Alberta Municipal Affairs  Electrical Safety Codes Officers

• Provincial Electrical Administrator
  – Clarence Cormier (Edmonton)

• Electrical Technical Advisor
  – Bob Hall (Edmonton)

• Electrical Team Lead
  – Kevin Glubrecht (Red Deer)

• Electrical Technical Advisor
  – Cameron Doram (Red Deer)

• Electrical Technical Advisor
  – David Phillips (Edmonton)

• Electrical Technical Advisor
  – Gregg Marshall (Calgary)

• Partnership Support Officer
  – Steve Eagles (Red Deer)
Staying Current in the Electrical Loop
How to Stay Current in the Electrical Industry

• IAEI - International Association of Electrical Inspectors
  http://www.iaei.org/

• EIAA - Electrical Inspectors Association Alberta
  https://www.eiaa.ca/

• Solar Energy Society of Alberta
  http://www.solaralberta.ca/

• ECAA - Electrical Contractors Association
  http://www.ecaa.ab.ca/

• Contact City / town inspections and permitting department – local Authority Having Jurisdiction (AHJ)
  http://www.municipalaffairs.alberta.ca/permits
How to Stay Current in the Electrical Industry Cont.

- Alberta Municipal Affairs
  http://www.municipalaffairs.alberta.ca/
  Call Center: 1.866.421.6929
  Email safety.services@gov.ab.ca

- Safety Codes Council  http://www.safetycodes.ab.ca/
EIAA MISSION STATEMENT

• The Electrical Inspectors Association of Alberta will promote the uniform understanding and application of the Rules and Regulations adopted under the Safety Codes Act. This shall be done without bias and with fairness. We will assist in the formulation of standards, technical, professional knowledge and procedures upon well-grounded information, in achieving safe electrical installations, in the interest of safety, to life and property.

• How to get involved: https://www.eiaa.ca/
Safety Codes Act

Responsibilities
The Safety Codes Act established a unifying administration to ten safety disciplines with each have their own safety codes to keep the public safe in the places they live, work and play.

For more information on a particular discipline, click one of the links below:

- Building
- Fire
- Electrical
- Gas (Natural and Propane)
- Plumbing
- Private Sewage
- Boilers and Pressure Vessels
- Elevators
- Amusement Rides
- Passenger Ropeways
Owners, care and control

5 The owner of any thing, process or activity to which this Act applies shall ensure that it meets the requirements of this Act, that the thing is maintained as required by the regulations and that when the process or activity is undertaken it is done in a safe manner.

1991 cS-0.5 s5

Design duties

6 A person who creates, alters, has care and control of or owns a design or offers a design for use by others shall ensure that the design complies with this Act and that it is submitted for review or registered if required by this Act, and if the design is deregistered, the person shall provide notice of its deregistration in accordance with the regulations.

1991 cS-0.5 s6
Safety Codes Act Cont.

Manufacturers’ duties
7 A person who manufactures any thing or undertakes a process or activity to which this Act applies shall ensure that the thing, the process or the activity complies with this Act.

1991 cS-0.5 s7

Contractors’ duties
8 A contractor who undertakes construction, operation or maintenance of or builds or installs any thing to which this Act applies shall ensure that this Act is complied with.

1991 cS-0.5 s8

Vendors’ duties
9(1) A person who is a vendor in the ordinary course of business, other than as an employee or an agent, shall not advertise, display or offer for sale, for lease or for other disposal, or sell, lease or otherwise dispose of, any thing to which this Act applies unless that thing complies with this Act.

(2) A person who sells, leases or otherwise disposes of a thing referred to in subsection (1) shall provide any warnings or instructions required by this Act.

(3) No person shall advertise, display or offer for sale, for lease or for other disposal, or sell, lease or otherwise dispose of, any thing that is prohibited from being sold by the regulations.

1991 cS-0.5 s9
Electrical Code

New Electrical Codes Already In Force Under the Regulation
Electrical Code
NOTICE

ELECTRICAL CODE REGULATION

This notice is intended for all Albertans who reference the Electrical Code Regulation.

Codes in Force under the Regulation

Effective as of January 1, 2016, the Electrical Code Regulation was amended by Alberta Regulation 125/2015 to facilitate automatic code adoption. Generally, electrical codes will now come into force one year after the month of their publication, unless otherwise prescribed by the Minister. The first such code automatically adopted under the amended regulation will be the Alberta Electrical Utility Code.

Effective May 1, 2017, the following codes will be in force as per the Electrical Code Regulation:

- CSA-C22.1-15 – Canadian Electrical Code, Part 1 – This code provides the minimum safety standards for the installation and maintenance of electrical equipment.
- Code for Electrical Installations at Oil and Gas Facilities – 6th Edition, 2015 – This code applies to electrical installations used in the search, transmission or production of oil, natural gas and related hydrocarbons, and it provides area classification guidelines.

