

File Ref #:5497478

Inspection No.17148542

Inspection Date: July 14, 2023

Report of Workplace Inspection

Inspectee: THE GOVERNORS OF ST. FRANCIS XAVIER UNIVERSITY**Operating As:** ST. FRANCIS XAVIER UNIVERSITY**Mailing Address:** P.O. BOX 5000
ANTIGONISH, NS CANADA B2G 2W5**Worksite Location:** St. Francis Xavier University**Non-Management Rep:** Blair Maltby**Occupation:** Electrician**Management Rep:** Laurie Reid
Doug Campbell
Kevin Latimer
Barry Purcellipe**Occupation:** Manger of OHS
Maintenance Manager
Energy and Utility Supervisor
Electrical Engineer

Inspection Overview:

On July 14, 2023, Nova Scotia Department of Labour, Skills and Immigration (LSI) Occupational Health and Safety Division Officers Paula Dobson and Electrical Engineer Darrell Thompson, conducted an inspection of St. Francis Xavier University located at 4130 University Ave, Antigonish, NS. The inspection was performed in accordance with Nova Scotia Occupational Health and Safety Act, Section 47 and pursuant Regulations and focussed on the electrical safety culture of the workplace.

Upon arrival LSI met with the University's Maintenance Manager, Energy and Utility Supervisor, Electrical Engineer, Manger of OHS and Electrician and made them aware of the intention to perform an electrical safety inspection in accordance with Nova Scotia Occupational Health and Safety Act, Section 47 and pursuant Regulations.

This is Officer Thompson first visited to this workplace therefore the inspection and this report focuses on providing information and guidance that could help the University improve its electrical safety program and procedures. It should be noted that the inspection was not a

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comprehensive review of compliance with the Occupational Health and Safety Act and Regulations. Ultimately, it is the employer's responsibility to ensure the workplace is compliant with the Act and Regulations.

Inspection Findings:

1. Occupational Safety General Regulations

General Overview

In addition to CSA C22.1-21 "Canadian Electrical Code, Part 1", I have reference CSA Z462:21 "Workplace Electrical Safety". I am of the view that CSA Z462:21 goes more into depth and can be more prescriptive than CSA C22.1-21 therefore it is a great resource for development or improving an electrical safety program.

Where you are to adopt a standard such as CSA Z462, NFPA 70E or any other electrical safety and maintenance standards which are more prescriptive or improve on CSA C22.1-21 you would be obligated to comply with that standard. For example, CSA C22.1-21 Subsection 2-306 requires at minimum a generic arc flash and shock hazard warning label that meet a certain design, but CSA Z462-21 requires a risk assessment which includes and arc flash and shock hazard analysis warning label.

During the walkthrough of the campus LSI was made aware of the following:

1. An electrical contractor performs yearly maintenance of the main circuit breaker and there is a major shut down of the University electrical system. The most recent shut down occurred in June 2023.

2. Wajax power system performs yearly maintenance of the university generator and transformers.

3. Strum Engineering performs updating of the electrical single line drawing, they are currently updating this drawing with the present construction.

4. Each building on campus electrical system is fully reviewed every five years.

5. The five electricians employed by the university are Red Seal and are the only employees allowed to perform electrical work.

6. All university employed electricians have an iPad which gives them access to digital copies of the most up to date version of the electrical system drawings.

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7.Electrical contractors also have access to digital copies of the most up to date version of the electrical system drawings as required.

8.University employed electricians are required for implementing lockout tagout procedures on 600V and above equipment and electrical contractor are permitted implement lockout tagout of equipment rated 120V and below.

9.All university electricians have received arc flash and shock hazard training in 2016. This makes them competent to understand the hazards and read warning labels. This training is out of date and will be update in the near future.

10.Arc Flash Hazard Warning Analysis Label attached to equipment are dated December 2018. A new study will be undertaken later this year before December 2023.

11.Security officers are trained by the Manger of OHS to test battery installed emergency lighting. Where an issue is found during the testing of the emergency lights a work order is created to get the equipment repaired.

12.Graybar is responsible for testing and provide insulated electrical rubber gloves.

At the time of this inspection LSI officers observed the following:

1.Rooms, workshops and areas inspected appeared appropriately lite.

