THE WINNIPEG BUILDING BY-LAW



BY-LAW No.
740/74

Printed documents purporting to be printed copies of any or all By-laws passed by The Council, and purporting to be printed by authority thereof, shall be admitted as prima facie evidence in all courts in this province, of such by-laws and the due passing thereof.
[City of Winnipeg Act 116(3)].

Effective Date

This By-law shall come into effect ninety (90) days after the date of its passing.

Printed by Authority of the
Council of The City of Winnipeg

IMPORTANT NOTICE

The Winnipeg Building By-law is subject to periodical review, and amendments may be made and bulletins will be issued from time to time giving interpretations regarding the By-law. Holders of this By-law who wish to be kept up to date should fill out this form and return it to:—

THE SUPERVISOR OF BUILDING INSPECTIONS
The City of Winnipeg
100 Main St.
Winnipeg, Manitoba R3C 1A5

RE:
BY-LAW No.
740/74

Please advise me of all amendments and bulletins in connection with The Winnipeg Building By-law.

Name .....
(PLEASE PRINT OR TYPE)

Address .....

City ..... Province .....

Postal Code .....

Date ..... Signature .....

(This is your mailing label. Please print clearly in ink or type.)

THE CITY OF WINNIPEG
BY-LAW No. 740/74

A By-law of THE CITY OF WINNIPEG to regulate the erection, alteration, repair, demolition or removal of buildings, erections, and structures, to classify buildings according to use, and the installation of electrical, plumbing, mechanical services, and other fixtures and installations with which buildings may be equipped and their inspection in The City of Winnipeg and the Additional Zone.

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

TABLE OF CONTENTS

Chapter 1

A. Adoption of the National Building Code of Canada 1970 as The Winnipeg Building By-law.

Chapter 2

Amendments to the 1970 NBC.

A. PART 1 ..... ADMINISTRATION
B. PART 2 ..... DEFINITIONS
C. PART 3 ..... USE AND OCCUPANCY
D. PART 4 ..... DESIGN
E. PART 5 ..... MATERIALS
F. PART 6 ..... BUILDING SERVICES
G. PART 7 ..... THE WINNIPEG PLUMBING BY-LAW
H. PART 8 ..... CONSTRUCTION SAFETY MEASURES
I. PART 9 ..... HOUSING AND SMALL BUILDINGS
J. PART 10 ..... SPECIAL CONSTRUCTION STANDARDS

PART I

ADMINISTRATION

A.

The National Building Code of Canada 1970 is varied by deleting therefrom "PART 1, ADMINISTRATION," and substituting therefor a new PART 1 as follows:

SECTION 1.1. SCOPE

SUBSECTION 1.1.1. TITLE

1.1.1.1. This By-law may be cited as "THE WINNIPEG BUILDING BY-LAW." Title

SUBSECTION 1.1.2. PURPOSE

1.1.2.1. It is the purpose of this By-law to safeguard life or limb, health, property and public welfare with respect to the design, construction, erection, addition, *alteration, repair,* demolition, *relocation, removal* and *occupancy* of any new or existing *buildings,* erections or structures by the provision of appropriate minimum standards. Purpose

SUBSECTION 1.1.3. EFFECTIVE DATE

1.1.3.1. This By-law shall come into effect 90 days after the date of its passing. Effective date

SUBSECTION 1.1.4. MATTER COVERED

1.1.4.1. This By-law shall regulate new and existing construction, including the construction, erection, addition, *alteration, repair,* demolition, *relocation, removal* and *occupancy* of any new or existing *buildings,* erections or *structures* and shall include public utility *buildings.* Matter covered

1.1.4.2. The provisions of this By-law shall not apply to *farm buildings* in a district zoned for agricultural purposes but shall apply to *dwellings* used as residences in the said districts. Farm buildings

(In the design of farm buildings consideration should be given to the requirements of The Canadian Code for Farm Buildings which provides standards and other useful information for farm buildings based on elements of the National Building Code.)

1.1.4.3.(1) Parts 1, 2, 5, 7, 8 and 10 of this By-law apply to all *buildings* or *structures.* Application of parts

1.1.4.4.(1) Parts 3, 4 and 6 of this By-law apply to:

- **(a)** all *buildings* used for *assembly,* Institutional, and *High Hazard Industrial Occupancies,* and
- **(b)** all *buildings* exceeding 6,000 square feet (558 square meters) in *building area* or exceeding 3 *storeys* in *building height* used for *Residential Business* and *Personal Services, Mercantile* and *Medium* and *Low Hazard Industrial Occupancies.*

1.1.4.5.(1) Part 9 of this By-law applies to buildings 3 *storeys* or less in height, having a building area not exceeding 6,000 square feet (558 square meters) and which are used for *Residential, Business* and *Personal Service, Mercantile,* and *Medium* and *Low Hazard Industrial Occupancies.*

SECTION 1.2. SUPERVISOR OF BUILDING INSPECTIONS

SUBSECTION 1.2.1. DUTIES

1.2.1.1. The *Supervisor of Building Inspections* and his assistants shall be responsible for the administration and enforcement of this By-law, and Responsibili

shall keep records of all applications received, building permits, and orders issued, inspections and tests made, and shall retain copies of all paper and documents connected with the administration of this By-law which will form part of the public records.

Duties

1.2.1.2. In administering this By-law the Supervisor of Building Inspections and his assistants shall answer such relevant questions as may be reasonable with respect to the provision of this By-law, but shall refrain from assisting in the layout of any work and from acting in the capacity of a consulting engineer or architect.

SUBSECTION 1.2.2. POWERS

Inspection examination and enforcement

1.2.2.1.(1) The *Supervisor of Building Inspections* and his assistants may, at all reasonable times, enter upon any land, *building* or premises in the *City* and the Additional Zone for the purpose of:

(a) inspecting or reading any meter or other appliance or equipment; or

(b) examining any *building* or *structure* thereon or any thing appurtenant to any such *building* or *structure* to ascertain whether compliance is being made with the regulations enacted by Council in this By-law; or

(c) carrying into effect or enforcing regulations made in this By-law

Requirements for test

1.2.2.2. The *Supervisor of Building Inspections* may direct that tests of materials, devices, construction methods, structural assemblies or foundation conditions be made, or sufficient evidence or proof be submitted at the expense of the *owner,* where such evidence or proof is necessary to determine whether the material, device, construction or foundation condition meets the requirements of this By-law.

Deferment of issuing permit

1.2.2.3.(1) The *Supervisor of Building Inspections* may defer issuing a building permit or building permits:

(a) to any *person* who has failed to pay any fees due and owing to the *City* under this By-law;

(b) to any *person* who has failed within a specified period of time to remedy a defect in construction under a building permit previously issued to him, after having been notified that such defect exists;

(c) where there may be a violation of another By-law of the *City;*

(d) where, in his opinion, the results of the tests referred to in 1.2.2.2. are not satisfactory; or

(e) where there is any doubt as to whether the proposed construction will comply with the requirements of this By-law.

Stop work order

1.2.2.4.(1) The *Supervisor of Building Inspections* may revoke a permit, a certificate, or direct that work will be stopped when any construction is not in accordance with this By-law, or the permit issued therefor, and with plans thereof, previously filed with the *Supervisor of Building Inspections.* Upon such notice, work shall be immediately stopped. The stop-work order shall be in writing, and shall be given to the *owner* of the property involved, or to the owner's agent, or to the person in charge personally, and shall state the conditions under which work may be resumed.

(2) Any *owner*, owner's agent, or other person in charge personally who shall continue any work in or about the site after having been served a stop-work order, except such work as he is required to remove a violation or unsafe condition, shall be liable to a fine of not more than one thousand dollars ($1,000.00)

Demolition or removal

1.2.2.5. The *Supervisor of Building Inspections* may authorize the complete or partial demolition or removal at the expense of the *owner* thereof a *building* which, in his opinion, has been constructed in contravention of any by-law and to provide that the cost of such demolition or removal as certified by such officer may be added to the taxes on the land occupied by such *building* and collected as other taxes.

Notice

1.2.2.6. The *Supervisor of Building Inspections* may by written notice require the *owner* of a *building*, or other person acting for the *owner* in respect thereof, to comply within a specified period of time to have the *building* made to conform with this By-law in such respects as are specified in the notice. Omission to give such notice, however, shall not prevent any *owner* or other person from being prosecuted for breach of this By-law.

Modification or variation of a regulatic

1.2.2.7. The *Supervisor of Building Inspections* in special cases that in his opinion warrant it, may modify or vary any specified regulation where such modification or variation in his opinion will substantially accomplish the object of the regulation.

Appeal

1.2.2.8. Any person who deems himself aggrieved by a decision of the *Supervisor of Building Inspections* as to the issuance of a building permit, the prevention of the construction or occupation of a building or structure, and the demolition or removal of a *building* or *structure* may appeal therefrom to the Committee on Environment.

Liability

1.2.2.9. The *Supervisor of Building Inspections* or any of his assistants charged with the enforcement of this By-law while acting for the *City* shall not thereby render themselves liable personally, and they are hereby relieved from all personal liability for any damage that may accrue to persons or property as a result of any act required or permitted in the discharge of their official duties. Any suit instituted against any officer or employee because of an act performed by him in the lawful discharge of his duties and under the provisions of this By-law shall be defended by the legal representative of the *City* until the final termination of the proceedings. In no case shall the *Supervisor of Building Inspections* or any of his assistants be liable for costs in any action, suit or proceeding that may be instituted in pursuance of the provisions of this By-law and any officer of the Inspections Department, acting in good faith and without malice, shall be free from liability for acts performed under any of its provisions or by reason of any act or omission in the performance of his official duties in connection therewith.

SECTION 1.3. THE OWNER

SUBSECTION 1.3.1. DUTIES AND RESPONSIBILITIES

Responsibili of owner

1.3.1.1.(1) Neither the granting of a permit nor the approval of the drawings and specifications nor inspections made by the *Supervisor of Building Inspections* or any of his assistants, shall in any way relieve the *owner* of such *building* from the full responsibility of carrying out the work or

having the work carried out, and for maintaining the *building* in accordance with the requirements of this By-law, or of other relative by-laws of the *City*, or for the fire safety, health standards and structural stability of the *building*.

Duties of owner

1.3.1.2.(1) Every *owner* shall:

(a) permit the *Supervisor of Building Inspections* to enter any *building* or premises at any reasonable time for the purpose of administering or enforcing this By-law, and shall not molest, obstruct, or interfere with the *Supervisor of Building Inspections* in the discharge of his duties under this By-law;

(b) obtain where applicable, from the appropriate authorities, permits relating to *building*, zoning, *grades*, sewers, water mains, plumbing, *signs*, blasting, street, *occupancy*, electrical, highways, and all other permits required in connection with the proposed work;

(c) obtain the approval of the *Supervisor of Building Inspections* before doing any work at variance with the approved documents filed after the permit has been issued;

(d) comply in all respects with this By-law;

(e) obtain an Occupancy Permit as required in Section 1.9 before occupying a *building* or portion thereof; and

(f) shall notify the *Supervisor of Building Inspections* as to the date of commencement of the project and the date of occupancy thereof.

Method of conducting tests

1.3.1.3.(1) To the extent that is possible all tests required by the *Supervisor of Building Inspections* shall be carried out by the *owner* in accordance with recognized standard test methods. In the absence of such standard test methods the *Supervisor of Building Inspections* may specify the test procedure to be followed.

(2) Where tests of any materials are made to ensure conformity with the requirements of this By-law, records of the test data shall be kept available by the *owner* or his agent for inspection during the construction of the *building* and for such period thereafter as required by the *Supervisor of Building Inspections*.

Requirements during construction

1.3.1.4.(1) The *owner* or his agent shall, during construction,

(a) keep posted in a conspicuous place on the exterior of the premises, a copy of the permit applicable thereto, or an *approved* poster or placard in lieu thereof;

(b) keep visible at all times during construction the street number of the premises in figures at least three (3) inches high and visible from the street or sidewalk; and

(c) keep a copy of the *approved* drawings and specifications on the construction site at all times during construction for inspection of the proposed work.

Responsibility for drawings specifications and inspections

1.3.1.5.(1) Except in the case of a *building* 3 *storeys* or less in height, having a building area not exceeding 6,000 square feet (558 square meters) and which is to be used for Residential, Business and Personal Service, Mercantile, and Medium and Low Hazard Industrial Occupancies, the *owner* shall appoint an architect(s) and/or engineer(s) entitled to practice in the Province of Manitoba, skilled in the appropriate section of the work

concerned, which consultant(s) shall be responsible for the preparation of drawings and specifications and for the inspection of construction to ensure conformity with the drawings, specifications and the applicable sections of the By-law.

(2) Notwithstanding the above, where in the opinion of the *Supervisor of Building Inspections,* any *building* requires the services of a consultant, to ensure conformance with this By-law, the *owner* shall appoint such a consultant to perform all the services described above.

(3) Where the construction of a *building* will not be supervised by the person responsible for its design as provided for in article 4.1.1.9., the name and address of the person who will supervise the construction shall be submitted with the application to build and notice shall be given to the *authority having jurisdiction* of any subsequent change of said person or of address whenever any such change takes place.

SECTION 1.4. CONSTRUCTOR

SUBSECTION 1.4.1. DUTIES AND RESPONSIBILITIES OF THE CONSTRUCTOR

1.4.1.1. Every *constructor shall:* Constructo responsibili

(a) ensure that all construction safety requirements of this By-law are complied with at all times;

(b) be responsible for ensuring that no excavation or other work is undertaken on public property, or that no *building* is erected or materials stored in whole or in part thereon without prior approval therefore having been obtained in writing from the *authority having jurisdiction; and,*

(c) be responsible for any work actually undertaken, notwithstanding such responsibilities are also assigned to the *owner* in Section 1.3 hereof.

SECTION 1.5. DANGEROUS AND UNSAFE CONDITIONS

SUBSECTION 1.5.1. DANGEROUS CONDITIONS AND PROCEDURES FOR SAFETY

1.5.1.1. Any *building* or *structure,* that is, in a dangerous condition in that it is liable to fall, or to cause an explosion, or to cause damage or injury to any person or property, or, in that it constitutes a fire hazard, or, that in the case of a well, excavation, or opening, is not properly covered or guarded, or that, in the opinion of the *Supervisor of Building Inspections* is so dilapidated, out of repair, or otherwise in such condition, that it is a trap for persons or animals, shall not be allowed to remain in such condition but shall be demolished, removed, guarded, or put in a safe condition, to the satisfaction of the *Supervisor of Building Inspections.* Procedures

1.5.1.2. If, in the opinion of the *Supervisor of Building Inspections,* a *building* or *structure* is in a dangerous condition, or a well, excavation, or opening is not properly covered or guarded, as set out in Sentence 1.5.1.1. above, the *Supervisor of Building Inspections* may serve a written notice on the *owner,* occupier, agent, or person in charge of the *building* or *structure,* or of a well, excavation or opening, by registered mail or Notice

personal notice to the last known address describing the *building* or *structure*, or the well, excavation, or opening requiring him to have it demolished, guarded, covered, or put in safe condition forthwith to the satisfaction of the *Supervisor of Building Inspections*.

Power for immediate safety

1.5.1.3. Without affecting any other remedy that the *City* may have, on default of compliance with a notice given under articles 1.5.1.2. and 1.5.1.5., the *Supervisor of Building Inspections* may, in the case of a *building* or *structure*, cause the same to be demolished, removed or put in a safe condition and in the case of a well, excavation or opening, to have the same covered, guarded, or put in a safe condition, as may be deemed expedient and necessary, and that the cost of the work may be recovered by the *City* by summary process of law, and shall also be a lien upon the *building* or *structure* and the materials thereof and upon the lot or parcel of land occupied by the said *building* or *structure* or by the said well, excavation or opening, and that the cost, when certified by the *Supervisor of Building Inspections* may be added to the taxes on the land or on the *building* or *structure*, and may be collected in the same manner as other municipal taxes are collected.

Non-compliance

1.5.1.4. Where, upon non-compliance with any notice given under articles 1.5.1.2. and 1.5.1.5., the *Supervisor of Building Inspections* causes the *building* or *structure* to be demolished, the *City* may sell the material, fixtures, and other salvage therefrom and apply the price received therefor toward paying the cost of the demolition, and the balance, if any, shall be applied toward paying any taxes owing in respect to the *property*, after which any balance then remaining shall be paid to the mortgages, encumbrancers, and lien holders, if any, in the order of their priority and the surplus, if any, shall be paid to the *owner* of the *property*.

Unsafe notice

1.5.1.5. Where the *Supervisor of Building Inspections* is unable, as set forth in Article 1.5.1.2. to locate the *owner*, occupier agent, or *person* in charge of the *building* or *structure*, or of a well, excavation or opening, or in cases where service as aforesaid is impracticable, the unsafe notice shall be posted by affixing two copies thereof in a conspicuous place on the premises; and such procedure shall be deemed the equivalent of personal notice.

Maintenance

1.5.1.6. All *buildings* or *structures*, existing and new, and all parts thereof shall be maintained in a safe condition. All devices, or safeguards which are required by this By-law in a *building* or *structure* when erected, *altered*, or *repaired*, shall be maintained in good working order. The *owner* or his designated agent shall be responsible for the maintenance of such *building* or *strucures*.

SECTION 1.6. EXISTING BUILDINGS OR STRUCTURES

SUBSECTION 1.6.1. ALTERATIONS AND ADDITIONS

Repairs or alterations

1.6.1.1.(1) Where *repairs* or *alterations* to an existing *building* or *structure* are made necessary on account of damage by fire or other causes, and where such *repairs* and *alterations* excluding electrical or mechanical equipment exceed one hundred percent (100%) of the replacement or market value of the *building* or *structure* prior to such damage, such *repairs* or *alterations* shall be considered a re-erection thereof and are prohibited unless the entire *building* or *structure* is made to conform with the requirements of this By-law for new construction.

(2) Where *repairs* or *alterations* to an existing *building* or *structure* are made necessary on account of delapidation, and where such *repairs* or *alterations* excluding electrical or mechanical equipment exceed one hundred percent (100%) of the replacement or market value of the *building* or *structure* at the time of application for a permit, such *repairs* or *alterations* shall be considered a re-erection thereof and prohibited unless the entire *building* or *structure* is made to conform with the requirements of this By-law for new construction.

(3) Where *alterations* or additions are made to an existing *building* or *structure*, the entire *building* or *structure* shall be made to conform with this By-law.

(4) Notwithstanding the provisions of Sentences (1), (2) or (3) above, the *Supervisor of Building Inspections* may permit variations from the regulations of this By-law for those portions of the existing *building* or *structure* not being altered, or added to, where:

(a) the applicant shall provide evidence satisfactory to the *Supervisor of Building Inspections* that said portions are structurally safe; and

(b) a special inspection has been made to determine the minimum variation to be permitted.

Increase in Height

Increase in building height

1.6.1.2. The number of *storeys* of an existing *building* or *structure* shall not be increased unless the entire *building* or *structure* conforms with the requirements of this By-law except where an increase may be permitted in accordance with 1.6.1.1.(4).

Increase in Area

Area increase

1.6.1.3. Additions may be made to an existing *building* or *structure* where the maximum area for the combined area of the existing *building* or the *structure* and addition as set forth in Part 3 is not exceeded. Where the combined area of the existing *building* or the *structure* and permitted addition exceeds the maximum area allowed in Part 3, a *fire wall* of the required *resistance rating* shall separate the addition from the existing *building* or the *structure* unless otherwise approved under 1.6.1.1.(4).

SUBSECTION 1.6.2. REMOVALS, RELOCATIONS AND DEMOLITIONS

Removals relocations demolitions

1.6.2.1.(1) This subsection provides regulations for:

(a) the moving of an existing *building* or *structure* from a site within the *City* or Additional Zone to another site within said area;

(b) the moving of an existing *building* or *structure* and the placing of same at another location on the same site; and

(c) the demolition of a *building* or *structure*.

(2) Notwithstanding anything elsewhere contained in this By-law, a *building* or *structure* to be moved onto a site in the *City* or Additional Zone from a site outside said areas shall comply with the regulations of this By-law for new construction.

Construction requirement

1.6.2.2.(1) The removal or relocation of a *building* or a *structure* shall not be permitted unless all regulations of this By-law for new construction are complied with unless otherwise approved under 1.5.1.1.(4).

Removals relocations not permitted

1.6.2.3.(1) A *building* or *structure* shall not be removed or relocated, within the *City* or Additional Zone, if the *building* or *structure* is in the opinion of the *Supervisor of Building Inspections;*

(a) in such a state of deterioration or disrepair, or is otherwise so structurally unsafe that it could not be moved without endangering persons or property; or

(b) structurally unsafe or will vary in appearance from the usual types of *buildings* at its new site to such extent as to lessen the desirability for building purposes of land in the immediate vicinity.

Taxes

1.6.2.4.(1) Upon application for a permit to demolish, relocate, or remove a *building* or *structure,* the applicant shall submit a statement that the taxes upon the land and *building* or *buildings,* or *structures* have been paid in full, and that the land and *building* or *buildings,* or *structures* have not been sold for taxes, or if so sold, have not been redeemed. This provision shall not apply to *buildings* or *structures* demolished under Section 1.5. of this By-law.

Application

(2) The *Supervisor of Building Inspections* may request that an application for a permit to remove, relocate or demolish a *building* or *structure* shall contain one or more of the following:

(a) a description of the *building* or *structure* giving the existing location, construction materials, dimensions, number of rooms and condition of exterior and interior;

(b) a legal description of the existing site;

(c) a legal description of the site to which it is proposed that the *building* or *structure* is to be moved to, if located within the *City* or Additional Zone; and

(d) a plot plan of the site to be occupied by the *building* or *structure* if located within the *City* or Additional Zone.

Responsibility of owner

(3) The *owner,* or his agent, of a site from which a *building* or *structure* is to be removed or demolished shall:

(a) notify the gas, electric, telephone and water service companies or utilities to shut off and/or remove their service;

(b) plug the sewer line with a *concrete* stopper eight (8) feet outside the property line; and

(c) upon completion of the removal or demolition, put the site in a safe and sanitary condition to the satisfaction of the *Supervisor of Building Inspections.*

SECTION 1.7. TEMPORARY BUILDINGS

SUBSECTION 1.7.1. DEFINITION

Definition

1.7.1.1. A temporary *building* shall mean a *building* having non-conforming features that is to be erected or placed on a site in the *City* or Additional Zone with the intent that said *building* will be removed within a limited period of time from the date of erection or placement.

SUBSECTION 1.7.2. REGULATIONS

Permission

1.7.2.1. No person shall erect or place on a site a *temporary building* without

unless the required permit has first been obtained from the *Supervisor of Building Inspections* as hereinafter provided, except in the case of painting or decorating, or in the case of minor *repairs* not exceeding five hundred dollars ($500.00) in value, where matters affecting health and safety are not involved. The above exception shall not apply to the provisions contained in Part 7, The Winnipeg Plumbing By-law.

Penalty for no permit

(2) Notwithstanding the provisions of Section 1.15., any *owner,* agent or *person* in charge, who commences work without first having obtained a permit therefor, is guilty of an offence and shall be liable, on a summary conviction, to a fine not less than $25.00 for each day such work is continued without a permit.

Occupancy

1.8.1.2. No *owner,* agent or *person* in charge shall occupy a *building* or part thereof or change the *occupancy* without first obtaining an Occupancy Permit or Certificate of Occupancy as set forth in Section 1.9.

Rivers and Streams

1.8.1.3.(1) The construction or *alteration* of any *building* located within 350 feet of normal summer water level of the following waterways is subject to the Rivers and Streams Act:

(a) the Red and Assiniboine Rivers in the *City* and Additional Zone; and

(b) the Seine River, Omand's Creek, Sturgeon Creek, Riviere La Salle and Bunn's Creek in the City of Winnipeg.

Metal buildings

1.8.1.4. An application for a permit for the construction of a metal or metal clad *buildings* or additions thereto shall have the approval of the *Supervisor of Building Inspections* before the permit is issued, except that such approval is not required for the use of factory finished cladding.

SUBSECTION 1.8.2. APPLICATIONS FOR PERMITS

Electrical

Electrical permit

1.8.2.1. The application for an Electrical permit shall be made as set forth in THE WINNIPEG ELECTRICAL BY-LAW

Plumbing

Plumbing permit

1.8.2.2. The application for a Plumbing permit shall be made as set forth in PART 7, THE WINNIPEG PLUMBING BY-LAW

Building

Building permit

1.8.2.3.(1) The application for a building permit shall:

(a) be made on the prescribed form;

(b) be signed by the *owner* of the property or his agent;

(c) state the intended use of the *building* or *structure;*

(d) include in duplicate, where required, a surveyor's certificate of the proposed construction site;

(e) include in duplicate, copies of the specifications and scaled drawings of the *building* or *structure* with respect to which the work is to be carried out showing:

(i) the dimensions of the *building* or *structure,*

(ii) the proposed use of each room or *floor area,*

(iii) the limiting distances,

(iv) the position, height and horizontal dimensions of all *buildings* or *structures* on the proposed construction site,

(v) the technical information specified in other Parts of this By-law required to be included on the drawings relating to those Parts, and

first entering into an agreement with the *City* and obtaining the required building permit.

1.7.2.2.(1) A *temporary building* shall be permitted only for the following major occupancy classifications: Occupancy

(a) All Divisions, Group A;
(b) Group D; and
(c) Group E.

(2) A display home, display cottage or mobile home may also be classified as a *temporary building*.

1.7.2.3. The building permit for a *temporary building* shall require the approval of the Chief of the Fire Department and the Medical Health Officer before issuance. Fire and health approval

1.7.2.4. In the construction of a *temporary building*, minor variations as approved by the *Supervisor of Building Inspections* may be made from the regulations of this By-law. Minor variations

1.7.2.5. A *temporary building* shall not exceed one (1) *storey* in height. Height

1.7.2.6. A *temporary building* shall be permitted for a period of one year, on the condition that the *owner* shall remove the *temporary building* before the expiration of specified period of time. Time period

1.7.2.6. The *temporary building* shall be properly maintained at all times by the *owner*. Maintenan

1.7.2.7. The *temporary building* shall be subject to any other conditions that may be specified in the agreement.

1.7.2.8. *Temporary buildings* to be used in connection with construction work may be erected without entering into an agreement or obtaining a permit, but shall be removed by the *owner* immediately upon completion of the construction work. Constructio buildings

SECTION 1.8. PERMITS

SUBSECTION 1.8.1. PROHIBITION

1.8.1.1.(1) An *owner*, agent or person in charge shall not commence or cause to be commenced: Where Permits required

(a) the erection or construction of any *building* or *structure*, or portion thereof;
(b) the addition, extension, improvement, *alteration* or conversion of any *building* or *structure*, or portion thereof;
(c) the *repair* of any *building* or *structure*, or portion thereof;
(d) the *relocation* or *renewal* or demolition of any *building* or *structure*, or portion thereof;
(e) the excavation of any land for any purpose of erecting or locating on or above it, any *building* or *structure*;
(f) the repair, construction, renewal, alteration or extension of a *plumbing system*;

SUBSECTION 1.8.3. RESPONSIBILITY FOR DESIGN

1.8.3.1.(1) Where the character of the proposed work requires technical knowledge, such as reinforced concrete, steel, timber construction, trusses and others, the *Supervisor of Building Inspections* may require that the plan and specifications be prepared and sealed, and the construction inspected by an Engineer entitled to practice in the Province of Manitoba.

(2) The structural members of a *building* shall be designed as provided for in PART 4 by an Engineer entitled to practice in the Province of Manitoba and competent in the specific field of design undertaken.

SECTION 1.9. OCCUPANCY

SUBSECTION 1.9.1. DEFINITION

Definition

1.9.1.1. Occupancy means the use or intended use of a *building* or *structure*, or part thereof, for the shelter or support of persons, animals or property.

SUBSECTION 1.9.2. CONTROL

Control

1.9.2.1.(1) A *building*, *structure*, or part thereof, shall not be used or occupied unless the *owner* or his agent obtains an Occupancy Permit as set forth in Subsection 1.9.3., or a Certificate of Occupancy as set forth in Subsection 1.9.4.

Inspection

(2) An inspection of a site shall be made prior to the issuance of an Occupancy Permit or a Certificate of Occupancy and a fee shall be charged in accordance with 1.10.1.1.(4).

Variation permitted

(3) Every *building* or *structure* that requires an Occupancy Permit or a Certificate of Occupancy shall comply with the construction requirements for the Major Occupancy Group to be housed therein, except that the *Supervisor of Building Inspections* may approve an Occupancy Permit or a Certificate of Occupancy for a *building* or *structure* which varies in a minor respect from the regulations of this By-law, where in his opinion, such a variation will substantially accomplish the objects of this By-law.

SUBSECTION 1.9.3. OCCUPANCY PERMIT

Occupancy permit

1.9.3.1. An Occupancy Permit is required for a *building* or *structure* located on land subject to By-law No. 1558 or, By-law No. 1800.

Interim occupancy permit

1.9.3.2. The *Supervisor of Building Inspections* may approve clearance for the issuance for an Interim Occupancy Permit, being a permit allowing the partial *occupancy* of a *building* or *structure*, provided that such *occupancy* will not jeopardize life or *property*.

SUBSECTION 1.9.4. CERTIFICATE OF OCCUPANCY

Certificate of occupancy

1.9.4.1. A certificate of occupancy is required for a *building* or *structure* located on any land other than that set forth in 1.9.3.1. in the *City* and the Additional Zone;

(a) for any new *building*, except a single-family dwelling and a two-family dwelling;

(vi) such other information as is necessary to illustrate all essential features of the design of the *building* or *structure;*

(f) include proof of approval from the *appropriate authority having jurisdiction* when necessary; and

(g) contain any and all other information that is necessary to establish compliance with this By-law or as required by the *Supervisor of Building Inspections.*

CONDITIONS UNDER WHICH BUILDING PERMITS ARE ISSUED

Building permit conditions

1.8.2.4.(1) Every building permit is issued upon the condition:

(a) that the construction is to be started within six (6) months from the date of issuing the building permit;

(b) that construction is to be actively carried out thereafter;

(c) that pegs, stakes, lines and other marks *approved* by the *Supervisor of Building Inspections* be located on the *building* site so as to establish the line or *limiting distance* beyond which the *building* or *structure* shall not extend as specified on the permit, and shall be accurately maintained during the course of construction and until *occupancy* has been approved. Such markings shall be provided for the erection of a new *building* or *structure,* extension or addition to existing *buildings* or *structures,* or for *buildings* or *structures* moved from one location to another whether on the same *property* or not;

(d) that the construction shall be carried out in accordance with all provisions of this By-law, and all provisions as described on the building permit and approved plans;

(e) that all By-laws of the *City* be complied with; and

(f) that the *Supervisor of Building Inspections* shall get copies of all changes ordered which may alter any condition or requirement of this By-law and a set of the revised plans.

Building permits prior to this By-law

(2) All work being carried out under a building permit issued prior to the effective date of this By-law shall be completed in accordance with the previous By-law requirements and any special conditions described on the building permit and approved plans. If work does not proceed at a satisfactory rate, in the opinion of the *Supervisor of Building Inspections,* the building permit may be cancelled, in which case a new building permit shall be obtained before work is continued and all subsequent work shall comply with the provisions of this By-law.

Permit duration for construction to start

(3) Any building permit issued may be revoked by the *Supervisor of Building Inspections* if the authorized work is suspended or abandoned for a period of six (6) months after time of commencing.

Inspection dates

(4) The permittee shall at those stages of construction that may be indicated on the building permit request an inspection from the Inspections Department of the *City* before proceeding further with construction.

Inspections after office hours

(5) Where an inspection is requested and it is necessary that the inspection be conducted outside of regular office hours or conducted during office hours in addition to a regular inspection, a fee shall be charged as provided for in 1.11.1.1.(4), in addition to the required permit fees.

(b) for any existing *building* or *structure* where an *alteration* or addition is made thereto, except for a single-family dwelling and a two-family dwelling;

(c) for a change from one Major Occupancy Group to another or a change from one Division to another within a Major Occupancy Group of any existing *building* or *structure*, or part thereof; and

(d) for a change from one use to another within the same Division in a Major Occupancy Group which results in an increase in the *occupant load*.

(2) No change shall be made in the type of *occupancy* or use of any *building* or *structure*, which would place the *building* or *structure* in a different Group of *occupancy*, unless such *building* or *structure* is made to comply with the requirements of this By-law for that Group.

(3) The *Supervisor of Building Inspections* may issue an Interim Certificate of Occupancy, being a certificate allowing the partial *occupancy* of a *building* or *structure*, provided that such *occupancy* will not jeopardize life or *property*. Interim certificate

SUBSECTION 1.9.5. OCCUPANT LOAD

1.9.5.1.(1) Notwithstanding anything elsewhere contained in this By-law, for each assembly room in a *building* or *structure* classified as a Group A Occupancy, the *Supervisor of Building Inspections* shall furnish an Occupant Load Placard which can be easily read from a distance of twenty (20) feet stating the maximum allowable occupant load as determinated by this By-law. Occupant load placard

(2) The *owner* of the *building* or *structure* shall be responsible for keeping the actual load within the allowable limits.

(3) The *owner* of the *building* or *structure* shall display the Occupancy Load Placard in a location approved by the *Supervisor of Building Inspections*.

SECTION 1.10. FEES

SUBSECTION 1.10.1. BUILDING PERMIT FEES

1.10.1.1.(1) Fees to be paid to the *City* for issuing building permits shall be as follows: Permit fees

(a) For the erection, repair, *alteration* and re-location of *buildings* or *structures:*

VALUATION	BUILDING PERMIT FEE
$0 to $ 200	$2.00
$20 to $1000	$1.00 per $100 of valuation or part thereof
$1000 or more	$10.00 on the first $1000 of valuation plus $2.50 on each additional $1000 of valuation or part thereof

(b) Removal of *buildings* or *structures*, or parts thereof..... $5.00

(c) Demolition of *buildings* or *structures*, or parts thereof $1.00

(d) Removal or demolition of accessory *buildings* or *structures* or parts thereof $1.00

(e) Fee for a *temporary building* ..... $10.00 per month for each *building*

(f) Fee for a temporary sign ..... $10.00 per month for each *sign*

(g) Building Permits for all *signs* .....same as (a) above

(h) Plumbing Permits ..... See Part 7

(i) Occupancy permit ..... per Zoning By-law

(j) Certificate of Occupancy $10.00

Valuation

(2) Valuation:

(a) The valuation to be shown on a *building* permit shall mean the total monetary worth, of all construction of work including all painting, papering, roofing, electrical work, plumbing, permanent of fixed heating equipment, elevator equipment, fire sprinkler equipment, and any permanent equipment and all labour, materials and other devices entering into and necessary to the prosecution of the work in its completed form. No portion of any *building* including mechanical, electrical and plumbing work, shall be excluded from the valuation of the *building* permit because of any other permits required by any governing By-law or agency.

(b) Notwithstanding the provisions of clause (a) above, the valuation for a building permit in the case of a *removal* or *relocation*, shall include the cost to move the *building*, excavation at the new site, cleaning and leaving the former site in the condition specified in this By-law and *alterations* or *repairs* to the *building*.

(c) In the case of the erection, *alteration* or enlargement of any *sign* or *encroachment*, the valuation shall reflect the cost of any contract for the prosecution of the work with all contractors which shall include all labour costs, materials, and devices necessary to complete the work.

(d) The determination of value or valuation shall be made by the *Supervisor of Building Inspections* and shall be the reproduction cost new without depreciation and without regard to any loss occasioned from fire, used material or other causes.

(e) Every *owner*, architect, engineer, contractor or builder, having contracted for or having performed or supervised any work of construction, *alteration* or repairs on any land, or the agent of such person, shall give, in writing over his signature when requested by the *Supervisor of Building Inspections* all the information in his power with respect to the cost of the work.

Inspection fees

(3) Inspection fees:

(a) Where an inspection of a *building* or *structure* not provided for by a building permit is requested and conducted during office hours the fee shall be Fifteen Dollars ($15.00) for the first hour or fraction thereof and Ten Dollars ($10.00) for each additional hour or fraction thereof.

(b) Any inspection conducted outside of regular office hours the fee shall be Fifteen Dollars ($15.00) per man-hour or fraction thereof with a minimum charge of two-hours.

(c) Any inspection conducted for the issuance of an occupancy permit or a certificate of occupancy not provided for by a building permit, the fee shall be $10.00.

(4) Whenever a building permit is revoked or voluntarily surrendered for cancellation a refund of the permit fee shall be made after deducting $5.00 plus $10.00 for each inspection made, this shall include the one inspection to ascertain if any work has been done. Where this cost exceeds the permit fee, no refund shall be made. Permit refur for revokement

(5) Where a permit has not been obtained prior to the commencement of the actual work, through neglect, or for some other reason, the fees shall be double the normal rate.

SUBSECTION 1.10.2. MISCELLANEOUS FEES

1.10.2.1.(1) The fees to be paid to the *City* for an encroachment in addition to the erecting permit fee shall be as set forth in the Encroachment By-law.

(2) License fees shall be paid within 30 days of the due date. License fees not paid within the 30-day period shall have an additional amount added to the fee at the rate of $5.00 per month or portion thereof.

(3) Notwithstanding Sentence (2) hereof:

(a) failure by the *owner* or his agent to pay the license fee within the period of 30 days shall constitute a violation of this By-law; and

(b) the Supervisor of Building Inspections may waive the additional fee charge.

(4) See Part 7, for licensing of *persons,* firm or corporation desiring to carry on the business of placing, installing, maintaining, repairing or replacing a *plumbing system.*

SECTION 1.11. EQUIVALENTS

SUBSECTION 1.11.1. PROCEDURES FOR NEW EQUIVALENTS

1.11.1.1. The provisions of this By-law are not intended to limit the appropriate use of materials, equipment or methods of construction not specifically authorized herein. Any *owner* desirous of providing an equivalent for one or more of the regulations of this By-law shall submit to the *authority having jurisdiction* sufficient evidence to satisfy the appropriate authority that the proposed equivalent will provide the level of performance required by this By-law. Procedure

SECTION 1.12. CLIMATIC DATA

SUBSECTION 1.12.1. CLIMATIC DATA FOR DESIGN

SUBSECTION 1.12.1.1. The climatic data required for the design of a *building* or *buildings* shall be that data set forth in Table 1.12.1.A. Climatic data

TABLE 1.12.1.A.
Forming Part of Subsection 1.12.1.1.
CLIMATIC DATA

		Apply to Code Requirement
1. January 2½ per cent Design Temp. (°F).....	-25	6.2.3.2
2. January 1 per cent Design Temp. (°F)	-28	6.2.3.2.
3. July 2½ per cent Design Drybulb Temp. (°F.)	87	6.2.3.2.
4. July 2½ per cent Design Wetbulb Temp. (°F.)	74	6.2.3.2.

5.	Annual Total Degree-days below 65°F	10679	
6.	Maximum Fifteen-minute Rainfall (in.)	0.6	7.4.11.5.
7.	Maximum One-day Rainfall (in.)	3.5	4.1.5.5.(1)
8.	Annual Total Precipitation (in.)	20	
9.	Maximum Snow Load on the Ground (lb. per sq. ft.)	45 psf	4.1.5.1
10.	Wind Effects: Probability 1/10	7.3	4.1.6.1.(3)
	Probability 1/30	8.7	4.1.6.1.(3)
	Probability 1/100	10.3	4.1.6.1.(3)
11.	Earthquake R-Factor	0	4.1.7.1.(4)

SECTION 1.13. REFERENCED DOCUMENTS

SUBSECTION 1.13.1. REFERENCES

Technical references

1.13.1.1. When detailed technical information regarding materials, equipment and methods of structural design is necessary to ensure their compliance with the performance requirements of this By-law, reference is made in the text to the specific edition of an appropriate technical standard issued by a recognized standards organization. This By-law therefore includes as a part of its provisions these referenced documents to the extent that they relate to *building* or *structures*.

1.13.1.2. In the case of any conflict between the provisions of this By-law and those of any referenced document the provisions of this By-law will always take precedence.

