



Maintenance Management Order

SUBJECT: Electrical Work Plan

DATE: February 1, 2010

NO: MMO-002-09

TO:

1. All Maintenance Capable Offices
2. Plant Manager, Maintenance Capable Offices
3. Manager, Maintenance Operations, Area Offices
4. Human Resource Analyst/Safety Area Offices
5. Manager, Safety & Health, District Offices
6. Safety Specialist, Plant
7. Manager, Safety & Health, Headquarters

FILE CODE: M, M3

pwel:mm08029ap

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

This Maintenance Management Order (MMO) updates existing electrical work policies and addresses the minimum requirements for a local Electrical Work Plan (EWP). An EWP is generally required at all Postal Service facilities where Postal Service employees perform electrical work on new or existing electrical equipment that is permanently or temporarily installed in Postal Service facilities.

The local EWP must comply with Postal Service policies contained in this MMO and Management Instruction (MI), MI EL-810-2009-1, "Electrical Work Plan." The Installation Head in each facility requiring an EWP is responsible for designating an Executive and Administrative Schedule (EAS) employee to coordinate the EWP. The Installation Head must also provide sufficient funding and personnel to implement the plan effectively.

The Postal Service's primary goal is to protect employees who perform electrical work from serious injuries and incidents that could result from electrical shock and arc-flash hazards. Developing an effective EWP that adheres to Postal Service policy and addresses the requirements in this MMO assists the Postal Service in meeting this goal.

This MMO addresses the Postal Service's three electrical work classifications referred to as: permissible work, permit-required work, and prohibited work. These work classifications are the basis for all subsequent plan requirements including qualifications, training, and control methods relating to work practices, tools, and Personal Protective Equipment (PPE) as detailed in the attachments of this MMO. Each attachment addresses specific requirements used to develop the local EWP. Attachment 10, "Electrical Work Assessment" must be conducted in order to determine the local EWP requirements. Attachment 12, "EWP Coordinator's Checklist" contains a checklist to assist with EWP oversight.

The following requirements must be completed within the specified time, based on the effective date of MI EL-810-2009-1 where applicable:

- **Electrical Work Assessment** – No later than three months after effective date of the MI.
- **Training** - Effective the end of the third quarter of FY2010.
- **Personnel Protective Equipment** -
 - Category 2, 3, and 4 Hand Protection – No later than four months after effective date of the MI.

- Category 2 and 3-L Eye Protection – No later than four months after effective date of the MI.
- Category 3-L, 3-H, and 4 Face Protection - No later than four months after effective date of the MI. Face protecting shields should be worn until the face protecting hoods are available.
- Category 3-L, 3-H, and 4 Head Protection - No later than four months after effective date of the MI.
- Category 2, 3-L, 3-H, and 4 Body Protection – No later than four months after effective date of the MI.
- **Work Practices (Tools)** - No later than three months after effective date of the MI.
- **Labeling** -
 - No later than four months after effective date of the MI.
 - Effective January 1, 2010, labeling will be implemented on new headquarters-procured equipment.

This MMO does not apply to non-Postal Service employees (e.g., contractors) working in a Postal Service facility to install or maintain electrical equipment, electrical utilities, or perform related services for the Postal Service. Contractors are expected to comply with all applicable local, state, and federal requirements for safe electrical work per EL-800, "Managing Contract Safety and Health Compliance."

Direct any questions or comments concerning this bulletin to the HelpDesk, Maintenance Technical Support Center, P.O. Box 1600, Norman OK 73070-1600; telephone FTS 2000 (405) 573-2123 or toll free (800) 366-4123.



Robert E. Albert
 Manager
 Maintenance Technical Support Center
 Maintenance Policies and Programs

- Attachments:
1. Summary of EWP Management Instruction
 2. Electrical Work
 3. Work Categories and Corresponding PPE
 4. Qualifications and Training
 5. Permissible Work
 6. Permit-Required Work
 7. Prohibited Work
 8. Control Methods
 9. Labeling Requirements
 10. Electrical Work Assessment
 11. Responsibilities
 12. EWP Coordinator's Checklist
 13. Forms
 14. Resources
 15. Definitions

ATTACHMENT 1**SUMMARY OF
EWP MANAGEMENT INSTRUCTION**

The following information is from MI EL-810-2009-1, “Electrical Work Plan”

MI EL-810-2009-1 establishes policy and requirements for an Electrical Work Plan.

MI EL-810-2009-1 applies to electrical work performed during the installation, operation, maintenance, modification, repair, and servicing of new or existing electrical equipment that is permanently or temporarily installed in Postal Service facilities.

The Headquarters authorities that have jurisdiction over these policies on behalf of the United States Postal Service™ are:

- Safety and Environmental Performance Management
- Maintenance Policies and Programs

The Postal Service is committed to providing a safe and healthy work environment for all employees and in compliance with all electrical safety regulations established by the Occupational Safety and Health Administration (OSHA), including:

- 29 Code of Federal Regulations (CFR) 1910.147, The Control of Hazardous Energy.
- 29 CFR 1910.137, Electrical Protective Equipment.
- 29 CFR 1910.331, Scope.
- 29 CFR 1910.332, Training.
- 29 CFR 1910.333, Selection and Use of Work Practices.
- 29 CFR 1910.334, Use of Equipment.
- 29 CFR 1910.335, Safeguards for Personnel Protection.

To ensure that these goals are met, the Postal Service has established the following minimum policy principles:

- Mail processing systems and building equipment must be de-energized and locked out, where feasible, before any maintenance task is performed on the equipment.
- Work on energized electrical systems and equipment is permitted for troubleshooting, testing, or performing limited maintenance tasks where it is not feasible to de-energize the equipment.
- Work on energized systems rated above 600 volts AC must be performed by qualified contractors.
- Dead-front operation of switchgear components above 600 volts AC is permitted.
- Maintenance of switchgear components above 600 volts AC must be performed by a qualified contractor.

- Employees must be qualified to perform any electrical work on a mail processing system or building-type equipment before they are assigned to install, modify, repair, service, or maintain such equipment. Refer to Attachment 4, "Qualifications and Training".
- Employees shall be provided with the applicable personal protective equipment (PPE), training, and tools appropriate for the work and the conditions to which they are exposed.
- Managers must adhere to the work category requirements of MI EL-810-2009-1 with regard to employee qualifications and training. Refer to Attachment 4, "Qualifications and Training".
- Managers must adhere to the PPE-level requirements of MI EL-810-2009-1. Refer to Attachment 3, "Work Categories and Corresponding PPE"

This policy does not apply to non-Postal Service employees (e.g., contractors) working in a Postal Service environment to install or maintain electrical equipment, maintain electrical utilities, or perform related services. Contractors are expected to comply with all applicable local, state, and federal requirements for safe electrical work, in accordance with Handbook EL-800, *Managing Contract Safety and Health Compliance*.

MI EL-810-2009-1 does not apply to the following:

- Operation of electrical switches that supply power to office equipment, processing machines, or lighting when such switches are enclosed in a manner similar to a pushbutton, or wall switch.
- Use of approved connectors, such as cords with attachment plugs and wall receptacles.
- On/Off functional switches built into office and facilities equipment, such as lighting receptacles with pull cords or computer power buttons.
- Switching circuit breakers located in lighting distribution panels on and off.
- Cord- and plug-connected equipment, including lamp fixtures, corded hand tools, control devices, and processing equipment.

The complete Management Instruction (MI), MI EL-810-2009-1, "Electrical Work Plan" is available at <http://blue.usps.gov/cpim/miid.htm>.

ATTACHMENT 2**ELECTRICAL WORK**

This attachment provides information relating to the policies that govern electrical work performed in Postal Service facilities by Postal Service employees. It is the foundation on which all other electrical work requirements located in this MMO are based. This attachment introduces new Postal Service terminology relating to the various types and classifications of electrical work. Acceptable work requirements that Postal Service employees must adhere to when performing electrical work are introduced in this attachment with additional details provided in subsequent attachments. Adherence to this MMO helps to protect Postal Service employees from electrical hazards that they may encounter when performing electrical work on new or existing electrical equipment that is permanently or temporarily installed in Postal Service facilities. The following sections discuss the various types and classifications of electrical work.

1. DE-ENERGIZED WORK

Postal Service policy generally requires equipment be de-energized and locked out before Postal Service employees may perform any maintenance related tasks on the equipment. De-energizing and locking out equipment is often referred to as “hazardous energy control” or “lockout”. Lockout requirements have been included in Postal Service policies for more than 20 years and are one reason the Postal Service’s accident and injury rates relating to electrical work have remained low.

Lockout remains one very important method to protect employees from inadvertent contact with energized equipment and circuits. Policies that address de-energizing and locking out equipment are located in the current MMO titled, “Hazardous Energy Control Program (Lockout)”. This MMO is available on the MTSC web page at <http://mtsc.usps.gov>.

Postal Service employees are required to de-energize and lockout equipment before performing maintenance tasks unless the specific task requires the equipment to be energized or the task is one of the specified exceptions to lockout identified in the current MMO on Hazardous Energy Control. Energized systems and components that operate at less than 50 volts to ground need not be de-energized if there will be no increased exposure to electrical shock or burns. Examples of tasks that are expected to be performed with the equipment de-energized and locked out include:

- Installation of any jumpers
- Loosening or tightening terminals
- Replacing/installing wires
- Removing, replacing, rewiring, or rebuilding relays
- Removing or replacing switches
- Replacing fluorescent ballast
- Removing, replacing, rewiring, or rebuilding motor contactors
- Installing or removing capacitors
- Replacing fuses

- Pulling wire in a panel
- Drilling into or within a panel
- Removing or replacing breakers
- Most other activities where direct contact or the potential for direct contact with an energized conductive material exists

Even though equipment has been de-energized and locked out, it is still considered energized until verification with test equipment proves that the circuit has been de-energized.

2. ENERGIZED WORK

Work on energized electrical equipment and circuits is limited to situations in which it is not feasible to de-energize and lockout the equipment. These situations are usually tied to activities that require the equipment to be energized to perform the task.

Energized electrical work requires additional safeguards to protect Postal Service employees from inadvertent contact with energized equipment and circuits. These additional safeguards will vary depending on the activities to be performed, as well as the voltage and amperage the employee will be exposed to while performing the activities.

3. EXPOSED AND NON-EXPOSED WORK

It is necessary to discuss the terms “exposed” and “non-exposed” in relation to equipment and circuits to fully understand the specific safety requirements for working on energized equipment.

3.1. EXPOSED WORK

Exposed work is work performed on energized circuits or components where there is a potential for direct or inadvertent contact with the energized parts. Exposed work is common on older equipment because fingersafe design characteristics may not have been incorporated into the equipment.

3.2. NON-EXPOSED WORK

The term non-exposed work is used to indicate work on electrical components that presents no risk of direct or inadvertent contact with energized components. Design characteristics that limit exposure to energized components and circuits are typically found on newer equipment. These characteristics include recessed or shielded terminal strips, connections, or test points. These characteristics are sometimes referred to as “fingersafe” designs. The term “fingersafe” will be used throughout this MMO to generally refer to non-exposed work.

If equipment designed to limit contact with exposed components is altered, modified, partially disassembled, or damaged in any way that compromises the safety design characteristics, then the equipment is no longer considered to be non-exposed. These fingersafe design characteristics can be restored, and upon doing so, the equipment will be considered to be non-exposed.

An example of fingersafe design is illustrated in Figure 2-1. An example of fingersafe versus not fingersafe (within the context of this MMO) is illustrated in Figure 2-2.

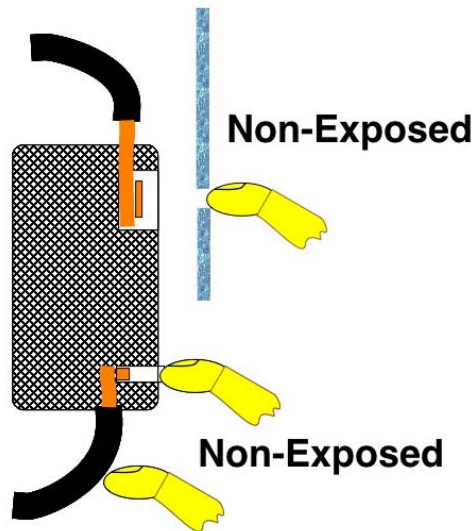


Figure 2-1. Fingersafe

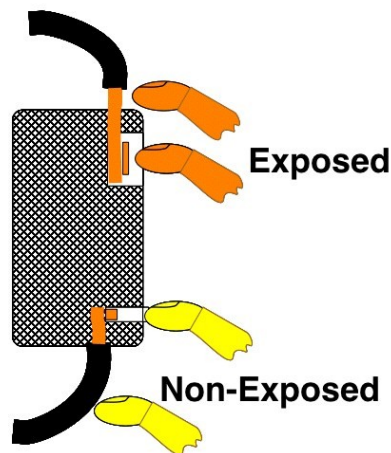


Figure 2-2. Fingersafe Versus Not Fingersafe

4. PERMISSIBLE, PERMIT-REQUIRED, AND PROHIBITED WORK

At the Postal Service, there are three classes of energized work. These classes are referred to as permissible, permit-required, and prohibited work. There are some limited energized electrical activities that are not subject to an EWP, and these activities are the exceptions and are discussed in Section 5, "Exceptions" of this attachment.

4.1. PERMISSIBLE WORK

The term “permissible work” as used in this MMO, pertains to specifically identified activities or tasks that have been identified by Headquarters Safety and Maintenance Management as permissible to perform while the equipment is energized. These select tasks can be performed on energized equipment and circuits rated at or below 600 volts. Examples of permissible work include testing and troubleshooting. Additional information regarding permissible work activities identified by Headquarters, along with the limitations and safeguard requirements, is located in Attachment 5, “Permissible Work.”

4.2. PERMIT-REQUIRED WORK

The term “permit-required work,” as used in this MMO, pertains to any activity or task that is performed on energized equipment rated at 600 volts or less that has not been identified by this MMO as permissible or prohibited work. Permit-required work is performed by Postal Service employees on a case-by-case basis after local safety and maintenance management have determined that, while it is not feasible to de-energize or lock out the equipment, it is still safe for Postal Service employees to perform such work. Permit-required work is performed by qualified and properly equipped employees, at the discretion of Maintenance Management or the Installation Head, and performed on equipment and circuits that are rated at or below 600 volts.

Permit-required work can usually be avoided by carefully considering various options and looking for an alternative that allows the circuit or equipment to be de-energized and locked out. Permit-required work should not be performed out of convenience, but only in situations where locking out the equipment is not feasible and such work will not increase the risk of an incident or injury occurring. Permit-required work must comply with the applicable OSHA requirements located in 29 CFR 1910.331-335. Additional information regarding permit-required work activities, limitations, and safeguard requirements is located in Attachment 6, “Permit-Required Work”.

