

Physical Resources

Electrical Shop Safe Work Procedure

5.1.1 Electrical Definitions

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Technical Reviewer: Manager, Electrical Shop:

Bruce McCurry

Management Endorsement: Director, Maintenance & Energy Services:

Steve Nyman

The following is a list of important terms and their definition. The terms are used throughout the Electrical Shop safe work procedures.

Approved (as applied to electrical equipment)

1) equipment that has been certified by a certification organization accredited by the Standards Council of Canada in accordance with the requirements of

a) CSA Group Standards; or

b) other standards that have been developed by a standards development organization accredited by the Standards Council of Canada, or other recognized documents, where CSA Group Standards do not exist or are not applicable, provided that such other standards or other recognized documents

i) are correlated with provisions of the CE Code,

Part I; and

ii) do not create duplication with standards already listed in Appendix A; or

2) equipment that conforms to the requirements of the regulatory authority.

Affected Employee

An employee whose job requires him or her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him or her to work in an area in which such servicing or maintenance is being performed.

Attendant

An employee assigned to remain immediately outside the entrance to an enclosed or other space to render assistance as needed to an employee inside the space.

Authorized Person

A qualified person who, in his or her duties or occupation, is obliged to approach or handle electrical equipment; or a person who, having been warned of the hazards involved, has been instructed or authorized to do so by someone having authority to give the instruction or authorization.

Automatic Circuit Recloser

A self-controlled device for interrupting and reclosing an alternating current circuit with a predetermined sequence of opening and reclosing followed by resetting, hold-closed, or lockout operation.

Barricade

A physical obstruction, e.g., tape, cones, or an A-frame-type wood or metal structure, intended to provide a warning about and to limit access.

Barrier

A physical obstruction that is intended to prevent contact with equipment or energized electrical conductors and circuit parts or to prevent unauthorized access to a work area.

Bonding (bonded)

A low-impedance path that is obtained by permanently joining all non-current-carrying metal parts to ensure electrical continuity and has the capacity to conduct safely any current likely to be imposed on it.

Boundary, limited approach

An approach limit at a distance from an exposed energized electrical conductor or circuit part within which a shock hazard exists.

Boundary, restricted approach

An approach limit at a distance from an exposed energized electrical conductor or circuit part within which there is an increased likelihood of electric shock, due to electrical arc over combined with inadvertent movement.

Bus

A conductor that serves as a common connection for the corresponding conductors of two or more circuits.

Bushing

An insulating structure, including a through conductor or providing a passageway for such a conductor, with provision for mounting on a barrier, conducting or otherwise, for the purposes of insulating the conductor from the barrier and conducting current from one side of the barrier to the other.

Cable

A complete manufactured assembly of one or more insulated conductors, which may also include optical fibers, fillers, strength members, and insulating and protective material, with a continuous overall covering providing electrical, mechanical, and environmental protection to the assembly.

Cable Sheath

A conductive protective covering applied to cables.

Note: A cable sheath may consist of multiple layers of which one or more is conductive.

Circuit

A circuit is generally considered to mean the portion of a wiring installation that is connected to the load side terminals of an ac or dc system and that forms a complete path or paths through which electrical current is normally intended to flow, including utilization equipment.

Clearance (between objects)

The clear distance between two objects measured surface to surface.

Clearance (for work)

Authorization to perform specified work or permission to enter a restricted area.

Communication Lines – See Lines

Conductor

A conductive material that is constructed for the purpose of carrying electric current.

Bare conductor — a conductor having no covering or electrical insulation.

Covered conductor — a conductor covered with a dielectric material having no rated dielectric strength.

Insulated conductor — a conductor covered with a dielectric material having a rated dielectric strength.

Current-carrying Part

A conducting part intended to be connected in an electric circuit to a source of voltage. Non-currentcarrying parts are those not intended to be so connected.

De-energized

Free from an electrical connection to a source of potential difference and from electrical charge, i.e., not having a potential different from that of the earth.

Note: The term is used only with reference to current-carrying parts, which are sometimes energized (live).

Designated employee (designated person)

An employee (or person) who is designated by the employer to perform specific duties under the terms of this section and who is knowledgeable in the construction and operation of the equipment and the hazards involved.

Electric Line Truck

A truck used to transport staff, tools and material for electric supply line work.

Electric Equipment

Any apparatus, appliance, device, instrument, fitting, fixture, luminaire machinery, material, or thing used in or for, or capable of being used in or for, the generation, transformation, transmission, distribution, supply, or utilization of electric power or energy, and, without restricting the generality of the foregoing, includes any assemblage or combination of materials or things that is used, or is capable of being used or adapted, to serve or perform any particular purpose or function when connected to an electrical installation, notwithstanding that any of such materials or things can be mechanical, metallic, or nonelectric in origin.

Electrical Hazard

A dangerous condition such that contact or equipment failure can result in electric shock, arc flash burn, thermal burn, or arc blast injury.