SECTION 1.14. BUILDING COMMISSION

SUBSECTION 1.14.1. APPOINTMENT

Appointment of commission

1.14.1.1.(1) A Building Commission is hereby appointed by *Council* pursuant to its powers in that behalf to exercise in whole or in part the powers hereinafter set forth.

SUBSECTION 1.14.2. MEMBERSHIP

Commission members

1.14.2.1.(1) The Building Commission shall consist of eight members, who are qualified by experience and training to consider matters pertaining to building design and construction.

(2) The following members, shall have at least ten years' experience in his occupation and shall be in active paractice during the term of his appointment:

(a) two (2) practicing members of the Association of Professional Engineers of Manitoba of which one shall be a Civil or Structural Engineer and the other a Mechanical Engineer,

(b) two (2) practicing members of the Manitoba Association of Architects,

(c) one (1) active member of the Winnipeg Builders' Exchange,

(d) one (1) active member of the Housing and Urban Development Association of Manitoba, and

(e) one (1) senior Fire Officer of the Manitoba Association of Fire Chiefs.

Chairman

(3) The Commissioner of Environment shall appoint from the Department of Environmental Planning one (1) senior member of his staff to serve as the Chairman of the Building Commission.

Deputy Chairman

(4) The members appointed in Sentence 1.14.2.1.(2), shall appoint by majority vote a deputy chairman.

Term

(5) The term of each member appointed in Sentence 1.14.2.1.(2) shall be for a period of three years measured from the date of appointment.

SUBSECTION 1.14.3. SECRETARY OF BUILDING COMMISSION

Commission secretary

1.14.3.1.(1) There shall be a secretary of the Building Commission provided by the Commissioner of Environment from his staff and such secretary shall be without voting power.

(2) The secretary shall be custodian of the records, conduct correspondence and be responsible for clerical work of the Commission and be present at all meetings and shall present all relevant information on matters presented to the Commission.

SUBSECTION 1.14.4. RULES OF PROCEDURE

Commissior rules of procedure

1.14.4.1.(1) The Building Commission shall hold a regular meeting and/or hearing at least once a month on a day and at such time as may be fixed by a resolution of the Commission.

(2) Special meetings and/or hearings shall be held at the call of the Chairman and at such other times as the Commission shall determine.

(3) One week prior to a regular meeting and/or hearing, the Secretary of the Building Commission shall send by mail to each member of the Commission a copy of the minutes of the previous meeting and/or hearing

and a copy of the agenda for the forthcoming meeting and/or hearing. In the event that there are no items on the agenda for the said forthcoming meeting and/or hearing, it shall be cancelled for that month.

Applications

1.14.4.2.(1) Any person wishing to apply to have the Building Commission consider a matter shall advise the Secretary of the Commission in writing, clearly stating his request, and the Secretary shall advise the person applying, of the day and time set for the meeting and/or hearing so that he or his representative may attend.

(2) The Secretary shall include all such applications on the agenda for the consideration of the Commission, but any applications received by the Secretary after the agenda has been mailed to the members of the Commission shall be included on the agenda for the next month's meeting and/or hearing.

Quorum

1.14.4.3.(1) The meeting and/or hearing of the Building Commission shall be called to order only when a quorum of four (4) Commission members are present.

(2) The decision of a majority of the Commission members voting on any item on the agenda shall be constituted a decision of the Building Commission.

(3) In the case of a tie vote the Chairman shall cast the deciding vote.

(4) Immediately following the meeting and/or hearing the Secretary shall cause a written notice of the decision to be given personally or sent by registered mail, to the owner of the building and any other interested parties.

Order of business

1.14.4.4.(1) The order of business for a meeting and/or hearing shall be as follows:

(a) Call to order.
(b) Hearing of delegations.
(c) Reading of minutes of previous meeting and/or hearing.
(d) Discussing business arising out of the minutes.
(e) Discussing unfinished business.
(f) Discussing new business.
(g) Adjournment.

SUBSECTION 1.14.5. DUTIES

Responsibility of commission

1.14.5.1.(1) It shall be the duty of the Building Commission appointed by *Council* pursuant to its power in that behalf to:

(a) consider the case of any existing *building* affected by this By-law which in the opinion of the Commission is dangerous to life or limb, health, property and public welfare in the view of the purpose for which any such *building* is being used, to decide which one or more, if any, alterations or appliances shall be made or installed in each case to eliminate the hazard;

(b) consider cases of new *buildings* affected by this By-law in relation to the construction thereof, and, if deemed expedient

owing to the proposed use of new methods or materials in connection with such construction, to modify or vary the regulation with regard thereto; and

(c) to act in an advisory capacity on matters related to this By-law.

SUBSECTION 1.14.6. APPLICATION

1.14.6.1.(1) This Section shall not apply to any *building* which conforms with all regulations applicable thereto contained in other PARTS of this By-law.

SUBSECTION 1.14.7. APPEAL

1.14.7.1.(1) Any person deeming himself aggrieved by a decision of the Building Commission may appeal therefrom to the Committee on Environment whose decision shall be final and binding. Appeal

SUBSECTION 1.14.8. REMUNERATION

1.14.8.1.(1) All members of the Commission except those appointed under clause 1.14.2.1.(2) (e) and Sentence 1.14.2.1.(3) will be paid such fee as Council may, from time to time, prescribe for each meeting attended. Remuneratic

SECTION 1.15. PENALTIES

SUBSECTION 1.15.1. OFFENCES AND PENALTIES

1.15.1.1.(1)(a) Any person who contravenes or disobeys, or refuses or neglects to obey, Penalty

(i) Any provision of this By-law or any provision of any other By-law that, by this By-law, is made applicable to the *City* or made applicable to preceedings taken or things done under this By-law; or

(ii) Any provision of any By-law, regulations, or order enacted or made by *Council;*

for which no other penalty is herein provided, is guilty of an offence and liable, on summary conviction, to a fine not exceeding one thousand dollars ($1000.00) in the case of an individual or five thousand dollars ($5000.00) in the case of a corporation, or, in the case of an individual, to imprisonment for a term not exceeding six months or to both such a fine and such an imprisonment.

1.15.1.2. Where a corporation commits an offence against this By-law or against any By-law of the *City,* each Director or Officer of the corporation who authorized, consented to, connived at, or knowingly permitted or acquiesced in, the doing of the act that constitutes the offence, is likewise guilty of the offence and liable, on summary conviction, to the penalty for which provision is made in 1.15.1.1.

1.15.1.3. In addition to 1.15.1.1. and 1.15.1.2., any person or corporation may be required to observe or perform such terms and conditions as a magistrate may impose.

1.15.1.4. Where the contravention, refusal, neglect, omission, or failure, continues for more than one day, the person is guilty of a separate offence for each day it continues.

SECTION 1.16. REPEAL

SUBSECTION 1.16.1. BY-LAW No. 711

Repeal of 711

1.16.1.1. By-law No. 711 of The Metropolitan Corporation of Greater Winnipeg, and amendments thereto, is hereby repealed upon the date that this By-law comes into effect.

THE WINNIPEG BUILDING BY-LAW

Chapter 2

The National Building Code of Canada 1970 is hereby varied as follows:

THE WINNIPEG BUILDING BY-LAW

Chapter 1

A.

THE NATIONAL BUILDING CODE OF CANADA 1970 including all errata from the Change Series which has or will be incorporated in subsequent printings, is hereby adopted as "THE WINNIPEG BUILDING BY-LAW" and is subject to the additions, deletions and changes set forth in Chapter 2 of this By-law.

PART 2

DEFINITIONS

B.

PART 2 of The National Building Code 1970 is varied as follows:

1. Article 2.1.1.2. of PART 2 of The National Building Code of Canada 1970 is varied by deleting therefrom the following definitions:

Approved
Authority having jurisdiction

Combustible
Plenum

2. Article 2.1.1.2. of PART 2 of The National Building Code of Canada 1970 as varied is further varied by adding thereto in alphabetic order the following new definitions:

Alarm signal means a signal indicating an emergency requiring immediate action such as an alarm for fire from a manual box, a water flow alarm, an alarm from an automatic fire alarm system or other emergency signal.

Approved means approved by the *authority having jurisdiction* except when used with reference to materials or fixtures used in a plumbing system in which case it means:

(A) that such materials or fixtures have been submitted for examination and tesing to the Canadian Standards Association; that formal certification has been given to the effect that they conform to the CSA standards; that the materials or fixtures have the required markings, and also are acceptable to the authority having jurisdiction; or

(B) that such materials or fixtures have been approved by the Minister of Health of the Province of Manitoba, and are also acceptable to the authority having jurisdiction; or

(C) that the materials or fixtures are acceptable to the authority having jurisdiction and such acceptance shall be considered only when warranted, and in the opinion of the authority having jurisdiction and shall apply mainly to the materials and fixtures of other than the regular line of manufactured materials or fixtures built to the customer's order, or materials or fixtures manufactured or produced singly or in small quantities.

Areaway means an underground *building* used for the convenience of the adjacent *building* it serves built separately or attached to said *building* and built entirely below ground, and may have all or a portion of its structure exposed at ground level. *Areaways* shall include: light openings, light wells, vaults, storage space, conduit, tunnels, pipelines, coal *chutes*, service *chutes* and other underground conveying devices.

Authority having jurisdiction means the *Supervisor of Building Inspections;* or where the term "local or appropriate authority having jurisdiction" is used, it means the responsible municipal, provincial or federal officials with legal authority for controlling the subject referred to, in consultation with the *Supervisor of Building Inspections.*

Awning, collapsible means any roof-like structure attached to a *building* and projecting more than twelve (12) inches from the face of the *building* to which it is attached.

Awning, fixed means any rigid roof-like structure other than a *marquee* attached to a *building* in an immovable position and projecting more than twelve (12) inches from the face of the *building* shall also include sun visors, louvres and other roof-like structures used to provide shade.

Building, farm means any *building* for the purpose of maintaining the operation of a farm so as to provide shelter for farm produce, animals and equipment. Commercial, industrial and residential *buildings,* shall not be construed as *farm buildings.*

Canopy means any roof-like structure projecting more than twelve (12) inches from the face of a *building,* having a rigid frame, and attached to said *building* in such a manner as not to become an integral part thereof.

Chute (as pertaining to PART 10) means a channel, trough, tube, shaft, etc., for conveying water, grain, coal, mail and other goods to a *building* and having all or a portion of its structure exposed at or above ground level.

City, means The City of Winnipeg established under Section 3 of The City of Winnipeg Act.

Combustible (as applying to an elementary building material) means that such material fails to conform to CSA B54. 1-1972, Specification for Determination of Noncombustiblity in Building Materials.

Council means the council for *the City* for the establishment of which provision is made in Section 9 of The City of Winnipeg Act.

Exit level (as applying to Subsection 3.2.6.) means the lowest level in an enclosed *exit* stairway from which an exterior door provides access to a public thoroughfare or to an *approved* open space with access to a public thoroughfare at approximately the same level either directly or through a vestibule or *exit* corridor.

Exit storey (as applying to Subsection 3.2.6.) means a *storey* from which an exterior door provides direct access at approximately the same level to a public thoroughfare or to an *approved* open space with access to a public thoroughfare.

Fire damper means a *closure* which consists of a normally open damper installed in an air distribution system or in a wall or floor assembly, and designed to close automatically in the event of a fire in order to maintain the integrity of the *fire separation.*

Fire stop flap means a device intended for use in horizontal assemblies required to have a *fire-resistance rating* and incorporating protective ceiling membranes, which operate to close off a duct opening through the membrane in the event of a fire.

Highway means any place or way, including any structure forming part thereof, which or any part of which the public is ordinarily entitled or permitted to use for the passage of vehicles or pedestrians, with or without fee or charge therefor, and includes all the space between the boundary lines thereof whether or not used for vehicular or pedestrian traffic; and, without restricting the generality of the foregoing, includes roads, road allowances, streets, lanes, thoroughfares, and other means of communication dedicated to the public use as highways, or opened or made as highways under this By-law or any Act, and any part of a highway as so defined, and also includes all bridges, subways, underpasses, grade separations, piers, wharves, ferries, and squares, and the road improvements thereon, dedicated to the public use; but does not include any area designed or intended, and primarily used, for the parking of vehicles and the necessary passage ways thereon.

Independent central station means a continually supervised station under the control of a company independent of the owners of the *building* to be protected, that conforms with NFPA 71-1972, 'Standard for the Installation, Maintenance and Use of Central Station Protection Signalling Systems'.

Marquee means any roof-like structure constructed and erected as a permanent part of the *building* over an entrance thereto, and projecting more than 12 inches from the exterior wall of the *building*.

Noncombustible (as applying to an elementary building material) means that such material conforms to CSA B54. 1-1972, "Specification for Determination of Noncombustibility in Building Materials'.

Plenum means a chamber forming part of an air duct system.

Proprietary control centre means a continually supervised station under the control of the *owner* or others interested in the *building* or *buildings* to be protected that conforms with Class A proprietary signalling systems in NFPA 72D-1972, 'Standard for Installation, Maintenance and Use of Proprietary Protective Signalling Systems'.

Removal means the moving of an existing *building* from one property to another *property*.

Repair means the renewal or reconstruction of any part of an existing *building* for the purpose of its maintenance or restoration. The word *repair* or *repairs* shall not apply to any change of construction.

Sign means any writing (including letter or word), pictorial representation (including illustration or decoration), emblem (including device, symbol or trade mark), flag (including banner or pennant), or any other figure of similar character, which:

(a) is a structure or any part thereof, or is attached to, painted on, or in any other manner represented on a building,

(b) is used to announce, direct attention to, or advertise, and

(c) is visible from outside a *building*.

Sign, electric means *signs,* any part of the letters of which are formed of or are delineated by incandescent electric lamps, tubing or other light producing electrical apparatus forming an integral part thereof, *signs* having a border of incandescent or other electric lamps attached thereto, and transparent or partly transparent, *signs* whether lighted by electricity or other illuminant.

Sign, free-standing means any *sign* supported by one or more uprights or braces placed in the ground and not attached to any *building*.

Sign, illuminated means any *sign* which is lighted by means of lamps or other lighting devices reflecting on the outside face of the *sign*.

Sign, projecting means any *sign* other than a *wall sign* which is attached to a *building* and extends beyond the line of the said *building* or beyond the surface of that portion of the *building* to which it is attached more than twelve (12) inches.

Sign, roof means any *sign* erected upon and above the roof of a *building* within the peripheral exterior dimensions of the *building*.

Sign, free swinging means any *sign* which, when erected or hung on or attached to any *building* is capable of swinging, oscillating or rocking, but not as a result of mechanical devices incorporated in the *sign* for such purpose.

Sign, temporary means any *sign*, banner, pennant, valance or advertising display, with or without frames, intended to be displayed for a short period of time but shall not include those *signs* specifically exempted by this By-law.

Sign, facia means any *sign* attached against the surface of or against, or within a recess in the wall, a *column* or other perpendicular portion of a *building* in a position essentially parallel to said wall, *column* or other perpendicular portion. A facia sign shall also mean any *sign* attached to the walls of two or more *buildings* and spanning the space or spaces between the said *buildings* (A *facia sign* shall include flat or *wall signs*.)

Street means a *highway* but shall include a Provincial Trunk Highway to which the Public Works Act applies.

Structure means anything constructed or erected with a fixed location on the ground, or attached to something having a fixed location on the ground and includes *buildings*, walls, fences, *signs*, billboards, poster panels, light standards, etc.

Sun visor means a projection from a *building* for the purpose of providing shade to an aperture in the form of louvres, egg crating or other similar methods, but in no case designed so as to prevent air, rain, snow or other atmospheric elements from passing through such projection.

Supervisor of Building Inspections means the officer designated, or other officer performing like duties, designated under Section 484 of The City of Winnipeg Act.

Supervisory signal means a signal indicating the need for action in connection with the supervision of sprinkler and other extinguishing systems or equipment, or with the maintenance features of other protection systems.

PART 3

USE AND OCCUPANCY

C.

PART 3 of The National Building Code 1970 is varied as follows:

‡1. Delete Sentence **3.1.1.1.(3)** of the Code.

‡2. Delete Articles **3.1.1.3.** and **3.1.1.4.** of the Code and substitute the following:

Plans and Specifications

3.1.1.3.(1) In addition to the requirements contained in this Bylaw, informatio shall be submitted to show schematically or in writing the major components c fire protection including:

(a) the division of the *building* by *firewalls;*

(b) the *building area* in square feet;

(c) the degree of *fire separation* of *storeys,* shafts and special rooms or are including the location and rating of *closures* in *fire separations*;

(d) the source of information for *fire-resistance ratings* of elements of constructio (to be indicated on large-scale sections), and

(e) the location of *exits.*

3.1.1.4.(1) Except where permitted by the *authority having jurisdiction*, a tent c *air-supported structure* shall not be erected unless the required permit has bee obtained.

(2) The *authority having jurisdiction* shall issue the required permit when he satisfied that a tent or *air-supported structure* complies with Article 3.1.4.6.

‡3. Delete Sentences **3.1.2.1.(3)** and **(5)** of the Code and substitute the following:

(3) When it is intended to use a *building* for more than one *major occupanc* the *building* shall be classified according to all *major occupancies* for which it used or intended to be used.

(5) An arena-type *building* intended for occasional use for trade shows and simil exhibition purposes shall be classified as Group A, Division 3 *occupancy* and whe the *building area* of such *building* exceeds 15,000 sq ft the *building* shall be *sprinklere*

‡4. Insert the words "Day Care Centres" in column 4 for the Group B, Division 2 lin of Table **3.1.2.A.** of the Code.

†5. Delete Clause **3.1.3.1.(4)(b)** of the Code and substitute the following:

(b) have, unless otherwise *approved*, a combined area not exceeding 3000 s ft (279 m²).

*6. Delete Sentence **3.1.3.2.(1)** of the Code and substitute the following:

3.1.3.2.(1) Not more than one *dwelling unit* shall be contained within a *buildi* classified as Group F, Division 2 *major occupancy*.

†7. Delete Note (2) to Table **3.1.3.A.** of the Code and substitute the following:

(2) For *repair garages* at least a 2 hr *fire separation* is required. See sentence 3.3.7.7.(11).

‡8. Delete Clause **3.1.4.4.(3)(b)** of the Code and substitute the following:

(b) round timber columns of uniform taper at least

(i) 8 in. (203 mm) diam. when supporting floor loads, and

(ii) 7 in. (178 mm) diam. when supporting roof and ceiling only.

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† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

*†9. Delete Article **3.1.4.5.** of the Code and substitute the following:

Noncombustible Construction

3.1.4.5.(1) Where a *building* or part of a *building* is required to be of *noncombustible construction,* the construction shall be made from *noncombustible* materials, except as permitted in Sentences (2) to (8), Articles 3.3.4.6., 3.3.5.2., 3.3.6.2., and Sentences 3.1.11.1.(2) and 3.3.7.7.(7).

(2) Combustible elements of roofs, floors and walls shall be limited to

(a) the following minor components:

(i) paint,

(ii) tightly adhering paper covering not exceeding 1/28 in. (0.9 mm) thickness applied to a *noncombustible* backing provided the assembly has a *flame-spread rating* of 25 or less,

(iii) insulation and jackets on wiring,

(iv) mastics and caulking materials applied to provide flexible seals between the major components of exterior wall construction,

(v) wood furring strips not exceeding 2 in. by 2 in. (51 mm) nominal dimension attached directly to a continuous *noncombustible* backing, or wood nailing strips set into a continuous *noncombustible* backing in an *approved* manner, for the attachment of interior finishes, and

(vi) similar minor components as *approved*;

(b) roof covering which has an A, B, or C classification determined in conformance with Subsection 3.1.13.;

(c) adhesives, vapour barriers and sheathing papers, and

(d) thermal and sound insulation having a *flame-spread rating* of not more than 25 on any exposed surface or any surface that would be exposed by cutting through the material in any direction except that:

(i) where the insulation is placed between two layers of *noncombustible* material having a melting point above 1200°F(649°C) without an intervening air space, the *flame-spread rating* of the insulation shall not exceed 75 on any exposed surface or any surface that would be exposed by cutting through the material in any direction,

(ii) no *flame-spread rating* shall be required for the surface of thermal insulation installed immediately beneath the roof covering when the surface of the insulation has been treated and installed so as to reduce the tendency of the bitumen to soak into or through cracks or gaps in the insulation,"

(iii) insulation and jackets on electrical wiring provided that where such wiring is located within a vertical shaft in *buildings* described in Subsection 3.2.6., it has a *flame-spread rating* not greater than 25 and a smoke developed classification of not more than 50, or is enclosed within a raceway or conduit conforming to Sentence (5). (See Article 3.1.7.7. for *combustible* elements penetrating a *fire separation.)*

(3) *Combustible* millwork, interior cladding and finishing materials shall be limited to

(a) millwork, such as interior trim, ordinary doors and door frames, show windows together with their frames, aprons and backings, handrails, shelves, cabinets and counters;

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(b) window sash and frames provided
  (i) each window in an exterior wall face is an individual unit separate by *noncombustible* wall construction from every other opening in th wall,
  (ii) windows in exterior walls in contiguous *storeys* are separated by a least 3 ft (915 mm) of *noncombustible construction,* and
  (iii) the aggregate area of openings in an exterior wall face of a *fir compartment* does not exceed 40 per cent of the area of the wall face;
(c) finished flooring applied directly to a floor slab in which wood nailing strip may be incorporated or applied to wood sleepers on top of a floor slat provided the space between the flooring is *fire stopped* in conformance wit Subsection 3.1.9.;
(d) interior finishes such as paint, wallpaper and other interior finishes nc exceeding 1/28 in. (0.9 mm) thickness;
(e) interior wall finishes that
  (i) are not more than 1 in. in thickness, and
  (ii) have a *flame-spread rating* of not more than 150 on any exposed surfac or any surface that would be exposed by cutting through the materi in any direction; and
(f) interior ceiling finishes that
  (i) are not more than 1 in. in thickness except for exposed *fire retarda treated wood* battens, and
  (ii) have a *flame-spread rating* of not more than 25 on any exposed surfac or on any surface that would be exposed by cutting through the materi in any direction;

(4) *Combustible* ducts, including *plenums,* may be used in a *building* require to be of *noncombustible construction* provided such ducts
(a) are used only in horizontal runs, and
(b) are Class 1 ducts, conforming to Part 6 of this Bylaw.

(5) *Combustible* pipe, pipe insulation, pipe coverings, associated adhesives an *combustible* conduit may be used in a *building* required to be of *noncombustib construction* provided such pipe, insulation, coverings, adhesives and conduit
(a) have a *flame-spread rating* of not more than 25 except when located described in Subclauses (b)(i), (ii) and (iii), and
(b) when used in *buildings* described in Subsection 3.2.6., have a smoke develope classification of not more than 50 except where such pipe is
  (i) located within a concealed space in a wall,
  (ii) located in a floor slab, or
  (iii) enclosed in a *noncombustible* raceway or conduit.

(6) *Combustible* electrical boxes shall have a *flame-spread rating* of not more tha 25.

(7) *Combustible* duct linings, duct coverings, duct insulation, vibration isolatic connectors, duct tape, pipe insulation and pipe coverings may be used in *buildin* required to be of *noncombustible construction* provided they conform to t appropriate requirements in Part 6 of this Bylaw.

(8) *Combustible* travelling cables may be used on elevating devices in *buildin* required to be of *noncombustible construction.*

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§ National Building Code. Revision Change Series No. 1
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†10. Delete Sentence **3.1.5.1.(1)** of the Code and substitute the following:

3.1.5.1.(1) Except as provided in Sentences (2) and (3), where a material, assembly of materials or a structural member is required to have a *fire-resistance rating,* it shall be determined by the *authority having jurisdiction* on the basis of the results of tests conducted in accordance with the appropriate provisions of the following:

CSA B54.3-1964, "Methods of Fire Tests of Walls, Partitions, Floors, Roofs, Ceilings, Columns, Beams and Girders,"

ASTM E119-71, "Standard Methods of Fire Tests of Building Construction and Materials, including Tentative Revision",

BS 476 Part 1 (1953), "Fire Test of Building Materials and Structures" (but excepting the reload tests),

ULC 263 (1971), "Fire Tests of Building Construction and Materials,"

ULI 263 (1971), "Fire Tests of Building Construction and Materials," or

NFPA 251 (1972), "Standard Methods of Fire Tests of Building Construction and Materials."

†11. Add immediately at the end of Article **3.1.5.1.** of the Code a new sentence as follows:

(5) Where a ceiling construction has a suspended membrane ceiling with lay-in panels or tiles which contribute to the required *fire-resistance rating* of the assembly, hold down clips or other *approved* means shall be provided to prevent the lifting of such panels or tiles in the event of a fire.

‡12. Delete Article **3.1.5.4.** of the Code and substitute the following:

3.1.5.4.(1) No structural member or assembly required to have a *fire-resistance rating* shall be supported on construction that has a lesser *fire-resistance rating*, except as permitted in Subsection 3.2.2. for mixed types of construction, Article 3.1.6.2., and elsewhere in this Part.

(2) Where structural members such as beams, girders, *columns* and trusses which support more than one floor or roof are required to have fire endurance such shall be individually fire protected so that they are independent for purposes of fire protection of the floor system in which they may be contained.

(3) Structural steel members supporting not more than one floor or roof which are required to be protected from fire shall be individually encased or may be protected by a continuous ceiling or membrane which alone or in combination with the floor or roof assembly provides the required *fire resistance rating.*

*13. Delete Clause **3.1.5.5.(1)(g)** of the Code and substitute the following:

(g) *loadbearing* steel or concrete members wholly or partially outside of a *building* face in *buildings* not exceeding 4 *storeys* in *building height,* and classified as Group A, B, C, D or F 3 *major occupancy,* provided such members are

(i) at least 10 ft (3 m) from a property line or centre line of a public thoroughfare, and

(ii) at least 3 ft (0.9 m) away from any *unprotected opening* in an exterior wall, or shielded from heat radiation in the event of a fire within a *building* by construction that will provide the same degree of protection that would be necessary if the member was located inside the *building* with the protection extending on either side of the member a distance equal to the projection of the member from the face of the wall.

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†14. Delete Clauses **3.1.5.6.(1)(d)** and **(e)** of the Code and substitute the following:

(d) where an opening exceeds 20 sq in. (0.01 m²) in area it is protected by *fi stop flaps* constructed of steel having a minimum thickness of 0.0667 in. (1.6 mm) covered on the unexposed side with ⅛-in. (3 mm) asbestos board, and

(e) *fire stop flaps* protecting openings will operate automatically when the tempe ature at the duct opening exceeds by 50°F (28°C) the maximum temperatu that will normally be encountered and such *fire stop flaps* are equipped wit corrosion-resistant pins and hinges.

*15. Delete Clauses **3.1.5.6.(2)(d)** and **(e)** of the Code and substitute the following:

(d) where an opening exceeds 20 sq. in (0.01m²) in area, it is protecte by a *fire stop flap* conforming to Article 6.2.4.10 of Part 6 of this Bylaw.

†16. Delete Sentence **3.1.6.1.(2)** of the Code and substitute the following:

(2) Except as provided in Subsections 3.2.2. and 3.2.3. openings in *fire separatio* shall be protected with *closures*, shafts or by other *approved* means in accordan with Subsection 3.1.7.

†17. Delete Sentence **3.1.6.2.(1)** of the Code and substitute the following:

3.1.6.2.(1) Except as otherwise permitted elsewhere in this Part, every *fire separati* required to have a *fire-resistance rating* shall be supported from the ground l construction having a *fire-resistance rating* at least equal to that required for tl supported *fire separation.*

†18. Delete Sentence **3.1.6.2.(2)** of Article **3.1.6.2.** of the Code and renumber Sentenc (3) to (6) of said Article accordingly.

‡19. Delete Sentence **3.1.7.1.(1)** of the Code and substitute the following:

3.1.7.1.(1) Except as provided in Sentence (2) where an opening in a *fire separati* is required to be protected with a closure having a *fire-protection rating,* su *fire-protection rating* shall be determined by *authority having jurisdiction* on t basis of the results of tests conducted in accordance with the appropriate provisio of the following:

CSA B54.4-1963, "Standard Methods of Fire Tests of Door Assemblies,"
CSA B54.b-1963, "Standard Methods of Fire Tests of Window and Glass Block Assemblies,"
ASTM E-152-72, "Standard Methods of Fire Tests of Door Assemblies,"
ASTM E163-65(1972), "Standard Methods of Fire Tests of window Assemblies,"
ULC 10(b) (1970), "Fire Tests of Door Assemblies,"
ULC 9 (1962), "Fire Tests of Window Assemblies,"
ULC 555 (1970), "Standard for Fire Dampers,"
ULI 10(b) 1970), "Fire Tests of Door Assemblies,"
ULI 9 (1962), "Fire Tests of Window Assemblies," or
NFPA 252 (1972), "Standard Methods of Fire Tests of Door Assemblies."

†20. Delete Sentence **3.1.7.1.(3)** of the Code and substitute the following:

(3) Except as otherwise specified in this Part, every *closure* required in *fi separations* shall be installed in conformance with the installation and operati requirements of NFPA 80 (1970), "Standard for Fire Doors and Windows".

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§ National Building Code. Revision Change Series No. 1
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‡21. Add immediately at the end of Article **3.1.7.1.** of the Code new sentences as follows:

(5) Except as provided in Sentence (10) a duct piercing a *fire separation* required to have a *fire-resistance rating* shall be equipped with a fire damper to act as a *closure* at the *fire separation.*

(6) Doors described in Sentence (4) shall have a clearance of not more than ¼ in. (6mm) at the bottom and not more than ⅛ in. (3mm) at the sides and top.

(7) A fire damper required in Sentence (5) or other fire damper used as a *closure* in a *fire separation* shall have a *fire-protection rating* conforming to Sentence (4) and shall be installed in conformance with Article 6.2.4.9. of Part 6 of this Bylaw.

(8) A fire damper referred to in Sentence (7) used in a *fire separation* required to have a *fire-resistance rating* of not more than 2 hr but which is not a *firewall,* shall be constructed and rated in conformance with ULC 555 (1970), "Standard for Fire Dampers'.

(9) A fire damper referred to in Sentence (7) used in a *fire separation* required to have a *fire-resistance rating* of more than 2 hr, or used in a *firewall* shall be rated in conformance with one of the test methods in Sentence (1) for door assemblies.

(10) Fire dampers need not be provided in *noncombustible* branch ducts that have a melting point above 1200°F (649°C) and penetrate a required *fire separation* provided such ducts:

(a) serve only air-conditioning units discharging air at not more than 4 ft. (1.2 m) above the floor provided such ducts:
  (i) do not pierce a floor at more than one place, and
  (ii) have a cross sectional area of not more than 20 sq in (129 sq cm) or

(b) are connected to exhaust duct risers in which the air flow is upward and such ducts are carried up inside the riser at least 22 in. (0.56 m).

†22. Delete Sentence **3.1.7.2.(4)** of the Code and substitute the following new sentences (4) and (5), and renumber the existing sentences(5) to (8) as sentences (6) to (9).

(4) A door having at least a 20 minute *fire-protection rating*, or a 1¾ in. thick solid core wood door, mounted in a frame that has been tested and rated, or mounted in a wood frame of at least 2 in. nominal thickness may be used as a *closure* in

(a) a *fire separation* required to have not more than a 1 hour *fire-resistance rating* where such *closure* is located between a *public corridor* and a room or suite of rooms, or

(b) a *fire separation* required to have a ¾ hr *fire-resistance rating* in *buildings* not exceeding 3 *storeys* in *building height.*

(5) The requirements for *noncombustible* sills in NFPA 80-1970, 'Standard for Fire Doors', shall not apply to doors described in Sentence (4).

†23. Delete Sentence **3.1.7.3.(1)** of the Code and substitute the following:

3.1.7.3.(1) Except as provided in Article 3.4.5.1. for separation of *exits*, an opening or openings in ¾-hr and 1-hr interior *fire separations* may be protected with wired glass or glass blocks when installed in accordance with Sentences (2) and (3).

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§ National Building Code. Revision Change Series No. 1
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†24. Delete Sentence **3.1.7.4.(3)** of the Code and substitute the following:

(3) When an escalator or an inclined moving walk is not a required *exit* bu pierces a *fire separation*, it shall be enclosed in accordance with the requirement of this Subsection except that in *buildings* that are *sprinklered* escalators and movin walks may be protected in accordance with the "Rolling Shutter Method", th "Sprinkler Vent Method" or the "Spray Nozzle Method" as described in Sectio 6-12 of NFPA 101 (1970), "Code for Safety to Life in Buildings and Structures".

*25. Delete Clause **3.1.7.6.(2)(b)** of the Code and substitute the following:

(b) conform to Articles 3.1.7.1. and 3.1.7.7. for unenclosed ducts and the are tightly fitted or *fire stopped* to prevent the passage of smoke an flame.

*†26. Delete Article **3.1.7.7.** of the Code and substitute the following:

3.1.7.7.(1) Every pipe, duct, electrical outlet box, and electric conduit or other simila service equipment, partially or wholly penetrating through a *fire separation*, sha be of *noncombustible* materials unless such service equipment has been incorporate in an assembly at the time of testing in conformance with Sentence 3.1.5.1.(1).

(2) *Combustible* drain, waste and vent pipe shall not be used in a syste within a *building* where part of the system passes through or is locate within a required *fire separation,* except where the *combustible* portion of the system are located entirely on one side of the *fire separatio* but in no case shall such pipe be located within a vertical shaft.

†27. Delete Clause **3.1.9.1.(2)(e)** of the Code and substitute the following:

(e) the top and bottom of each run of stairs at ceiling and floor levels;

†28. Delete Subclause **3.1.9.1.(7)(a)(i)** of the Code and substitute the following:

(i) asbestos cement board, gypsum board or other *noncombustible* materia having a melting point above 1200°F (649°C), such as sheet steel.

†29. Delete Subsection **3.1.10.** of the Code and substitute the following:

SUBSECTION 3.1.10. FLAME-SPREAD RATING

3.1.10.1.(1) Except as provided in Sentences (2) and (5), the *flame-spread ratin* and smoke developed classification of a material, assembly of materials or structura member shall be determined by the *authority having jurisdiction* on the basis o the average of at least three tests conducted in accordance with the appropriat provisions of the following:

ASTM E84-70, "Test for Surface Burning Characteristics of Buildin Materials,"

ULC C723 (1972), "Fire Hazard Classification of Building Materials,"

ULI 723 (1965), "Test Method for Fire Hazard Classification of Buildin Materials," or

NFPA 255-1972, "Method of Test of Surface Burning Characteristics o Building Materials."

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(2) The *flame-spread rating* and smoke developed classification of a material or assembly of material for floor application shall be determined by the *authority having jurisdiction* on the basis of results of tests conducted in accordance with the provisions of CSA B54.9-1972, "Standard Method of Test for Surface Burning Characteristics of Flooring and Floor Covering Materials".

(3) *Flame-spread rating* or smoke developed classification may be determined where *approved* on the basis of the results of tests conducted in accordance with the earlier editions of test standards listed in Sentence (1) which were current at the time of test but modified in conformance with Sentence (4).

(4) A material, assembly of materials, or a structural member may be assigned a *flame-spread rating* on the basis of NBC Supplement No. 2, "Fire Performance Ratings 1965".

(5) Where the flame spread classification determined in accordance with the provision of Sentence (1) is between 55 and 78 the *flame-spread rating* shall be the greater of:

(a) the value determined in accordance with the provisions of Sentence (1); or

(b) the greatest value that can be determined by the formula $25\frac{d}{t}$ applied to observations of the progress of the flame front during the tests, where

d = any distance of flame travel from the point of origin, in feet, that is greater than 10, and

t = the time in minutes for the flame to travel distance d.

†30. Delete Clause **3.1.11.1.(2)(f)** of the Code and substitute the following:

(f) such lighting elements have a *flame-spread rating* not exceeding 200.

†31. Delete Sentence **3.1.11.1.(3)** of the Code and substitute the following:

(3) Open grid and translucent ceilings located below sprinkler systems shall be installed inconformance with NFPA 13-1972, "Standard for the Installation of Sprinkler Systems," paragraphs 4321 and 4322, and the rules contained therein.

†32. Delete Sentence **3.1.13.1.(1)** of the Code and substitute the following:

3.1.13.1.(1) Except as provided in Sentence (2) where a roof covering is required to be a Class A, B or C roof covering, such classification shall conform to ULC 790C (1969), "Standards for Test Methods for Fire Resistance of Roof Covering Materials" for Class A, B or C roof covering and shall be determined by the *authority having jurisdiction* on the basis of results of tests conducted in accordance with the following:

ASTM E108-70 (1965), "Fire Tests of Roof Covering,"

ULC 790 (1969), "Standards for Test Methods for Fire Resistance of Roof Covering Materials,"

ULI 790 (1970), "Standards for Test Methods for Fire Resistance of Roof Covering Materials," or

NFPA 256-1970, "Methods of Fire Tests of Roof Coverings."

†33. Delete Clause **3.1.14.1.(1)(b)** of the Code and substitute the following:

(b) unless otherwise *approved* not less than the number of persons that can be accommodated on the *floor area* or part thereof as determined from Table 3.1.14.A.

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§ National Building Code. Revision Change Series No. 1
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‡34. Delete Table **3.1.14.A.** of the Code and substitute the following:

Table 3.1.14.A.

Forming Part of Article 3.1.14.1.

Item No.	Type of Use of *Floor Area* or Part Thereof	Area per Person, sq. ft.
	Assembly uses	
1	space with fixed seats	(1)
2	space with nonfixed seats	8
3	space with nonfixed seats and tables	10
4	standing space	4
5	stadia and grandstands	6
6	bowling alleys, pool and billiard rooms	100
7	classrooms	20
8	school shops and vocational rooms	100
9	reading or writing rooms or lounges	20
10	dining, beverage and cafeteria space	12
11	laboratories in schools	50
	Institutional uses	
1	surgical and obstetrical suites	125
2	wards containing more than 2 beds	50
3	detention quarters	125
	Residential uses	(2)
1	houses	*see* Part 9
2	dormatories	50
	Business and Personal Service uses	
1	personal service shops	50
2	offices	100
	Mercantile uses	
1	retail sales floors at ground, basement or cellar	30
2	retail sales floors of a one storey store building having no basement or cellar	45
3	other floors	60
	Industrial uses	
1	manufacturing or process rooms	50
2	*storage garage*	500
3	storage space (warehouse)	300
4	aircraft hangars	500
	Other uses	
1	cleaning and repair of goods	50
2	kitchens	100
3	storage	500

Notes to Table 3.1.14.A.:

(1)The *occupant load* shall be based on the number of seats provided.

(2)The *occupant load* for *dwelling units* shall be based on 2 persons per bedroom or area provided for sleeping.

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†35. Delete Clause **3.2.2.20.(2)(f)** of the Code and substitute the following:

(f) roof assemblies shall have a 1-hr *fire-resistance rating*, except that this requirement is waived in *buildings*, where every part of a roof assembly is 20 ft (6.1 m) or more above the main floor or balcony and carries no loads other than normal roof loads including access walks and ventilating and sound or similar equipment. The above restriction concerning minimum distance shall not apply to

(i) an inclined and stepped floor ascending from the main floor and which is used for seating purposes only,

(ii) a balcony used for seating purposes only, or

(iii) a walkway used only as a *means of egress*; and

†36. Strike out the word "Sprinklered" in the heading "Group B, Division 2" of Article **3.2.2.24.** of the Code.

†37. Delete Clause **3.2.2.25.(2)(c)** of the Code and renumbered Clauses (d) to (g) as Clauses (c) to (f) of said Article.

‡38. Delete Article **3.2.2.26.** of the Code and substitute the following:

Group C, up to 2 Storeys

3.2.2.26.(1) A *building* classified as Group C shall conform to Sentences (2) and (3) provided the *building*

(a) is not more than 2 *storeys* in *building height*, and

(b) if unsprinklered, is not greater in *building area* than the value in Table 3.2.2.D., or

(c) if *sprinklered*, is not greater than twice the area limits of Clause (b).

Table 3.2.2.D.