4.3. PROHIBITED WORK

Postal Service policy prohibits Postal Service employees from performing work on electrical systems or components rated above 600 volts, regardless of amperage, except for the operation and monitoring of dead-front switchgear. Additional information regarding prohibited work is located in Attachment 7, "Prohibited Work".

Figure 2-3 depicts the relationship between the various types and classifications of electrical work.

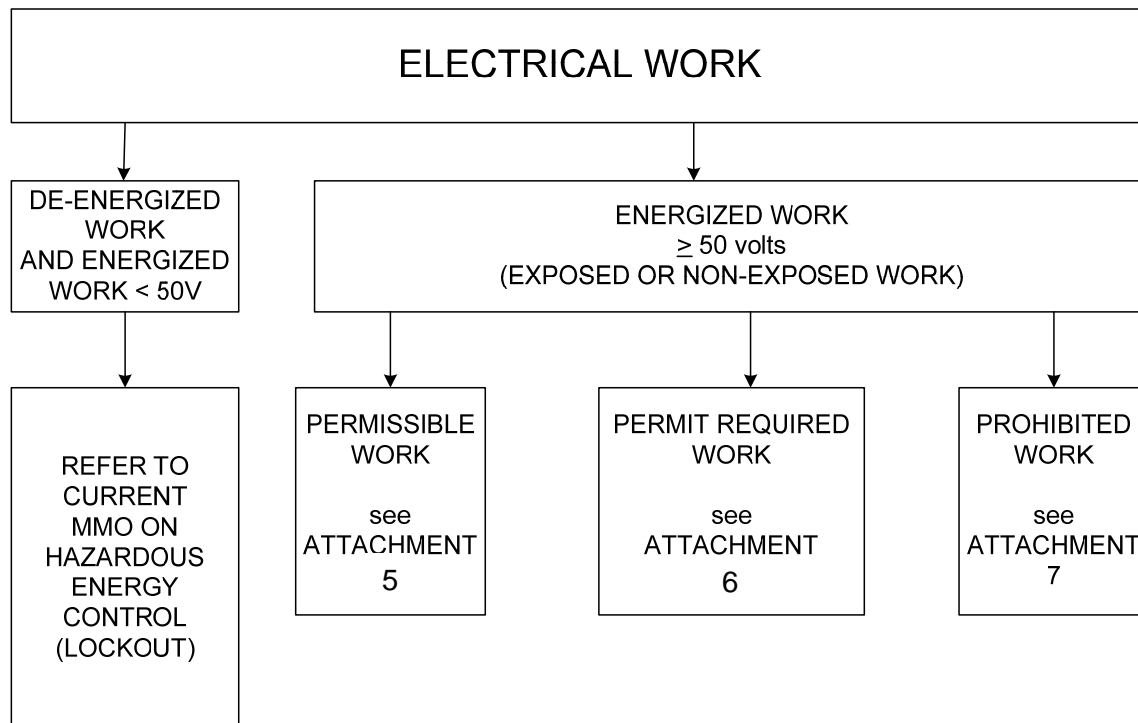


Figure 2-3. Types and Classification Relationships

5. EXCEPTIONS

As stated in Attachment 1, there are some electrical tasks and activities that while performed in an energized state, are not controlled by the requirements of the EWP MI or this MMO. These tasks include the following:

- Operation of electrical switches that supply power when such switches are enclosed or incorporated into equipment or the building (e.g., on/off switches, pull cords for lighting receptacles, computer power buttons, other push buttons or wall switches).
- Use of approved connectors, such as cords with attachment plugs for wall receptacles and other cord and/or plug-connected equipment (e.g., lamp fixtures, corded hand tools, control devices and processing equipment).
- Switching circuit breakers located in lighting distribution panels.
- Replacing light bulbs and fluorescent tubes.

6. WORK CATEGORIES

To simplify specific Personal Protective Equipment (PPE) and training required for employees who perform maintenance activities on energized equipment, several work categories have been established. The appropriate PPE and training not only depends on the voltage and amperage of the circuit, but also on the equipment design elements as they relate to exposed and non-exposed circuits. In some situations, the required PPE level is reduced if the equipment incorporates non-exposed design elements. Additional information on work categories and PPE is contained in Attachment 3, "Work Categories and Corresponding PPE".

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

ATTACHMENT 3**WORK CATEGORIES AND CORRESPONDING PPE****1. WORK CATEGORIES**

This attachment provides information relating to work categories and the corresponding PPE requirements. Five work categories (1 through 5) were established which correlate to the voltage and amperage present in Postal Service facilities. The five work categories are shown in Table 3-1.

Table 3-1. Work Categories

Work Category	Voltage Range	Amperage	Standard System Voltages
1	0 to 49	All	5v, 12v, 24v
2	50 to 250	All	120v, 208v, 240v
3	251 to 600	Less than 1,000	277v, 480v
4	251 to 600	1,000 and above	277v, 480v
5 ¹	601 and above	All	All

¹Work category 5 is generally classified as prohibited work.

Work Category One (1) addresses low voltage control circuits or low power circuits. This category does not place any limitations on work performed on circuits rated at less than 50 volts.

Work Category Two (2) addresses all equipment and circuits rated up to 250 volts. This category contains most of the Postal Service mail processing automation equipment and includes all 120, 240, and 208 volt systems.

Work Category Three (3) addresses all equipment and circuits rated between 251 and 600 volts that are rated at less than 1,000 amps. Common equipment and circuits found in postal facilities in this category are usually rated at 277 and 480 volts and rated at less than 1,000 amps.

For practical purposes, work category three (3) is usually limited to 800 amps due to the classification of panels and protective devices. The amperage is determined by the trip setting/rating of the protective device (fuse or breaker) feeding the circuit or panel.

Work Category Four (4) addresses all equipment and circuits rated between 251 and 600 volts, and rated at 1,000 amps or more. Typically, work on energized 480 volt switchgear or large electrical power distribution panels fall into Work Category four (4).

Work Category Five (5) addresses equipment and circuits rated 601 volts and above regardless of its rated amperage. Work Category five (5) is generally classified as prohibited work.

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

2. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Each work category has corresponding PPE requirements. Table 3-2 lists the PPE required for each PPE Level which can then be correlated to each work category. Table 5-1 illustrates this correlation. The PPE Levels applies to permissible work performed by Postal Service employees on energized equipment and circuits. Additional PPE may be required for permit-required work. Refer to Attachment 6, "Permit-Required Work".

Table 3-2. Personal Protective Equipment (PPE) Level

PPE Level	Part of the Body to Be Protected				
	Hands	Eyes	Face	Head	Body
1	NR ¹	NR ¹	NR ¹	NR ¹	NR ¹
2	Appropriate Gloves (Attachment 8)	Prescription Glasses or Safety Glasses ²	NR ¹	NR ¹	Lab coat, smock or Jacket (minimum FR rated @ 8 cal/cm ²) ³
3 - L	Appropriate Gloves (Attachment 8)	Prescription Glasses or Safety Glasses ²	Face Shield ⁴	Hard Hat ⁵	Lab coat, smock or Jacket (minimum FR rated @ 8 cal/cm ²) ⁶
3 - H	Appropriate Gloves (Attachment 8)	NR ¹	Arc Flash Hood ⁷	Hard Hat ⁵	Lab coat or Coveralls (minimum FR rated @ 25 cal/cm ²) ⁸
4	Appropriate Gloves ⁹ (Attachment 8)	NR ¹	Arc Flash Hood ⁷	Hard Hat ⁵	Flash Suit and Foot Protection (minimum FR rated @ 25 cal/cm ²) ¹⁰
5 Prohibited ¹¹	Voltage Rated Gloves	NR ¹	Arc Flash Hood ⁷	Hard Hat ⁵	Flash Suit and Foot Protection (minimum FR rated @ 25 cal/cm ²) ¹⁰

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

- ¹ Not required under the provisions of the EWP MI and this MMO.
- ² Eyeglasses must provide clear color, clarity, and interpretation. Due to visual field distortions, safety goggles are not permitted.
- ³ Employees performing energized electrical work should wear a long-sleeved shirt of all natural material such as cotton, or they must wear a lab coat or smock with a minimum Flame Resistant (FR) rating @ 8 cal/cm².
- ⁴ Face shield must have a minimum FR rating of 8 cal/cm².
- ⁵ Typically Arc Flash Hood and Face Shield manufacturers require the use of a hard hat for proper fit of the arc flash hood.
- ⁶ Lab coat or smock must have a minimum FR rating @ 8 cal/cm².
- ⁷ The arc flash hood must be worn in place of safety glasses, but prescription corrective lenses may be worn under the hood. The hood must have an arc rating equal to that of the flash suit. The arc flash hood must have a minimum FR rating of 25 cal/cm².
- ⁸ Lab coat or coveralls must have a minimum FR rating of 25 cal/cm².
- ⁹ Work on switchgear requires voltage-rated gloves.
- ¹⁰ Foot protection does not include dielectric or steel-toe shoes, but footwear of an arc rating equal to that of the flash suit.
- ¹¹ Postal Service policy does not allow employees to work on electrical equipment operating at 601 volts and above, except that employees may perform operation and monitoring tasks on dead-front switchgear.

As mentioned in Attachment 2, "Electrical Work", PPE levels are reduced for work that is performed on non-exposed energized equipment, including work on equipment that incorporates fingersafe design elements. Fingersafe design characteristics reduce or eliminate the risk of direct or inadvertent contact with energized parts or circuits.

To determine the proper PPE level for exposed and non-exposed work, refer to Attachment 5, "Permissible Work".

MAINTENANCE MANAGEMENT ORDER

THIS PAGE BLANK

MAINTENANCE MANAGEMENT ORDER

ATTACHMENT 4**QUALIFICATIONS AND TRAINING****1. QUALIFICATIONS**

In the Postal Service environment, a qualified person must be familiar with the equipment being serviced, the required safety measures, and the tools and test equipment being used. Qualified employees must be capable of working safely on energized circuits by demonstrating their knowledge and skills related to safe electrical work.

Postal Service maintenance employees who are required to work on electrical equipment must be trained on electrical safety-related work practices, including the proper use of special precautionary techniques, PPE, and insulating tools and materials. It is important that employees are familiar with the maintenance and operation of the equipment as well as the safe electrical practices involved with the work being performed.

Several electrical safety courses have been developed at the National Center for Employee Development (NCED). Each employee is required to complete the training that corresponds to the category of work the employee is expected to perform, as determined by the voltage and current in Postal Service electrical equipment. This ensures that each employee has been equipped with the knowledgeable of the work practices, PPE, and tools necessary to perform their required tasks safely. An employee's familiarity with the maintenance and operation of the equipment depends on previous work experience and training.

OSHA considers an employee to be qualified when he or she has undergone the appropriate training and has demonstrated the ability to perform assigned duties safely at his or her level of training.

The Postal Service considers an employee to be qualified when he or she has met the OSHA requirements in the paragraph above and has completed the appropriate courses relating to the applicable work categories identified in Attachment 3, Table 3-1, on page 3-1.

Employees must perform electrical work using existing safe electrical work practices until they have completed the appropriate training.

1.1. CURRENT MAINTENANCE EMPLOYEES

Any maintenance employee who performs work on energized equipment must be qualified. Employees must know how to perform the work safely and discuss the safety-related work practices applicable to the task to be performed.

Training must be documented and such documentation must indicate the type and scope of the training received. A copy of this documentation must be maintained in the Learning Management System and at the employee's permanent duty station, preferably by Maintenance Management.

Although an employee may have received training in the past from the Postal Service, a previous employer, or an educational institution, each maintenance employee must receive the appropriate training outlined in this attachment. Information in this attachment describes the training required to ensure employees' are equipped with current knowledge of specific Postal Service policies and safety-related work practices.

If a maintenance employee has demonstrated the ability to maintain electro-mechanical mail-processing or building equipment safely for at least 6 months, then that employee need only take the courses applicable to the work categories in which they perform activities.

1.2. NEW MAINTENANCE EMPLOYEES

New maintenance employees who can provide documentation that they have maintained electro-mechanical industrial (or equivalent military) equipment safely for at least 6 months need only take the safety electrical courses appropriate for the work they will be expected to perform. The Postal Service will retain a copy of the provided documentation on file.

New maintenance employees who have no previous experience working on electro-mechanical industrial equipment must receive the appropriate courses applicable to the work categories to which they will be exposed and 6 months OJT with a qualified employee. The 6 months of OJT may be a combination of hands-on work with a qualified employee and equipment-specific training from NCED.

2. ELECTRICAL SAFETY TRAINING

There are four levels of electrical safety training in the Postal Service for those employees performing work on energized circuits rated at or above 50 volts. Each training level is based on the Work Category corresponding to the work an employee is expected to be able to perform. The various electrical safety courses available through NCED address the following topics:

- Applicable Postal Service Policies
- Electrical Safety Theory
- Electrical safety-related work practices typically based on permissible work tasks
- Use of applicable tools
- Use and care of PPE
- Skills and techniques necessary to distinguish exposed energized parts from other parts of electrical equipment
- Skills and techniques necessary to determine the nominal voltages and currents of energized components and circuits

2.1. ELECTRICAL SAFETY WORK CATEGORIES 1 AND 2

This course covers Postal Service policies established in the EWP MI, MI EL-810-2009-1, along with the supporting information on those policies contained in this MMO. Specifically, the course covers the safety-related electrical work practices for equipment and circuits rated from 0 to 250 volts. This course is a prerequisite for the Electrical Safety Work Category 3 course.

2.2. ELECTRICAL SAFETY WORK CATEGORY 3

This course covers the safety-related electrical work practices and PPE required for performing work on equipment or circuits rated from 251 volts to 600 volts, and at less than 1,000 amps. This course is a prerequisite for the Electrical Safety Work Category 4 course.

2.3. ELECTRICAL SAFETY WORK CATEGORY 4

This course covers the safety-related electrical work practices and PPE required for performing work on equipment or circuits rated from 251 volts to 600 volts and at 1,000 amps or more.

2.4. LOCAL SITE SPECIFIC ELECTRICAL SAFETY WORK CATEGORY 4 AND 5

Maintenance employees who will perform work under Categories 4 and/or 5 must complete Electrical Safety Work Category 4 and receive site-specific training related to the safe electrical work practices applicable to specific equipment. Local training must include the site specific PPE and tools necessary when working on this equipment. Examples of equipment that may fall into this category include switchgear and chillers.

Local site and equipment specific training must be provided to any employee who is responsible for operating switchgear rated at 251 to 600 volts at 1,000 amps or more and switchgear equipment rated at 601 volts or more.

Local sites must document all required training, including training for site-specific equipment through a vocational school, community college, equipment manufacturer or distributor, or an OJT program for Work Categories 4 and 5.

Table 4-1 consolidates the above course information. Table 4-1 must be used in conjunction with the Qualification flow chart located in Figure 4-1 on page 4-5 to determine what training is required for each employee working on electrical equipment.