Information on Purchasing the Codes

The Canadian Electrical Code may be purchased directly from the Canadian Standards Association at www.shop.csa.ca, or from applicable electrical wholesalers and post-secondary institutions.

The Code for Electrical Installations at Oil and Gas Facilities and the Alberta Electrical Utility Code is available for purchase from the Alberta Queen’s Printer at www.qp.alberta.ca.

The Electrical Code Regulation 209/2006, with amendments up to and including Alberta Regulation 126/2015, is available for purchase or download from the Alberta Queen’s Printer at www.qp.alberta.ca.

May 1, 2017

For more information, please call 1-866-421-6926, or visit www.municipalaffairs.alberta.ca
New Electrical Code

- Codes can be ordered online from CSA at: http://shop.csa.ca/
New Electrical Code

• The Alberta Electric Utility Code is published and it was announced September 1, 2016. A copy can be purchased from the Alberta Queens Printer.

• The date the code will come into effect according to section 65 in the Safety Codes Act and the new automatic adoption policy will be May 1, 2017. The 2015 overhead and underground standards will also apply as they are referenced in the 5th edition of the AEUC.
STANDATA’S

WHERE’S MY ELECTRIC?
WHERE’S MY PLANS?
WHERE’S MY MUM?
What is a STANDATA?

- Electrical STANDATA, developed jointly by Alberta Municipal Affairs and the Safety Codes Council. These information bulletins contain interpretations, clarifications, recommended practices or province-wide variances on Codes and Standards matters related to the Safety Codes Act.

- STANDATA is a living document that is constantly changing. It is recommended to subscribe.
How do you receive STANDATA’s?

• To receive STANDATA notifications, please go to: http://municipalaffairs.alberta.ca/am_list_subscription_services.cfm and complete the posted subscription form.

• Once the form is submitted you will be automatically notified when new STANDATA or other related information is posted on the Safety Services site.

• Links to currently posted STANDATAAs can be viewed at: http://www.municipalaffairs.alberta.ca/cp_index.cfm
How to Subscribe for an Electrical STANDATA:

• Go to the website: http://www.municipalaffairs.alberta.ca/1840
STANDATA’S Cont.

- Select the discipline you are wanting to subscribe to [http://www.municipalaffairs.alberta.ca/cp_gas](http://www.municipalaffairs.alberta.ca/cp_gas)
STANDATA’S Cont.

- Fill out the required information
- Click subscribe when completed
  [http://www.municipalaffairs.alberta.ca/am_list_subscription_services](http://www.municipalaffairs.alberta.ca/am_list_subscription_services)
Questions
Electrical Equipment manufactured or built in Alberta

Question

• Is a permit required to build the product in Alberta if the product is to be sold outside Alberta?

STANDATA/Electrical Code Regulation

– Section 2 - Electrical Systems Equipment

• (2) No person shall manufacture, install, sell or offer for sale any equipment related to electrical systems for use in Alberta unless the equipment has been
  – (a) certified by a certification body in accordance with the certification body’s terms of accreditation with Standards Council of Canada, or
  – (b) inspected by an inspection body in accordance with the inspection body’s terms of accreditation with Standards Council of Canada
PERMIT REGULATION

• Exemptions
  
  2 This Regulation does not apply to the following:
  
  a) an accredited corporation operating within the scope of its terms of accreditation;
  
  b) equipment and materials regulated under the Elevating Devices, Passenger Ropeways and Amusement Rides Permit Regulation (AR 28/2012);
  
  c) equipment, materials and systems regulated under the Pressure Equipment Safety Regulation (AR 49/2006). AR 204/2007 s2;17/2015

• Permit required
  
  3 (1) Subject to subsection (2), a person shall not start any undertaking for which a permit is required under this Regulation unless a permit has been issued.
Answer

• An SCO could ask the person(s) manufacturing the product for a proof of sale. This would indicate and prove the product is intended to be sold/used outside of Alberta.

• If a receipt can not be produced, then all applicable codes and standards in Alberta would have to be followed. It is the responsibility of the contractor, or accredited corporation to provide this information upon request. It is also advised these parties and local AHJ have a working relationship. This working relationship will aid in ensuring there is no confusion with this process.

• For further information on this item contact Alberta Municipal Affairs at 1-866-421-6929 or email safety.services@gov.ab.ca and ask to speak to our partnership expert David Ramsay.
Bathroom Luminaires

Question

• Are hanging luminaires permitted to be installed over a bathtub? What code rule allows or doesn’t allow this installation?

Code rule:

Section 0 Definitions

– **Damp location** — an exterior or interior location that is normally or periodically subject to condensation of moisture in, on, or adjacent to electrical equipment and includes partially protected locations under canopies, marquees, roofed open porches, and similar locations.

– **Wet location** — a location in which liquids may drip, splash, or flow on or against electrical equipment.