Forming Part of Sentence 3.2.2.26.(1)

Unsprinklered Maximum Area, sq. ft.			
No. of *Storeys*	Facing 1 *Street*	Facing 2 *Streets*	Facing 3 *Streets*
1	12,000	15,000	18,000
2	9,000	11,250	13,500

(2) The *building* shall be of *combustible* or *noncombustible construction* used either singly or in combination, and

(a) basements, cellars and crawl spaces shall be subdivided by a ¾-hr *fire separation* into areas not exceeding 5000 sq ft (465 m²), or they shall be *sprinklered*;

(b) floor assemblies immediately above basements or cellars shall be a ¾-hr *fire separation*;

(c) other floor assemblies except floors over crawl spaces shall be a ¾-hr *fire separation* (see Article 3.2.2.3.);

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* National Building Code. Revision Change Series No. 3
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(d) balconies and *mezzanines* shall have, if of *combustible construction,* a ¾-h *fire-resistance rating*; and

(e) all *loadbearing* walls, columns and arches shall have a *fire-resistance ratin* at least equivalent to that required for the supported assembly.

(3) When *buildings* contain *dwelling units* consisting of more than 1 *storey,* a provided in Article 3.3.4.2., the provisions of Sentences (1) and (2) shall apply excep that subject to the provision of Sentence 3.3.4.2.(2) the floor assemblies, includin floors over basements or cellars, which are entirely contained within such *dwellin units*, shall have a ¾-hr *fire-resistance rating* and need not be constructed as a *fir separation*; in *buildings* where there is no *dwelling unit* above another th *fire-resistance rating* for the floor assemblies within the *dwelling unit* is waived.

†**39.** Delete Clause **3.2.2.27.(2)(g)** of the Code and substitute the following:

(g) all *loadbearing* walls, columns and arches shall have a *fire-resistance ratin* at least equivalent to that required for the supported assembly.

†**40.** Delete Clause **3.2.2.29.(2)(a)** of the Code and substitute the following:

(a) crawl spaces in a *building* of *combustible construction*, and basements an cellars in every *building* shall be subdivided by ¾ hr *fire separations* int areas not exceeding 5000 sq ft. (465 m²) or they shall be *sprinklered;*

†**41.** Delete Clause **3.2.2.32.(2)(f)** of the Code and substitute the following:

(f) roof assemblies shall have a 1 hr *fire resistance rating*, except that in *buildin* of one *storey* in *building height* this requirement is waived; and

†**42.** Delete Clause **3.2.2.33.(2)(a)** of the Code and substitute the following:

(a) crawl spaces in a *building* of *combustible construction*, and basements an cellars in every *building* shall be subdivided by ¾ hr *fire separations* in areas not exceeding 5000 sq ft (465 m²) or they shall be *sprinklered;*

***43.** In Table **3.2.2.N.** of the Code in the fourth column thereof headed "Facing 3 Streets strike out the figure "19,000" and substitute therefor the figure "18,000".

†**44.** Delete Clause **3.2.2.41(2)(a)** of the Code and substitute the following:

(a) crawl spaces in a *building* of *combustible construction*, and basements an cellars in every *building* shall be subdivided by ¾ hr *fire separations* int areas not exceeding 5000 sq ft (465 m²) or they shall be *sprinklered;*

†**45.** Delete Clause **3.2.2.46.(2)(c)** of the Code and substitute the following:

(c) floor assemblies immediately above crawl spaces shall have, if of *combustibl construction* a ¾-hr *fire-resistance rating*, except that this requirement is waive if the crawl spaces are subdivided by a ¾-hr *fire separation* into areas n exceeding 10,000 sq ft (930 m²), or they are *sprinklered* (see Article 3.2.2.3. and

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† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
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†46. Delete Sentence **3.2.3.1.(1)** of the Code and substitute the following:

3.2.3.1.(1) Except as provided in Articles 3.2.3.2., 3.2.3.6. and 3.2.3.8., the area of *unprotected openings* shall not exceed that set forth in Tables 3.2.3.A. or 3.2.3.B. for the *limiting distance* applicable to the *exposing building face* under consideration.

(The requirements of this Article are aimed at combating fire spread by thermal radiation provided adequate fire fighting is envisaged. It has been found that periods of 10 to 30 minutes usually elapse between the outbreak of flaming combustion in a building and the attainment of high radiation levels. During this period the specified spatial separations will prove adequate to inhibit ignition of the exposed building facade or interior of an adjacent building by radiation. Subsequently, however, reduction of the fire intensity by firefighting and the protective wetting of the exposed building facade will often be necessary as supplementary measures to inhibit fire spread.

†47. Add immediately at the end of Article **3.2.3.1.** of the Code a new Sentence as follows:

(4) In respect to the *building* under consideration where firefighting facilities and protective wetting facilities are not available within ten minutes of the alarm being received, the limiting distance required by Article 3.2.3.1. shall be doubled.

†48. Delete Sentence **3.2.3.4.(1)** of the Code and substitute the following:

3.2.3.4.(1) Every wall that is a *party wall* shall be constructed as a *firewall.*

†49. In the first column that is titled "Max. Area, sq. ft." of Table **3.2.3.A.** of the Code change the figure "20000" to read "20000 or greater."

†50. In the first column that is titled "Max. Area, sq. ft." of Table **3.2.3.B.** of the Code change the figure "20000" to read "20000 or greater."

*‡51. Delete Article **3.2.4.1.** of the Code and substitute the following:

3.2.4.1.(1) An *approved* fire alarm system shall be installed in all *buildings* of 4 *storeys* or more in *building height* and as otherwise prescribed in Table 3.2.4.A., or by the requirements of Subsection 3.2.6.

(2) Where a fire alarm system is required in occupancies A1, B1 and B2, smoke detectors shall be installed in the mean egress of these buildings as a means of activating the alarm system.

(3) An *approved* type of automatic fire detection system shall be installed in addition to any manual system that may be required in an *occupancy* intended to contain hazardous substances, regulated by Article 3.3.1.1. when such *occupancy* is to be unoccupied at times such as at night or during weekends or during shutdowns for holidays, unless the *building* is *sprinklered* and a water flow switch incorporated in the sprinkler system is connected to the fire alarm system.

(4) When mixed *occupanies* are present in the same *building*, the most demanding requirements for fire alarm and detector systems for the *occupancies* contained therein shall apply.

(5) Where a fire alarm system is required in any portion of a *building*, it shall be installed throughout the *building.*

(6) Smoke detectors in recirculating air systems shall be installed as prescribed in Table 3.2.4.A. and Subsection 3.2.6. to be used primarily as a means of shutting down fans and closing dampers to prevent circulation of smoke.

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§ National Building Code. Revision Change Series No. 1
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* National Building Code. Revision Change Series No. 3
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§52. Delete Article **3.2.4.3.** of the Code and substitute the following:

3.2.4.3. Where a fire alarm system is installed in a Group A, Division 1 *occupancy* a Group B *occupancy*, or in a *building* regulated by the requirements of Subsectio 3.2.6., there shall be direct connection to the fire department headquarters by wa of the municipal fire alarm system or an independently owned system or via central station or proprietary control centre with direct communication with th fire department.

§53. Delete Sentence **3.2.4.4.(4)** of the Code

‡54. Delete Article **3.2.4.5.** of the Code and substitute the following:

3.2.4.5. Required fire alarm, fire detector, smoke detector systems and annunciato shall be located and installed in conformance with the requirements of the Winnipe Electrical By-law.

†55. Add immediately to the end of Article **3.2.5.1.** of the Code a new sentence as follows

(5) Every *building* shall be located so that it has access to a *street*, either directly or by a yard conforming to Sentence 3.2.2.4.(1).

*56. Delete Subsection **3.2.6.**, including **Note,** of the Code and substitute the following:

SUBSECTION 3.2.6. ADDITIONAL REQUIREMENTS FOR HIGH BUILDINGS

Introductory Note

(Experience with high buildings has shown that the time required for complete evacuation can exceed th which is considered necessary for the safe egress of all occupants. Studies of the 'chimney effect' and observatic of smoke movement in actual fires have shown that present measures for containing a fire on any one stor will not usually prevent the movement of smoke through elevator, stair and other vertical shafts to the upp floors of a high building. Occupants of high buildings, and particularly those on upper storeys may therefc be faced with severe smoke conditions from fires occurring in storeys below them, before their own evacuati is possible. The measures described in this Subsection are designed to maintain safe conditions for occupai of a high building who may have to remain in the building during a fire, and to assist the firefighters providing efficient access to the fire floor.

It is assumed that all fire situations will be under the direct control of the officer-in-charge of the fire departme facility responding to the fire, who will determine the location of the fire, direct smoke control measu and by means of the central control facility and the voice communication system, arrange for the safe moveme of building occupants who have been alerted to the emergency condition by the fire alarm system.

This subsection contains only those items that relate to the design and construction of a building. Operati of the facilities and recommended actions to be taken by the building owner, occupant and fire departme are subjects covered by the National Fire Code of Canada.

Measures that relate to limiting or controlling the movement of smoke caused by a building fire are describ in ACNBC publication, "Measures for Fire Safety in High Buildings". Adoption of one of these measu is considered to be an acceptable means of complying with the requirements of this Subsection. It is n however, intended that these measures should be regarded as excluding any other equally effective meas that may be developed.)

3.2.6.1.(1) This Subsection applies to:

(a) every *building* of Group A, D, E or F *major occupancy* classification th is more than

(i) 120 ft (36.6 m) in height measured between *grade* and the floor lev of the top *storey,* or

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* National Building Code. Revision Change Series No. 3
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(ii) 60 ft. (18.3m) in height, measured between *grade* and the floor level of the top *storey* and in which the cumulative or total *occupant load* in a *building* on or above any *storey* above *grade,* other than the first *storey,* divided by the number of 22-in. units of *exit* width in all *exit* stairs at that *storey,* exceeds 300 persons, and

(b) every *building* containing a Group B or C *major occupancy* located more than 60 ft (18.3m) above *grade,* and every *building* containing a *floor area* or part of a *floor area,* located above the third *storey,* designed or intended as a group B *occupancy* for patients in bed or infirm persons.

3.2.6.2.(1) Every *building* shall be designed to limit the danger to occupants and firefighters from exposure to smoke in a *building* fire as provided in Sentences (2) to (9).

(2) Except as provided in Sentences (5) to (8), every *building* shall be designed so that during a period of 2 hr after the start of a fire all *floor areas* that are above the lowest *exit storey* will not contain more than 1 per cent by volume of contaminated air from the fire floor, assuming an outdoor temperature equal to the January design temperature on a 2½ per cent basis in Table 1.18.1.A of Part 1 of this Bylaw.

(3) Except as provided in Sentences (6) and (8), every *building* shall be designed so that during a fire the limit described in Sentence (2) on the movement of contaminated air into other *floor areas* is not exceeded in

(a) each *exit* stair serving *storeys* above the lowest *exit level,* and

(b) each *exit* stair serving *storeys* below lowest *exit level.*

(4) Except as provided in Sentences (6) and (8), every *building* shall be designed so that during a fire the limit described in Sentence (2) on the movement of contaminated air into other *floor areas* is not exceeded in a shaft that contains a firefighters' elevator, as required by Article 3.2.6.3.

(The requirements of Sentences (2), (3) and (4) may be met by use of measures B, D, F, H or I, described in ACNBC publication "Measures for Fire Safety in High Buildings".)

(5) The requirements of Sentence (2) are waived in a *building* Group C *major occupancy* classification that is not more than 250 ft in height measured between *grade* and the floor level of the top *storey,* and in any *building* of Group A, D, E or F *major occupancy* classification where occupants above the first *storer* can enter and be safely accommodated in *floor areas* or parts of *floor areas* that

(a) are designated as areas of refuge on the plans and are identified as such in the *building,*

(b) are located at least on every fifth *storey,*

(c) provide not less than 5 sq ft of floor space per ambulatory occupant, and 16 sq ft of floor space per non-ambulatory occupant,

(d) have access corridors and doors leading to each designated part of a *floor area* on the same *storey* sufficient to provide one 22-in. unit of width for every 150 persons who may have to use these passages to reach the designated part of a *floor area,*

(e) have access stairs from intervening *storeys* leading to each designated part of a *floor area* sufficient to provide one 22-in. unit of width for every 100 persons who may have to use these stairs to reach the designated part of a *floor area,* and

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* National Building Code. Revision Change Series No. 3
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(f) during a period of 2 hr after the start of a fire do not contain more th 1 per cent by volume of contaminated air from the fire floor, assuming outdoor temperature equal to the January design temperature on a 2½ p cent basis in Table 1.18.1.A of Part 1 of this Bylaw.

(In a *building* that falls within the scope of Sentence (5), the requirements in Sentence (5) may be met use of Measures K or L, described in ACNBC publication "Measures for Fire Safety in High Buildings".)

(6) In a *building* of Group A, C, D, E or F *major occupancy* classification, t requirements of Sentences (2) and (4) and Clause 3(a) are waived when the *buildi* is *sprinklered,* and

(a) the sprinkler system is equipped with a water flow and *supervisory sigr* system that will

(i) transmit automatically a water-flow signal directly to the fi department, or through an *approved independent central station,*

(ii) transmit automatically other *supervisory signals* to an *approv proprietary control centre* or to an *approved independent central static* and

(iii) activate a signal at the central alarm and control facility describ in Article 3.2.6.8.

(b) each stairway that serves *storeys* above the lowest *exit level* is vented to t outdoors at or near the bottom of the stairshaft,

(c) measures are taken to limit movement of smoke from a fire in a *floor ar* below the lowest *exit storey* into upper *storeys,* and

(d) except for exhaust fans in kitchens, washrooms and bathrooms in *dwelli units,* and except for fans used for smoke venting in Article 3.2.6.5., air movi fans are stopped in any system that serves more than two *storeys.*

(In a *building that falls within the scope of Sentence (6), the requirements in Sentence (6) may be met by of Measure A, described in ACNBC publication "Measures for Fire Safety in High Buildings".)*

(7) The requirements of Sentence (2) are waived in a *building* of Group A, D, E or F *major occupancy* classification where

(a) the *building* is not more than 250 ft in height measured between *grade* a the floor level of the top *storey,* and

(b) the number of occupants of above *grade storeys* does not exceed one thi of the total area in square feet of treads and landings in the *exit* stairs servi these *storeys.*

(In a *building* that falls within the scope of Sentence (7), the requirements of Sentence (7) may be met use of Measures C, E, G or J, described in ACNBC publication "Measures for Fire Safety in High Buildings"

(8) The requirements of Sentences (2) and (4) and Clause (3)(a) are waived a *building* of Group C *major occupancy* classification

(a) that is not more than 120 ft in height, measured between *grade* and floor level of the top *storey.*

(b) where each individually rented room, suite of rooms or *dwelling unit* abc *grade* has direct access to an exterior balcony that

(i) has a depth from the outside face of the exterior wall to the ins edge of the balcony of at least 5 ft, and

(ii) provides not less than 5 sq ft of balcony space for each occup of the room, suite of rooms or *dwelling unit,*

(c) where each stairway that serves *storeys* above the lowest *exit level* is ven to the outdoors at or near the bottom of the stairshaft,

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
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(d) where measures are taken to limit movement of smoke from a fire in a *floor area* below the lowest *exit storey* into upper *storeys,* and

(e) where, except for exhaust fans in kitchens, washrooms and bathrooms in *dwelling units,* air moving fans are stopped in any system that serves more than two *storeys.*

(In a *building* that falls within the scope of Sentence (8), the requirements of Sentence (8) may be met by use of Measure M, described in ACNBC publication "Measures for Fire Safety in High Buildings".)

(9) Where a *building* described in Sentence 3.2.6.1.(1) is connected to any other *building,* measures shall be taken to limit movement of contaminated air from one *building* into another during a fire.

(The requirement of Sentence (9) may be met by the use of Measure N, described in ACNBC publication, "Measures for Fire Safety in High Buildings".)

Elevators

3.2.6.3.(1) Except at the *street* floor level on which the central alarm and control facility required in Article 3.2.6.8. is located, elevator door re-opening devices that may be affected by smoke or hot gases such as photo-electric devices, shall be rendered inoperative after the doors have been held open for 10 sec.

(2) A key-operated switch shall be provided that

(a) is in a conspicuous location on the outside of the elevator shaft at or near the central alarm and control facility referred to in Article 3.2.6.8.,

(b) will cause the immediate return of all elevator cars in the *building* to the *street* floor or transfer lobby by cancelling all other calls after the car has stopped at the next floor at which it can make a normal stop, and

(c) will render inoperative the emergency stop switch in each elevator car upon operation of the key-operated switch.

(3) In each elevator car a key-operated switch shall be provided to

(a) enable the elevator to operate independently of other elevators,

(b) allow operation of the elevator without interference from floor call buttons,

(c) render door protective devices inoperative, and

(d) control the opening of power-operated doors only by continuous pressure on the "open" buttons or switches, so that, if the "open" button or switch is released while the door is opening, the doors will automatically reclose.

(4) Keys to operate the switches required by Sentences (2) and (3) shall be provided in a suitably identified box conspicuously located on the outside of an elevator shaft near the central alarm and control facility required by Article 3.2.6.8., and an additional key, or keys, shall be kept at the central alarm and control facility.

Elevator for Use by Firefighters

3.2.6.4.(1) At least one elevator shall be provided for use by firefighters in conformance with Sentences (2) to (6).

(2) The elevator required in Sentence (1) shall have a platform area not less than 24 sq ft (2.2 m^2), and shall be capable of carrying a load of 2,000 lb. (8900 N) from a *street* floor landing to the top floor that it serves in 1 min.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
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(3) *Approved* measures shall be taken to ensure that the elevator required i Sentence (1) is operable under conditions of exposure to a fire from the outsid of the shaft for a period of 1 hr.

(The requirements in Sentences (3) and 3.2.6.2.(4) are considered to be met by use of Measures B, C, I and E or L, described in ACNBC publication "Measures for Fire Safety in High Buildings". to limit entr of smoke into the elevator required in Sentence (1), provided the elevator door opens onto a *public corrid* or a vestibule protected against entry of smoke and fire as described in these measures.)
(The requirements in Sentences (3) and 3.2.6.2.(4) are considered to be met by use of Measure K, describe in ACNBC publication, "Measures for Fire Safety in High Buildings", by providing an elevator complyin with the requirements of Sentence (2) and Sentences (4) to (7) on each side of a vertically divided *building.)*

(4) Except as provided in Sentence (5), an elevator required in Sentence (1) sha be capable of providing transportation from the *street* floor to every floor normall served by the elevator system that is above *grade* in the *building.*

(5) Where it is necessary to change elevators to reach any floor referred to i Sentence (4), the system shall be designed so that not more than one change c elevators is required when travelling from a *street* floor to any floor in the *building.*

(6) Elevators required in Sentence (1) shall be identified on the floor containin the central alarm and control facility described in Article 3.2.6.8., and at an interchange level described in Sentence (5), except that where Measures A or I are used such elevators shall not be identified.

(7) Electrical conductors for the operation of the elevator referred to in Sentenc (1) shall be

(a) installed in *service spaces* conforming to Section 3.5 that do not contain othe *combustible* material,

(b) installed in the elevator shaft when permitted by the *authority havin jurisdiction,* provided the conductors are *approved,* or

(c) protected against exposure to fire from the service entrance of the emergenc power supply, or the normal service entrance of the normal power suppl to the equipment served, to ensure operation for a period of 1 hr whe subjected to the temperature conditions described in the appropriate *fi resistance* test in Article 3.1.5.1.

Venting to Aid Firefighting

3.2.6.5. Means of venting each *floor area* to the outdoors shall be provided i conformance with Chapter 3 of ACNBC publication, "Measures for Fire Safe in High Buildings" by windows, wall panels or smoke shafts, or in a *sprinklere building* the *floor area* may be vented by the *building* exhaust system describe in ACNBC publication, "Measures for Fire Safety in High Buildings."

Provision of Sprinklers

3.2.6.6.(1) The following spaces shall be *sprinklered:*

(a) every *storey,* or part thereof, intended for a Group E or Group F, Divisic 1 or Division 2 *occupancy,*

(b) every *restaurant* or licensed beverage establishment, and

(c) every *storey* or part thereof intended for the storage or handling of hazardo substances. (See Article 3.3.1.1.)

(Sprinklering of below *grade storeys* is covered in Article 3.2.2.8)

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
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Interior Finish

3.2.6.7.(1) Except as permitted in Sentence (2), the interior finish for every wall, *partition,* ceiling or floor of a room or space including *service spaces* and elevator cars shall have a *flame-spread rating* and a smoke developed classification conforming to Table 3.2.6.B.

TABLE 3.2.6.B
Forming Part of Article 3.2.6.7.

Location	Maximum *Flame-Spread Rating*			Maximum Smoke Developed Classification		
	Wall Surface	Ceiling Surface	Floor Surface	Wall Surface	Ceiling Surface	Floor Surface
Exit stairways, vestibules to *exit* stairs and *exit lobbies*	25(3)	25(3)	25	50(3)	50(3)	50
Corridors providing access to exit except within suites	(1)	(1)	300	100(3)	50(3)	500
Elevator cars and vestibules	25	25	300	100	100	300
Service spaces and service rooms	25	25	25	50	50	50
Other rooms or spaces	(1)	(1)	(2)	300	50	(2)

Notes to Table 3.2.6.B.

(1) See Section 3.3 and Subsections 3.1.4. and 3.1.11. for *flame-spread rating* requirements in these locations.
(2) See Sentence (3).
(3) Trim millwork and doors may have a *flame-spread rating* not exceeding 150 (see Sentences 3.4.4.1.(1) and (2)) and a smoke developed classification not exceeding 300, provided they do not exceed 10 per cent of the area of the wall or ceiling in which they occur.

(2) Except for *buildings* of Group B *major occupancy* classification, the *flame-spread ratings* required elsewhere in this Part may be used in lieu of the requirements of Sentence (1) where a *building* is *sprinklered* and supervised, as provided in Sentence 3.2.6.2.(6).

(3) Floor coverings in rooms and spaces other than in *service rooms, service spaces,* floors and stairs in *exits,* elevator cars, vestibules adjacent to elevator cars, and corridors providing *access to exits* not within suites, shall pass the test method for flame resistance in CGSB 4-GP-129 (1972) "Standard for Carpets, Commercial".

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
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Central Alarm and Control Facility

3.2.6.8.(1) A central alarm and control facility other than a *proprietary control cent* shall be provided on the *street* entrance floor that

(a) is in an *approved* location that is readily accessible to firefighters enteri the *building,* and

(b) takes into account the effect of background noise likely to occur under fi emergency conditions so that the facility can properly perform its requir function under such conditions.

(2) The central alarm and control facility shall include

(a) means to control the voice communication system required by Article 3.2.6.

(b) means to give an audible and visual fire *alarm signal* when any fire alar or detection device is activated, and a switch to silence the audible sign causing a visual signal to indicate that the audible signal has been silenced,

(c) an annunciator panel connected to indicate the type of signal and the flo or zone from which the fire alarm is received,

(d) means to transmit automatically *alarm signals* to the fire department, eith directly or through an *approved independent central station,* or through *approved proprietary control centre.*

(e) means to cause doors to vestibules, if these are normally held open, to clo automatically on receipt of an *alarm signal,* as provided in Sentence 3.1.7.2.(9 unless this is effected automatically by proprietary system control equipmer

(f) means to manually activate the fire alarm devices in the *building* and silence them after they have operated initially for not less than 1 min., a indicate by a visual signal that the fire alarm has been silenced, and

(g) means to activate auxiliary equipment or means to communicate with continually manned auxiliary equipment control centre as appropriate the measure for fire safety provided in the *building.*

Voice Communication System

3.2.6.9.(1) When the vertical distance between the floor of the top *storey* and *gra* exceeds 120 ft (36.6 m), or in *buildings* containing a *floor area* or part of a *flo area* located above the third *storey,* designed or intended as a Group B *occupan* for patients in bed or infirm persons, an *approved* voice communications syste or systems shall be provided in *buildings* and shall consist of

(a) a two-way communication system at *approved* locations on each *floor ar* with connections to the central alarm and control facility, and to t mechanical control centre, and

(b) loudspeakers operated from the central alarm and control facility which a designed and located so as to be heard in all areas of the *building.*

(2) The system shall include provision for silencing the fire alarm devices wh the loudspeakers are in use, but only after the fire alarm devices have operat initially for not less than 1 min.

Fire Protection of Electrical conductors

3.2.6.10.(1) Electrical conductors for emergency equipment shall be installed *service spaces* that do not contain othe *combustible* material, or shall be protect against exposure to fire, as provided in Subsections 3.5.3. and 3.5.4., to ensu

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
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continued operation for a period of 1 hr, from the source of power supply, to the branch circuits supplying the equipment required by Articles 3.2.6.2., 3.2.6.3., 3.2.6.4. and 3.2.6.5.

Emergency Electrical Power Supply

3.2.6.11.(1) An *approved* emergency power supply, capable of operating under a full load for at least 2 hr, shall be provided in the event of failure of the normal source of power supply, by a separate service not supplied from the same transformer as the primary source, or by a local emergency power supply for:

(a) fire alarm and voice communication systems required in Articles 3.2.6.8. and 3.2.6.9.,

(b) every elevator in a *building* that is more than 120 ft (36.6 m) in vertical height between *grade* and the floor of the top *storey,* assuming only one elevator will operate at a time,

(c) water supply for fire fighting in conformance with Article 3.2.5.3., when the supply is dependent on electrical power supplied to the *building,* and

(d) fans required for venting in Article 3.2.6.5.

(See Sentence 3.4.7.2.(3) for emergency lighting)

(2) Provision shall be made for automatic transfer to emergency power for the services described in Clause (1)(a) in the event of a power failure.

3.2.6.12. Provision shall be made for checking the systems for control of smoke movement and venting described in Articles 3.2.6.2. and 3.2.6.5., according to the procedures described in Appendix C of ACNBC publication "Measures for Fire Safety in High Buildings", when requested by the *authority having jurisdiction.*

†57. Delete Sentences **3.3.1.1.(2), (3),** and **(4)** of the Code and substitute the following:

(2) Every room or vault where hazardous substances are stored shall be separated from all other *occupancies* by a 3-hr *fire separation.* Such *fire separations* need not be supported as required in Sentence 3.1.6.2.(1).

(3) In kitchens containing commercial cooking equipment, the equipment used in processes producing smoke or grease-laden vapours shall be equipped with a mechanical exhaust system and shall conform to Sections 3, 4, 6 and 10 of NFPA 96-1971, "Standard for the Installation of Equipment for the Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment" for hoods, canopies, duct systems, grease removal equipment and fire extinguishing equipment.

‡†58. Delete Article **3.3.1.3.** of the Code and substitute the following:

3.3.1.3.(1) Except as provided in Sentence (2), where any *floor area* is occupied by more than one tenancy and each tenancy is enclosed by walls and *partitions,* each room or suite of rooms occupied as a single tenancy shall have an exterior doorway at *grade* or a doorway leading to an interior corridor or to an exterior balcony or exterior passageway which is open to the outside air. From the point at which such doorway enters the corridor, balcony or passageway, it shall be possible to go in opposite directions to two separate *exits* from the *floor area.*

(2) In *buildings* of *residential occupancy* and not more than 3 *storeys* in *building height* a doorway from a *dwelling unit* is permitted to open directly into an *exit* stairway or into a *public corridor* served by a single *exit* stairway provided each *dwelling unit* has a second and separate *means of egress.*

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

(3) *Public corridors* shall be separated from the remainder of the *building* with any *floor area* by a *fire separation* having a *fire-resistance rating* at least equal 1 hr except that a ¾ hr *fire separation* is permitted where the *fire resistance rati* of the floor assembly is not required to exceed ¾ hr.

(4) A public corridor may be dead ended provided the length of the corrid beyond the nearest exit from the corridor shall not exceed the width of the corrid and in no case shall this length be greater then twenty (20) feet. Door openin located in the dead-end portion of the public corridor that serves as an acce to an exit shall be

(a) provided with a self-closing device and a positive locking dead lock of tl type that cannot be accidentally locked against entry to the room by closi of the door, and

(b) located so that is shall not be necessary to pass more than two doors travelling to the nearest exit.

*59. Add immediately thereto at the end of Article **3.3.1.7.** of the Code a new sentenc as follows:

(3) Every door in a principal *access to exit* from a *floor area* containing a *hig occupant load* of more than 60 persons shall be equipped with an *approved* fasten that will release and allow the door to swing wide open when a pressure of 2 lb (9.1 kg) is applied to the door in the direction of travel to the *exit*.

*60. Delete Article **3.3.1.11.** of the Code and substitute the following:

3.3.1.11.(1) Except as required in Sentences (2) and (3) interior finish materia used on a wall or ceiling of a *public corridor* or corridor serving classrooms patients' bedrooms shall have a *flame-spread rating* of not more than 150.

(2) Except where the *building* is *sprinklered* at least 90 per cent of the surfac of the ceiling of any *public corridor* or corridor serving classrooms or patient bedrooms shall have a *flame-spread rating* of not more than 25.

(3) Except where the *building* is *sprinklered* at least 90 per cent of the surfac of any wall other than doors of any *public corridor* or corridor serving classroon or patients' bedrooms shall have a *flame-spread rating* of not more than 75 or least 90 per cent of the surface of the upper half of such wall shall have a *flame-sprec rating* of not more than 25.

††61. Delete Sentence **3.3.1.12.(3)** of the Code and substitute the following:

(3) Smoke vent openings into smoke shafts described in Subsection 3.2.6. locate less than 42 in. above the floor and which are of sufficient size to constitute hazard shall be protected with a guard at least 42 in. in height.

(4) The size of any opening through every required guard serving a room space to which the public is admitted or serving an exterior balcony shall be suc a size as to prevent the passage of a spherical object having a diameter of 4 i (102 mm) unless it can be shown to the satisfaction of the *authority having jurisdictic* that the location and size of openings that exceed this limit do not present a hazardo condition.

(5) Where windows extend closer than three feet to floor levels they shall b provided with guards at least three feet in height, or alternatively, the glazing sha be designed and certified by a Registered Professional Engineer as adequate withstand 150 p.l.f. applied horizontally at three feet above the floor level.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

††62. Delete Article **3.3.1.13.** of the Code and substitute the following:

3.3.1.13.(1) Every glass or transparent door accessible to the public shall be designed and constructed so that the existence and position of such door is readily apparent by attaching thereto non-transparent hardware, bars or other permanent fixtures and when constructed of glass shall be constructed of wired glass or safety glass conforming to Part 9 of this By-law.

(2) Transparent panels used in *access to exits* which because of their physical configuration or design could be mistaken for doors shall be made inaccessible to the occupants by barriers or railings conforming to the requirements of Sentence 3.3.1.12.(2).

(3) Glass in doors and side lights that could be mistaken for doors within or at the entrances to *dwelling units* shall conform to the requirements in Part 9 of this By-law.

3.3.1.14. An exit from the upper storeys of a *building* shall be arranged so that it is not necessary to change over to a travel in an upward direction at any point before discharging to the outside of the *building* at street level.

‡63. Sentence **3.3.2.5.(9)** of the Code is amended by adding thereto immediately at the end thereof a new clause as follows:

(i) in Group A, Division 1, *occupancies* where the illumination of the place of assembly may be reduced during the period of the performance, the aisles and the steps in aisles shall be illuminated to levels of not less than 0.2 feet candles measured one foot from the floor.

‡64. Section **3.3.2.** of the Code is amended by adding thereto immediately at the end thereof a new Article as follows:

Places of Assembly With Removable Seats

3.3.2.13.(1) (a) When the *occupant load* is more than 100 persons, non-fixed seats shall be secured together in units of at least five seats and shall be so arranged so that there shall be a space of not less than 12 inches between the back of one seat and the front of the seat immediately behind it, measured between plumb lines.

(b) There shall be not more than 7 seats between any seat and an aisle. Such aisles shall be not less than 44 inches in width leading directly to an *exit* or to an aisle leading to an *exit*.

(2) (a) In any room or place of assembly where removable seats and tables are used, the distance between tables shall be not less than 6 ft. so as to provide sufficient *access to exit* space between chairs when placed at the tables except that where such seats back to a wall, there shall be not less than 3 ft. between the table and the wall.

(b) Aisles not less than 44 inches shall be provided so that there are not more than 15 seats between any seat and an aisle, such aisles shall lead directly to an *exit* or to an aisle leading to an *exit*.

†65. Delete Sentence **3.3.3.5.(1)** of the Code and substitute therefor the following sentences and in addition renumber Sentences (2), (3) and (4) of said Article as Sentences (3), (4) and (5) respectively.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

3.3.3.5.(1) Every *floor area* used or intended to be used for patients in bed or *infir persons* shall be divided into two or more zones separated by a *fire separation* such a manner that the occupants in every zone have access to two *exits* eith directly or through adjacent zones.

(2) *Fire separations* between zones shall have a *fire-resistance rating* of at lea 1 hr except that a ¾ hr *fire separation* is permitted where the *fire-resistance ratir* of the floor assembly is not required to exceed ¾ hr.

*66. Delete Sentence **3.3.4.2.(1)** of the Code and substitute the following:

(1) Except as provided in Sentence (2), sleeping rooms occupied separately ar not as suites, and suites or *dwelling units* in hotels and other residential *building* shall be separated from adjacent rooms, suites and *public corridors* by a *fire separatic* having a *fire resistance* rating of at least 1 hr, except that a 3/4 hr *fire-resistan rating* is permitted if the floor assembly is not required to exceed 3/4 hr *fire-resistan rating.*

†67. Delete Sentence **3.3.4.2.(5)** of the Code and substitute the following:

(5) Trunk rooms and dead storage rooms for the use of tenants of *resident occupancies* not forming part of an individual *dwelling unit* or sleeping room occupi separately and not as a suite shall be separated from the remainder of the *buildi* by a 1 hr *fire separation* except that a ¾ hr *fire separation* is permitted where t *fire-resistance rating* of the floor assembly is not required to exceed ¾ hr, or su rooms shall be *sprinklered.*

†68. Delete Sentence **3.3.7.7.(11)** of the Code and substitute the following:

(11) A *repair garage* shall be separated from other *occupancies* by at least a 2- *fire separation.* Openings shall not be permitted in the *fire separation* between *repair garage* and a Group A, B, or C *occupancy.*

‡69. Article **3.3.7.7.** of the Code is amended by adding thereto immediately at the er thereof a new sentence as follows.

(16) Notwithstanding Subsection 3.2.2. all *repair garages*, service stations a *storage garages* shall have their exterior walls of *noncombustible construction.*

†70. Delete Article **3.4.1.3.** of the Code and substitute the following:

3.4.1.3. Subject to the requirements of this Section, an *exit* from any *floor ar* shall be one of the following used singly or in combination:

escalator,
exterior doorway,
exterior passageway,
exterior ramp,
exterior stairway,
fire escape (as described in Article 3.4.8.16.),
horizontal exit,
interior passageway,
interior ramp,
interior stairway, or
inclined moving walkways that move only in the direction of *exit* travel.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

†71. Delete Sentences **3.4.1.4.(4)** and **(5)** of the Code and substitute the following:

(4) A fire escape shall not be erected on an existing *building* unless it can be demonstrated to the satisfaction of the *authority having jurisdiction* that it is impractical to provide one or more of the *exit* facilities in Article 3.4.1.3.

(5) A slide escape shall not be erected on any *building* as a required *exit* but may be provided as an additional egress facility where unusual hazards may exist.

*72. Add thereto immediately at the end of Sentence **3.4.2.1.(2)** of the Code the following note:

(See Articles 9.9.7.6. and 9.9.9.1. for Group C, D, E and F occupancies.)

‡73. Article **3.4.2.1.** of the Code is amended by adding thereto immediately at the end thereof a new Sentence as follows:

(4) Notwithstanding the requirements of 3.4.2.1.(1), only one (1) *exit* is required from a penthouse that contains only mechanical equipment, and has a *floor area* of less than 1000 sq. ft. (93m^2). Where the *floor area* exceeds 1000 sq. ft. (93m^2), two (2) *exits* are required, and one of these may be in the form of a ladder or spiral stair which leads to an *exit* independent of the main stair serving the penthouse.

*74. Delete Sentence **3.4.2.2.(1)** of the Code and substitute the following:

3.4.2.2.(1) Where two or more *exits* are required from a *floor area,* the distance between at least two *exit* doorways measured along the shortest path of travel shall be at least

(a) one half the maximum diagonal dimension of the *floor area* but need not be more than 30 ft (9.2 m) for a *floor area* having a *public corridor* serving more than one tenant, or

(b) one half the maximum diagonal dimension of the *floor area* but not less than 30ft (9.2 m) for all other *floor areas.*

*75. Delete Sentence **3.4.3.1.(5)** of the Code and substitute the following:

(5) The width of an *exit* stair shall be at least 44 in. (1.1 m) where the stair serves one or more *floor areas* having a combined *occupant load* greater than 100 persons.

*76. Delete Sentence **3.4.3.2.(4)** of the Code and substitute the following:

(4) Except as provided in Sentences (5) and (6), the required units of *exit* width shall be cumulative where 2 or more *exits* converge.

(5) Except as provided in Sentence (6), where an *exit* stair serves 2 or more *floor areas* one above the other, the required units of *exit* width are not cumulative.

(6) The required units of *exit* width for *exit* stairs that serve one or more *floor areas* containing a *high occupant load* shall be increased by an amount required for the *high occupant load,* except that such increase need not extend to more than 5 *storeys* beneath the *storeys* with the *high occupant loads* in *buildings* within the scope of Subsection 3.2.6.

*77. Delete Sentence **3.4.3.3.(3)** of the Code and substitute the following:

(3) Except as permitted in Sentence (4), the number of persons per unit of *exit* width shall be 90 for *exits* at ground level.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

*78. Delete Sentence **3.4.3.3.(5)** of the Code and substitute the following:

(5) Except as provided in Sentences (2) to (4), the number of persons per u of *exit* width shall be 60.

†79. Delete Sentence **3.4.5.1.(1)** of the Code and substitute the following:

3.4.5.1.(1) Except as provided in Sentences (2), (3) and (4) and in Sentence 3.3.7.7.(every *exit* shall be separated from the remainder of the *building* it serves by *fire separation* having a *fire-resistance rating* conforming to Table 3.4.5.A. for t grade of *fire separation* required for the floor assemblies of the *storeys* throu which it penetrates or which it serves. This requirement shall not be deemed prohibit *unprotected openings* in walls of an *exit* enclosure that are not *fire separatio*

*‡80. Delete Sentences **3.4.5.1.(3)** and **(4)** of the Code and substitute the following:

(3) In *buildings* not exceeding 3 *storeys* in *building height* where the *fire separati* for *exits* is permitted to be ¾-hr, not more than one *exit* shaft may include wir glass or glass block between such shaft and a *public corridor* or vestibule locat within a *floor area* provided such wired glass or glass block conforms to Artic 3.1.7.3.

(4) Except as provided in Article 3.4.2.5., not more than one required *exit* fro any *floor area* above or below the first floor may lead through a lobby includi the foyer or entrance hall of another *floor area* at ground level when

(a) the lobby floor is not more than 15 ft (4.6 m) above *grade;*

(b) the path of travel through a lobby does not exceed 50 ft (15.2 m);

(c) rooms or premises adjacent to the lobby, other than those used for the sc purpose of control or supervision in Group B or C *occupancies,* are enclos within a *fire separation* in conformance with Subsection 3.1.3. except th where the lobby and the adjacent *occupancies* are *sprinklered* the *fire separati* between such occupancies and the lobby need not have a *fire-resistance ratin* and

(d) the *occupancies* in the adjacent rooms or premises are not more hazardo than any which could be classified as Group D or Group E *occupancies*

†81. Delete Article **3.4.5.2.** of the Code and substitute the following:

3.4.5.2.(1) There shall be no openings in any *fire separation* separating *exits* exce *exit* doorways and openings for standpipes.

(2) An *exit* shall not be used as a *plenum* for a heating, ventilating air-conditioning system.

(3) An *exit* shall be designed for no other purpose than exiting.

*82. Delete Clauses **3.4.6.1(2)(c)** and **(d)** of the Code and substitute the following:

(c) a room with a *high occupant load* of more than 60 except as provid in Clause 3.3.2.4.(2)(a),

(d) be connected to an electrical circuit separate from other electrical circui and

(e) be designed to be illuminated by an emergency power supply described in Sentence 3.4.7.2.(3) where emergency lighting is requir in Sentence 3.4.7.2.(2).

