THE WINNIPEG ELECTRICAL BY-LAW

By-law No. 86/2018

including
ELECTRICAL TECHNICAL INTERPRETATIONS
2018

A publication issued by

The City of Winnipeg

PLANNING, PROPERTY AND DEVELOPMENT DEPARTMENT

Development and Inspections Division

An electronic copy of this publication is also available under “Fees & Related By-laws” on the City of Winnipeg Electrical Info Centre at:

http://www.winnipeg.ca/ppd/InfoCentre/Electrical/default.stm

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This publication is produced by:

THE CITY OF WINNIPEG, DEVELOPMENT AND INSPECTIONS DIVISION

It forms a compilation of the following documents:

- The Winnipeg Electrical By-law No. 86/2018

- The 2018 City of Winnipeg Electrical Technical Interpretations

THE 2018 CANADIAN ELECTRICAL CODE, PART I, 24th EDITION

The Twenty-fourth Edition of the Canadian Electrical Code Part I, CSA Standard C22.1-18 has been adopted, with specific amendments, by City of Winnipeg By-law (effective October 1, 2018) and is known as:

THE WINNIPEG ELECTRICAL BY-LAW NO. 86/2018

The amendments are reprinted in this publication.

In addition to a copy of the City of Winnipeg By-law, this publication contains technical interpretations for use in the application of the Code.

The 24th Edition of the Canadian Electrical Code, Part I and the Canadian Electrical Code Handbook, in hardcopy, PDF or eBook format are available from CSA at www.csa.ca.

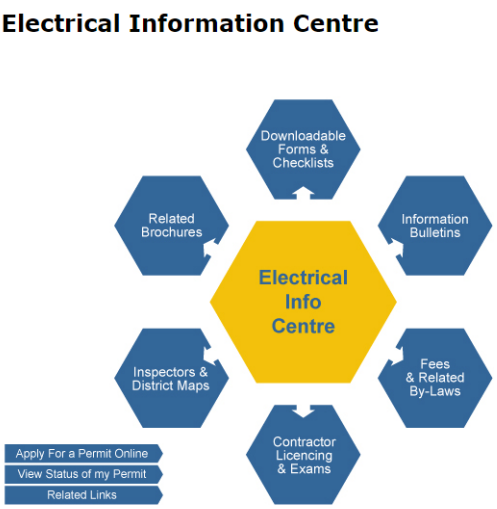
ELECTRICAL INFORMATION CENTRE

www.winnipeg.ca/ppd/electrical_info.stm

The following brochures and forms, produced by The City of Winnipeg, are available online from our Electrical Info Centre. Those indicated with an asterisk (*) are also available in hard copy from the City Permits Office at Unit 31 – 30 Fort Street:

Informational Brochures

- "Help Us Help You" guide for commercial electrical permit document requirements
- Electromagnetic Lock Installations
- Woodworking Shops
- Electrical Plan Requirements for New Construction
- Patient Care Areas Guide
- Emergency Lighting and Exit Signs
- High Voltage Installations
- Life Safety Tests
- Fire Alarm Verifications (qualification requirements for personnel conducting F.A. VI's)
- Electrical Requirements in the Building Code
- Flooded Buildings
- Commercial Building Permit Process
- Homeowners' Guides for:
    - Electrical Installations*
    - Basement Development*
    - Swimming Pools*
    - Detached Garages*
    - Electrical & Plumbing Permits*
    - Wood Decks*



Downloadable Forms & Checklists

- Homeowner Electrical Permit Declaration Form
- Electromagnetic Locks Checklist
- Photoluminescent Exit Signs Checklist
- Patient Care Areas Declaration Form
- Schedule 'A' for Fire Alarm Monitoring
- After Hours Inspection Request Form
- Building Design Summary (BDS)
- Commercial Alteration Design Summary (CADS)
- Professional Designer's Certificate (RPDC)
- Owner Statement
- Optional Professional Designer Program certificate (OPCP)
- Wording for Letters of Certification – Final and Interim
- Request for Code Deviation Form
- Electrical Permit Applications Forms for:
    - Commercial
    - Housing
    - Signs
- Worksheets for Apartment Bldg Calculations:
    - Service Calculations
    - Suite Calculations

THE CITY OF WINNIPEG

THE WINNIPEG ELECTRICAL BY-LAW

NO. 86/2018

A By-law of THE CITY OF WINNIPEG
adopting and varying the 2018 Canadian Electrical Code.

THE CITY OF WINNIPEG, in Council assembled, enacts as follows:

Title

1 This By-law shall be referred to as the **Winnipeg Electrical By-law**.

Definitions

2 In this By-law:

"Code" means the *2018 Canadian Electrical Code, Part I, Twenty-fourth Edition, C22.1-18, Safety Standard for Electrical Installations* adopted by this By-law or a subsequent and similar Code adopted by this By-law.

"Designated employee" means the Manager of Development and Inspections of the Planning, Property and Development Department of the City of Winnipeg and any employee of the City to whom he or she has delegated authority to administer or enforce all or part of this By-law.

Adoption of Canadian Electrical Code

3(1) Except as varied by this By-law, the *2018 Canadian Electrical Code, Part I, Twenty-fourth Edition, C22.1-18, Safety Standard for Electrical Installations* published by the Canadian Standards Association is hereby adopted as part of this By-law, and a violation or contravention of the Code is a violation or contravention of this By-law.

3(2) Where in this By-law reference is made to a Rule or Section number, the reference shall be understood to mean that rule or section in the Code.

3(3) In the event of any conflict, explicit or implied, between the provisions set out in the Code and the provisions set out in this By-law, the provisions set out in this By-law shall prevail.

Application

4 No person shall install electrical wiring or electrical apparatus and no person shall use electrical current except as provided in this By-law.

Authority

5(1) Designated employees are authorized to conduct inspections and take steps to administer and enforce this By-law or remedy a contravention of this By-law in accordance with *The City of Winnipeg Charter* and, for those purposes, have the powers of a "designated employee" under *The City of Winnipeg Charter*.

5(2) Without restricting the generality of subsection (1), designated employees are hereby given the authority in an emergency associated with construction governed by this By-law or the Code to take whatever actions and measures are necessary to meet the emergency and to eliminate or reduce its effects.

5(3) The details of any construction which are not specifically dealt within this By-law shall be performed to the satisfaction of a designated employee, which authority shall be reasonably exercised by the designated employee.

5(4) Designated employees are hereby authorized to determine whether equipment, techniques, conditions, circumstances and all other matters meet the standards and requirements of this By-law or are otherwise acceptable and, where in this By-law such terms as "proper", "adequate", "sufficient", "ample", "suitable", "substantial", "secure", "necessary", "dangerous" and the like or derivatives thereof, are used, they mean "proper", "adequate", "sufficient", "ample", "suitable", "substantial", "secure", "necessary", "dangerous" to the satisfaction or in the reasonable opinion of the designated employee, and such terms as "where practicable", "where required", "as far as possible" have a like significance.

5(5) In exercising their discretion to determine the acceptability or satisfactory nature of equipment, techniques, conditions, circumstances and all other matters under this By-law and whether or not they are "proper", "adequate", "sufficient", "ample", "suitable", "substantial", "secure", "necessary", "dangerous" and the like, designated employees shall act reasonably and with the objective of ensuring and promoting the safe and efficient use of electricity.

Authority to conduct certain Electrical Inspections

6 Electrical inspections of one and two family dwellings, row housing and related structures and equipment may be carried out by inspectors who are employed by the City of Winnipeg and who

(a) hold an electrician's journeyperson Licence; or

(b) have successfully completed an inspection training program provided by

(i) the City of Winnipeg;
(ii) an educational institution approved by the Manager of Development and Inspections; or
(iii) a building code development, training and certification organization with a course content approved for the purpose of this section by the Manager of Development and Inspections.

Variations to the Code

7 The Code is varied by the provisions of Schedule "A" to this By-law, which is hereby incorporated into and forms part of this by-law.

Repeal of By-law No. 77/2015

8 The Winnipeg Electrical By-Law No. 77/2015 is hereby repealed.

Coming into effect

9 This By-law comes into effect on October 1, 2018 and applies to all permit applications made on or after that date.

DONE AND PASSED in Council assembled, this 20th day of September, 2018.

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SCHEDULE "A" TO WINNIPEG ELECTRICAL BY-LAW NO. 86/2018

The 2018 Canadian Electrical Code, Part I, Twenty-fourth Edition, C22.1-18, Safety Standard for Electrical Installations, published by the Canadian Standards Association is hereby varied as follows:

Variations to Section 0 of the Code
OBJECT, SCOPE AND DEFINITIONS

Definitions

Section 0 is varied by:

(a) striking out the following definitions:

Acceptable
Approved
Electrical Contractor
Inspection Department

(b) adding the following definitions in alphabetical order:

Acceptable *means acceptable to a designated employee.*

Accredited Field Evaluation Agency *means an agency that has been accredited by the Standards Council of Canada, in accordance with specific criteria, procedures and requirements, to operate on a continuing basis as a special inspection body for electrical equipment.*

Approved*, when used with reference to any electrical equipment means:*

- *a) that the equipment has been certified by an accredited certification organization as*
  - *i) meeting CSA standards; or,*
  - *ii) where CSA Standards do not exist or are not applicable, other recognized standards; or alternatively*
- *b) that the equipment:*
  - *i) has been approved by the Minister of Labour of the Province of Manitoba or an accredited field evaluation agency after examining the equipment or a sample and finding that it conforms to the applicable standards for the equipment and presents no undue hazard to persons or property; and*
  - *ii) is acceptable to the designated employee.;*

City *means the City of Winnipeg.*

Construction *means the installation of electrical equipment in or about any building or premises and includes all electrical equipment installed.*

Designated employee *means the Manager of Development and Inspections of the Planning, Property and Development Department of the City of Winnipeg and any employee of the City to whom he or she has delegated authority to administer or enforce all or part of this Code.*

Electrical contractor *means an individual to whom an Electrical Contractor's Licence has been issued.*

Examining Committee *means the committee established by Rule 2-008 6).*

Inspection Department *means the Electrical Section of the Commercial Inspections Branch and the Housing Inspections Branch of the Development and Inspections Division of the Planning, Property and Development Department of the City of Winnipeg.*

Licence *means an electrical contractor licence as provided for in this Code.*

Owner *means a person or the agent, servant or employee of a person who owns, manages or is in possession of land or a building to which this By-law applies, or who is in receipt of the whole or a part of any rents or profits therefrom, whether the rents and profits are received on the person's own account, or as agent or trustee for another person.*

Person *includes an individual, corporation, partnership, firm or entity.*

Professional Engineer *means a professional engineer who is a member of Engineers and Geoscientists Manitoba and who is entitled to practice in the Province of Manitoba.*

Single Detached Dwelling *means a building designed for residential occupancy and containing no more than one dwelling unit and no other occupancy. Includes modular and ready-to-move homes, but does not include mobile homes.*

Structure *means anything constructed or erected with a fixed location on or in the ground or attached to something having a fixed location on the ground and includes but is not limited to buildings, walls, fences, signs, billboards, poster panels, light standards, and swimming pools.*

Variations to Section 2 of the Code
GENERAL RULES

Administrative

Section 2 is varied by striking out Rules 2-000 to 2-032 and substituting the following:

ADMINISTRATIVE

2-000 Duty of owner regarding design and inspection

1) Unless the designated employee concludes it is not necessary in order to ensure that it complies with this Code and the Manitoba Building Code, the owner must ensure that a Professional Engineer entitled to practice in the Province of Manitoba and skilled in the

application of this Code to the design and construction of the structure represented in the plans, drawings and related documents has signed and sealed plans, drawings, specifications and a certificate submitted as part of an application for a building permit or an electrical permit, and has reviewed the electrical installation and provided certification required by the designated employee that the installation has been installed in accordance with this Code and the applicable by-laws, for any of the following types of electrical installations.

i) installations where Sections 18, 20, 24 or 36 of the Code are applicable;
ii) buildings referred to in Sentence 1.3.3.2.(1) of the Manitoba Building Code;
iii) buildings where the electrical service requirements exceed 750 KVA;
iv) fire alarm systems for buildings noted in Item b);
v) fire pumps;
vi) generators 50 kW or larger and those supplying life safety systems;
vii) lightning protection systems for high buildings as defined in the Manitoba Building Code;
viii) power factor correction of electrical installations, other than individual motor applications;
ix) solar photovoltaic installations;
x) any other type of installation where the designated employee requires it under Subrule 2-002 1).