30-318 *Luminaires in damp or wet locations*

1) Luminaires installed in damp or wet locations shall be approved for such locations and be so marked.

2) Luminaires suitable for use in wet locations shall be permitted to be used in damp locations as well.
30-606 Lampholders in wet or damp locations

1) Where lampholders are installed in wet or damp locations, they shall be of the weatherproof type.

**Building Code (reference only, please consult with a Building Duty Officer for further information)**

- The following is for protection of the walls around the bathtub and may help in determining “wet location”

9.29.2. Waterproof Wall Finish

- 9.29.2.1. Where Required
  1) Waterproof finish shall be provided to a height of not less than
     a) 1.8 m above the floor in shower stalls,
     b) 1.2 m above the rims of bathtubs equipped with showers, and
     c) 400 mm above the rim of bathtubs not equipped with showers
https://www.youtube.com/watch?v=r3oHNRY6JvE
(Need an internet connection to work, but could change your mind)

Answer

• The fixture shall be approved for location and if installed in wet or damp locations, they shall be of the weatherproof type as per 30-606 and other rules such as GFCI protection may apply
Question
• Is a NuTek outlet box considered a Rigid a PVC outlet box?

Code Rules
30-302 Supports
4) Where the weight of a luminaire does not exceed 23 kg, the luminaire shall be permitted to be supported by a ceiling outlet box attached directly to the building structure or by a ceiling outlet box attached to a bar hanger.

6) Rigid PVC boxes shall not be used for the support of luminaires unless they are marked as being suitable for the purpose.
Certificate of Compliance

Project: 70015879                         Date Issued: December 24, 2014
Issued to: Thomas & Berth Limited
700 Thomas Ave
St-Jean-sur-Richelieu, QC J2X 2M9
Canada
Attention: Mr. Pierre Aubin

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Michael Chung
Issued by: Michael Chung

PRODUCTS
CLASS: 4411 01: OUTLET BOXES AND FITTINGS - Boxes
Non-metallic outlet boxes with integral clamps:
Cat Nos. WOCT.N, W.SW, WSW, FWSW for use with non-metallic sheathed cables Nos 14/2, 14/3, 12/2, 12/3, 10/2, 10/3 AWG.
Cat Nos. W-CT, W-CT2, W-CT3, 2-FWSW, 3-FWSW, 3-FWSW for use with non-metallic sheathed cables Nos 14/2, 14/3, 12/2, 12/3 AWG.
Cat Nos. W-RD, W-RD for use with non-metallic sheathed cable Nos 10/3, 8/3 AWG.
Cat Nos. WSWBX, FWSWFX for use with armored cables Nos 14/2, 14/3, 12/2, 12/3 AWG.
Cat Nos. 4-WSW, 4-FWSW for use with non-metallic sheathed cables Nos 14/2, 14/3, 12/2, 12/3 AWG.
NuTek outlet box Cont.

CLASS 4411 B1 - OUTLET BOXES AND FITTINGS - Boxes - Certified to US Standards
Non-metallic outlet boxes with integral clamps:
Class Nos. W-CT, W-CSR, W-CSR for use with non-metallic sheathed cables Nos. 14/2, 14/3, 12/2, 12/3, 10/2, 10/3 AWG.
Class Nos. W-CT, W-CSR, W-CSR for use with non-metallic sheathed cables Nos. 14/2, 14/3, 12/2, 12/3, 10/2, 10/3 AWG.
Class Nos. W-CT, W-CSR, W-CSR for use with non-metallic sheathed cables Nos. 14/2, 14/3, 12/2, 12/3, 10/2, 10/3 AWG.
Class Nos. W-CT, W-CSR, W-CSR for use with non-metallic sheathed cables Nos. 14/2, 14/3, 12/2, 12/3, 10/2, 10/3 AWG.

APPLICABLE REQUIREMENTS
CSA Std. C22.2 No. 18.2 - Non-metallic Outlet Boxes
UL Std. 514C - Non-metallic Outlet Boxes, Flush-Device Boxes and Covers.
Answer

• NuTek outlet boxes are not considered Rigid PVC as per manufacturer’s specifications. They are classified as non-metallic outlet boxes as per CSA certificate of compliance. Therefore 30-302(6) does not apply to NuTek brand non-metallic outlet box;

• 30-302(4) might be useful to installers and is provided as a courtesy.
In-situ Modification

Question(s)

• What are the requirements when converting fluorescent fixtures to LED fixtures?
• Are Permits required?
• Are the fixtures required to be re-certified?

• STANDATA

• Retrofitting Luminaires for Energy Conservation or Similar Programs
  – As indicated above, repairs or alterations to certified equipment, if not done properly, may void certification.

  – REMOVED FOR MODIFICATION When all luminaires are removed from the ceiling and modified either on site or at a remote location, these locations can be termed a 'defined factory location'.
In-situ Modification Cont.