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

†83. Article **3.4.6.1.** of the Code is amended by adding thereto immediately at the end thereof new sentences as follows:

(6) Every glass or transparent *exit* door accessible to the public shall be designed and constructed so that the existence and position of such door is readily apparent by attaching thereto non-transparent hardware, bars or other permanent fixtures and when constructed of glass shall be constructed of wired glass or safety glass conforming to Part 9 of this By-law.

(7) Transparent panels, sidelights or windows used in *exits* which because of their physical configuration or design could be mistaken for doors shall be made inaccessible to the occupants by barriers or railings.

(8) Glass in doors and sidelights that could be mistaken for doors within or at the entrances to *dwelling units* shall conform to the requirements of Part 9 of this By-law.

*84. Delete Sentence **3.4.7.2.(1)** and the first three lines of Sentence **3.4.7.2.(2)** of the Code and substitute the following:

3.4.7.2.(1) Emergency lighting shall be provided to average levels of at least one foot-candle at floor level in *exits* and corridors used by the public where such *exits* and corridors are located below *grade.* or are windowless.

(2) Emergency lighting shall be provided to average levels of at least one foot-candle at floor level in *exits* and corridors used by the public in every *building* which is classified by *major occupancy* as:

*85. Delete Clause **3.4.7.2.(2)(c)** of the Code and substitute the following:

(c) Group C *occupancy* having an *occupant load* of over 100 persons or containing more than 50 *dwelling units;*

*86. Delete Clause **3.4.7.2.(3)(b)** of the Code and substitute the following:

(b) 1 hr for *buildings* of Group B *major occupancy* classification that are not regulated by the requirements in Subsection 3.2.6.

*87. Article **3.4.7.2.** of the Code is amended by adding thereto immediately at the end thereof a new Sentence as follows:

(4) Where an emergency power generator is supplied from an energy source outside of the *building,* provision shall be made to ensure its operation in the event of an emergency.

†88. Article **3.4.8.5.** of the Code is amended by adding thereto immediately at the end thereof a new sentence as follows:

(6) Windows in *exit* stairways that extend to less than 42 in. above the landing shall be protected by a barrier or railing located approximately 42 in. above such landing.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

*89. Article **3.4.8.6.** of the Code is amended by adding thereto immediately at the e thereof a new Sentence as follows:

(4) Guards around balconies in *buildings* of *residential occupancy* shall be design so that no member, attachment or opening located between 4 in. and 36 in. abc the balcony floor will facilitate climbing.

†90. Delete Clause **3.4.8.12.(6)(b)** of the Code and substitute the following:

(b) be mounted in separate openings or mounted in one opening and meet a mullion, unless otherwise *approved*, provided the size of such openi shall not exceed that specified for *firewalls* in Subsection 3.1.8., and

*91. Delete Sentence **3.4.8.15.(11)** of the Code and substitute the following:

(11) Every door that serves as a principal *exit* from every *floor area* or part o *floor area* containing a *high occupant load* of more than 60 persons shall be equipp with *approved* fasteners that will either break or release when a pressure of lb (9.1 Kg) is applied to the inside of the door and causes the door to swing w open.

†92. Delete Sentence **3.4.8.16.(11)** of the Code and substitute the following:

(11) Unless otherwise *approved*, the flight of stairs leading to the ground at t foot of a fire escape shall be fixed in position. Where such flight of stairs is n fixed in position, it shall be held in the 'up' position without a latch or locki device, and shall be fitted with an *approved* counterbalancing device that will perr it to be easily and quickly brought into position for use.

*93. Delete Article **3.5.1.2.** of the Code and substitute the following:

3.5.1.2. All service facilities including ductwork, piping and associated coverir insulation and linings shall conform to the installation requirements in Part 6 this Bylaw.

†94. Delete Article **3.5.1.5.** of the Code and substitute the following:

3.5.1.5. Where ducts pass through a *fire separation*, such ducts shall be equip with fire dampers to act as *closures* in conformance with Article 3.1.7.1.

*95. Delete Articles **3.5.1.6., 3.5.1.7.** and **3.5.1.8.** of the Code.

*96. Delete Article **3.5.1.9.** of the Code and substitute the following:

3.5.1.9. Where a fuel-fired heating *appliance* is installed on the roof of a *buildi* it shall be installed in conformance with Article 6.2.5.1. of Part 6 of this Bylaw.

†97. Article **3.5.2.1.** of the Code is amended by adding thereto immediately at the e thereof a new sentence as follows:

(4) A *fire separation* around a *service room* need not be supported in conforma with Sentence 3.1.6.2.(1).

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

‡**98.** Subsection **3.5.2.** of the Code is amended by adding thereto immediately at the end thereof a new Article as follows:

3.5.2.8. Every transformer vault shall be separated from all other *occupancies* by a 3 hour *fire separation* of *non-combustible construction* in which the walls, shall be of solid masonry or reinforced concrete, and shall also comply with all other construction requirements of The Winnipeg Electrical By-law.

†**99.** Delete Sentence **3.5.3.2.(3)** of the Code and substitute the following:

(3) Every refuse chute shall be constructed to permit the escape of the products of combustion to the outdoors in conformance with Section 6.6. of Part 6 of this By-law.

‡**100.** Delete Sentence **3.6.1.1.(1)** of the Code and substitute the following:

3.6.1.1.(1) Except as otherwise specified, the height of every room and space, measured between finished floor and ceiling shall be eight (8) feet or greater over 75 per cent of the room area so that adequate light and air is provided for the intended occupancy and that no obstruction is caused by the ceiling or ceiling fixtures to movement or activities below.

*†**101.** Delete Sentence **3.6.3.4.(2)** of the Code and substitute the following:

(2) Except as provided in Sentences (3) to (6), where a mechanical ventilation system is required, it shall be designed to limit the average concentration of carbon monoxide to not more than one hundred parts per million for periods longer than 1 hr, with a maximum concentration at any time of not more than 400 parts per million of carbon monoxide when measured between 3 and 4 ft (915 mm and 1.2 m) from the floor.

‡**102.** Delete Clause **3.6.3.4.(6)(a)** of the Code and substitute the following:

(a) more than 50 per cent of the area of two or more sides comprising not less than ½ the perimeter of the *building* are open to the outdoors at every *storey*.

‡**103.** Delete Sentence **3.6.4.2.(5)** of the Code and substitute the following:

(5) Where mobile homes do not have individual sanitary facilities connected to a central water supply and drainage system, a service *building* shall be provided for public use and shall contain at least one water closet for each sex where the facilities serve not more than 10 mobile homes, and where the facilities serve more than 10 mobile homes, an additional water closet for each sex shall be provided for each additional 10 mobile homes.

†**104.** Delete Sentence **3.6.4.3.(3)** of the Code.

†**105.** Subsection **3.6.4.** of the Code is amended by adding thereto immediately at the end thereof a new Article as follows:

3.6.4.4. Glass, other than safety glass, shall not be used for a shower or bathtub enclosure.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

‡**106.** Part 3 of the Code is amended by adding thereto immediately at the end thereof new sections as follows:

SECTION 3.7 PROVISIONS FOR PHYSICALLY HANDICAPPED PERSONS

SUBSECTION 3.7.1 GENERAL

3.7.1.1.(1) Buildings designed to accommodate handicapped persons shall comply with the requirements of this section in addition to the requirements of all other sections of this Part.

3.7.1.2.(1) This section applies to the design or alteration of buildings for the following occupancies;

(a) Group A, All Divisions;
(b) Group B, Division 1 and 2;
(c) Group C, buildings which, because of their size are required to be of noncombustible construction. Except in apartment blocks, wheelchair facilities shall be provided within 5% of guest rooms and suites;
(d) Group D, excepting offices and homes and those covered by Sentence 3.2.2.29.(1);
(e) Group E, excepting those covered by Sentence 3.2.2.33.(1); and
(f) Group F, Divisions 2 and 3, excepting those covered by Sentences 3.2.2.41.(1) and 3.2.2.46.(1).

3.7.1.3.(1) This section is intended to make a building accessible to and usable by the physically handicapped without assistance.

3.7.1.4.(1) The term "shall" is mandatory and not permissive; the word "should" is permissive and not mandatory in the interpretation of this section.

SUBSECTION 3.7.2 REGULATIONS

3.7.2.1. Every *designated building* shall have at least one principal entrance designed in conformance with NBC Supplement No. 5 for use by physically handicapped persons, opening to the outdoors at sidewalk level or to a ramp leading to a sidewalk.

3.7.2.2. Every *designated building* shall provide access for physically handicapped persons from the entrance described in Article 3.7.2.1. to public spaces on the entrance floor, to tunnels, concourses and skywalks, and to at least one elevator where elevators are provided.

3.7.2.3. Washroom facilities in *designated buildings* shall conform to Article 3.7.2.4 (Where buildings are designed to accommodate handicapped persons, the requirements in NBC Supplement No. 5, 'Building Standards for the Handicapped, 1970' may be used as a guide.)

3.7.2.4. In every *designated building* where washrooms are provided for the public at least one washroom shall be provided that is designed for and is accessible to physically handicapped persons in conformance with the appropriate provisions in NBC Supplement No. 5 (1970).

3.7.2.5. The *authority having jurisdiction* may waive any or all of these requirements where the requirements can be proven to be unnecessary in the particular *building*.

3.7.2.6. When the main entrance of a building is not usable by persons in wheelchairs a sign shall be installed in front of the building to indicate clearly the location of the ground level entrance that is usable by such persons.

SUBSECTION 3.7.3. RECOMMENDATION

3.7.3.1.(1) In the design of all *buildings,* consideration should be given to all the requirements of NBC Supplement No. 5.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

SECTION 3.8 FLAMMABLE LIQUIDS

SUBSECTION 3.8.8. STORAGE, HANDLING AND USE OF FLAMMABLE LIQUIDS

3.8.1.1. Except as otherwise specified herein and elsewhere in this By-law, the standards for the storage, handling and use of *flammable* liquids shall comply with the appropriate Municipal Fire Prevention By-law or in the absence of such by-law, the Provincial Fire Code.

3.8.1.2. The installation of tanks for the storage of *flammable* liquids, either above or below ground or in any *building* shall have the approval of the Chief of the Fire Department or if there is no fire department, the approval of the Provincial Fire Commissioner prior to the issuance of the *building* permit.

3.8.1.3. Tanks for the storage of Class A *flammable* liquids may not be installed under a *building* and in no case may dispensing devices for such liquids be installed inside of *buildings.*

3.8.1.4. Underground storage tanks at any *repair garage* or *service station* for the storage of Class A liquids shall not exceed 5,000 gallons capacity each and the aggregate capacity at any such site shall not exceed 30,000 gallons and in no case shall there be more than 6 tanks in the aggregate.

3.8.1.5. No tank, or piping attached thereto, installed for the purpose of handling, storing or conveying *flammable* liquids, may be covered until the *owner* or person in charge of the installation has notified the *authority having jurisdiction* that the installation is ready for inspection and *approved* by him.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

PART 4

DESIGN

D.

(a) Supplement No. 4: Canadian Structural Design Manual 1970, including errata and revisions to Supplement No. 4 from Change Series No. 1, No. 2 and No. 3 is hereby adopted as a part of The Winnipeg Building By-law.

(b) PART 4 of The National Building Code of Canada 1970 is varied as follows:

*1. Delete Sentence **4.1.1.3.(1)** of the Code and substitute the following:

4.1.1.3.(1) *Buildings* and their structural members shall be designed to have sufficie structural capacity to resist safely and effectively all loads and effects of loads a influences that may reasonably be expected, having regard to the expected serv life of *buildings,* and shall in any case satisfy the requirements of this Section.

§ 2. Delete Sentence **4.1.1.8.(3)** of the Code and substitute the following:

(3) The calculations and analysis made in the design of the structural memb of a *building* shall be submitted upon request for inspection by the *authority havi jurisdiction.*

* 3. Delete Article **4.1.5.1.** of the Code and substitute the following:

4.1.5.1. The design load due to the accumulation of snow on a surface shall r be less then the ground snow load specified in the Table of Climatic Data in P. 1 of this Bylaw decreased or increased as provided for in Articles 4.1.5.2. to 4.1.5 except that the roof snow load shall be not less than 20 psf for any roof w a slope of 30 deg. or less.

* 4. Add to Sentence **4.1.7.1.(2)** of the Code immediately at the end thereof the followin

"e = Computed eccentricity from centre of mass to centre of shear."

"e_x = Design eccentricity at level x."

"D_n = The dimension of the *building* in feet in a direction normal to the appli forces."

* 5. Delete Clause **4.1.7.1.(8)(a)** of the Code and substitute the following:

(a) Torsional eccentricities about the vertical axis of a *building* shall be comput in all *storeys.* The design eccentricity, e_x, shall be $(1.5e + 0.05D_n)$ or (0.5e-0. 05D whichever produces the greater member forces in combination with the lateral forc

* 6. Delete Table **4.1.8.A.** of the Code and substitute the following:

Table 4.1.8.A.
Forming Part of Article 4.1.8.3.

Impact Due to	Factor
Operation of motor driven cranes	1.25
Operation of hand driven cranes	1.10
Live loads on hanger supported floors and stairs	1.33
Operation of elevators	See CSA Standard B 44, 1971, Item 2.6.2.
Supports for light machinery, shaft or motor driven	1.20
Supports for reciprocating machinery or power driven units	1.50
Column 1	Column 2

§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

‡ **7.** Delete Article **4.2.1.15.** of the Code and substitute the following:

4.2.1.15. A soil exploration shall be carried out under the direction of a Professional Engineer competent in this field of work, who shall prepare a report on the results of the site exploration, unless otherwise exempted by the *authority having jurisdiction* by reason of the fact that the proposed structure is sufficiently flexible that differential settlement will not affect its stability.

† **8.** Delete Sentence **4.2.2.1.(1)** of the Code and substitute the following:

4.2.2.1.(1) Where timber is exposed to soil or air above the permanent water table it shall be treated with preservative in accordance with CSA 080.1-1970, "Preservative Treatment by Pressure Process – All Timber Products," and also in accordance with

(a) CSA O80.2-1970, "Preservative Treatment of Lumber, Timbers, Bridge Ties and Mine Ties by Pressure Processes," or

(b) CSA O80.3-1970, "Preservative Treatment of Piles by Pressure Processes" and CSA O80.12-1970, "Preservative Treatment of Timber Foundation Piles by Pressure Processes."

‡ **9.** Delete Article **4.2.2.6.** of Code and substitute the following:

4.2.2.6. All *concrete foundation units* in contact with the soil shall be made of sulphate resisting cement.

***10.** Delete Article **4.2.2.9.** of the Code and substitute the following:

4.2.2.9. Where steel is used in *foundations,* it shall be in accordance with requirements of Section 4.5 or 4.6, and where steel pipes or tubes are used as *piles* or as shells to form cast-in-place concrete *piles* and to act as permanent load-carrying members, the steel shall be in accordance with one of the following standards:

ASTM 252-71 'Welded and Seamless Steel Pipe Piles,'

ASTM A283-70a 'Low and Intermediate Tensile Strength Carbon Steel Plates of Structural Quality,'

ASTM A366-72 'Steel Sheet, Carbon, Cold-Rolled, Commercial Quality,'

ASTM A569-72 'Steel, Carbon (0.15 Maximum Percent), Hot-Rolled Sheet and Strip, Commercial Quality,'

ASTM A570-72 'Hot-Rolled Carbon Steel Sheets and Strip, Structural Quality,'

ASTM A611-72 'Steel, Cold-Rolled Sheet, Carbon Structural.'

***11.** Delete Clause **4.2.4.2.(a)** of the Code and substitute the following:

(a) a plate load test, where the footing is 3 ft (915 mm) wide or less, carried out in accordance with ASTM D1194-72, "Bearing Capacity of Soil for Static Load on Spread Footings," except that the bearing plate shall be 12 in. by 12 in. (305 mm by 305 mm) and the *design bearing pressure* of the soil is

(i) ⅓ the ultimate bearing capacity of the soil or,

(ii) ⅓ the pressure that would cause the bearing plate to settle 1 in. (25 mm) whichever is the lesser, or

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

§12. Delete Table **4.2.4.A.** of the Code and substitute the following:

Table 4.2.4.A.

Forming Part of Clause 4.2.4.2.(b)

Type and Condition of Soil or Rock	Design Bearing (1), (2), (3) Pressure, psf
Cohesionless soils	
Dense sand, dense sand and gravel	6,000
Cohesive soils	
Firm silt	1,000
Soft silt	500
Stiff clay	3,000
Firm clay	2,000
Soft clay	1,000
Hard till or Hardpan	15,000
Limestone Bedrock	
Sound	60,000
Soft or Shattered	20,000
Column 1	Column 2

Notes to Table 4.2.4.A.

(1) Values above those shown in the Table may be used when it can be shown to the satis faction of the *authority having jurisdiction* that on the basis of a soils exploration such value are justified.

(2) Where load test values or the values given in Table 4.2.4.A. are used as provided for i Article 4.2.4.1., the *design capacity* of the *foundation unit* is the *bearing surface* area time the *design bearing pressure* of the soil or rock reduced as may be necessary by the requir ments contained in Subsection 4.2.3.

(3) For purposes of determining the vertical *stress* in soils or rock below the *bearing surfac* the load from the *foundation* shall be assumed to be distributed uniformly over the are of any horizontal plane within a frustum extending downward from the *foundation* at 6 degrees to the horizontal; but the area considered as supporting the load shall not exten beyond the intersection of 60 degree planes of adjacent *foundations.*

‡13. Add to Article **4.2.4.5.** of the Code the following new sentences:

(3) Unit masonry shall not be used for exterior *foundation* walls belo *grade.*

(4) *Foundation* walls and beams supported on *piles* and caissons shall b adequately tied to the *pile* or caisson tops to prevent uplift due to swellin of the soil.

§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

‡14. Delete sentence **4.2.5.2.(1)** of the Code and substitute the following:

4.2.5.2.(1) The maximum *design capacity* of the *pile* shall be determined on the basis of:

(a) a load test carried out in accordance with Article 4.2.5.3., or

(b) the provisions for end-bearing *piles* in Sentence 4.2.5.4.(1) and Article 4.2.5.5., or

(c) the provisions for friction *piles* in Sentence 4.2.5.4.(2) and Article 4.2.5.5., or

(d) local experience as described in Article 4.2.5.5., or

(e) the provisions for precast prestressed concrete *piles* in Sentence 4.2.5.4.(3).

†15. Delete Sentence **4.2.5.3.(1)** of the Code and substitute the following:

4.2.5.3.(1) Except as provided in Sentence (3), the maximum *design capacity* of a *pile* may be determined on the basis of a load test carried out in accordance with ASTM D1143-69, "Load Settlement Relationship for Individual Vertical Piles Under Static Axial Load."

‡16. Delete Article **4.2.5.4.** of the Code and substitute the following:

4.2.5.4.(1) The *design capacity* of an end-bearing *pile* may be taken as the *design bearing pressure* of the soil or rock times the area of the end of the *pile*. The area of the end of the *pile* shall be taken as the minimum cross-sectional area of the shaft.

(2) (a) The *design capacity* of a friction *pile* may be determined on the basis of frictional resistance between its surface and the ground with which it is in permanent contact.

(b) The frictional support of cohesive soils shall not be included for a depth of at least 5 feet below the *basement, cellar* or lowest level of crawl space or 10 feet below adjacent ground level, whichever is greater.

(3) (a) The *design capacity* of an hexagonal shaped precast prestressed concrete *pile* under ideal conditions may be taken as:

Diameter (across flats)	Design Capacity
12"	100,000 lbs.
14"	140,000 lbs.
16"	180,000 lbs.

(b) The above *design capacities* apply to *piles* driven to virtual refusal in hardpan with hammers having a rated energy of:

(i) at least 20,000 ft. lbs. and

(ii) at least 30,000 ft. lbs. for *piles* heavier than 7,500 lbs.

(c) Where bedrock is not overlain by a significant depth of hardpan, or where boulder soils have been encountered or where *piles* receive that load eccentrically, the above *design capacities* should be reduced.

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§ National Building Code. Revision Change Series No. 1
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* National Building Code. Revision Change Series No. 3
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‡**17.** Delete Clause **4.2.5.5.(c)** of the Code and substitute the following:

(c) the results of load tests on the same type and design of *piles* at th site, or

(d) for a *friction pile* in contact with firm clay the maximum design friction resistance of 300 psf may be used.

‡**18.** Delete Clauses **4.2.8.2.(2)(c)** and **(d)** of the Code and substitute the following:

(c) that the design of shoring be undertaken by a Professional Engine competent in this field of work; and

(d) that the installation of shoring be carried out under continuo inspections by a Professional Engineer competent in this field of work.

*19. Delete Article **4.3.3.2.**

§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

PART 5

MATERIALS

E.

PART 5 of The National Building Code 1970 is hereby deleted therefrom and the following substituted therefor:

TABLE OF CONTENTS

	Abbreviations	3
Section 5.1	Material Standards and Methods of Testing	5
Section 5.2	Alternative Materials	5
Section 5.3	Used Materials	5
Section 5.4	Storage of Materials	5
	List of Standards	6

PART 5 MATERIALS

Abbreviations Used

The following abbreviations shall apply in referring to the source of standards listed in this Part.

Canadian Standards Association
Rexdale, Ontario ..... CSA

Canadian Government Specifications Board,
Ottawa, Ontario ..... CGSB

Underwriters' Laboratories of Canada,
Scarborough, Ontario ..... ULC

American National Standards Institute,
New York, N.Y., U.S.A. ..... ANSI

American Society for Testing and Materials,
Philadelphia, Pa., U.S.A. ..... ASTM

Federal Specifications and Standards,
General Services Administration,
Washington, D.C., U.S.A. ..... FS

National Fire Protection Association,
Boston, Mass., U.S.A. ..... NFPA

Underwriters' Laboratories, Inc.,
Chicago, Ill., U.S.A. ..... ULI

British Standards Institution,
London, W. 1., England ..... BS

SECTION 5.1 MATERIAL STANDARDS AND METHODS OF TESTING

SUBSECTION 5.1.1. MATERIAL STANDARDS

5.1.1.1. Unless otherwise specified or *approved,** materials used in fulfilment of the requirements of this Bylaw shall conform to the appropriate standards listed in this Part.

5.1.1.2. Lumber shall conform to the grades for specific end uses listed in Tables 9.3.3.A. or 9.3.3.B. as appropriate for the grading rules being applied.

SUBSECTION 5.1.2. METHODS OF TESTING

5.1.2.1. All required tests of materials shall be conducted according to the appropriate methods found in the standards listed in this Part, or in the absence of these, as specified by the *authority having jurisdiction* or other authority acceptable to him. All tests shall be conducted and reports thereon prepared at the expense of the *owner* or his agent. Laboratory tests shall be conducted by a laboratory acceptable to the *authority having jurisdiction.*

SECTION 5.2 ALTERNATIVE MATERIALS

5.2.1. The provisions of this Bylaw are now intended to prevent the use of any material not specifically prescribed herein. Any such material may be *approved* provided it is shown to be satisfactory for the purpose intended and at least the equivalent of that required in this Bylaw in quality, strength, effectiveness, fire resistance, durability and safety.

5.2.2. Approval in writing shall be obtained by the *owner* or his agent before any alternative material is used. The *authority having jurisdiction* shall base such approval on the principle set forth in Subsection 5.2.1. and shall require that tests be made or sufficient evidence or proof be submitted, at the expense of the *owner* or his agent, to substantiate any claim for the proposed material.

SECTION 5.3 USED MATERIALS

5.3.1. Unless otherwise specified, used materials may be reused where these meet the requirements of this Bylaw for new materials, and are otherwise satisfactory for the intended use.

SECTION 5.4 STORAGE OF MATERIALS

5.4.1. All building materials shall be stored on the building site in such a way as to prevent deterioration or the loss or impairment of their structural and other essential properties.

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*Words which are in italics in this Part are defined in Part 2.

LIST OF STANDARDS

STANDARDS ISSUED BY THE CANADIAN STANDARDS ASSOCIATION

Number	*Title*	*Code Part or Section*
A5-1971	Portland Cements	9
A8-1970	Masonry Cement	9
A23.1-1967	Concrete Materials and Methods of Concrete Construction	4.2 and 9
A23.2-1967	Methods of Test for Concrete	9
A60.1-1969	Vitrified Clay Pipe	7
A60.3-1969	Vitrified Clay Pipe Joints	7
A82.1-1965	Burned Clay Brick	6 and 9
A82.3-1954	Sand-Lime Building Brick	9
A82.4-1954	Structural Clay Load-Bearing Wall Tile (Reaffirmed 1967)	9
A82.5-1954	Structural Clay Non-Load-Bearing Tile (Reaffirmed 1967)	9
A82.21-1950	Gypsum (Reaffirmed 1964)	9
A82.22-1963	Gypsum Plasters (Reaffirmed 1968)	9
A82.24-1962	Gypsum Lath (Reaffirmed 1967)	9
A82.25-1950	Gypsum Partition Tile or Block (Reaffirmed 1964)	9
A82.26-1950	Keene's Cement (Reaffirmed 1964)	9
A82.27-1972	Gypsum Wallboard	9
A82.28-1962	Gypsum Sheathing Board (Reaffirmed 1967)	9
A82.30-1965	Interior Furring, Lathing and Gypsum Plastering	9
A82.42-1950	Quicklime for Structural Purposes (Reaffirmed 1964)	9
A82.43-1950	Hydrated Lime for Masonry Purposes (Reaffirmed 1964)	9
A82.44-1950	Normal Finishing Hydrated Lime (Reaffirmed 1964)	9
A82.46-1962	Special Finishing Hydrated Lime (Reaffirmed 1967)	9
A82.56-1950	Aggregate for Masonry Mortar (Reaffirmed 1967)	9
A82.57-1954	Inorganic Aggregates for Use in Interior Plaster (Reaffirmed 1964)	9
A100-1962	Asphalt Floor Tile (Reaffirmed 1968)	9
A101-1968	Mineral Wool Thermal Building Insulation	9
A123.1-1964	Asphalt ShinglesSurfaced with Mineral Granules	9
A123.2-1966	Asphalt Roofing Surfaced with Mineral Granules	9
A123.3.1973	Asphalt Roofing Surfaced with Fine Mineral Matter	9
A123.4-1965	Wide Selvage Asphalt Roofing Surfaced with Mineral Granules	9
A123.6-1953	Asphalt-Saturated Roofing Felt for use in Waterproofing and in Constructing Built-Up Roofs (Reaffirmed 1964)	9

LIST OF STANDARDS (Cont'd)

Number	*Title*	*Code Part or Section*
A123.7-1970	Asphalt for Use in Construction of Built-Up Roof Coverings	9
A123.8-1953	Coal-Tar Saturated Roofing Felt for Use in Waterproofing and in Constructing Built-Up Roofs (Reaffirmed 1970)	9
A123.9-1953	Asphalt-Saturated Asbestos Felts for Use in Waterproofing and in Constructing Built-Up Roofs (Reaffirmed 1970)	9
A123.10-1953	Coal-Tar Saturated Asbestos Felts for Use in Waterproofing and in Constructing Built-Up Roofs (Reaffirmed 1964)	9
A123.11-1969	Asphalt-Saturated and Coated Asbestos Felts for Use in Constructing Built-up Roofs	9
A123.13-1953	Coal-Tar Pitch for Roofing, Dampproofing and Waterproofing (Reaffirmed 1966)	9
A123.17-1963	Asphalt-Saturated Felted Glass-Fibre Mat for Use in Construction of Built-Up Roofs	9
A126.1-1967	Vinyl Asbestos Floor Tile	9
A145-1959	Rubber Floor Tile	9
A146-1965	Linoleum Products	9
A165.1-1964	Hollow Load-Bearing Concrete Masonry Units	9
A165.2-1964	Hollow Non-Load-Bearing Concrete Masonry Units	9
A165.3-1964	Solid Load Bearing Concrete Masonry Units	9
A165.4-1965	Concrete Brick Masonry Units	9
A247.1-1969	Fibreboard Roof Insulation	9
A247.2-1969	Insulating Fibreboard Sheathing	9
A247.3-1969	Fibreboard Used in Interior Application	9
B45.1-1963	Vitreous China Plumbing Fixture	7
B54.1-1972	Specification for Determination of Non-Combustibility in Building Materials	2, 3 and 9
B54.3-1964	Methods of Fire Tests of Walls, Partitions, Floors, Roofs, Ceilings, Columns, Beams and Girders	3
B54.4-1963	Standard Methods of Fire Tests of Door Assemblies	3
B54.5-1963	Standard Methods of Fire Tests of Window and Glass Block Assemblies	3
B63-1966	Welded and Seamless Steel Pipe	7
B67-1972	Lead Service Pipe, Waste Pipe, Traps, Bends and Accessories	7
B70-1971	Cast Iron Soil Pipe and Fittings	7
B111-1967	Wire Nails, Spikes and Staples	9
B125-1967	Plumbing Fittings	7
B131.5-1973	Cast Iron Pipe Centrifugally Cast in Metal Molds, for Water or Other Liquids	7
B131.7-1973	Cast Iron Pipe Centrifugally Cast in Sand-Lined Molds, for Water or Other Liquids	7

LIST OF STANDARDS (Cont'd)

Number	*Title*	*Code Part or Section*
B131.11-1958	Universal Cast Iron Pipe and Fittings Cast in Sand-Lined Molds, for Water and Other Liquids ..	7
B137.1-1970	Polyethylene Pipe for Cold Water Services.....	7
B137.6-1971	Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Piping for Hot and Cold Water Distribution Systems.....	7
B181.1-1967	Acrylonitrile-Butadiene-Styrene Drain, Waste and Vent (ABS-DWV) Pipe and Pipe Fittings	7
B181.2-1967	Poly (Vinyl Chloride) Drain, Waste and Vent Pipe and Pipe Fittings	7
B182.1-1967	Plastic Drain and Sewer Pipe and Pipe Fittings for use Underground	7
B228.1-1968	Pipes, Ducts and Fittings for Residential Type Air Conditioning Systems	9
HC.7.5-1968	Seamless Copper and Red Brass Pipe	7
HC.7.6-1968	Seamless Copper Water Tube, Drainage Tube (DWV), and Hydronic Heating Tube (Type H).....	7
O56-1962	Round Timber Piles (Reaffirmed 1967)	4.2
O80-1970	Wood Preservation	4.2 and 3
O80.1-1970	Preservative Treatment by Pressure Process-All Timber Products	4.2
O80.2-1970	Preservative Treatment of Lumber, Timbers, Bridge Ties and Mine Ties by Pressure Processes.....	4.2
O80.3-1970	Preservative Treatment of Piles by Pressure Process	4.2
O80.12-1970	Preservative Treatment of Timber Foundation Piles by Pressure Processes	4.2
O80.M4-1962	Instructions for the Care of Pressure Treated Wood after Treatment	4.2
O115-1967	Hardwood Plywood	9
O118-1960	Western Red Cedar Shingles, Machine Grooved Shakes, and Hand-split Red Cedar Shakes (Reaffirmed 1965).....	9
O121-1961	Douglas Fir Plywood	9
O132.1-1965	Wood Windows	9
O132.2-1972	Wood Doors	9
O141-1970	Softwood Lumber.....	9
O151-1961	Western Softwood Plywood	9
O153-1963	Poplar Plywood.....	9
O188-1968	Mat-formed Wood Particle Board	9

STANDARDS ISSUED BY THE CANADIAN GOVERNMENT SPECIFICATIONS BOARD

9-GP-2a April 1971	Paper: Building, Cellulosic Fibre	9
11-GP-3b Sept. 1972	Hardboard	9
12-GP-1b Aug. 1971	Glass: Safety, for Building Construction.....	9
12-GP-2a Sept. 1970	Glass, Sheet: Flat, Clear	9
12-GP-3b Sept. 1970	Glass, Plate: Flat, Polished Plate or Float.....	9
11-GP-5 Sept. 1972	Precoated Hardboard, for Exterior use	9

LIST OF STANDARDS (Cont'd)

Number	*Title*	*Code Part or Section*
12-GP-8 15 Jul. 1966	Factory-Sealed Double-Glazing Units (Amended: 23 Aug. 68)	9
19-GP-3b Jan. 1972	Sealing Compound: Two Component, Polysulphide Base, Chemical Curing	9
19-GP-5b April 1971	Sealing Compound: One Component, Acrylic Base, Solvent Curing	9
19-GP-9b Apr. 1971	Sealing Compound: One Component, Silicone Base, Chemical Curing	9
19-GP-13 1968	Sealing Compound: Elastomeric, One Component, Polysulphide Base, Chemical Curing	9
19-GP-14 Oct. 1970	Sealing Compound: One Component, Butyl-Polyisobutylene Base, Solvent Curing	9
19-GP-15a Apr. 1971	Sealing Compound: Multicomponent, Polyurethane Base, Chemical Curing Pipe	9
34-GP-1b May 1969	Pipe: Asbestos Cement, Pressure	7
34-GP-4b Jan. 1970	Siding: Asbestos Cement, Shingles and Clapboards (Amended: Jan. 1971)	9
34-GP-5c Jan. 1970	Sheets: Asbestos Cement, Corrugated (Amended: Jan. 1971)	9
34-GP-9d Sept. 1972	Pipe: Sewer, Asbestos Cement	7
34-GP-11b Jan. 1970	Pipe Asbestos Cement, Flue	
34-GP-14a May 1969	Sheets: Asbestos Cement, Decorative	9
34-GP-16b Jan. 1970	Sheets: Asbestos Cement, Flat, Fully Compressed (Amended: Jan. 1971)	9
34-GP-17c Jan. 1970	Sheets: Asbestos Cement, Flat, Semi-compressed	9
34-GP-21a Jan. 1970	Sheets: Sandwich, Asbestos Cement and Fibreboard	9
34-GP-22a Jan. 1970	Pipe: Asbestos-Cement, Drain (Amended: Jan. 1971)	7 and 9
37-GP-2c Oct. 1971	Emulsified Asphalt, Mineral Colloid Type, Unfilled, for Dampproofing and Waterproofing,	
37-GP-4b Apr. 1971	and for Roof Coatings Cement: Lap, Asphalt Cutback, Fibrated, for	9
37-GP-5c Dec. 1971	Asphalt Roofing Cement: Plastic, Cutback Asphalt	9 9
37-GP-6c Nov. 1971	Cutback Asphalt: Unfilled, for Dampproofing	9
37-GP-8c Dec. 1971	Asphalt Cutback: Filled for Roof Coating	9
37-GP-9c Oct. 1971	Asphalt Primer for Asphalt Roofing, Dampproofing	
37-GP-12b Dec. 1971	or Waterproofing Application of Unfilled Cutback Asphalt for	9
37-GP-16c Dec. 1971	Dampproofing Cutback Asphalt: Filled, for Dampproofing and	9
37-GP-17b Dec. 1971	Waterproofing Asphalts: Hot Application, for Dampproofing and	9
	Waterproofing Systems	9

LIST OF STANDARDS (Cont'd)

Number	*Title*	*Code Part or Section*
37-GP-18c Dec. 1971	Cutback: Tar, Unfilled, for Dampproofing	9
37-GP-21c Dec. 1971	Roof Coating: Tar Cutback, Fibrated	9
37-GP-22b Dec. 1971	Application of Unfilled Tar Cutback Foundation Coating for Dampproofing	9
41-GP-6b Jan. 1973	Sheets: Thermosetting, Polyester Plastics, Glass Fiber reinforced	
41-GP-14a Mar. 1972	Thermal Insulation, Expanded Polystyrene	9
41-GP-16a May 1971	Polyurethane: Rigid, Cellular, for Thermal Insulation and other Applications	9
41-GP-24 Oct. 1972	Siding, Soffits and Fascia, Rigid Vinyl	
56-GP-1b Dec. 1970	Pipe: Bituminized-Fiber, Drain and Sewer	9
56-GP-2a 6 Oct. 1967	Sealing Compound: Sewer Pipe Joint, Hot Pour, Mineral Filled, Bituminous	7
56-GP-3a 6 Oct. 1967	Sealing Compound: Sewer Pipe Joint, Hot Pour, Mineral Filled, Plastic	7
56-GP-10a Dec. 1970	Pipe: Bituminized Fibre, Perforated (Amended: 18 Dec. 64)	9
63-GP-2a 4 Nov. 1966	Windows: Extruded Aluminum, Vertical and Horizontal Sliding, Medium Duty	9
63-GP-3a 4 Nov. 1966	Windows: Extruded Aluminum, Vertical and Horizontal Sliding, Standard Duty	9
63-GP-4a July 1971	Windows: Sashless, Horizontal Sliding (Amended: Oct. 1969)	9
63-GP-5a Jan. 1970	Windows: Steel, Vertical and Horizontal Sliding, Standard Duty (Amended: May 1970)	9
70-GP-1a Nov. 1970	Vapor Barriers: Sheet, for use in Above-Grade Building Construction	9
77-GP-1a Nov. 1970	Caulking Compound, Cementitious Type, Cold Applied, for Pipe Joints	7
82-GP-1a Aug. 1972	Doors: Glass, Aluminum Frame, Sliding, Standard Duty	9
82-GP-2a Sept. 1972	Doors, Glass, Aluminum Frame, Sliding, Medium Duty	9
93-GP-2 Apr. 1970	Siding: Soffit and Fascia, Aluminum Coated, Standard Duty	9
93-GP-4 May 1971	Siding: Soffits and Fascia, Steel, Zinc Coated (Galvanized), Prefinished, Standard Duty, for Residential Buildings	9

STANDARDS ISSUED BY THE AMERICAN SOCIETY FOR TESTING AND MATERIALS

A167-70	Corrosion-Resisting Chromium-Nickel Steel Plate Sheet and Strip	6
A570-70	Hot-Rolled Carbon Steel Sheets and Strip, Structural Quality	4.2
A252-71	Welded and Seamless Steel Pipe Piles	4.2
A283-67	Low and Intermediate Tensile Strength Carbon Steel Plates of Structural Quality	4.2
A303-64	Hot-Rolled Carbon Steel Strip of Structural Quality	4.2

LIST OF STANDARDS (Cont'd)

Number	*Title*	*Code Part or Section*
A366-72	Steel Sheet, Carbon, Cold-Rolled Commercial Quality	4.2
A569-66T	Hot-Rolled Carbon Steel Sheets and Strip, Commercial Quality	4.2
A444-71	Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process for Culverts and Underdrains	7
A525-71	General Requirements, Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process	6
A568-71	General Requirements for Carbon and High-Strength Low-Alloy Steel, Hot-Rolled Strip, Hot-Rolled Sheets and Cold-Rolled Sheets	6
B88-72	Seamless Copper Water Tube	
B209-72a	Aluminum-Alloy Sheet and Plate	6
B306-72	Copper Drainage Tube (DWV)	
C4-62	Clay Drain Tile	9
C14-71	Concrete Sewer, Storm Drain, and Culvert Pipe	7
C64-72	Fireclay Brick Refractories for Heavy Duty Stationary Boiler Service, Including Tentative Revision	9
C105-47 (1971)	Ground Fireclay as a Refractory Motor for Laying-Up Fireclay Brick	6
C106-67	Fireclay Brick and Silicon Carbide Brick for Incinerator Service	6
C126-69	Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units	9
C153-61	Fireclay Brick Refractories for Moderate Duty Stationary Boiler Service	6 and 9
C211-68	Standard and Extra Strength Perforated Clay Pipe	9
C212-60 (1970)	Structural Clay Facing Tile	9
C260-69	Air-Entraining Admixtures for Concrete	9
C279-54 (1972)	Chemical-Resistant Masonry Units	6
C315-56 (1972)	Clay Flue Linings	6 and 9
C411-61	Hot Surface Performance of High-Temperature Thermal Insulation	
C412-72	Concrete Drain Tile	9
C444-68	Perforated Concrete Pipe	9
C494-71	Chemical Admixtures for Concrete	9
E84-70	Surface Burning Characteristics of Building Materials	3
E108-58 (1970)	Fire Tests of Roof Coverings	3
E119-71	Fire Tests of Building Construction and Materials, Including Tentative Revision	3
E152-72	Fire Tests of Door Assemblies	3
E163-65 (1972)	Fire Tests of Window Assemblies	3

STANDARDS ISSUED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE

A40.6-1943	Backflow Preventers in Plumbing Systems	7
B16.3-1971	Malleable-Iron Screwed Fittings, 150 and 300 lb.	7
B16.4-1971	Cast-Iron Screwed Fittings, 125 and 250 lb.	7
B16.12-1971	Cast-Iron Threaded Drainage Fittings	7
B16.15-1971	Cast Bronze, Threaded Fittings, 150 and 300 lb.	7

LIST OF STANDARDS (Cont'd)

Number	*Title*	*Code Part or Section*
B16.18-1963 (1967 Addendum)	Cast Bronze Solder-Joint Pressure Fittings	7
B16.22-1963	Wrought Copper and Bronze Solder-Joint Pressure Fittings	7
B16.23-1969	Cast Bronze Solder Joint Drainage Fittings DWV	7
B16.24-1971	Bronze Flanges and Flanged Fittings, 150 and 300 lb.	7
B16.26-1967	Cast Bronze Fittings for Flared Copper Tubes	7
Z21.22-1971	Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems, Listing Requirements for	7

STANDARDS ISSUED BY THE UNDERWRITERS' LABORATORIES OF CANADA

ULC-9-1962	Fire Tests of Window Assemblies	3
ULC-10(b) Nov. 1970	Door Assemblies, Fire Tests of	8
ULC-103 July 1963	Chimneys, Factory-Built	6 and 9
ULC-181-1970	Air Ducts	
ULC-214-1969	Flame Tests of Flame Resistant Fabrics anf Films	
ULC-263-1971	Building Construction and Materials, Fire Tests of	3
ULC-555-1970	Fire Dampers	3
ULC-723-1972	Fire Hazard Classification of Building Materials, Standard Test Method for	3
ULC-790-1969	Standards for Test Methods for Fire Resistance of Roof Covering Materials	3
ULC-900-1970	Air Filter Units	

STANDARDS ISSUED BY THE UNDERWRITERS' LABORATORIES, INC.