2) The owner must immediately advise the designated employee if the Professional Engineer who has signed and sealed drawings, specifications and the certificate submitted as part of an application for a Building Permit will not review and certify the construction or installation of the electrical installations referred to in the drawings, specifications and certificate.

3) The owner must ensure that the construction or installation of the electrical installations does not deviate from the requirements of the conditions of the permit, including the plans, drawings and other documents accepted as part of a building permit, without first obtaining from the designated employee permission to do so, except for minor changes which conform to this Code. Where, in the reasonable opinion of the designated employee, deviations from the conditions of the permit are substantial and require an additional review of the plans, drawings or other documents, he or she shall treat the proposed deviations as a new application and the process associated with a new application, including the payment of fees, must then be followed.

4) When completed construction or installation of electrical installations is not in compliance with this Code or an applicable by-law, the owner must, at his or her expense, rectify the non-compliance within a reasonable period of time.

2-002 Engineer's responsibility

1) Where, in the reasonable opinion of a designated employee, the character of the proposed construction requires technical knowledge for the preparation of drawings and specifications, as provided in Subrule 2-000 1) j), the drawings and specifications shall be prepared, signed and sealed by a Professional Engineer and the construction reviewed by a Professional Engineer or a suitably qualified person reporting to the Professional Engineer.

2) *Where Subrule 2-000 1) applies, a designated employee shall not issue a Building Permit or, where a Building Permit is not required, an Electrical Permit, until the responsible Professional Engineer has submitted plans, drawings and specifications for the construction or installation of the electrical installations and a certificate required by the designated employee under Subrule 2-032 5) concerning the compliance of the plans and drawings with this Code and applicable by-laws containing the following statement*:

I hereby certify that I have complied with all applicable legislation and professional codes in affixing my seal to the plans, drawings and related documents which are being submitted as part of this application for a permit under the Winnipeg Building By-law or the Winnipeg Electrical By-law.

By affixing my seal, I am representing that:

- **I am fully aware of the provisions of the Manitoba Building Code and the Winnipeg Electrical By-law that are applicable to these plans and drawings;**
- **I have applied a professional standard of care to ensure compliance of these plans and drawings with the applicable provisions of the Manitoba Building Code and the Winnipeg Electrical By-law.**

3) *The responsible Professional Engineer shall submit a certificate required by the designated employee under Subrule 2-032 5) concerning the compliance of the construction or installation of the electrical installations with this Code prior to issuance of an interim or final Building Occupancy Permit or, where a Building Occupancy Permit is not required, upon completion of the construction.*

4) *The plans, specifications and certificates referred to in this Rule shall not be accepted by the designated employee unless they have been signed and sealed by a Professional Engineer.*

5) *No person may sign and seal all the documents referred to in this Rule unless he or she is a member in good standing with Engineers and Geoscientists Manitoba and is skilled in the application of this Code to the construction or installation of the electrical installations referred to in the documents.*

2-004 Electrical permit

1) Subject to Subrule 2), no person shall commence electrical construction or permit commencement of electrical construction until an electrical permit for the construction has been issued by the designated employee and no person may engage in construction, connection, reconnection, alteration, repair or extension of any electrical installation prior to an electrical permit being issued by the designated employee for that construction.

2) Notwithstanding Subrule 1), no electrical permit is required for

a) electrical construction within the category that is authorized to be done by the holder of a Provincial Voice Data Video Licence and the electrical construction takes place in a single detached dwelling; or

b) the installation of replacement luminaires, general-use switches, motors, ballasts and

receptacles by the owner of a single detached dwelling or the holder of a valid, current Journeyperson Electrician's Licence, if the luminaire, general-use switch, motor, ballast or receptacle is:

i) installed in an owner-occupied single detached dwelling;
ii) installed in a branch circuit having a rating not exceeding 20A and 130V;
iii) interchangeable with the equipment being replaced in function, electrical rating, size and weight without having to change any part of the branch circuit;
iv) installed in the same location as the equipment being replaced;
v) not connected to aluminum wiring;
vi) approved in accordance with Rule 2-024;
vii) not electrical equipment forming part of an electrical installation to which Section 68 of this Code applies;
viii) not recessed luminaires to which Rules 30-900 to 30-912 apply; and
ix) connected to a branch circuit where a grounding means exists.

3) A designated employee shall issue an electrical permit only to an individual

a) who holds an Electrical Contractor's Licence authorizing that individual to carry on his or her occupation, trade or business in the City of Winnipeg; or
b) who holds a valid, current and applicable Manitoba Journeyperson Electrician's Licence authorizing that individual to do construction on a single detached dwelling owned and occupied by that individual as his or her principal residence or which will be occupied by that individual upon completion as his or her principle residence;
c) subject to Subrule 5), authorizing that individual to do construction on a single detached dwelling owned and occupied by that individual as his or her principal residence where the construction authorized is not electrical work for any of the following:
i) electrical work greater than 200 Amps;
ii) renewable energy systems (e.g.: solar photovoltaic systems or wind systems); or
iii) generators; or
d) subject to Subrule 5), authorizing that individual to do construction on a single detached dwelling owned by that individual which will be occupied by that individual upon completion as his or her principal residence where the construction authorized is not electrical work for any of the following:
ii) electrical work greater than 200 Amps;
ii) renewable energy systems (e.g.: solar photovoltaic systems or wind systems); or
iii) generators

4) The designated employee may reject the application if the applicant for a permit

a) fails within a reasonable period of time to provide information required to process the application or fails to respond to communication from the City, or
b) otherwise appears to have abandoned the application, or
c) if required by the designated employee under Subrule 5), fails to pass a test or demonstrate his or her competence to do the work for which a permit is sought.

The designated employee may give the applicant notice of a decision to reject an application by sending the notice to the applicant at the address provided by the applicant in the permit application.

5) *Before issuing a permit under Subrule 3) c) or d), the designated employee may, if he or she considers it appropriate for reasons of safety and Code compliance, require that the owner occupant of a single detached dwelling pass a test or otherwise provide evidence of his or her competency to do the work for which a permit is sought.*

6) *A permit automatically expires and is thereafter null and void if the construction or other work authorized by the permit*

a) subject to Subrule 7), is not initiated within 6 months after the permit is issued;
b) subject to Subrule 7), is not completed within
i) three years after the date the permit is issued; or
ii) a greater length of time as determined to be reasonable by the designated employee in the case of extraordinarily large construction projects; and
c) fails to comply with the conditions imposed on the permit or a provision of the Code.

7) *Upon application by the owner, a designated employee may grant an extension to the dates by which construction or other work must be initiated and completed. The extension may extend the time period for initiation and completion by no more than the time period set out in Subrule 6) for the initiation or completion, as the case may be, of the construction or other work authorized by the permit. In order to qualify for the extension, the owner must*

a) submit, and undertake to implement, a work plan which sets reasonable and measurable targets for stages of construction or other work to be completed; and
b) provide a deposit in an amount equal to the cost of the permit which must be refunded, without interest, if the construction or other work is completed within the extended time period.

8) *A designated employee may revoke a permit by giving notice to the owner at the address provided by the owner in the permit application if*

a) the construction or other work authorized by the permit is not proceeding reasonably to completion after being initiated; or
b) the owner does not meet the targets set out in the work plan referred to in Item 7) a) for stages of construction or other work to be completed.

9) *Where a designated employee has revoked a permit under Subrule 8) and the same owner applies for a new permit in respect of substantially the same construction project, the designated employee may require that the owner provide a deposit in an amount equal to the cost of the permit before issuing the permit. The deposit must be refunded, without interest, if the owner complies with Subrule 6) in respect of the construction or other work for which the permit is issued.*

10) *A permit is void and all rights under the permit are terminated if the negotiable instrument used for payment of the permit fee is returned for any reason.*

11) All construction being carried out under an electrical permit issued prior to the effective date of this By-law shall:

a) be completed in accordance with the By-law requirements applicable at the time of permit application and any special conditions described on the electrical permit and approved plans; and
b) proceed at a satisfactory rate in the reasonable opinion of a designated employee.

12) If the requirements set out in Subrule 6) are not met, a designated employee may cancel the electrical permit, in which case,

a) a new electrical permit shall be obtained before construction may be continued and
b) all construction undertaken under the authority of the new permit shall comply with the provisions of this Bylaw.

2-006 Annual electrical permit

1) Notwithstanding Rule 2-004, a designated employee may issue an Annual Electrical Permit to an individual holding an Electrical Contractor's Licence "A" or "B" and the Permit must specify the particular site or sites to which it applies.

2) Notwithstanding Subrule 2-004 1), construction, connection, re-connection, alteration, repair or extension of an electrical installation may take place under the supervision and responsibility of the holder of an Annual Electrical Permit without the necessity of a permit being issued for the specific construction, connection, re-connection, alteration, repair or extension of an electrical installation.

3) The designated employee may issue an Annual Electrical Permit subject to reasonable terms or conditions.

4) An Annual Electrical Permit expires on the thirty-first day of December of the year in which it was issued.

5) The designated employee may suspend, withdraw or refuse to re-issue an Annual Electrical Permit where

a) the permit holder has failed to comply with the applicable codes and by-laws or the terms and conditions of the Annual Electrical Permit;
b) the permit holder has failed to remit the permit fees applicable to the construction, connection, re-connection, alteration, repair or extension of an electrical installation that has taken place under the authority of the Annual Electrical Permit within the time set out in the Planning, Development and Building Fees By-law.
c) a log book setting out specifics of the work undertaken on each project has not been maintained or is not available for inspection.

2-008 Electrical contractor licences

1) Except for a homeowner who has obtained a permit under Items b), c) or d) of Subrule 2-004 3), and subject to Subrule 2-004 3) c) or d), no person may place, install, maintain, repair or replace any electrical equipment in the City of Winnipeg unless the person is operating under the authority of an Electrical Contractor Licence issued under this By-law.

2) An Electrical Contractor Licence may only be issued to an individual; in order for a corporation, partnership, governmental department or some other legal entity to operate as an Electrical Contractor, an employee or officer of the entity shall obtain an Electrical Contractor Licence on behalf of the entity.

3) An individual applying for a licence, whether on his or her own behalf or on behalf of a legal entity, shall satisfy the licensing requirements and pay the established licensing and examination fees before being issued a licence.