Electrically Safe Work Condition

A state in which an electrical conductor or circuit part has been disconnected from energized parts, locked out in accordance with established standards, tested to verify the absence of voltage, and, if necessary, temporarily grounded for personnel protection.

Electric Supply Lines

See lines, electric supply.

Electric Utility

An organization responsible for the installation, operation, or maintenance of an electric supply system.

Energized (alive, live)

Electrically connected to or is a source of voltage.

Energy Isolating Device

A physical device that prevents the transmission or release of energy, including, but not limited to the following: a manually operated electric circuit breaker, a disconnect switch, a manually operated switch, a slide gate, a slip blind, a line valve, blocks, and any similar device with a visible indication of the position of the device. (Push buttons, selector switches, and other control-circuit-type devices are not energy isolating devices.)

Energized Part

An energized conductive component.

Exposed (as applied to live parts)

Live parts that can be inadvertently touched or approached nearer than a safe distance by a person, and the term is applied to parts not suitably guarded, isolated, or insulated.

Ground

A connection to earth obtained by a grounding electrode.

Ground Fault

An unintentional electrical path between a part operating normally at some potential to ground, and ground.

Grounded

Connected effectively with the general mass of the earth through a grounding path of sufficiently low impedance and having an ampacity sufficient at all times, under the most severe conditions liable to arise in practice, to prevent any current in the grounding conductor from causing a harmful voltage to exist between the grounding conductors and neighbouring

a) exposed conducting surfaces that are in good contact with the earth; or

b) surfaces of the earth itself.

Guarded

Covered, shielded, fenced, enclosed, or otherwise protected by suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach or contact by persons or objects to a point of danger

High-power Tests

Test in which fault currents, load currents, magnetizing currents, and line-dropping currents are used to test equipment, either at the equipment's rated voltage or at lower voltages.

High-voltage Tests

Tests in which voltages of approximately 1000 volts are used as a practical minimum and in which the voltage source has sufficient energy to cause injury.

Insulated

Separated from other conducting surfaces by a dielectric material or air space having a degree of resistance to the passage of current and to disruptive discharge sufficiently high for the condition of use.

Lines: Communication Lines

The conductors and their supporting or containing structure which are used for public or private signal or communication service, and which operate at potentials not exceeding 400 volts to ground or 750 volts between any two points of the circuit, and the transmitted power of which does not exceed 150 watts. If the lines are operating at less than 150 volts, no limit is placed on the transmitted power of the system. Under certain conditions, communication cables may include communication circuits exceeding these limitations where such circuits are also used to supply power solely to communication equipment.

Note: Telephone, telegraph, railroad signal, data, clock, fire, police alarm, cable television, and other systems conforming to this definition are included. Lines used for signaling purposes, but not included under this definition are considered as electric supply lines of the same voltage.

Lines: Electric supply Lines

Conductors used to transmit electric energy and their necessary supporting or containing structures. Signal lines of more than 400 volts are always supply lines within this section, and those of less than 400 volts are considered as supply lines if so run and operated throughout.

Manhole

A subsurface enclosure which staff may enter and which is used for the purpose of installing, operating, and maintaining submersible equipment or cable.

Manhole Steps

A series of steps individually attached to or set into walls of a manhole structure.

Minimum approach Distance

The closest distance an employee is permitted to approach an energized or a grounded object.

Qualified Worker

one who has demonstrated skills and knowledge related to the construction and operation of electrical equipment and installations and has received safety training to identify the hazards and reduce the associated risk.

Switch

A device for making, breaking, or changing connection in a circuit.

System Operator

A qualified person designated to operate the system or its parts.

Vault (transformer vault or electrical equipment vault)

An isolated enclosure, either above or below ground, with fire-resisting walls, ceilings, and floors for the purpose of housing transformers and other electrical equipment. ES SWP 5.1.1 Electrical Shop Definitions, February 2020

Vented Vault

A vault that has provision for air changes using exhaust flue stacks and low-level air intakes operating on differentials of pressure and temperature providing for airflow which precludes a hazardous atmosphere from developing.

Voltage

The effective (root-mean-square) potential difference between any two conductors or between a conductor and ground. Voltages are expressed in nominal values unless otherwise indicated. The nominal voltage of a system or circuit is the value assigned to a system or circuit of a given voltage class for the purpose of convenient designation. The operating voltage of the system may vary above or below this value.

Extra-low voltage — any voltage not exceeding 30 V.

High voltage — any voltage exceeding 750 V.

Low voltage — any voltage exceeding 30 V but not exceeding 750 V.

Relevant Legislation

Occupational Health and Safety Act, 1990. 2018 Ontario Electrical Safety Code (OESC)

Related Policies, Procedures and Documents

CSA Z462-18 CSA Z460-05

Revision History

Revision No.	Revision Date (M,Y)	Summary of Change
00	May, 2015	N/A
01	October, 2019	Format
02	February, 2020	Updated definitions based on current OESC, Z462 and Z460