Table 4-1. Training Requirements

Employee Position	Title of Course	Type of Work	Material Covered
All Employees	Video – “Electrical Safety and You”	All	Awareness-level topics.
EAS-level employees ¹	EWP Coordinator	Responsible for local EWP	Local program requirements
Maintenance Supervisors ²	Electrical Safety – For the Maintenance Supervisor	Oversight of employees who perform electrical work	Postal Service policies related to electrical work practices for work categories 1 to 5
New Postal Service Maintenance Employees ³	Maintenance Safety Awareness (MSA) ⁴	General maintenance	General maintenance topics, including electrical
Postal Service Maintenance Employees	Electrical Safety Work Categories 1 and 2	Working on 0 to 250 volts	Postal Service policies related to electrical work practices and PPE required for 0 to 250 volts
	Electrical Safety Work Category 3	Working on 251 to 600 volts and less than 1,000 amps	Electrical work practices and PPE required for 251 volts to 600 volts and less than 1,000 amps
	Electrical Safety Work Category 4	Working on 251 to 600 volts and 1,000 amps or more	Electrical work practices and PPE required for 251 volts to 600 volts and 1,000 amps or more
	Local Site Specific (Work Categories 4 and 5)	Working on 251 to 600 volts and 1,000 amps or more and 601 volts or more	Electrical work practices for site specific equipment, PPE, and tools. Operating switchgear rated at 251 to 600 volts 1,000 amps or more and 601 volts or more.

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

- ¹ EWP Coordinators must also complete all of the coursework required for any employee in his or her facility.
- ² Maintenance supervisors must also complete all of the coursework required for his or her subordinate employees.
- ³ New employees must also complete the applicable courses listed under Postal Service Maintenance Employees.
- ⁴ Only a portion of this 40-hour course deals with electrical work.

While the required electrical safety courses listed above will cover the required PPE for each Work Category, the EWP Coordinator must ensure that local training will cover any and all PPE or tools that will be purchased locally. Training on PPE must instruct employees how to select the proper PPE for the task to be performed and how to properly wear, inspect, store, and maintain PPE.

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

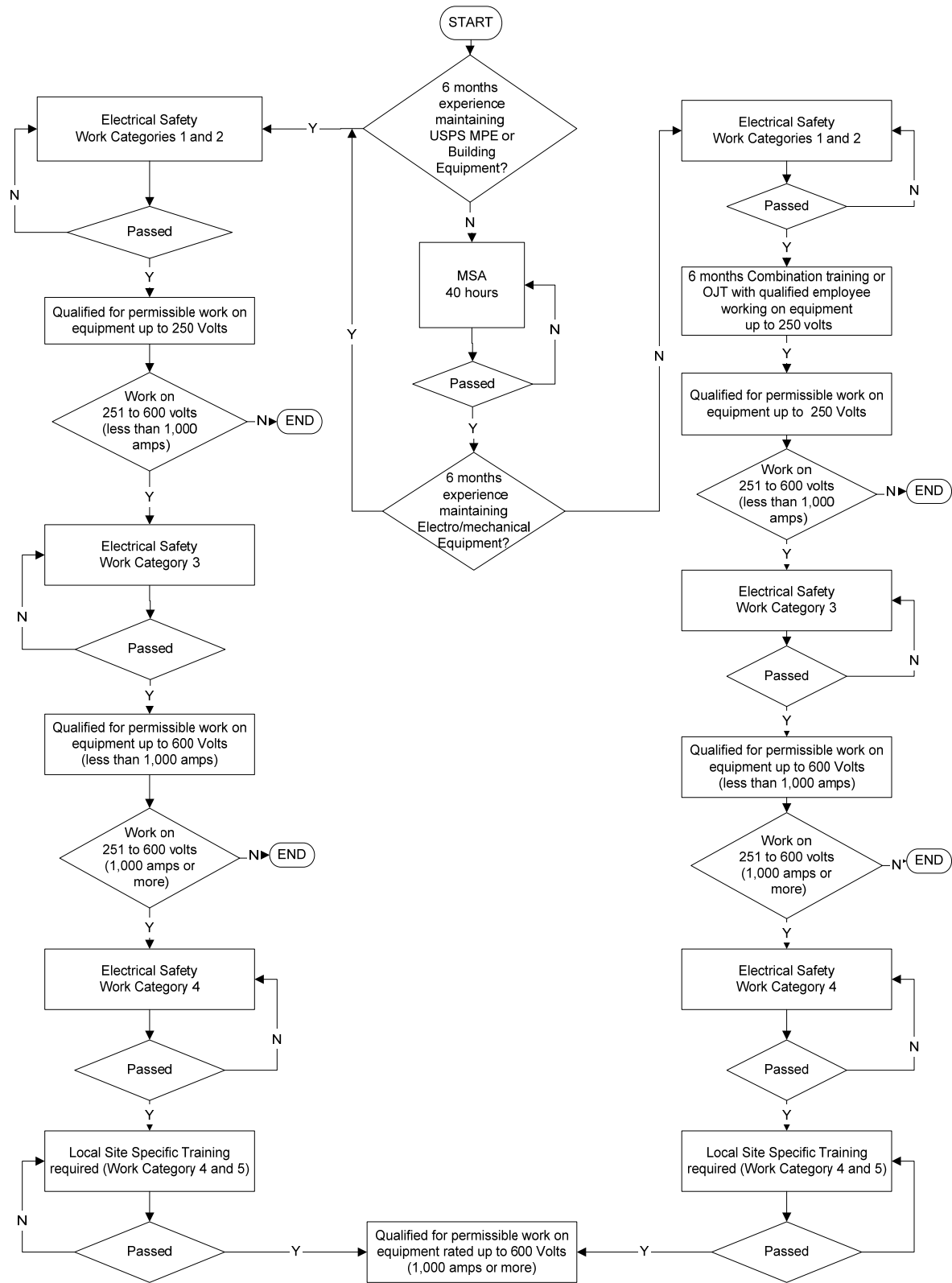


Figure 4-1. Qualification Flow Chart

2.5. REFRESHER TRAINING

Refresher training is intended to introduce new or revised work practices or procedures, as well as re-establish employee proficiency. When work practices change, employees must complete refresher training. Refresher training must also be completed whenever Management reasonably believes such training is necessary, such as following a safety incident or observations of inadequacies in an employee's knowledge or use of the applicable work practices.

When management believes there are deviations from the established work practices, the employee must take the appropriate electrical safety-training course that addresses that particular work practice. If management believes there are inadequacies in the employee's knowledge of electrical work policies, the employee must take Electrical Work Categories 1 and 2 which covers the basic Postal Service policies regarding electrical work.

2.6. SUPERVISOR TRAINING

It is essential that supervisors are familiar with safety-related work practices, PPE, and the tools their employees must use in performing energized electrical work. Therefore, supervisors must complete electrical safety courses to the level required of their employees in addition to the course titled, "Electrical Safety - Supervisors."

2.7. EWP COORDINATOR TRAINING

It is essential that the EWP Coordinator is familiar with safety-related work practices, PPE, and tools the employees in their facility must use in performing energized electrical work. Therefore, the EWP Coordinator must complete electrical safety courses to the highest level required of the employees at their facility. In addition, the EWP Coordinator must complete the EWP Coordinator's Course. The Coordinator's course enables the EWP Coordinator to develop, implement, and manage the local EWP.

Due to potential absences for annual leave, training, sick leave, and for tour coverage, it is recommended that additional EAS level Maintenance Management employees complete the EWP Coordinator's course to ensure an EAS level employee knowledgeable in EWP requirements is available at all times.

ATTACHMENT 5**PERMISSIBLE WORK****1. PERMISSIBLE WORK**

The term “permissible work,” as used in this MMO, pertains to specifically listed activities or tasks that have been identified by Headquarters Safety and Maintenance Management as permissible to perform when the equipment is energized. Permissible work can be performed on energized equipment or circuits rated at or below 600 volts when it is not feasible to de-energize and lock out the equipment or circuit. These select tasks must be performed using appropriate safe guards that will limit exposure to energized circuits. Tasks and activities that are identified as permissible work are limited to the following:

- Testing
- Troubleshooting
- Programming of Programmable Logic Controllers (PLCs)
- Adjustments to Variable Frequency Drives (VFDs)
- Adjustments to servo drives and other similar devices where there is no exposure to circuits with voltages greater than 50 volts
- Limited electrical power and switchgear operational tasks

Specific precautionary steps must be taken to limit an employee’s exposure to live parts. These specific steps include wearing appropriate PPE, training, and following work practices.

1.1. WORK CATEGORIES

To simplify the specific requirements that must be met when performing the above maintenance tasks, five work categories (1 through 5) were developed as discussed in Attachment 3, “Work Categories and Corresponding PPE”. Each Work Category has its own specific requirements based on potential hazards related to the voltage and amperage involved. Hazards can vary depending on equipment design. If equipment incorporates non-exposed design elements, then the PPE levels are reduced to account for the reduced risk.

To identify the specific PPE requirements associated with a particular task, the Work Category and PPE-Level must be determined. The first step is to determine the appropriate Work Category based on voltage and amperage associated with the equipment. The next step is to determine if the work involves energized or de-energized components. If the activity involves only de-energized electrical components, there are no PPE requirements, except for tasks that involve the operation and monitoring of dead-front switchgear.

The next step is to determine whether the work involves “exposed work” or “non-exposed work”. If the activity involves energized but non-exposed electrical components, the appropriate PPE under the “PPE-Level – Non-Exposed Work” column in Table 5-1 is applicable. If there is any component within the panel or enclosure that does not incorporate fingersafe design elements, then the entire panel or enclosure must be considered to be exposed.

If the activity involves exposed energized electrical components, the appropriate PPE under the “PPE-Level – Exposed Work” column in Table 5-1 is applicable.

Table 5-1. Permissible Energized Electrical Activities

WORK CATEGORY	Voltage Range	Standard System Voltages ¹	Amps	Examples of Equipment	Energized Activity Limitations	PPE Level	
						"Exposed" Work	"Non-Exposed" Work
1	0 to 49	5 12 24	All	Alarm and communication equipment	No limitations	1	1
2	50 to 250	120 208 240	All	Outlet receptacles, DBCS, CSBCS, portable conveyors, scissor lifts	<ul style="list-style-type: none"> ▪ Troubleshooting energized circuits ▪ Electrical adjustments within a power cabinet or circuit (VFDs, time-delay relays, etc.) 	2	1
3	251 to 600	277 480	400 and Less	Lighting panels, Motor Control Centers, and mail processing equipment such as APPS and robots	<ul style="list-style-type: none"> ▪ Troubleshooting energized circuits ▪ Electrical adjustments within a power cabinet or circuit (VFDs, time-delay relays, etc.) 	3 - L	2
			401 To 999	Large Lighting /Distribution Panels, Motor Control Centers, Large Chillers	<ul style="list-style-type: none"> ▪ Troubleshooting energized circuits ▪ Electrical adjustments within a power cabinet or circuit (VFDs, time-delay relays, etc.) 	3 - H	2 ²
4	251 to 600	277 480	1,000 and above	Switchgear	Operation / Monitoring of Dead-front switchgear	4	2 ³
					Maintenance / Work activities <ul style="list-style-type: none"> ▪ Racking breakers in/out on switchgear ▪ Replace fuses (switch or breaker must be open) ▪ Checking relay trip status that requires opening the breaker cubicle 	4	4

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

					door		
				Large electrical panels, large motor control centers	Troubleshooting energized circuits	4	2
5	601 and above	All	All	High voltage switchgear, large transformers, large chillers	Operation / Monitoring of Dead-front switchgear. ³	5 prohibited ⁴	2 ³
					All electrical work is prohibited. ⁴	5 prohibited ⁴	5 prohibited ⁴
¹ Voltage ranges in this table are nominal system voltages, not measured voltages. ² Work performed with all covers, doors, or panels in place and properly secured with all fasteners in place. ³ All operating or monitoring of switchgear shall be performed with all covers, doors, or panels of all individual modules of the switchgear in place and properly secured with all fasteners in place. ⁴ Postal Service policy does not permit employees to work on electrical components operating at 601 volts and above, except that employees may perform operation and monitoring tasks on dead-front switchgear.							

Refer to Attachment 3, Table 3-2 on page 3-2 for the corresponding PPE required for the appropriate work category.

NOTE

Work on de-energized equipment does not require PPE except for de-energized work on switchgear. De-energized work on switchgear requires the same level of PPE as required for non-exposed energized work.

1.2. EXAMPLE OF A WORK CATEGORY AND PPE-LEVEL DETERMINATION

This example illustrates the importance of performing a work category and PPE-Level determination and how equipment design characteristics (exposed versus non-exposed) can affect the outcome of the determination.

For the purpose of this example, an EWP coordinator is performing a work category and PPE-Level determination for a Motor Control Center (MCC). Referring to the Facility Electrical Work Assessment, it is noted the MCC is supplied with a nominal voltage of 480 volts and nominal amperage of 400 amps.

The next step in this evaluation is to determine if there is a need to perform any electrical work (troubleshooting, adjustments, racking a breaker, or fuse replacement) inside the MCC while it is energized. Since this is a Motor Control Center, it is likely that some maintenance work must be performed inside the MCC while the MCC is energized.

Considering the voltage and amperage rating and the potential for energized work, and using Table 5-1, the EWP Coordinator will note that the task involves Category 3 work.

Once the Work Category has been identified, the EWP Coordinator must check to see if the work to be performed is listed as permissible work in Table 5-1. In this case, the work is considered permissible work.

If this work were not permissible work and the electrical components were rated at 601 volts and above the work should be completed by a contractor.

If the task will be performed by a maintenance employee, the next step is to determine if the energized work will be performed on either exposed or non-exposed components. Keep in mind

that if any fingersafe component within this MCC has been altered, modified, partially disassembled or damaged in any way, such may compromise the fingersafe design of the MCC. For example, if this MCC is missing a cover over a terminal or has a partially exposed conductor, then the energized electrical work performed in this MCC can no longer be considered non-exposed. All subsequent work on the MCC must be considered as exposed until the fingersafe design elements are reinstalled and the exposed conductor or component is corrected.

Table 5-2 presents the possible PPE-Levels and the work category for energized work on this Motor Control Center.

- Line 1, contains non-exposed components, or components with a fingersafe design.
- Line 2, contains exposed components, or components not constructed with fingersafe design characteristics.

Table 5-2. Work Category and PPE Level Determination

Service Voltage	Amps	Work Category	Fingersafe	PPE Level
480 volts	400	3	Yes	2
480 volts	400	3	No	3-L

When determining the Work Category and PPE level for a task, it is important to understand and correctly interpret the available equipment information. Table 5-2 illustrates the impact of fingersafe design elements on required PPE Levels.

The lower PPE Level does not indicate a reduced level of training required for employees working in this MCC. On the contrary, employees must be trained to the highest level of work category that would be required for the piece of equipment. This will ensure qualified employees are available to perform permissible electrical work if the fingersafe design characteristics of that particular piece of equipment are compromised.