4) The holder of a licence, or an agent authorized in writing to do so on behalf of the licence holder, is eligible to obtain permits to perform electrical construction within the scope of the licence as follows:

- *a) The holder of an Electrical Contractor Licence "A" or his/her agent may obtain permits for any electrical construction governed by City of Winnipeg By-laws and The Electricians' Licence Act; and*
- *b) The holder of an Electrical Contractor Licence "B" or his/her agent may obtain permits to install and maintain electrical installations in premises owned, leased or managed by the corporation, firm, company or government department on behalf of whom the Licence is held as permitted by City of Winnipeg By-laws and The Electricians' Licence Act; and*
- *c) The holder of an Electrical Contractor Licence "C" or his/her agent may obtain permits for limited electrical construction as authorized by this By-law and the Limited Specialized Trade Electrician's Licence issued under The Electricians' Licence Act.*

5) In order to obtain a licence, an individual shall meet the following requirements:

- *a) to qualify for an Electrical Contractor Licence "A" the applicant shall:*
  - *i) hold a valid, current Journeyperson Electrician's Licence as required by The Electricians' Licence Act; and*
  - *ii) have passed an examination set out by the Examining Committee.*
- *b) to qualify for an Electrical Contractor Licence "B", the applicant shall:*
  - *i) hold a valid, current Journeyperson Electrician's Licence as required by The Electricians' Licence Act; and*
  - *ii) have passed an examination set out by the Examining Committee.*
- *c) to qualify for an Electrical Contractor Licence "C", the applicant shall:*
  - *i) hold a limited specialized trade electrician's Licence, issued under The Electricians' Licence Act; and*
  - *ii) have passed an examination set out by the Examining Committee.*

6) An Examining Committee, consisting of the designated employee and any other person whom the designated employee may appoint, is hereby established with responsibility to:
a) prescribe the subjects on which candidates for the Electrical Contractor Licence shall be examined;
b) prepare, organize and conduct or supervise the examination of the candidates; and
c) report on the results of the examinations to the designated employee.

7) Where an applicant fails to pass an examination set out by the Examining Committee on two successive occasions, he or she must complete a training course acceptable to the designated employee before being eligible to apply again for a licence.

8) Every licence holder is responsible for construction carried out under the authority of a permit issued to him or her and, where an individual holds a licence on behalf of a corporation, partnership, governmental department or some other legal entity, the licence holder is responsible and may be prosecuted under this By-law for the activities of all individuals operating under that licence, even if the licence holder is no longer employed or retained by the corporation, partnership, governmental department or other legal entity.

9) *Where it appears that a licence holder may have violated any provisions of this By-law or that construction carried out under the authority of a licence holder fails to meet the standards and requirements set out in this Code, the designated employee may hold a hearing to investigate the matter and may revoke or suspend any licence as a result of the hearing.*

10) Notwithstanding Subrule 9), the designated employee may immediately suspend a licence for a period of up to 30 days where it appears that the licence holder has violated this Bylaw in a way that endangers the life or health of an individual or endangers property, but the designated employee must reinstate the licence after 30 days unless a hearing to investigate the matter provides justification to further suspend or to revoke the licence.

11) Licences may not be transferred, sold or assigned.

12) A licence may be issued for multiple years and terminates on the date indicated on the licence.

13) Electrical contractor licences, terms and fees, including administrative fees for licences that are renewed after their expiry date, are as published in the City of Winnipeg annual Fees and Charges schedule.

14) Where an individual is unlicenced for more than 6 months, he or she must re-qualify for a licence under Subrule 5).

2-010 Electrical permit fees

The electrical permit fees are as published in the City of Winnipeg annual Fees and Charges schedule.

2-012 Special requirements

Requirements and standards in this Code that apply to particular types of installations are in addition to general requirements and standards in this Code and, in the event of a conflict between them, the requirements and standards that apply to particular types of installations shall prevail.

2-014 Inspection and availability of work for inspection

1) An electrical contractor is responsible for notifying the District Electrical Inspector or another designated employee in the Electrical Inspections Branch when construction is ready for inspection and shall do so at such time or times as will permit inspection being made before any construction or portion thereof is concealed.

2) No person may render electrical construction inaccessible by lathing, boarding, or other building construction until it has been inspected and approved by a designated employee.

2-016 Plans and specifications

1) Until the designated employee has reviewed and accepted plans and specifications for the construction and an electrical permit has been issued, no person may begin construction on

a) wiring installations of public buildings, industrial establishments, factories, and other buildings in which public safety is involved; or
b) large light and power installations and the installation of apparatus such as generators, transformers, switchboards, large storage batteries, etc.; or
c) other installations specified by the designated employee

2) The owner is responsible for submitting the plans and specifications referred to in Subrule 1) in quantities reasonably required by the designated employee.

2-018 Connection

1) No electrical installation, extension, alteration, or addition shall be connected or reconnected to any service or other source of electrical energy by a supply authority, electrical contractor, or other person, until the designated employee has issued an electrical permit and given authorization to make such connection or reconnection.

2) Subrule 1) does not apply to Manitoba Hydro when it reconnects electrical power to a location where the service has been cut off for non-payment of bills or a change of occupant, provided there have been no alterations or additions to the installation subsequent to the last authorization.

2-020 Re-inspection

The designated employee may re-inspect any installation if and when he or she reasonably considers such action to be necessary.

2-024 Use of approved equipment

1) Electrical equipment used in electrical installations shall be approved, and shall be of a kind or type and rating approved for the specific purpose for which it is to be employed.

2) No person may connect unapproved electrical equipment.

2-026 Withdrawal of approval (See Appendix B)

The designated employee may withdraw approval of electrical equipment at any time if

a) the equipment is of lesser quality than the sample on which approval was based;
b) the conditions of use indicate that the equipment is not suitable; or
c) the terms of the approval agreement are not being carried out.

2-028 Damage and interference with electrical equipment

1) No person shall damage any electrical installation or a component of an electrical installation.

2) Unless prior permission has been obtained from the designated employee, no person shall cut, break or interfere with any lock or seal that has been placed on any electrical equipment by or at the direction of the designated employee.

3) No person shall interfere with any electrical installation or component of an electrical installation except when, in the course of alterations or repairs to non-electrical equipment or structures, it is necessary to disconnect or move components of an electrical installation, it which case it is the responsibility of the person carrying out the alterations or repairs to ensure that the electrical installation is restored to a safe operating condition as soon as the progress of the alterations or repairs will permit.

2-030 Deviations or postponements

1) The designated employee may grant special permission to deviate from or postpone compliance with the requirements and standards of this Code where the deviation or postponement will not, in the reasonable opinion of the designated employee, jeopardize the safety of people or property and will permit substantial compliance with the objects of the requirement or standard, but such permission applies solely to the specific installation and circumstances for which it is granted.

2) Requests for special permission or deviation must be submitted to the designated employee via a "Request for code deviation" form.

2-032 Role of the designated employee

1) The designated employee is responsible for the administration and enforcement of this Code and for these purposes he or she and all individuals to whom he or she has delegated authority to administer or enforce all or part of this Code have all the powers of a "designated employee" under The City of Winnipeg Charter.

2) An order from a designated employee requiring that construction be stopped on a project shall set out the conditions under which the construction may be resumed.

3) The designated employee shall accept as satisfactory any construction or condition that lawfully existed prior to the effective date of this By-law, so long as the construction or condition does not constitute an unsafe condition.

4) The designated employee is authorized to determine the type and form of plans, drawings and other documents that are required under Rule 2-000 to be submitted as part of an application for an electrical permit.

5) Without restricting the generality of Subrule 4), but subject to Subrule 2-002 2), the designated employee is authorized to establish the text of a certificate signed and sealed by a Professional Engineer that the owner must submit as part of an application for a building permit, an electrical permit, an interim building occupancy permit or a building occupancy permit.

6) For the purposes of complying with the City's obligation to inspect and approve plans relating to construction prior to a building permit being issued, the designated employee may rely on a certificate or representation of a Professional Engineer as to the compliance of plans and drawings or other documents, or of construction, with this By-law and the Winnipeg Building By-law.

7) In relying on a certificate or representation of a Professional Engineer pursuant to Subrule 6), the designated employee may establish circumstances in which no examination or review whatsoever of certain aspects or parts, or of the entirety, of the plans or drawings or other documents signed and sealed by a Professional Engineer, or of construction reviewed by a Professional Engineer, will be conducted by the City of Winnipeg before a building permit, an electrical permit or an interim or final building occupancy permit is issued.

8) As part of the authority granted by Subrule 6), the designated employee is authorized to determine:

a) subject to this Rule, the form and content of the certification or representation to be provided, including a signed statement using specific text approved by the designated employee, or sealed plans and drawings;
b) the amount of professional liability insurance, if any, that must be carried by a Professional Engineer who provides certifications or representations;
c) the criteria, if any, for determining when the City of Winnipeg will not rely solely or at all on the required certificates or representations submitted by specific individual Professional Engineers; and
d) the form of an audit or other programs, if any, to encourage compliance of submitted plans and specifications with this Code and applicable by-laws.

9) Subject to Subrule 10), the designated employee may institute a program in which building permits and occupancy permits authorizing the construction or installation of electrical installations or of interim or final occupancy of buildings to which Rule 2-000 does not apply are issued by the City with minimal examination or review by the City of plans, drawings or specifications for compliance with this By-law and with minimal or no inspection of construction or installation of electrical facilities.

10) The program referred to in Subrule 9) must include an audit function which subjects the unexamined plans or specifications as well as the construction of the building to random, systematic or targeted review.

11) As part of the authority granted by this Rule, the designated employee is authorized to establish the circumstances in which the program authorized in Subrule 9) will apply and to determine the form of the audit function established as part of the program.

12) Notwithstanding that permits have been issued under this rule on the basis of plans, specification or certifications signed and sealed by a Professional Engineer, where a designated employee determines, through an audit or otherwise, that plans, specifications or certifications, or actual construction based upon those plans and specifications fail to comply with this By-law or the Building By-law, the designated employee may order the Professional Engineer or the owner, or both, to rectify the point of non-compliance within a reasonable time. A Professional Engineer or owner who fails to comply with an order issued under this provision commits an offence.

13) The designated employee may refuse to issue an electrical permit or permits:

- *a) whenever information submitted is inadequate to determine compliance with the provision of this By-law;*
- *b) whenever incorrect information is submitted;*
- *c) to any person who has failed to pay any fee or payment due and owing to the City of Winnipeg under this By-law or the City of Winnipeg Fees and Charges Schedule;*
- *d) if a violation of another By-law, standard, act or regulation could result from the electrical construction permitted by it; or*
- *e) if, in the case of an addition, alteration, repair or extension to any wiring system, in, on or through any building or place, the existing wiring is not in accordance with the provisions of this By-law.*

14) The designated employee may cancel any electrical permit if:

- *a) in the opinion of the designated employee, the privileges granted by that permit are being misused;*
- *b) any condition under which the permit was issued is not being observed;*
- *c) the permit was issued in error;*
- *d) the permit was issued on the basis of incorrect information; or*
- *e) in the reasonable opinion of the designated employee, the electrical construction is not proceeding at a satisfactory rate.*

2-034 Duties of the owner

1) Every owner shall make or have made at his own expense such tests or inspections as are necessary to demonstrate to the designated employee that the equipment or action proposed complies with this By-law.

2) When required by the designated employee, every owner shall uncover and replace at his own expense any construction that has been covered contrary to Rule 2-014.

3) The owner of a building must ensure that the electrical installations in the building are in compliance with the Electrical Code that was in effect at the time that that the electrical installations were constructed or installed. This requirement applies whether or not the owner owned the building at the time that the electrical installations were constructed or installed.

4) The owner shall maintain the electrical installations associated with the property in a safe condition.

5) When the electrical installations on a property are in an unsafe condition, the owner shall immediately take all necessary action to put the building electrical installations in a safe condition.

6) The owner shall maintain in good working order all safeguards or devices that are required to be installed in the building by the Winnipeg Building By-law or this Code.

7) Every owner shall ensure that no unsafe condition exists or will exist because of the work being undertaken and not completed, should occupancy exist or occur prior to the completion of any work being undertaking that requires a permit.