- **IN-SITU MODIFICATION** It may be more practicable to modify the luminaires without removing them from the ceiling.

- A suitable label showing the following information is to be placed on each luminaire:
  
  a) Identification of the party responsible for the modifications  
  b) New Electrical Ratings  
  c) New Bulb Type and Size (if applicable)  
  d) Date Code  
  e) Reference to the Certification Body’s File Number
In-situ Modification Cont.

• Permit Regulation
  
  ❖ Electrical Discipline

  Electrical permit

  • 8 (1) A permit in the electrical discipline is required to install, alter or add to an electrical system.

  • (2) Despite subsection (1), a permit is not required for the following:

    » (e) the replacement of electrical equipment with units of a similar type if the replacement is made for the purpose of maintaining the system and does not modify the ratings or characteristics of the electrical installation.

• It is important to note the permit issuer can set additional requirements as explained in Part 2 - 22 of the Permit Regulation. For this reason you must always consult with the local AHJ.
In-situ Modification Cont.

Answer

• Converting a luminaire from fluorescent to LED is known as in-situ modification. Contractors should always contact the local AHJ before performing or quoting jobs to find out additional requirements that are specific to each area. In addition to the job requiring a permit, the fixtures may be required to be recertified and this is determined by the C.B
  – Example 1: Replacing existing fluorescent tubes with LED tubes that utilize the existing ballast, no re-wiring. Contact your local AHJ, as permitting requirements vary from municipality to municipality. Fixture certification is a different matter handled by C.B’s/I.B’s.
    • In the above scenario it is Municipal Affairs opinion the fixture would not require re-certification or permits.

  – Example 2: Removing the ballast and connecting the tombstone directly to line voltage. Contact your local AHJ, as permitting requirements vary from municipality to municipality. Fixture certification is a different matter handled by C.B’s/I.B’s.
    • In the above scenario it is Municipal Affairs opinion the fixture would require re-certification and permits.
In-situ Modification Cont.

Example 3: Using an approved kit to modify the fluorescent to use LED lamps. Contact your local AHJ, as permitting requirements vary from municipality to municipality. Fixture certification is a different matter handled by C.B’s/I.B’s.

- In the above scenario it is Municipal Affairs opinion the fixture would require permits, however because an approved kit was used and compatible with the existing fixture re-certification most likely not required.

The above examples are Municipal Affairs opinions only. In all cases of in-situ modification contact your local AHJ, C.B, and I.B/s to ensure all requirements are met.
Cannabis Extraction Facilities

These slides are to get you thinking of the near future if the federal government goes ahead with Marijuana Legalization.

Question
• What electrical requirements will be required in the facilities?
• Zoning?

Recommendation
• Currently we have NEC for reference. Based on the Class I Division I location, all equipment in the extraction room must be rated for use in Class I Division I locations. Depending on the type of exhaust system provided, this could be the entire room or the area inside of a hood or booth.
Cannabis Extraction Facilities Cont.

• Comments

• Questions

• Thoughts

• Concerns
Wireless Switches

Question
• Does the CE Code permit the typical wired wall switch be eliminated and replaced with a wireless switch?
Wireless Switches Cont.

**Code Rules**

- **30-500 Lighting equipment at entrances (see Appendix G)**
  - An exterior luminaire controlled by a **wall switch** located within the building shall be provided at every entrance to buildings of residential occupancy.

- **30-502 Luminaires in dwelling units (see Appendix G)**
  - (1) Except as provided in Subrule (2), a luminaire controlled by a **wall switch** shall be provided in kitchens, bedrooms, living rooms, utility rooms, laundry rooms, dining rooms, bathrooms, water closet rooms, vestibules, and hallways in dwelling units.
  - (2) Where a receptacle controlled by a **wall switch** is provided in bedrooms or living rooms, such rooms shall not be required to conform to the requirements in Subrule (1).
• **30-504 Stairways (see Appendix G)**
  – (1) Every stairway shall be lighted.
  – (2) Except as provided for in Subrule (3), three-way *wall switches* located at the head and foot of every stairway shall be provided to control at least one luminaire for stairways with four or more risers in dwelling units.
  – (3) The stairway lighting for basements that do not contain finished space nor lead to an outside entrance or built-in garage, and that serve not more than one dwelling unit, shall be permitted to be controlled by a single switch located at the head of the stairs.

• **30-506 Basements (see Appendix G)**
  – (1) A luminaire shall be provided for each 30 m2 or fraction thereof of floor area in unfinished basements.
  – (2) The luminaire required in Subrule (1) that is located nearest the stairs shall be controlled by a *wall switch* located at the head of the stairs.
Wireless Switches Cont.