ATTACHMENT 6**PERMIT-REQUIRED WORK****1. PERMIT-REQUIRED WORK**

The term “permit-required work”, as used in this MMO pertains to any energized electrical task that: (1) involves energized equipment with a voltage rating of 600 or less; and (2) does not involve an activity specifically identified as permissible activity (Refer to Attachment 5, “Permissible Work”). Postal Service employees performing permit-required work must be qualified and properly equipped. When performing permit-required electrical work, a qualified employee must be accompanied by another employee with the same level of qualification. The second qualified employee must monitor the maintenance activities of the first qualified employee from outside of the immediate work area, but in continuous sight of and in communications with the first qualified employee.

Permit-required work performed by qualified Postal Service employees is limited to work on equipment and circuits rated at or below 600 volts. Postal Service policy generally does not permit Postal Service employees to perform maintenance task on equipment or circuits rated above 600 volts. Refer to Attachment 7, “Prohibited work”.

Permit-required work can usually be avoided by carefully considering various options and looking for alternatives that allow the circuit or equipment to be de-energized. Permit-required work should not be performed out of convenience, but only in situations where de-energizing the equipment is not feasible or performing the work de-energized will increase the risk of an incident or injury. Permit-required work must comply with applicable OSHA Standards.

Permit-required work should occur infrequently since most building and processing equipment is capable of being de-energized and locked out before performing any maintenance activity such as removal, replacement, or alignment tasks. While the Management Instruction on the Electrical Work Plan does allow permit-required work to be performed if it is absolutely necessary to perform these tasks on energized electrical components that fall outside the boundaries of permissible work, however, Headquarters Safety and Maintenance strongly discourages Postal Service employees from performing permit-required work. Due to the infrequent occurrence of these activities, Postal Service employees who have received previous training may not retain the knowledge necessary to perform the job safely and effectively. To ensure the safety of Postal Service employees in these situations, the Installation Head and Maintenance Management has the discretion to use qualified contractors for this type of work when appropriate.

Evaluating the need to contract this work requires consideration of cost, efficiency, and qualifications of employees. Article 32 of the Handbook EL-912 must be considered when evaluating the need to contract this work. If the energized work is to be contracted, arrangements should be made in advance with local contractors or the appropriate utility companies to ensure a process and procedure is established prior to an electrical emergency.

Each facility that requires a local EWP must decide if any permit-required work will be performed by Postal Service employees at that facility and develop a relevant local policy. The local policy must be documented and a copy retained in the EWP files. Documentation must also indicate that all appropriate maintenance employees who have received information on the local policy. A documented local safety talk is one method to ensure the appropriate maintenance employees have received this information.

If local policy authorizes qualified maintenance employees to perform permit-required work, all

requirements addressed in the next sub-sections must be adhered to.

1.1. ENERGIZED ELECTRICAL WORK PERMIT

If permit-required work is to be performed by Postal Service employees, the Maintenance Manager or his designee must ensure all employees involved are qualified and provided the necessary PPE to perform the task, both safely and effectively. In addition, an Energized Electrical Work Permit form must be completed prior to the work being performed (Figure 6-1).

Figure 6-1. Energized Electrical Work Permit

Requested By (Print Name)	Phone No.	Issue Date	Expiration Date
1. Location of Work:			
Building	Floor	Room	Column #
2. Description of Work to be Performed			
3. Equipment to be Worked On			
4. Ratings of Equipment (Voltage and Current)			
5. Special Characteristics and Abnormalities			
6. Description of any non-electrical hazards			
7. Description of Safe Work Practices			
8. Required PPE			
9. Special Tools / Special Test Equipment			
10. Special Safety Requirements/Procedures			
11. Means of Restricting Unqualified Employees from the work area			
12. QUALIFIED EMPLOYEES ASSIGNED and Initial Job Briefing Completed			
(Name)	(Signature)	(Duties)	
13. Compelling Reason- The Justification for working on equipment energized			
APPROVAL SIGNATURES			
MAINTENANCE MANAGER			
(Name)	(Signature)		
FACILITY SAFETY PROFESSIONAL			
(Name)	(Signature)		
PLANT MANAGER			
(Name)	(Signature)		

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

A properly completed form will include the appropriate approval signatures, and this form must be completed before permit-required work can begin. A copy of the form and information on how to complete it is located in Attachment 13, "Forms." The form template is available on the MTSC web page at: http://www.mtsc.usps.gov/equipment/safety_external/files/energized_electrical_work_permitform.doc

The Maintenance Manager or his designee must ensure that an Energized Electrical Work Permit has been completed and approved before any permit-required work is performed by Postal Service employees. In addition, before the Energized Electrical Work Permit is approved, a hazard assessment must be completed and a job safety analysis (JSA) developed to ensure the energized electrical work can be performed safely. It is recommended that the Maintenance Manager engage employees in the hazard assessment and the JSA development as appropriate.

A separate Energized Electrical Work Permit, Hazard Assessment, and JSA must be completed for each permit-required work activity, regardless of how similar the work may appear to a previous activity.

1.2. HAZARD ASSESSMENT

1.2.1. CONDUCT AND DOCUMENT A HAZARD ASSESSMENT

The Safety Representative and the Maintenance Manager, or his designee must conduct and document a hazard assessment before any Postal Service employee performs permit-required work. In addition to assessing hazards related to the energized electrical work that is to be performed, the assessment must include surveying for other types of hazards in the immediate area where the activity will be performed that could impact the safety of the employee performing the electrical work. The hazard assessment will assist in determining if hazards are present, or are likely to be present, which will necessitate the use of additional PPE or may require the implementation of additional safety precautions.

1.2.2. DETERMINATION OF APPROPRIATE PPE

When conducting the hazard assessment, Attachment 3, Table 3-2, "Personal Protective Equipment" on page 3-2 must be used initially to identify the minimal level of PPE required when performing each permit-required activity. The minimal level of PPE required will be based on the appropriate work category (Attachment 3, Table 3-1 on page 3-1) as determined by the supply voltage, supply amperage, and potential exposure. The determination of whether additional PPE, beyond that identified in Table 3-2 is required will be conducted on a case-by-case basis and dependent on any other hazards identified during the hazard assessment.

In relation to permit-required work, voltage rated gloves and full-face protection, along with other PPE identified in Table 3-2 are the minimum PPE required on all circuits rated above 50 volts.

1.2.3. DETERMINE TRAINING REQUIREMENTS

An employee performing permit-required work must be knowledgeable of the specific equipment, as well as the tasks that may be performed while the equipment is energized. This includes familiarity with the hazards involved and applicable work practices and procedures necessary to perform the work safely. In addition, the qualified employee must be trained on the applicable JSA.

Although an employee may be qualified to perform similar permissible work, depending on the

employee's electrical skills, the employee may not be qualified to perform related permit-required work. A maintenance employee's supervisor is responsible for determining if the employee has knowledge of the equipment and the skills necessary to perform permit-required work safely. This determination should be based on documented training and work experience, at a minimum. Training and work experience may be from a previous employer. Copies of previous training and work experience must be maintained with the EWP files.

When assessing an employee's knowledge of the equipment, keep in mind that infrequent exposure to the equipment will reduce the employee's knowledge, skills, and abilities to perform the energized work safely. Therefore, the employee may have a document stating that the employee has completed relevant training, but if the employee may not be familiar with the equipment work practices and procedures necessary to be considered qualified for the permit-required work activity. An employee that does not have the necessary skill levels must not perform permit-required work.

Any qualified employee performing permit-required work must receive training on the PPE that is purchased locally that would enable the employee to perform permit-required work. Training must include selecting the proper PPE for the task to be performed, as well as how to properly wear, inspect, store, and maintain the PPE. While the electrical safety courses discussed in Attachment 4, "Qualifications and Training" cover PPE issues for permissible work, these courses do not necessarily cover PPE that may be required for permit-required work.

Relevant PPE training must be documented in writing using Form 2548, "Individual Training Record." The employee's name, the date, and the subject of the training must be included on Form 2548.

Performing permit-required work may require training beyond that covered in the Postal Service developed electrical safety courses. The EWP Coordinator is responsible for determining if any additional training is required and then arranging for the training locally from a non-Postal Service source. Some sources where this type of training may be obtained are a vocational school, community college, equipment manufacturer or distributor, an OJT program, or another equivalent source.

1.2.4. MAINTAIN HAZARD ASSESSMENT RECORDS

A copy of the hazard assessment, including documentation of PPE selections and training must be maintained in the EWP files. The work sheets in Attachments 1 and 2 of the current management instruction addressing personal protective equipment may be used to document the hazard assessment and PPE selection.

1.3. JOB SAFETY ANALYSIS (JSA)

As mentioned above, a job safety analysis (JSA) must be developed to ensure the energized electrical work can be performed safely before the Energized Electrical Work Permit can be completed.

A separate JSA must be completed for each permit-required work activity regardless of how similar the activity may appear to be to a previous activity or an activity performed at another facility. A copy of the JSA must be attached to the corresponding hazard assessment and the completed Energized Electrical Work Permit. The package of documents must be maintained in the EWP files. Each qualified employee expected to perform permit-required work must be trained on and receive a copy of the appropriate JSA.

JSAs are used to identify potential hazards. Once hazards are identified, safe work practices and procedures must be developed to eliminate each identified hazard. PS Form 1783, "On-

the-Job Safety Review/Analysis” must be used to complete each JSA.

PS Form 1783 is available at <http://blue.usps.gov/formflow/xft/psform1783.xft>. A copy of PS Form 1783 along with instructions on completing the form is located in Attachment 13, “Forms”. Additional information on completing JSAs is located in Chapter 8 of the EL-801 Supervisor’s Safety Handbook available at <http://blue.usps.gov/cpim/ftp/hand/el801.pdf>.

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

THIS PAGE BLANK

MAINTENANCE MANAGEMENT ORDER

ATTACHMENT 7**PROHIBITED WORK****1. PROHIBITED WORK**

Postal Service policy prohibits Postal Service employees from performing work on de-energized and energized electrical systems rated above 600 volts regardless of amperage. Due to the specialized nature, work on equipment rated above 600 volts should be performed by a qualified contractor.

Operational and monitoring activities on Dead-Front Switchgear are not considered prohibited work and can be performed by qualified employees.

2. OUTSIDE CONTRACTOR

Postal Service policies contained in MI EL-810-2009-1 and this MMO do not apply to non-Postal Service employees (e.g., contractors) working on equipment in a Postal Service facility or who perform related services. Contractors are expected to comply with all applicable local, state, and federal requirements for safe electrical work, as stated in EL-800 Managing Contract Safety and Health Compliance.

Contractors performing work on energized circuits must provide their own PPE and tools. The company they represent may require more stringent PPE and insulated tools due to their company's interpretation or implementation of the applicable jurisdictional requirements in the development of their electrical work policies.

Contracting must comply with Article 32 of the Handbook EL-912.

MAINTENANCE MANAGEMENT ORDER**MAINTENANCE MANAGEMENT ORDER**

MAINTENANCE MANAGEMENT ORDER

THIS PAGE BLANK

MAINTENANCE MANAGEMENT ORDER

ATTACHMENT 8**CONTROL METHODS**

Energized electrical work requires various methods to further protect employees from electrical hazards. Engineering controls and safety-related work practices are two methods that aid in preventing inadvertent contact with energized components and circuits. Additional control methods including insulated tools, test equipment, and PPE provide additional levels of protection for an employee should contact occur.

Each of the individual methods mentioned above provide some benefit. However, it is the layering of these methods, when appropriate, that create the level of protection necessary to prevent electrical incidents and injuries. The actual levels of protection required will always depend on the work to be performed the conditions at the work location, and the layering of control methods.

This attachment discusses engineering controls, work practices, and electrical workmanship and their importance in protecting employees from electrical incidents. With respect to quality workmanship, it is a commonly overlooked control that reduces the potential exposures an employee faces while performing electrical work. It is important to maintain the quality of workmanship throughout the life of the equipment, as this will ensure the same level of protection is afforded to exposed employees throughout the equipment life.

1. ENGINEERING CONTROLS

Engineering controls are an effective component of an electrical work plan. They are devices that can be used to physically prevent access to, or negate the need to access exposed energized electrical components. The main goal is to eliminate situations where accessing exposed energized electrical components is necessary. There are a number of methods used to ensure employees are protected when they access exposed energized electrical components.

Voltage presence detectors and panel-mounted meters enable employees to determine if a panel is energized without opening the electrical panel. Shields and other fingersafe devices are also often installed inside an electrical panel to protect against inadvertent contact with energized conductors or circuits inside the panel while performing maintenance tasks. These devices provide safe access for troubleshooting and testing.

2. ELECTRICAL SAFETY-RELATED WORK PRACTICES

Safety-related work practices must be followed to prevent electric shock or other injuries resulting from either direct or indirect contact with exposed electrically energized equipment or circuits. The safety-related work practices that are used must be consistent with the nature and extent of the electrical hazard.

OSHA requires that qualified employees be familiar with each of the following safety-related work practices. Information on each of these work practices listed below will be addressed in the electrical safety training.

- Working space around electrical equipment
- Training
- Lockout
- Control circuits

- Stored electrical energy
- Energized work
- Illumination
- Tools and test equipment

De-energizing and locking out equipment or circuits is the best method to ensure employees are protected from inadvertent contact with energized equipment or circuits. Lockout is an OSHA requirement and has been a Postal Service policy since the early 1980's. It is Postal Service policy that employees lock out equipment when performing maintenance tasks when feasible. Refer to the current MMO on Hazardous Energy Control for additional information on lock out policies.

When energized equipment or circuits cannot be de-energized or locked out, safety-related work practices must be used to protect employees who may be exposed to inadvertent contact with energized electrical circuits or components. Such safety-related work practices must protect employees against contact with exposed energized equipment or circuits directly with any part of their body or through some other conductive object. The safety-related work practices that are used must be suitable for the conditions under which the work is to be performed.

The safe maintenance and repair of any electrical equipment, components, or circuits requires a thorough knowledge of safety and repair techniques. Employees should be familiar with the specific safety features of the equipment involved. Employees should refer to maintenance manuals, maintenance bulletins, and training materials on how to repair or service the equipment. Employees performing energized electrical work must be familiar with the safety-related work practices discussed in this MMO, as well as those covered in their electrical safety training before performing any electrical work. Electrical safety-related work practices must be regularly reviewed with all qualified employees to ensure the employees are familiar with the appropriate work practices. These reviews can be accomplished through periodic safety talks.