8) When a "stop work" order is issued by a designated employee, the owner shall ensure that the person or persons to whom it is directed stops construction immediately, except for the installation or erection of covers or guards so as to be able to maintain the site in a safe condition.

9) When required by the designated employee, every owner shall provide a letter to certify compliance with the requirements of this By-law and of any permits required.

10) An owner shall ensure that electrical installations on his or her premises are not overloaded, defective or being misused.

11) An owner shall remove or cause to be removed from the premises

a) unsafe electrical appliances or wiring;
b) dead or unused electrical wires or equipment that are or may become a hazard.

12) An owner shall comply with orders made by a designated employee.

2-036 Duties of the permit holder

1) Every permit holder shall ensure that all construction safety requirements of this By-law are complied with.

2) Every permit holder shall ensure that all construction is carried out in accordance with this By-law and all provisions as described on the permit and accepted drawings.

3) Every permit holder shall give notice to a designated employee:

a) when construction is ready to be inspected prior to covering; and
b) when construction has been completed so that a final inspection can be made.

4) Every permit holder is jointly and severally responsible with the owner for any construction actually undertaken.

5) When required by the designated employee, the permit holder shall provide a statutory declaration that the electrical installation was constructed in accordance to the accepted plans, specifications and requirements of the Winnipeg Electrical By-law and the Winnipeg Building By-law.

6) When a "stop work" order is issued by a designated employee, a permit holder shall ensure that the construction ceases immediately, except for the installation or erection of covers or guards so as to be able to maintain the site in a safe condition.

7) A permit holder shall comply with orders made by a designated employee.

2-038 Service of orders and other documents

Orders to remedy a contravention of this By-law or a decision made by the designated employee that is subject to an appeal shall be served in accordance with The City of Winnipeg Charter and, where an address for sending an order or decision is required; one of the following shall be used:

a) if the person to be served is the owner of real property, the address maintained by the tax collector for the purpose of issuing the tax notice for that property; and
b) if the person to be served is the occupant of real property, the street address for that property; and
c) if the document to be served relates to a permit, licence or other document for which the person to be served has applied, the address provided by the person in the application.

2-040 Appeals

An appeal from an order to remedy a contravention of this By-law or a decision made by the designated employee that is subject to appeal may be made to the Standing Policy Committee on Property and Development, Heritage and Downtown Development in accordance with The City of Winnipeg Charter.

Variations to Section 4 of the Code CONDUCTORS

4-004 Ampacity of wires and cables

Section 4 of the Code is varied by deleting Subrule 4-004(22).

4-006 Temperature limitations

Section 4 of the Code is varied by replacing Items 4-006 2) a) and b) with "75 °C."

Variations to Section 6 of the Code
SERVICES AND SERVICE EQUIPMENT

Control and protective equipment

6-212 Wiring space in enclosures
Section 6 of the Code is varied by deleting Subrule 6-212 3).

Metering equipment

6-400 Metering equipment
Section 6 of the Code is varied by renumbering the present Rule 6-400 as Subrule 6-400 1) and by adding the following Subrule immediately after it:

2) *For determining the type of metering equipment required by the supply authority, reference shall be made to supply authority metering standards which shall be amendatory or additional to Rules 6-402 to 6-412, inclusive.*

Variations to Section 10 of the Code
GROUNDING AND BONDING

Grounding

Grounding - General

10-102 Grounding electrodes
Section 10 of the Code is varied by re-numbering Items 10-102 2) a) i), ii) and iii) as Items iii), iv) and v), respectively, and adding Items i) and ii) as follows:

i) copper-clad;
ii) not less 15.8 mm in diameter;

10-116 Installation of grounding conductors
Section 10 of the Code is varied by deleting Subrules 10-116 1) and 5) and substituting the following:

1) *The grounding conductor for a system shall be without joint or splice throughout its length, except in the case of busbars, thermit-welded joints, compression connectors applied with a compression tool compatible with the particular connector.*

5) *A grounding conductor installed in the same raceway with other conductors of the system to which it is connected shall be insulated, except that an uninsulated grounding conductor shall be permitted where the length of the raceway*

a) does not exceed 15 m between pull points; and
b) does not contain more than the equivalent of two quarter bends between pull points.

Solidly grounded systems

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

Section 10 of the Code is varied by deleting Rule 10-210 and substituting the following:

1) The grounded conductor of a solidly grounded ac system supplied by the supply authority shall

a) be connected to a grounding conductor at each consumer's service with the connection being made on the supply side of the service disconnecting means in the service box;
b) have a minimum size as specified
i) for a bonding conductor; and
ii) for a neutral conductor when the grounded conductor also serves as a neutral;
c) be connected to the equipment bonding terminal by a system bonding jumper; and
d) have no other connection to the non-current-carrying conductive parts of electrical equipment on the load side of the grounding connection.

2) Where two or more buildings or structures are supplied from a single consumer's service,

a) the grounded circuit conductor at each of the buildings or structures shall be connected to a grounding electrode and be connected to the equipment bonding terminal by a system bonding jumper; or
b) the non-current-carrying conductive parts of the electrical equipment in or on the building or structure shall be bonded to ground by a bonding conductor run with the feeder or branch circuit conductors.

3) Where the system is grounded at any point, the grounded conductor shall be run to each individual service.

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

Section 10 of the Code is varied by deleting Subrule 10-212 2).

Bonding

Equipment bonding

Section 10 of the Code is varied by adding the following after Rule 10-614:

10-616 Installation of equipment bonding conductors

1) The bonding conductor for equipment shall be permitted to be spliced or tapped, but such splices or taps shall be made only within boxes, except in the case of open wiring where they shall be permitted to be made externally from boxes and shall be covered with insulation.

2) Where more than one bonding conductor enters a box, all such conductors shall be in good electrical contact with each other by securing all bonding conductors under screws, or by connecting them together with a solderless connector and connecting one conductor only to the box by a bonding screw or a bonding device, and the arrangement shall be such that the disconnection or removal of electrical equipment fed from the box will not interfere with, or interrupt, the bonding continuity.

3) Where a bonding conductor is run in the same raceway with other conductors of the system to which it is connected, it shall be insulated, except that where the length of the raceway does not exceed 15 m and does not contain more than the equivalent of two quarter bends, and uninsulated bonding conductor shall be permitted to be used.

4) A bonding conductor shall be protected from damage

a) mechanically; or
b) by location.

5) Where a separate bonding conductor, required by this Code, is run with single-conductor cables, the bonding conductor shall follow the same route as the cables.

6) The bonding jumper, in the case of receptacles having grounding terminals isolated from the mounting strap required for special equipment, shall be permitted to be extended directly back to the distribution panel.

7) Electronic equipment rated to operate at a supply voltage not exceeding 150 volts-to-ground and that requires a separate bonding conductor shall be permitted to be bonded to ground by an insulated conductor extended directly back to the distribution panel, provided that

a) the separate bonding conductor is enclosed in the same raceway or cable containing the circuit conductors throughout the length of that cable or raceway;
b) the separate bonding conductor is sized not less than as given in Rule 10-614 for each leg of the run; and
c) the bonding requirements of Rules 10-600 are met.

Variations to Section 12 of the Code
WIRING METHODS

Exposed wiring on exteriors of buildings and between buildings on the same premises

12-300 Exterior exposed wiring rules
Section 12 of the Code is varied by renumbering the existing Rule 12-300 as Subrule 12-3001) and by adding the following Subrule immediately after it:

2) Exposed overhead wiring on the exteriors of buildings and between buildings or structures on the same premises shall not be permitted, except by special permission or deviation from the designated employee.

Raceways – General

12-904 Conductors in raceways
Section 12 of the Code is varied by deleting “Except for cable tray,” in Subrule 12-904 2).

Cable trays

12-2200 Method of installation
Section 12 of the Code is varied by deleting Subrule 12-2200 7).

12-2208 Provisions for bonding
Section 12 of the Code is varied by deleting Rule 12-2208 and substituting the following:

Metal cable trays shall be adequately bonded at intervals not exceeding 15 m and the size of bonding conductors shall be based on the ampacity of the largest ungrounded conductor in the circuits or equivalent for multiple parallel conductors *carried by the cable tray in accordance with the requirements of Rule 10-614.*

Variations to Section 26 of the Code INSTALLATION OF ELECTRICAL EQUIPMENT

General

26-008 Sprinklered equipment
Section 26 of the Code is varied by deleting Rule 26-008 and substituting the following:

Electrical service and distribution equipment with ventilation openings located in sprinklered buildings or spaces shall be protected where needed by non-combustible hoods or shields so arranged as to minimize interference with the sprinkler equipment.

Branch circuits

26-654 Branch circuits for dwelling units
Section 26 of the Code is varied by adding “and” at the end of Item 26-654 f) and adding the following Item:

g) at least one branch circuit shall be provided solely for receptacle(s) for the driveway in accordance with 26-726 d).

Receptacles

26-700 General
Section 26 of the Code is varied by adding the following Subrule to Rule 26-700:

8) Where a sump pump is required by the Winnipeg Building By-law for the control of water from a subsurface drainage (weeping tile) system:

a) a single receptacle shall be installed for the connection of the sump pump; and
b) the receptacle for the sump pump shall be supplied from a branch circuit that supplies no other outlets or equipment.

26-708 Receptacles exposed to the weather
Section 26 of the Code is varied by deleting Subrules 26-708, 2) and 3), substituting the following.

2) Receptacles of CSA configurations 5-15R, 5-20R, 5-20RA, 6-15R, 6-20R and 6-20RA shall be provided with cover plates suitable for wet locations and marked "Extra Duty."

3) Notwithstanding Subrule 2), wet location cover plates not marked "Extra Duty" shall be permitted for receptacles
a) installed facing downward at an angle of 45° or less from the horizontal; or
b) located at least 1 m above finished grade or floor level in a damp location.

Receptacles for residential occupancies

26-726 Receptacles for single dwellings
Section 26 of the Code is varied by adding the following after Item c) of Rule 26-726*:*

d) at least one receptacle shall be provided for each driveway.

Variations to Section 28 of the Code
MOTORS AND GENERATORS

Disconnecting Means

28-602 Types and ratings of disconnecting means
Section 28 of the Code is varied by deleting Subrule 28-602 5).

Variations to Section 30 of the Code
INSTALLATION OF LIGHTING EQUIPMENT

Luminaires in Buildings of Residential Occupancy

30-504 Stairways
Section 30 of the Code is varied by adding the following Subrule to Rule 30-504:

4) Notwithstanding Subrule 3) and Appendix G, provisions for 3-way switches shall be installed for stairway lighting to basements.

Variations to Section 36 of the Code
HIGH-VOLTAGE INSTALLATIONS

Grounding and bonding

36-302 Station ground electrode
Section 36 of the Code is varied by deleting Item 36-302 1) a) and substituting the following:

1) a) *consist of a minimum of four driven copper-clad ground rods not less than 3 m long and 17.09 mm in diameter spaced at least the rod length apart and, where practicable, located adjacent to the equipment to be grounded;*

Variations to Section 46 of the Code
EMERGENCY POWER SUPPLY, UNIT EQUIPMENT, EXIT SIGNS, AND LIFE SAFETY SYSTEMS

General

46-108 Wiring method
Section 46 of the Code is varied by adding the following as Subrule 46-108 6):

6) *For the purpose of Subrule 46-108 5), "life safety system" includes the essential electrical systems noted in Clause 6.1 of CSA Z32,* standard for Electrical safety and essential electrical systems in health care facilities.