2.Electrical panels and switches were not damaged and appeared to operate adequately.

3.The facility has numerous personal protective equipment for electrical workers, such as the arc flash hood, arc rated coverall and insulated rubber gloves. At the time of this inspection the insulated rubber gloves where not inspected and certified. However, this was remedied later in the day, where LSI was sent an email with a picture of a new insulated glove which the facility has acquired. This glove was dated and certified.

4.Several of the electrical panels, switches and other electrical equipment were inadequately labelled with a name tag, rating and/or arc flash and shock hazard warning label. In one instance the panel directory did not match the installed circuit breakers. The arc flash and shock hazard warning labels warn individuals of the potential arc flash and electric shock hazards and provides awareness to personnel who might come in close contact or work on energized electrical equipment.

(Warning).

Occurrences of this included but are not limited to:

a.Main Circuit Breaker Room: Panel DPA and Panel AA

b.Charles V. Keating Millenium Centre: portable electrical panel PNL DPD

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c.MacIsaac Building: Panel P22, Panel P21
d.Morrison Hall various panels

2-100 Marking of equipment (CSA C22.1-21)

- 1) Each piece of electrical equipment shall bear those of the following markings necessary to identify the equipment and ensure that it is suitable for the particular installation:
 - a) the maker's name, trademark, or other recognized symbol of identification;
 - b) catalogue number or type;
 - c) voltage;
 - d) rated load amperes;
 - e) watts, volt amperes, or horsepower;
 - f) whether for ac, dc, or both;
 - g) number of phases;
 - h) frequency in hertz;
 - i) rated load speed in revolutions per minute;
 - j) designation of terminals;
 - k) whether for continuous or intermittent duty;
 - l) short-circuit current rating or withstand rating;
 - m) evidence of approval; or
 - n) other markings necessary to ensure safe and proper operation.
- 2) At the time of installation, each service box shall be marked in a conspicuous, legible, and permanent manner, to indicate clearly the maximum rating of the overcurrent device that may be used for this installation.
- 3) At each distribution point, circuit breakers, fuses, and switches shall be marked, adjacent thereto, in a conspicuous and legible manner to indicate clearly
 - a) which installation or portion of installation they protect or control; and
 - b) the maximum rating of overcurrent device that is permitted.

2-306 Shock and arc flash protection (CSA C22.1-21)

- 1) Electrical equipment such as switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centres that are installed in other than dwelling units and are likely to require examination, adjustment, servicing, or maintenance while energized shall be field marked to warn persons of potential electric shock and arc flash hazards.
- 2) The marking referred to in Subrule 1) shall be located so that it is clearly visible to persons before examination, adjustment, servicing, or maintenance of the equipment.

4.3.5.6.2 Incident energy analysis method (CSA Z462:21)

The incident energy analysis shall be updated when changes occur in the electrical

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distribution system that could affect the results of the analysis. The incident energy analysis shall also be reviewed for accuracy at intervals not to exceed 5 years.

2. Occupational Safety General Regulations

General Overview

4.3.5.7 Equipment labelling (CSA Z462:21)

Electrical equipment such as switchboards, panelboards, industrial control panels, meter socket

enclosures, and motor control centres (MCCs) that are in other than dwelling units and that are likely to require examination, adjustment, servicing or maintenance while energized shall be marked with a label containing all the following information:

- a) nominal system voltage;
- b) arc flash boundary;
- c) at least one of the following:
 - i) available incident energy and the corresponding working distance or the arc flash PPE category in Table 6A or V.1 for ac or Table 6B for dc for the equipment, but not both;
 - ii) minimum arc-rating of PPE; or
 - iii) site specific level of PPE; and
- d) date the information required by this Clause was determined.

The method of calculating and data to support the information for the label shall be documented. The data shall be reviewed for accuracy at intervals not to exceed 5 years. When the review of the data identifies a change that renders the label inaccurate, the label shall be updated. Unless changes in electrical distribution system(s) render the label inaccurate, labels applied prior to the effective date of this edition of this Standard are acceptable if they complied with the requirements for equipment labelling in this Standard in effect at the time the labels were applied.