Common safety-related work practices required for energized work include, but are not limited to the following:

- Know the work content and the sequence in which it should be accomplished before beginning work.
- Avoid wearing clothing made from synthetic materials, such as acetate, nylon, polyester, or rayon. Clothing made from these materials is considered dangerous when exposed to an electrical incident as the fabric will burn or melt onto the skin. Employees must wear the appropriate clothing and footwear for their position. Employees who perform energized electrical activities should wear all natural fiber long-sleeved shirts and long pants and footwear with leather uppers.
- Remove metallic personal items such as rings, watches, necklaces, earrings and etc., while working on energized equipment.
- Know what tools are required and how to use them.
- Know what personal protective equipment (PPE) is required to perform the job safely and how to use it.
- Limit access to the work area. Only qualified individuals who are familiar with the work, or employees in training who are accompanied by qualified individuals are to be allowed into the work area.

- Use barricades in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas. Do not use metal barricades in areas where electrical work is performed.
- Immediately report unsafe conditions to your supervisor and stop work.
- Work that does not meet the definition of permissible work requires an electrical work permit before work can begin.

3. WORKMANSHIP

The quality of workmanship can play a large part in preventing electrical incidents. Electrical work must be accomplished in a neat and professional manner. There must be no damaged parts (e.g., broken, bent, spliced, or cut) when the work is completed. Deterioration caused by corrosion, chemical exposure, or overheating must be corrected as it could adversely affect safe operation of the equipment. In addition, circuit components and parts must not be damaged or contaminated by paint, plaster, cleaners, abrasives, or corrosive residues. Particular attention should be paid to the following details:

- Unused cable and raceway openings in boxes, cabinets, cases, panels, or equipment enclosures must be effectively closed.
- Connections of cable, wires, and conductors to terminal parts or strips must be tightened to ensure a good connection without damaging the wires or conductors.
- The appropriate size wire and connectors must be used.
- Insulation must not be stripped back further than is necessary to make a good connection.
- Circuit breaker and fuse replacements must be completed with units that are rated appropriately for the circuit.
- Spaces for circuit breakers that are not used must be covered with the appropriate plate.
- Covers to electrical panels and equipment must be re-installed after work is completed.
- Covers must be installed as appropriate using the correct number and size of fasteners. Fasteners must be tightened to ensure covers provide the protection as designed.

The items listed above are just a few of the items that must be addressed. Additional information on workmanship and how it can protect employees who work on or may work near the equipment is included in the electrical safety training courses.

4. TOOLS

OSHA's regulations in 29 CFR 1910.335(a)(2) requires the use of insulated tools in addition to PPE to safeguard employees working near exposed energized equipment or circuits. This requires that tools, such as screw drivers and pliers, be insulated when work is in close proximity to energized parts or circuit components.

It is very important to realize that insulated tools are not intended to provide protection for the employee working directly on energized circuits or components, but intended to protect the employee who works near exposed energized electrical equipment or circuits.

Insulated tools help minimize shock hazards if the tool inadvertently comes in contact with an energized component. Additionally, if the tool is accidentally dropped or otherwise makes contact across two energized conductors or a conductor to ground, it will reduce or eliminate the chance of an arc or arc flash occurring.

Insulated tools must not be relied upon solely to provide protection against energized electrical hazards, but should be used in conjunction with safety-related work practices and PPE.

The employee's immediate Supervisor at each local site is responsible for providing employees with insulated tools appropriate for the work to be performed. Insulated tools will be identified as insulated and display the voltage level rating on the tool or the insulation. There are generally two types of construction for insulated hand tools. Composite tools minimize the use of metal or conductive material by only using metal at the point of contact. Some nut drivers, screwdrivers, and sockets use this design where the contact area is metal and the rest of the tool is constructed of non-conducting composite material. Another type of insulated tools is constructed of metal and uses insulation to cover all metal except for the point of contact area. Tools that are not manufactured and tested specifically as insulated tools, should not be field-converted for use as insulated tools by applying tape or other insulating material.

Lineman tools, also known as handling equipment, provide users with protection from electrocution when working on high voltage overhead lines, generally at voltages greater than 600 volts. Therefore, lineman tools are not generally required for employees performing electrical work on Postal Service equipment.

4.1. USE AND CARE OF INSULATED TOOLS

Always follow the manufacturer's recommendations on the appropriate use of each tool and how to care for the tool. OSHA's regulations in 29 CFR 1910.335(a)(1)(ii) requires that insulated hand tools be maintained in a safe, reliable condition and be periodically inspected. Insulated tools should be kept in a clean, dry state and avoid chemicals, ozone, ultraviolet (UV) light, or other conditions that could potentially damage the insulation. Any dirt, oil, or film on the tool should be cleaned following the manufacture's recommendations. Tools should be inspected for damage before and after each use.

4.2. INSPECTION

Although there are no specific requirements for testing or re-testing insulated hand tools, most manufacturers suggest inspecting the insulation before each use and performing an annual inspection. To aid in the inspection process, some manufacturers offer two-layer insulation with each layer having a different color so it is easy to detect physical damage to the outer protective layer.

Before and after each use, a visual inspection should be performed to check the insulation for damage or potential conductive material on the insulation. An annual inspection of the tool should be conducted to check for insulation damage including both physical damage such as cuts, wear, and cracks in the insulation or discoloration and deterioration due to chemical or UV light exposure.

Tools that are damaged must be returned to the employee's immediate Supervisor. These tools will be destroyed or disposed of in accordance with applicable Postal Service policies.

Damaged metal tools of the type that are covered with insulation may be kept for non-electrical work if the insulation is completely removed, leaving no doubt that the tool can no longer be used for electrical work. Insulated tools that are made of non-conductive materials except for the point of contact must be destroyed if they show signs of damage.

Supervisors are responsible for ensuring employees receive training on the insulated tools including the proper methods for use, care, and inspection. While the training required by Attachment 4, "Qualifications and Training" discusses these issues, the supervisor must ensure local training is conducted on the specific items that are purchased locally. Equipment vendors can usually assist with these training needs.

5. TEST INSTRUMENTS AND EQUIPMENT

Only employees who are knowledgeable and have been trained to work safely with test instruments and equipment will be allowed to perform testing on electrical circuits or equipment.

Test instruments, equipment, and their accessories must be rated for the circuits and equipment they will be used on. Test equipment must be designed for the environment in which they will be used. Test probes must incorporate fingersafe design elements that prevent the employee from contacting exposed energized parts.

For example, voltmeters, both analog and digital, are designed for a number of applications from troubleshooting to power system testing. The user must read and understand the manufacturer's instructions on the use and application of the voltmeter. When a multi-function, multi-scale meter is used, it is important for the user to select the function and scale necessary for the task being performed. This will decrease the potential for injury to the employee or damage or destruction of the meter and equipment being tested.

Test instruments and equipment, as well as all associated test leads, cables, power cords, probes, and connectors must be visually inspected for external defects and damage before and after the test equipment is used. Defective or damaged items must be removed from service and tagged as defective using PS 4707. Damaged test equipment must be returned to the supervisor. This equipment must be replaced or repaired and tested before it can be placed back into use by employees.

All test instruments and equipment that require periodic calibration must be calibrated at the required frequency. A record should be maintained for each instrument, by serial number or equivalent method, showing dates of inspection, calibration data, the date when it should next be recalibrated, and any interim repair data.

6. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Under the provisions of MI EL-810-2009-1, or the current EWP MI and this MMO, Postal Service employees must be provided with appropriate PPE and use it appropriately when performing electrical work. Qualified employees are responsible for using the appropriate PPE based on the tasks they are performing and the environment in which the work will be performed. PPE issued for work on electrical circuits must not be used for other purposes. Employees must not bring PPE into Postal Service facilities from outside sources. If similar PPE is needed for other activities, the employee must contact their immediate Supervisor.

Refer to Attachment 5, "Permissible Work" to select the appropriate PPE required for permissible work. Refer to Attachment 6, "Permit-Required Work" when selecting the appropriate PPE required for permit-required work.

6.1. PROCUREMENT

Local management must procure and issue the appropriate PPE to qualified employees as required by the category of work for which the employees are expected to perform electrical work. In addition, the PPE that is purchased locally must comply with applicable national standards and be marked by the manufacturer to indicate compliance with standards listed in Table 8-1.

Table 8-1. PPE STANDARDS

SUBJECT	STANDARD NUMBER	TITLE
EYE (SAFETY GLASSES)	ANSI Z87.1	Practice for Occupational and Educational Eye and Face Protection
FACE AND EYE (HOODS)	ASTM F 2178	Standard Test Method for Determining the Arc Rating and Standard Specification for Face Protective Products
HAND (INSULATING GLOVE)	ASTM D 120-02	Standard Specifications for Rubber Insulating Gloves
HAND (LEATHER PROTECTORS)	ASTM F 696-02	Standard Specifications for Leather Protectors for Rubber Insulating Gloves and Mittens
HEAD	ANSI Z89.1	Requirements for Protective Headwear for Industrial Workers
FLAME RESISTANT MATERIALS - FR CLOTHING (lab coats, smocks, and coveralls) and ARC FLASH SUITS	ASTM F 1506	Standard Performance Specification for Flame Resistant Textile Materials for Wearing Apparel for Use by Electrical Workers Exposed to Momentary Electric Arc and Related Thermal Hazards
	ASTM F 1959	Standard Test Method for Determining the Arc Rating of Materials for Clothing
BLANKETS	ASTM D 1048	Standard Specifications for Rubber Insulating Blankets
INSULATED TOOLS	ASTM F 1505	Standard Specifications for Insulated and Insulating Hand Tools

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

6.2. FACE SHIELDS

The face shields that are required to be worn will depend on the work category, the PPE Level, and the potential hazards of the working environment. Work Category 3 requires either a 3–L or 3–H PPE level face shield depending on the amperage of the equipment being worked on.

A 3–L PPE level correlates to equipment rated at 400 amps or less. The face shield must be rated at a minimum of 8 cal/cm². Most manufactured face shields require a hard hat to be worn to ensure proper fit of the face shield.

A 3–H PPE level correlates to equipment rated at 401 – 999 amps. Face protection for a 3–H PPE Level requires the use of an Arc Flash Hood with a minimum FR rating of 25 cal/cm².

Employees requiring face shields must be provided the face shield and the hard hat as appropriate for the work being performed. It is important that employees also be provided the case, bag, or any other storage device recommended by the manufacturer in order to protect the face shield when not in use.

6.3. FLAME RESISTANT (FR) LAB COATS OR COVERALLS

PPE Levels 2, 3-L, and 3-H require employees to wear a FR rated lab coat, smock, jacket, or coveralls, depending on the PPE Level. Each of these PPE Levels has slightly different requirements regarding these articles.

PPE Level 2 requires employees to wear a FR rated lab coat, smock, or jacket rated @ 8 cal/cm² when working on energized electrical equipment. However, if the employee wears a long-sleeved shirt made of all natural fibers, such as cotton, the employee need not wear the lab coat.

PPE Level 3-L requires employees to wear a lab coat, smock, or jacket FR rated @ 8 cal/cm² when working on energized electrical equipment.

PPE Level 3-H requires employees to wear a lab coat or coveralls FR rated at 25 cal/cm² when working on energized electrical equipment.

6.4. GLOVES

The gloves that are required to be worn will depend on the work category and the potential hazards of the working environment. While category 3 requires a protective work glove, it does not require that it be a voltage-rated glove as required by categories 4 and 5.

For work performed in category 3, the gloves may be rubber insulated or constructed of other non-conductive materials. The glove selected must be designed so it does not sustain a burn if exposed to an ignition source. The gloves selected should provide enough flexibility to enable the employee to performed required tasks.

Where voltage-rated gloves or rubber insulating gloves are required, these gloves must meet applicable requirements located in OSHA's regulations at 29 CFR 1910.137. Voltage-rated gloves come in classes identified as Class 00, 0, 1, 2, 3 and 4. The class is based on the level of protection afforded regarding various voltage levels. If a qualified employee will require a volt-rated glove, it will be limited to Class 00 (rated for 500 volts AC) or Class 0 (rated for 1000 volts AC) gloves as Postal Service employees are prohibited from working on equipment rated above 600 volts. However, for informational purposes, each of the classes is described as

follows:

- Class 00 - Maximum Use Voltage = 500 volts AC
- Class 0 - Maximum Use Voltage = 1,000 volts AC
- Class 1 - Maximum Use Voltage = 7,500 volts AC
- Class 2 - Maximum Use Voltage = 17,000 volts AC
- Class 3 - Maximum Use Voltage = 26,500 volts AC
- Class 4 - Maximum Use Voltage = 36,000 volts AC

Whenever voltage-rated gloves are required, approved leather protector gloves shall also be worn.

6.5. FLASH SUIT AND FOOT PROTECTION

The entire flash suit, including the hood's face shield and foot protection shall have an arc rating corresponding to the requirements listed in Attachment 3, Table 3-2 on page 3-2. Flash suits are designed to allow easy and rapid removal. The size of the suit must be selected according to the size of the employee intended to wear the suit. The requirement to have foot protection that meets the flash suit arc rating can be met by wearing ankle high leather footwear. Dielectric footwear is not necessary.

Flash suits must be inspected before and after each use. Flash suits that are contaminated with grease, oil, flammable or combustible liquids, or those that have been damaged must not be used. The manufacturer's instructions for care and maintenance must be followed. Specific training relating to the flash suits must be obtained from the vendor from which the suit was procured. Training should include specific information on wearing, inspecting, maintaining, storing, and testing.

6.6. USING, INSPECTING, MAINTAINING, AND STORING PPE

Employees must visually inspect PPE immediately before and after electrical work has been completed. When voltage-rated gloves are required, employees must perform a visual inspection and an air test before and after each use. Equipment that does not successfully pass visual inspection must not be used and must be returned to the employee's immediate Supervisor for testing, repair, or disposal as applicable. PPE must be maintained in a safe reliable condition based on manufacturer's recommendations.

Required PPE should be stored flat, undistorted, right side out, and unfolded in appropriate protective containers and/or as advised by the equipment manufacturer.

Rubber goods shall be stored in a location that is cool, dark, and dry. The location shall be as free as practicable from ozone, chemicals, oils, solvents, and damaging vapors and fumes. The storage location shall not be located near electrical discharge areas or in direct sunlight.

Voltage-rated gloves should be stored cuff down, in a bag, box, or container that is designed for the glove. Voltage-rated gloves may be stored inside the leather protectors.

6.7. TESTING REQUIREMENTS

Voltage-rated gloves must be subjected to periodic electrical tests as appropriate. New non-issued gloves shall not be placed into service unless they are still in the manufacturers sealed packaging. If they are not in the original manufacturers packaging, they must have been electrically tested within the previous twelve months.

Voltage-rated gloves that have been issued must be retested every 6 months. Testing methods must meet OSHA 29 CFR 1910.137. Voltage-rated gloves required to be retested must be marked to indicate the date of retest and test results. Gloves must be marked using a non-conductive method to prevent damaging the insulating qualities of the gloves. Another acceptable method of marking is entering the test results in eMARS. If eMARS is used, there must be a direct correlation between each glove and each eMARS test result entry. The method used for tracking test results and the results of such tests shall be documented with copies maintained in the EWP files.