Variations to Section 60 of the Code
ELECTRICAL COMMUNICATION SYSTEMS

Outside Conductors

60-500 Overhead Conductors on Poles
Section 60 of the Code is varied by renumbering Rule 60-500 as Subrule 60-500 1) and adding the following Subrule immediately after it:

2) *Exposed overhead wiring on the exteriors of buildings and between buildings or structures on the same premises shall not be permitted, except by special permission from the designated employee.*

Variations to Section 64 of the Code
RENEWABLE ENERGY SYSTEMS

Solar Photovoltaic Systems

64-060 Disconnecting means
Section 64 of the Code is varied by deleting Item 64-060 2) g) and substituting the following:

g) *be located*
- i) *within sight of the equipment or be lockable in the open position; and*
- ii) *within 9 m of the equipment or be integral to the equipment.*

Section 64 of the Code is varied by deleting Rule 64-110 and substituting the following:

64-110 Unbalanced interconnections

1) Single-phase inverters for renewable energy systems and ac modules in interactive renewable energy systems shall not be connected to three-phase systems.

2) Three-phase inverters and three-phase ac modules in interactive systems shall comply with the requirements of Rules 84-008 and 84-018.

Variations to Section 76 of the Code TEMPORARY WIRING

76-006 Service entrance equipment

Section 76 of the Code is varied by deleting Item 76-006 d) and substituting the following:

d) be installed in one of the following ways:
- *i) for services not exceeding 200 A, on a pole or on a solid wood post that measures at least 89 mm x 150 mm nominal and is adequately braced;*
- *ii) for services exceeding 200 A, on a substantial pole structure; or*
- *iii) for services supplied from an underground distribution, on an adequately braced post.*

Variations to the Tables Section of the Code TABLES

Table 39 Minimum permitted size for 3-wire 120/240 V and 120/208 V service conductors for single dwellings and feeder conductors supplying single dwelling units or row housing of apartment and similar buildings and terminating on equipment having a conductor termination temperature of not less than 75°C

The Tables section of the Code is varied by deleting Table 39.

THE WINNIPEG ELECTRICAL BY-LAW 86/2018

TECHNICAL INTERPRETATIONS 2018

The Technical Interpretations (T.I.'s) are not amendments but clarifications of how the associated Rules are interpreted by the City of Winnipeg.

A PUBLICATION ISSUED BY

The City of Winnipeg
Planning, Property and Development Department
Development and Inspections Division

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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 CRTC (Canadian Radio Telecommunication Commission). 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.

SECTION 2
GENERAL RULES

2-1 INSULATION AND VAPOUR BARRIER BEHIND ELECTRICAL EQUIPMENT

Note that the Manitoba Building Code requires the upper part of foundation walls enclosing a heated space to be insulated from the underside of the sub-floor to not less than 2.4 m (8 feet) below finished ground level. The insulation may be installed on the interior or the exterior of the foundation wall.

Installers are reminded that electrical equipment shall be installed to accommodate the vapour barrier and insulation requirements as per Sections 9.25. and 9.36 and Part 5 of the Manitoba Building Code.

2-006 ANNUAL PERMITS
Rule 2-006 Annual Electrical Permit

An annual permit can be issued to a contractor who holds an "A" or "B" electrical contractor licence. The annual permit is to perform minor electrical maintenance work to electrical facilities at a premises owned, leased or managed by the corporation, firm, company or government department so named on the permit application over the course of a calendar year. The permit covers "non-capital projects" of a routine maintenance nature such as replacement of ballasts, receptacles, luminaires and other electrical equipment that may require maintenance, replacement or relocation within a plant or facility, at the discretion of the Inspections Branch.

Annual permits do not cover projects where a separate electrical permit is required such as in the following examples:

- when a building permit is required such as for a general renovation or an addition;
- hazardous locations including paint booths;
- fire alarm installations or modifications;
- new services or service repairs;
- modifications to an electrical distribution other than like for like panel replacement or breaker replacement;
- new production lines;
- upgrading of multiple pieces of mechanical or electrical equipment not due to failure.

The electrical contractor will be responsible for maintaining and supplying to the Inspections Branch, prior to the Inspector's site visit, a record for each property of all work done, locations, quantities and by whom. The permit holder is required to contact the Electrical Inspector in March, June, September and December to arrange for the quarterly and final inspections and to close the permit. Contractors should note that any defects will be subject to extra inspections fees as noted in the Fees and Charges Schedule.

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. 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 re-certified 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.

The following will not be deemed as electrical equipment and therefore is not required to be approved or certified under the *Electrician's Licence Act* and the Winnipeg Electrical By-law:

1. A maximum of four contactors or relays installed in an approved electrical box ("control box") provided that:
   a) The ampere rating of the control box shall not exceed 20 amperes;
   b) The control box must have a permanent nameplate installed stating the electrical characteristics as stipulated in the Winnipeg Electrical By-law;
   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 Winnipeg Electrical By-law; 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 A*ct of Manitoba.

2-024 D ELECTRICAL EQUIPMENT DISCONNECTING MEANS
Rule 2-024 Use of Approved Equipment

All disconnecting means required by the Winnipeg Electrical Bylaw shall be field installed external to the equipment. All integral disconnecting means will only be considered acceptable when:

- Specifically permitted in the Winnipeg Electrical Bylaw, and
- The associated CSA Part II Standard has provisions for the installation and marking of the required disconnect.

(Ref. rules 28-604 5), 62-206 3), 64-060, etc.)

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.

2-100 A **IDENTIFICATION OF UNDERGROUND INSTALLATIONS**
Rule 2-100 Marking of Equipment

Rule 2-100 – Identification of equipment serviced by underground cables.
All new underground conductor installations shall be identified with a label indicating the Code year to which the installation was designed, including the U/G Detail and Table utilized to achieve the rated ampacity of the IEEE ampacity calculation.

Rule 2-100 & 4-004 Label – Equipment serviced by underground installations of #1/0 AWG and larger shall be identified with a permanently secured lamicoid label (minimum size: 3” x 5”) posted on or near each service or overcurrent supplying equipment indicating the following:

UNDERGROUND CONDUCTORS

CIRCUIT I.D._____

YEAR INSTALLED _____

DIAGRAM _____ DETAIL _____ TABLE _____

SIZE/TYPE OF CONDUCTOR _____

AMPACITY _____ MAX. OVERCURRENT _____

2-100 B **LABELLING OF FUSED SWITCHES AND ADJUSTABLE BREAKERS**
Rule 2-100 Marking of Equipment

Installers should be aware that Subrules 2-100 2) and 3) require permanent labelling where the rating of the installed fuses or the breaker set point is less than the maximum rating of the fused switch or adjustable breaker.

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

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

Cables in insulated spaces shall be separated by at least one cable diameter except that two cables shall be permitted to be in contact where passing through holes in structural members.

The practice of bunching or grouping more than two cables in thermal insulation is not acceptable.

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 1). 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 2).

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 3) 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:
1. *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.*
2. *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.*
3. *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.*

2-130 FLEXIBLE CORD FOR LUMINAIRES AND GREEN INSULATED CONDUCTORS INSTALLED IN NON-COMBUSTIBLE CONSTRUCTION
Rule 2-130 Flame Spread Requirements for Electrical Wiring and Cables

All wiring that is installed in buildings that are required to be of non-combustible construction must be minimum FT-4 rated to meet the flame spread requirements of Rule 2-130.

Note that this includes flexible cords for luminaires that are not usually FT-4 rated unless specified otherwise and exposed green insulated conductors such as R90 that may be used for grounding of services, grounding of transformers or for bonding to supplement single conductor cables.

2-400 NON-WEATHERPROOF ENCLOSURES FOR ELECTRICAL EQUIPMENT
Rule 2-400 Enclosures, Type Designations, and Use

Enclosures for electrical equipment shall be of the type for use in their environment as per Table 65. The practice of installing non-weatherproof electrical equipment in weatherproof enclosures is not acceptable.

Note that the meter height relaxations noted in the Manitoba Hydro Customer Metering Standards only apply to multiple metering centres installed in dedicated electrical rooms.

This will also be enforced for services falling under the requirements of Section 76, Temporary wiring.

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 Winnipeg Electrical By-law. 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 VFD's/ASD's
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 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.

4-008 SHEATH CURRENTS IN DIRECT BURIED SINGLE CONDUCTOR CABLE INSTALLATIONS OTHER THAN CONSUMER'S SERVICE
Rule 4-008 Induced Voltages and Currents in Metal Armour or Sheaths of Single-Conductor Cables; Appendix B note

Where metal sheathed cable is run underground, the sheath shall be isolated at the load end and a separate bonding conductor run adjacent to the cables. Alternatively, if sheath currents are not eliminated, the cable ampacity shall be de-rated in accordance with Rule 4-008.

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 farm yard 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.

6-110 SMALL SERVICES
Rule 6-110 Three-Wire Consumer’s Services

Rule 6-110 states:

“A three-wire consumer’s service shall be provided in all cases where more than two 120V branch circuits are installed, unless such supply is not available from the supply authority.”

Refer to Section 0 definitions for Consumer’s Service and Service Box.

Intent of this rule:
An overcurrent device is required ahead of a panelboard containing more than two circuits.

6-112 A UPGRADING OF EXISTING RESIDENTIAL ELECTRICAL SERVICES
Rule 6-112 Support for the Attachment of Overhead Supply or Consumer's Service Conductors or Cables

Where a customer's meter is to be relocated outside or service conductors re-pulled in an existing conduit, 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.

NOTE: *Prior to 1972, a 9 foot (2.7 m) service head and supply service clearance was in effect; between 1972 and 1980, this was increased to 11 feet (3.5 m).*

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.

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 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), or
   (c) In an acceptable multiple position meter socket.

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.

6-200 B HOT SPLITTERS
Rule 6-200 Service equipment

Where existing electrical services utilize "hot splitters," no more than four subdivisions are allowed. The City of Winnipeg will no longer accept additional sub-divisions from existing hot splitters in single dwellings. Should the relocation or addition of loads beyond the capacity of the service, as determined by Rule 8-106 8), require service changes, a single service box in accordance with Rule 6-200 will be required.

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.

NOTES:
1. *Main breaker lugs MUST be sized to accommodate the service conductors.*
2. *Refer to T.I. 2-1 for insulation requirements behind electrical equipment.*
3. *In single dwellings, the 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.*

6-200 C USE OF MULTI-POSTION METER SOCKETS
Rule 6-200 Service Equipment

As per Rule 6-200 2) and T.I. 6-200 A, multi-position meter sockets may be use 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.

For installations where the ampacity of the service conductors is less than the rating of the meter assembly, a service box must be installed ahead of the service subdivision.

6-206 ELECTRICAL REQUIREMENTS FOR THE DESIGNATED FLOOD FRINGE AREA
Rule 6-206 Consumer's Service Equipment Location

For buildings located within the designated floodway fringe area, the requirements of Provincial Regulation 266/91 must be met. Section 8, Item (b) of the Regulation states:

> *"the electrical service and panelboard shall be located above the main floor unless the existing service and panelboard located below the main floor within a structure existing before August 15, 1981 is being replaced or added to in the same location."*

For the purpose of this Regulation, we interpret "electrical service and panelboard" to mean the main service switch such that the main service switch must be located above the main floor. If the service switch is part of a combination-style service entrance panelboard, the entire panelboard must be located above the main floor.

6-302 INSULATION RATING FOR OVERHEAD CONSUMER'S SERVICE CONDUCTORS
Subrule 6-302 5) Overhead Consumer's Service Conductors

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

6-400 METER SOCKETS SERVED FROM UNDERGROUND SUPPLY SYSTEMS
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 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, as 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.

As per Subrule 2-100 4), 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:

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 = <u>280A</u>
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 = <u>320A</u>
	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.

