Technical Interpretations for the 2024 Manitoba Electrical Code

The electrical technical interpretations (T.I.s) are clarifications of how the associated code rules are interpreted by the electrical authorities having jurisdiction in Manitoba.

Revision history:

Date	Section(s) Updated	Summary of Changes	Author	Owner
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June 19, 2026	22-104 A & 22-104 B 68-058 A & 68-058 B	Minor notation edits, addition of information bulletins for 68-058 A, and removal of 68-058 B.	Karen McRae	City of Winnipeg PPD & Manitoba Hydro

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Section 0
Object, scope, and definitions

0-1 Point of demarcation – Interface point between utility communication or community antenna distribution systems and customer systems

Section 0 Scope

The function of a communication or community antenna distribution utility ends at the point of demarcation as defined by the Canadian Radio Telecommunication Commission (CRTC). The point of demarcation is the physical point at which the utility's equipment and wiring ends and the customer's equipment and wiring begins. If located within the building, the point of demarcation shall be located as close as practicable to the point where the utility conductors enter the building.

0-2 Installation of wireless wall switch

Section 0 Definitions: Switch

Wireless switches with no physical wiring or local control will not be acceptable to satisfy the requirements of wall switches installed in accordance with the Manitoba Building Code (see T.I. 30-1). Such wireless switching shall be permitted as supplementary devices only.

Section 2
General Rules

2-1 Insulation and vapour barrier behind electrical equipment

Electrical equipment shall be installed to accommodate the vapour barrier and insulation requirements per Sections 9.25. and 9.36 and Part 5 of the Manitoba Building Code.

Penetrations of the air barrier by electrical equipment and wiring must be sealed, and the integrity of the air barrier maintained in a manner acceptable to the local building official. Information on acceptable methods is available from the local municipality.

2-004 A Electrical permit

Rule 2-004 Electrical permit

Generally, separate electrical residential permits are required for each civic address. Notwithstanding service conductors and dwelling unit panelboard feeders, electrical installations must be contained within the dwelling unit or the property it serves to which the permit was issued. Where practicable, feeders must be kept outside separately owned dwelling units they do not serve.

2-004 B Permit requirements

Rule 2-004 Electrical permit

For permit requirements in the City of Winnipeg, refer to the Winnipeg Electrical By-law. For permit requirements outside the City of Winnipeg, refer to Informative note - Section 25 Manitoba Hydro Act.

2-004 C Annual permits

Subrule 2-004 14) Electrical permit

For information on annual electrical permits, refer to Manitoba Hydro Informative note - Section 25 Manitoba Hydro Act or City of Winnipeg Electrical annual permits webpage.

2-004 D Replacement of defective fire alarm devices

Item 2-004 2) b) Electrical permit

1. An electrical permit is required for the installation of fire alarm equipment including equipment that is replaced in conjunction with a fire alarm control panel replacement.

2. No permit is required for work limited to the maintenance, service, or replacement of existing defective field device(s) as required by the Manitoba Fire Code if the following conditions are all met:
    - the work is performed by a CFAA-certified technician with an applicable Province of Manitoba electrician's licence,
    - the devices have been previously installed under an electrical permit,
    - the devices are connected to an existing fire alarm control panel,
    - no wiring modifications are being made, and
    - all required testing, verification, and documentation is completed.

2-022 Electrical upgrades to existing residential occupancies

Rule 2-022 Renovation of existing installations

For existing residential occupancies where electrical work is being performed in areas where smoke, carbon monoxide alarms or heat sensors are required, interconnected alarms must be installed in accordance with the Manitoba Building Code. In areas where interior wall or ceiling finishes are removed to accommodate electrical upgrades, the designated employee may require those areas to comply with current code.

2-024 A Breakers of differing manufacturers installed in panelboards

Rule 2-024 Use of approved equipment

Breakers to be installed in existing or new panelboards shall be approved for use in that panelboard. Manufacturer documentation must be supplied by the installer.

2-024 B Field modifications of electrical equipment

Rule 2-024 Use of approved equipment

Any field modification of electrical equipment voids the existing certification on the equipment (e.g.: drilling or tapping bus work or modifications to switchboards, panelboards, MCC's or other

equipment). The modified equipment shall be field evaluated and labelled by an organization accredited by the Standards Council of Canada.

2-024 C Approval of electrical equipment

Rule 2-024 Use of approved equipment

Under the Provisions of the *Electrician's Licence Act* of the Province of Manitoba, electrical equipment shall be approved before the equipment is used, sold, displayed, advertised, offered for sale or distributed in Manitoba except as specified herein.

A maximum of four contactors or relays installed in an approved electrical box (control box) would not be required to be approved as a control panel under The Electrician's Licence Act and the Manitoba Electrical Code, provided that:

a) The Ampere rating of the control box shall not exceed 20 Amps;
b) The control box must have a permanent nameplate installed stating the electrical characteristics as stipulated in the Manitoba Electrical Code;
c) The control box must have a schematic wiring diagram permanently installed in its interior;
d) There shall not be any other electrical equipment (such as control transformers, indicating lights or overload devices) installed in or on the control box;
e) The control box must be marked "WARNING: MORE THAN ONE LIVE CIRCUIT" if it is energized from more than one circuit and does not have a means for disconnecting all ungrounded conductors;
f) The control box shall only be installed in an ordinary location as stipulated in the Manitoba Electrical Code; and
g) The installation within the control box is performed by the holder of a valid Journeyperson Electrician or applicable Limited Electrician license as recognized under the Electrician's Licence Act of Manitoba.

2-024 D Electrical equipment disconnecting means

Rule 2-024 Use of approved equipment

All disconnecting means required by the Manitoba Electrical Code shall be field installed external to the equipment. All integral disconnecting means will only be considered acceptable when permitted in the Manitoba Electrical Code.

2-024 E Circuit breaker locking devices

Rule 2-024 Use of Approved Equipment

In addition to being approved by an Accredited Certification Organization, circuit breaker lock-off and lock-on devices must be identified with the type or catalogue number of the circuit breaker with which it may be used and shall also comply with the following:

a) Accommodate a padlock that will prevent the operation of the circuit breaker or switch with the padlock in place;
b) Not depend on the panel enclosure cover to retain the device in place;
c) Require the use of a tool for removal.

d) Not interfere with the intended operation of the circuit breaker or switch;
e) Ensure that the “on-off” marking for the circuit breaker or switch is clearly visible with the padlocking attachment in place;
f) Have the necessary mechanical strength to ensure reliable and positive mechanical performance;
g) Be permanently installed; and
h) Be tested to ensure it operates as intended.

When an approved circuit breaker lock-on or lock-off is required for an installation, it is recommended the breaker manufacturer be consulted for availability prior to the installation.

2-032 Smoke and water damage to circuit breakers

Rule 2-032 Damage and interference

CSA Audits and Investigations Department has advised inspection authorities that circuit breakers exposed to water or smoke damage, such as may be experienced in a flood or fire, may not operate under overload or fault conditions. Where circuit breakers have been so exposed they shall be replaced or undergo factory re-certification to ensure safe operation. Equipment taken out of service and deemed unsuitable for use should be destroyed in the presence of the electrical inspector or by the factory.

2-112 Mechanical protection of conductors installed in metal studs

Rule 2-112 Quality of work

For conductors/cables installed under Sections 12, 16, 54, 56 & 60, Rule 2-112 requires that care be taken to prevent damage. Grommets or other acceptable means shall be provided to prevent damage to conductors that are to be installed through metal studs.

2-126 Grouping of cables in insulated spaces

Rule 2-126 Use of thermal insulation

Item 2-126 1) a) requires the use of “special care” to assure safe conductor operating temperatures when heat dissipation is restricted by conductor/cable grouping in thermal insulation.

2-128 Firestopping

Rule 2-128 Fire spread

To delay the spread of fire within a building, certain walls, floors and ceilings are constructed as “fire separations” (See Note A). Rule 2-128 and Manitoba Building Code Article 3.1.9.1. require that precautions be taken to limit the spread of fire through fire separations where they are penetrated by electrical raceways, cables, or outlet boxes (See Note B).

Listed below are requirements for commonly encountered situations.

1. Where a fire separation is partly or wholly penetrated by an electrical raceway, cable or outlet box, the penetration shall be:

a. sealed by an approved fire stop system that complies with Manitoba Building Code Clause 3.1.9.1.(1)(a); or
b. cast in place.

2. Where a firewall (see Note C) is partly or wholly penetrated by an electrical raceway, cable or outlet box, the penetration shall be sealed using an approved fire stop system that complies with Manitoba Building Code Clause 3.1.9.1.(2).

Notes:

A. Manitoba Building Code Article 3.1.9.1. refers to both “fire separations” and “assemblies required to have a fire resistance rating”. For ease, only the term “fire separation” is used in this item.
B. This item deals only with fire stopping. The Manitoba Building Code Articles 3.1.9.2., 3.1.9.3., and 9.10.9.6. must be consulted for the size and type of electrical penetrations that are permitted.
C. A “firewall” is designed to limit the spread of fire from one building to another, whereas a fire separation is only designed to limit the spread of fire within a building. A firewall also has structural requirements to maintain its integrity in a fire event. Firewalls are most frequently constructed of masonry.

2-200 Securing buildings prior to energization by Manitoba Hydro

Rule 2-200 Protection of persons and property, General

Buildings shall be secure and weatherproof prior to energization by Manitoba Hydro. Requirements include but are not limited to completed roof coverings and adequately covered door and window openings that are secured against moisture and unauthorized entry. Where windows or doors are not yet installed, temporary coverings may be acceptable.

