety. A competent person is not the same as an OSHA qualified person, as according to OSHA, "Qualified" means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project. While both a qualified person and a competent person have the capabilities to identifying specific workplace hazards, a competent person has the authority to take prompt measures to eliminate these hazards.

- Each cord set, attachment cap, plug and receptacle of cord sets, and any equipment connected by cord and plug, shall be visibly inspected before each day’s use for external defects, such as deformed or missing pins or insulation damage, and for indications of possible internal damage

- Equipment found damaged or defective shall not be used until repaired.
- All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.

> A **continuity test** is the checking of an electric circuit to see if current flows (that it is in fact a complete circuit). A continuity test is performed by placing a small voltage (wired in series with an LED or noise-producing component such as a piezoelectric speaker) across the chosen path. If electron flow is inhibited by broken conductors, damaged components, or excessive resistance, the circuit is "open".

Devices that can be used to perform continuity tests include multimeters which measure current and specialized continuity testers which are cheaper, more basic devices. They generally have a simple light bulb that lights up when current flows (and thus, electrical continuity is assessed).

A typical application of a continuity test is to assess a bundle of wires so as to identify the two ends of a particular circuit..

Other important aspects of an assured grounding program include:

- Newly Purchased cord sets, plugs, etc., shall be inspected (as described above).
- Repaired cord sets, plugs, etc., shall be re-inspected.
- Inspections/tests of electrical circuits should occur at Intervals not to exceed three (3) months.
- Tests must be recorded (by date tested, worker who conducted test, damage repaired, etc.).
- Color Coding is a popular practice that is designed to mark cords, plug sets, etc. that are a part of the Assured Grounding Program. Specific color coding can be applied every three months (Example: White marking tape for January through March, Green; April through June, Red; July through September and Orange tape for October through December).

As an FYI, Assured Equipment Grounding Conductor Program (AEGCP) are necessary when ground-fault circuit interrupters (GFCIs) are not used. That means that the installation of GFCI's can be used in lieu of an assured grounding program!

A written description of the program needs to be maintained at the jobsite. Maintain a written record of the required tests, identifying all equipment that passed the test and the last date it was tested (or the testing interval).

An Assured Grounding Program is typically integrated into an organization's Electrical safety Program, and therefore, not a stand-alone document. Nevertheless, an Assured Grounding Program is an important facet of any company's S&H program, as without the proper provisions, workers can be susceptible to serious injuries - injuries which can be easily preventable by using the practices established in a comprehensive Assured Grounding Program.

Before anything else, preparation is the key to success
Alexander Graham Bell