8-106 A **QUALIFIED PERSON**
Subrule 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 B **DEMONSTRATED LOADS**
Subrule 8-106 9) Use of Demand Factors

Designers 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 City of Winnipeg Commercial Electrical Plan Examination or Commercial Electrical Inspections branches.

Note that pre-approval for the use of demonstrated loads will only be considered for buildings of similar size, height, occupancy, location, 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 C **LOAD INCREASES TO EXISTING SERVICES**
Rule 8-106 Use of Demand Factors

Installers should note that Manitoba Hydro requires notification prior to a load increase of 10 kVA/kW/hp or more to any existing service. Furthermore, in the Underground Secondary Network Area, Manitoba Hydro requires notification prior to the addition of 5 hp or more to an existing single phase service.

8-200 **CALCULATED LOAD FOR MULTI-FAMILY DWELLINGS WITH 2, 3 OR 4 SINGLE DWELLINGS**
Rule 8-200 Single Dwellings

The calculated load for services and feeders for multi-family dwellings with two, three or four single dwellings, e.g.: duplexes, triplexes and quadruplexes, shall be based on the calculation method detailed for row housing in Subrule 8-200 2).

SECTION 10
GROUNDING AND BONDING

10-102 USE OF SINGLE ROD GROUNDING ELECTRODES
Rule 10-102 Grounding Electrodes

1. Rule 10-700 2) a) for manufactured rod grounding electrodes has been relaxed in its application to permit the use of a single copper-clad rod as a grounding electrode provided the following conditions have been met:
    a) The service is single phase and not greater than 200 amperes and 150 volts to ground; and
    b) The service is temporary or supplies a bus shelter, cable television distribution equipment, or other similar installation.
    c) The service supplies a sign and is not greater than 100 Amps and 150 Volts to ground.
2. 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 in order to reduce the risk of damaging buried conductors.

10-112 ALUMINUM GROUNDING CONDUCTORS AND CONNECTIONS
Rule 10-112 Material for Grounding Conductors

Rule 10-112 permits the use of aluminum grounding conductors only when resistance to corrosion has been considered. Aluminum grounding conductors and connections installed in any corrosive environment must have corrosion protection. For example, bare aluminum grounding conductors or connections to a grounding electrode installed in contact with masonry or earth are subject to corrosion and will not be permitted. For more information see the Appendix B note to rule 10-112.

It is strongly recommended that installers use copper grounding conductors and connections when installing services.

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 Item 10-210 1),grounding conductors shall not be terminated in meter mounting devices or customer service termination enclosures (CSTE's).

Note: Rule 6-308 permits the service neutral to be bare. The grounded service conductor (neutral) on the supply side of the service box may be insulated or bare and will be permitted to bond the meter mounting device.

10-610 BONDING BETWEEN ENCLOSURES INTERCONNECTED WITH FIBRE SPACERS OR METAL THROATS
Rule 10-610 Bonding Means – Fixed Equipment

The use of fibre spacers or metal throats will be permitted to interconnect component parts of electrical equipment provided bonding jumpers sized in accordance with Table 16 are installed.

10-700 BONDING OF INTERIOR GAS PIPING
Rule 10-700 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 S406-92, “Construction of Preserved Wood Foundations.” 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 S406-92.

12-010 A 12-3000 WIRING AND BOXES IN RETURN AIR DUCTS AND PLENUM CHAMBERS
Rule 12-010 Wiring in Ducts and Plenum Chambers
Rule 12-3000 Outlet boxes

Subrule 12-010 5) is relaxed to include all return air plenums that are constructed of combustible joists in single dwellings.

Device boxes, outlet boxes and recessed light fixtures should be located outside of return air ducts and plenums wherever possible. However, where not practicable, device and outlet boxes recessed into return air ducts/plenums must be the airtight type complete with gaskets. Pot lights recessed into return air ducts/plenums are required to be IC rated, airtight and gasketted.

12-010 B TRANSFORMERS IN RETURN AIR PLENUMS
Rule 12-010 Wiring in Ducts and Plenum Chambers

In order to comply with Article 3.6.4.3. of the Manitoba Building Code, flame spread requirements and smoke developed classifications must be met for electrical installations in plenums. Transformers do not meet these requirements and therefore are 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 8), a concrete slab at grade level denotes a building floor slab.

12-012 B CONDUITS AND CABLES INSTALLED IN OR UNDER FLOORS OF ATTACHED GARAGES
Rule 12-012 Underground Installations

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

12-100 A TYPE USEB90 AND USEI90 CABLES
Rule 12-100 Types of Insulated Conductors and Cables

Type USEB90 and USEI90 cables will be permitted for use as underground feeders provided:

a) A bonding conductor, sized in accordance with Table 16, is installed with the cable except as permitted by Rule 10-210, and
b) The installation is in accordance with the requirements of Rule 12-012 and 12-100; and
c) The cables are not installed in or on a building unless in a raceway; and
d) Where type USEB90 is installed on a pole, it is installed in rigid conduit to a point at least 2 m above grade or ground level; and
e) Where type USEI90 is installed on a pole or building, it is in a raceway between the underground trench and the above ground termination; and
f) All conduits are sealed to prevent the entrance of moisture.

Note: USEB and USEI cables are not for use in overhead services where no part of the cable installation is underground.

12-100 B ARMOURED CONTROL AND INSTRUMENTATION CABLE (ACIC)
Rule 12-100 Types of Insulated Conductors and Cables

Type ACIC cables are approved under CSA Part II Standards as control and instrumentation cable only and will not be permitted for use as a power cable.

12-120 CABLE TIES AS CONDUIT OR CABLE SUPPORTS
12-920
Rule 12-120 Supporting of Conductors
Rule 12-920 Support of Raceways

Cable ties will not be accepted as a supporting means for 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.

12-618 SECURING NON-JACKETTED ARMOURED CABLE WITH TIE WIRE
Rule 12-618 Running of Cable Between Boxes, etc.

Galvanized tie wire is not an approved method of supporting cables or raceways. It has been an acceptable industry practice to support AC90 type armoured cable with tie wire.

Galvanized tie wire will be permitted to provide support for AC90 type armoured cables inside a finished wall only. All AC90 type 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.

12-930 RACEWAYS INSTALLED WHERE MOISTURE MAY ACCUMULATE
Rule 12-930 Raceways Installed Underground or Where Moisture may Accumulate

Areas where conductors are subject to moisture, as noted in Item 12-930 1) c), include locations where raceways are embedded in concrete in areas such as concrete floors exposed to periodic hosing down or rain, indoor loading docks, car washes, parkades, etc.

Wiring methods in these and similar areas are required to be of the type approved for Category 1 locations.

12-1014 PNEUMATIC TUBING IN RACEWAYS
Rule 12-1014 Insulated Conductors and Cables in Conduit

Electrical raceways may only be used for the purpose of carrying electrical conductors. An exception will be permitted to allow pneumatic tubing in a raceway where all the electrical conductors are designated as Class 2 circuits.

Conduit fill for such raceways shall be calculated in accordance with the requirements of Rule 12-910 using the diameter of the tubing where the Rule specifies “cable diameter.”

12-1500 ELECTRICAL NON-METALLIC TUBING (ENT) INSTALLED OUTDOORS
Rule 12-1500 Use of Electrical Non-metallic Tubing

Electrical Non-metallic Tubing shall not be installed exposed in exterior locations unless specifically approved for sunlight resistance, and so marked as per 2-134, and provided with the required mechanical protection.

12-3014 ELECTRICAL CONDUIT FITTINGS
Rule 12-3014 Accessibility of Junction Boxes

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

12-3032 MULTI-SECTION PANELBOARDS
Rule 12-3032 Wiring Space in Enclosures

Where two or more panelboard interiors are provided in a single enclosure complete with a factory-installed metal barrier between the panelboards, the only openings permitted in this barrier are those required to run the subfeed conductors from one panelboard to the other. These interconnecting conductors are factory installed. No other conductors may be run through these openings.

For the purpose of Subrule 12-3032 3), 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 for individual installations 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.

14-606 **PANELBOARD/SPLITTER OVERCURRENT PROTECTION**
Rule 14-606 Panelboard Overcurrent Protection

Rule 14-606 allows for panelboards to be installed on the secondary side of transformers with overcurrent protection on the primary side provided the panelboard rating is not less than the overcurrent rating in amperes multiplied by the ratio of the primary to the secondary voltage. For the application of this rule, the definition of a “panelboard” includes splitters.

SECTION 16
CLASS 1 AND CLASS 2 CIRCUITS

16-200 to 16-226 **CLASS 2 CIRCUITS, 30 VOLTS OR LESS**
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

18-250 to 18-254

WOODWORKING SHOPS
Rules 18-250 to 18-254 Installations in Zone 22 Locations

Classification

Woodworking shops are considered to be Zone 22 locations. The following relaxations to Zone 22 requirements will be permitted where adequate dust control equipment is installed and interlocked. For items not specifically listed below, Zone 22 requirements shall apply.

1. Wiring Methods

a) Surface wiring may be either rigid PVC conduit or Electrical Metallic Tubing (EMT) utilizing couplings and connectors approved for wet locations. Boxes and fittings shall comply with Rule 18-252 2).
b) Concealed wiring may be type AC or NM cable. Concealed boxes and fittings may be ordinary type.
c) Surface mounted boxes and fittings shall comply with Rule 18-252 2).
d) Surface mounted enclosures for equipment disconnects must be marked as suitable for circulating dust as per Table 65.

2. Covers for Switches and Receptacles

Switch and receptacle covers may be of the type marked suitable for wet locations; covers marked Extra Duty (i.e.: in-use covers) are not acceptable. Where duplex receptacles are used, a separate self-closing cover will be required for each section of the receptacle.

3. Lighting

General purpose fluorescent lighting luminaires other than those with T5 lamps, may be installed:

a) If mounted directly on the ceiling; or
b) If suspended, provided with adequate dust shields to prevent the accumulation of dust.

Note: Industrial-type fluorescent fixtures with solid reflectors are not considered to have adequate dust shields as required in (b) above. The dust shields must prevent dust from accumulating on the ballast compartment.

LED luminaires, exit signs and emergency lights must be of dust tight construction with a minimum NEMA rating of Type 4 or 12.

3. Equipment

Woodworking equipment shall be of dust tight construction.

4. Heating

Unit electric air heaters, other than those approved for the location, will be permitted provided the following requirements are met:

a) Motors are of the totally enclosed type;
b) The unit is designed to minimize the accumulation of dust and other debris;
c) The enclosures for electrical parts of the heater shall prevent the entrance of dust; and
d) The exposed surface* temperature of the heater shall not exceed 165 degrees Celsius under normal conditions and 218 degrees Celsius under abnormal conditions such as fan failure.

* *Exposed surface means a surface exposed to the air, e.g. motor enclosure, heater sheath, etc. A "GX" rated heater will generally meet these requirements.*

SECTION 22
LOCATIONS IN WHICH CORROSIVE LIQUIDS OR 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.