2-306 Shock and arc flash protection

Rule 2-306 Shock and arc flash protection

The responsibility for documentation required in Item 3) b) will be on the engineer of record or the manufacturer. The owner will be responsible to ensure that the documentation is readily available to personnel that install, operate, inspect, and maintain electrical equipment.

2-310 Access to service equipment

Rule 2-310 Entrance to, and exit from, working space

Where required due to differing elevation, permanent stairs conforming to the Manitoba Building Code must be installed to provide ready access to consumer service equipment including metering.

2-400 Non-rated outdoor enclosures for electrical equipment

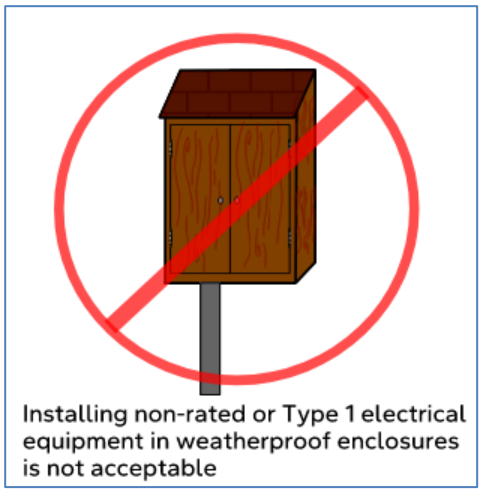
Rule 2-400 Enclosures, type designations, and use

Enclosures for electrical equipment including temporary services, shall be of the type for use in their environment per Table 65. The practice of installing non-rated electrical equipment in

weatherproof enclosures is not acceptable. Equipment located outdoors must be rated for outdoor use.

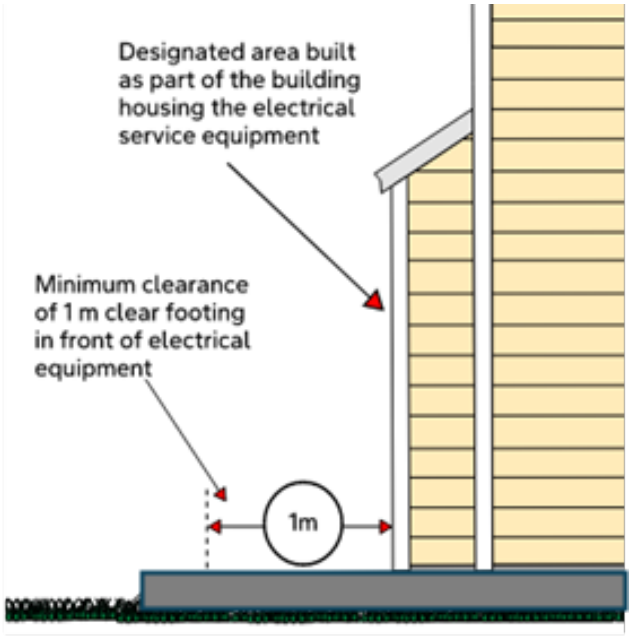
If equipment is installed in a designated area that is constructed as part of the building per the MBC (i.e.: has a floor and is sealed from the elements) it may utilize Type 1 rated electrical equipment. Multiple metering centres located in such a designated area may be permitted to comply with the meter height relaxations noted in the Manitoba Hydro Customer Metering Standards.

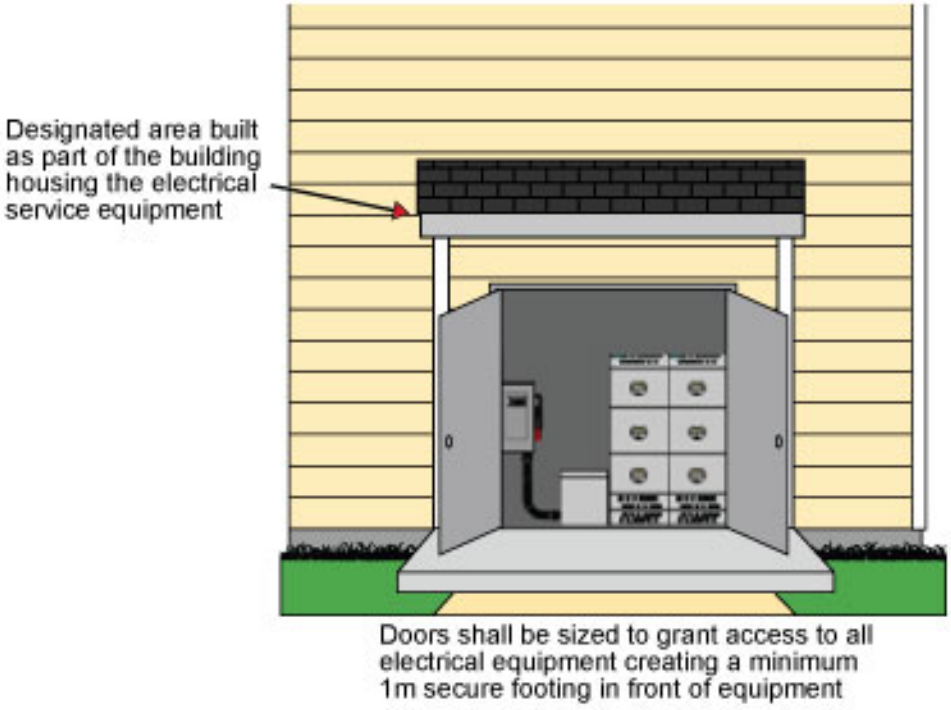
Installers are reminded that such structures shall be constructed to comply with applicable zoning requirements.



Installing non-rated or Type 1 electrical equipment in weatherproof enclosures is not acceptable

Acceptable installation





2-402 Enclosures with ingress protection (IP) designations only

Subrule 2-402 2) Marking of enclosures

Ingress protection (IP) designations are not recognized by the Manitoba Electrical Code. Enclosures marked with IP designations **only** will not be accepted for installation. Enclosures marked with the designations noted in Table 65 will be accepted for installation.

2-404 Marking of motors controlled by VFDs/ASDs

Rule 2-404 Marking of motors

Variable frequency drive (VFD) or adjustable speed drive (ASD) controlled motor installations require the appropriate marking on the motors as follows:

New Installations:
Motors and VFDs intended for use in a variable speed application must be compatible and motors must be marked accordingly.

Existing Installations:
Where a new VFD is being installed to control an existing motor, owners and installers are responsible for assessing the compatibility of the motor with the corresponding VFD. The Development and Inspections Division will require a record of the compatibility assessment information and documentation from the motor manufacturer ensuring the motor is compatible with the VFD.

Refer also to Appendix B notes for Rules 18-106 and 28-314.

Section 4
Conductors

4-004 A Single conductor cables

Rule 4-004 Ampacity of wires and cables

Where the ratings of Tables 1 or 3 are being applied, at least 50% of the total cable length shall be outside the equipment being connected.

4-004 B Conductor ampacity and derating factors

Rule 4-004 Ampacity of wires and cables

If other derating factors are applied to reduce the conductor ampacity, the conductor size shall be the greater of that so determined or that determined by Rule 8-104 5) or 6).

4-004 C High voltage conductor ampacity 5kV to 46 kV

Items 4-004 1) g) & 2) g) Ampacity of wires and cables

All areas of the province of Manitoba may not meet the conditions of use for Table D17, Ampacities for shielded cables rated 5 KV to 46 kV. As indicated in the table notes, change of any conditions will result in a change of ampacity, therefore an IEEE 835 calculation may be required to determine the conductor ampacity for these installations.

4-004 D Ratings of conductors in fibre spacers, metal throats and nipples

Item 4-004 7) a) Ampacity of wires and cables

Fibre spacers, metal throats and nipples not longer than 150 mm in length may be treated as auxiliary gutters in accordance with Rule 4-004 7) a) in which case no de-rating for multiple conductors need be applied to the Table 2 or 4 ratings.

Section 6
Services and service equipment

6-1 Underground supply service termination requirements

The minimum size of rigid conduit required from a meter mounting device or a customer owned supply service termination enclosure to the supply trench to accommodate Manitoba Hydro supply conductors is shown in the table below.

These sizes are based on a maximum conduit fill of 40% in accordance with the Winnipeg Electrical Bylaw governing customer owned installations. Some conduit sizes have been increased to accommodate installation.

Confirmation of the cable size should be obtained from your local Manitoba Hydro Customer Service Centre prior to installation of this conduit.

Insulated Conductor Size	Minimum Conduit Size	Maximum Number of Conductors
1/0 AWG	53 (2”)	5
4/0 AWG	63 (2½”)	3
3-4/0 & 1-#2	63 (2½”)	4
350 KCMIL	78 (3”)	4
750 KCMIL	129 (5”)	4
1000 KCMIL	155 (6”)	5

6-2 Manitoba Hydro owned farm service poles and structures

Manitoba Hydro will not normally permit customer owned electric service facilities to be located on Manitoba Hydro owned poles and structures.

Where customer owned facilities are attached to Manitoba Hydro poles and structures, including existing farm service poles, the following procedures shall be adhered to:

When the customer requires work to be conducted on electric facilities located more than 3m above grade on a Manitoba Hydro owned pole or structure, the primary supply shall be de-energized by Manitoba Hydro staff before any work is carried out.

6-3 Attachments to Manitoba Hydro poles

Except for an overhead service attachment to the secondary rack on a farmyard pole, no attachments may be made to a Manitoba Hydro pole without written permission. Anyone wishing to install a standby transfer switch or splitter for underground wiring or a sign or any other item on a Manitoba Hydro pole must apply to the local district office giving the location and details of the installation. GenerLink style transfer switches shall not be installed in a Manitoba Hydro owned metering facility.