- 30-510 Garages and carports (see Appendix G)
  - (1) A luminaire shall be provided for an attached, built-in, or detached garage or carport.
  - (2) Except as provided in Subrule (3), luminaires required in Subrule (1) shall be controlled by a wall switch near the doorway.
  - (3) Where the luminaire required in Subrule (1) is ceiling-mounted above an area not normally occupied by a parked car, or is wall-mounted, a luminaire with a built-in switch accessible to an adult of average height shall be permitted to be used.
  - (4) Where a carport is lighted by a luminaire at the entrance to a dwelling unit, additional carport lighting shall not be required.
Answer - This item was reviewed by the ESC (Electrical Sub Council) for their input in 2015/16. It is currently being reviewed again in 2017 and it will be decided if a STADATA is warranted to allow their use.

• Municipal Affairs opinion is that although these devices are approved equipment, they do not meet the intent of Rules 30-500 – 30-510 as a minimum prescriptive requirement.
  – These devices could be used in addition to the requirements of Rules 30-500 – 30-510, however, not as a replacement.

• Wireless “switches” are transmitters. These “switches” (transmitters) are also relocatable, therefore the CE Code requirement of where switches are to be located cannot be considered enforceable. Therefore they do not meet the minimum requirements as stated in the code.

• Stay tuned . . .
Question

• Is there a regulatory expectation of how ampacities of 5KV + Shield Cables will be determined?

Code Rules

• **4-004 Ampacity of wires and cables**
  
  – (1) The maximum current that a **copper** conductor of a given size and insulation is permitted to carry shall be as follows:
    
    • (g) shielded cables rated 5 kV to 46 kV in sizes No. 2 AWG to 1000 kcmil, as specified in Tables D17A to D17N for the configurations described therein and the conditions described in Table D17, or as calculated by the IEEE 835 calculation method.
  
  – (2) The maximum current that an **aluminum** conductor of a given size and insulation is permitted to carry shall be as follows:
    
    • (g) shielded cables rated 5 kV to 46 kV in sizes No. 2 AWG to 1000 kcmil, as specified in Tables D17A to D17N for the configurations described therein and the conditions described in Table D17, or as calculated by the IEEE 835 calculation method.
Answer

• IEEE 835 could be used, a computer program exists that uses this standard. Variables are entered including; elevation, temperature and other criteria from the tables. Information is entered and a number is generated regarding the required ampacity.

• Table D17A to D17N could be used if all conditions of use for the tables are met.

• Both could be accepted. It is worthy to note on pg 575 in the CE Code and in most locations, elevations in Alberta are above the 300 m requirement as stated in Table D17 which states the conditions of use for Tables D17A to D17N.
EMT Luminaire Support

Question
• Can EMT be used as a luminaire support?

Code Rules
• CE Code 2015
  – 12-3012 Boxes, cabinets, and fitting supports
    1) Boxes, cabinets, and fittings shall be fastened securely in place.
    2) Boxes and fittings having a volume of less than 1640 mL shall be permitted to be attached to a firmly secured exposed raceway by threading or other equally substantial means.
EMT Luminaire Support Cont.

- **12-1110 Support of luminaires**
  - Rigid PVC boxes shall not be used for the support of luminaires unless they are marked as being suitable for the purpose.

- **30-302 Supports**
  1) Every luminaire shall be securely supported.
  2) Where a luminaire weighs more than 2.7 kg or exceeds 400 mm in any dimension, it shall not be supported by the screwshell of the lampholder.
  3) Where the weight of a luminaire does not exceed 13 kg, the luminaire shall be permitted to be supported by a wall outlet box attached directly to the building structure or by a wall outlet box attached to a bar hanger.
  4) Where the weight of a luminaire does not exceed 23 kg, the luminaire shall be permitted to be supported by a ceiling outlet box attached directly to the building structure or by a ceiling outlet box attached to a bar hanger.
5) Where the weight of a luminaire prohibits the installation methods specified in Subrule (3) or (4), the luminaire shall be supported
   a) independently of the outlet box; or
   b) by a fixture hanger provided with an integral outlet box suitable for the purpose.

6) Rigid PVC boxes shall not be used for the support of luminaires unless they are marked as being suitable for the purpose.
Answer

• 2-024, 30-302(5)(b) state equipment is to be used for its specific purpose. If the contractor can prove by showing an ESCO the manufacturers specifications and prove the connector / coupling / EMT can support the weight of the fixture being installed, the installation could be accepted. If this information cannot be supplied, the installation should not be accepted.

• Threaded equipment exists; therefore threaded pipe is one method that could be used to suspend a fixture.

• It is worthy of note and in such cases, the responsibility should be put on the installer to demonstrate the equipment is suitable for the purpose. The code is written in the permissive, while some rules tell us what not to do, generally the code outlines what is acceptable, not what is unacceptable.
EMT Luminaire Support Cont.

- Could be Acceptable
• Not Acceptable

12-3004 Terminal fittings
(3) The fittings shall not be used at outlets for luminaires.
• May not be Acceptable
Residential Receptacles

Question
• Is an outdoor receptacle located on a 3rd story balcony required to be on a dedicated branch circuit?

