## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th></th>
<th>POLICY</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>AUTHORITY AND RESPONSIBILITY</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>WORK PRACTICES</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>ELECTRICAL INSTALLATIONS</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>TRAINING</td>
<td>9</td>
</tr>
</tbody>
</table>
1 POLICY
Electrical equipment shall be operated and installed and electrical work shall be performed in accordance with this policy.

2 AUTHORITY AND RESPONSIBILITY

2.1 Environmental Health and Safety Manager is responsible for:

- Assisting supervisors with complying with this policy;
- Conducting inspections to ensure compliance with this policy;
- Arrange for basic electrical safety training; and
- Annually reviewing and updating, if necessary, this policy.

2.2 Departments are responsible for:

- Ensuring employees comply with all requirements of this policy;
- Determining the level of electrical safety training required for their employees;
- Providing employees with all the tools and equipment necessary to comply with this policy; and
- Ensuring that Unqualified and Qualified employees complete Basic Electrical Safety Training.

2.3 Employees are responsible for:

- Complying with all aspects of this program;
- Not performing electrical work for which they are not trained;
- Only performing on work on live electrical parts, greater than 50 volts, only when necessary;
- Following the Lockout/Tagout program; and
- Completing required training.

2.4 POM Manager is responsible for:

- Ensuring that electrical installations for facilities are compliant with the requirements in this policy.
3 WORK PRACTICES

De-energization of electrical equipment provides the highest level of safety when servicing or maintaining electrical equipment. Working on live electrical parts should be avoided when possible and should only be performed in the following two scenarios:

- De-energizing the equipment creates additional hazards, such as shutdown of hazardous ventilation systems or life safety systems; and
- Equipment must be energized to allow for testing that can only be performed live.

Only employees that are qualified persons are allowed to work on live electrical parts that are 50 V or higher. Qualified persons must perform live electrical work in compliance with the most current National Fire Protection Association 70E Standard for Electrical Safety in the Workplace (NFPA 70E).

The following work practices must be followed when working on live electrical parts:

- Personal protective equipment (PPE) must be used when required;
- Conductive apparel (watches, bracelets, rings, key chains, necklaces, zippers, cloth with conductive thread, etc.) must not be worn;
- Non-conductive hand tools must be used and must be rated for the voltage at which live electrical work is being performed;
- Barricades and signage must be posted a safe distance away from the work area and unqualified persons must not be allowed in the work area;
- Conductive materials and tools must be kept a safe distance away from live electrical parts; and
- Electrical equipment must be restored to safe conditions and all safeguards must be replaced when work is complete.

When electrical equipment is not required to be live during servicing or maintenance work, equipment should be de-energized in accordance with the Lockout/Tagout policy.

Ladders made from conductive materials such as aluminum or steel pose an electrocution hazard when working around overhead power lines. Refer to the Ladder Safety policy for requirements when using ladders around live overhead power lines or when performing live electrical work.

Confined spaces with live, exposed electrical parts are considered permit-required confined spaces. Work inside these spaces must be conducted in accordance with the Confined Space policy.
3.1 **Personal Protective Equipment**

Personal protective equipment (PPE) for electrical hazards shall be used and maintained in accordance with the PPE policy.

3.2 **Extension Cords and Power Strips**

Employees must be aware of the dangers of misusing extension cords and power strips, which include electrocutions and fire hazards.

Extension cords and power strips must be inspected for damage to the outer insulation prior to use. Damage to the outer layer of insulation itself may be repaired with electrical tape. If damage extends beyond the outer layer of cord (i.e. if the conductor is exposed), then the extension cord must be discarded.

Extension cords and power strips must be plugged into a wall outlet and may not be plugged into another extension cord or power strip.

Extension cords and power strips that have a ground pin may only be plugged into grounded outlets. Devices that have a ground pin may only be plugged into extension cords and power strips that accept ground pins. Do not remove the ground pin from the plug of the device or the extension cord or power strip.

Extension cords may never be used in place of permanent wiring and may only be used for a temporary period of up to 90 days. Unless they are specifically designed to do so, extension cords must not be used to suspend portable lighting. Extension cords must be heavy duty and rated for the power tool with which it is being used. Only extension cords rated for outdoor use may be used outdoors.

The following work practices shall be followed when using extension cords:

- Never use an extension cord to lift or lower power tools;
- Avoid running cords over sharp corners and projections;
- Do not run cords through windows or doors unless they are protected from damage and only used on a temporary basis;
- Do not run cords above ceilings and inside or through walls, ceilings, or floors;
- Do not fasten cords with staples or otherwise hang them in such a fashion as to damage the outer jacket or insulation;
- Do not use extension cords to suspend portable lighting, unless they are specifically designed to do so;
- Do not lift or lower equipment with extension cords; and
• Cover cords with a cable bridge or tape when they extend into a walkway or other path of travel to avoid tripping hazards.

Power strips must be UL approved and are to be used within the manufacturer’s guidelines. Industrial equipment, power tools, and other high-current devices may not be plugged into power strips unless they are UL-approved for industrial use (the manufacturer’s guidelines will specify the rating of the power strip).