6-110 Small services

Rule 6-110 Three-wire consumer’s services

Refer to Section 0 definitions for Consumer’s service and Service box. The intent of this rule is that an overcurrent device is required ahead of a panelboard containing more than two circuits.

6-112 A Alterations of existing residential electrical services

Rule 6-112 Support for the attachment of overhead supply or consumer’s service conductors or cables

When altering an existing consumer’s residential service, the existing supply service attachment point will be acceptable provided:

- the building is a single detached dwelling;
- the service attachment point is acceptable to the utility;
- the existing conduit is of sufficient size;

- the service drop clearances in effect at the time of installation have not been decreased through landscaping, addition of buildings, pools, decks, etc.; and
- the attachment point is not less than 3 m above grade except that a variance of 150 mm may be accepted at the discretion of the Inspection Department.

6-112 B Service masts and attachments

Rule 6-112 Support for the attachment of overhead supply or consumer's service conductors or cables

Prior to installing the supply service attachment means, the supply authority shall be consulted to determine whether a single or multi-point rack will be required. Installers shall confirm attachment means are approved for the installation.

Note: When metal racks are being installed as support for the attachment of overhead consumer's service conductors, they shall be welded or bolted through. The use of spring nuts or similar items will not be accepted.

6-112 C Means of attachment

Rule 6-112 Support for the attachment of overhead supply or consumer's service conductors or cables

A means of attachment shall be provided for all supply or consumer's service conductors. The attachment shall be a service mast or attachment provided by the customer on a building or a customer owned service pole at a location that is acceptable to the supply authority.

Note: When poles are installed they shall be a minimum of a class 6 pole and must be treated with a wood preservative. A timber or post will not meet the requirements of this rule.

6-116 Aerial service attachment

Rule 6-116 Consumer's service head location

Rule 6-116 of the Code has been relaxed to allow the attachment point of an aerial service to be at the same height as the service head where an under-eave bracket is used.

Note: An under-eave bracket is only rated for 100 Amps and shall be used for its intended purpose and shall not be wall mounted.

6-200 A Consumer's service boxes

Rule 6-200 Service equipment

1. The requirements of 6-200 2) are relaxed to permit outdoor subdivisions of a consumer's service to be made:
   a) In a transformer rated meter mounting device approved with dual lugs on the load side in a residential application; or
   b) In an acceptable Customer Service Termination Enclosure (CSTE)
   c) At an overhead rack on a pole or building.

2. For the application of Rule 6-104, each subdivision permitted in Item 1. above shall be considered a consumer's service.
3. Each subdivision of the consumer's service shall terminate in a single service box.
4. No other consumer's service may be attached to the supply service.

Notes:

A. CSTE's may be wall, structure or pad mounted provided the location is acceptable to the supply authority. For the definition of CSTE's, see Manitoba Hydro Customer Metering Standards.
B. If a 3-phase supply service is feeding a single consumer service, the consumer service shall have the same voltage and characteristics as the supply service.
C. The neutral must be run to each consumer service and shall have sufficient ampacity to carry the unbalanced load.

6-200 B Hot splitters

Rule 6-200 Service equipment

Alterations or additional sub-divisions from existing hot splitters in single dwellings are not permitted except by special permission. Consult your local electrical authority having jurisdiction prior to commencing work.

In single dwellings, the repair of an existing service or replacement of the main breaker in an existing panel due to malfunction or the addition of any circuit breakers in an existing panel are permitted without replacement of the existing hot splitter.

When replacing an existing 200 Amp hot splitter with a 200 Amp service box or combination panel in a residential application, existing #2/0 copper service conductors may be re-used.

Where an existing commercial electrical service utilizes a hot splitter, no more than four subdivisions are allowed.

6-200 C Use of multi-position meter sockets

Rule 6-200 Service equipment

Per Rule 6-200 2), multi-position and dual lug meter sockets may be used to subdivide a consumer's service within the restrictions of Rule 6-104. When using a multi-position meter socket for this purpose (i.e.: no service box installed ahead of the meter assembly), the consumer's service conductors must be sized to suit the rating of the meter assembly. Designers and installers should note that this may require service conductors to be sized greater than what the demand factor calculations in Section 8 allow.

A single service switch is required if

a. The ampacity of the service conductors is less than the rating of the multi-position meter assembly.
b. Where the sum of the subdivision overcurrent devices exceeds the rating of the multi-position meter assembly or dual lug meter socket.

6-202 Use of panelboards to subdivide the main consumer's service

Rule 6-202 Subdivision of main consumer's service

The use of distribution panelboards to subdivide consumer's services will not be accepted. Rule 6-202 of the Code states that "each subdivision of the main consumer's service shall be provided with a separate service box, or equivalent multi-service equipment shall be used."

Panelboards, including central distribution panels (CDPs), are not approved as equivalent multi-service equipment. Equipment must be constructed and approved to CSA C22.2 No. 229, Switching and metering centres.

6-206 A Existing services and panelboards located below the flood elevation

Rule 6-206 Consumer's service equipment location

Item 6-206 1) c) v) does not allow a service box or other consumer's service equipment to be located in areas below the flood elevation. An existing service entrance rated panelboard installed before August 15, 1981 may be replaced in the same location in accordance with the Manitoba Regulation 266/91 Section 8, Item (b), however service upgrades are required to meet current Code.

For information regarding flood hazard zone areas, builders and installers are advised to contact the municipality or the Provincial Senior Flood Protection Planning Officer. For projects within the City of Winnipeg, consult the online Development policy search tool.

6-302 A Insulation rating for overhead consumer's service conductors

Subrule 6-302 5) Installation of overhead consumer's service conductors

For compliance with Subrule 6-302 5), conductor/cable insulation shall be rated for -40°C.

6-302 B Use of NS75 and NS90 for overhead consumer's service conductors

Rule 6-302 Installation of overhead consumer's service conductors

NS75 or NS90 shall not be installed along a building. Once the NS75 or NS90 reaches the building a transition to other suitable wiring methods will be required.

6-302 C Parallel conductors

Rule 6-302 Installation of overhead consumer's service conductors

To ensure compliance with Rule 2-138, all parallel conductors and those marked with phasing tape must be terminated at both ends to verify proper identification and phasing during inspections.

For overhead services this would require that all conductors of the same phase be in contact with each other at the service head or attachment point. This may be accomplished by taking a single strand from each conductor in the same phase and twisting them together or any alternate method that ensures continuity between all conductors of the same phase.

6-308 Identification of neutral conductors for overhead services

Rule 6-308 Use of neutral conductors in consumer's services

Insulated neutrals in services create safety risks for supply authority employees involved in connecting service conductors due to incorrect identification at installation. For this reason, insulated neutrals in services must be identifiable along the entire length of the conductor.

Acceptable identification of the neutral conductor must be verifiable during inspections and can be accomplished by different means per the list below however, conductors must also be identified at each end in accordance with Rule 4-026:

- A reduced neutral in residential services is inherently identifiable by the size difference from the ungrounded conductors.
- White tape along the length of the conductor.
- White marking line along the length of conductor.
- Neutral conductor is a different colour than the ungrounded conductors (sun resistant cable required for overhead services).
- If the material of the neutral conductor is different from that of the ungrounded conductors (e.g.: aluminum conductors with copper neutral), the neutral is easily identifiable.

6-400 Meter sockets served from underground supply systems

Rule 6-400 Metering equipment

Single phase meter sockets and meter troughs served from underground supply systems shall be factory equipped with studs on the line side to provide for the connection of compression type wire connectors.

Note: This requirement is not enforced for a combination meter socket and breaker (farm metering unit) or 7 jaw meter sockets.

Section 8
Circuit loading and demand factors

8-104 A Maximum continuous load on a circuit

Rule 8-104 Maximum circuit loading

Contractors and designers are cautioned that the maximum continuous load on a circuit is limited under Subrules 8-104 5) and 6) and is based on the circuit rating which is, per Subrule 1), the lesser of either the rating of the overcurrent device or the allowable ampacity of the conductors.

Designers should also be aware that when using conductors with an allowable ampacity less than the rating of the overcurrent device as permissible by Table 13, the maximum continuous load permitted on the circuit is reduced accordingly.

Per Subrule 2-100 5), where the maximum continuous load is less than the continuous operating marking of the overcurrent device, e.g.: less than 320A on a circuit protected by a 400A breaker

marked for 80% operation or less than 400A on a circuit protected by a 400A breaker marked for 100% operation, a lamicoid label must be permanently affixed to the overcurrent device enclosure stating “MAXIMUM CONTINUOUS LOAD ____A.”

The following sample calculations are offered using a 400A overcurrent device:

Single conductors in free air (Tables 1 and 3)

Non-Continuous Load Rule 8-104		Continuous Load **using 100% rated equipment** Rule 8-104 5) b)		Continuous Load **using 80% rated equipment** Rule 8-104 6) b)	
max. allowable circuit loading	= 100% of 400A = 400A	max. allowable circuit loading	= 85% of 400A = 340A	max. allowable circuit loading	= 70% of 400A = 280A
Minimum conductor allowable ampacity	= 400A	Minimum conductor allowable ampacity	= 400A	Minimum conductor allowable ampacity	= 400A
		max. allowable circuit loading	= 100% of 400A = 400A	max. allowable circuit loading	= 80% of 400A = 320A
		Minimum conductor allowable ampacity	= 471A	Minimum conductor allowable ampacity	= 458A

Multi-conductor cable and raceways (Tables 2 and 4)

Non-Continuous Load Rule 8-104		Continuous Load **using 100% rated equipment** Rule 8-104 5) a)		Continuous Load **using 80% rated equipment** Rule 8-104 6) a)	
max. allowable circuit loading	= 100% of 400A = 400A	max. allowable circuit loading	= 100% of 400A = 400A	max. allowable circuit loading	= 80% of 400A = 320A
Minimum conductor allowable ampacity	= 400A	Minimum conductor allowable ampacity	= 400A	Minimum conductor allowable ampacity	= 400A

Refer to Rule 8-104, Subrules 5) & 6) in the CE Code Handbook for additional examples.