Code Rule
• Canadian Oxford Dictionary
  – Porch — a covered shelter projecting in front of the entrance of a building.
  – Balcony — a platform enclosed by a wall or balustrade on the outside of a building, with access from an upper-floor window or door

• CE Code 2015
  Definitions
  – Dwelling unit — one or more rooms for the use of one or more persons as a housekeeping unit with cooking, eating, living, and sleeping facilities.
  – Single dwelling — a dwelling unit consisting of a detached house, one unit of row housing, or one unit of a semi-detached, duplex, triplex, or quadruplex house.
Residential Receptacles Cont.

- **Receptacles**

  **26-712 Receptacles for dwelling units**
  - This Rule applies to receptacles for dwelling units (including single dwellings) as follows:
    - (a) except as otherwise provided for in this Code, in dwelling units duplex receptacles shall be installed in the finished walls of every room or area, other than bathrooms, hallways, laundry rooms, water closet rooms, utility rooms, or closets, so that no point along the floor line of any usable wall space is more than 1.8 m horizontally from a receptacle in that or an adjoining space, such distance being measured along the floor line of the wall spaces involved;
    - (b) at least one duplex receptacle shall be provided in each area, such as a balcony or porch, that is not classified as a finished room or area in accordance with Item (a)

  **26-714 Receptacles for single dwellings**
  - This Rule applies to receptacles for single dwellings only as follows:
    - (a) for each single dwelling, at least one duplex receptacle shall be installed outdoors so as to be readily accessible from ground or grade level for the use of appliances that need to be used outdoors;
Residential Receptacles Cont.

26-726 Branch circuits for single dwellings

- This Rule applies to branch circuits for single dwellings only as follows:
  - (a) outdoor receptacles readily accessible from ground level and installed in accordance with Rule 26-714(a) shall be supplied from at least one branch circuit dedicated for those outdoor receptacles

Answer

- The balcony receptacle could be on with a general house circuit due to being inaccessible from ground level.

- **Example:** If you have a deck accessible off the ground, and the deck railing is built in such a way you could reach through the railing to access the receptacle.
- In the above example it is our opinion this receptacle could be considered as being readily accessible from ground level. Rule 26-726 could apply.
Hotels/Motels with Cooking Facilities

Question

- Is a hotel room with cooking facilities considered a dwelling unit? Could the following apply: 26-710, 26-712, 26-720, and 26-724?

Canadian Oxford Dictionary

- **Hotel** — an establishment providing accommodation, meals, and other services for travellers and tourists.
- **Motel** — a roadside hotel designed primarily for motorists, typically having the rooms arranged in low blocks with parking directly outside.
Hotels/Motels with Cooking Facilities Cont.

**CE Code**

- **Definitions**
  - *Dwelling unit* — one or more rooms for the use of one or more persons as a housekeeping unit with cooking, eating, living, and sleeping facilities.

**Answer:**

- A hotel/motel room with cooking facilities could fit the definition of a dwelling unit, therefore rules regarding receptacle locations for dwelling units could apply.

- With added cooking facilities in a hotel/motel room, considerations should be made when performing the service calculation.

- **Appendix B**
  - **Rule 8-208**
    - For the purpose of this Rule, a motel unit with cooking facilities may be considered an apartment.
Grounding Electrodes

Question

• When installing a ground plate in frozen ground, what should be considered to ensure an effective ground?

CE Code 2015

• Definitions
  – **Grounding electrode** — a buried metal water-piping system or metal object or device buried in, or driven into, the ground to which a grounding conductor is electrically and mechanically connected.
• Code Rule

Grounding electrodes

10-700 Grounding electrodes (see Appendix B)

2) Manufactured grounding electrodes shall
b) in the case of a plate electrode, be
   » (i) in direct contact with exterior soil at no less than 600 mm below grade level; or
   » (ii) encased within the bottom 50 mm of a concrete foundation footing in direct contact with the earth at not less than 600 mm below finished grade.

5) Where a local condition such as rock or permafrost prevents a rod or a plate grounding electrode from being installed at the required burial depth, a lesser acceptable depth shall be permitted.
Answer

• The CE Code 2015 is clear on how plate electrodes are to be installed. If the SCO is of the opinion an effective ground can not be established they should request a test be done to ensure continuity.

• If this test fails a better grounding system would be required and possible engineer involvement.

• Options exist; Many different methods are available in industry to achieve effective grounding, even in frozen ground.
Grounding Electrodes Cont.