Testing of voltage-rated gloves must be performed by approved national testing laboratories. There are a number of approved testing laboratories that provide testing on electrical safety equipment including voltage-rated gloves. To locate approved testing laboratories in a specific area, go to the following link <http://www.nail4pet.org/laboratories.html>. If gloves fail the test, the gloves must be destroyed. Records must be maintained that reflect the gloves have been destroyed.

An alternative to the testing requirements is to purchase new equipment. A cost comparison should be performed prior to contracting for the required electrical testing to determine if it is more cost effective to test or replace the equipment. If new equipment is purchased, then the used equipment must be destroyed and disposed of with records kept in the EWP files that document the destruction and disposal.

6.8. TRAINING

Supervisors of employees who perform energized electrical work are responsible for ensuring that qualified employees, who are required to wear PPE for electrical work, are trained in selecting the proper PPE for the task they are performing, as well as how to wear, inspect, maintain, and store the issued PPE. While the training required by Attachment 4 "Qualifications and Training" will discuss these PPE issues, the EWP Coordinator must ensure local training covers the specific types of PPE that are purchased locally. PPE vendors generally can assist with these training needs.

7. OTHER ELECTRICAL PROTECTIVE EQUIPMENT

Insulated blankets and insulated mats are generally used to provide protection when working on high voltage equipment and circuits. Typically, they are used in situations where the voltage levels are greater than 600 volts. Since Postal Service employees are generally prohibited from working on energized equipment and circuits rated greater than 600 volts these devices are not usually found in Postal Service facilities.

When such items are purchased for employee use, the Postal Service facility must meet all applicable requirements for "Electrical Protective Devices" as stated in OSHA regulation at 29 CFR 1910.137. The manufacturer of the insulated blankets and mats may have additional requirements. The employees must also follow any additional requirements stated by the manufacturer's documentation. At a minimum, the requirements discussed below must be addressed.

Insulated blankets and insulated mats must be clearly marked as applicable with its class. The class refers to the maximum use voltage. Insulating blankets and mats must not be used around energized circuits that exceed their maximum use voltage. Insulated blankets must also be marked to indicate its type which refers to its ozone resistance. Type I is not ozone resistant; Type II is ozone resistant. Insulating mats do not require the "Type" marking. Besides the class and type marking, insulated blankets and mats may have other markings that include information on the manufacturer. Markings must be non-conductive and applied in such a manner that there is no damage to the insulating qualities of the equipment.

The EWP Coordinator must ensure insulated blankets have been tested in accordance with OSHA's regulations as stated in 29 CFR 1910.137. Testing requires the insulated equipment to have a method of tracking the equipments test date and test results. Marking of equipment using manufacturer's recommendations or entering the test dates and results on a log are two acceptable means of meeting this requirement. For ease of tracking, it is recommended test information be entered into eMARS. The testing frequency for insulating blankets are before it is first issued and every 12 months thereafter. If the insulating blanket has been electrically tested but not issued for service, it may not be placed into service unless it has been electrically tested within the previous 12 months. Testing of insulated blankets must be performed by approved national testing laboratories. There are a number of approved testing laboratories that provide testing on electrical safety equipment including insulated blankets. To locate approved testing laboratories in a specific area go to the following link:
<http://www.nail4pet.org/laboratories.html>.

While OSHA requires initial testing of insulating mats by the manufacturer, OSHA does not require retesting by the employer. Visual inspections must be performed to ensure the insulated mats are maintained in a safe and reliable condition as required by OSHA regulations stated in 29 CFR 1910.137. Insulated mats are intended as supplementary devices used with other appropriate electrical protective equipment and not as the sole method of protection.

Insulating blankets and mats must be cleaned as needed to remove foreign substances and must be inspected before and after each use. They should also be inspected immediately following any incident that may have caused damage. Insulating equipment found to be defective or damaged shall be immediately removed from service. Equipment must be replaced if there is a hole, tear, cut, or punctures, or if there is ozone deterioration, an object has become embedded in the rubber, or there are texture changes such as softening, hardening, swelling, stickiness, or any other defect.

Insulating equipment shall be stored in such a location and in such a manner as to protect it from light, temperature extremes, excessive humidity, ozone, and other injurious substances or conditions. Insulating blankets must be stored in a canister or other means that offer equivalent protection when the blanket is not in use. Blankets shall not be folded while in storage; however, blankets are allowed to be rolled for storage.

To ensure compliance with all applicable requirements, refer to OSHA standard 29 CFR 1910.137 and the manufacturer's documentation.

ATTACHMENT 9**LABELING REQUIREMENTS****LABELING**

Postal Service policy requires marking distribution panels, switchboards, industrial control panels, and motor control centers in addition to other equipment identified through the facility work assessment. Refer to Attachment 10, "Electrical Work Assessment". Markings must warn qualified employees of potential electric shock and arc flash hazards.

To meet this requirement, the Postal Service has developed electrical shock and arc flash hazard labels that must be installed on the equipment listed above, as appropriate. Equipment rated at 250 volts and below need not be labeled with arc flash hazards warning labels. There are three different labels that address separate levels of voltage and amperage. Label 212 must be used on equipment rated at 251 to 600 volts with an amperage rating of less than 1,000 amps. Label 213 is required on equipment rated at 251 to 600 volts with amperage rating of 1,000 amps or more. Label 214 is used on equipment rated at 601 volts and above, regardless of the amperage rating. The three labels can be viewed at the end of this attachment. The labels illustrated are not their actual size.

The appropriate label must be selected and applied on the outside of the panel door in proximal location to the disconnect. Selection of the appropriate label must be based on the supply voltage and amperage as determined by the protective device (fuse or breaker) protecting the feed to the equipment. Equipment deployed nationally after January 1, 2009 will have the appropriate labels affixed as required by MI EL-810-2009-1 or current MI for Electrical Work Plan.

To standardize Postal Service labeling requirements, Label 212, 213, and 214 are the only electrical shock and arc flash labels authorized for application on electrical equipment located in Postal Service facilities. These labels can be ordered through the Topeka Materials Distribution Center (TMDC). Ordering information and label examples are located at the end of this attachment.

Equipment located in a non-maintenance capable office that requires a label must be labeled by the Area Maintenance Technician (AMT) or other qualified maintenance employee the next time there is work scheduled to be performed at the site. Visits by a qualified maintenance employee are not required solely for the purpose of applying the labels.

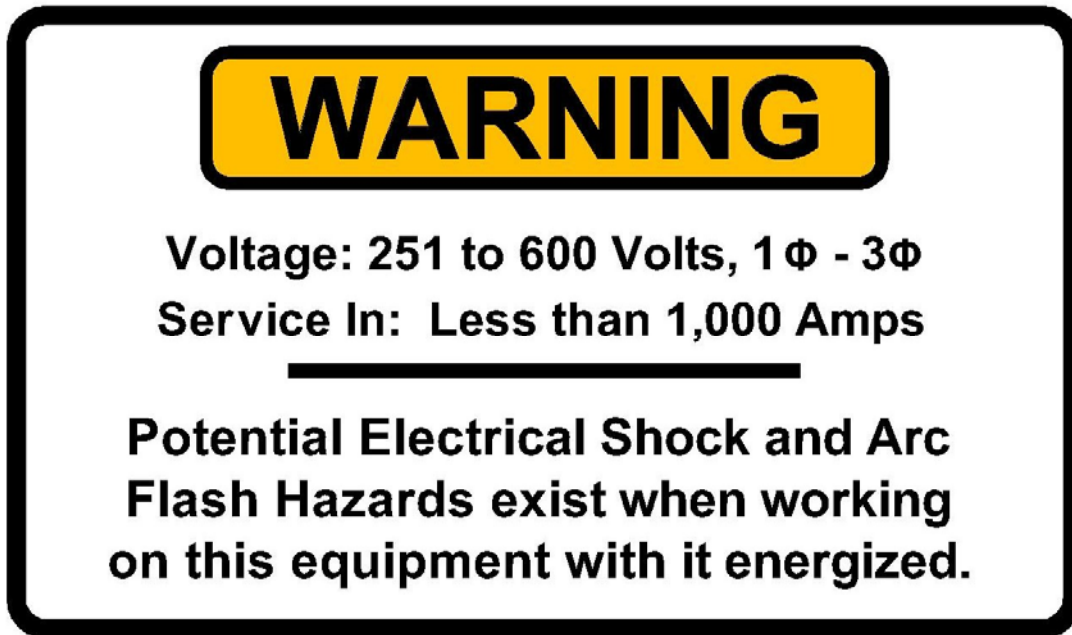
MAINTENANCE MANAGEMENT ORDER**MAINTENANCE MANAGEMENT ORDER**

Label 212

Label 212 can be ordered using PSN 7690-08-000-4630.

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER



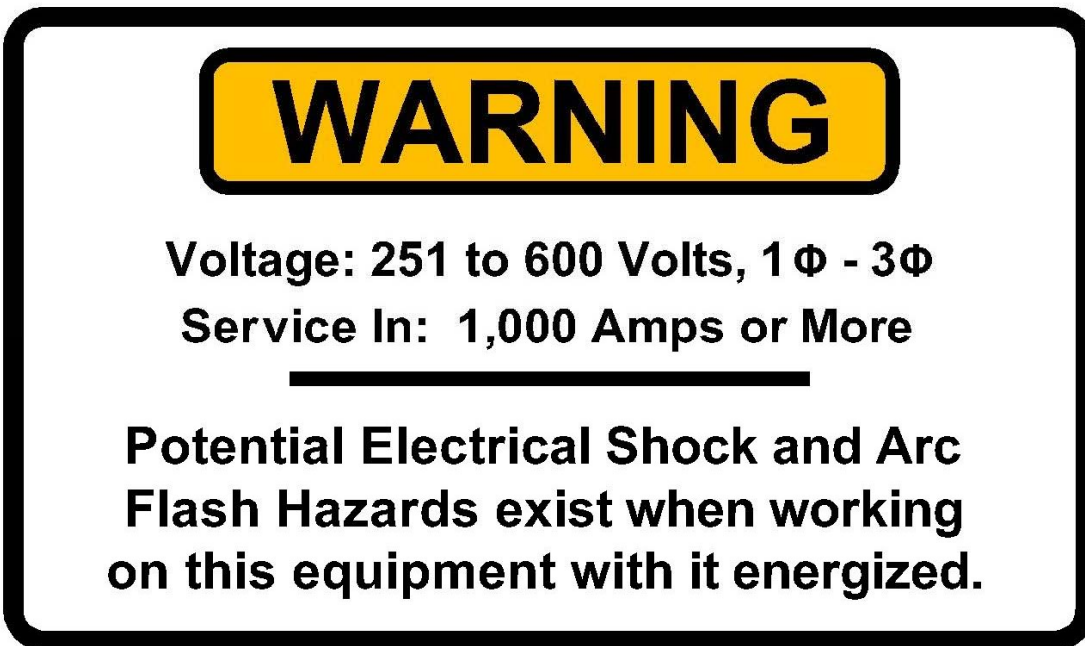
USPS Label 212, June 2006

PSN 7690-08-000-4630

1055735

LABEL 213

Label 213 can be ordered using PSN 7690-08-000-4631.



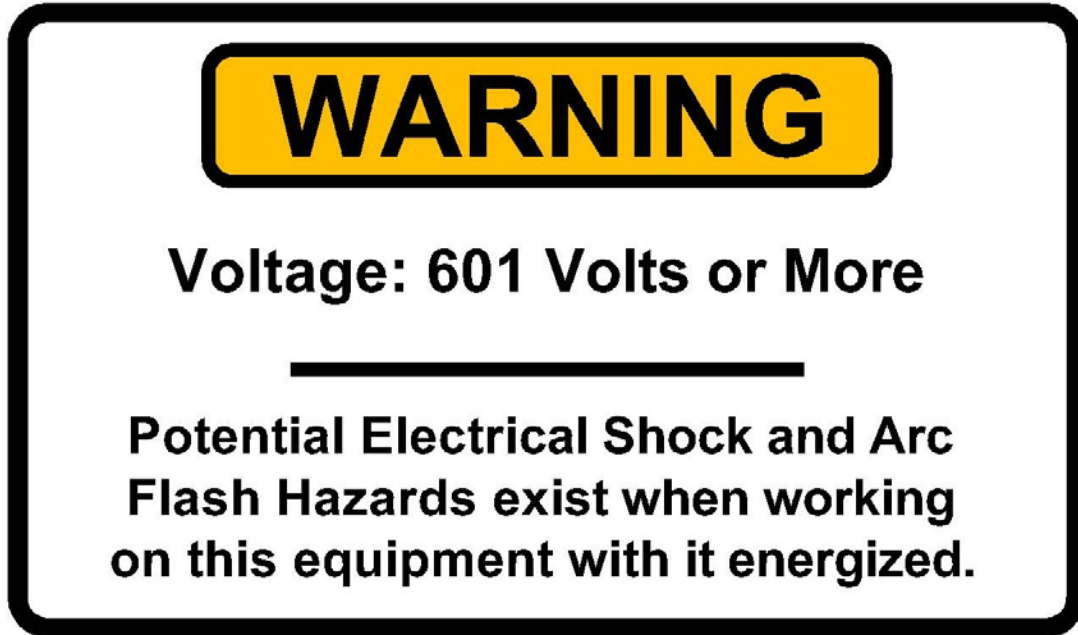
USPS Label 213, June 2006

PSN 7690-08-000-4631

1055736

Label 214

Label 214 can be ordered using PSN 7690-08-000-4628.



USPS Label 214, June 2006

PSN 7690-08-000-4628

1055737

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

THIS PAGE BLANK

MAINTENANCE MANAGEMENT ORDER

ATTACHMENT 10**ELECTRICAL WORK ASSESSMENT**

An electrical work assessment of existing building and processing equipment must be conducted. Performing the assessment will assist in identifying the applicable work category and labeling requirements for each piece of equipment, based on the supply voltage and amperage, as determined by the protective device (fuse or breaker) protecting the feed to the equipment. Refer to the information in Attachment 3, "Work Categories and Corresponding PPE" when performing this work assessment. The electrical work assessment must be updated as new equipment is installed in the facility. The assessment must also be updated whenever the fingersafe components of the equipment listed in the assessment has been removed or altered.

The electrical distribution voltage for equipment maintained by Postal Service employees will normally be one of the following:

- 120 volt, single phase (is one phase to neutral of the three phase 208 volt system)
- 208 volt, three phase
- 240 volt, single or three phase
- 277 volt, single phase (is one phase to neutral of the 480 volt three phase system)
- 480 volt, three phase

NOTE

In small Postal Service facilities, the 120 volt, single phase supply may result from one leg of a 240 volt single phase system.

Identifying the work category will assist in determining the work practices, qualification, training, and PPE required when performing energized electrical work on the equipment. Therefore, it is important that the assessment's work categories are reviewed and updated when changes or modifications are made to the equipment.