8-104 B Variable demand characteristics

Rule 8-104 Maximum circuit loading

Where only a single maximum ampacity is listed on the equipment nameplate for electrical equipment capable of variable demands, the equipment shall be wired to the ampacity displayed on the nameplate.

8-106 A Equipment with variable demand loads

Rule 8-106 Use of demand factors

Where equipment allows for field adjustable demand settings, a lower demand setting may be acceptable provided:

- The settings are protected and cannot be adjusted by the consumer,
- The manufacturer's nameplate must reflect the field settings, and
- Warning labels must be permanently affixed to the equipment reading, "Do not adjust settings."

Systems that allow the consumer to set the load require the maximum demand load to be applied towards the branch circuit, service or feeder calculation, even if the demand at time of installation is intended to be lower.

8-106 B Qualified person

Rule 8-106 Use of demand factors

For the purposes of the Subrules of Rule 8-106, a "qualified person" shall be an engineer licensed to practice in the Province of Manitoba and skilled in the appropriate area of work.

8-106 C Demonstrated loads

Rule 8-106 Use of Demand factors

A qualified person wishing to use demonstrated loads to determine an acceptable service size for a building as allowed in Subrule 8-106 9) may do so only with pre-approval from a designated employee of the Manitoba Hydro Inspections Department or the City of Winnipeg Commercial Electrical Plan Examination Branch, as applicable.

Note that pre-approval for the use of demonstrated loads will only be considered for equipment of the same rating and characteristics or for buildings of similar size, height, occupancy, location, equipment load, use and function and will not be considered for residential, multi-residential or large industrial buildings. Data must be provided for a 24-month period as noted in Rule 8-002, Special Terminology for Demonstrated Load.

8-106 D Load increases to existing services

Rule 8-106 Use of demand factors

Manitoba Hydro requires notification prior to any load increase to an existing service including within the City of Winnipeg. See hydro.mb.ca/service/connections/ for further information.

8-500 Acceptability of EVEMS

Rule 8-500 Electric vehicle energy management systems

All field-assembled Electric Vehicle Energy Management Systems (EVEMS) must undergo an SPE-1000 field evaluation. The evaluation report must reference all applicable standards and documents to confirm compliance with CSA C22.2 No. 343, Electric Vehicle Energy Management Systems.

This requirement may apply to EVEMSs incorporating remote current transformers or similar remote components.

Section 10
Grounding and bonding

10-102 Grounding electrode for temporary builder's service

Rule 10-102 Grounding electrodes

When a temporary builder's service is located 3 m or less from the supply utility's pad- mounted transformer or cable trench, the supply utility's grounding electrode shall be used in lieu of a customer owned grounding electrode. The customer must supply a grounding conductor between the temporary builder's service and the pad mounted transformer. A customer owned grounding electrode will not be acceptable to reduce the risk of damaging buried conductors.

10-116 Tingle voltage

Rule 10-116 Installation of grounding conductors

Subrule 10-116 2) allows for various approved devices to be installed between the system ground and the neutral conductor of a service or distribution system on farm outbuildings.

New barns: When wiring new barns, be advised that the most effective remedial action to prevent problems with tingle voltage is the installation of an equipotential mat in the floor of the building. The installation of a mat should be done prior to pouring the floor. When involved in a barn installation, contractors should advise their customers of the importance of installing this mat. In dairy and P.M.U. facilities, the important locations are the animal standing areas. For further information, contact your local electrical inspector.

10-210 Grounding conductor connections to service boxes

Rule 10-210 Grounding connections for solidly grounded ac systems supplied by the supply authority

For the application of Subrule 10-210 1), grounding conductors shall not be terminated in meter mounting devices, transformer rated meter mounting devices, network termination enclosures (NTEs) or customer service termination enclosures (CSTE's).

The grounded service conductor (neutral) on the supply side of the service box will be permitted to bond the meter mounting device. If the neutral is isolated in the meter base, a separate bonding conductor shall be run to the meter base from the service box.

10-212 Transformer grounding

Subrule 10-212 3) Grounding connections for solidly grounded separately derived ac systems

As permitted in Subrule 3), the use of the bonding conductor supplied in the primary transformer circuit may be used as the system grounding conductor provided both the primary and secondary are 750 Volts or less. Refer to Appendix B and Figure B10-11. Raceways do not qualify as a bonding conductor for this purpose.

Installers are reminded to use Table 16 to size the system bonding jumper based upon the secondary output current rating.

10-600 Bonding of metallic sleeves for extra low voltage cables

Rule 10-600 Bonding for fixed electrical equipment

Short lengths of metallic raceways used as sleeves for extra low voltage cables (e.g.: communication, data, video, thermostats, etc.) shall not be required to be bonded. This is limited to conduit stubs that do not leave the room they serve.

10-700 Bonding of interior gas piping

Rule 10-700 Equipotential bonding of non-electrical equipment

For the gas pipe bonding requirements in single dwellings, the bonding conductor supplied as an integral part of a cable assembly supplying the appliance may be considered a suitable bonding conductor for the circuit supplied by that cable assembly and may be deemed to meet the intent of Subrule 10-700 c).

Section 12
Wiring methods

12-1 Preserved wood foundations

Installers are advised that the Manitoba Building Code requires preserved wood foundations to conform to CSA Standard CAN/CSA S406, “Specification of permanent wood foundations for housing and small buildings. This Standard requires that where receptacles or other wiring is placed in exterior walls of a preserved wood foundation, the wiring shall be run vertically within a single stud space, with holes drilled only in the top plates.

Holes are not permitted to be drilled through studs in preserved wood foundations, according to Standard S406.

12-000 Class 2 wiring rules

Rule 12-000 Scope

Class 2 wiring must comply with all Rules of Section 12 except for Rules 12-506 1), 2) & 3), 12-522 & 12-524.

12-010 Electrical equipment in return air plenums

Rule 12-010 Wiring in ducts and plenum chambers

To comply with Manitoba Building Code Article 3.6.4.3., Plenum Requirements, flame spread requirements and smoke developed classifications must be met for electrical equipment installed in plenums. Transformers and other types of electrical equipment may not meet these requirements and therefore may not permitted to be installed in plenums.

12-012 A Direct buried cables and raceways beneath a concrete slab

Rule 12-012 Underground installations

For Subrule 12-012 9), a concrete slab at grade level denotes a building floor slab.

12-012 B Conduits and cables installed in or under floors of residential attached garages

Rule 12-012 Underground installations

Conduits or cables shall not be run in or under the floors of residential attached garages unless installed to meet the minimum cover requirements of Table 53.

12-100 Control and instrumentation cables (ACIC & CIC)

Rule 12-100 Types of insulated conductors and cables

Cables marked type ACIC or CIC only are approved under CSA Part II Standards as control and instrumentation cable only and will not be permitted for use as a feeder or branch circuit in accordance with Table 19.

Cables marked ACIC or CIC with additional type designations may be installed per the conditions of use identified in Table 19.

12-106 Lighting power and control circuits in the same cable, raceway or box

12-904 **Rule 12-106 Multi- and single-conductor cables**

12-3030 **Rule 12-904 Conductors in raceways**

Rule 12-3030 Insulated conductors in boxes, cabinets, or fittings

Provided all conditions of the Code are met and manufacturer installation instructions are followed, extra low voltage conductors for DC dimming of lighting equipment can be run in the same cable, raceway and enclosure as it's associated branch circuit conductors.

Manufacturers specifications may still require separation between extra low voltage and line voltage wiring.

12-120 Plastic and hook and loop ties as conduit or cable supports

12-920 **Rule 12-120 Supporting of conductors**

Rule 12-920 Support of raceways

Plastic and hook and loop style cable ties (e.g. zip ties or Velcro®) will not be accepted as a supporting means for overhead conductors, cables and raceways.

Cable ties will be permitted to secure cables where the weight of the cable is supported in an acceptable manner such as in a cable tray or on top of a unistrut type of supporting means.

12-608 Bonding bushing in non-metallic enclosures

Rule 12-608 Continuity of armoured cable

It is permissible to omit the bonding bushing in non-metallic enclosures at the final point of termination if the cable is bonded at the supply end and maintained throughout the rest of the run provided the equipment is bonded using the internal bonding conductor of the cable.

12-618 Securing non-jacketted armoured cable with tie wire

Rule 12-618 Running of cable between boxes, fittings, etc.

Galvanized tie wire is not an approved method of supporting cables or raceways but will be permitted to provide support for armoured cables inside a finished wall only. All armoured cables located outside a finished wall shall be supported with an approved strap or device.

12-904 A Conductors of the same circuit contained in the same raceway

Rule 12-904 Conductors in raceways

All conductors of the same circuit shall be contained within the same raceway, unless otherwise permitted in accordance with 12-108 or 4-004 1) d) and 2) d).

12-904 B Wiring systems for modular office furniture

Rule 12-904 Conductors in raceways

Office areas are often designed with relocatable partitions that are pre-wired with communication and/or branch circuit wiring by the manufacturer. Before connecting such equipment to the building wiring system, installers are advised to carefully check the manufacturer's installation instructions and equipment marking. In some cases, there may be a restriction on the number of circuits or sources that are permitted to supply the pre-wired furniture.