Canadian Electrical Code Handbook reference

Rod electrode driven into the earth
- At least 3 m
- At least two rods

Plate electrode direct buried in the earth
- Minimum 600 mm below finished grade level
- 0.2 m² total surface area

Plate electrode having 0.4 m² of surface area placed within the bottom 50 mm of a concrete footing
- Minimum 600 mm
- Attachment of grounding conductor to the plate

Plate electrode in a concrete foundation footing
- Concrete footing installed a minimum of 600 mm below finished grade level
# AFCI Summary Sheet in dwelling units for 15A/20A Receptacles

<table>
<thead>
<tr>
<th>AFCI protection required</th>
<th>AFCI protection NOT required</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>15A/20A receptacles</strong></td>
<td></td>
</tr>
<tr>
<td>- Washer/Microwave/Hallway</td>
<td>- Refrigerator/Freezers and located in Kitchen 26-712(d)(i)</td>
</tr>
<tr>
<td>- Out door receptacles attached to dwelling</td>
<td>- Receptacle located within 1 m of a wash basin, in a bathroom or washroom, 26-710(f) (see STANDATA on 26-724(f)(i))</td>
</tr>
<tr>
<td>- Receptacle <em>not</em> located within 1 m of a wash basin, in a bathroom or washroom, 26-710(f) (see STANDATA on 26-724(f)(i))</td>
<td>- Detached garage/carport (does not fit definition of dwelling unit)</td>
</tr>
<tr>
<td>- Family room / Living Room/Bedrooms</td>
<td>- Sump and required to be a single receptacle 26-724(f)(ii)(A)</td>
</tr>
<tr>
<td>- Undeveloped basement</td>
<td>- Out door receptacle not attached to dwelling, could include a sewer receptacle (i.e. on a post and not attached structurally)</td>
</tr>
<tr>
<td>- Attached garage/car port</td>
<td>- Kitchen Counter 26-712(d)(v)</td>
</tr>
<tr>
<td>- Built in appliances (could be dishwasher or cappuccino maker)</td>
<td>- Island/peninsula 26-712(d)(iv)</td>
</tr>
<tr>
<td>- Utility room/Hot water tank</td>
<td>- Gas range adapter - a device fed by a 40A 220v branch circuit.</td>
</tr>
<tr>
<td>- Sewer receptacle (i.e. attached to dwelling)</td>
<td></td>
</tr>
</tbody>
</table>
AFCI Protection Required

Question:

• Are fridges, freezers required to be AFCI protected?

Code Rule:

26-712 Receptacles for dwelling units
   (d) in dwelling units there shall be installed in each kitchen
   (i) one receptacle for each refrigerator;

26-724 Branch circuits for dwelling units (see Appendix B)
   (f) each branch circuit supplying 125v receptacles rated 20A or
   less shall be protected by a combination-type arc-fault circuit
   interrupter, except for branch circuits supplying
   (i) receptacles installed in accordance with
       (B) Rule 26-712(d)((i)

Answer:

• If located in the kitchen AFCI not required, if located outside the kitchen
  AFCI required. Blue prints, and designers will define a kitchen.
Question:

• Does a detached garage fit the requirements under 26-724 requiring AFCI protection?

Code Rule:

26-724 Branch circuits for dwelling units (see Appendix B)This Rule applies to branch circuits for dwelling units (including single dwellings) as follows:…

Definitions:

• **Dwelling Unit** — one or more rooms for the use of one or more persons as a housekeeping unit with cooking, eating, living, and sleeping facilities.

• **Single Dwelling** — a dwelling unit consisting of a detached house, one unit of row housing, or one unit of a semi-detached, duplex, triplex, or quadruplex house
Answer:

- Dwelling unit and single dwelling is a defined term in the Canadian Electrical Code, Part I this is the definition that must be used when interpreting this rule.

- Municipal Affairs Opinion
  - an attached garage is attached structurally to the dwelling. AFCI protection is required.
  - Detached garage – AFCI Not required
Question:

• If a house or duplex has an outside combination meter/service disconnect, can table 39 be used to size the conductors that run between the disconnect and the panelboard?

• We would NOT consider a SFD that has an exterior disconnect similar to “row housing of apartments and similar buildings” as stated in table 39, and 4-004.

• **Single dwelling** — a dwelling unit consisting of a detached house, one unit of row housing, or one unit of a semi-detached, duplex, triplex, or quadruplex house.
Table 39

• CE Code 2015
  – **4-004 Ampacity of wires and cables** (see Appendix B)
    • (1)…..
    • (23) Notwithstanding Rule 4-006, 3-wire 120/240 V and 120/208 V service conductors for single dwellings and feeder conductors supplying single dwelling units of row housing of apartment and similar buildings and terminating on equipment having a conductor termination temperature of not less than 75 °C shall be permitted to be sized in accordance with Table 39.

• Example
  – If a house or duplex has an outside service with a combination meter/service disconnect, the conductors from the load side of that outside service breaker to the inside panelboard technically are feeders based on the definition of feeder.

  – Selecting conductors from T39 is not suitable to run as that feeder to the inside panelboard.

  – Currently you must choose a cable from table 2 or 4 and the 75 degree ampacity column.