Table 10-1 depicts an example of a completed Electrical Work Assessment Form. This is an example and may not accurately represent equipment or a facility. When completing the Electrical Work Assessment in relation to switchgear components, it is important to list the various components separately. These components are contained in separate enclosures, even though they are usually attached together giving the appearance of a common enclosure. Common switchgear components that must be listed separately include the incoming supply switch, transformers (step down or step up), and the downstream switchgear components.

Attachment 13, "Forms" contain the blank template of the Electrical Work Assessment along with instructions for completing the form. Electrical Work Assessment forms are also available on the MTSC web page at: http://www.mtsc.usps.gov/equipment/safety_external/files/electrical_work_assessmentform.doc.

NOTE

It is important to read this entire MMO prior to performing the assessment.

Table 10-1. Electrical Work Assessment (Example)

ELECTRICAL EQUIPMENT	LOCATION (FLOOR AND COLUMN)	SUPPLY			WORK CATEGORY	PPE LEVEL	FINGER SAFE	USPS LABEL
		VOLTS	AMPS	LOCATION				
Utility Feed	Basement	480	2000ea		5		N	213
Switchgear	B-H3	480	2000		4		N	213
Distribution Panels	1-K2	480	800		3		N	212
	1-D6	480	800		3		N	212
	1-F3	480	400		3		N	212
	1-A2	480	400		3		N	212
	B-H4	480	400		3		N	212
	Lighting Panels	2-C7	480	225		3		N
	1-C3	480	225		3		N	212
	1-F3	480	225		3		N	212
	1-C9	480	225		3		N	212
	1-B7	480	400		3		N	212
Motor Control Center	B-H4	480	600		3		N	212
Motor Control Center	1-A3	480	600		3		N	212
HVAC Chillers	B-H4	480	250		1		N	212
Air Compressors	B-H4	480	40		1		N	212
AFSM 100	Work Room	208	125		1		Y	N/A
AFSM 100 W/AI	Work Room	208	100		1		Y	N/A
AFSM 100 W/PRS	Work Room	208	40		1		A	N/A
DBCS	Work Room	208	125		2		Y	N/A
DBCS	Work Room	208	125		2		Y	N/A
DBCS	Work Room	208	125		2		A	N/A
Other Equipment								

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

ATTACHMENT 11**RESPONSIBILITIES****1. SUPERVISOR'S RESPONSIBILITIES**

The Supervisor of an employee qualified to perform electrical work shall ensure such work is performed safely. The Supervisor shall:

- Ensure employees have received all formal training as required and any applicable On-The-Job Training (OJT).
- Ensure employees have the required qualifications to perform assigned electrical work safely.
- Ensure qualified employees are provided the appropriate PPE and tools required for the electrical tasks they perform.
- Ensure qualified employees are trained to select the proper PPE for the task they are performing.
- Ensure qualified employees are trained on the proper methods of wearing, inspecting, maintaining, and storing PPE.
- Ensure qualified employees use electrical PPE and tools only when they are performing tasks on electrical circuits and not for other purposes.
- Ensure qualified employees do not use PPE from outside sources.
- Conduct frequent observations to ensure employees are inspecting, wearing, maintaining, and storing PPE as appropriate.
- Ensure qualified employees have access to current work practices, procedures, and JSAs as appropriate.
- Observe employees that perform energized electrical work to ensure they adhere to appropriate policies, work practices, and use the proper tools and PPE.
- Ensure periodic safety talks address electrical safety issues.
- Address and resolve safety deficiencies noted in safety inspections and random observations.
- Participate in the facility Electrical Work Assessment.
- Participate in the development, review, and update of locally developed electrical work practices.
- Participate in investigations of electrical incidents.
- Complete electrical safety training as required. Level of electrical safety training must be equivalent to the maximum level of training required by employees that are supervised.

MAINTENANCE MANAGEMENT ORDER**MAINTENANCE MANAGEMENT ORDER**

2. QUALIFIED EMPLOYEE'S RESPONSIBILITIES

Qualified employees must adhere to all electrical policies and safety-related work practices when performing electrical work. Qualified employees must also adhere to the following:

- De-energize and lock out electrical equipment unless work activities fall under permissible work or an Energized Electrical Work Permit is approved.
- Maintain qualifications by participating in formal classroom and on-the-job electrical safety training as required.
- Be aware of and warn others about electrical hazards in the workplace.
- Immediately report any electrical incidents such as shock, arc flashes, or fires to their supervisor.
- Stop electrical work immediately if unanticipated incidents occur and report the situation to their supervisor.
- Immediately report any electrical tasks that exceed their resources, competency, or level of qualification to their supervisor.
- Use appropriate safety-related electrical work practices.
- Report to work wearing the appropriate clothing and foot wear for your position (for energized electrical work it is recommended that employees wear long-sleeved cotton shirts, long pant, and shoes with leather uppers).
- Inspect PPE before and after each use.
- Use, store, and maintain PPE as appropriate.
- Participate in the facility electrical work assessment when required.
- Participate in the development, review, and verification of locally developed electrical work practices when required.
- Consult supervisor or site EWP Coordinator in regards to any questions related to electrical work.

3. UNQUALIFIED EMPLOYEE'S RESPONSIBILITIES

Unqualified employees must also adhere to the following:

- Unqualified employees must not perform any energized electrical work.
- Observe warning signs and barricades which limit access to exposed energized work.
- Unless an unqualified employee is receiving on-the-job training, they must remain at least three feet away from where exposed energized electrical work is being performed.
- Avoid approaching or distracting an individual who is performing electrical work.
- Never place yourself in danger to help someone.
- Never touch an individual who appears to be performing electrical work and is no longer responsive to their environment or is apparently injured or being injured.
- Seek assistance, if not able to provide assistance.
- Never spray water on a suspected electrical fire.

- Use appropriate fire extinguishers on electrical fires; one should be trained in their use.

4. NATIONAL TECHNICAL SUPPORT NETWORK (NTSN) RESPONSIBILITIES

NTSN Technicians must complete electrical safety training for work categories 1, 2, and 3 (Refer to Attachment 4, "Qualifications and Training"). This ensures they are qualified to perform permissible work activities on electrical systems rated up to 600 volts at less than 1,000 amps.

As maintenance employees qualified to perform energized electrical work, they must comply with all responsibilities listed in Section 2, "Qualified Employee's Responsibilities" of this attachment.

An NTSN Technician must not perform permit-required work at sites away from their domiciled office unless they receive the appropriate tools, PPE, and training to perform the site-specific, permit-required work. At a minimum, they must receive the equivalent training and PPE that a local employee would require while performing the permit-required work.

5. DUTIES OF THE EWP COORDINATOR

The EWP Coordinator will oversee the local EWP. The Coordinator may, with the concurrence of the Installation Head, delegate specific duties to other appropriate EAS level employees. The following are the minimum responsibilities of the Coordinator:

- Administers local EWP to ensure all requirements of an EWP are addressed as applicable.
- Prepares, reviews, revises, and documents local written EWP and maintains a copy in the EWP files. This includes a requirement to perform an annual review of the local EWP plan.
- Assists with the development and documentation of local EWP policy.
- Advises the Maintenance Manager or Senior Postal Service Official on compliance issues and national Postal Service policy decisions concerning EWP.
- Ensures each employee receives electrical training appropriate to their Postal Service job function. The EWP Coordinator should work in conjunction with local maintenance management to ensure each employee who performs electrical work has received the appropriate training.
- Provide local management personnel, having funding authority, the budget requirement to ensure funding is available for training, PPE, tools, and other protective devices as appropriate.
- Ensure all PPE that requires testing is conducted at the appropriate intervals.
- Monitors adherence to the EWP through documentation review, discussions with supervisors and craft employees, and personal observations. Copies of documentation must be maintained in the EWP files.
- Complete electrical safety training as required. Level of electrical safety training must be equivalent to the level of training required by qualified employees in the facility.
- Complete the current NCED course(s) for EWP Coordinators.

MAINTENANCE MANAGEMENT ORDER

THIS PAGE BLANK

MAINTENANCE MANAGEMENT ORDER

ATTACHMENT 12**EWP COORDINATOR'S CHECKLIST****1. WORK CLASSIFICATIONS**

- Ensure local policies regarding Permissible, Permit-Required, and Prohibited work are available to qualified employees maintaining electrical equipment and circuits.
- Ensure a hazard assessment, a JSA, and an authorized Energized Electrical Work Permit form has been completed for each instance of permit-required work with copies maintained in the local EWP file.

2. ELECTRICAL WORK ASSESSMENT

- Performs an Electrical Work Assessment (Refer to Attachment 10. "Electrical Work Assessment") to evaluate existing electrical equipment. A completed assessment indicates what equipment will be maintained by Postal Service employees, which equipment incorporates non-exposed (fingersafe) designs, and which equipment needs warning labels.
- Update the Electrical Assessment as necessary to reflect current electrical equipment and maintain an updated copy in the EWP files.

3. QUALIFICATIONS AND TRAINING

- Coordinate with local supervision to determine what level of qualification each employee must attain based on the electrical equipment and systems they will be assigned to maintain.
- Maintain list of "qualified electrical employees", based on each employees' level of training. A separate list must be maintained for each qualification level (i.e., Electrical Safety-Work Categories 1 and 2, Electrical Safety-Work Category 3, and Electrical Safety-Work Category 4) (Refer to Attachment 4, "Qualifications and Training").
- Schedule training and refresher training as necessary (Refer to Attachment 4, "Qualifications and Training").
- Coordinate with local supervision to schedule any required On-the-Job (OJT) training.
- Ensure maintenance management completes applicable electrical safety courses.
- Maintains training documentation in local EWP files.

4. CONTROL METHODS

- Review and revise, as necessary, electrical work practices and procedures for applicability to local conditions or equipment modifications.
- Oversee development and revisions of locally developed electrical work practices.
- Maintain a file of all current electrical work practices and procedures that are applicable locally.
- Identify and procure all tools and test equipment necessary for use by qualified employees when performing energized electrical work.

- Identify and procure other protective equipment as appropriate for energized electrical work.
- Identify and procure all appropriate PPE for use during energized electrical work.
- Establish and document the procedures for the selection, testing, repair, replacement, and disposal of PPE as appropriate.
- Ensure applicable tools, test equipment, and PPE are tested as required.

5. LABELING

- Determine which electrical panels and equipment require a warning label based on the Electrical Work Assessment (Refer to Attachment 10, "Electrical Work Assessment") and information contained in Attachment 9, "Labeling Requirements."
- Order warning labels from the Topeka Material Distribution Center (TMDC).
- Ensure labels are applied to the appropriate panels.

6. RECORDKEEPING

- Ensure all required records are current, complete, and accurate.
- Maintain copies of electrical safety training records locally.
- Ensure training records are accessible, even when the EWP Coordinator is not available.
- Maintain a local file of the following records :
 - Copy of the facility's written EWP.
 - List of electrical equipment and other electrical systems that Postal Service employees maintain.
 - Copy of Facility Electrical Assessment.
 - Copy of procedures used to select, repair, replace, and dispose of PPE.
 - Copy of procedures used for testing applicable PPE.
 - Copy of PPE test results.
 - Copy of all hazard assessments, JSAs, and authorized Energized Electrical Work Permits.
 - Copy of all locally authorized Electrical Work Practices.
 - Qualified Electrical Employees Training Records:
 - Initial Training – Training subject, Employee name, Employee signature, date, and Course number.
 - Refresher training – Training subject, Employee name, signature, date, and course number.
 - Use Form 2548, Individual Training Record, or equivalent.
 - Enter the training records in eMARS.
 - List of "Qualified Employees" for each applicable electrical work category.
- Maintain a copy of the following training records locally:

- Electrical Safety – Work Categories 1 and 2
- Electrical Safety – Work Categories 3
- Electrical Safety – Work Categories 4
- Electrical Safety – EWP Coordinator
- Electrical Safety - Supervisor
- Site specific training on PPE and tools
- Site specific training on Category 4 equipment, including Switchgear Operations

MAINTENANCE MANAGEMENT ORDER

THIS PAGE BLANK

MAINTENANCE MANAGEMENT ORDER

ATTACHMENT 13

FORMS

This attachment contains the following forms:

- ELECTRICAL WORK ASSESSMENT
- ENERGIZED ELECTRICAL WORK PERMIT
- JOB SAFETY ANALYSIS, FORM PS 1783

MAINTENANCE MANAGEMENT ORDER

THIS PAGE BLANK

MAINTENANCE MANAGEMENT ORDER

ELECTRICAL WORK ASSESSMENT FORM

ELECTRICAL WORK ASSESSMENT

ELECTRICAL EQUIPMENT	LOCATION (FLOOR & COLUMN)	SUPPLY			WORK CATEGORY	PPE LEVEL	FINGER SAFE	USPS LABEL
		VOLTS	AMPS	LOCATION				
UTILITY FEED					5			
SWITCHGEAR								
DISTRIBUTION PANELS								
LIGHTING PANELS								
MOTOR CONTROL CENTERS								
HVAC CHILLERS								
AIR COMPRESSORS								
AFSM 100								
AFSM 100 W/ AI								
AFSM 100 W/PRS								
DBCS								
OTHER MAIL-PROCESSING EQUIPMENT								
OTHER BUILDING EQUIPMENT								

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

Electrical Work Assessment Form Instructions:

The “ELECTRICAL EQUIPMENT” column is used to list the specific equipment found in the facility that may have electrical work performed by qualified Postal Service employees or may require some electrical maintenance work at some time in the future. Each piece of equipment requires a separate entry. Although there are numerous pieces of equipment that appear to be virtually the same, such as common mail processing equipment, it is important to identify them individually to enable one to distinguish between them for location purposes, should their electrical feed conditions differ.

The “LOCATION (FLOOR & COLUMN)” column should reference the location of the equipment. The method used should be common to the facility and familiar to the employees at the facility. Some common reference may include room numbers, column coordinates, basement, penthouse, or the floor number with column coordinates for multi-story buildings. The actual identifier can also be used if it indicates the location, such as LP-H3 for lighting panel at column H3.

Under the “SUPPLY” column, the “VOLTS” column is the supply voltage of the equipment or the highest electrical distribution voltage in the particular cabinet or panel.

Under the “SUPPLY” column, the “AMPS” column is the trip rating or setting of the upstream protective device used to protect the circuit, panel, or equipment.

Under the “SUPPLY” column, the “LOCATIONS” column is the location of the upstream protective device used to protect the circuit, panel, or equipment.

The “WORK CATEGORY” column is determined using Attachment 3, Table 3-1, on page 3-1.

The “PPE LEVEL” column is determined using Attachment 5, Table 5-1, on page 5-2.