Code users are reminded that where such circuits are supplied from different transformers or different sources of voltage, the circuits shall be separated in accordance with Subrule 12-904 2).

12-920 Electrical raceway supports

Rule 12-920 Support of raceways

Electrical raceways shall be securely fastened in place. The use of suspended ceiling support wires or tie wires are not considered an acceptable means of fastening a raceway.

12-1500 Electrical non-metallic tubing (ENT) installed outdoors

Rule 12-1500 Use of electrical non-metallic tubing

Electrical non-metallic tubing requires mechanical protection and if installed in exterior locations, must be specifically approved for sunlight resistance and so marked per 2-136.

12-3014 Electrical conduit fittings

Rule 12-3014 Accessibility of junction boxes

Under the requirements of Rule 12-3014 1), conduit fittings equipped with a cover (LB's, T's, etc.) shall be accessible.

12-3032 Multi-section panelboards

Subrule 12-3032 3) Wiring space in enclosures

Where two or more panelboard interiors are provided in a single enclosure complete with a factory-installed metal barrier between them, each panelboard section is deemed a separate enclosure and therefore no branch circuit conductors terminating in any one of the panelboards may be fed through the adjacent panelboard.

Section 14
Protection and control

14-012 Interrupting ratings of overcurrent devices

Rule 14-012 Ratings of protective and control equipment

Under the requirements of Rule 14-012, electrical equipment which is required to interrupt fault current, (breakers, fuses and switches) must have ratings sufficient for the voltage employed and for the fault current available at the terminals.

The maximum fault current available at any location is governed by a number of criteria and must therefore be calculated for each installation. Fault current information at the utility point of delivery must be obtained from Manitoba Hydro.

To ensure compliance with Rule 14-012, electrical drawings submitted for review shall indicate the expected available fault current and the interrupting ratings of all equipment required to interrupt the fault current.

The following criteria will apply to all fault current calculations:

1. The calculation will assume an infinite primary bus.
2. The percent impedance for transformers will be the percent impedance of the installed transformer.

Important note:
For installations for all new services or modifications to existing services within the 125/216V underground secondary network area, service entrance equipment must consist of a circuit breaker or circuit breaker/fuse combination with a rupturing capacity of at least 100,000 Amperes or a disconnecting switch equipped with minimum 100,000 Amperes high rupturing capacity fuses.

14-106 Suitable access for overcurrent devices

Rule 14-106 Location and grouping

Suitable permanent access must be provided to serve all overcurrent devices.

14-612 Standby equipment

Rule 14-612 Transfer equipment for standby power systems

When installing an inlet for provision of the connection of a portable generator, a permanently affixed label must be installed indicating the maximum permissible generator overcurrent.

Installers must be aware of the grounding requirements of 10-214.

Section 16
Class 1 and Class 2 circuits

16-200 to 16-226 Class 2 circuits, 30 Volts or less

Rules 16-200 to 16-226 Class 2 circuits

1. Class 2 Circuits shall be supplied from Class 2 transformers, or
   a) A Class 2 power supply or device; or
   b) Where the voltage does not exceed 20 volts, a 5 ampere (maximum) mini circuit breaker or a 5 ampere non-interchangeable fuse.
2. Lighting products, electromedical equipment, equipment for hazardous locations and thermostats incorporating heat anticipators shall be approved in accordance with Subrule 16-222 2).
3. The wiring method on the load side of the Class 2 power supply may conform to the applicable requirements of Section 16 of the Code for a Class 2 system.
4. The wiring method on the line side of the Class 2 power supply shall conform to the applicable requirements of Section 12 of the Code.
5. The power supply shall be located and installed in an acceptable manner.

Section 18
Hazardous locations

18-190 to 18-256 Woodworking shops

Rules 18-190 to 18-256 Explosive dust atmospheres

Classification

Woodworking shops may present a potential for an explosive dust atmosphere. Woodworking shops, woodworking industrial arts classrooms, or similar installations shall be classified and/or designed by an engineer.

Residential spaces used for personal use will not be considered woodworking shops (ie: not manufacturing for sale). A declaration letter from the owner will be required.

Installations of equipment added to existing woodworking shops may be designed to the accepted classification established under the previous Code when the shop was constructed provided the conditions have not changed.

Section 20
Flammable liquid and gasoline dispensing, service stations, garages, bulk storage plants, finishing processes, and aircraft hangars

20-300 Spray booth field certification

Rules 20-300 to 20-314 Finishing processes

Site assembled spray booths require a field certification by an accredited field evaluation agency.

The agency must be accredited for the certification of electrical equipment intended for use in, or that creates, a hazardous location.

Section 22
Locations in which corrosive liquids, vapours, or excessive moisture are likely to be present

22-002 A Walk-in freezers and coolers

Rule 22-002 Category definitions – Appendix B

Walk-in freezers are considered Category 1, wet locations, and walk-in coolers are considered ordinary locations in accordance with the definitions in Section 0.

22-002 B Greenhouses

Rule 22-002 Category definitions – Appendix B

Greenhouses are considered a Category 1 (wet) location. Greenhouses provided with positive mechanical ventilation could be reduced to a lesser classification when supported by a document sealed by an engineer licensed to practice in the Province of Manitoba and skilled in the area of work detailing the measures taken to reduce the classification and what the new classification is.

22-002 C Area classifications for buildings housing livestock or poultry

Rule 22-002 Category definitions – Appendix B

Dairy barns and stables for horses are considered Category 1, wet locations. All other buildings housing livestock or poultry are considered “Category 2 wet” locations, i.e.: Category 1 wet and Category 2 corrosive locations.

a. Category 1 and Category 2 wet locations shall only contain electrical equipment essential to that operation. Electrical equipment installed in these areas shall be approved and marked accordingly for that environment.

b. Enclosure designations and markings for Category 2 wet locations shall comply with Rule 2-400 and Table 65 for corrosive areas, and hose-down and splashing water (minimum 4X-wet and corrosive). The Authority Having Jurisdiction reserves the right to request certified test reports that demonstrate the equipment meets all applicable CSA Part 2 standards. Ingress Protection (IP) standards and markings are not acceptable.

22-002 D Ice rinks

Rule 22-002 Category definitions – Appendix B

For ice rinks, the area containing the ice surface is considered a Category 1, wet location. Rinks provided with positive mechanical ventilation could be reduced to a lesser classification with an engineer stamped document stating measures taken and the new classification.

Δ 22-104 A Water treatment plants

Rule 22-002 Category definitions – Appendix B

Water treatment plants are considered to be Category 1 locations; when corrosive vapours or liquids are present in the treatment areas, they are considered to be “Category 2 wet” locations (Category 1 wet and Category 2 corrosive locations).

The following conditions will allow for water treatment plant areas to be considered ordinary locations under the Manitoba Electrical Code:

a. Treatment areas that utilize a completely closed water treatment process, with all piping insulated (to prevent condensation), and that do not incorporate any open water sources; or
b. Treatment areas that do not utilize completely closed systems but that incorporate a continuously operating ventilation system with adequate temperature control and dehumidification and incorporating a positive means of detecting and annunciating ventilation system failure.

Δ 22-104 B Lampholders in Category 2 wet locations

Rule 22-104 Pendant lampholders

Rule 22-104 1) is relaxed to include box-mounted lampholders. Porcelain type keyless lampholders will be permitted in buildings housing livestock provided these lampholders are fitted with pigtails and potted terminations.

22-108 Receptacles for use in buildings housing livestock or poultry

Rule 22-108 Wiring devices and connectors

Where receptacles are or are likely to be exposed to corrosive vapours, they shall be of the corrosion-resistant type.

22-704 Classification of sewage lift and treatment plants

Rule 22-704 Classification of areas

Classification of sewage lift and treatment plants must be submitted under seal of an electrical engineer.

22-808 Wiring methods for buildings housing livestock or poultry

Rule 22-808 Wiring methods

Electrical metallic tubing shall be permitted in areas classified as ordinary location within a building housing livestock. CMG and CMX cables shall be permitted for Class 2 circuits.

Section 24
Patient care areas

24-100 Patient care areas

Rule 24-100 Rules for patient care areas

The Patient Care Area Declaration Form identifying patient care areas, or the absence thereof, must be submitted for all projects for health care facilities.

Refer to the Guide to electrical patient care areas for additional information and requirements for the City of Winnipeg and for Manitoba Hydro.

Section 26
Installation of electrical equipment

26-012 Use of fibreglass pads

Rule 26-012 Dielectric liquid-filled equipment - outdoors

For the purposes of item 26-012 4) c), pads manufactured of fibreglass are acceptable provided manufacturer's installation instructions are followed.

26-248 "Step-up / step-down" transformer circuit

Rule 26-248 Disconnecting means for transformers

For the application of this Rule, where two transformers are installed to step up voltage to reduce voltage drop and then stepped down using the second transformer to feed the load, a separate disconnecting means will be required in the primary circuit of each transformer in such a "step-up/step-down" application. The disconnect for the step-down transformer shall be located within sight of and within 3 m of the transformer.

26-254 Transformer overcurrent protection guideline

Rule 26-254 Overcurrent protection for dry-type transformer circuits rated 750 V or less

Users are reminded that Subrule 26-254 1) states that an overcurrent in the primary of a transformer must be rated or set at **not more than** 125% of the rated primary current of the transformer. See table and example below.

3 phase xfmr. kVA	Rated primary current at 600 V	Standard acceptable overcurrent rating
45	43.3 A	45 A or 50 A
75	72.2 A	80 A or 90 A
112.5	108.3 A	110 A or 125 A
150	144.5 A	150 A or 175 A
225	216.7 A	225 A or 250 A
300	289.0 A	300 A or 350 A

Example:
112.5 kVA, 600V:120/208V delta/wye transformer

Rated primary current = 108 A
Maximum primary OC rating = (108 A x 125%) = **135 A** [per 26-254 1)]
Minimum rating of primary OC without choking the transformer = the rated primary current of 108 A.