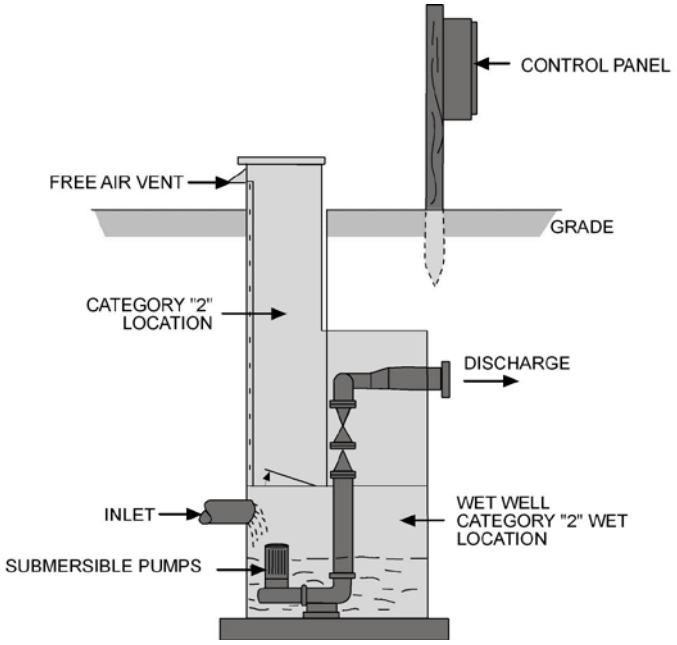
22-002 B **GREENHOUSES**
Rule 22-002 Category Definitions – Appendix B

Commercial 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 letter sealed by an engineer licenced to practice in the Province of Manitoba detailing the measures taken to reduce the classification and what the new classification is.

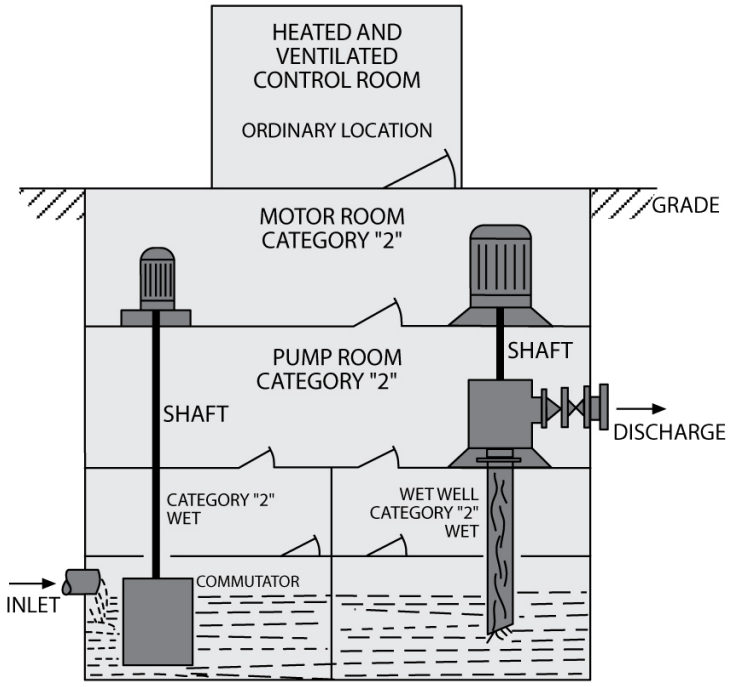
22-704 **DIAGRAMS FOR SEWAGE LIFT AND TREATMENT PLANTS**
Rule 22-704 Classification of Areas

The following diagrams detail typical installations and area classifications for sewage lift and treatment plants:

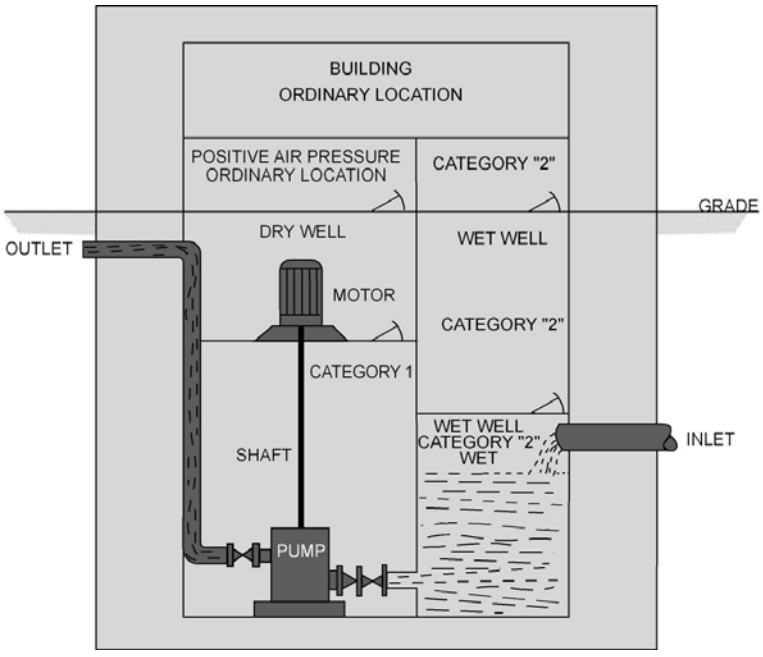
Typical Sewage Lift Station (Self-Contained)



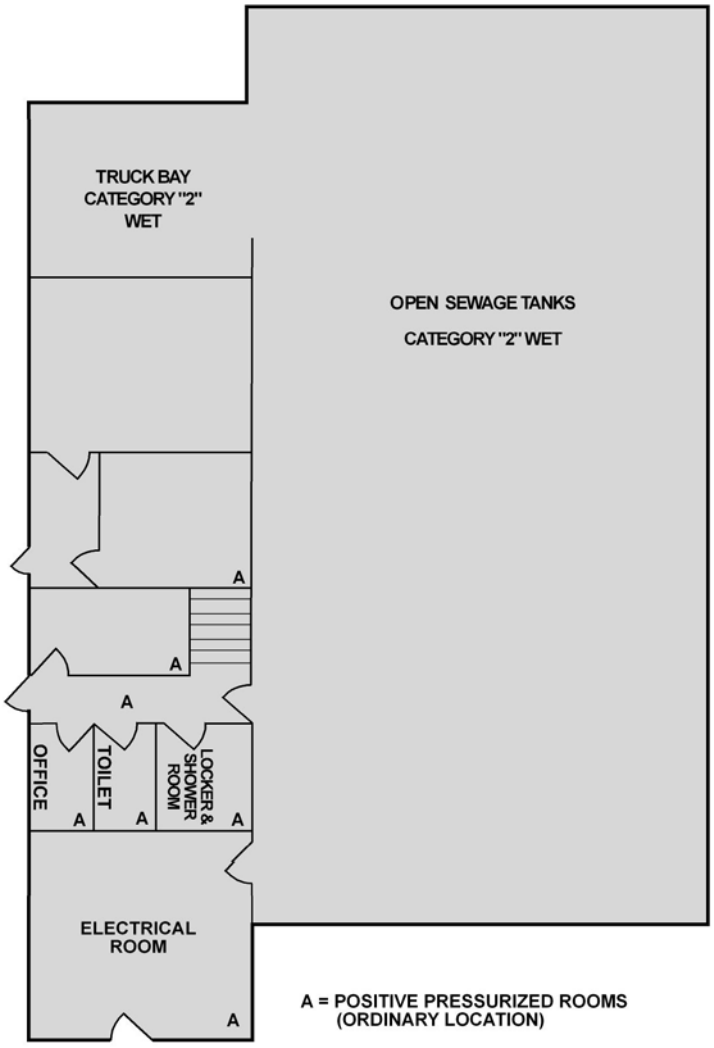
Typical Sewage Lift Station (Control Building on top of wet well)



Typical Sewage Lift Station (Side-by-Side)



Typical Sewage Treatment Plant



SECTION 24
PATIENT CARE AREAS

24-100 PATIENT CARE AREAS

Rule 24-100 Rules for Patient Care Areas

DEFINITION: Electrical patient care areas are areas where permanently-connected or cord-connected electrical medical equipment is used for the purpose of intentional contact at a patient's skin surface or internally during the patient's treatment, diagnostics or monitoring.

Documentation identifying patient care areas, or the absence thereof, must be submitted for **ALL** health care facilities.

Standard CAN/CSA-Z32 for electrical safety in health care facilities identifies medical facilities such as dental clinics, chiropractors' offices, physicians' offices, optometrists' offices,

physiotherapists' offices, and others, in addition to traditional hospital facilities, as potentially having electrical patient care areas.

The level of patient care – basic, intermediate or critical – is then determined based on the frequency or type of contact with electrical medical equipment as defined in either Section 24 of the Winnipeg Electrical By-law or in the Z32 Standard.

According to the Z32 Standard, the responsibility for defining a facility's patient care areas lies with the facility administrator. The administrator is defined as the person responsible for operating the health care facility, or his/her designee.

Required documentation:

- For all health care facilities, the facility administrator must provide a completed City of Winnipeg Patient Care Areas Declaration form to the City of Winnipeg Plan Examination branch. The Declaration form is available under the "Downloadable Forms" bubble on the Electrical Info Centre at www.winnipeg.ca/electrical_info.stm.
- Where an engineer responsible for the electrical design is required or has otherwise been retained,
  a. It is expected that the engineer discusses the Declaration with the facility administrator and advises as to its accurate completion,
  b. The engineer must provide a detail for the installation of patient care wiring methods for the level(s) of patient care area(s) applicable to the project, and
  c. The engineer must provide a bonding/grounding diagram for the installation.
- In the absence of an engineer, the electrical contractor must provide the detail noted in b. above.
- If patient care areas are clearly identified and classified on submitted electrical drawings that are sealed by an electrical engineer licensed to practice in The Province of Manitoba, it is assumed that the facility administrator has appointed the engineer as the designee and further documentation from the administrator is not required.
- The patient care information submitted on the Declaration form, the electrical drawings or specifications must list each room classified as patient care and must list the level of patient care for each room.

Authorization Letter Required for Designee (other than engineer):

If the administrator has appointed a designee to provide the above required documentation other than an engineer as noted above, a letter signed by the administrator, authorizing the designee as such must be submitted. Acceptable wording for the authorization letter is as follows:

"As the administrator of [facility name] located at [facility address], I authorize [name of designee] of [name of designee's company] to provide designations and classifications of electrical patient care areas in the above facility to the City of Winnipeg for the application of the Winnipeg Electrical By-law."

SECTION 26
INSTALLATION OF ELECTRICAL EQUIPMENT

26-014 USE OF FIBREGLASS PADS
Rule 26-014 Dielectric Liquid-Filled Equipment – Outdoors

For the purposes of Item 26-014 4) c), pads manufactured of fibreglass are acceptable.

26-248 **"STEP-UP / STEP-DOWN" TRANSFORMER INSTALLATIONS**
Rule 26-248 Disconnecting Means for Transformers

For the application of this Rule, a separate disconnecting means will be required in the primary circuit of each transformer in 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 **CHOKING TRANSFORMERS**
Rule 26-254 Overcurrent Protection for Dry-Type Transformer Circuits Rated 750V or Less

“Choking” of transformers smaller than 75 kVA shall not be permitted. Transformers 75 kVA or larger shall be permitted to be "choked" by a maximum of one standard transformer size.

Example: If primary overcurrent protection adequate for a 75 kVA, 600 Volt transformer is installed (i.e.: 80 Amp circuit breaker), the maximum larger size transformer permitted to be installed with that size of overcurrent device is 112½ kVA (i.e.: one standard transformer size larger). See table below:

3 phase xfmr. size (kVA)	Minimum allowable overcurrent for choked xfmr.
75	44 A
112.5	73 A
150	109 A
225	145 A
300	217 A

A transformer is considered as being “choked” if the primary protection is less than the rated primary current of the transformer. For example, a 75 kVA, 600 Volt transformer is considered as “choked” when protected by a 70 Amp primary breaker since the rated primary current of the transformer is 72.2 Amps.

When a “choked” transformer is installed, a mechanically secured (riveted) lamicoid label is required on the primary overcurrent device indicating the maximum allowable size of overcurrent protection.

26-600 **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. Code users are also reminded that Rule 6-206 requires a minimum headroom clearance of not less than 2 m where service boxes, including combination service entrance panelboards, are located.