6.4.4.4 Warning signs and labels (CSA Z462:21)

Electrical safety warning signs and labels shall be posted as applicable on electrical equipment doors, covers, and protective barriers. The warning signs and labels shall adequately warn of the hazard using effective words, colours, and symbols. These signs and labels shall be permanently affixed to the equipment and shall be of sufficient durability to withstand the environment involved.

5. Materials not associated with the electrical equipment are placed or stored in close proximity to electrical switches and panels. They can pose a fire or shock hazard to people needing access to the equipment. To assure worker safety a working space of a minimum of 1m with secure footing should be maintained around electrical equipment

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that contain renewable parts, disconnecting means, or operating means or requires examination, adjustment, operation or maintenance. This distance can be different for transformers and other electrical equipment depending on the rating. (Warning)

Occurrences of this included but are not limited to:

- a. Charles V. Keating Millenium Centre: Panel PNL DPD, track area switch nets stored in front switch and generator room.
- b. Morrison Hall: Electrical Rm 107, and RM34

2-124 Installation of other than electrical equipment (CSA C22.1-21)

Equipment or material of other than an electrical nature shall not be installed or placed so close to electrical equipment as to create a condition that is dangerous.

2-308 Working space around electrical equipment (CSA C22.1-21)

1) A minimum working space of 1 m with secure footing shall be provided and maintained about electrical equipment that

- a) contains renewable parts, disconnecting means, or operating means; or
- b) requires examination, adjustment, operation, or maintenance.

2) The working space referred to in Subrule 1) shall not be required behind equipment where there are no renewable parts such as fuses or switches on the back and where all connections are accessible from locations other than the back.

3) The working space referred to in Subrule 1) shall be in addition to the space required for the operation of drawout-type equipment in either the connected, test, or fully disconnected position and shall be sufficient for the opening of enclosure doors and hinged panels to at least 90°.

6. Broken or inadequately installed electrical equipment throughout the facility. Broken or damage equipment should be repaired, removed, or taken out of service with conductors capped and labelled. (warning)

Occurrences of this included but are not limited to:

- a. Charles V. Keating Millennium Centre: Generator Room Open junction box.
- b. MacIsaac Building Electrical Room & Vault: two out of service junction box.
- c. Nicholson Tower: communication pull box. The cover was found at the entrance so this issue may have already been resolved.
- d. Throughout the facility there are lighting that appear to be inoperable.

7. In the Charles V. Keating Millenium Centre track area equipment such as portable panel are partially blocking the access and egress to the electrical room. (warning)

8. In Morrison Hall, Room 34 LSI observed that Panel 3E1 was covered with a plastic material. The electrician was unable to explain the reason for the plastic installation but was able to confirm that the equipment had been covered for a number of years.

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Covering of electrical equipment with traps or plastic does not allow the system to ventilate and can shorten the life of the system. Where there is a possibility of water ingress, the source should be repaired and the electrical equipment access to ensure a hazard does not exist. (Order)

2-032 Damage and interference

3) Electrical equipment that has been exposed to ingress of water shall be subjected to evaluation to ascertain whether or not the equipment may be placed back into service.

During the walkthrough of the construction site LSI was made aware of the following:

1. In early February 2023 the MCC for the building under construction was locked out and tagged out by the University's electrician and turned over to the contractor.

2. Most of the portable tools are insulated battery-operated tools.

3. An electrical contractor with certified and red seal electricians is performing the work.

4. There is an orientation for workers.

During the walkthrough of the construction site LSI observed the following:

1. Extension cords were adequately rated for the environment.

2. Tools chargers viewed were adequately certified.

Warnings:

1. Occupational Safety General Regulations
120-1 General Provisions - Electrical Safety

An employer shall ensure that an electrical installation is designed, installed, assembled, operated, inspected, serviced, tested, maintained, repaired and dismantled in accordance with the latest version of CSA standard CSA C22.1, 'Canadian Electrical Code Part 1', Safety Standard for Electrical Installations'.

Subsection 120(1) amended: O.I.C. 2000-130, N.S. Reg. 52/2000; O.I.C. 2013-65, N.S. Reg. 53/2013.