3.3 Ground Fault Circuit Interrupters

Ground fault circuit interrupters (GFCI) protect users of electrically-powered tools and equipment from electrical shocks, especially when working in wet environments. The following are situations when a GFCI is required for electrically-powered equipment and tools:

• Being used at locations where employees are likely to contact water or conductive liquids such as: outdoors, bathrooms, kitchens, or any other area with potential exposure to water;
• Being used at construction or renovation sites; or
• Being used for portable lighting in wet or other conductive locations (such as inside boilers or tanks).

The GFCI can be located on the extension cord, outlet, or the circuit breaker. A GFCI is required in outlets that are installed around sinks or any other areas where water may present. GFCIs must be UL-approved and used within the manufacturer’s guidelines.

4 ELECTRICAL INSTALLATIONS

Electrical building systems and equipment must be free from recognized hazards that are likely to cause injuries or electrical fires. Equipment must be suitable for the installation and use, and must be installed and used in accordance with any instructions included in the listing or labeling and maintained in compliance with all National Electrical Code (NEC), Massachusetts Electrical Code, and Occupational Safety and Health Administration (OSHA) requirements that are current at the time of installation. Suitable equipment means that the equipment is approved by a nationally recognized testing laboratory, such as Factory Mutual (FM) or Underwriters Laboratory (UL).
New electrical wiring and modifications, extensions, or replacements of existing wiring must conform to the requirements of the NEC, Massachusetts Electrical Code, and OSHA. The following are additional requirements for electrical wiring:

- Conductors entering boxes, cabinets or fittings must be protected from abrasion, and openings through which conductors enter must be effectively closed;
- Unused openings in cabinets, boxes, and fixtures must be effectively closed;
- GFCI outlets must be installed where water hazards are present; such as around sinks, water treatment areas, etc.;
- All new electrical outlets must be 3-pronged; and
- Electrical wiring, components, and fixtures must be of the proper rating for the location of its installation.

4.1 Guarding

Electrical systems must be guarded to prevent inadvertent contact with live conductors. The following are requirements for guarding live electrical parts:

- Live parts to electrical equipment operating at 50 volts or more above ground must be guarded against accidental contact;
- Proper guarding can be achieved by use of an approved cabinet or other approved enclosure or by location in a room or vault that is accessible to qualified persons only; and
- If electrical equipment is located in an area where it is potentially exposed to physical damage, the enclosure or guard must be of sufficient strength to prevent such damage.

4.2 Electrical Equipment

Electrical equipment must be provided with sufficient access and working space to permit ready and safe operation and maintenance of the equipment. Working clearances of 36 inches shall be provided in front of all electrical equipment such as electrical panels and disconnect boxes.

New installations of electrical panels, disconnect boxes, or any other electrical equipment that requires servicing, inspection, or maintenance while energized shall have an arch flash and approach analysis conducted in accordance with the requirements of the NFPA 70E standard.

The following are additional requirements for electrical panels and disconnect boxes:
• Disconnect boxes must be clearly labeled with the voltage and the equipment that it is powering, unless the disconnect is located and arranged such that its purpose is evident;
• There must be a clear path from the disconnect box to the equipment that it powers;
• Electrical panels must be able to open at least 90 degrees; and
• Panel doors to panels and disconnect boxes must always remain closed when they are not being serviced.

4.3 Electrical Rooms and Closets

The following are requirements for electrical rooms and closets:

• Storage of any material is prohibited in rooms designated for electrical equipment;
• Only qualified persons are allowed to enter High Voltage (greater than 600 volts) rooms;
• High voltage rooms must be locked at all times; and
• Entrances to rooms and other guarded locations that contain exposed live electrical parts operating at 50 volts or more above ground must be affixed with permanent signs that state “DANGER – HIGH VOLTAGE – KEEP OUT”.

4.4 Hazardous Locations

Hazardous locations are areas where fire or explosion hazards may exist due to the presence of flammable gases or vapors, flammable liquids, combustible dusts, or ignitable fibers or flyings. Electrical equipment, tools, and systems can become a source of ignition in these areas.

Electrical system components and electrical tools must be designed and constructed to be suitable for installation and use in hazardous locations. Electrical equipment must be designated as Class I, II, or III for the following areas:

• Class I for areas in which flammable vapors, liquids, or gases may be present;
• Class II for areas in which combustible dust may be present; and
• Class III for areas in which ignitable fibers may be present.
5 TRAINING

There are no training requirements for MBL employees whose normal job duties would not expose them to live electrical circuits operating at 50 volts or more above ground.

General Electrical Safety Training is required for unqualified persons whose normal job duties would not expose them to live electrical parts operating at 50 volts or more, but perform duties that include the following:

- Using electrically-powered hand tools;
- Performing service on electrically-powered machines or equipment; or
- Performing maintenance or repair functions on electrically-powered machines or equipment.

Qualified persons shall be trained in accordance with the training requirements in the most current NFPA 70E standard.

Employees must complete training prior to the assignment of duties that are covered by this policy. Retraining will be required whenever an employee shows a lack of the necessary knowledge or skills to safely work on or around electrical systems.