The “FINGERSAFE” column documents the condition of the equipment in relation to fingersafe components. If the equipment is designed with fingersafe components, enter a “Y” or “YES”. If the equipment does not utilize fingersafe components, enter an “N” or “NO”. If fingersafe equipment has been removed or altered, enter an “A” or “ALTERED”.

The “USPS LABEL” column documents the label that must be applied to the equipment based on its supply voltage and amperage rating. The label listed will either be a label 212, 213, or 214. For equipment that has a supply voltage rated at 250 volts or below, there is no requirement to place a label on the equipment; therefore, the letters N/A for non-applicable should be entered in the column. Refer to Attachment 9, “Labeling Requirements” for additional information on labeling requirements.

MAINTENANCE MANAGEMENT ORDER

THIS PAGE BLANK

MAINTENANCE MANAGEMENT ORDER

ENERGIZED ELECTRICAL WORK PERMIT FORM

MAINTENANCE MANAGEMENT ORDER

THIS PAGE BLANK

MAINTENANCE MANAGEMENT ORDER

ENERGIZED ELECTRICAL WORK PERMIT

Requested By (Print Name)	Phone No.	Issue Date	Expiration Date
1. Location of Work:			
Building	Floor	Room	Column #
2. Description of Work to be Performed			
3. Equipment to be Worked On			
4. Ratings of Equipment (Voltage and Current)			
5. Special Characteristics and Abnormalities			
6. Description of any non-electrical hazards			
7. Description of Safe Work Practices			
8. Required PPE			
9. Special Tools / Special Test Equipment			
10. Special Safety Requirements/Procedures			
11. Means of Restricting Unqualified Employees from the work area			
12. QUALIFIED EMPLOYEES ASSIGNED and Initial Job Briefing Completed			
(Name)	(Signature)	(Duties)	
13. Compelling Reason- The Justification for working on equipment energized			
APPROVAL SIGNATURES			
MAINTENANCE MANAGER			
(Name)	(Signature)		
FACILITY SAFETY PROFESSIONAL			
(Name)	(Signature)		
PLANT MANAGER			
(Name)	(Signature)		

ENERGIZED ELECTRICAL WORK PERMIT

PREPARATION, REVIEW, AND APPROVAL INSTRUCTIONS

1. Specify the location of work to be performed.
2. Provide a general summary of the work to be performed.
3. Identify equipment to be worked on.
4. Identify equipment ratings.
5. Identify and provide a description of any special characteristics or abnormalities.

Special characteristics of the equipment may include: Uninterruptible Power Supplies (UPS), Automatic Transfer Switches (ATS), or unlabeled wires.

Special characteristic should include abnormalities like unlabeled wires, no color-coded wires, color coding of wires appear incorrect, fluid puddle inside enclosure, missing lockout, and racked or otherwise deformed panel door.

Abnormalities indicate an unexpected condition or defect of the equipment.
6. Identify and describe any non-electrical hazards associated with the tasks.
7. Describe safe work practices to be used.
8. Describe the required protective equipment to be used (e.g., gloves and other PPE).
9. Identification of special tools and test equipment, along with special instructions for safe use.
10. Identify special safety requirements and procedures.
11. Describe barriers or other methods used to restrict access of unqualified persons.
12. Identification of employees assigned to the work and their duties; use additional pages as necessary. Employees' signatures attest to completion of an initial job briefing covering all job specific hazards. Other periodic job briefings may also be required.
13. Explanation of why it is not feasible to de-energize equipment before performing the maintenance activity.

NOTES:

- A minimum of two qualified employees define the scope of work, assess the hazards, and hazard mitigation of the job. The two qualified employees can include an equally qualified employee, supervisor, the EWP Coordinator, or a knowledgeable safety professional.
- A copy of the approved permit must be maintained in the EWP files for at least one year.
- It should be stressed that the signatures of the qualified employees(s) and safety professional indicate concurrence with the hazard assessment and controls that have been completed.
- The signature of the Maintenance Manager indicates the training records for those employees that are assigned the work have been reviewed and are verified as having an adequate level of training necessary to perform the work safely.

**JOB SAFETY ANALYSIS FORM
PS 1783**

MAINTENANCE MANAGEMENT ORDER

THIS PAGE BLANK

MAINTENANCE MANAGEMENT ORDER

United States Postal Service		Date	
On-the-Job Safety Review/Analysis <i>(See instructions on reverse)</i>			
Location (e.g., Station, Branch, BMC)	Unit (Inbound, Outbound, etc.)	Specific Task Analyzed	
Title of Employee Performing Task	Required and/or Recommended Personal Protective Equipment to Perform the Task		
Completed By (Title)	Reviewed By (Title)	<input type="checkbox"/> Concurrence <input type="checkbox"/> Non-Concurrence	No. of Employees Involved
Sequence of Basic Task Steps	Potential Hazard or Accident	Recommended Action to Prevent Accident or Eliminate Hazard	

PS Form 1783, January 1989

Instructions

A. What Is an On-the-Job Safety Review/Analysis?

An On-the-Job Safety Review/Analysis is a procedure to analyze a specific task to uncover hazards or accidents producing situations:

1. That may have been overlooked in the layout of the operation, design of machinery, equipment, and work practices;
2. That may have developed after the job or work was started.

B. What Job Tasks Should Be Reviewed?

Assigned jobs usually involve a combination of different tasks during an eight hour shift. Select for analysis specific tasks of a job, e.g., stacking pallets, unloading BMC containers from a trailer, culling mail, etc. Consideration should be given to selecting those tasks which involve:

1. A high frequency of accidents;
2. Disabling injuries;
3. The potential for severe injury; exposure to hazardous materials; or physical agents;
4. New jobs, changes in equipment or processes.

C. How Should an On-the-Job Review/Analysis Be Performed?

1. Record the Basic Task Steps

Break down the task into successive steps and list them numerically in Column A. To determine the basic steps, ask "What step starts the task?" Then, "What is the next basic step?" and so on. Keep it brief, but specific. Begin each step with an action word such as, "remove," "open," "lift," "position," and then follow it with an item to which the action applies, such as "remove jam," "open trailer door," "lift each to top tier," "position nutting truck," etc.

D. Record Hazards or Potential Accidents

After listing all the steps begin the search for hazards or potential accidents. Address the accidents that could happen to the employee doing this job step. Closely studying the mechanics involved in each step, discussing it with the employee, and recalling causes of past accidents will aid you in developing answers. Other helpful questions are:

1. Is there a potential for lifting injuries due to manual handling procedures?
2. Is there a danger that employees could be exposed to potentially hazardous materials, harmful noise levels, or breathing harmful vapors or dust?
3. Can the employee slip or fall? Can the employee fall on the same level or to another level?

Record any hazards or potential accidents in Column B next to the task step involved. Be brief in identifying each hazard or potential accident. But be specific, e.g., "fall from dock," "hands can get caught between containers and wall," "strain from lifting in awkward position," "defective utility cart guard," etc.

E. Recommended Action

Record in Column C the action necessary to eliminate the hazard or prevent an accident. Possible actions may include finding a new way to do the job, changing the physical conditions that create the hazard, or changing the job procedure. The action indicated must be specific, i.e., "What changes should be made? How should the job be done?"

F. Disposition

After completion route the form through the Safety Office or other designated Department under existing local procedures.

Guide to Preparing a Job Safety Analysis (Sequence of Basic Task Steps)

Sequence of Basic Task Steps (Column 1)	<p>Divide the job into a sequence of steps, each describing what is being done.</p> <p>To avoid two common errors when dividing the job into sequenced steps:</p> <ul style="list-style-type: none"> ■ Do not make the division so detailed that an excessively large number of steps result. ■ Do not make the division so general that basic steps are not recorded. <p>To apply a good technique of dividing the job:</p> <ul style="list-style-type: none"> ■ Select a person to observe. ■ Brief that person on the reason for your observation. ■ Observe the person performing the job and try to divide the job into basic steps. ■ Record each step in the process. ■ Check the process with the person observed. <p>Remember: Each step must describe what work is done, not how it is completed. Begin each step with an action word such as <i>remove</i>, <i>lift</i>, or <i>drive</i>.</p>
Hazards and Potential Accidents (Column 2)	<p>Identify all hazards and potential accidents — both those produced by the environment and those connected with the job procedure.</p> <p>To apply a good technique for identifying all hazards:</p> <ul style="list-style-type: none"> ■ Observe closely. ■ Repeat the job observation as necessary until you are confident you have identified all hazards and possible accidents. ■ Ask yourself these questions about each job step: <ul style="list-style-type: none"> ■ Is there a danger of striking against, being struck by, or making any other injurious contact with an object? ■ Can the employee be caught in, between, or by objects or moving parts? ■ Is there potential for a slip, trip, or fall? Can the employee fall on one level or to another level? ■ Can pushing, pulling, lifting, bending, or twisting cause a strain on the employee? ■ Is there an environmental exposure hazard, such as gas, radiation, or heat? ■ Check with the employee being observed; an experienced employee may be able to suggest additional ideas. ■ Make no attempt to develop solutions while analyzing each job step for hazards. Thinking about solutions at this stage interferes with the process of spotting hazards.
Recommended Action to Prevent Accident or Eliminate Hazard (Column 3)	<p>Develop a recommended safe job procedure to prevent the occurrence of potential accidents.</p> <p>Principle solutions may include:</p> <ul style="list-style-type: none"> ■ <i>Find a new way to do the job.</i> Determine the work goal of the job and then analyze various ways of reaching the goal to determine the safest procedures. ■ <i>Change or eliminate the physical conditions that create the hazard.</i> Ask yourself what changes in tools, materials, location, or equipment, for example, can eliminate the hazard or prevent the accident. ■ <i>Change work procedures to eliminate or minimize any hazards still present.</i> Ask yourself what the employee should do, or not do, to eliminate or minimize this particular hazard. ■ <i>Reduce the frequency with which the job is required.</i> <p>Note: Be sure to check or test your proposed solutions by observing the job again and discussing the changes with the workers who do the job.</p>

MAINTENANCE MANAGEMENT ORDER

MAINTENANCE MANAGEMENT ORDER

ATTACHMENT 14**RESOURCES****1. OSHA**

OSHA's home page - <http://www.osha.gov>

2. POSTAL SERVICE DOCUMENTS

- MI EL-810-2009-1, Electrical Work Plan
<http://blue.usps.gov/cpim/miid.htm>
- MI-EL-810-2009-4 Personal Protective Equipment and Respiratory Protection Programs -
<http://blue.usps.gov/cpim/miid.htm>
- Current MMO, Personal Protective Equipment -
<http://www.mtsc.usps.gov>
- Current MMO, Electrical Work Plan -
<http://www.mtsc.usps.gov>
- Current MMO, Hazardous Energy Control Program (Lockout) -
<http://www.mtsc.usps.gov>

3. NATIONAL CENTER FOR EMPLOYEE DEVELOPMENT (NCED)**3.1. ALL EMPLOYEES**

1960174 - Video, "Electrical Safety and You"

3.2. EWP COORDINATOR'S COURSE

1960190 - EWP Coordinator course

Training that enables the EWP Coordinator to develop, implement, and manage the local EWP.

3.3. ELECTRICAL SAFETY COURSES FOR ELECTRICAL WORKERS

1960175 - Electrical Safety, Work Categories 1 and 2

Training covers Postal Service policies relating to Electrical Work. Included is specific information relating to work on energized electrical equipment and circuits rated less than 251 volts. Information includes work practices, tools, and PPE requirements. This course is a prerequisite to the Electrical Safety, Work Category 3.

1960180 - Electrical Safety, Work Category 3

Training covers specific information relating to work on energized electrical equipment and circuits rated between 251 and 600 volts with currents rated at less than 1,000 amps. Information includes work practices, tools, and PPE requirements. This course is a prerequisite to the Electrical Safety, Work Category 4.

1960178 - Electrical Safety, Work Category 4

Training covers specific information relating to work on energized electrical equipment and circuits rated between 251 and 600 volts with currents rated at 1,000 amps or greater. Information includes work practices, tools, and PPE requirements. This course is a prerequisite to any required local site specific training.

5560429- Electrical Safety, Local

This course number is used to track any required local site and equipment specific training as appropriate.

Additional training information may be located on NCED's web page at <http://nced.usps.gov/>.

MAINTENANCE MANAGEMENT ORDER**MAINTENANCE MANAGEMENT ORDER**

ATTACHMENT 15**DEFINITIONS**

The definitions presented are for the purposes of this MMO and are intended to provide greater clarity. Thus, the specific definitions may differ from the definitions from other sources.

Contractor - Individual or group of individuals that perform services for the Postal Service under an express or implied agreement and that retains the right to control the means, method, and manner of performing the agreed upon services. A contractor is not an employee of the Postal Service.

Dead-front - Electrical equipment with no live parts exposed to a person on the operating side or exterior of the equipment.

De-energized work - Electrical activities that are performed on equipment that: (1) is not connected to an energy source; and (2) does not contain residual or stored energy.

Energized work - Electrical activities performed on equipment that: (1) is connected to an energy source; or (2) contains residual or stored energy.

Exposed work - Conductor and circuit components (examples include uninsulated or bare wires, terminations, bus bars, coils, connectors, fuses, or a fuse holder) that are capable of being inadvertently touched. (Work on electrical components that incorporates a fingersafe design is not considered to be exposed work.)

Fingersafe - Electrical components and conductors that are designed to prevent accidental or inadvertent contact with exposed components and conductors.

Live electrical work - Electrical activities performed on equipment from which the power has not been removed.

Lockout - The isolation of hazardous energy sources by the means of the appropriate lockout device and lock.

Maintenance - Performing tasks to keep equipment in proper working condition (e.g., assembling, setting up, installing, adjusting, inspecting, repairing, replacement, modifying, and servicing equipment).

Operation - The utilization of equipment to perform its intended function. These functions are typically performed with electrical component covers secured in place, thus ensuring there is no direct exposure to energized components (e.g., switching, using key interlocks, and reading instruments, indicators, or flags).

Permissible work - Select maintenance activities that may be performed by Postal Service employees on energized equipment and circuits rated at or below 600 volts and when it is not feasible to de-energize the equipment or circuit.

Permit-required work – Select maintenance activities that may be performed, at the discretion of the Maintenance Manager and local Safety Professional, on energized equipment and circuits rated at or below 600 volts, provided: (1) it is not feasible to de-energize the equipment or circuit; (2) the work to be performed is not specifically listed as permissible work; (3) the work to be performed is also not considered prohibited work; and (4) an Energized Electrical Work Permit form must be completed prior to the work being performed..

Personal Protective Equipment (PPE) - A device worn by a person to provide physical protection or reduce exposure by providing a barrier between an individual and the workplace environment. (Examples include hand, eye, face, head, and body protection)

Prohibited work - Maintenance activities performed on electrical components rated 601 volts and above. The operation and monitoring of dead-front switchgear is not considered prohibited work.

Qualified - An individual who has completed classroom training, on-the-job training (OJT), or both and who meets all the requirements specified in the Training section of Attachment 4.