  – Based on a 100amp service and if a meter disconnect did not exist, it would be permissible to select a #2 aluminum from table 39. In the above example, and because a disconnect exists the use of table 39 would not be permitted. Should SCO’s be of the opinion it is reasonable to allow a #2 aluminum (in the above example of a 100amp service) under these conditions, a provincial variance would be required, and they are encouraged to fill out a submission form and send to the ESC.
Table 39

Safety Codes Council

Alberta Submission to the Canadian Electrical Code
Submission such as: new rule, amendment to an existing rule, review, or interpretation

Date:

To: Chair, Electrical Sub-Council
   Safety Codes Council, 1000, 10665 Jasper Ave, Edmonton, AB, T5J3S9

From: ____________________________

Rule #: __________________________

Request: __________________________

Reason: __________________________
Question:
Is it acceptable to install a “hot splitter” between the Utility distribution equipment and the service equipment?

• CE Code 2015 Definitions
  – Service, supply — any one set of conductors run by a supply authority from its mains to a consumer’s service.
  – Service, consumer’s — all that portion of the consumer’s installation from the service box or its equivalent up to and including the point at which the supply authority makes connection.
  – Service box — an approved assembly consisting of an enclosure that can be locked or sealed, containing either fuses and a switch, or a circuit breaker, and of such design that it is possible to operate either the switch or circuit breaker to the open position by manual means when the box is closed (see Appendix B).
  – Feeder — any portion of an electrical circuit between the service box or other source of supply and the branch circuit overcurrent devices.
• **CE Code 2015 Rules**
  
  – **14-100 Overcurrent protection of conductors** *(see Appendix B)*
  
  – Each ungrounded conductor shall be protected by an overcurrent device at the point where it receives its supply of current and at each point where the size of conductor is decreased, except that such protection shall be **permitted to be omitted** in each of the following cases:

  – (g) where the smaller conductor
    
    • (i) is supplied by a circuit at not more than 750 V;
    • (ii) is supplied from an overhead or underground circuit and is run overhead or underground except where it enters a building;
    • (iii) is installed in accordance with the requirements of Section 6; and
    • (iv) terminates in service equipment in accordance with Section 6.
Consumer Service

• **CE Code 2015 Rules**
  – **6-310 Use of joints in consumer’s service neutral conductors**
    
    • *The neutral or identified conductor of a consumer’s service shall be without joints* between the point of connection and the service box or equivalent consumer’s service equipment, except that a joint shall be permitted where it is made

    a) by means of a clamp or bolted connection in a meter mounting device or at the service head if exposed wiring is used in accordance with Rule 6-302(2);

    b) by a joint underground in accordance with Rule 12-112(5), where such a joint is required to repair damage to the original installation or to accommodate a pole or service relocation; or

    c) where a cable transition is made to meet the requirements of Rule 4-006.
Consumer Service

• **CE Code 2015 Rules**
  
  **6-300 Installation of underground consumer’s service conductors** *(see Appendix I)*

  1. Except where a deviation has been allowed in accordance with Rule 2-030, consumer’s service conductors that are located underground shall be
   
   a) installed in rigid conduit, or electrical non-metallic tubing permitted only for the underground portion of the tubing run, and be of a type for use in wet locations in accordance with Rule 4-008(1); or
   
   b) a single- or multi-conductor cable for service entrance use below ground in accordance with Rule 4-008(1), provided that
      
      i. the installation is in accordance with Rule 12-012; and
      
      ii. the cable is **without splice or joint** except
         
         A. in metering equipment located on the line side of the service box; or
         
         B. where a cable transition is made to meet the requirements of Rule 4-006.

  2. Notwithstanding Subrule (1)(b)(ii), joints in the underground portion of a consumer’s service shall be permitted where such joints are made in accordance with Rule 12-112(5) and joints are required to repair damage to the original installation or to accommodate a pole or service relocation.
Answer:

A “hot splitter” in the above example could be accepted by the local AHJ, provided the requirements of 14-100(g) are met.
Consumer Service

Not allowed in a new installation
Consumer Service
Allowable Options

Diagram:
- Cable / Conduit To Building
- 100 Amp Fusible Disconnect
- 100 Amp Splitter
- Cable / Conduit To Building
General Discussion Items

- Gas line and Electrical Cables in the same trench
  - Side by side or one on top of the other?

- Non-Certified Products
  - What are you doing in your area?
  - We receive quite a few calls regarding businesses selling or offering for sale non-certified products
  - Under your QMP, it most likely states it is the AHJ’s responsibility to follow up these enquiries. It may be a good idea to consult your QMP manager.

- Accessibility to Electrical Equipment
  - 2-122 Installation of electrical equipment (see Appendix G)
    - Electrical equipment shall be installed so as to ensure that after installation there is ready access to nameplates and access to parts requiring maintenance.
  - 2-312 Accessibility for maintenance (see Appendix G)
    - Passageways and working space around electrical equipment shall not be
The End

THANK YOU