You have contravened the above provision as follows:

i. Electrical equipment is inadequately labelled with name, rating or hazard warning label.

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ii. Materials not associated with the electrical equipment are placed or stored in close proximity to the electrical equipment. Not adequate spacing around electrical equipment.

iii. Broken equipment installed at the workplace.

In order to be in compliance with this section you must:

i. Ensure that electrical equipment is properly labelled label in compliant with CSA C22.1-21

ii. Ensure that nonelectrical equipment is removed from close proximity to electrical equipment and provide method to maintain required workspace around electrical equipment in compliant with the CSA C22.1-21.

iii. Ensure that broken equipment is repaired and assess in compliance with CSA C22.1-1-21.

2. Occupational Safety General Regulations

140-1 Access and exit

An employer shall provide a safe means of access to and exit from all work areas.

You have contravened the above provision as follows:

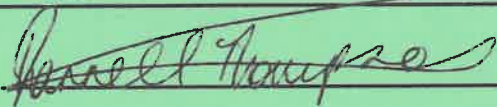
i. Equipment stored near electrical room entrance restricting exit and access.

In order to be in compliance with this section you must:

i. Ensure that exit and access to electrical room is unrestricted.

This inspection report was provided to Laurie Reid  by:

Officer Name: Darrell Demetrius Thompson

Officer Signature: 

Report of Workplace Inspection

Inspectee: THE GOVERNORS OF ST. FRANCIS XAVIER UNIVERSITY

Operating As: ST. FRANCIS XAVIER UNIVERSITY

This report was produced by Darrell Demetrius Thompson, Occupational Health and Safety Officer, who may be contacted at:

Occupational Health and Safety Division
Department of Labour, Skills and Immigration

Phone: 1-800-952-268 Fax:

Email: Darrell.Thompson@novascotia.ca

Within Nova Scotia, call: 1-800-952-2687

Fax: 902-541-5651

Outside Nova Scotia, call: 902-424-5400

Section 69 of the Occupational Health and Safety Act allows orders and some decisions to be appealed. You may appeal this order by filing notice with the Labour Board no later than 30 days after being served this notice. To get information and the required forms, please visit the Labour Board website at: <http://www.novascotia.ca/lae/labourboard/>.

Contraventions of the OHS Act and regulations can result in administrative penalties being issued. Compliance with orders issued by OHS officers is expected and required by law; it does not prevent a penalty from being issued.

Compliance Orders

Issued Under the Occupational Health and Safety Act

File Ref #:5497478

Inspection No. 17148542

Inspection Date: July 14, 2023

Inspectee: THE GOVERNORS OF ST. FRANCIS XAVIER UNIVERSITY

Operating As: ST. FRANCIS XAVIER UNIVERSITY

Mailing Address: P.O. BOX 5000
ANTIGONISH, NS CANADA B2G 2W5

Related to the work being conducted at:

Worksite Location: St. Francis Xavier University

**TAKE NOTICE THAT YOU ARE TO COMPLY WITH THE FOLLOWING
ORDER(S) ISSUED UNDER THE AUTHORITY OF THE OCCUPATIONAL
HEALTH AND SAFETY ACT**

Order 17148542-001

Date Order Issued: July 20, 2023

Occupational Safety General Regulations

120-1 General Provisions - Electrical Safety

An employer shall ensure that an electrical installation is designed, installed, assembled, operated, inspected, serviced, tested, maintained, repaired and dismantled in accordance with the latest version of CSA standard CSA C22.1, 'Canadian Electrical Code Part 1', Safety Standard for Electrical Installations'.

Subsection 120(1) amended: O.I.C. 2000-130, N.S. Reg. 52/2000; O.I.C. 2013-65, N.S. Reg. 53/2013.

You have contravened the above provision as following:

i.Inadequate protection and installation of electrical equipment. Installation of plastic can cause overheating and ingress of water can contribute to other hazards.

In order to be in compliance with this section you must:

i.Ensure that the equipment is installed and maintained in compliance with CSA C22.1-21 and the manufactures specification. Provide this officer with an assessment verifying that the equipment is safe and adequately installed and has not been damaged by ingress of water or lack of ventilation.