There are two standard OC sizes available between the rated primary current and the maximum primary OC: 110 A and 125 A. Designers must select one of these values for the primary OC.

If the primary OC is rated or set at the next standard size (150 A) as allowed by Subrule 26-254 3), secondary OC protection rated at or less than the rated secondary current (312 A) would be required. This is because the let through current, calculated by multiplying the 150 A OC by the 2.88 turns ratio, is 432 A which is greater than the 312 A rated secondary current.

26-600 A Suitable access

Rule 26-600 Locations of panelboards

Where required due to differing elevation, permanent means must be installed to provide ready access to panelboards. A portable ladder is not considered as providing permanent access.

26-600 B Panelboard mounting heights and headroom clearances in dwelling units

Rule 26-600 Locations of panelboards

Subrule 26-600 2) requires that panelboards in dwelling units be installed as high as possible, with no overcurrent device operating handle being more than 1.7 m above the finished floor. Installers are advised that the 1.7 m restriction will not be applied to an overcurrent device located in the service box portion of a combination service entrance panelboard.

Except by special permission, a minimum headroom clearance of not less than 2 m is required where panelboards are installed.

26-652 Ground fault protection in flood hazard zones

Rule 26-652 Branch circuits below ground level in areas designated as flood hazard zones

The ground fault protection required by Rule 26-652 shall be located above the flood hazard zone. For renovations or alterations, the ground fault protection shall not be located at an elevation lower than the existing panelboard feeding the branch circuit.

26-658 A “Dead front” arc-fault protection devices

Rule 26-658 Arc-fault protection of branch circuits for dwelling units

Where a “dead front” arc-fault device is installed in lieu of an arc-fault breaker, it must be located adjacent to the panel supplying the circuit, wired per 26-658 b) ii) and labelled as to the branch circuit it protects.

26-658 B Septic/sewage pumps

Rule 26-658 Arc-fault protection of branch circuits for dwelling units

Item 26-658 a) ii) may also be applied to receptacles provided for septic/sewage pumps where it is acceptable to install a single receptacle labelled in a conspicuous, legible, and permanent manner identifying it as a septic/sewage pump receptacle and not supplying any other receptacles in lieu of installing arc-fault protection.

26-658 C 26-704 26-706 Receptacles for buildings or structures associated with residential occupancies

Rule 26-658 Arc-fault protection of branch circuits for dwelling units
Rule 26-704 Protection of receptacles by a ground fault circuit interrupter of the Class A type
Rule 26-706 Tamper-resistant receptacles

Clarification of the ground fault circuit interrupter, tamper resistant and arc-fault protection requirements for receptacles and branch circuits that are installed in or on buildings or structures associated with residential occupancies (includes dwelling units and single dwellings) is provided in the following table:

Building or structure	Arc-fault Rule 26-658	Ground fault[1] Rule 26-704	Tamper resistant Rule 26-706
Attached garages and carports	✓	✓	✓
Detached garages and carports	×	✓	×
Sheds	×	✓	×
Posts or fences	×	✓	×

[1] For receptacles installed outdoors and within 2.5 m of finished grade.

26-704 GFCI protection for vehicle heater or septic/drain pump receptacles

Subrule 26-704 2) Protection of receptacles by a ground fault circuit interrupter of the Class A type

When a written request to the City of Winnipeg designated employee or the Manitoba Hydro Electrical Inspection Department is provided and approved, GFCI protection for vehicle block heater receptacles intended for use by emergency vehicles, fleet vehicles and the like may be omitted. A permanently affixed label reading “no GFCI protection” must be provided.

Ground fault protection shall not be required for septic/drain pump receptacles where the inadvertent operation of the GFCI could cause a health risk or property damage.

26-710 Receptacles for rooftop equipment

Rule 26-710 Receptacles for maintenance of equipment located on rooftops

Receptacles are required for the maintenance of equipment located on rooftops (HVAC equipment, dust extracting equipment, etc.). In addition to the code requirements of Rule 26-710, the following apply:

- The receptacle shall be mounted independent of the equipment; a receptacle provided with the equipment is not acceptable to meet the requirements of this Rule.
- The branch circuit conductors cannot be run through the equipment (i.e.: the equipment cannot be used as a raceway).

- A maximum of two 5-20R receptacles may be wired to a single 20 Amp circuit.
- Receptacles must have wet location cover plates marked “extra-duty,” i.e.: “in-use” cover plates.

26-720 Controlled outlet duplex receptacles

Item 26-720 k) Receptacles for residential occupancies – General

A controlled outlet duplex receptacle will not be acceptable to satisfy the lighting outlet and luminaire requirements in accordance with the Manitoba Building Code (See T.I. 30-1). Such wireless control shall be permitted as a supplementary device only.

26-722 Receptacles for kitchen counter work surfaces

Rule 26-722 Receptacles for dwelling units

1. Receptacles for kitchen counter work surfaces shall be located in one or more of the following:
   a. In, on or above the counter work surface including wall mounted or mounted to the underside of the upper cabinets, but not more than 500 mm above it, providing they are mounted along the wall.
   b. For islands and peninsulas, when mounted below the counter work surface, as close as practicable to the counter work surface.

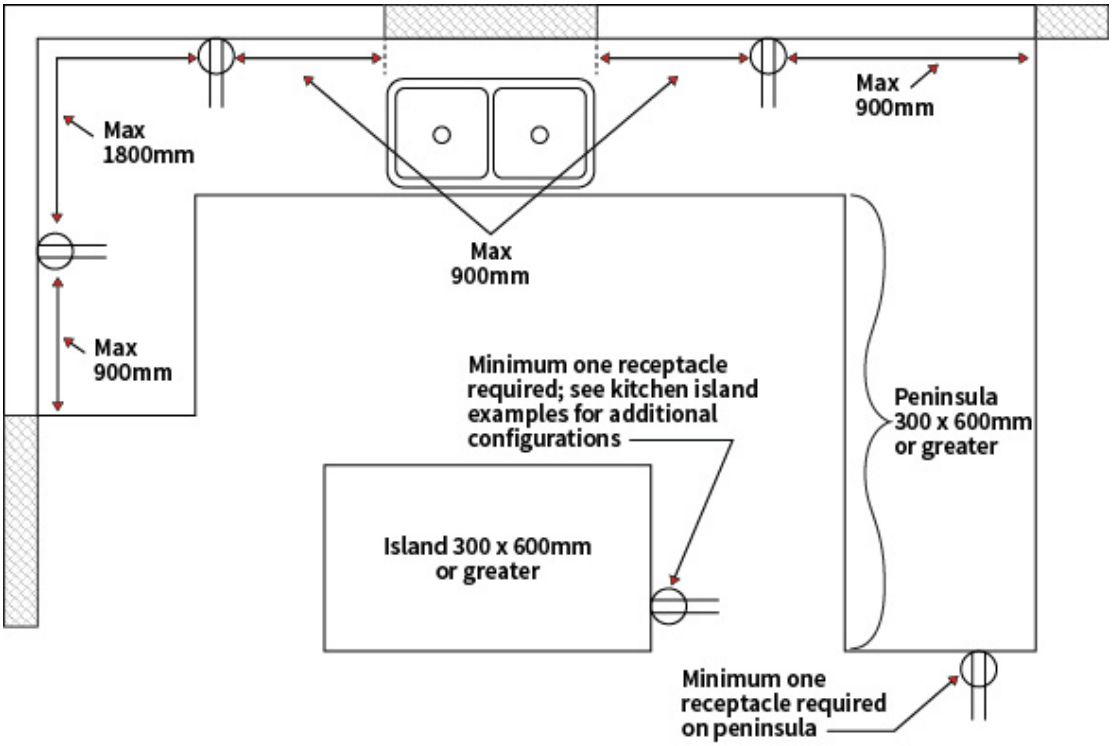
2. The Appendix B note to Items 26-722 d) iv) and v) states that a continuous counter surface is one that is not interrupted by sinks, ranges and other built-in equipment.

3. A room or area intended to be used as an extension of the kitchen (e.g. spice kitchen, cooking or food prep area) may be required to meet the requirements of this Rule. The intent of the space should be clarified with the owner.

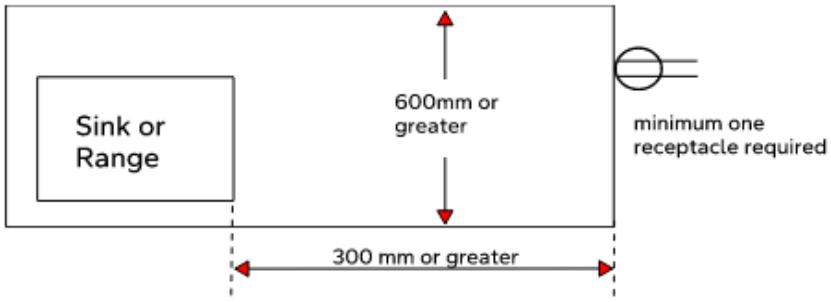
4. An additional kitchen (with cooking facilities) in another area of the dwelling, shall be provided with counter receptacles meeting the requirements of this Rule.

5. Item 26-722 d) iv) requires that at least one receptacle be installed at each permanently fixed island counter space with a long dimension of 600 mm or greater and a short dimension of 300 mm or greater.