ULI-9-1962	Window Assemblies, Fire Tests of	3
ULI-10(b)-1970	Fire Tests of Door Assemblies	3
ULI-127-1970	Fireplaces, Factory-Built	9
ULI-263-1971	Building Construction and Materials, Fire Tests of	3
ULI-723-1971	Fire Hazard Classification of Building Materials, Test Method for	3
ULI-790-1970	Standards for Test Methods for Fire Resistance of Roof Covering Materials	3

UNITED STATES FEDERAL SPECIFICATION

FS-L-F-00450A May 1970	Flooring, Vinyl Plastic	9

STANDARDS ISSUED BY THE BRITISH STANDARDS INSTITUTION

BS476, Part 1, 1953	Fire Test of Building Materials and Structures	3

STANDARDS ISSUED BY THE NATIONAL FIRE PROTECTION ASSOCIATION

NFPA 214-1971	Water-Cooling Towers	6
NFPA 251-1972	Standard Methods of Fire Tests of Building Construction and Materials	3
NFPA 252-1972	Standard Methods of Fire Tests of Door Assemblies	3
NFPA 255-1972	Methods of Test of Surface Burning Characteristics of Building Materials	3
NFPA 701-1969	Standard Method of Fire Test for Flame-Resistant Textiles and Films	3 and 6

PART 6

BUILDING SERVICES

F.

PART 6 of the National Building Code of Canada 1970 is varied as follows:

*1. Delete Table **6.1.4.A.** of the Code and substitute the following:

Table 6.1.4.A.
Forming Part of Article 6.1.4.1.

SUBSTITUTION OF DECIMAL INCHES FOR GAUGE NUMBERS IN THE DESIGNATION OF MINIMUM SHEET METAL THICKNESSES[1]				
Gauge No.	Minimum Thickness of Sheet Metal, in.			
	Galvanized Sheet Gauge (GSG)[2] ASTM A525-71	Manufacturers' Standard Gauge (MSG)[3] ASTM A568-71	United States Standard Gauge (USSG)[4] ASTM A167-70	Brown & Sharpe Gauge (B&SG)[5] ASTM B209-72a
6	—	0.184	—	0.146
7	—	0.171	—	0.128
8	0.159	0.156	0.158	0.115
9	0.144	0.142	0.142	0.106
10	0.129	0.127	0.129	0.094
11	0.114	0.112	0.115	0.084
12	0.099	0.097	0.100	0.074
13	0.084	0.082	0.086	0.065
14	0.070	0.067	0.071	0.057
15	0.065	0.060	0.064	0.050
16	0.058	0.053	0.057	0.044
17	0.053	0.047	0.051	0.039
18	0.047	0.043	0.045	0.034
19	0.041	0.038	0.039	0.030
20	0.036	0.033	0.034	0.026
21	0.033	0.030	0.030	0.023
22	0.030	0.027	0.027	0.021
23	0.027	0.024	0.024	0.019
24	0.024	0.021	0.022	0.016
25	0.021	0.018	0.019	0.014
26	0.019	0.016	0.016	0.012
27	0.017	0.014	0.014	0.011
28	0.016	0.013	0.014	0.009
29	0.014	—	0.012	0.008
30	0.013	—	0.011	0.008
Col. 1	2	3	4	5

Notes to Table 6.14.A.:

[1] Minimum thickness in this Table is the nominal thickness corresponding to the gauge number reduced by the greatest allowable minus-thickness-tolerance specified in the appropriate ASTM standard.

[2] Applies to galvanized (zinc-coated) steel and is the over-all thickness including coating.

[3] Applies to uncoated steel.

[4] Applies to stainless steel.

[5] Applies to aluminum alloy sheets up to 84 in. in width.

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* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

*2. Delete Sentences **6.2.1.1.(1)** and **(2)** of the Code and substitute the following:

6.2.1.1.(1) This Section applies to the design, construction and installation of

(a) solid-fuel-fired heating systems,

(b) heating systems in which the rated heat input exceeds 400,000 Btu per hr (117 kW), and

(c) ventilating and air-conditioning systems in which the rated fan capacity exceeds 4000 cfm (113.3 m^3/min.).

(2) Where the rated heat input of heating systems or equipment does not exceed 400,000 Btu per hr (117.24 kW) or the rated fan capacity of ventilating or air-conditioning systems and equipment does not exceed 4000 cfm (113.3 m^3/min.), the requirements in Part 9 shall apply.

†3. Revise the Note to Sentence **6.2.3.1.(2)** of the Code to read as follows:

(The procedures described in the ASHRAE Guide and Data Books, the ASHRAE Handbook of Fundamentals, the HRA Digest and the IBR Manuals may be considered as good engineering practice.)

†4. Delete Sentence **6.2.3.1.(3)** of the Code and substitute the following:

(3) Heating and air-conditioning equipment other than solid-fuel-fired equipment shall be installed to conform to the following appropriate standards:

(a) CSA B139-1971, 'Installation Code for Oil Burning Equipment',

(b) CSA B149.1-1970, "Installation Code for Natural Gas Burning Appliances and Equipment,"

(c) CSA B149.2-1969, "Installation Code for Propane Burning Appliances and Equipment, and Supplement No. 1-1971,"

(d) The Winnipeg Electrical By-law.

†5. In the third line of Sentence **6.2.3.5.(3)** of the Code change the standard "NFPA 96-1969" to read "NFPA 96-1971."

‡6. Delete Article **6.2.3.6.** of the Code and substitute the following:

6.2.3.6. Electrical wiring and electrical equipment used in heating, ventilating and air-conditioning systems shall be installed to conform to The Winnipeg Electrical By-law.

*7. Delete Subsection **6.2.4.** of the Code and substitute the following:

SUBSECTION 6.2.4. AIR DUCT SYSTEMS

6.2.4.1.(1) All ducts including flexible duct connectors, associated fittings and *plenums* used in air duct systems shall be constructed of steel, aluminum alloy, copper, or other *approved* metal, or of clay, asbestos-cement or similar basically *noncombustible* material.

(2) All ducts, associated fittings and *plenums* may be of *combustible* material provided

(a) they conform to the applicable requirements for Class 1 air duct materials and connectors in ULC 181-1970, "Air Ducts,"

(b) are not used in vertical runs serving more than 2 *storeys,* and

(c) are not exposed to heated air or radiation from heat sources that would result in the exposed surface exceeding a temperature of 250°F (121°C).

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(3) Materials in Sentences (1) and (2) which when used in a location where the may be subject to excessive moisture shall have no appreciable loss of strengt when wet and shall be corrosion-resistant.

6.2.4.2. The construction and support of air ducts, fittings and *plenums,* includin joints, seams, stiffening, reinforcing and access openings shall conform to th applicable requirements of the duct construction standards contained in th ASHRAE Guide and Data Books 1970 (Systems) and 1972 (Equipment).

6.2.4.3. Air duct systems shall be made substantially air tight throughout and sha have no openings other than those required for proper operation and maintenanc of the system. Access openings shall be provided where debris, paper or oth *combustible* material may accumulate in *plenums* and ducts. Removable grille requiring only the loosening of catches or screws for removal, may be considere as access openings.

6.2.4.4.(1) Vibration isolation connectors in air duct systems shall be *noncombustibl* except that *combustible* fabric connectors are permitted provided they

(a) do not exceed 10 in. in length,

(b) comply with the flame-resistance requirements of ULC 214-1969, "Standar for Flame Tests of Flame-Resistant Fabrics and Films," and

(c) are not used in a location where they are exposed to heated air or radiatic from heat sources that may cause the exposed surface to exceed a temperatu of 250°F (121°C).

6.2.4.5. Tape used for sealing joints in air ducts, *plenums* and other parts of a duct systems shall meet the flame-resistance requirements for fabric in ULC 214-196 "Standard for Flame Tests of Flame-Resistant Fabrics and Films."

6.2.4.6.(1) Coverings, linings and associated adhesives and insulation of air duc *plenums* and other parts of air duct systems shall be of *noncombustible* materi when exposed to heated air or radiation from heat sources that would result the exposed surface exceeding a temperature of 250°F (121°C).

(2) When *combustible* coverings and linings, including associated adhesives a insulation, are used they shall have a *flame-spread rating* of not more than 25 any exposed surface or any surface that would be exposed by cutting through t material in any direction, and a smoke-developed classification of not more th 50, except that the outer covering of ducts, *plenums* and other parts of air du systems used within an assembly of *combustible construction* may have an expos surface *flame-spread rating* of not more than 75 and may have a smoke-develop classification greater than 50.

(3) *Combustible* coverings and linings in Sentence (2) shall not flame, glo smoulder or smoke when tested in accordance with the method of test AST C411-61, "Hot-Surface Performance of High-Temperature Thermal Insulation," a temperature of 250°F (121°C).

(4) *Combustible* coverings and linings of ducts, including associated adhesiv and insulation, shall be interrupted at the immediate area of operation of he sources in a duct system such as electric resistance heaters or fuel-burning heat or *furnaces.* and where the duct penetrates a *fire-separation.*

(5) Linings of ducts shall be installed so that they will not interfere with t operation of *fire dampers, fire stop flaps* and other *closures.*

6.2.4.7. Underground ducts shall be constructed to provide interior drainage a shall not be connected directly to a sewer.

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6.2.4.8. The clearances from *combustible* material of supply *plenums,* supply ducts, boots and register boxes of heating systems shall conform to the requirements of Subsection 9.34.3. of Part 9 of this Bylaw.

6.2.4.9.(1) *Fire dampers* shall conform to the requirements of Articles 3.1.7.1. and 3.5.1.5. of Part 3 of this Bylaw and to this Article.

(2) *Fire dampers* shall be arranged to close automatically upon the operation of a fusible link or other *approved* heat or smoke actuated device. When actuated by heat, the device shall be located where it is readily affected by an abnormal rise of temperature in the duct, and have a temperature rating approximately 50°F (28°C) above the maximum temperature that would exist in the system either with the system in operation or shut down.

(3) *Fire dampers* shall be installed in the plane of the *fire separation* so as to stay in place should the duct be dislodged during a fire.

(4) *Fire dampers* tested in the vertical or horizontal position shall be installed in the manner in which they were tested.

(5) A tightly fitted access door shall be installed for each *fire damper* to provide access for the inspection of the damper and reseting of the release device.

6.2.4.10.(1) Where *fire stop flaps* are used in air duct systems in membrane ceilings required in Article 3.1.5.6. of Part 3 of this Bylaw, such *fire stop flaps* shall be constructed of steel having a minimum thickness of 0.058 in. (1.47 mm) covered on both sides with asbestos paper at least 1/16 in. (1.6 mm) thick. Such *fire stop flaps* shall be equipped with corrosion-resistant pins and hinges.

(2) *Fire stop flaps* shall be held open with a fusible link or other *approved* heat-actuated device having a temperature rating approximately 50°F (28°C) above the maximum temperature that would exist in the system either with the system in operation or shut down.

6.2.4.11.(1) Except as provided in Sentence (2), *exhaust ducts* of non-mechanical ventilating systems serving separate rooms or spaces shall not be combined.

(2) *Exhaust ducts* of non-mechanical ventilating systems serving similar *occupancies* may be combined immediately below the point of final delivery to the outside, such as at the base of a roof ventilator.

(3) *Exhaust ducts* of ventilating systems shall have provision for the removal of condensation where this may be a problem. The exhaust outlet shall be designed to prevent back draft under wind conditions.

(4) Except as provided in Sentence (6), *exhaust ducts* serving rooms containing water closets, urinals, basins, showers or slop sinks shall be independent from *exhaust ducts* serving other areas of the *building.*

(5) Except as provided in Sentence (6), *exhaust ducts* serving rooms containing residential cooking equipment shall be independent from *exhaust ducts* serving other areas of the *building.*

(6) Two or more exhaust systems in Sentences (4) and (5) may be interconnected or connected with *exhaust ducts* serving other areas of the *building,* provided the connections are made at the inlet of an exhaust fan and all interconnected systems are equipped with suitable back pressure devices to prevent passage of odours from one system to another when the fan is not in operation.

(7) Where *exhaust ducts* containing air from heated spaces pass through or are adjacent to unheated spaces, the ducts shall be insulated to prevent moisture condensation in the duct.

6.2.4.12. In *institutional* or *residential occupancies* air shall not be recirculated from one room or suite of rooms to any other room or suite of rooms nor to a *public corridor* or *exit* stairway.

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6.2.4.13.(1) In ventilating systems that exhaust air to the outdoors, provision sha be made for the admission of a supply of make-up air in sufficient quantity s that the efficiency of the exhaust system is not adversely affected.

(2) Supply, return and exhaust air openings in rooms or spaces in *buildings,* whe located less than 7 ft above the floor, shall be protected by a substantial gril having openings of a size that will not allow the passage of a ½-in-diameter sphere.

(3) Outdoor air intakes and exhaust outlets at the *building* exterior shall b designed or located so that the air entering the *building* system will not contai more contaminants than the normal exterior air of the locality in which the *buildin* is situated.

(4) Exterior openings for outdoor air intakes and exhaust outlets shall be shielde from the entry of snow and rain and shall be fitted with corrosion-resistant screei of mesh not larger than ½ in., except where climatic conditions may require larg openings. Such screens shall be accessible for maintenance.

6.2.4.14.(1) Air filters for air duct systems shall conform to the requirements f Class 1 and Class 2 air filter units when subjected to the flame-exposure ar spot-flame tests of ULC-900 1970, "Standard for Air Filter Units."

(2) The filter and water evaporation medium of every air washer and evaporati cooling section enclosed within a *building* shall be made of *noncombustible* materi Sumps for such sections shall be constructed and installed so that they can b flushed and drained.

(3) Evaporative cooling sections or towers of *combustible* material located c or outside *buildings* shall have a clearance of at least 40 ft from sources of ignitic such as chimneys or incinerators when the tower exterior construction *noncombustible,* and a clearance of at least 100 ft when the tower exterior constructic is *combustible.*

(4) Evaporative cooling sections or towers, the main structure of which excee a volume of 2,000 cu ft, shall comply with the requirements of NFPA 214-197 "Water-cooling Towers."

(5) Electrostatic-type filters when used shall be installed to ensure that the electr circuit is automatically de-energized when access doors are opened. Facilities f flushing and drainage shall be provided where the filters are designed to be washe in place.

(6) When odour removal equipment of the adsorption type is used it shall be

(a) installed to provide access so that the adsorption material can be reactivat or renewed, and

(b) protected from dust accumulation by air filters installed on the inlet side.

6.2.4.15.(1) Fans and associated air handling equipment such as air washers, filte and heating and cooling units when installed on the roof or otherwise outside t *building,* shall be of a type *approved* for outdoor use.

(2) Exposed openings into fan housings shall be protected with substantial me screens or gratings to prevent accidents.

***8.** Delete Article **6.2.5.1.** of the Code and substitute the following:

6.2.5.1.(1) Fuel-fired heating *appliances* shall be located, enclosed, or separated fr the remainder of the *building* in conformance with Section 3.5 of Part 3 of t Bylaw.

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(2) Fuel-fired *appliances* installed on the roof of a *building* or otherwise outside the *building* shall

(a) be *approved* for such location,

(b) be installed not closer than 4 ft (1.2 m) measured horizontally from the property line, and

(c) be installed at least 10 ft (3 m) from an adjacent wall of the same *building*, unless every opening in such wall within 3 *storeys* above and 15 ft (4.6 m) horizontally is protected by wired glass conforming to Article 3.1.7.3. of Part 3 of this Bylaw.

(3) Heating *appliances* using oil, gas or electrical energy shall be installed

(a) in accordance with the appropriate standard listed in Sentence 6.2.3.1.(3), and

(b) to ensure that there is no damage to piping or equipment from possible movements of the *building* structure.

(4) Heating *appliances* using solid fuel shall be connected to a *chimney* directly or by a *flue pipe* or *breeching* conforming to Subsection 6.2.8.

*9. Delete heading for Article **6.2.5.2.** and, also delete Articles **6.2.5.2.** and **6.2.5.3.** of the Code and substitute the following:

Boilers and Furnaces Using Solid Fuel

6.2.5.2. Steam and hot water *boilers* using solid fuel shall be designed, constructed and installed to conform to CSA B51-1972, "Code for the Construction and Inspection of Boilers and Pressure Vessels."

6.2.5.3. *Boilers* and *furnaces* using solid fuel shall be installed in a room or space having

(a) a volume sufficiently large to permit accessibility to the *appliance* and to provide clearances as required in Article 6.2.5.5., and

(b) permanent opening or openings providing an area of at least 1½ sq in (10 cm^2) per 1000 Btu per hr (293.1 W) input, connecting with the outdoors or with some space that freely connects with the outdoors.

*10. In Table **6.2.5.B.** of the Code change figure "0.0129-in." to "0.013-in." and also change figure "0.0259-in." to "0.027-in."

*11. In Table **6.2.5.D.** of the Code change figure "0.0129-in." to "0.013-in." and, also change figure "0.0259-in." to "0.027-in."

†12. Delete Article **6.2.5.8.** of the Code and substitute the following:

6.2.5.8.(1) *Stoves, ranges, space heaters* and *service water heaters* using solid fuel shall be installed in a room or space sufficiently large to permit accessibility to the *appliance* and to provide clearances as required in Article 6.2.5.9.

(2) The requirements for the mounting of *stoves, ranges, space heaters* and *service water heaters* using solid fuel shall be as required in Article 6.2.5.4. for *boilers* and *furnaces* of similar construction.

*13. Delete Subsection **6.2.6.** of the Code and substitute the following:

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SUBSECTION 6.2.6. PIPING FOR HEATING AND COOLING SYTEMS

6.2.6.1. Every pipe used in a heating or air-conditioning system shall be designed to have adequate strength and durability. Nonmetallic piping shall not be used unless *approved.*

6.2.6.2. Every pipe used in a heating or air-conditioning system shall be installed to allow for expansion and contraction due to temperature changes.

6.2.6.3. Supports for piping in a heating or air-conditioning system shall be designed and installed to conform to good engineering practice.

6.2.6.4.(1) Insulation and coverings on pipes shall be composed of material suitable for the operating temperature of the system to withstand deterioration from softening melting, mildew and mold.

(2) Insulation and coverings on pipes in which the temperature of the fluid exceeds 250°F shall be composed of *approved noncombustible* material.

(3) Where *combustible* insulation is used on piping in a *horizontal* or *vertical service space,* the insulation and coverings on such pipes shall have a *flame-spread rating* throughout the material not exceeding 25 in *buildings* of *noncombustible construction* and not exceeding 75 in *buildings* of *combustible construction.*

(4) Insulation and coverings on piping located in rooms and spaces other than the *service spaces* described in (3) shall have a *flame-spread rating* not exceeding that required for the interior finish of the room or space.

(5) Pipes that are exposed to human contact shall be insulated so that the exposed surface does not exceed 160°F.

6.2.6.5. Clearances between *combustible* material and bare pipes carrying steam or hot water shall conform to Table 6.2.6.A.

Table 6.2.6.A.
Forming Part of Article 6.2.6.5.

Steam or Water Temperature, °F	Minimum Clearance, in.
up to 250	½
above 250	1
Column 1	Column 2

6.2.6.6.(1) Where a pipe carrying steam or hot water at a temperature in excess of 250°F (121°C) passes through a *combustible* floor, ceiling or wall, the construction shall be protected by a sleeve of metal or other *noncombustible* material at least 2 in. (51 mm) larger in diameter than the pipe.

(2) Steam or hot water pipes that pass through a storage space shall be insulated with at least 1 in. (25 mm) of *approved noncombustible* material or otherwise protected to prevent direct contact between the surface of the pipe and the material stored.

6.2.6.7. Where piping for heating or air-conditioning systems is enclosed in a shaft the requirements for shafts of Article 3.5.3.1. of Part 3 of this Bylaw shall apply.

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§ National Building Code. Revision Change Series No. 1
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†14. Delete Sentence **6.2.8.3.(1)** of the Code and substitute the following:

6.2.8.3.(1) Brick and mortar for rectangular brick *masonry chimneys* shall conform to Section 4.4 of Part 4 of this By-law except that fireclay brick shall be laid with fireclay mortar conforming to ASTM C105-47 (1971), 'Ground Fireclay as a Refractory Mortar for Laying up Fireclay Brick,' or with other mortar *approved* for use with fireclay brick.

*‡15. Delete Sentence **6.2.8.3.(2)** of the Code and substitute the following:

(2) Every rectangular brick *masonry chimney* shall be lined with

(a) *chimney liners* of clay conforming to ASTM C315-56 (1972), "Specification for Clay Flue Linings";

(b) fireclay refractory brick conforming to the following appropriate standard: ASTM C153-61, "Refractories for Moderate Duty Stationary Boiler Service," ASTM C64-72, "Refractories for Heavy Duty Stationary Boiler Service," ASTM C106-67, Fireclay Brick and Silicone Carbide Brick for Incinerator Service.

(c) hard burned lining brick conforming to ASTM C279-54 (1972), "Specification for Chemical-Resistant Masonry Units," or

(d) metal having durability and resistance to corrosion and heat at least equivalent to 0.012-in.-(0.3 mm) thick stainless steel, provided the intended flue gas temperature does not exceed 1000°F (538°C).

*16. Delete Sentence **6.2.8.4.(3)** of the Code and substitute the following:

(3) Fireclay brick shall be laid up with fireclay mortar, conforming to ASTM C105-47 (1971), "Ground Fireclay as a Refractory Mortar for Laying Up Fireclay Brick," or other mortar *approved* for use with fireclay brick.

*17. Delete Clause **6.2.8.4.(5)(b)** of the Code and substitute the following:

(b) the lining is laid up with fireclay mortar conforming to ASTM C105-47 (1971), "Ground Fireclay as a Refractory Mortar for Laying Up Fireclay Brick," and

*18. Delete Sentence **6.2.8.6.(4)** of the Code and substitute the following:

(4) The thickness of metal in every *metal chimney* shall be at least 0.127 in. (3.2 mm) and shall be adequate to resist all stresses.

†19. Delete Sentence **6.2.8.6.(6)** of the Code and substitute the following:

(6) Joints of every *metal chimney* shall be riveted, bolted or welded and such joints shall be at least as corrosion resistant as the sheets or plates so joined.

*20. Delete Clause **6.2.8.8.(1)(b)** of the Code and substitute the following:

(b) not have an offset inclined more than 45 deg. to the vertical, and

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† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
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*21. Delete Table **6.2.8.A.** of the Code and substitute the following:

Table 6.2.8.A.

Forming Part of Sentence 6.2.8.9.(2)

Diameter of Flue pipe, in.	Minimum Thickness of Metal, in.	
	Uncoated Steel	Galv. Steel
Below 6	0.016	0.016
6 to 8 (incl.)	0.021	0.019
Over 8 to 10	0.027	0.024
Over 10 to 12	0.033	0.030
Over 12 to 16	0.043	0.036
Over 16	0.067	0.058
Column 1	2	3

*22. In Table **6.2.8.B.** of the Code change figure "0.0129-in." to "0.013-in." and figu "00259-in." to "0.027-in."

*23. Delete Article **6.3.1.1.** of the Code and substitute the following:

6.3.1.1. The design, construction, installation and *alteration* of every indc incinerator shall conform to NFPA 82-1972, "Incinerators and Rubbish Handling

‡24. Delete Article **6.4.1.1.** of the Code and substitute the following:

6.4.1.1. The installation of electrical equipment and wiring including emergen systems shall conform to The Winnipeg Electrical By-law.

†25. Delete Sentence **6.5.1.1.(1)** of the Code and substitute the following:

6.5.1.1.(1) The design, construction, installation and *alteration* of every elevat dumbwaiter and escalator shall conform to CSA B44-1971, "Safety Code f Elevators, Dumbwaiters, Escalators, and Moving Walks."

*26. Delete Sentence **6.5.1.2.(1)** of the Code and substitute the following:

6.5.1.2.(1) Before being placed in service, every elevator, dumbwaiter or escala installation including safety and control devices shall be inspected and tested accordance with CSA B44-1971, "Safety Code for Elevators, Dumbwaiters, Escalat and Moving Walks."

*27. In the ninth line of Article **6.5.2.2.** of the Code change the figure "10°C" to re 28°C."

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

*28. Delete Article **6.6.2.3.** of the Code and substitute the following:

6.6.2.3. Intake openings for linen and refuse chutes shall be fitted with *approved closures* designed to close automatically and latch after use.

†29. Delete Sentence **6.6.2.4.(1)** of the Code and substitute the following:

6.6.2.4.(1) Except when exempted by the *authority having jurisdiction* every interior linen or refuse chute shall be vented through the roof and shall extend at least 3 ft (915mm) above the roof. Such vents shall:

(a) have an area at least 10 per cent of the cross-sectional area of the chute, and

(b) be covered with an *approved* skylight or *approved* shutter that shall open automatically in the event of fire.

†30. Delete Sentence **6.6.2.4.(3)** of the Code and substitute the following:

(3) A window in the side of the chute may replace a skylight or shutter provided that:

(a) the window sill is at least 3 ft (0.9m) above the adjacent roof level, and at least 2 ft (0.6m) above a roof surface or structure within a horizontal distance of 10 ft (3m) from the shaft,

(b) the window or other venting arrangement opens automatically in the event of fire, and

(c) the window conforms to Subsection 3.2.3. of Part 3 of this Bylaw.

‡31. Delete Subsection **6.7.2.** of the Code and substitute the following:

SUBSECTION 6.7.2 FIRE ALARM SYSTEMS

Design and Installation

6.7.2.1. All fire alarm systems shall be designed and installed in accordance with the requirements of The Winnipeg Electrical By-law.

Heat and Smoke Detection

6.7.2.2.(1) Where heat detectors and/or smoke detectors are required in Subsection 3.2.4. of Part 3 of this By-law, they shall be installed in accordance with the requirements of The Winnipeg Electrical By-law.

†32. Delete Sentence **6.7.3.1.(1)** of the Code and substitute the following:

6.7.3.1.(1) Where standpipes are required in a *building* they shall be installed to provide fire protection during construction in conformance with Article 8.2.2.3. of Part 8 of this Bylaw.

‡33. Delete Sentences **6.7.3.1.(3)** and **(4)** of the Code and substitute the following:

(3) Buildings shall be zoned so that standpipe risers shall not exceed 275 ft (83.9m) in height. Every zone above 275 ft (83.9m) shall have separate supply piping at least 8 in. in diameter. Every zone above 275 ft (83.9m) having two or more standpipe risers shall be served by at least two supply pipes.

(4) Standpipe risers for 1½-in. hose systems and continuous flow hose reels described in Sentence 6.7.3.2.(8) shall be at least 2 in. diameter, except that if the riser is over 50 ft (15.2 m) in height such riser shall be at least 2½-in. diameter.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
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(5) Hose connections at hose stations shall be 1½-in. diameter for 1½-in. hos racks or continuous flow hose reels, and shall be 2½-in. diameter for 2½-in. hos systems.

†**34.** Delete Sentence **6.7.3.2.(8)** of the Code and substitute the following:

(8) Hose stations shall be equipped with either *approved* hose racks fitted wi not more than 75 ft (22.9m) of *approved* 1½ in. fire hose or continuous flow ho reels fitted with not more than 50 ft (15.2m) of *approved* hose of rubber or plast at least ¾ in. inside diam.

†**35.** Delete Sentence **6.7.3.3.(5)** of the Code and substitute the following:

(5) Doors to hose cabinets shall have no locking devices, except that lockir devices may be used provided:

(a) they are designed to be easily and safely unlocked without the use of ke after the removal of a properly identified knockout panel or glass pan equipped with a knockout or glass breaking device securely fastened to tl cabinet adjacent to the panel, and

(b) concise instructions for the removal or breakage of the panel are permanent and legibly imprinted on or in the panel or its frame.

†**36.** Delete Sentence **6.7.3.4.(2)** of the Code and substitute the following:

(2) The water supply for 1½ in. hose systems or continuous flow hose reels sh be sufficient to provide a minimum flow of 70 gpm (318 l/min.) for at least minutes at a pressure of at least 45 psig (310 kN/m²), measured at the highe and most remote hose valve or hose connection. The water supply for the 2½ i hose connections required in Sentence 6.7.3.2.(10) for fire department use sh be designed, installed and maintained in accordance with the requirements of t *authority having jurisdiction* (see Article 3.2.5.3.).

†**37.** Delete Sentence **6.7.3.5.(1)** of the Code and substitute the following:

6.7.3.5.(1) Except for standpipe systems not required to have a 2½ in. hose connecti at the hose station, every standpipe system shall be served by at least one fi department connection (see Article 3.2.5.3.).

†**38.** Delete Sentence **6.7.3.5.(6)** of the Code and substitute the following:

(6) The fire department connection shall be marked in legible lettering on wall plate of cast-metal or other material *approved* for this use.

***39.** Delete Sentence **6.7.3.7.(3)** of the Code and substitute the following:

(3) Valves controlling water supplies to standpipe systems shall outside-screw-and-yoke or *approved* indicator type of cast iron, steel or bror construction.

***40.** Delete Article **6.7.4.1.** of the Code.

***41.** Delete Sentence **6.7.4.2.(1)** of the Code and substitute the following:

6.7.4.1.(1) Where the installation of sprinkler systems is required elsewhere in Bylaw, they shall be designed, constructed, installed and tested in conforma with NFPA 13-1972, 'Standard for the Installation of Sprinkler Systems.'

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§ National Building Code. Revision Change Series No. 1
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THE WINNIPEG BUILDING BY-LAW



PART 7

The Winnipeg Plumbing By-Law

G.

The National Building Code of Canada 1970 is varied by deleting therefrom, in its entirety "PART 7 – PLUMBING SERVICES" including those portions of the Change Series that apply to said PART 7 thereof, and substituting therefor the following new PART 7:

A GUIDE TO THE USE OF THE WINNIPEG PLUMBING BY-LAW

The decimal numbering system used is as follows:

7	Part
7.5	Section
7.5.1	Subsection
7.5.1.6	Article
7.5.1.6.(1)	Sentence
7.4.1.6.(1) (e)	Clause
7.5.1.6.(1) (e) (i)	Subclause

Generally a reference to a requirement of this By-law includes the name of the division and the full number, i.e., Sentence 7.4.11.4.(2). Where a reference is made to Sentence (2) the reference is to Sentence (2) of the same Article.

Tables that form part of the Winnipeg Plumbing By-law retain the same numbering system as in said By-law, i.e., they are numbered according to the Subsection in which they occur, followed by a capital letter, e.g., Table 7.4.11.D.

Section 7.0 contains the definitions that are related to plumbing. Section 7.1 contains the regulations for plumbing installations.

TABLE OF CONTENTS

A GUIDE TO THE USE OF THE WINNIPEG PLUMBING BY-LAW

Subsection		Page
	SECTION 7.0 DEFINITIONS AND ABBREVIATIONS	
7.0.1.	Definitions	5
7.0.2.	Abbreviations	12
	SECTION 7.1 GENERAL REQUIREMENTS	
7.1.1.	Application	13
7.1.2.	Scope	13
7.1.3.	Definitions	13
7.1.4.	Permits and Fees	13
7.1.5.	Inspection and Testing	15
7.1.6.	Licensing	16
	SECTION 7.2. MATERIALS	
7.2.1.	General	18
7.2.2.	Fixtures	18
7.2.3.	Traps and Interceptors	21
7.2.4.	Fittings	22
7.2.5.	Non-Metallic Pipe and Fittings	22
7.2.6.	Ferrous Pipe and Fittings	24
7.2.7.	Non-Ferrous Pipe and Fittings	25
7.2.8.	Jointing Materials	27
7.2.9.	Miscellaneous Material	27
	SECTION 7.3. PIPING	
7.3.1.	Application	30
7.3.2.	Constructon and Use of Joints	30
7.3.3.	Joints and Connections	32
7.3.4.	Service Piping	33
7.3.5.	Support of Piping	33
7.3.6.	Protection of Piping	35
7.3.7.	Testing of Drainage and Venting System	35
7.3.8.	Testing of Potable Water System	36
	SECTION 7.4. DRAINAGE SYSTEMS	
7.4.1.	Application	38
7.4.2.	Connecton of Drainage Systems	38
7.4.3.	**Paisposal of Subsoil Drainage**	38
7.4.4.	Connection of Fixtures	38
7.4.5.	Location of Fixtures	40
7.4.6.	Installation of Fixtures	40
7.4.7.	Treatment of Harmful Sewage and Wastes	41
7.4.8.	Traps	41
7.4.9.	Arrangement of Drainage Piping	45
7.4.10.	Minimum Slope of Drainage Pipes	47
7.4.11.	Hydraulic Loads	48
7.4.12.	Diameter of Pipes	55
	SECTION 7.5. VENTING SYSTEM	
7.5.1.	Vent Pipes for Traps	56
7.5.2.	Vent Pipes for Waste Stacks	59
7.5.3.	Miscellaneous Vent Pipes	60
7.5.4.	Arrangement of Vent Pipes	60
7.5.5.	Sizes of Vent Pipes	61

SECTION 7.6. POTABLE WATER SYSTEM

7.6.1. Arrangement of Piping 65
7.6.2. Protection from Contamination 67
7.6.3. Tanks 68
7.6.4. Wells 69
7.6.5. Size and Capacity of Pipes 69

SECTION 7.7. NON-POTABLE WATER SYSTEM

7.7.1. Connection 71
7.7.2. Identification 71
7.7.3. Location 71

Index 72

Part 7

Part 7 of the Winnipeg Building By-law may be cited as

"THE WINNIPEG PLUMBING BY-LAW."

DEFINITIONS AND ABBREVIATIONS

SECTION 7.0 DEFINITITIONS AND ABBREVIATIONS OF WORDS AND PHRASES

SUBSECTION 7.0.1. DEFINITIONS OF WORDS AND PHRASES

7.0.1.1. The words and terms in italics in The Winnipeg Plumbing By-law shall have the meanings assigned to them in this Section.

7.0.1.2. For definitions of words used in The Winnipeg Plumbing By-law that are not included in this Section, reference should be made to Part II of The Winnipeg Building By-law and if not included there to a standard dictionary such as "Webster's Third New International Dictionary (1961)."

Air gap means the vertical distance between the lowest point of a water supply outlet and the *flood level rim* of the *fixture* or device into which the outlet discharges.

Alloyed zinc means an alloy of zinc having the corrosion resistance and physical properties of an alloy containing 0.15 per cent titanium, 0.74 per cent copper and 99.11 per cent zinc and so tempered as to be capable of being formed into the shape required for a watertight joint.

Alteration (as applying to a *building*) means a change from one *major occupancy* class or division to another, or a structural change such as an addition to the area or height, or the removal of part of a *building*, or any change to the structure such as the construction of, cutting into or removal of any wall, *partition*, column, beam, joist, floor or other support, or a change to or closing of any required *means of egress* or a change to the *fixtures*, equipment, cladding or trim where they are regulated by this By-law.

Appliance means a receptacle or equipment that receives or collects water, liquids or *sewage* and discharges water, liquids or *sewage* either directly or indirectly to a *plumbing system*.
See also the definition of *fixture*.

Approved means approved by the *authority having jurisdiction*, and when used with reference to materials or *fixtures* used in a *plumbing system* means that:

(A) such materials or *fixtures* have been submitted for examination and testing to the CSA Testing Laboratories; that formal certification has been given to the effect that they conform to the CSA Standards; that the materials or *fixtures* have the required markings, and also are acceptable to the *authority having jurisdiction;* or

(B) such materials or *fixtures* have been *approved* by the Minister of Health of the Province of Manitoba, and are also acceptable to the *authority having jurisdiction;* or

(C) the materials or *fixtures* are acceptable to the *authority having jurisdiction* and such acceptance shall be considered only when warranted, in the opinion of the *authority having jurisdiction* and shall apply mainly to the materials and *fixtures* of other than the regular line of manufactured materials or *fixtures* built to the customer's order, or materials or *fixtures* manufactured or produced singly or in small quantities.

Authority having jurisdiction means the city council and the agent thereof that have authority over the subject that is regulated.

Back-siphonage means the flow-back of water from a plumbing *fixture* or vessel or other source into a water supply pipe due to negative pressure in such pipe.

Back-siphonage preventer (or *vacuum breaker*) means a device that is installed in a water supply system to prevent flow-back into the system when the pressure in the system is less than atmospheric.

Backflow means the flow of water or other liquids, mixtures or substances into the distributing pipes of a supply of *potable* water from any source other than its intended source and may be produced by the differential pressure existing between two systems either or both of which are at pressures greater than atmospheric.

Backflow connection means any connection or condition that may permit *backflow.*

Backflow preventer means a device or a method to prevent *backflow* caused by gravity or back pressure into a *potable* water supply.

Branch (as applying to plumbing drainage systems) means:

(A) a *soil-or-waste pipe* located in one *storey,* connected at its upstream end to the junction of two or more *soil-or-waste pipes* or to a *soil-or-waste stack,* and connected at its downstream end to another *branch,* a *soil-or-waste stack* or a *building drain, and/or.*

(B) a *soil-or-waste* pipe other than the *building drain* or a fixture drain not located in any *storey,* connected at its upstream end to the junction of two or more *soil-or-waste pipes* or to a *soil-or-waste stack,* and connected at its downstream end to another *branch,* or a *building drain.*

Branch vent means a vent pipe that is connected at its lower end to the junction of two (2) or more *vent pipes* and is connected at its upper end either to a *stack vent, vent stack* or *header,* or is terminated in open air.

Building means any structure used or intended for supporting or sheltering any use or *occupancy.*

Building drain means that part of the lowest horizontal piping, connected at its upstream end to a *main vent,* and which conducts *sewage, clear-water waste* or *storm water* to a *building sewer.*

Building sewer means a pipe that is connected to a *building drain* three (3) feet outside a wall of a *building* and that leads to a public sewer or *private sewage disposal system.*

Building subdrain means that part of a *drainage system* that cannot drain by gravity into the *building sewer.*

Building-trap means a *trap* that is installed in a *building drain* or *building sewer* to prevent circulation of air between a *drainage system* and a public sewer.

Circuit vent means a *vent pipe* that is connected at its lower end to a *branch* and at its upper end to a *vent stack* or terminates in open air.

