STEPPING UP ELECTRICAL SAFETY PRACTICES

A Guideline for Establishing a Safe Work Procedure for Working on 347-Volt Lighting Systems

COMPANY: _____ Contact: _____

SECTION: Safe Work Procedures Date Issued: 00/00
Revised: 00/00

SUBJECT: **347-VOLT SYSTEM MAINTENANCE Safe Work Procedure Guidelines** Page: 1 of 3

INTRODUCTION: The following provides a guideline to assist in defining safety steps and procedures suitable for facilities to keep employees and contract staff safe from potential hazards associated with working on 347-volt system ballasts.

The Electrical Safety Authority is responsible for public electrical safety in Ontario and defines and enforces safety standards through the Ontario Electrical Safety Code, Ontario Regulation 164/99.

PURPOSE: **To assist in the development of site-specific safety guidelines for facilities to protect workers and contract staff from potential hazards associated with working live on 347-volt system ballasts.**

POLICY: **The Company believes that the majority of electrical work can be carried out with the electrical system de-energized. In keeping with this mandate a policy of Live Work under only those limited conditions permitted under the Occupational Health & Safety Act will be permitted when it is not practicable to disconnect electrical equipment or conductors from the power supply before working on, or near, live exposed parts of the equipment or conductors. "Not practicable" does not mean "not convenient". It means where life, limb or property damage may occur if the power is turned off.**

LEGAL REQUIREMENTS: **Work with the electrical systems de-energized.**

The Ontario Electrical Safety Code (Ontario Regulation 164/99) requires systems to be de-energized prior to conducting any electrical maintenance work (Section 2-304 (1)) to protect electrical trades and maintenance workers. The Occupational Health and Safety Act (OHSA) and Regulations has the same requirements.

If it is not practical to disconnect an electrical system, workers should follow the rules outlined to protect them. This includes the use of personal protective equipment (approved rubber gloves, mats, shields and V-rated tools), and spotters when working on live electrical systems greater than 300 volts (OHSA Reg., Section 189 (4)). OHSA requirements for construction projects further require employers to:

a) establish and implement written measures and procedures for complying with this section to ensure that workers are adequately protected from electrical shock and burn; and

b) make a copy of the written measures and procedures available to every worker on the project. O.Reg. 627/05, s.7.

(3) Section 190 (2) requires that "The worker shall follow the written measures and procedures".

Non-compliance with these requirements could lead to charges being laid under the Occupational Health and Safety legislation or the Criminal Code.

GENERAL:

The Electrical Safety Authority's "2004 Ontario Electrical Safety Report" identified that 30% of all occupational electrocutions were sustained by electrical maintenance or electrical trades people who were knowingly working on live electrical systems. Incidents linked to working on live electrical systems have increased by 30% in the past 6 years, and one-third of electrical shocks have been associated with 347-volt systems.

Working on live 347-volt systems presents unusual risks:

- 347-volt systems have complex circuitry
- 3-phase wire systems can become unbalanced when disconnected
- a neutral conductor can become live if not disconnected properly
- the t-bar ceiling structure often associated with these systems can conduct electricity

Following the health and safety procedures outlined can reduce potential electrical hazards. OHSA and Regulations for Construction projects requires that all electrical work be performed by workers certified under the Trades Qualification and Apprentice Act (Regulations Section 182.1a) In addition, the Electrical Safety Authority recommends that only certified and licensed electricians work on 347-volt systems and 347-volt system ballasts.

FACILITY SAFETY REQUIREMENTS:

This facility is committed to the preventing injuries by providing a safe and healthy environment for its employees. As a result, this facility requires electrical systems to be de-energized prior to conducting any electrical upgrades or maintenance work. These steps will be followed in this facility to ensure that potential electrical hazards associated with 347-volt system ballasts are managed. (mark those that apply to your facility with an "✓")

- ☐ Consult relevant electrical drawings and verify that actual wiring installations match the drawing.
- ☐ Inspect the work area for any potential electrical hazards such as faulty wiring prior to starting work.
- ☐ Check for power at the fixture – a proximity tester can be used. The following procedure should be followed for testing:
  a. Test the tester on a known circuit.
  b. Test the live on the circuit you are working on, see if it is energized.
  c. Go back and test the known circuit for verification.
- ☐ Identify the circuit at the panel to be disconnected.
- ☐ De-energize the system.
- ☐ Lock out & tag out at the panel or switch.
- ☐ Verify that you have de-energized the correct circuit – Test the two circuit conductors feeding into the fixture and test each to ground to verify both wires are dead. This procedure requires that you use an approved Category III meter when testing, and that you use the same 3-point testing method outlined above (a.b.c.)
- ☐ The following Personal Protective Equipment (PPE) must be used until systems are tested and confirmed.
  - ○ Safety hard hat
  - ○ Safety glasses or goggles

- ○ Rubber gloves rated for 347/600 volts, worn with leather gloves on the outside
- ○ Boot with di-electric property, dry and free of moisture
- ○ V-rated tools
- ○ Non-conductive ladders/platforms
- ○ All NFPA Section 70E specified safety equipment

- ☐ Others Personal Protective Equipment required: _____
- ☐ Personal Protective Equipment (PPE) must be assessed and inspected every ___ weeks.
- ☐ In keeping with this commitment to not work live this facility only permits live work under those limited conditions permitted under the Occupational Health & Safety Act – when it is not practicable to disconnect electrical equipment or conductors from the power supply before working on, or near live exposed parts of the equipment or conductors. "Not practicable **does not mean** not convenient."

SAFETY RESPONSIBILITIES:

Supervisors are responsible to instruct workers and contract staff to de-energize 347-volt system ballasts prior to initiating electrical work and/or maintenance in accordance with the requirements specified in the Occupational Health and Safety legislation (OHSA) and the Ontario Electrical Safety Code.

Any decision to do live work will be made by the Supervisor in conjunction with the Company's Safety Director. In the field, a risk analysis or job safety plan must be carried out by the supervisor to assess the level of risk of the work being done.

Supervisors are responsible for ensuring employees are provided with personal protective equipment, and that timelines for inspection and maintenance of personal protective equipment have been established and communicated.

Employees are responsible to notify supervisors of the need for Personal Protective Equipment, and to ensure that 347-volt systems are **de-energized**, **tested**, and **locked-out/tagged-out**.