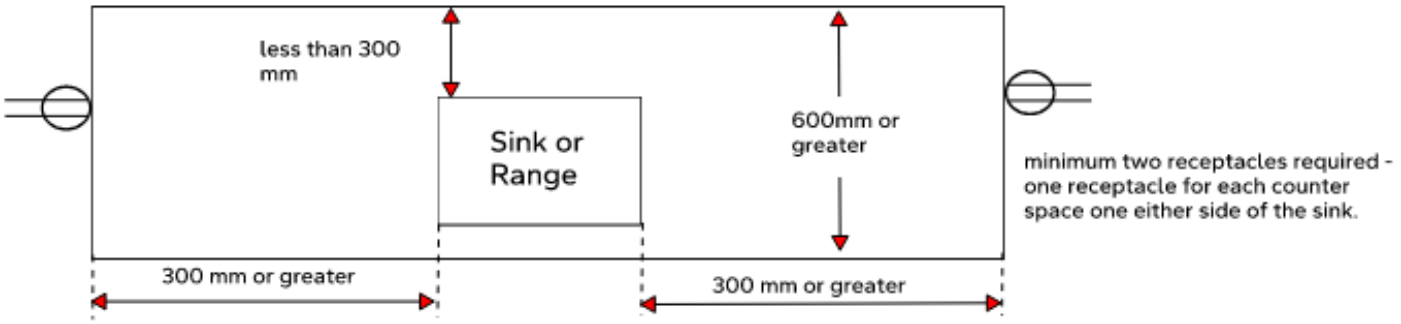
For the purpose of this rule, an island is considered to be permanently fixed unless mounted on wheels.



Kitchen with island and peninsula



Kitchen island example 1



Kitchen island example 2

26-724 Outdoor receptacles for vehicle parking

Subrule 26-724 1) Outdoor and garage receptacles for single dwellings

At least one duplex receptacle shall be provided for each driveway or other area where there is provision for vehicle parking. Where two outdoor receptacles are required for a single dwelling per Subrule 26-724 1), one of the duplex receptacles may be used for this purpose.

26-806 Gas fired unit heaters

Rule 26-806 Heating equipment rated 117 kW and less

Subrule 26-806 1) applies to central heating equipment. The grouping of gas fired unit heaters utilizing fractional hp fan motors is permitted on a single 15 ampere branch circuit provided the requirements of Rule 28-206 a) are met.

Section 28
Motors and generators

28-202 Overcurrent protection marked on refrigerant motor-compressors
28-702

Rule 28-202 Overcurrent protection marked on equipment

Rule 28-702 Marking

For the application of these Rules, installations of overcurrent devices exceeding the marked nameplate ratings will **not** be accepted.

Section 30
Installation of lighting equipment

30-1 Requirements for lighting outlets in buildings

The requirements for lighting outlets in buildings are outlined in Subsection 9.34.2. of the Manitoba Building Code (MBC), partially reprinted below.

These requirements apply to all Part 9 buildings, and Part 3 buildings of residential occupancy.

MBC Part 9, Housing and small buildings, applies to buildings that are 3 storeys or less in building height, having a building footprint not exceeding 600 m^2, and used for home-type care (B4), residential (C), business and personal services (D), mercantile (E), and medium- and low-hazard industrial (F2 and F3) major occupancies. MBC Part 3 applies to all other buildings.

Excerpt from the 2024 MBC*:

9.34.2. Lighting Outlets

9.34.2.1. Lighting of Entrances

1) An exterior lighting outlet with fixture controlled by a wall switch located within the *building* shall be provided at every entrance to *buildings* of *residential occupancy*.

9.34.2.2. Outlets in Dwelling Units

1) Except as provided in Sentence (2), a lighting outlet with fixture 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 need not conform to the requirements in Sentence (1).

9.34.2.3. Stairways

1) Every stairway shall be lighted.

2) Except as provided in Sentence (3), 3-way wall switches located at the head and foot of every stairway shall be provided to control at least one lighting outlet with fixture for stairways with 4 or more risers in *dwelling units* and houses with a *secondary suite* including their common spaces.

3) The stairway lighting for *basements* that do not contain finished space or lead to an outside entrance or built-in garage and which serve not more than one *dwelling unit* is permitted to be controlled by a single switch located at the head of the stairs.

9.34.2.4. Basements

1) A lighting outlet with fixture shall be provided for each 30 m2 or fraction thereof of *floor area* in unfinished *basements*.

2) The outlet required in Sentence (1) nearest the stairs shall be controlled by a wall switch located at the head of the stairs.

9.34.2.5. Storage Rooms

1) A lighting outlet with fixture shall be provided in storage rooms.

9.34.2.6. Garages and Carports

1) A lighting outlet with fixture shall be provided for an attached, built-in or detached garage or carport.

2) Except as provided in Sentence (3), outlets required in Sentence (1) shall be controlled by a wall switch near the doorway.

3) Where the outlet and fixture required in Sentence (1) are ceiling mounted above an area not normally occupied by a parked car, or are wall mounted, a fixture with a built-in switch accessible to an adult of average height is permitted to be used.

4) Where a carport is lighted by a light at the entrance to a *dwelling unit*, additional carport lighting is not required.

* Users are reminded to use the current enforced edition of the MBC and the current referenced edition of the National Building Code of Canada (NBCC). The NBCC is available in free electronic format through the NRC Publications Archive and should be read in conjunction with the Manitoba amendments.

30-2 Lighting control for stairways in residential occupancies

While stairway lighting to a basement not containing finished space or leading to an outside entrance or built-in garage is permitted to be controlled by a single switch located at the head of the stairs per MBC 9.34.2.3.(3), provisions for 3-way switches shall be installed.

30-100 Approval of remote power supplies for LED luminaires

Rule 30-100 General

Remote mounted power supplies for LED luminaires shall be approved for the purpose in accordance with Rule 2-024 and marked with supply voltage, current rating and frequency. Wiring methods shall be in accordance with other applicable sections of the Code. Installers are reminded that these remote power supplies are not included in the approval of the luminaire and therefore are not considered approved electrical equipment unless specifically marked as such.

All retrofit kits must be approved for use with the existing luminaire installed and must bear the mark of a recognized certification organization or the converted luminaire must be field evaluated and marked by an accredited field evaluation agency.

30-104 Cord connected lighting

Rule 30-104 Protection

Cord connected lighting must follow the Rules for luminaires including the protection requirements of 30-104. The maximum rating of an overcurrent device protecting a branch circuit containing luminaires, lamp holders, or lighting track shall be followed, i.e. in a dwelling unit, no more than 15 Amp overcurrent shall be used for all luminaires, including grow lights.

30-900 Installation of recessed luminaires in insulated spaces and fire rated assemblies

Rule 30-900 Recessed luminaires, General

Recessed luminaires must be approved for the installation type. Installers should be aware that this includes locations where luminaires are in contact with thermal insulation or combustible surfaces, in wet locations, in fire rated assemblies, and in air-tight or smoke-tight barriers.

Section 32
Fire alarms systems, smoke alarms, carbon monoxide alarms and fire pumps

32-000 Fire alarm systems

Rules 32-000 Scope

The intent of this Rule is that **all** installations of fire alarm systems shall meet all the requirements of Section 32.

32-200 A Supply voltage for smoke and carbon monoxide alarms

Rule 32-200 Installation of smoke alarms and carbon monoxide alarms in dwelling units

To meet the requirements of Subrule 32-200 1) a), smoke alarms and carbon monoxide alarms must be 120 Volts.

32-200 B Circuits for heat sensors

Rule 32-200 Installation of smoke alarms and carbon monoxide alarms in dwelling units

Where a heat sensor is required to be installed in attached garages of dwelling units per Manitoba Building Code Article 9.10.19.A., it must be connected to a lighting circuit that is not protected by an AFCI or GFCI.

Section 34
Signs and outline lighting

34-200 Approval of remote power supplies for LED signs

Rule 34-200 Enclosures

Remote mounted power supplies for LED signs and outline lighting shall be approved for the purpose in accordance with Rule 2-024 and marked with supply voltage, current rating and frequency. Wiring methods shall be in accordance with other applicable sections of the Code. Installers are reminded that these remote power supplies may not be included in the approval of the sign and therefore are not considered approved electrical equipment unless specifically marked as such.

All retrofitted signs must bear the mark of a recognized certification organization or it must be field evaluated and re-certified by an accredited field evaluation agency.

Section 36
High-voltage installations

36-1 Outdoor pad mounted high voltage switchgear

The following conditions shall be met for all outdoor pad mounted high voltage switchgear installations:

1. Outdoor pad mounted high voltage switchgear shall be provided with a suitable hasp for Manitoba Hydro to install a padlock on all compartments containing Manitoba Hydro terminations or metering facilities. An exception to this would be front doors of front operated switches where the customer shall have access to replace fuses etc. (In these cases the CSA standard requires dead front over the line terminations).

2. Where outdoor pad mounted high voltage switchgear is accessible to the public, all doors of "customer compartments" accessing live parts shall be locked or secured with acceptable tamperproof devices.

Notes:

- Switchgear inside a locked station fence or suitable enclosure is not considered accessible to the public.
- Tamperproof devices shall be other than those used by Manitoba Hydro on its own equipment.

36-2 Grounding conductor to be installed with circuit conductors other than overhead systems

To meet the requirements of the Manitoba Electrical Code, a grounding conductor shall be installed with every set of circuit conductors. The grounding conductor shall be not less than 2/0 AWG copper and shall have sufficient ampacity to carry the maximum ground fault current in accordance with Table 51.

36-000 Applicable CSA Part III Standards for high voltage installations

Rule 36-000 Scope

High-voltage installations not covered in the Manitoba Electrical Code shall meet the requirements of the applicable CSA Part III standards.