Cleanout means a pipe fitting that is intended to provide access to a pipe to permit pipe cleaning.

Clear-water waste means clear water that does not contain *sewage* or *storm water.* Examples of clear-water waste are the waters discharged from a drinking fountain, cooling jacket, air conditioner, or relief valve outlet.

Combined building drain means a *building drain* that is intended to conduct *sewage* and *storm water.*

Combined building sewer means a *building sewer* that is intended to conduct *sewage* and *storm water.*

Combined sewer means a sewer that is intended to conduct *sewage* and *storm water.*

Combustible (as applying to an elementary building material) means that such material fails to conform to CSA B54.1-1960 (as amended October 1969), "Determination of Noncombustibility in Building Materials." or to ASTM E136-65, "Noncombustibility of Elementary Materials."

Continuous vent means a *vent pipe* that is an extension of a vertical section of a *branch* or *fixture drain.*

Critical level means the highest level to which a *back-siphonage preventer,* when subjected to a specified test, can be submerged before *backflow* begins.

Dead end means a pipe that is two (2) feet or more in *developed length* and terminates with a closed fitting.

Developed length means the length along the centre line of a pipe.

Diameter means the length along the centre line of a pipe.

Diameter unless otherwise indicated means the nominal diameter by which a pipe, fitting, *trap* or other items is commercially designated.

Directly connected means physically connected in such a way that water or gas cannot escape from the connection.

Drain (see *building drain* and *building subdrain*).

Drainage system means an assembly of pipes, fittings, *fixtures, traps* and appurtenances that is used to convey *sewage, clear-water waste* or *storm water* to a public sewer or a *private sewage disposal system* but does not include *subsoil drainage pipes* nor the *building sewer.*

Dual vent means a *continuous vent* or *stack vent* that serves two (2) *fixtures* that are connected at the same level to the *branch* or *soil-or-waste stack* of which the *vent pipe* is an extension.

Dwelling: means a building or portion thereof which is used by human occupants with cooking, eating; living, sleeping and sanitary facilities.

Dwelling detached: (as applying to *plumbing systems)* means a *building* designed and used or intended to be used for one family, which has no *party wall* and which has a *plumbing system* which is completely separate and connected directly to a privately owned water and sewer system, or a public sewer and water main on the street.

Dwellings, semi-detached: (as applying to *plumbing systems)* means a *building* designed and used or intended to be used by two non-communicating *dwellings,* each for the exclusive use by one family, which has a *party wall* common to both dwellings and which has a *plumbing system* which is completely separate and connected directly to a privately owned water and sewer system or a public sewer and water main on the street.

Dwelling, row: (as applying to *plumbing systems* means a *building* designed and used or intended to be used by three or more attached non-communicating *dwellings* each separated by a *party wall* and which has a *plumbing system,* which is completely separate and connected directly to a privately owned water and sewer system or a public sewer and water main on the street.

Dwelling unit means one (1) or more rooms for the use of one (1) or more persons as a housekeeping unit with cooking, eating, living, sleeping and sanitary facilities.

Effective opening means an opening that has a cross-sectional area equal to the minimum area through which water is discharged at a discharge opening, control valve inlet or control valve seat of a water supply inlet to a *fixture* or device.

Fire separation means a construction assembly that acts as a barrier against the spread of fire. (A fire separation may or may not be required to have a *fire-resistance rating* or a *fire-protection rating.*)

Fixture means a receptacle, *appliance,* apparatus or other device that discharges *sewage* or *clear-water waste* and includes a floor drain.

Any *fixture* that is movable such as a washing machine or portable dishwater is considered to be an *appliance.* (See definition of *appliance.*)

Fixture drain means the pipe that connects a *trap* serving a *fixture* to another part of a *drainage system.*

Fixture outlet pipe means a pipe that connects the waste opening of a *fixture* to the *trap* serving the *fixture.*

Fixture unit means a measure of the hydraulic load of a *fixture* on a *drainage system.*

Flood level rim means the top edge of which water can overflow from a *fixture* or device.

Fresh air inlet means a *vent pipe* that is connected at its lower end to a *building drain* and is extended through the wall of a *building* to terminate in outside air.

Frost-proof closet means a water closet that has no water in the bowl and has a *trap* and water control valve that are designed for installation below the frost line.

Header means a *vent pipe* that is installed to connect the upper end of one (1) or more *vent stacks* or *stack vents,* to a *vent stack, stack vent* or open air.

Indirect service water heater (see *service water heater, indirect*).

Indirectly connected means not *directly connected* to a *drainage system.*

Individual vent means a *vent pipe* that serves not more than one (1) *fixture.*

Interceptor means a receptacle that is installed to prevent oil, grease, sand, or other materials from passing into a *drainage system.*

Leader means a *nominally vertical* pipe that is installed to carry *storm water* from a roof to a *storm building drain* or *sewer* or other place of disposal.

Loop vent means a *vent pipe* that is connected at its lower end to a *branch* and at its upper end to a *stack vent* or *header or to a branch vent* that is connected to a *stack vent* or *header.*

Main vent means the *soil-or-waste stack* serving one (1) or more water closets, that is most distant from the *building sewer,* together with any *vent pipe* that joins the top of the stack to open air, except that in a *building* where *fixtures* are located only on the lowest *storey,* main vent means the vertical *soil-or-waste pipe* that is most distant from the *building sewer,* together with any *vent pipe* that connects the top of the pipe to open air.

Major leg means a pipe that is connected immediately downstream of a *nominally horizontal* double Y or a double Y and ⅛ bend.

Nominally horizontal means at an angle of less than 45 degrees with the horizontal.

Nominally vertical means at an angle of not more than 45 degrees with the vertical.

Occupancy means the use or intended use of a *building* or part thereof for the shelter or support of persons, animals or property.

Offset means a combination of elbows or bends that brings one section of the pipe out of line but into line parallel with another section.

Owner means any person, firm or corporation controlling the property under consideration.

Permit, Plumbing means permission or authorization in writing by the *authority having jurisdiction* to perform work regulated by The Winnipeg Plumbing By-law.

Plumbing contractor means a person, corporation or firm that undertakes to construct, extend, alter, renew or repair any part of a *plumbing system.*

Plumbing system means a *drainage system, a venting system* and a *water system.*

Potable means safe for human consumption.

Private sewage disposal system means a privately owned plant for the treatment and disposal of *sewage* (such as a septic tank with an absorption field).

Relief vent means a *vent pipe* that is connected at its lower end to a *branch* and at its upper end to a *branch vent, header, stack vent* or *vent stack,* or is terminated in open air.

Sanitary building drain means a *building drain* that may conduct *sewage* and *clear-water waste,* but not *storm water.*

Sanitary building sewer means a *building sewer* that may conduct *sewage* and *clear-water waste,* but not *storm water.*

Sanitary drainage system means a *drainage system* that may conduct sewage or *clear-water waste,* and includes a *combined building drain* and *combined building sewer.*

Sanitary sewer means a sewer that may conduct *sewage* or *clear-water waste* but not *storm water.*

Service water heater means an *appliance* intended for the heating of water for plumbing services as distinct from water for space heating.

Service water heater, indirect means a *service water heater* that derives its heat from a heating medium such as warm air, steam or hot water.

Service water heater, storage type means a *service water heater* with an integral hot water storage tank.

Sewage means liquid waste that contains animal, mineral or vegetable matter.

Size unless otherwise indicated means the nominal size by which a pipe, fitting, *trap* or other item is commercially designated.

Soil-or-waste pipe means a pipe in a *sanitary drainage system.*

Soil-or-waste stack means a vertical *soil-or-waste pipe* that passes through one (1) or more *storeys,* and includes any *offset* that is part of the stack.

Stack vent means a vertical *vent pipe* that is an extension of a *soil-or-waste stack.*

Storage-type service water heater (see *service water heater, storage type*).

Storey means the interval between two (2) successive floor levels, or floor level and roof beginning at the lowest gravity *soil-or-waste pipe.*

Storm building drain means a *building drain* that may conduct only *storm water* or *clear-water waste.*

Storm building sewer means a *building sewer* that may conduct only *storm water* or *clear-water waste.*

Storm drainage system means a *drainage system* or a part of a *drainage system* that conveys only *storm water* or *clear-water waste.*

Storm sewer means a sewer that is installed to convey *storm water.*

Storm water means water that is discharged from a surface as a result of rainfall or snowfall.

Subsoil drainage pipe means a pipe that is installed underground to intercept and convey groundwater.

Sump means a tank or pit that receives and holds the discharge from a *drainage system* pipe.

Trap means a fitting or device that is designed to hold a liquid seal that will prevent the passage of gas but will not materially affect the flow of a liquid.

Trap dip means the lowest part of the upper interior surface of a *trap.*

Trap seal means the vertical distance between the *trap dip* and the *trap weir.*

Trap weir means the highest part of the lower interior surface of a *trap.*

Vacuum breaker (see *back siphonage preventer*).

Vent pipe means a pipe that is a part of a *venting system.*

Vent stack means a vertical *vent pipe* that is connected at its lower end to a *soil-or-waste stack* or to a *building drain* and is connected at its upper end either to a *stack vent* or *header,* or is terminated in open air.

Venting system means an assembly of pipes and fittings that connects a *drainage system* with outside air for circulation of air and the protection of *trap seals* in the *drainage system.*

Waste pipe (see *soil-or-waste pipe*).

Water service pipe means a pipe in a *water system* that conveys water from a public water main or a private water source to the inner side of the wall or floor through which the system enters the *building.*

Water system means an assembly of pipes, fittings, control valves and appurtenances that conveys water from a public main or private water source to the water supply outlets of *fixtures* or devices, and includes a private water source.

Wet vent means a *soil-or-waste pipe* that also serves as a *vent pipe.*

Yoke vent means a *vent pipe* that is connected at its lower end to a *soil-or-waste stack* and at its upper end to a *vent stack* or a *branch vent* that is connected to a *vent stack.*

SUBSECTION 7.0.2. ABBREVIATIONS OF NAMES OF ASSOCIATIONS

7.0.2.1. The abbreviations in The Winnipeg Plumbing By-law for the names of associations shall have the meanings assigned to them in this Subsection.

ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASTM	American Society for Testing and Materials
CGSB	Canadian Government Specifications Board
CSA	Canadian Standards Association

SUBSECTION 7.0.3. ABBREVIATIONS OF WORDS AND PHRASES

7.0.3.1. The abbreviations of words and phrases in The Winnipeg Plumbing By-law shall have the meanings assigned to them in this Subsection

ABS	acrylonitrile-butadiene-styrene
°C	degree(s) Celsius
deg.	degree(s)
diam.	diameter
°F	degree(s) Fahrenheit
ft	foot(feet)
ft/sec	foot(feet) per second
gal.	gallon(s)
gpm	gallon(s) per minute
hr	hour(s)
in.	inch(es)
kg	kilogram(s)
kN	kilo Newton(s)
l	litre(s)
lb	pound(s)
max.	maximum
m	metre(s)
m^2	square metre(s)
mm	millimetre(s)
min.	minimum
min.	minute(s)
N	Newton(s)
N/m	Newton(s) per metre
N/m^2	Newton(s) per square metre
No.	number(s)
oz	ounce(s)
psf	pound(s) per square foot
psi	pound(s) per square inch
psig	pound(s) per square inch gauge
PVC	polyvinyl chloride
sq ft	square foot (feet)
sq in.	square inch(es)
temp.	temperature

Chapter II of Part 7

PLUMBING SERVICES

SECTION 7.1 GENERAL REQUIREMENTS

SUBSECTION 7.1.1. APPLICATION

7.1.1.1. The Winnipeg Plumbing By-law applies to the construction, extension, *alteration*, renewal or repair of *plumbing systems* in the *City of Winnipeg* and the Additional Zone.

SUBSECTION 7.1.2. SCOPE

7.1.2.1. The Winnipeg Plumbing By-law specifies the minimum requirements for the supply of *potable* water to a *building*, the removal of water-borne wastes from a *building* to a public sewer or *private sewage disposal system*, and the removal of *storm water*.

SUBSECTION 7.1.3. DEFINITIONS

7.1.3.1. Words that appear in italics are defined as set forth in Section 7.0.

SUBSECTION 7.1.4. PLUMBING PERMITS AND FEES

7.1.4.1.(1) Except as provided in Sentence (2), a *plumbing system* shall not be constructed, extended, altered, renewed or repaired or a connection made to a sewer unless a *plumbing permit* to do so has been obtained.

(2) A *plumbing permit* is not required when a *fixture*, valve or faucet is repaired or replaced, a stoppage cleared or a leak repaired if no change to the piping is required.

(3) An application for a *plumbing permit* shall be made to the *authority having jurisdiction*.

Issuance of plumbing permit

(4) *Plumbing permits* shall be issued only to:

- **(a)** a licensed *plumbing contractor;*
- **(b)** a person to do work in a *building*, owned by him and occupied by him only as his domestic domicile provided he has satisfied the *authority having jurisdiction* that he is competent to perform such work;
- **(c)** to a person to do work in a new *building*, owned by him, and which upon completion will be occupied by him only as his domestic domicile, provided that he has satisfied the *authority having jurisdiction* that he is competent to perform such work;
- **(d)** a journeyman plumber or qualified person to do work in a commercial or industrial establishment in respect of which there exists a *plumbing contractor's* license in good standing and in which he is steadily employed for such purpose, and in such instance, the observance of the requirements of the foregoing section shall be the responsibility of the licensed commercial or industrial establishment; and

(e) a journeyman plumber, who is an employee of the Provincial or Federal Government, to do work on behalf of that Government.

Application for a plumbing permit

7.1.4.2.(1) An application for a *plumbing permit* shall be made on the form that is provided by the *authority having jurisdiction.*

(2) Every application shall be accompanied by:

(a) the fee that is set forth in Article 7.1.4.4., and

(b) a specification or description of proposed work.

Plans required for a plumbing permit

(3) Where the installation consists of more than five (5) *fixtures,* the application shall also be accompanied by:

(a) a plan that shows the location and *size* of every *building drain,* and of every *trap* or inspection piece that is on a *building drain,* and

(b) a sectional drawing that shows the *size* and location of every *soil-or-waste pipe, trap* and *vent pipe.*

(4) No plan will be required for a single-family dwelling with a separate *building sewer.*

(5) Where a *plumbing permit* has been issued, no departure shall be made from the specification, description, plan or sectional drawing unless written permission is obtained from the *authority having jurisdiction.*

Expiry date of a plumbing permit

7.1.4.3. A *plumbing permit* shall expire if active work is not commenced and reasonably continued within six (6) months of the date of issue.

Plumbing permit fees

7.1.4.4.(1) No *plumbing permit* shall be issued until the following minimum fees have been paid:

(a) for minor repairs, such as a renewal of a *fixture trap* and/or *drain.* Each *fixture trap* and/or *drain* $1.00
for each new or used *fixture* installed.
(no fee for a renewal of a *fixture*) $1.00

(b) for the roughing-in of each fixture outlet including a floor *drain* $2.00

(c) for each rainwater roof terminal (this fee includes the rainwater trap) $2.00

(d) for each rainwater *trap* $2.00

(e) for the installation of each floor, hub, drip or similar drains $2.00

(f) for the installation of each water supplied air conditioner $3.00

(g) for the installation of each grease, oil, mud or sand *interceptor.* (this fee includes the trap) $3.00

(h) for any water supplied or waste discharging device which in the opinion of the *authority having jurisdiction* is part of or relative to the *plumbing system* $3.00

(i) for drains and shower heads in rooms with multiple showers
each shower *trap* $2.00
each shower head $1.00

(j) for the installation of each acid diluting tank or pit (this fee includes the *trap*) $3.00

(k) for alterations and/or *fixtures* not included above $3.00

(2) A fee of $1.00 shall be required for the issuance of each Certificate of Plumbing Inspection Approval.

(3) Inspection fees: Inspection fees

(a) Where an inspection of a plumbing system not provided for by a *plumbing permit* is requested and conducted during office hours the fee shall be Fifteen Dollars ($15.00) for the first hour or fraction thereof and Ten Dollars ($10.00) for each additional hour or fraction thereof.

(b) Any inspection conducted outside of regular office hours the fee shall be Fifteen Dollars ($15.00) per man-hour or fraction thereof with a minimum charge of two hours.

SUBSECTION 7.1.5. INSPECTION AND TESTING

7.1.5.1.(1) Where a *plumbing permit* is required as described in Subsection 7.1.4., the *plumbing system* shall not be put into use until it has been inspected and tested to the satisfaction of the *authority having jurisdiction.* Inspection and testing

(2) The *plumbing contractor* shall notify the *authority having jurisdiction* when the work is complete and ready to be inspected or tested.

(3) Inspections and tests including final inspections shall be made in the presence of the *plumbing contractor* or his representative when required by the *authority having jurisdiction.*

(4) The *plumbing contractor* shall furnish any equipment, material, power or labour that is necessary for inspection or testing.

(5) No part of any *plumbing system* shall be covered until it is inspected and *approved.*

(6) If any part of a *plumbing system* is covered before it is inspected and *approved* it shall be uncovered if the *authority having jurisdiction* so directs.

(7) If any part of a *plumbing system* is not *approved* after it is inspected or tested the *plumbing contractor* shall make any *alteration* or replacement that is necessary and the work shall be subjected to further inspection or testing.

7.1.5.2.(1) The *authority having jurisdiction* may inspect an existing *plumbing system* in any *building,* and where there is reason to suspect that the *plumbing system* is not satisfactory, order it to be tested. Inspection of existing plumbing systems

(2) If any part of the *plumbing system* is in a condition that is, or may become, dangerous or injurious to health, the *owner* shall make any *alteration* or replacement that is ordered in writing by the *authority having jurisdiction.*

Certificate of approval

7.1.5.3. Subject to Sentence 7.1.4.4.(2) when a *plumbing system* has been completed and has been *approved*, the *authority having jurisdiction*, when requested, shall issue a Certificate of Plumbing Inspection Approval to the *owner* and/or to the *plumbing contractor*.

Responsibility of Plumbing Contractor

7.1.5.4. The granting of a *plumbing permit*, the approval of a specification or plan, or an inspection or test that is made by the *authority having jurisdiction* does not in any way relieve the *plumbing contractor* of full responsibility for carrying out work on a *plumbing system* in complete accordance with The Winnipeg Plumbing By-law.

SUBSECTION 7.1.6. LICENSING

Plumbing contractors license

7.1.6.1. Every person, firm or corporation desiring to carry on the business of placing, installing, maintaining, repairing, or replacing a *plumbing system* shall be described as a *plumbing contractor*, and the person or some member of the firm or some official of the corporation shall apply in writing to the *authority having jurisdiction* for examination and shall pay an examination fee of Ten Dollars ($10.00), and upon passing the examination and paying the contractor's license fees as provided herein, he shall be given a license enabling such work of plumbing contracting to be carried on, by such person, firm or corporation.

Qualification for license

7.1.6.2. Every person or persons so to be licensed as a *plumbing contractor* must either be himself a qualified plumber under The Apprenticeship Act or The Tradesmen's Qualifications Act or employ a sufficient number of persons so qualified under the said Acts.

Application for license

7.1.6.3.(1) Every application for a *plumbing contractor's* license shall give the name and business address of the applicant.

(2) If the applicant is a partnership, the application shall contain the names and addresses of the various partners of the firm.

(3) If the applicant is a corporation, the names and addresses of the corporation officers and their corporate titles shall be shown.

License examining committee

7.1.6.4.(1) There is hereby established an examining committee consisting of three (3) members who are conversant in a practical degree with the qualifications necessary to be held by a person described as a *plumbing contractor* and who shall prescribe the subjects for which candidates for a *plumbing contractor's* license shall be examined and conduct and provide for and supervise the examination of candidates and report thereon to the *authority having jurisdiction*.

(2) The committee shall consist of The Mechanical Supervisor and the Chief Plumbing Inspector of Building Inspections Division, of the City of Winnipeg, and a representative appointed by the Mechanical Contractors of Manitoba.

License fee

7.1.6.5.(1) The fee for a *plumbing contractor's* license shall be Fifty Dollars ($50.00) for the year or fraction thereof for which the same is taken out.

(2) All *plumbing contractor's* licenses shall expire on the last day of December next ensuing and for each ensuing year such person shall pay an annual fee of Twenty-five Dollars ($25.00).

Renewal of license

7.1.6.6.(1) *Plumbing contractor's* licenses shall not be transferable and must be renewed each year prior to the first day of February, and failure to renew the license prior to the first day of February shall preclude the *plumbing contractor* from obtaining a renewal license and he shall thereafter be required to qualify for a new license.

(2) The *authority having jurisdiction* may require that the applicant for renewal of a *plumbing contractor's* license, or the change of ownership of a *Plumbing Contractors* License have some member or employee of the firm write the examination required in article 7.1.6.1.

Notification of change o address

7.1.6.7. Every person licensed under The Winnipeg Plumbing By-law shall give immediate notice to the *authority having jurisdiction* of any change in his place of business or in the case of any firm of its dissolution or, in case of a corporation, of any change in persons holding corporate offices.

Posting of License

7.1.6.8. Every *plumbing contractor* granted a *plumbing contractor's* license under the Winnipeg Plumbing By-law shall post the said license in a conspicuous place in the place of business of the said contractor.

Responsibil of a Contractor

7.1.6.9. Every *plumbing contractor* shall be responsible for the work of his employees.

Revokemen of a license

7.1.6.10. The *authority having jurisdiction* may revoke, cancel or suspend a *plumbing contractor's* license if the licensee violates any of the provisions of this By-law.

Firm license

7.1.6.11. Subject to Articles 7.1.6.3., 7.1.6.5., 7.1.6.6., 7.1.6.7., 7.1.6.8., 7.1.6.9. and 7.1.6.10., a *plumbing contractor's* license may be issued to a commercial or industrial establishment when this firm has a steadily employed journeyman plumber or person who in the opinion of the *authority having jurisdiction* is qualified to perform such work.

SECTION 7.2 MATERIALS

SUBSECTION 7.2.1. GENERAL

Refer to Part 5 of the Winnipeg Building By-law for the list of standards to which materials must conform and for other requirements including the use of alternative materials.

Defects in materials

7.2.1.1. Every material, including a *fixture*, shall be free from defects that affect its usefulness for its intended purposes.

Exposure of materials

7.2.1.2. Where unusual conditions exist such as excessively corrosive soil or water, only materials suited for use in such locations shall be used.

Restrictions on re-use

7.2.1.3.(1) A used material, including a *fixture*, shall not be re-used without the consent of the *authority having jurisdiction.*

(2) A material that has been used for a purpose other than the distribution of *potable* water shall not be re-used in a *potable water system.*

Markings on materials

7.2.1.4. Every length of pipe and every fitting shall have cast, stamped, or indelibly marked on it the maker's name or mark and the weight or class or quality of the product, or it shall be marked in accordance with the relevant standard, and such markings shall be visible after installation.

New materials

7.2.1.5. Approval in writing shall be obtained by the *owner* or his agent from the *authority having jurisdiction* before any new, alternative or equivalent materials are used as indicated in Section 7.0.

SUBSECTION 7.2.2. FIXTURES

Vitreous china or earthenware fixtures

7.2.2.1.(1) Every vitreous china or vitreous glazed earthenware *fixture* shall conform to CSA B45.1-1963, "Vitreous China Plumbing Fixtures."

(2) Except as permitted in Subsection 7.2.2. approval in writing shall be obtained by the *owner* or his agent from the *authority having jurisdiction* before any new, alternative or equivalent *fixtures* are used as indicated in Section 7.0.

Materials for fixtures

7.2.2.2.(1) Except as permitted in Sentence (2), the following *fixtures* shall be made of vitreous china, vitreous glazed earthenware, enameled cast-iron or enameled steel, or other material having an equally smooth, hard, corrosion-resistant surface free from flaws and blemishes that may interfere with cleaning:

(a) water closet bowl,

(b) urinal,

(c) wash basin,

(d) bathtub,

(e) drinking fountain,

(f) *fixture* that is intended for use in the preparation of food or drink,

(g) medical or hospital *fixture*,

(h) sink,

(i) *fixture* that is intended for a use that is related to personal hygiene, and

(j) laundry tray except as specified in Sentence (4).

Special purpose fixtures

(2) Every *fixture* that is intended for a special purpose shall be made of material *approved* for that purpose.

Shower receptor

(3) Every shower receptor shall be made of a material that is smooth, hard, corrosion-resistant and can be readily cleaned.

(4) A laundry tray may be made of concrete if:

(a) the concrete is strong and dense,

(b) the tray is moulded in one piece,

(c) the corners of the tray are rounded inside and out,

(d) the thickness of the sides and partitions is at least 1⅛ in. (29 mm) at the top and 1¼ in. (32 mm) at the bottom, and

(e) the thickness of the bottom is at least 1¼ in. (32 mm).

Diameter o waste opening

7.2.2.3. The *diameter* of the waste opening of a *fixture* shall conform to Table 7.2.2.A.

Table 7.2.2.A.

Forming Part of Article 7.2.2.3.

Fixture	Min. *Diameter* of Waste Opening in.
Bathtub (with or without shower)	1½
Laundry tray (each compartment)	1½
Sink (except laboratory sink)	1½
Shower receptor—	
Serving one head	1½
Serving 2 or 3 heads	2
Serving 4 to 6 heads	3
Wash basin	1¼
Water closet	3
Column 1	Column 2

Area of strainer

7.2.2.4.(1) Where a strainer, other than the cross-bar type, is installed in a waste opening of a *fixture,* it shall provide an outlet area that is at least equal to the area of the waste opening.

(2) Where a cross-bar type strainer is installed in a waste opening of a *fixture,* the outlet area shall be at least 60 per cent of the area of the waste opening.

Constructi of overflow

7.2.2.5.(1) Except as provided in Sentence (2), where an overflow is installed on a *fixture* it shall be constructed so that:

(a) the area of the overflow and the overflow pipe or passage is at least one half the area of the waste opening of the *fixture,*

(b) the overflow pipe or passage is connected to the *fixture outlet pipe,* and

(c) the overflow pipe can be readily and effectively cleaned.

(2) Every overflow for a wash basin shall conform to the appropriate requirements of CSA B45.1-1963, "Vitreous China Plumbing Fixtures."

(3) A concealed-type overflow shall not be installed on a sink other than a laboratory sink.

Construction of water closet bowl

7.2.2.6.(1) Every water closet bowl shall be constructed

- **(a)** in one piece with an integral *trap* and flushing rim,
- **(b)** so that it is capable of meeting the flushing test set forth in CSA B45.1-1963, "Vitreous China Plumbing Fixtures," and
- **(c)** so that the flushing rim will flush the entire inside surface of the bowl, and the capacity of the bowl below the *trap weir* shall be sufficient to prevent fouling of the surface of the bowl.

(2) Every floor outlet bowl shall be of the siphon-jet, blowout, washdown or reverse-trap type.

(3) A *frost-proof closet* shall not be used.

Construction of urinals

7.2.2.7.(1) Every urinal shall be constructed as a one-piece *fixture.*

(2) Every urinal shall have an integral flushing rim, except that a washout-type stall urinal may be equipped with a flush spreader.

(3) Every urinal of the siphon-jet, blowout or pedestal type shall have an integral *trap.*

(4) Every stall urinal shall have a spud by which it can be connected to a tail piece.

7.2.2.8. A trough urinal shall not be used.

Diameter of flush tank spud and flush pipe

7.2.2.9.(1) The *diameter* of a spud or a flush pipe for a water closet tank shall be at least:

- **(a)** 2 in. (51 mm) when the bottom of the tank is not more than 2 ft (610 mm) above the floor, and
- **(b)** 1½ in (38mm) when the bottom of the tank is more than 2 ft (610 mm) above the floor.

Direct flush valve

7.2.2.10.(1) Every direct flush valve shall:

- **(a)** open fully and close positively under service pressure,
- **(b)** complete its cycle of operation automatically,
- **(c)** be provided with a means of regulating the volume of water that it discharges, and
- **(d)** be provided with a *vacuum breaker* unless otherwise *approved* by the *authority having jurisdiction.*

Drinking fountain orifice

7.2.2.11.(1) The orifice of every drinking fountain shall:

- **(a)** be of the shielded type, and
- **(b)** direct the water upward at an angle of approximately 45 deg.

(2) Every drinking fountain shall include a means of regulating the flow of the orifice.

(3) Bubblers shall not be installed on any *fixtures,* other than drinking fountains, except when otherwise *approved.*

7.2.2.12.(1) Every shower receptor shall be constructed and arranged so that water cannot leak through the walls or floor. Shower receptor

(2) Not more than six (6) shower heads shall be served by a single waste opening.

(3) Except for an individual shower, where two (2) or more heads are served by a waste opening, the floor shall be sloped, and the opening located so that water from one (1) head cannot flow over the area that serves another head.

(4) The smallest interior dimension of a receptor shall be not less than 30 in. (762 mm).

(5) When shower heads are installed in series the distance between two adjacent shower heads shall be not less than 30 in. (762 mm) except for column showers.

SUBSECTION 7.2.3. TRAPS AND INTERCEPTORS

7.2.3.1.(1) Every *trap* shall: Traps

- **(a)** have a *trap seal* not less than 1½ in. (38 mm) and not more than 3 in. (76 mm) unless approved by the *authority having jurisdiction* except that the *trap seal* of a floor drain shall be not less than 4 in. (102 mm),
- **(b)** be self-cleaning,
- **(c)** have no partitions,
- **(d)** have a water seal that does not depend on the action of moving parts, and
- **(e)** be constructed as short as possible measured *nominally horizontal* between the inlet and the *trap wier* or, be approved by the *authority having jurisdiction.*

(2) Every *trap* that serves a wash basin, a sink or a laundry tray shall:

- **(a)** be provided with a cleanout plug located at the lowest point of the *trap* and of the same material as the *trap* except that a cast-iron *trap* shall be provided with a brass cleanout plug, or
- **(b)** be designed so that part of the *trap* can be completely removed by screwed connections for cleaning purposes.

(3) Every *building-trap* and every *trap* that serves a *leader* or a *subsoil drainage pipe* shall be installed with a *cleanout* in accordance with Sentence 7.4.9.6.(8).

(4) Every lead *trap* shall conform to CSA B67-1972, "Lead Service Pipe, Waste Pipe, Traps, Bends and Accessories."

(5) A bell *trap* or a drum *trap* shall not be used.

7.2.3.2.(1) Every *interceptor* shall be designed so that it can be readily cleaned. Interceptor

(2) Every grease *interceptor* shall be designed so that it does not become air bound and it shall not have a water jacket.

SUBSECTION 7.2.4 FITTINGS

General

7.2.4.1(1) Every fitting shall be constructed so that it does not offer unnecessary obstruction to flow.

(2) Except for a water closet or a similar *fixture* bend, or flange, a fitting that has a reduction in area in the downstream direction shall not be used in a *drainage system* downstream of a *trap.*

T or cross fitting

7.2.4.2 A **T** or a cross fitting shall not be used in a *drainage system* except to connect a *vent pipe.*

Sanitary T-Y

7.2.4.3.(1) A **T-Y** fitting shall not be used in a *nominally horizontal soil-or-waste pipe* except to connect a *vent pipe.*

(2) A **T-Y** fitting shall not be used to change the direction of flow in *nominally horizontal* drainage piping.

(3) Except as permitted by Article 7.2.4.5., a **T-Y** fitting shall be used to connect a *continuous vent* to a *fixture drain.*

Double Y

7.2.4.4. The diameter of a major leg double **Y** or a double **Y** and ⅛th bend fitting used in a *nominally horizontal soil-or-waste pipe* shall be at least 2 in. (51 mm).

Y and ⅛ bend

7.2.4.5. A **Y** and ⅛ bend fitting may be used to connect a *fixture drain* whose diameter is more than 2 inches to a *continuous vent* or *nominally vertical soil-or-waste pipe* that serves as the *vent pipe.*

Quarter bend

7.2.4.6. A quarter bend that has a centreline radius that is less than the *diameter* of the pipe shall not be used to join two *soil-or-waste pipes.*

Sisson fitting

7.2.4.7. A sisson fitting shall not be installed in a *nominally horizontal soil-or-waste pipe.*

Change in direction of a nominally horizontal system

7.2.4.8. A change in direction in a *nominally horizontal drainage system* shall be made by the appropriate use of 45 degree wyes, long sweep quarter, sixth, eighth, or sixteenth bends.

SUBSECTION 7.2.5. NON-METALLIC PIPE AND FITTINGS

Asbestos-cement drainage pipe and fittings

7.2.5.1.(1) Asbestos-cement drainage pipe, couplings and fittings shall conform to:

(a) CGSB 34-GP-9d, 1972, "Pipe: Sewer, Asbestos-Cement," or

(b) CGSB 34-GP-22a, 1970, "Pipe: Asbestos-Cement, Drain;"

(2) Every rubber ring used with asbestos-cement pipe fittings shall be made of moulded and vulcanized rubber compound.

(3) Except as provided in Sentence (4) asbestos-cement drainage pipe shall not be used except for the underground part of a *drainage system.*

(4) Asbestos-cement drainage pipe may be used:

(a) in a non-habitable space less than 6 feet (2 m) in height between the lowest floor assembly and the ground or other surface, and providing it conforms to the medium and heavy grades specified in CGSB 34-GP-22a, 1970, and

(b) for a *storm drainage system* where the pipe conforms to CGSB 34-GP-22a, 1970.

Asbestos-cement water pipe and fittings

7.2.5.2.(1) Asbestos-cement water pipe, couplings and bends shall conform to CGSB 34-GP-Ib, 1969, "Pipe, Asbestos-Cement Pressure."

(2) Asbestos-cement water pipe shall not be used above ground.

Bituminized fibre pipe an fittings

7.2.5.3.(1) Bituminized fibre pipe, couplings and bends shall conform to CGSB 56-GP-Ib, 1970, "Pipe, Bituminized-Fibre, Drain and Sewer."

(2) Bituminized fibre pipe shall not be permitted unless *approved* by the *authority having jirisdiction.*

Concrete pipe

7.2.5.4.(1) Concrete pipe shall conform to "standard strength non-reinforced" concrete sewer pipe as specified in ASTM C14-71 "Concrete Sewer, Storm Drain and Culvert Pipe.

(2) Every *branch* shall be securely and completely fastened to the barrel of the concrete pipe in the process of manufacture.

(3) Concrete pipe shall not be used in or under a *building.*

Vitrified clay pipe

7.2.5.5.(1) Vitrified clay pipe shall conform to CSA A60.1 and A60.3-1969, "Vitrified Clay Pipe" and "Vitrified Clay Pipe Joints."

(2) Vitrified clay pipe shall not be used except for an underground part of a *building sewer* or an indirect waste.

Plastic pipe and fittings

7.2.5.6.(1) Polyethylene water pipe shall conform to CSA B137-1-1970, "Polyethylene Pipe for Cold Water Services."

(2) Polyethylene water pipe shall not be used except for a *water service pipe.*

7.2.5.7.(1) Plastic pipe, fittings and solvent cement used underground outside a *building* in a *drainage system* shall conform to

(a) CSA B181.1-1967 'Acrylonitrile-Butadiene-Styrene Drain, Waste and Vent (ABS-DWV) Pipe and Pipe Fittings',

(b) CSA B181.2-1967 'POLY (Vinyl Chloride) Drain, Waste and Vent Pipe and Pipe Fittings,' or

(c) CSA B182.1-1967 'Plastic Drain and Sewer Pipe and Pipe Fittings for Use Underground'."

7.2.5.8.(1) Plastic pipe, fittings and solvent cement used inside a *building,* in a *drainage* or *venting system* shall conform to

(a) CSA B181.1-1967 'Acrylonitrile-Butadiene-Styrene Drain, Waste and Vent (ABS-DWV) Pipe and Pipe Fittings', or

(b) CSA B181.2-1967 'Poly (Vinyl Chloride) Drain, Waste and Vent Pipe and Pipe Fittings'."

(2) Plastic pipe conforming to sentences 7.2.5.8.(1) and 7.2.5.9.(1) shall not be used in a system within a *building* where part of the system passes through or is located within a required *fire separation* except where the *combustible portions* of the system are located entirely on one side of the *fire separation.*

7.2.5.9(1) CPVC hot and cold water pipe, fittings and solvent cements shall conform to CSA B137, 6-1971, 'Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Piping for Hot and Cold Water Distribution Systems'.

(2) CPVC pipe and fittings shall not be used in a system where the design water temperature may exceed 180°F or if the design pressure may exceed 100 psi.

SUBSECTION 7.2.6. FERROUS PIPE AND FITTINGS

Cast-iron soil pipe and fittings

7.2.6.1.(1) Cast-iron soil pipe and fittings shall conform to CSA B70-1971, "Cast Iron Soil Pipe and Fittings", except that the pipe may be manufactured with a beaded spigot on each end.

(2) Cast-iron *soil-or-waste pipe* and fittings shall not be used in a *water system.*

7.2.6.2. Cast-iron fittings designed for use with asbestos-cement pipe for drainage purposes shall conform to CSA B70-1971, "Cast-Iron Soil Pipe and Fittings".

Screwed cast-iron drainage fittings

7.2.6.3.(1) Screwed cast-iron drainage fittings shall conform to ANSI B16.12-1971, "Cast-Iron Threaded Drainage Fittings".

(2) Screwed cast-iron drainage fittings shall not be used in a *water system.*

Cast-iron water pipe

7.2.6.4.(1) Cast-iron soil pipe shall conform to:

(a) CSA B131.5-1973, "Cast Iron Pipe Centrifugally Cast in Molds for Water or Other Liquid";

(b) CSA B131.7-1973, "Cast Iron Pipe Centrifugally Cast in Sand-Lined Molds for Water or Other Liquid"; and

(c) CSA B131.11-1958, "Universal Cast Iron Pipe and Fittings Cast in Sand-Lined Molds for Water and Other Liquids".

Cast-iron screwed water fittings

7.2.6.5.(1) Screwed cast-iron water fittings shall conform to ANSI B16.4-1971, "Cast Iron Screwed Fittings, 125 and 250 lb.".

(2) Screwed cast-iron water fittings used in a *water system* shall be cement lined or galvanized.

(3) Screwed cast-iron water fittings shall not be used in a *drainage system.*

Malleable iron screwed water fittings

7.2.6.6.(1) Screwed malleable iron water fittings shall conform to ANSI B16.3-1971, "Malleable Iron Screwed Fittings 150 and 300 lb.".

(2) Screwed malleable iron water fittings used in a *water system* shall be cement lined or galvanized.

(3) Screwed malleable iron water fittings shall not be used in a *drainage system.*

7.2.6.7.(1) Except as provided in Sentences (2) and (3), welded and seamless steel pipe shall not be used in a *plumbing system.* Galvanized Steel pipe

(2) Galvanized steel pipe may be used in a *drainage system* or a *venting system* above ground inside a *building.*

(3) Galvanized steel pipe may be used in a *water distribution system* where *approved.*

(4) Galvanized steel pipes shall conform to CSA B63-1966 "Welded and Seamless Steel Pipe".

7.2.6.8.(1) Corrugated steel pipe and couplings shall be made from material conforming to ASTM A444-71 'Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process for Culverts and Underdrains'. Corrugated Steel pipe

(2) Corrugated steel pipe shall not be used except underground outside a *building* in a *storm drainage system.*

(3) Couplings for corrugated steel pipe shall be constructed so that when installed they shall

- **(a)** preserve the pipe alignment,
- **(b)** resist the separation of adjoining lengths of pipe,
- **(c)** prevent root penetration, and
- **(d)** prevent the infiltration of surrounding material.