26-656 A **“DEAD FRONT” ARC FAULT PROTECTION DEVICES**
Rule 26-656 Arc Fault Protection of Branch Circuits for Dwelling Units

An AFCI “dead front” device will be accepted as suitable AFCI protection for receptacles required to be on a separate branch circuit, eg: wash machine, microwave, etc., where it is

demonstrated that an AFCI from the panel manufacturer is not available or the existing panel doesn't afford the space for an AFCI breaker. The "dead front" AFCI device must be installed adjacent to the panel supplying the circuit, wired as per 26-656 2) b) and labelled as to the appliance it protects. "Dead front" AFCI devices will not be accepted for new construction.

26-656 B
26-706
26-722 **RECEPTACLES FOR BUILDINGS OR STRUCTURES ASSOCIATED WITH RESIDENTIAL OCCUPANCIES**

Rule 26-656 Arc Fault Protection of Branch Circuits for Dwelling Units
Rule 26-706 Tamper Resistance Receptacles
Rule 26-722 Protection of Residential Occupancy Receptacles Installed Outdoors by a Ground Fault Circuit Interrupter of the Class A Type

Clarification of the ground fault circuit interrupter (GFCI), tamper resistant (TR) and arc fault protection (AFP) 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):

AFCI - Arc fault protection set out in Rule 26-656 will not be required for branch circuits or receptacles located in or installed on detached garages, sheds, and receptacles on posts or fences.

TR - In addition to the tamper resistant requirements set out in Rule 26-706, tamper resistant receptacles will be required for receptacles located in or installed on buildings or structures associated with the residential occupancy such as detached garages, carports, sheds, and receptacles on posts or fences.

GFCI – Rule 26-722 requires that all receptacles of residential occupancies installed outdoors and within 2.5 m of finished grade be protected by a Class A GFCI. This includes receptacles located on buildings or structures associated with the residential occupancy such as detached garages, carports, sheds and receptacles on posts or fences.

26-724 **KITCHEN ISLAND RECEPTACLES**

Rule 26-724 Receptacles for Dwelling Units

Item 26-712 d) iv) requires that at least one receptacle (15A split or 20A T-slot) 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.

26-806 **GAS FIRED UNIT HEATERS**

Rule 26-806 Heating Equipment Rated 117 kW and Less

Rule 26-806 1) requires a separate branch circuit for each gas fired unit heater. The grouping of unit heaters, utilizing fractional hp fan motors will be 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
28-702 **OVERCURRENT PROTECTION MARKED ON REFRIGERANT MOTOR-COMPRESSORS**

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.

28-314 PROTECTION FOR MOTORS CONTROLLED BY VFD's/ASD's
Rule 28-314 Overheating Protection Required

See Technical Interpretation 2-404 for Marking of Motors Controlled by VFD's/ASD's.

28-604 MOTOR DISCONNECTING MEANS
Rule 28-604 Location of Disconnecting Means

For the purpose of Item 28-604 1) b) ii) an acceptable lock-off device shall require the use of a tool for the removal of the device mechanism from the breaker and shall have provision for a lock-off facility acceptable to the Inspection Branch. This lock-off device shall allow the breaker to be manually operated without requiring the device to be removed from the breaker.

SECTION 30
INSTALLATION OF LIGHTING EQUIPMENT

30-400 CORD-CONNECTED NON-RECESSED LUMINAIRES
Rule 30-400 Wiring of Luminaires

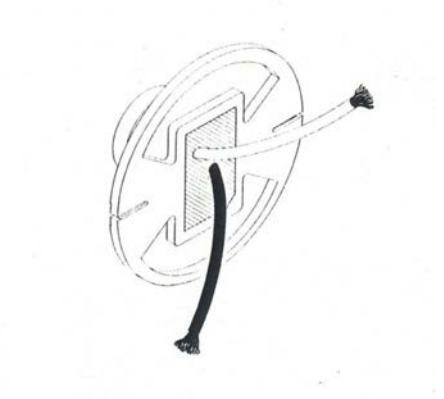
Cord-connected luminaires must be manufactured and certified with the cord. Luminaires that are modified in any way (for example, to alter the length of the cord, incorporate a cord, or remove the cord cap) are no longer approved and will require re-certification as permitted by the Winnipeg Electrical By-law.

After mounting, the cord shall:

a) Terminate in a permanent wiring method within a maximum horizontal distance of 1.5 meters after reaching the building structure; and
b) Be supported by a Kellems grip type strain relief or an acceptable strain relief connector if not approved with a cord cap (i.e.: no L-16 connectors).
c) Meet the requirements of Rules 2-130 and 12-402.

30-606 LAMPHOLDERS IN CATEGORY 1 LOCATIONS
Rule 30-606 Lampholders in Wet or Damp Locations

Where porcelain type keyless lampholders are installed in Category 1 Locations such as livestock housing, the lampholders shall be approved for outdoor use. These lampholders are fitted with pigtails and potted terminations and have the words "outdoor use" marked on the container.



30-900 INSTALLATION OF RECESSED LUMINAIRES IN INSULATED SPACES
Rule 30-900 Recessed Luminaires, General

Rule 30-900 requires that recessed luminaires, when blanketed with thermal insulation be identified as approved for such use. A number of approved luminaires are available in the market place.

Where the installation of a standard recessed luminaire in an insulated ceiling is desired, a box shall be constructed around the luminaire to allow adequate heat dissipation. The capacity of the box in cubic cm shall be based on the maximum rated wattage of the luminaire multiplied by 800.

The installation shall comply with the rules of 30-900.

Example:

Rating of luminaire	= 100 watts
100 W X 800	= 80,000 cubic cm
Proposed box length and width	= 40 cm X 40 cm = 1600 cm^3
Minimum depth	= 80,000/1,600 = 50 cm deep
Box dimensions	= 40 X 40 X 50 cm

SECTION 32
FIRE ALARMS SYSTEMS, FIRE PUMPS, AND CARBON MONOXIDE ALARMS

32-000 FIRE ALARM SYSTEMS
Rules 32-000 Scope

The intent of this Rule is that all installations of Fire Alarm Systems shall meet the requirements of Section 32.

32-108 LABELING OF CIRCUIT BREAKERS FOR FIRE ALARM SYSTEMS
Rule 32-108 Power Supply

To clearly identify the fire alarm system circuit breaker, as is required in Subrule 32-108 3), a permanently affixed red lamicoid nameplate mounted adjacent to the overcurrent device and reading “FIRE ALARM PANEL,” or other approved wording, is required.

32-200 A SUPPLY VOLTAGE FOR SMOKE ALARMS
Rule 32-200 Installation of Smoke Alarms and Carbon Monoxide Alarms in Dwelling Units

To meet the requirements of Rule 32-200 a), 120V smoke alarms and carbon monoxide alarms will be required.

32-200 B CIRCUITS FOR HEAT SENSORS
Rule 32-300 Installation of Smoke Alarms and Carbon Monoxide Alarms in Dwelling Units

Where a heat sensor is required to be installed in dwelling units as 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.

32-308 TRANSFER SWITCHES USED FOR FIRE PUMPS
Rule 32-308 Transfer Switch

As required in Rule 32-308 1) d), transfer switches used to provide emergency power to fire pump equipment shall be ULC listed. All other transfer switches used solely to provide emergency power to building systems need only be approved by an accredited organization.

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 are not included in the approval of the sign and therefore are not considered approved electrical equipment unless specifically marked as such.

SECTION 36
HIGH-VOLTAGE INSTALLATIONS

36-1 OUTDOOR PADMOUNTED HIGH VOLTAGE SWITCHGEAR

The following conditions shall be met for all Outdoor Padmounted High Voltage Switchgear installations:

1. Outdoor Padmounted 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 a dead front over the line terminations).
2. Where Outdoor Padmounted 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 should 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 Winnipeg Electrical By-law, 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.

36-204 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 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 Winnipeg Electrical By-law, 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.

36-308 B 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.

SECTION 46
EMERGENCY POWER SUPPLY, UNIT EQUIPMENT, EXIT SIGNS, AND LIFE SAFETY SYSTEMS

46-202 EMERGENCY GENERATOR SETS
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 currently 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 the Electrical Inspections Branch prior to occupancy approval.

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

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 SPACE AND SURFACE HEATING SYSTEMS

62-104 TERMINATION KITS FOR HEAT TRACE CABLES
Rule 62-104 Installation of Heating Devices and Bonding

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

62-206 USE OF INTEGRAL DISCONNECTING MEANS
Subrule 62-206 3) Installation of Central Units

See Technical Interpretation D for Subrule 2-024.

SECTION 64
RENEWABLE ENERGY SYSTEMS

64-060 A INVERTER INTEGRAL DISCONNECTS
Rule 64-060 Disconnecting Means

Inverter integral DC and AC disconnects will not be considered as meeting the requirements of a disconnecting means as required by the Winnipeg Electrical Bylaw. As such, the required DC and AC disconnects shall be field installed adjacent and external to the inverter.

64-060 B 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 as per 64-060 and 14-402.

64-072 LABELLING
64-074 Rule 64-072 Marking
64-200 Rule 64-074 Warning Notice and Diagram
Rule 64-200 Solar Photovoltaic Systems, Marking

All labels for renewable energy systems as required by the Winnipeg Electrical By-law shall be permanently attached, engraved lamicoid. The lamicoid shall have a red background with white lettering.

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 as per Rule 14-414.

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).

64-202 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.
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 750 Volts will require other effective means such as fenced enclosures in accordance with Rule 26-300 or elevation.

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

SECTION 68
POOLS, TUBS, AND SPAS

68-058 BONDING REQUIREMENTS FOR POOLS, TUBS AND SPAS
Rule 68-058 Bonding

Notwithstanding the Appendix B note to Subrule 68-058 1), the bond conductor must terminate at the panelboard supplying the pool equipment.

68-068 GFCI REQUIREMENTS FOR SPAS AND HOT TUBS
Rule 68-068 Ground Fault Circuit Interrupters

Approved factory assembled spa or hot tub units are factory equipped with a G.F.C.I., as required. Electrical components which are electrically connected to a remote packaged unit and intended to be installed within 3 meters of a spa or hot tub shall be protected by a ground fault circuit interrupter of the Class A type as per Rule 68-068.

SECTION 72
MOBILE HOME AND RECREATIONAL VEHICLE PARKS

72-102 DEMAND FACTORS FOR SERVICE AND FEEDER CONDUCTORS FOR RECREATIONAL VEHICLE PARKS
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 50 Amps, the demand load as calculated in accordance with Subrules 2), 3) and 4) shall not be considered to be a continuous load for the application of Rule 8-104.

TABLES

TABLE 19 THE USE OF T90 NYLON CONDUCTORS AND DUAL RATED T90 NYLON/TWN75
Table 19

1. **T90 Nylon** may be used in raceways in dry or damp locations.

2. **T90 Nylon** shall not be used:
   a) For direct buried raceway installations (Refer to Rule 12-928),
   b) For installation at ambient temperatures below minus 10 degrees Celsius (Refer to Rule 12-102 1)), or
   c) As consumers service conductors where exposed to the weather. (Refer to Rule 6-302 5)).
   d) For exposed wiring where flexing may be required in temperatures below minus 10 degrees Celsius.

3. **Dual rated T90 Nylon / TWN75** may be used:
   a) In raceways in dry, damp or wet locations, and
   b) For direct buried raceway installations.

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City of Winnipeg, Planning, Property and Development Department
Development and Inspections Division
Commercial Inspections Branch 204-986-5190
Housing and Existing Buildings Inspections Branch 204-986-5300
Commercial Plan Examination Branch 204-986-5268

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