36-204 Accessible ground operated switch handles

Rule 36-204 Overcurrent protection

Each break load interrupting device or break air break switch required by Items 36-204 1) b) and c) shall have a ground operated switch handle located in a readily accessible location. This will apply to single phase and three phase installations.

36-308 A Neutral grounding requirement for pole mounted transformers

Rule 36-308 Connections to the station ground electrode

It shall be permitted to use the grounding conductor specified in Item 36-308 2) b) i) to ground the neutral of a pole mounted transformer provided the size has a sufficient ampacity to carry the maximum ground fault current of the transformer in accordance with Table 51.

36-308 B Grounding conductor size for low voltage secondary neutrals when transformer primary exceeds 750 Volts

Rule 36-308 Connections to the station ground electrode

To meet the requirements of the Manitoba Electrical Code, the grounding conductor required by Item 36-308 6) b) shall be not less than 2/0 copper. There will be no requirement to increase this conductor based on the ground fault current of the transformer.

Section 46
Emergency power supply, unit equipment, exit signs, and life safety systems

46-202 Emergency generator sets

Rule 46-202 Types of emergency power supply

The Manitoba Building Code states that required emergency equipment, such as that for fire alarm systems, emergency lighting and fire pumps, be provided with emergency power.

Where the emergency power is supplied by a generator, it shall be installed in accordance with the current enforced version of CSA Standard C282, “Emergency Electrical Power Supply for Buildings.”

Section 10 of CSA Standard C282, specifies a number of tests be performed on the completed installation to ensure conformance to the standard.

Documentation supporting satisfactory performance of the installation during these tests shall be submitted to Electrical Inspections prior to occupancy approval.

CSA Standard CAN/CSA C282**,** “Emergency Electrical Power Supply for Buildings,” is available from the Canadian Standards Association.

Installers and designers should also be aware that the Manitoba Building Code requires life safety systems be tested per CAN/ULC-S1001, Standard for Integrated Systems Testing of Fire Protection and Life Safety Systems, including partial system replacements.

46-304 Emergency lighting supplies

Rule 46-304 Supply connections

Where emergency lighting is required by the authority having jurisdiction, the requirements of Subrule 46-304 4) shall be met. The intent of this Subrule is to ensure illumination in the area

being served by the unit equipment is maintained when power to the normal lighting in the area fails.

Note: Detailed information is available in the Canadian Electrical Code Handbook.

Section 62
Fixed electric heating systems

62-104 Termination kits for trace heater cables

Rule 62-104 Installation of heating devices and bonding

Installers are reminded that trace heating cable terminations shall be made only with the materials and methods specified in the trace heating cable manufacturer's instructions. Failure to use the specified materials and methods will void the trace heating cable approval.

62-126 Qualified persons for field repair of trace heater sets

Rule 62-126 Field repair, modification, or assembly of series trace heater sets

Field repair by unlicensed persons is not permitted in Manitoba under the Electrician's Act.

Section 64
Renewable energy systems, energy production systems, energy storage systems, and batteries

64-060 AC equipment disconnects with interactive inverters

Rule 64-060 Disconnecting means

All AC disconnect switches supplied with two sources of voltage are to be connected with the utility source to the line side and inverter output to the load side. All AC disconnecting means utilizing fuses and energized from two sources shall be provided with an additional adjacent disconnecting means on the load side per Rules 64-060 and 14-402.

Note: For Manitoba Hydro owned farm metering facilities with splitters or pole top subdivisions of the consumer's service, the utility owned breaker will not be permitted for the required customers disconnecting means. Furthermore, no customer equipment can be installed on a utility owned pole to facilitate this disconnect. Changes initiated to accommodate solar will necessitate the customer install their own service equipment

64-074 Labelling

64-076 **Rule 64-074 Marking**

64-200 **Rule 64-076 Warning notice and diagram**

Rule 64-200 Solar photovoltaic systems, marking

All labels for renewable energy systems as required by the Manitoba Electrical Code shall be permanently attached, engraved lamicoid. The lamicoid shall have a red background with white lettering. Refer to City of Winnipeg and Manitoba Hydro information bulletins.

64-112 A Interactive point of connection

Rule 64-112 Interactive point of connection

The only interactive point of connection Manitoba Hydro, as the supply authority, will permit is a connection on the load side of the service disconnecting means.

This connection shall be done at a panelboard or switchboard. Each source interconnection at the panelboard, switchboard or splitter shall be made at a dedicated circuit breaker or fusible disconnecting means.

When electrical equipment is supplied by multiple sources, an adjacent disconnecting means shall be installed for all sources per Rule 14-414.

Note: A separate meter and a connection on the line side of the service disconnecting means will not be permitted by Manitoba Hydro.

64-112 B Utility disconnect

Rule 64-112 Interactive point of connection

Rule 64-112 1) requires the output of an interactive inverter intended to be connected to the supply authority to be in accordance with Section 84. As the supply authority, Manitoba Hydro will require a utility disconnect to be installed for all solar photovoltaic systems. The utility disconnect shall be installed adjacent to the utility meter where practicable and must always be installed outdoors. When the Inspections Branch has deemed it not practicable to locate the utility disconnect adjacent to the meter, a label must be installed on the meter enclosure that indicates the location of the utility disconnect.

Manitoba Hydro, as the supply authority, will not mandate the application of Rule 84-024 1) c) and will not require the utility disconnect to have the contact operation verifiable by direct visible means (viewing window).

64-112 C Metering facilities and busbar ratings

Rule 64-112 Interactive point of connection

Metering facilities permitted for the subdivision of the consumer's service and supplied simultaneously by a primary power source and one or more utility-interactive inverters shall comply with the bus bar requirements of 64-112 4) and the following:

Customer Service Termination Enclosures (CSTE):
For calculating busbar ratings, the ampere rating of the CSTE shall be used for the utility source overcurrent device ampere rating. The ampere rating of the CSTE shall be deemed the bus bar rating on an existing CSTE that is not marked with a bus bar ampacity. You may also have the manufacturer re-label the CSTE with a bus bar rating provided the equipment is re-approved in accordance with the Manitoba Electrical Code. The sum of the connected solar cannot exceed the ampere rating of the CSTE.

Transformer Rated Meter Mounting Devices (TRMMD):
The sum of the ampere rating of the overcurrent devices for connected consumer's services shall not exceed the ampere rating of the TRMMD.

Dual Lug Meter Sockets (DLMS):
The sum of the ampere rating of the overcurrent devices for connected consumer's services shall not exceed the ampere rating of the DLMS.

Examples:
- 400 Amp rated TRMMD – One 400 Amp or two 200 Amp consumer's services are permitted.
- 200 amp rated DLMS – Two 100 Amp consumer's services are permitted

64-202 Array installations in accessible locations

64-210 **Rule 64-202 Voltage of solar photovoltaic systems**

64-220 **Rule 64-210 Wiring method**

Rule 64-220 Attachment plugs and similar wiring devices

For the application of Rules 64-202 4) a), 64-210 2) & 3) and 64-220 2), PV installations that are not protected by elevation or fencing require an acceptable barrier for making conductors and connectors inaccessible. An acceptable barrier shall consist of:

1. Sheet metal not less than 1.3 mm thick, or
2. Metal screening not less than 1.3 mm thick and where openings are a maximum size of 6.75 mm.

Installations in excess of 1000 VAC/1500 VDC will require other effective means such as elevation or fenced enclosures in accordance with Rule 26-300.

Note: For the application of Class B modules, sheet metal or screening is not considered an acceptable method for making installations inaccessible.

64-210 Rodent protection requirements

Rule 64-210 Wiring method

Installers are advised that, with the 2024 amendment to Subrule 64-210 5), the requirement for protection of conductors and cables against damage from rodents has been expanded to include all installations where the dc arc-fault protection is not an integral part of the module.

64-926 Energy storage systems

64-1100 **Rule 64-926 Separation from building exposures and egress from buildings**
Subrule 64-1100 9) Installation of energy storage systems at residential occupancies

UL 9540, Energy storage certification, NFPA 855, Standard for the installation of stationary energy storage systems, and 2021 IRC R328, Energy storage systems are **not** harmonized with the Manitoba Electrical Code for the location requirements for energy storage systems (ESS). The requirements in the Manitoba Electrical Code shall prevail.

An energy storage system shall be evaluated to UL 9540A, Test method for battery energy storage systems (BESS). Requirements and documentation must be submitted stating it meets the recognized minimum standard tests for flame spread and thermal runaway.

Section 68
Pools, tubs, and spas

Δ 68-058 A Bonding requirements for pools

Rule 68-058 Pool bonding

Code users should be aware that when using encapsulated reinforcing steel (rebar) for pools, a copper bonding grid must be installed per Item 68-058 4) c). This includes splash pads.

Pools, tubs and spas now require perimeter surface bonding. A copper ring or grid may be required to eliminate any voltage gradients between a conductive surface and the pool. Concrete and earth are considered conductive surfaces.

Refer to the City of Winnipeg and Manitoba Hydro pool bonding requirements for additional information.

Δ 68-058 B Removed.

Section 72
Mobile home and recreational vehicle parks

72-102 Recreational vehicle park calculation for 50 Amp receptacles

Rule 72-102 Demand factors for service and feeder conductors

For the application of this rule, if the panelboard or switch is rated 200 amps or less and the receptacles installed are rated 12000 watts, the demand load as calculated in accordance with Rules 72-102 2), 3) and 5) will not be considered a continuous load for the application of Rule 8-104.

Section 86
Electric vehicle charging systems

86-306 EV rated receptacles

Rule 86-306 Receptacles for electric vehicle supply equipment

Receptacles as stipulated in Section 86-306 b), must be rated for electric vehicles (EVs) when specified by the EV charger manufacturer.

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