7.2.6.9. A sheet metal *leader* shall not be used except above ground outside a *building.* Sheet metal leader

SUBSECTION 7.2.7. NON-FERROUS PIPE AND FITTINGS

7.2.7.1. Copper and brass pipe shall conform to CSA HC.7.5-1968, "Seamless Copper and Red Brass Pipes". Copper and brass pipe

7.2.7.2. Brass or bronze pipe flanges and flanged fittings shall conform to ANSI B16.24-1971, "Bronze Flanges and Flange Fittings, 150 and 300 lb.". Brass or bro flanges and flange fittin

7.2.7.3.(1) Brass or bronze screwed water fittings shall conform to ANSI B16.15-1971, "Cast Bronze Screwed Fittings, 150 and 300 lb.". Brass or bro screwed water fittin

(2) Brass or bronze screwed water fittings shall not be used in a *drainage system.*

7.2.7.4.(1) Copper tube shall conform to Copper tub

- **(a)** CSA HC.7.6-1968 'Seamless Copper Water Tube, Drainage Tube (DWV) and Hydronic Heating Tube (Type H)',
- **(b)** ASTM B88-72 'Specification for Seamless Copper Water Tube', or
- **(c)** ASTM B306-72 'Specification for Copper Drainage Tube (DWV)'."

(2) Except as indicated in Sentence 7.6.5.1(2) or *approved* by the *authority having jurisdiction* copper tube conforming to sentence (1) may be used for plumbing purposes as set forth in Table 7.2.7.A.

(3) The wall thickness of fittings used with the copper tube designated in Sentence (1) shall not be less than the wall thickness of the tube.

(4) The bending of type M copper tube is not permitted.

Table 7.2.7.A.

Forming Part of Article 7.2.7.4.

Type of Copper Tube or Pipe	Plumbing Purposes							
	Water Service Pipe	Water Distribution System		Building Sewer	Drainage System		Venting System	
		Under-Ground	Above Ground		Under-Ground	Above-Ground	Under-Ground	Above-Ground
K, Hard	P	P	P	P	P	P	P	P
K, Soft	P	P	N	N	N	N	N	N
L, Hard	P	P	P	P	P	P	P	P
L, Soft	P	P	N	N	N	N	N	N
M	N	N	P	N	N	P	N	P
DWV	N	N	N	N	N	P	N	P

P = Permitted N = Not Permitted

Cast brass solder-joint drainage fittings

7.2.7.5.(1) Cast-brass or cast-bronze solder-joint drainage fittings shall conform to ANSI B16.23-1969, "Cast Bronze Solder-Joint Drainage Fittings".

(2) A cast-brass or cast-bronze solder-joint drainage fitting shall not be used in a *water system.*

Forged solder-joint fittings

7.2.7.6. Forged solder-joint fittings shall conform to ANSI B16.18-1963 (1967 Addendum), "Cast Brass Solder-Joint Fittings".

Solder-joint water fittings

7.2.7.7. Solder-joint water fittings shall conform to ANSI B16.18-1963 (1967 Addendum), "Cast Brass Solder-Joint Fittings", or ANSI B16.22-1963, "Wrought Copper and Bronze Solder-Joint Pressure Fittings".

Flared joint fittings

7.2.7.8. Every fitting for a flared joint shall conform to ANSI B16.26-1967, "Cast Bronze Fittings for Flared Copper Tube".

Lead waste pipe and bends

7.2.7.9.(1) Lead *waste pipe* shall conform to "strong" pipe, and lead bends shall conform to "heavy" bends as set forth in CSA B67-1964, "Lead Service Pipe, Waste Pipe, Traps, Bends and Accessories", except that hard lead (16 per cent antimony) may be used.

(2) Lead *waste pipe* and bends shall be made of lead that weighs at least 8 lb/sq ft.

(3) When there is a change in *diameter* of a lead closet bend, the change shall be in the vertical section of the bend or made in such a manner that there shall be no rentention of liquid in the bend.

(4) Lead *waste pipe* and bends shall not be used in a *water system* or for a *building sewer.*

SUBSECTION 7.2.8. JOINTING MATERIALS

Cement jointing mortar

7.2.8.1. Cement mortar for jointing shall be a mixture of equal parts of clean sharp mortar sand and portland cement. The mortar shall be mixed at least 20 minutes and not more than 1 hour before it is used.

Hot-poured caulking compound

7.2.8.2.(1) Hot-poured caulking compounds shall conform to:

- **(a)** CGSB 56-GP-2a, 1967, "Sealing Compound; Sewer Pipe Joint, Hot Pour, Mineral Filled, Bituminous", or
- **(b)** CGSB 56-GP-3a, 1967, "Sealing Compound; Sewer Pipe Joint, Hot Pour, Mineral Filled, Plastic".

(2) Cold caulking compounds shall conform to CGSB 77-GP-1a, 1970 "Compound; Pipe Jointing, Cementitious; Cold Applied".

Solder and caulking le

7.2.8.3. Solder and caulking lead shall conform to CSA B67-1964, "Lead Service Pipe, Waste Pipe, Traps, Bends and Accessories".

Saddle hub

7.2.8.4. A saddle hub shall not be used.

SUBSECTION 7.2.9. MISCELLANEOUS MATERIALS

Brass floor flanges

7.2.9.1.(1) Brass floor flanges shall conform to ANSI B16.23-1969, "Cast Bronze Solder-Joint Drainage Fittings".

(2) Every bolt, nut and washer for a floor flange and every closet screw shall be of heavy brass.

Cleanout ferrule

7.2.9.2.(1) The thickness of the body of every cleanout ferrule shall be not less than the thickness that is specified for a pipe of the same material.

(2) The length of every cleanout ferrule shall be such that the cover plate or plug will project above a hub into which the cleanout ferrule is inserted.

(3) Every cast-iron cleanout ferrule shall be fitted with a threaded brass plug at least ⅛ in. (3 mm) thick or with a cover plate fastened with brass bolts and nuts.

(4) Every threaded brass plug for a cleanout ferrule shall be provided with a raised integral nut, a recessed socket or a pair of raised studs.

(5) Every raised nut of a threaded brass plug shall be at least 1 in. (25 mm) in its smallest horizontal dimension and at least ⅝ in. (16mm) high, and if it is hollow it shall be at least 3/16 in. (5 mm) thick.

(6) Every recessed socket for a threaded brass plug shall be at least 1 in. (25 mm) in its smallest horizontal dimension and at least ½ in. (13 mm) deep.

(7) Every raised stud for a threaded brass plug shall be at least ⅝ in. (16 mm) high and sufficiently strong to withstand any force that may be applied to them in service.

Vent flashings

7.2.9.3.(1) Where stacks or *vent pipes* pass through a roof they shall be equipped with a flashing and the joint between the roof and the pipe or stack shall be made watertight.

(2) Flashing for stacks and *vent pipes* shall be of copper, aluminum, *alloyed zinc*, lead or neoprene.

(3) Except as provided in Sentence (4), flashing shall be rectangular and at least 20 in. (508 mm) in length by 20 in. (508 mm) in width and, where sleeve flashing is used, the sleeve shall be extended at least 6 in. (152 mm) above the roof at every point of the pipe or stack.

(4) On flat roofs a round flashing with a flange of at least 5 in. (127 mm) may be used.

(5) Flashing shall consist of:

- **(a)** lead sheet weighing not less than 5 lb per sq ft;
- **(b)** copper sheet weighing not less than 10 oz per sq ft;
- **(c)** sheet aluminum weighing not less than 5.5 oz per sq ft;
- **(d)** *alloyed zinc* sheet weighing not less than 8.1 oz per sq ft; or
- **(e)** neoprene weighing not less than 0.722 lb per sq ft.

Valves and faucets

7.2.9.4. Valves and faucets shall conform to CSA B125-1967, "Plumbing Fittings".

Back-siphonage preventer

7.2.9.5. *Back-siphonage preventers* shall be constructed to conform to ANSI A40.6-1943, "Backflow Preventers in Plumbing Systems".

Relief valves

7.2.9.6. Temperature relief, pressure relief, or combined temperature and pressure relief valves shall conform to ANSI Z21.22-1971. "Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems".

Pipes and vents for corrosive wastes

7.2.9.7.(1) Pipes to be used for carrying off acid or other corrosive wastes and vents if required shall be constructed of:

- **(a)** lead, the joints of which shall be burned or welded,
- **(b)** salt-glazed earthenware with joints made of oakum and hot asphaltum and finished with cement,
- **(c)** cast-iron coated with hot asphaltum inside and out, and joints of oakum and molten lead, or *approved* asbestos cement caulking compound,
- **(d)** high silicon corrosion resisting iron with joints made of oakum and molten lead, or *approved* asbestos cement caulking compound,
- **(e)** acid-resisting borosilicate glass with joints of an *approved* acid resisting resilient sleeve held in place with a stainless steel clamp and bolt, or
- **(f)** such materials that have been submitted for examination and testing to the CSA Testing Laboratories; that formal certification has been given to the effect that they conform to the CSA Standards; that the materials have the required markings, and also are acceptable to the *authority having jurisdiction.*

(2) All corrosive and acid wastes shall discharge into a neutralizing or diluting tank and afterwards be connected direct to a *drain* through a *trap* or over a floor drain.

(3) Each neutralizing or diluting tank shall have an *approved* automatic device for neutralizing the liquid unless *approved* by the *authority having jusrisdiction.*

(4) *Combustible* drain, *waste* and *vent pipe* shall not be used in a system within a *building* where part of the system passes through or is located within a required *fire separation* except where the *combustible* portions of the system are located entirely on one side of the *fire separation* but in no case shall such pipe be located within a vertical shaft.

SECTION 7.3 PIPING

SUBSECTION 7.3.1. APPLICATION

Application

7.3.1.1.(1) This Section applies to the construction and use of joints and connections, and the arrangement, protection, support and testing of piping.

SUBSECTION 7.3.2. CONSTRUCTION AND USE OF JOINTS

Caulked lead drainage joint

7.3.2.1.(1) Every caulked lead drainage joint shall be firmly packed with oakum, and tightly caulked with lead to a depth of at least 1 in. (25 mm).

(2) No paint, varnish or other coating shall be applied on the lead until after the joint has been tested.

(3) Caulked lead drainage joints shall not be used except for cast-iron pipe in a *drainage system* or *venting system*, or between such pipe and

(a) other ferrous pipe,

(b) brass and copper pipe,

(c) a caulking ferrule, or

(d) a *trap* standard.

Wiped joints

7.3.2.2.(1) Wiped joints shall not be used except for sheet lead or lead pipe, or between such pipe and copper pipe or a ferrule.

(2) Every wiped joint in straight pipe shall:

(a) be made of solder,

(b) have an exposed surface on each side of the joint at least ¾ in. (19 mm) wide, and

(c) be at least ⅜ in. (10 mm) thick at the thickest part.

(3) Every wiped flanged joint shall be reinforced with a lead flange that is at least ¾ in. (19 mm) wide.

Screwed joint

7.3.2.3.(1) In making a screwed joint the ends of the pipe shall be reamed or filed out to the size of the bore and all chips and cuttings shall be removed.

(2) No pipe-joint cement or paint shall be applied to the internal threads.

Soldered joint

7.3.2.4.(1) In making a soldered joint the surface to be soldered shall be cleaned bright and the joint shall be properly fluxed, made with solder and thoroughly cleaned of all residue.

Flared joint

7.3.2.5.(1) In making a flared joint the pipe shall be expanded with a proper flaring tool.

(2) Flared joints shall not be used for hard (drawn) copper tube.

Hot-poured joint

7.3.2.6.(1) Hot-poured joints shall be caulked tightly with twisted oakum and rammed, and a hot-poured caulking compound shall be placed to a depth of at least 1 in. (25 mm) all around the pipe.

(2) Hot-poured joints shall not be used except for vitrified clay or concrete pipe, or between either of such pipes and ferrous pipe.

Cement join

7.3.2.7.(1) Cement joints in pipe that has a diameter of 6 in. (152 mm) or less shall be made by completely filling the annular space between the hub and the spigot with cement mortar.

(2) Every cement joint in pipe that has a *diameter* of more than 6 in. (152 mm) shall be made by:

(a) ramming into the annular space between the hub and the spigot a gasket of closely twisted hemp or oakum at least equal in length to the circumference of the pipe, and

(b) filling the remaining annular space with mortar.

(3) The exterior of every cement joint shall be carefully shaped from the outside of the hub to the barrel of the pipe at an angle of approximately 45 deg.

(4) After every joint is made, the interior of the pipe shall be thoroughly swabbed and cleaned.

(5) Cement joints shall not be used except for vitrified clay or concrete pipe or between either of such pipes and ferrous pipe.

Burned lead joint

7.3.2.8.(1) In making a burned lead joint the lead shall be lapped and fused to form a weld that is at least 1½ times as thick as the wall of the pipe.

(2) In lead pipe the width of the weld shall not be less than:

(a) ½ in. (13 mm) where the *diameter* of the pipe is less than 3 in. (76 mm),

(b) ⅝ in. (16 mm) where the *diameter* of the pipe is 3 in. (76 mm), or

(c) ¾ in. (19 mm) where the *diameter* of the pipe is 4 in. (102 mm).

(3) In sheet lead the width of the weld shall be as specified in Table 7.3.2.A.

Table 7.3.2.A.

Forming Part of Sentence 7.3.2.8.

Weight of Sheet Lead, lb/sq. ft.	Minimum Width of Weld, in.
2½ to 3	¼
4 to 5	⅜
6 to 8	¾
10 to 12	1
12 to 30	1¼
Column 1	Column 2

Mechanical joint

7.3.2.9. Mechanical joints shall be made with *approved* compounded elastomer couplings or rings held by stainless steel or cast-iron clamps or contained within a compression connection and shall only be used to joint vitrified clay pipe, asbestos-cement pipe, cast-iron soil pipe, steel pipe or any other combination of pipes and fittings *approved* by the *authority having jurisdiction.*

Cold-caulked joints

7.3.2.10.(1) Cold-caulked joints shall not be used except for bell and spigot pipe in a *water system* or a *drainage system*. The caulking compound shall be applied according to the manufacturer's directions.

(2) Every cold-caulked joint in a *drainage system* shall be firmly packed with oakum and tightly caulked with cold caulking compound to a depth of at least 1 in. (25 mm).

(3) Every cold-caulked joint in a *water system* shall be made by tightly caulking the entire depth of the socket with caulking compound.

SUBSECTION 7.3.3. JOINTS AND CONNECTIONS

Drilled and tapped joints

7.3.3.1. Drilled and tapped joints shall not be made in a *soil-or-waste pipe* and *vent pipe* and fittings unless a suitable provision in the fitting has been provided for drilling and tapping.

Welded joint

7.3.3.2. Welding of ferrous metals shall not be permitted unless *approved* by the *authority having jurisdiction*.

Unions and slip joints

7.3.3.3. Unions with a gasket seat, including a long thread and packing nut connection, or slip joints, shall not be used downstream of a *trap weir* in a *drainage system* nor in a *venting system*.

Increaser or reducer

7.3.3.4. Every connection between two pipes of different *size* shall be made with an increaser or a reducer fitting installed so that it will permit the system to be completely drained.

Burned lead joint

7.3.3.5. Every joint in hard lead shall be made with a burned lead joint.

Dissimilar connections

7.3.3.6.(1) Every joint between pipes and fittings of dissimilar material or sizes shall be made by adaptors, connectors or mechanical joints manufactured for the purpose.

(2) Every joint between plastic pipe and cast-iron hub and spigot pipe shall be made with a cold caulking compound.

Connection of roof hopper to leader

7.3.3.7. Every roof hopper shall be securely connected to a *leader* and provision shall be made for expansion.

Connection of floor outlet fixtures

7.3.3.8.(1) Every pedestal urinal, floor-mounted water closet, or S-*trap* standard shall be connected to a *fixture drain* by a floor flange, except that a cast-iron *trap* standard may be caulked to a cast-iron pipe.

(2) Except as provided in Sentences (3) and (4), every floor flange shall be of brass.

(3) A cast-iron floor flange may be used to connect a water closet located on a concrete basement floor to a cast-iron *fixture drain*.

(4) Where plastic pipe is used a floor flange of the same material may be used.

(5) Every floor flange shall be securely set on a firm base and bolted to the *trap* flange of the *fixture*, and every joint shall be sealed with an *approved* gasket, or with a closet setting compound.

(6) Where a lead water closet stub is used the length of the stub below the floor shall be at least 3 in. (76 mm).

(7) Where plastic pipe is used, expansion joints shall be installed immediately above the base of the stack.

(8) Except where an expansion joint as required by Sentence 7.3.3.8.(7) is installed, a lead bend or lead stub shall be used in all wood joist construction between any floor mounting *fixture* having an earthenware *trap* and the piping.

SUBSECTION 7.3.4. SERVICE PIPING

Separate piping for individual buildings

7.3.4.1.(1) Piping in any *building* shall be connected to the public services separately from the piping of any other *building*, except that ancillary *buildings* on the same property may be served by the same service.

(2) Every *building drain* shall where possible be laid at a depth of not less than six (6) feet at the building line.

(3) Old *building sewers* may be used in connection with new *buildings* or new plumbing only when they are found, on examination and test, to conform in all respects to the requirements governing new sewers as prescribed in this By-law.

SUBSECTION 7.3.5. SUPPORT OF PIPING

Capability o support

7.3.5.1. Piping shall be provided with support that is capable of keeping the pipe in alignment and bearing the weight of the pipe and its contents.

Independen of support

7.3.5.2. Every pipe that is connected to a *fixture*, tank or device shall be supported independent of it.

Insulation o support

7.3.5.3. Where a hanger or support for copper tube or brass or copper pipe is of a material other than brass or copper it shall be suitably separated and electrically insulated from the pipe.

Support for vertical piping

7.3.5.4.(1) Except as provided in Sentences (2) and (3), vertical piping shall be supported at its base and at the floor level of alternate *storeys* by metal rests, each of which can bear the weight of pipe that is between it and the metal rest above it.

(2) The maximum spacing of supports shall be 25 ft (7.6 m).

(3) Where hub and spigot cast-iron pipe is used each metal support shall rest on a hub unless *approved* by the *authority having jurisdiction.*

(4) Where mechanical joint cast-iron pipe is used it shall be supported at its base and at the floor level of every *storey.*

Support for horizontal piping

7.3.5.5.(1) *Nominally horizontal* piping that is inside a *building* shall be braced to prevent swaying and buckling and to control the effects of thrust.

(2) *Nominally horizontal* piping shall be supported so that:

(a) galvanized iron or steel pipe and copper pipe is supported at intervals of

(i) 12 ft (3.7 m) or less if the pipe *diameter* is 6 in. (152 mm) or more, and

(ii) 8 ft (2.4 m) or less if the pipe *diameter* is less than 6 in. (152 mm);

(b) lead pipe is supported throughout its length;

(c) cast-iron pipe is supported

(i) at or adjacent to each hub or joint,

(ii) at intervals not exceeding 10 ft (3 m); and

(iii) at intervals not exceeding 3 ft (915 mm) if the pipe has mechanical joints and the length of pipe between adjacent fittings is 12 in. (305 mm) or less;

(d) asbestos-cement pipe is supported

(i) adjacent to each joint,

(ii) at intervals not exceeding 6½ ft (2 m), and

(iii) at intervals not exceeding 3 ft (915 mm) where the length of pipe between adjacent fittings is 12 in. (305 mm) or less; and

(e) ABS or PVC plastic pipe is supported

(i) at intervals not exceeding 4 ft (1.2 m),

(ii) at the ends of *branches*,

(iii) at changes of direction or elevation, and

(iv) if the pipe is a *fixture drain* that is more than 3 ft (915 mm) in length, as close as possible to the *trap*.

(f) CPVC plastic pipe is supported at intervals not exceeding 3 ft (0.9 m).

(3) Where PVC, CPVC or ABS plastic pipe is installed

(a) the pipe shall be aligned without added strain on the piping,

(b) the pipe shall not be bent or pulled into position after being welded, and

(c) hangers shall not compress, cut or abrade the pipe.

(4) Where hangers are used to support *nominally horizontal* piping they shall be:

(a) metal rods of at least ⅜ in. (10 mm) diameter for pipe over 4 in. (102 mm) in diameter, and

(b) solid or perforated metal strap hangers for pipe 4 in. (102 mm) or less in diameter.

(5) Where a hanger is attached to concrete or masonry it shall be fastened by metal or expansion-type plugs that are inserted or built into the concrete or masonry.

Support for underground horizontal piping

7.3.5.6.(1) *Nominally horizontal* piping that is underground shall be supported on a base that is firm and continuous under the whole of the pipe.

(2) *Nominally horizontal* underground drainage piping within the walls of a *building* shall be installed in an open-cut trench.

7.3.5.7. Where a *vent pipe* terminates above the surface of a roof it shall be supported or braced to prevent misalignment. Support of vent pipe above roof

See Article 7.5.4.4. for location of vent pipe terminals.

SUBSECTION 7.3.6. PROTECTION OF PIPING

7.3.6.1. Where piping is installed underground the backfill shall be carefully placed and tamped to a height of 12 in. (305 mm) over the top of the pipe and shall be free of stones, boulders, cinders and frozen earth. Backfill

7.3.6.2. Where asbestos-cement drainage pipe, vitrified clay pipe, or bituminous fibre pipe is located less than 2 ft (610 mm) below a basement floor and the floor is constructed of other than 3 in. (76 mm) or more of concrete, the pipe shall be protected by a 3 in. (76 mm) layer of concrete installed above the pipe. Protection non-metall pipes

7.3.6.3. Where piping passes through or under a wall it shall be installed so that the wall does not bear on the pipe. Isolation from loads

7.3.6.4.(1) Where piping may be exposed to freezing conditions it shall be protected from frost. Protection from frost

(2) Where a *vent pipe* that terminates above the surface of a roof is in danger of closure by frost it shall be insulated.

See Article 7.5.4.4. for location of vent pipe terminals.

7.3.6.5. Plumbing, piping and equipment exposed to mechanical damage shall be protected." Protection against damage

SUBSECTION 7.3.7. TESTING OF DRAINAGE AND VENTING SYSTEMS

7.3.7.1.(1) After a section of a *drainage system* or a *venting system* has been roughed in and before any *fixture* is installed, or piping covered, a water or an air test shall be conducted to the satisfaction of the *authority having jurisdiction.* Time for testing of drainage system or venting system

(2) After every *fixture* is installed and before any part of the *drainage system* or *venting system* is placed in operation, a smoke test shall be carried out when requested by the *authority having jurisdiction.*

(3) Where required by the *authority having jurisdiction* a ball test shall be made to any pipe in a *drainage system.*

7.3.7.2.(1) Every pipe in a *drainage system,* except an external *leader* or *fixture outlet pipe,* shall be capable of withstanding, without leakage, a water test, air test or smoke test. Capability drainage system test

(2) Every pipe in a *drainage system* shall be capable of meeting a ball test.

7.3.7.3. Every *venting system* shall be capable of withstanding, without leakage, a water test, air test or smoke test. Capability venting system test

Water test

7.3.7.4. (1) Where a water test is made it shall be applied to:

(a) the system as a whole, or

(b) sections of the system, each of which is at least 10 ft (3 m) high and includes at least 5 ft (1.5 m) of the section below.

(2) In making a water test

(a) every opening except the highest shall be tightly closed with a testing plug or a screw cap, and

(b) the system or the section shall be kept filled with water for 15 min.

Air test

7.3.7.5.(1) Where an air test is made:

(a) every opening in the system shall be closed,

(b) air shall be forced into the system until a pressure of 5 psi (10 in. (254 mm) of mercury column), is created, and

(c) this pressure shall be maintained, without the addition of more air for 15 min.

Smoke test

7.3.7.6.(1) Where a smoke test is made:

(a) every *trap* shall be filled with water,

(b) smoke from one or more smoke machines shall be forced into the system,

(c) when the smoke appears from all roof terminals they shall be closed, and

(d) a pressure equivalent to a 1 in. (25 mm) water column shall be built up and maintained for 15 min.

Ball test

7.3.7.7.(1) Where a ball test is made a hard ball that is sufficiently dense that it will not float shall be rolled through the pipe.

(2) The diameter of the ball shall be:

(a) 2 in. (51 mm) where the *diameter* of the pipe is 3 in. (76 mm) or more, or

(b) 1 in. (25 mm) where the *diameter* of the pipe is less than 3 in. (76 mm).

SUBSECTION 7.3.8. TESTING OF POTABLE WATER SYSTEM

Application of tests

7.3.8.1.(1) When requested by the *authority having jurisdiction*, after a section of a *potable water system* has been completed and before it is placed in operation, a water test shall be conducted to the satisfaction of the *authority having jurisdiction* except that an air test may be used in freezing conditions.

(2) A test may be applied to each section of the system or to the system as a whole.

Tests of water system

7.3.8.2.(1) Every *potable water system* shall be capable of:

(a) withstanding without leakage a water pressure that is at least equal to the maximum pressure to which it may be subject in service, or

(b) withstanding for at least 2 hrs without a drop in pressure an air pressure that is at least 100 psi (690 kN/m^2).

7.3.8.3.(1) Where a water test is made, all air shall be expelled from the system before *fixture* control valves or faucets are closed. Water test

(2) *Potable* water shall be used to test a *potable water system*.

SECTION 7.4 DRAINAGE SYSTEMS

SUBSECTION 7.4.1. APPLICATION

Application

7.4.1.1. This section applies to a *sanitary drainage system* or a *storm drainage system.*

SUBSECTION 7.4.2. CONNECTION OF DRAINAGE SYSTEMS

Sanitary drainage system

7.4.2.1. Every *sanitary drainage system* shall be connected to a public *sanitary sewer* or *combined sewer,* or a *private sewage disposal system* and shall be terminated by a main vent.

Storm drainage system

7.4.2.2.(1) Every *storm drainage system* shall be connected to one of the following: a *combined building drain,* a *combined building sewer,* a public *storm sewer,* a public *combined sewer,* or as designated by the *authority having jurisdiction.*

(a) A *storm drainage system* shall connect separately to a public *storm sewer* when available.

(2) Every overflow from rainwater tanks shall be connected to a *storm drainage system* where such a system is installed.

(3) Where an overflow from a rainwater tank is connected to a *sanitary drainage system* a backwater valve shall be installed on the overflow pipe.

SUBSECTION 7.4.3. DISPOSAL OF SUBSOIL DRAINAGE

Disposal of subsoil drainage

7.4.3.1. Subsoil drainage shall be disposed of as directed by the *authority having jurisdiction.*

SUBSECTION 7.4.4. CONNECTION OF FIXTURES

Connection to sanitary drainage system

7.4.4.1.(1) Every *fixture* shall be connected to a *sanitary drainage system* except that:

(a) a floor drain may be connected to a *storm drainage system* provided:

(i) there is no *sanitary drainage system,*

(ii) it is located where it can receive only *clear-water waste* or *storm water,* and

(iii) the installation is *approved,*

(b) *fixtures* that discharge only *clear-water waste,* other than a floor drain, may be connected to a *storm drainage system* or drained onto a roof, when the installation is *approved.*

(c) every outlet from a relief valve on a *water system* shall be:

(i) terminated above a receptacle that drains to outside air, or

(ii) turned downward and terminated within 1 ft (305 mm) of a floor that slopes to a floor drain, and

(d) *fixtures* that have a hydraulic load of not more than one *fixture unit* may be connected to a *loop vent, circuit vent, relief vent, yoke vent,* or *vent stack* provided:

(i) no other *fixture* is drained to the *vent pipe,*
(ii) the *fixture* that is connected to the *vent pipe* is in the same *storey* as the *fixtures* that are served by the *vent pipe,* and
(iii) no *fixture* shall discharge into a *vent stack* except in its lowest *storey.*

(2) No other *fixture* shall be connected to a lead bend or stub that serves a water closet.

(3) A *soil-or-waste pipe* shall not be connected to a *nominally horizontal offset* closer than 5 ft (1.5 m) *developed length* downstream from the base of the upper vertical section of the *soil-or-waste stack* where such upper vertical section:

(a) receives a discharge of 30 or more *fixture units,* or
(b) receives the discharge from *fixtures* located on two or more *storeys.*

(4) A *soil-or-waste pipe* shall not be connected to a *nominally horizontal soil-or-waste pipe* closer than 5 ft (1.5 m) *developed length* down-stream from the base of a *soil-or-waste stack* that:

(a) receives a discharge of 30 or more *fixture units,* or
(b) receives the discharge from *fixtures* located on two or more *storeys.*

7.4.4.2.(1) Where one of the following *fixtures* is connected to a *drainage system* it shall be *indirectly connected:* Indirect connectio

(a) device for storage, preparation or processing of food or drink, including a refrigerator or icebox,
(b) device or *appliance* that uses water as a cooling or heating medium,
(c) drip pipe from a food receptacle,
(d) water operated device,
(e) sterilizer or water still,
(f) water treatment device,
(g) drain or overflow from a *water system,*
(h) an overflow from a tank or vat in which a water supply inlet is protected according to Sentence 7.6.2.3.(3), or
(i) a pressure, temperature or other relief valve that is installed in a *water system.*

(2) Drinking fountains may be *indirectly connected.*

(3) A floor drain that does not receive food or other organic matter may be *indirectly connected.*

7.4.4.3.(1) Except as provided by Sentences (2) and (3), where a *fixture* is *indirectly connected* the connection shall be made by terminating the *fixture drain* above the *flood level rim* of a *directly connected fixture* to form an air break. Making indirect connectio

(2) Two or more *fixture drains* that serve outlets from a single *fixture* that is listed in Sentence 7.4.4.2.(1) may be *directly connected* to a *branch* that:

(a) has a *diameter* of at least 1¼ in. (32 mm), and

(b) is terminated above the *flood level rim* of a *directly connecte fixture* to form an air break.

(3) Two or more *fixture drains* from *fixtures* that are listed in Sentenc 7.4.4.2.(1) may be *directly connected* to a pipe that:

(a) is terminated to form an air break above the *flood level rim* o a *fixture* that is *directly connected* to a *sanitary drainage system* and

(b) is extended through the roof when *fixtures* that are on three or more *storeys* are connected to it.

(4) The *size* of the air break shall at least equal the *size* of the *fixture drain, branch* or pipe that terminates above the *directly connected fixture* and it shall not be less than 1 in. (25 mm).

SUBSECTION 7.4.5. LOCATION OF FIXTURES

Requirement

7.4.5.1. Plumbing *fixtures* shall be provided for various *occupancies* as required by the Winnipeg Building By-law.

Accessibility

7.4.5.2. Every *fixture and interceptor* shall be located where it is readily accessible for cleaning.

Lighting and ventilation

7.4.5.3. Every water closet or urinal shall be located in a room that is lighted and ventilated according to Subsections 3.6.2. and 3.6.3. of Part 3 of The Winnipeg Building By-law.

Flush valve or tank

7.4.5.4. Every direct flush valve or a flush tank shall be located where it is readily accessible for repair.

Garbage grinder

7.4.5.5. Garbage grinders, potato peelers and other similar types of equipment shall not be located upstream of an *interceptor.*

7.4.5.6. A floor drain or other *fixture* located in a transformer vault, a high voltage room or any room where flammable, dangerous or toxic chemicals are stored or handled shall not be connected to a *drainage system.*

SUBSECTION 7.4.6. INSTALLATION OF FIXTURES

Water closet installation

7.4.6.1.(1) Every floor-mounted water-closet bowl shall be securely attached to the floor by means of a flange.

(2) Every wall-mounted water-closet bowl shall be supported so that no strain is transmitted to the piping.

Water closet type

7.4.6.2. The seat on a water closet other than one in a *dwelling unit* shall be of the open front type unless *approved* by the *authority having jurisdiction.*

Stall urinal installation

7.4.6.3. Every stall urinal shall be installed so that water from the urinal cannot run onto the walls or floor beneath the *fixture.* Walls and floors within 3 ft (915 mm) of the urinal shall be of an impervious material.

7.4.6.4.(1) Every flushing device that serves a water closet or one or more urinals shall have sufficient capacity and be adjusted to deliver at each operation a volume of water that will thoroughly flush the *fixture* or *fixtures* it serves. Flushing device

(2) Where a manually operated flushing device is installed it shall serve only one *fixture*.

SUBSECTION 7.4.7. TREATMENT OF HARMFUL SEWAGE AND WASTES

7.4.7.1.(1) Where a *fixture* discharges *sewage* that in the opinion of the *authority having jurisdiction* may damage or impair: Sewage treatment

(a) the *sanitary drainage system*, or

(b) the functioning of a public or *private sewage disposal system*, provision shall be made for treatment of the *sewage* before it is discharged to the *sanitary drainage system*.

7.4.7.2. Where a *fixture* discharges *sewage* or *clear-water waste* that is at a temperature in excess of 170 deg. F. (77°C), provision shall be made for cooling of the waste to less than 170 deg. F. (77°C) before it is discharged to the *drainage system*. Cooling of hot wastes sewage

7.4.7.3.(1) Where the discharge from a *fixture* may contain oil or gasoline, an oil *interceptor* shall be installed. Interceptor for oil, gasoline or grease

(2) Where a *fixture* discharges *sewage* that includes grease is located in a public kitchen, restaurant or in an institution, a grease *interceptor* shall be installed when required by the *authority having jurisdiction*.

(3) Where a *fixture* discharges sand, grit or similar materials an appropriate *interceptor* shall be installed.

(4) Every *interceptor* shall have sufficient capacity to perform the service for which it is provided.

(5) Every *interceptor* shall be located where it is readily accessible for cleaning.

(6) Where an *interceptor* is installed in a service garage, vehicle parking area, automobile wash floor, cleaning establishments and elsewhere where required by the *authority having jurisdiction*, the capacity of the *interceptor* shall be sufficient to retain the sand or grit reaching the *interceptor* during any ten hour period but in no case shall be less than 20 cu. ft. measured from the floor of the *interceptor* to the invert of the overflow.

SUBSECTION 7.4.8. TRAPS

7.4.8.1.(1) Every *fixture outlet pipe* of a *fixture* that is *directly* or *indirectly connected* shall be provided with a *trap* except that: Traps for fixtures

(a) one *trap* may serve all the trays or compartments of a two- or three-compartment sink or laundry trays if

(i) the *developed length* of the *fixture outlet pipe* from the *trap* to the waste opening of the farthest compartment or tray does not exceed 36 in. (915 mm), and

(ii) the part of the *fixture outlet pipe* that is common to three compartments of a sink or tray is one size larger than the largest waste opening that it serves,

(b) except for a drinking fountain one *trap* may serve a group of floor drains, *indirectly connected fixtures*, or a group of laboratory sinks if the *fixtures*

(i) are in the same room, and

(ii) are not located where they can receive food or other organic matter.

(c) a domestic dishwashing machine equipped with a drainage pump may discharge through a direct connection into the waste outlet piping of an adjacent kitchen sink or disposal unit provided:

(i) the pump discharge line rises to an elevation just under the sink rim or counter, and

(ii) the pump discharge line connects on the inlet side of the sink *trap* by means of an *approved* wye-branch, or

(iii) the pump discharge line connects to an *approved* connection on disposal unit, and

(iv) the pump discharge line shall not connect to the sink tailpiece, continuous waste or the piping between the disposal unit and the *trap*,
and

Interceptor as Trap

(d) where an *interceptor* is installed to serve a *fixture* and has an effective water seal of at least 1½ in. (38 mm) on the outlet end of the *interceptor*, it may serve as a *trap*.

(2) Open *traps*, acid *traps* or any *trap* that may overflow shall not be permitted in a crawl space or any other unfrequented area.

Location of trap or interceptor

7.4.8.2. Every *trap* and every *interceptor* that serves as a *trap* shall be located as close as is practicable to the *fixture* it serves, and in no case shall the *developed length* of the *fixture outlet pipe* be more than 36 in. (915 mm).

Size of trap

7.4.8.3.(1) The *size* of a *trap* that serves a *fixture* shall not be less than the *size* of the *fixture outlet pipe*.

(2) The *size* of a *trap* that serves a *fixture* shall not be less than the *size* set forth in Table 7.4.8.A.

(3) The *size* of a *trap* that serves an *interceptor* shall be sized according to the hydraulic load draining into it as indicated in Subsection 7.4.11. but in no case shall the size be smaller than the largest waste draining into it.

(4) The size of each floor drain including the *trap* that serves an *interceptor* in a vehicle garage, car parking garage, car wash, or a similar type building shall not be less than 4 in. unless approved by the *authority having jurisdiction*.

Table 7.4.8.A.

Forming Part of Sentence 7.4.8.3.(2)

Fixture	Min. Dia. of *Trap*, in.	Minimum Hydraulic Load, *fixture units*
Autopsy table	1½	2
Bathroom group		
(a) with flush tank	—	6
(b) with flush valve	—	10
Bathtub (with or without shower)	1½	1½
Bath: foot, sitz or slab	1½	1½
Beer Cabinet	1½	1½
Bidet	1¼	1
Clothes washer	1½	2
Dental unit or cuspidor	1¼	1
Dishwasher		
(a) domestic type	1½	1½ { no load when connected to garbage grinder
(b) commercial type	2	3
Drinking fountain	1¼	1
Floor drain	2	3 with 2 in. *trap* 5 with 3 in. *trap*
Garbage grinder, commercial type	2	3
Icebox	1¼	1
Laundry tray		
(a) 1 or 2 compartments	1½	1½
(b) 3 compartments	2	2
Potato peeler	2	3
Shower drain		
(a) from 1 head	1½	1½
(b) from 2 or 3 heads	2	3
(c) from 4 to 6 heads	3	6
Sink		
(a) S-*trap* type	3	3
(b) S-*trap* standard	2	3
(c) with P-*trap*		
(i) butler, bar, rinse, single compartment kitchen sink or single compartment of combination sink	1½	1½
(ii) 1 and 2 compartment kitchen sinks or single compartment of combination sink — with garbage grinder	1½	1½
Column 1	Column 2	Column 3

Table 7.4.8.A–(Cont'd)

Forming Part of Sentence 7.4.8.3.(2)

Fixture	Min. Dia. of *Trap*, in.	Minimum Hydraulic Load, *fixture units*
(iii) 3 compartment sink —common *trap*	2	2
(iv) 2 or 3 compartment sink with garbage grinder—common *trap*	2	3
(v) pot or scullery	2	4
(vi) P-*trap* service	2	3
(vii) surgeons or surgeons scrub	1½	1½
Urinal		
(a) pedestal, siphon-jet or blowout type	2	4
(b) stall, washout type	2	2
(c) wall, lip type		
(i) washout type	1½	1½
(ii) other types	2	3
Washbasin		
(a) barber or beauty	1½	1½
(b) dental	1¼	1
(c) domestic type	1¼	1 with 1¼ in. *trap* 1½ with 1½ in *trap*
(d) multiple or circular	1½	according to Table 7.4.11.A.
Water closet or similar fixture		
(a) with flush tank	3	6
(b) with flush valve	3	8
Column 1	Column 2	Column 3

Water seal

7.4.8.4. The water seal of a floor drain shall be 4 inches unless otherwise approved by the *authority having jurisdiction.*

Traps for storm drainage system

7.4.8.5.(1) A *storm drainage system* shall be trapped before it connects to a *storm building sewer.*

(2) Where a *storm drainage system* is connected to a *combined building drain,* a *combined building sewer,* or a public *combined sewer,* a *trap* shall be installed between any opening in the system and the drain or sewer.

Traps for subsoil drainage

7.4.8.6.(1) *Subsoil drainage* shall drain into the *sanitary drainage system* through an *approved trap* at least 4 inches in diameter unless *approved* by the *authority having jurisdiction.*

Location of trap for subsoil drainage

(2) When *subsoil drainage* is pumped into a *sanitary drainage system* or a *storm drainage system* the connection shall be made on the upstream side of a *trap approved* by the *authority having jurisdiction.*

7.4.8.7.(1) A *building* of six or more storeys shall have a *building trap.* Building trap

(2) Where a *building-trap* is installed it shall be located: Location of building trap

(a) inside the *building* and as close as is practicable to the wall through which the *building drain* leaves the *building*, or

(b) outside the *building* in an accessible manhole and protected from freezing.

SUBSECTION 7.4.9. ARRANGEMENT OF DRAINAGE PIPING

7.4.9.1.(1) Piping shall not be located over nonpressure *potable* water tanks, over manholes in pressure *potable* water tanks or over food-handling equipment. Location of piping

(2) Rainwater *leaders* shall not be used for *soil-or-waste pipes* and *soil-or-waste pipes* shall not be used for rainwater *leaders.*

(3) No *drainage system* shall be installed in any outside wall of a *building.*

7.4.9.2. There shall be no unused open ends in a *drainage system* and *dead ends* shall be so graded that moisture will not collect in them. Unused ope ends

7.4.9.3. A length of hub and spigot pipe and pipe fittings in a *drainage system* shall be installed with the hub at the upstream end. Lead caulke pipe

7.4.9.4.(1) Piping that is too low to drain into a *building sewer* by gravity shall be drained to a *sump* or receiving tank. Sump or receiving tank

(2) Where the *sump* or tank receives *sewage* it shall be water and air-tight and shall be vented in accordance with Section 7.5.