This order must be complied with by August 7, 2023

Compliance Orders

Issued Under the Occupational Health and Safety Act

File Ref #:5497478

Inspection No. 17148542

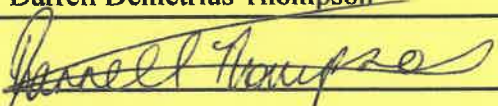
Inspection Date: July 14, 2023

Important Notes:

1. A person who has contravened a provision of the *Occupational Health and Safety Act* or regulations may be required to pay an administrative penalty.
2. Section 69 of the *Occupational Health and Safety Act* allows orders and some decisions to be appealed. You may appeal this order by filing notice with the Labour Board no later than 30 days after being served this notice. To get information and the required forms, please visit the Labour Board website at: <http://www.novascotia.ca/lae/labourboard/>
3. Compliance with an order issued by an OHS officer is expected and required by law. Where an order is issued you are required to submit a compliance notice to the officer named below identifying the action taken to comply with the order. Failure to submit your compliance notice(s) can result in prosecution.
4. Submitting a compliance notice does not prevent the issuance of an administrative penalty. Where a contravention of the OHS Act or regulations has been recorded in an order it will be considered for an administrative penalty.
5. If you are an employer and have been issued this order(s) you are required to post a copy of the order(s) in a prominent place. You are also required to give a copy of the order(s) to the joint occupational health and safety committee or health and safety representative, if they exist in your workplace.

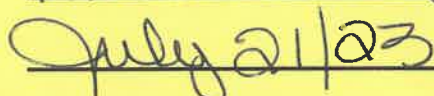
The Compliance Order report was provided to Laurie Reid by:

Officer Name: Darrell Demetrius Thompson

Officer Signature: 

Date: 2023-07-20

Inspectee Signature: LAURIE REID 

Date: 

This order(s) was issued by Darrell Demetrius Thompson, Occupational Health and Safety Officer, who may be contacted at:

Occupational Health and Safety Division
Department of Labour, Skills and Immigration

Phone: 1-800-952-2687 Fax:

Email: Darrell.Thompson@novascotia.ca

Compliance Orders

Issued Under the Occupational Health and Safety Act

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Inspection No. 17148542

Inspection Date: July 14, 2023

Within Nova Scotia, call: 1-800-952-2687

Fax: 902-541-5651

Outside Nova Scotia, call: 902-424-5400

File Ref #: 5497478

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Inspection Date: July 14, 2023

Issuing Officer: Darrell Demetrius Thompson

Compliance Notice

Inspectee: THE GOVERNORS OF ST. FRANCIS XAVIER UNIVERSITY
Operating As: ST. FRANCIS XAVIER UNIVERSITY

Mailing Address: P.O. BOX 5000
ANTIGONISH, NS CANADA B2G 2W5

Phone Number: 902-867-2101

Fax Number: 902-867-3303

Order 17148542-001

Occupational Safety General Regulations

120-1 General Provisions - Electrical Safety

An employer shall ensure that an electrical installation is designed, installed, assembled, operated, inspected, serviced, tested, maintained, repaired and dismantled in accordance with the latest version of CSA standard CSA C22.1, 'Canadian Electrical Code Part 1', Safety Standard for Electrical Installations'.

Subsection 120(1) amended: O.I.C. 2000-130, N.S. Reg. 52/2000; O.I.C. 2013-65, N.S. Reg. 53/2013.

The ways in which the order has been complied with are as follows:

Compliance Notice

This Compliance Notice was submitted by:

Print Name: _____

Signature: _____

Position: _____

Once completed, this form may be returned to:

Darrell Demetrius Thompson, Occupational Health and Safety Officer
Occupational Health and Safety Division
Department of Labour, Skills and Immigration

Phone: 1-800-952-2687 Fax:

Email: Darrell.Thompson@novascotia.ca

Within Nova Scotia, call: 1-800-952-2687

Fax: 902-541-5651

Outside Nova Scotia, call: 902-424-5400

Important Notes:

1. A person who has contravened a provision of the *Occupational Health and Safety Act* or regulations may be required to pay an administrative penalty. Once an administrative penalty is issued, it is too late to appeal the order that sets out the contravention. If you disagree with an order appeal it immediately.
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