(3) Equipment such as a pump or ejector that can lift the contents of the *sump* or tank and discharge it into the *building drain* or *building sewer* shall be installed.

(4) Where the equipment does not operate automatically the *size* of the *sump* shall be sufficient to hold at least a 24 hr. accumulation.

(5) Where there is a *building-trap* the discharge pipe from the equipment discharging *sewage* shall be connected to the *building drain* or *building sewer* downstream of the *trap.*

(6) The discharge pipe from every *sewage sump* shall be equipped with a shut-off valve, a check valve and an *approved* union or flange.

7.4.9.5.(1) Where a *building drain* may be subject to surcharge, a gate valve or a backwater valve shall be installed on the *fixture* or *branch drain*, other than a floor drain, that: Protection from backflow

(a) is below the level of the adjoining street, and

(b) drains by gravity into the *building drain.*

(2) Where a floor drain is connected to a *building drain* that may be subject to *backflow:*

(a) a backwater valve shall be installed on the *fixture drain* or upstream of the *trap,*

(b) a gate valve shall be installed on the *fixture drain* of the floor drain, or

(c) a screw cap shall be installed on the upstream side of the *trap* of the floor drain.

(3) A *subsoil drainage pipe* that drains into a *sanitary drainage system* that is subject to surcharge, shall be connected in such a manner that *sewage* cannot back up into the *subsoil drainage pipe.*

(4) When a pit is necessary for a gate or back water valve, provision shall be made to drain the pit.

Cleanouts

7.4.9.6.(1) Except as provided in Sentence (2), a *building drain* shall be provided with a *cleanout* that is installed at the upstream side of the wall through which the drain leaves the *building*, and where a *building-trap* is installed inside the *building* the *cleanout* shall be between the *trap* and the wall.

(2) Where a *building-trap* is installed outside a *building* a *cleanout* shall be installed in the manhole on the downstream side of the *trap.*

(3) Where there is a change of direction of more than 45 deg. in a *building, branch* or *fixture drain* a *cleanout* shall be installed, unless *approved* by the *authority having jurisdiction.*

(4) *Cleanouts* shall be installed in a *nominally horizontal branch* and/or *building drain* at intervals that will ensure that the distance between *cleanouts* does not exceed:

(a) 100 ft (30.5 m) where the *diameter* of the pipe exceeds 4 in. (102 mm), or

(b) 50 ft (15.2 m) where the *diameter* of the pipe is equal to or less than 4 in. (102 mm).

(5) **(a)** Except as provided in Clause (b) of this sentence, every *soil-or-waste stack* shall be provided with a *cleanout* that is installed at its base.

(b) A *cleanout* conforming to Sentence 7.4.9.9.(1) may be substituted for a *cleanout* at the base of a stack providing it is installed within 10 ft (3 m) of the stack, at right angles to the *building* or *branch drain.*

(6) Where there is a change in direction in a drip pipe from a food receptacle a *cleanout* shall be installed.

(7) A *cleanout* shall be provided to permit the cleaning of vents to the flood level rim of *fixtures* which discharge grease laden waste.

(8) A *cleanout* shall be installed at the upstream side of, and directly over, every *building-trap* or *trap* that serves a *leader* or *subsoil drainage pipe.*

(9) *Cleanouts* shall be provided to permit cleaning of all parts of the *drainage system* not previously indicated.

Type of cleanout

7.4.9.7.(1) Every *cleanout* shall be made with:

(a) a barrett-type fitting that has a bolted cover plate and gasket,

(b) a fitting that has a threaded plug, or

(c) a *cleanout* ferrule that is installed on a **Y**.

(2) Where the **Y** is extended it shall be extended without a change of direction of more than 45 deg.

7.4.9.8. Where the *size* of a pipe is less than 4 in. (102 mm) the *size* of a *cleanout* on the pipe shall be at least the same *size* as the pipe, and where the *size* of the pipe is 4 in. (102 mm) or more the *size* of the *cleanout* shall be at least 4 in. (102 mm). Size of cleanout

7.4.9.9.(1) Every *cleanout* shall be so located that the opening is readily accessible and has sufficient clearance for effective rodding and cleaning. Location o cleanout

(2) Manholes may be used as *cleanouts* in a *building sewer* or *combined building sewer*, provided:

- **(a)** the *developed length* from the outer face of the wall of the *building* to the manhole nearest the outer face of the wall does not exceed 100 ft (30.5 m),
- **(b)** the distance between successive manholes does not exceed 300 ft (91.5 m); and
- **(c)** there is no change in slope or direction between manholes.

SUBSECTION 7.4.10. MINIMUM SLOPE OF DRAINAGE PIPES

7.4.10.1.(1) Except as provided in Sentences (2) and (3), a pipe shall have a slope in the direction of flow of at least ⅛ in. per ft. Minimum slope

Guide to Minimum Slopes of Draining Systems Indicated in this Subsection

Type of Pipe	Diameter, in.	Minimum Slope, in./ft.
Fixture drains—(except Sentence (7.5.1.1.(4)	any size	1/4
Drainage pipes	3 in. or less	1/4
Drainage pipes—(except building sewers)	over 3 in.	1/8
Building sewer—(no velocity limitation)	any size	1/8
Building sewer—(designed for minimum velocity of 2ft/sec)	4	1/8
	5	3/32
	6	3/32
	8	1/16
	10	1/16
	12	1/32
	15	1/32

(2) *Building sewers* may have slopes less than ⅛ in. per ft if they are designed so that the liquid velocity is at least 2 ft. per sec

(3) Except as provided in Sentence 7.5.1.1.(4) every pipe that has a diameter of 3 inches (76 m) or less, and every *fixture drain* shall have a slope in the direction of flow of at least ¼ inch per foot.

SUBSECTION 7.4.11. HYDRAULIC LOADS

Total load

7.4.11.1.(1) The hydraulic load on a pipe is the total load from:

(a) every *fixture* that is connected to the system upstream of the pipe,

(b) every *fixture* for which provision is made for future connection upstream of the pipe, and

(c) all roofs, paved surfaces, grass areas, gravel areas and all surfaces that drain into the system upstream of the pipe.

Hydraulic load from fixtures

7.4.11.2. The hydraulic load from a *fixture* that is listed in Table 7.4.8.A. is the number of *fixture units* set forth in the Table.

7.4.11.3. Except as provided in Article 7.4.11.4., the hydraulic load from a *fixture* that is not listed in Table 7.4.8.A. is the number of *fixture units* set forth in Table 7.4.11.A. for the *trap* of the *size* that serves the *fixture*.

Table 7.4.11.A

Forming Part of Article 7.4.11.3

Size of *Trap*, in.	Hydraulic Load, *fixture units*
1¼ or less	1
1½	2
2	3
2½	4
3	5
4	6
Column 1	Column 2

Hydraulic load from fixtures with continuous flow

7.4.11.4.(1) Except as provided in Sentence (2), the hydraulic load from a *fixture* that produces a continuous or semi-continuous flow, such as a pump or an air-conditioning *fixture*, is two *fixture units* for each gallon per minute of flow.

(2) Where a *fixture* that produces a continuous or semi-continuous flow drains to a *combined building drain*, *combined building sewer*, or to a *storm building drain* or *sewer*, the hydraulic load from the *fixture* is 29 sq. ft. for each gallon per minute of flow.

Hydraulic load from roof or paved surface

7.4.11.5.(1) Except as provided in Sentence (2), the hydraulic load in square feet from a roof or paved surface is the maximum 15 minute rainfall for the City of Winnipeg Area or (0.6) multiplied by the sum of:

(a) the area in square feet of the horizontal projection of the surface that is drained, and

(b) one-half the area in square feet of the largest adjacent vertical surface above the area drained.

NOTE: the (0.6) is the 15 minute rainfall intensity taken from Supplement No. 1 Climatic Information for Building Design in Canada.

(2) Where a proportional weir roof drain is installed, the hydraulic load in Sentence (1) may be reduced subject to the following:

(a)(i) Control Flow roof *drainage systems* will be permitted providing the design conforms to an *approved* manufacturers manual and the following limiting factors are incorporated in the design. (If there is any conflict, the regulations below take precedence.)

1. Rainfall is based on current data or a 50 year return period.
2. The maximum drain down time shall not exceed 24 hours.
3. On dead-level roofs, drains shall be located no further than 50 feet from the edge of the roof and no further than 100 feet between drains; on sloped roofs, drains shall be located at the lowest point; on a combination dead-level roof and sloped roof, drains shall be located no further than 50 feet from the edge of the flat area and no further than 100 feet apart.
4. Roofs having less than 1 inch of slope shall be considered flat.
5. Maximum storage depth from the lowest point shall not exceed 6 inches on a sloping roof and 3 inches on a flat roof.
6. Plumbing stack terminals shall be installed at least 1 inch above the top of the scuppers and shall be adequately protected from frost closure.
7. Scuppers shall be provided on all roofs using control flow roof drains and shall be the size of conventional roof drains for the given roof, and the bottom of the scupper shall be no lower than the design water depth and the area of the scupper must be contained between the design water depth and a maximum height of 7 inches.
8. *Nominally vertical* leaders and *nominally horizontal* drains shall be sized from the *approved* manufacturer's tables and graphs, and the drain sizes shall not be reduced when changing from *nominally horizontal* to *nominally vertical* in the direction of the flow.
9. There shall be no spilling of water from small roof areas on main roof areas which are over 5 inches in design of water build-up on the roof; the penthouses and small roof areas may be scuppered onto a main roof area where the design depth is under 5 inches of water build-up, providing the small roof area is not more than 10% of the main roof area; (This design depth is that found from considering the main roof area alone, with no spillage from the small roof area onto it.); and where a small roof is scuppered onto a larger roof, the area of the roof spilling shall be added to the main roof area in calculating resultant depth, gallonage, and drain down time.
10. Flow control roof drainage will be allowed on pyramid roofs if designed for in an *approved* manufacturer's manual; however, up to 10% of a roof will be allowed to be of a pyramid type, using the

tables for a normally sloped or flat roof, depending upon whether the major area of the roof is flat or sloped normally.

11. Roofs, paved and grass areas may be drained separately into control flow systems providing the design allows 29 square feet of area per gallon of discharge.
12. Conventional type rain water and control flow drains may be mixed providing the conventional type roof area is sized so that 29 square feet of area will equal 1 gallon per minute.
13. Each roof area separated by an expansion joint or control joint shall be considered as a separate roof.
14. Control flow systems shall not be connected to the *sanitary building drain*, but may be connected to the *sanitary building sewer* or separately to the sewer main on the street.
15. The diameter of the *storm building sewer* and the *storm building drain* shall not be less than 4 inches to the *cleanout* indicated in Sentence 7.4.9.6.(1).

(b) When control flow roof drainage is to be installed the following shall be shown on the roof plan:

(i) the sizes of all different roof areas,
(ii) all expansion joints, control joints, etc.,
(iii) slopes of roof areas,
(iv) size and location of each scupper from each roof area,
(v) height of each scupper from the lowest portion of each roof area,
(vi) number of weirs, notches and weir setting on each roof terminal and location of roof terminals,
(vii) peak gallons per minute each terminal will drain,
(viii) the design depth of water on each roof area,
(ix) name of manufacturer of roof drains used; and

(c) Since some architectural features such as slope of the roof and type of roof may limit their use, plans of these systems must be submitted and *approved* before issuance of the building permit.

Conversion of fixture units to square feet

7.4.11.6.(1) Except as provided in Sentence 7.4.11.4.(2), where the hydraulic load is to be expressed in square feet, *fixture units* shall be converted as follows:

(a) when the number of *fixture units* is 256 or fewer, the load is 1000 sq. ft. (93m^2), and

(b) when the number of *fixture units* exceeds 256, the load is 3.9 sq. ft. (0.36m^2) for each *fixture unit.*

Hydraulic load on stack

7.4.11.7.(1) The hydraulic load that is drained to every *soil-or-waste stack* that passes through 3 *storeys* or less or to an *offset* that is part of the stack, shall not exceed the number of *fixture units* that is set forth in column 2 of Table 7.4.11.B., according to the *diameter* of the stack.

(2) The hydraulic load that is drained to every *soil-or-waste stack* that passes through more than 3 *storeys* or to an *offset* that is part of the stack, shall not exceed the number of *fixture units* set forth in column 3 of Table 7.4.11.B., according to the *diameter* of the stack, and the hydraulic load

from *fixture drains* or *branches* that are connected to the stack in a single *storey* shall not exceed the number of *fixture units* set forth in column 4 of Table 7.4.11.B., according to the *diameter* of the stack.

Table 7.4.11.B

Forming Part of Article 7.4.11.7

Diameter of Stack, in.	Maximum Load on *Soil-or-Waste Stack*, *fixture units*		
	Maximum load on stack that passes through 3 *storeys* or less	Maximum load on stack that passes through more than 3 *storeys*	Maximum load to be drained to stack of more than 3 *storeys* from any 1 *storey*
1¼	2	2	1
1½	5	8	2
2	10	24	6
2½	20	42	9
3	60	60	16
4	240	500	90
5	540	1100	200
6	960	1900	350
8	2200	3600	600
10	3800	5600	1000
12	6000	8600	1500
Column 1	Column 2	Column 3	Column 4

Table 7.4.11.C

Forming Part of Article 7.4.11.8

Diameter of *Branch*, in.	Maximum Load on *Branch* *fixture units*
1¼	1
1½	3
2	6
2½	12
3	27
4	180
5	390
6	700
8	1600
10	2500
12	3900
Column 1	Column 2

Hydraulic load on branch

7.4.11.8. The hydraulic load that is drained to a *branch* shall not exceed the number of *fixture units* set forth in Table 7.4.11.C. according to the *diameter* of the *branch.*

Hydraulic load on sanitary building drain or sewer

7.4.11.9. The hydraulic load that is drained to a *sanitary building drain* or a *sanitary building sewer* shall not exceed the number of *fixture units* set forth in Table 7.4.11.D. and Table 7.4.11.E. according to the *diameter and slope of the drain or sewer.*

Table 7.4.11.D.

Forming Part of Article 7.4.11.9.

Diameter of Drain or Sewer, in.	Maximum Load on Drain or Sewer, *fixture units*			
	Slope of Drain, 1/16 in./ft.	Slope of Drain, 1/8 in. ft.	Slope of Drain, 1/4 in./ft.	Slope of Drain, 1/2 in./ft.
3	—	20	27	36
4	—	180	240	300
5	—	390	480	670
6	—	700	840	1300
8	1400	1600	2250	3370
10	2500	3000	4500	6500
12	3900	5400	8300	13000
15	7000	10400	16300	22500
Column 1	Column 2	Column 3	Column 4	Column 5

Table 7.4.11.E.

Forming Part of Article 7.4.11.9.

Diameter of Building Sewer, in.	Maximum Load on *Sanitary Building Sewer* *fixture units*		
	Slope of Sewer 1/32 in./ft.	Slope of Sewer 1/16 in./ft.	Slope of Sewer 3/32 in./ft.
5	—	—	380
6	—	—	600
8	—	1400	1500
10	—	2500	2700
12	2240	3900	4500
15	4800	7000	9300
Column 1	Column 2	Column 3	Column 4

7.4.11.10.(1) The hydraulic load calculated in accordance with this Subsection that is drained to:

Hydraulic load on horizontal storm pipe, combined building drain or sewer

(a) a *nominally horizontal* pipe in a *storm drainage system,*

(b) a *combined building drain,* or

(c) a *combined building sewer*

shall not exceed the number of square feet set forth in Table 7.4.11.F. and Table 7.4.11.G.

Table 7.4.11.F.

Forming Part of Article 7.4.11.10.

Diameter of Pipe, Drain or Sewer, in.	Maximum Load on Pipe, Drain or Sewer, sq. ft.		
	Slope of Pipe 1/8 in./ft.	Slope of Pipe 1/4 in./ft.	Slope of Pipe 1/2 in./ft.
3	822	1160	1644
4	1880	2650	3760
5	3340	4720	6680
6	5350	7550	10700
8	11500	16300	23000
10	20700	29200	41400
12	33300	47000	66600
15	59400	84000	119000
Column 1	Column 2	Column 3	Column 4

Table 7.4.11.G.

Forming Part of Article 7.4.11.10

Diametet of Sewer, in.	Maximum Load on Storm or Combined Building Sewer, sq. ft.		
	Slope of Sewer 1/32 in./ft.	Slope of Sewer, 1/16 in./ft.	Slope of Sewer 3/32 in. ft.
5	–	–	2880
6	–	–	4650
8	–	8090	10000
10	–	14680	18100
12	17000	23800	29400
15	30700	43200	53200
Column 1	Column 2	Column 3	Column 3

7.4.11.11.(1) The hydraulic load calculated in accordance with this Subsection that is drained to:

Hydraulic load on roo gutters

(a) a semi-circular roof gutter shall not exceed the number of square feet set forth in Table 7.4.11.H. for the appropriate *diameter* and slope of gutter, and

(b) a gutter that is not semi-circular shall not exceed the number of square feet set forth in Table 7.4.11.H. for the appropriate area and slope of gutter.

Hydraulic load on leaders

7.4.11.12.(1) The hydraulic load calculated in accordance with this Subsection that is drained to:

(a) a circular *leader* shall not exceed the number of square feet set forth in Table 7.4.11.I. (Column 2), and

(b) a *leader* that is not circular shall not exceed the number of square feet set forth in Table 7.4.11.I. (Column 4).

Table 7.4.11.H.

Forming Part of Article 7.4.11.11

Diameter of Gutter, in.	Area of Gutter, sq. in.	Maximum Load on Gutter, sq. ft.			
		Slope of Gutter, 1/16 in./ft.	Slope of Gutter, 1/8 in./ft.	Slope of Gutter, 1/4 in./ft.	Slope of Gutter, 1/2 in./ft.
3	3.53	170	240	340	480
4	6.28	360	510	720	1020
5	9.82	625	880	1250	1770
6	14.14	960	1360	1920	2770
7	19.24	1380	1950	2760	3900
8	25.13	1990	2800	2980	5600
10	39.27	3600	5100	7200	10000
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6

Table 7.4.11.I.

Forming Part of Article 7.4.11.12.

Circular *Leader*		Non-circular *Leader*	
Diameter of *Leader*, in.	Max. Load, sq. ft.	Area of *Leader*, sq. in.	Max. Load sq. ft.
2	720	3.14	650
2½	1300	4.90	1170
3	2200	7.07	1980
4	4600	12.57	4140
5	8650	19.63	7785
6	13500	28.27	12150
8	29000	50.26	26100
Column 1	Column 2	Column 3	Column 4

SUBSECTION 7.4.12. DIAMETER OF PIPES

7.4.12.1. A pipe shall not be smaller than the largest pipe that drains into it, or *vent pipe* that is connected to it. Minimum size

7.4.12.2. The *diameter* of every pipe that serves a water closet shall be at least 3 in. (76 mm). Pipe servin water close

7.4.12.3. The *diameter* of every *nominally horizontal branch, building drain* or *building sewer* that serves more than two water closets shall be at least 4 in (102 mm). Pipe servin more than water close

7.4.12.4. The *diameter* of every *building sewer* and the *diameter* of every *building drain* connecting a *building sewer* to a *main vent* shall be at least 4 in. (102 mm), except that the *diameter* of a *building drain* or *building sewer* that drains to a *private sewage disposal system* may be 3 in. (76 mm) when not more than 27 *fixture units,* including not more than two water closets, are drained into it. Building sewer and drain

7.4.12.5. The *diameter* of every *soil-or-waste stack* that serves more than six water closets or similar *fixtures* shall be at least 4 inches (102 mm). Minimum diameter o stack

7.4.12.6. The *diameter* of every *fixture outlet pipe* shall not be less than the *diameter* of the *fixture* waste opening. Fixture out pipe

7.4.12.7. The *diameter* of every *fixture drain* shall not be less than the *size* of the *trap* that serves the *fixture.* Fixture dra

7.4.12.8. The *diameter* of every vertical *soil-or-waste pipe,* including a *soil-or-waste stack and stack vent,* that is part of a *main vent* shall be at least 3 in. (76 mm) and where the *soil-or-waste stack* extends through six or more *storeys* the *diameter* shall be at least 4 in. (102 mm). Main vent

SECTION 7.5 VENTING SYSTEM

SUBSECTION 7.5.1. VENT PIPES FOR TRAPS

Venting for traps and future fixtures

7.5.1.1.(1) Except as provided in Sentences (3) and (4), a *trap* shall be protected by:

(a) a *vent pipe*, or

(b) a *wet vent* installed according to Articles 7.5.1.6., 7.5.1.7. or 7.5.1.8.

(2) Where a *fixture drain* is installed to provide for a *fixture* that may be installed at a future time, a *vent pipe* or a *wet vent* installed according to Articles 7.5.1.6., 7.5.1.7., or 7.5.1.8., shall be connected to the *fixture drain.*

(3) A *trap* need not be protected where it serves an *indirectly connected fixture*, a *subsoil drainage* pipe or a *storm drainage system.*

(4) A floor drain *trap* that is connected above the horizontal centreline and drains separately into a *building drain* need not be protected where:

(a) the *diameter* of the *trap* is three inches (76 mm) or more,

(b) the length of the *fixture drain* is more than 18 inches (457 mm) and the fall does not exceed the diameter of the pipe, and

(c) the *fixture drain* is connected at least 5 feet (1.5 m) from the base of any *soil-or-waste stack.*

Length of fixture drain

7.5.1.2.(1) Where a *nominally horizontal branch* serves, according to Articles 7.5.1.6., 7.5.1.7. or 7.5.1.8., as the *vent pipe* of a *fixture* other than:

(a) a water closet,

(b) another *fixture* that relies on siphonic action for its operation, or

(c) an S-*trap* standard

the length of the *fixture drain* shall be at least 18 in. (457 mm).

Fall on fixture drain

7.5.1.3.(1) Except for water closets, S-*trap* standards, a floor drain *trap* indicated in Sentence 7.5.1.1.(4) or *fixtures* that depend on siphonic action for the proper functioning of the *fixture*, every *fixture trap* shall have a protecting vent so located that:

(a) the total fall in the *fixture drain* from the *trap weir* to the *vent pipe* is not greater than the diameter of the *fixture drain*, and

(b) the *developed length* of the *fixture drain* from the *trap weir* to the *vent pipe* is not less than twice the *diameter* of the *fixture drain* nor more than 5 ft (1.5 m).

(2) Where a water closet or another *fixture* that relies on siphonic action for its operation is *loop vented*, *circuit vented* or *wet vented*, the vertical distance from the outlet of the *fixture* to the invert of the *branch* to which the *fixture drain* is connected shall not exceed 30 in. (762 mm) and the overall developed length of the *fixture drain* shall not exceed 5 feet (1.5 m).

(3) Where a water closet or another *fixture* that relies on siphonic action for its operation is vented other than defined in Sentence (2), the vertical distance from the outlet of the *fixture* to the vent connection shall not exceed 30 inches (762 mm) and the overall developed length of the *fixture drain* shall not exceed 5 feet (1.5 m).

7.5.1.4. The section of the *fixture drain* between the *trap* and *vent pipe* connection shall not have a cumulative change of direction of more than 135 deg., except that if the *trap* discharges vertically the cumulative change in direction shall not exceed 225 deg. Connectio of drain to vent pipe

7.5.1.5. *Continuous vents* or *stack vents* may serve as *dual vents* for not more than two *fixtures* that are connected at the same level to the top of the *branch* or *soil-or-waste stack* of which the *vent pipe* is an extension. Dual venti

7.5.1.6.(1) Subject to Articles 7.5.1.2. to 7.5.1.4., a *branch* that is extended as a *dual vent* or a section of a *fixture drain* that is extended as a *continuous vent* may serve as a *wet vent* for one or two *fixtures* provided: Wet ventir

- **(a)** the *wet vented fixture* or *fixtures* are connected to a *nominally horizontal* part of the *branch* or *fixture drain.*
- **(b)** not more than three *fixture units* including not more than two *fixtures* are drained to the *branch* or *fixture drain* upstream of the wet vented *fixture* or *fixtures,*
- **(c)** where two water closets are *wet vented* they are connected by a double **Y** fitting,
- **(d)** where a water closet and another *fixture* are *wet vented,* the water closet is connected downstream of the other *fixture.*
- **(e)** where *fixtures* are *wet vented,* all *fixtures* must be in the same or adjacent rooms and located in the same *storey,* and
- **(f)** the *size* of the *wet vent* is
  - (i) at least 1¼ in. (32 mm) where the *size* of the largest *fixture drain* of a wet vented *fixture* is not more than 1½ in. (38 mm)
  - (ii) at least 1½ in. (38 mm) where the *size* of the largest *fixture drain* of a wet vented *fixture* is 2 in. (51 mm), or
  - (iii) at least 2 in. (51 mm) where the *size* of the largest *fixture drain* of a wet vented *fixture* is more than 2 in. (51 mm).

(2) Except where a wet vented *fixture* is a water closet or other *fixture* that relies on siphonic action for its operation, or an S-*trap* standard, the length of the *fixture drain* of a wet vented *fixture* shall be at least 18 in. (457 mm).

(3) Wastes from urinals or grease discharging *fixtures* shall not be used to wet vent *fixtures.*

7.5.1.7.(1) Except as otherwise required in Articles 7.5.1.2. to 7.5.1.4., a section of a *soil-or-waste stack* or of a *branch* that is extended as a *continuous vent* may serve as a *vent pipe* for not more than: Stack venti

- **(a)** one water closet and three other *fixtures* installed on the same floor provided,
  - (i) the *developed length* of each *fixture drain* does not exceed 5 ft. (1.5 m),
  - (ii) all fixtures connect separately and directly into the *soil-or-waste stack* or *branch,*
  - (iii) the *fixture drains* of the three other *fixtures* are not more than 1½ in. (38 mm) in *diameter* and each connect separately into the *soil-or-waste stack* or *branch* above the water closet connection,
  - (iv) the *soil-or-waste stack* or *branch* continues full size to the top-most *fixture* connection, and

(v) no urinal or a grease discharging *fixture* shall discharge into a *nominally horizontal waste pipe,* or

(b) two water closets and three other *fixtures* installed on the same floor provided the installation conforms to the requirements of clause (a) and the water closets are connected separately and directly into a *branch* or stack through an *approved* double fitting.

(2) Subject to Sentence 7.5.1.7.(1) an *approved* box inlet fitting may be used for additional *fixtures* providing the installation is *approved* by the *authority having jurisdiction.*

Circuit or loop venting

7.5.1.8.(1) Subject to Articles 7.5.1.2. to 7.5.1.4., a *nominally horizontal branch* may be vented by a *circuit* or *loop vent* provided:

(a) the *branch* serves not more than eight floor mounted *fixtures* such as floor drains, showers, bathtubs, water closets, mop sinks, and urinals,

(b) every *fixture* that is connected to the *branch* is in the same *storey* and connects separately into the *branch,*

(c) the *circuit* or *loop vent* is connected to the *branch* between the two most upstream *fixtures* that are vented by the *branch,*

(d) the *circuit* or *loop vent* is taken off above the centre line of the branch and continues *nominally vertically* above the highest *fixture,* and

(e) the *branch* continues full size to the most upstream *circuit* or *loop vent.*

(2) A *relief vent* shall be connected to the *branch* when the downstream end of the *branch* is connected to:

(a) a *soil-or-waste stack, building drain* or *branch* that serves a *fixture* on a higher *storey,*

(b) a *building drain* or *branch* downstream of a *fixture* or *fixtures* that have a hydraulic load of more than six *fixture units,* or

(c) a *soil-or-waste stack* below a water closet.

(3) Where a *relief vent* is required it shall be connected to the *branch* downstream of the connection from the most downstream *fixture* that is vented by the *branch.*

(4) A change in direction of more than 45 deg. shall not be made in the *branch* downstream of the most upstream *fixture* that is vented by the *branch.*

(5) A *branch* may serve as a *vent pipe* for more than 8 *fixtures* if an additional *relief vent* is connected to the *branch* for every 8 additional *fixtures* or fraction thereof.

(6) Subject to Sentences 7.5.1.8.(1) to 7.5.1.8.(5) wall outlet *fixtures* may connect into a *circuit* or *loop vented branch* providing the outlet *fixture drain* or *branch* does not exceed 2 inches in *diameter* and the connection is made downstream of the *circuit* or *loop vent.*

SUBSECTION 7.5.2. VENT PIPES FOR WASTE STACKS

7.5.2.1. Every *soil-or-waste stack* shall be extended to form a *stack vent.* Stack vent

7.5.2.2.(1) Except for *detached dwellings, semi-detached dwellings* and *row dwellings* a *vent stack* shall be installed in conjunction with every *soil-or-waste stack* when *vents* are required in two or more storeys. Installation stack vent

(2) Every *vent stack* shall connect full size at its base to a *soil-or-waste stack* at or immediately below the lowest horizontal *waste pipe* or *fixture* connection.

(3) In no case shall a *vent* terminate, at its base, in the branch of a side inlet box fitting when more than one-water closet and a proportionate number of small *fixtures* (10 *fixture units* in all) discharges into the *stack* above such connection.

7.5.2.3.(1) Except as provided in Sentence (2) where a *soil-or-waste stack* extends through ten or more *storeys,* a *yoke vent* shall be connected to a *soil-or-waste stack* as follows: Yoke vent

- **(a)** at every fifth *storey* measured downward from the highest *storey* that has a fixture connection,
- **(b)** immediately above each change of direction from the vertical downstream to the horizontal,
- **(c)** below the lowest *fixture drain* or *branch* in the *storey* in which the vent connection is made,
- **(d)** the vent connection shall be made with a **Y** to the *soil-or-waste stack* and shall continue vertically 3 inches (76 mm) above the highest fixture in the *storey.*

(2) Subject to Sentence (1) *yoke vents* need not be installed:

- **(a)** in the top-most *storey* of the *soil-or-waste stack* that has a fixture connection,
- **(b)** in the first *storey* of the *soil-or-waste stack* that has a fixture connection, or
- **(c)** provided a *vent pipe* full size of the *fixture drain* or a *relief vent* full size of the *branch drain* is installed at each fixture connection made to the stack.

7.5.2.4. Except for Sentence 7.5.2.5. the *stack vent* of a *soil-or-waste stack* shall not be reduced if the *soil-or-waste pipe* rises more than 25 ft. (7.6 m) measured vertically from its connection with a *drain* or stack to the highest *fixture branch.* Where stacl vent reduction n permitted

7.5.2.5. Where a *nominally vertical soil-or-waste stack* extends through one or more *storeys* and becomes a *nominally horizontal drain* which serves two or more *soil-or-waste stacks* with *fixtures* on two or more *storeys, a relief* or *stack vent* ½ the diameter of the *soil-or-waste stack* or 4 inch (102 mm), whichever is the smaller, may be substituted in place of the *vent stack* indicated in Sentences 7.5.2.2.(1) and (2), provided a *vent stack* connects at the base of each *soil-or-waste stack.* This *relief* or *stack vent* shall be installed downstream between the lowest *fixture* connection and where the *nominally horizontal drain* changes to the vertical. The *vent* shall extend *nominally vertical* to open air as a *stack vent* or connect within the building to a *vent stack* or *header* at least equal in diameter size.

SUBSECTION 7.5.3. MISCELLANEOUS VENT PIPES

Venting of sewage sump

7.5.3.1. Every *sump* that receives *sewage* shall be provided with a *vent pipe* that is connected to the top of the *sump.*

Venting of oil interceptor

7.5.3.2.(1) Every sealed oil *interceptor* shall be provided with two *vent pipes* that are connected to the high points of opposite ends of the *interceptor* and

(a) the *vent pipes* shall be extended directly to open air,

(b) one of the *vent pipes* shall be terminated at 12 in. (305 mm) above the other to promote circulation of air through the *interceptor,* and

(c) adjacent compartments shall be connected to each other by a vent.

Venting of building trap

7.5.3.3. Where a *building-trap* is installed a *fresh air inlet* shall be connected to the *building drain* upstream of and within 4 ft. (1.2 m) of the *building-trap* and downstream of any *fixture* connection or *branch drain.*

Venting air injector

7.5.3.4. Air injector vents are to be vented separately through the roof.

Venting single-family dwelling units

7.5.3.5. A *vent* at least 1½ inches (38 mm) in diameter shall be installed in the lowest *storey* of all new single-family *dwelling units.* This vent shall connect to the venting system and shall terminate in the lowest *storey* in an easily accessible sealed threaded fitting or connect into the *drainage system.*

SUBSECTION 7.5.4. ARRANGEMENT OF VENT PIPES

Drainage of vent pipes

7.5.4.1. Every *vent pipe* shall be installed without depressions in which moisture can collect, and shall be graded and connected so that moisture will drain back to the *drainage system.*

Vent pipe connections

7.5.4.2.(1) Except as provided in Sentence 7.5.4.3.(1) every vent pipe shall be connected as directly as possible from its lower end to outside air, and shall be installed in a *nominally vertical* position.

(2) Except as indicated in Sentences 7.5.1.6.(1) and 7.5.1.7.(1) a *vent pipe* connection made to a *nominally horizontal soil-or-waste pipe* shall be above the centreline of the *soil-or-waste pipe* and shall continue *nominally vertical* to a point not less than 3 inches (76 mm) above the flood level rim of the *fixture* it is venting.

(3) Except as provided in Sentence 7.5.4.2.(5) and Sentence 7.5.4.4.(5) no *vent pipe* shall be installed outside a building unless *approved* by the *authority having jurisdiction.*

(4) No *vent pipe* shall be installed in an external wall unless protected from the outside with at least 2 inches (51 mm) of insulation.

(5) Every *vent pipe* that passes through a roof that is used for any purpose other than weather protection, shall extend at least 7 feet (2.1 m) above the roof, be firmly braced and adequately insulated.

Vents to connect above fixtures they serve

7.5.4.3.(1) Where a *vent pipe* is connected to another *vent pipe* the connection shall be located at least 3 in. (76 mm) above the *flood level rim* of every *fixture* that is served by either *vent pipe.*

(2) Every connection between a *yoke vent* and *vent stack* or *branch vent* shall be located at least 3 in. (76 mm) above the *flood level rim* of every *fixture* in the *storey* in which the connection is made.

7.5.4.4.(1) The upper end of every *vent pipe* that is not terminated in open air shall be connected to a *vent pipe* or *venting system* that is terminated in open air. Terminals

(2) The upper end of every *stack vent* or *vent stack* shall be terminated in open air or be connected within the *building* to another *stack vent* or *vent stack* or to a *header.*

(3) The upper end of every *vent pipe* that is terminated in open air, other than

(a) a *fresh air inlet,*

(b) a *vent pipe* that serves an oil *interceptor,* or

(c) a *vent pipe* that is installed when an existing *drainage system* is extended

shall be extended *nominally vertical* through a roof.

(4) Where a *vent pipe* is terminated in open air the terminal shall be located

(a) at least 3 feet (915 mm) above or 12 feet (3.7 m) in any other direction from every air inlet, openable window or door,

(b) at least 7 feet (2.1 m) above or 12 feet (3.7 m) in any other direction from a roof that is used for other than weather protection, and

(c) except for a *fresh air inlet,* at least 7 ft. (2.1 m) above the ground.

(5) Except as provided in Articles 7.3.5.7. and 7.3.6.4., and Sentence 7.4.11.5.(2) and subject to Article 7.2.9.3. and Sentence 7.5.5.1.(1), where a *vent pipe* passes through a roof it shall be terminated not less than one inch (25 mm) and not more than four inches (102 mm) above the roof.

(6) A fresh air inlet pipe shall be extended outside the external wall of a *building* to a point at least 12 inches (304 mm) above the surface of the ground, and shall, where practicable, be placed not less than 6 feet (2 m) from any opening window, door or other opening in the *building* and shall be finished off with a return bend or when terminating through the outside wall of a *building* may be finished off with a grille.

SUBSECTION 7.5.5. SIZE OF VENT PIPES

7.5.5.1.(1) The *diameter* of every *vent pipe* shall Minimum diameter

(a) be at least 1¼ inch (32 mm) and not less than the *diameter* set forth in Table 7.5.5.A. according to the largest *trap* that it serves,

(b) be at least 1½ inch (38 mm) before being increased if terminating through the roof,

(c) be at least 3 inch (76 mm) for the part of the *vent pipe* that is above the roof of a *building* unless otherwise required by the *authority having jurisdiction.*

(d) be increased at a point as it passes through the roof,

(e) be at least 3 inches (76 mm) when it serves an oil interceptor, and

(f) conform to the appropriate requirements of this Subsection for each type of *vent.*

Size of vents for future fixtures

7.5.5.2. Where provision is made in the installation of *soil-or-waste pipes* for a *fixture* to be installed at a future time, the *venting system* shall be adequate to serve the additional *fixture.*

Minimum diameter of individual vent

7.5.5.3. The *diameter* of every *individual vent* shall not be less than the *diameter* set forth in Table 7.5.5.A.

Table 7.5.5.A.

Forming Part of Articles 7.5.5.1 and 7.5.5.3.

Size of Trap, inches	Minimum *Diameter* of *Individual Vent*, in.	Maximum length of Vent, in feet
1¼	1¼	30
1½	1¼	30
2	1½	100
2½	1½	100
3	1½	100
4	1½	100
5	2	200
6	2	200
Column 1	Column 2	Column 3

Continuous vent

7.5.5.4.(1) The *diameter* of every *continuous vent* other than an *individual vent* shall not be less than the *diameter* set forth in Table 7.5.5.B. according to the length of the *continuous vent* and the total hydraulic load from the *fixtures* that it serves.

(2) The length of a *continuous vent* is its *developed length* from its connection with the *fixture drain* or *branch* to a *stack vent, vent stack* or *header,* and where the *continuous vent* is connected to a *branch vent* the length includes the length of the *branch vent* from its connection with the *continuous vent* to its upper end.

Branch vent or header

7.5.5.5.(1) No section of a *branch vent* or *header* shall have a *diameter* less than the *diameter* that is set forth in Table 7.5.5.B. according to

(a) the total hydraulic load from the *fixtures* that are served by the section, and

(b) the length of the *branch vent* or *header* of which it is a part.

(2) The length of a *branch vent* is its *developed length* from its upper end to the most distant *soil-or-waste pipe* that it serves, and includes the length of any *vent pipe* that connects it to the *soil-or-waste pipe.*

(3) The length of a *header* is its *developed length* from open air to the most distant *soil-or-waste pipe* that it serves, and includes

(a) the length of any *stack vent* or *vent stack* that connects it with open air, and

(b) the length of any *vent pipe* that connects it to the *soil-or-waste pipe.*

Table 7.5.5.B.

Forming Part of Articles 7.5.5.4., 7.5.5.5., and Sentence 7.5.5.8.(3)

Total Hydraulic Load, *fixture units*	Minimum *Diameter* fo Continuous Vent, Branch Vent or *Header,* in.								
	1¼	1½	2	2½	3	4	5	6	8
	Maximum Length of *Vent Pipe, ft.*								
0-2	30								
3-8	30	100	200						
9-24	25	50	150	400					
25-42	15	30	100	300	440				
43-60	PER	15	50	80	400	1000			
61-500			30	70	180	700	900		
501-1100	NOT	MIT		20	50	200	700	900	
1101-1900			TED		20	70	200	700	1000
1901-3600						25	60	250	800
3601-5600							25	60	250
Column 1	2	3	4	5	6	7	8	9	10

7.5.5.6.(1) Except as provided in Sentence (2), the *diameter* of every *vent pipe* for a *sewage sump* shall be not less than one *size* smaller than the largest inlet pipe to the *sump.* Sump vent

(2) The *diameter* of every *vent pipe* for a *sewage sump* shall be not less than 2 in. (51 mm) and need not be larger than 4 in (102 mm).

7.5.5.7. The *diameter* of every *circuit vent, loop vent* or *relief vent* shall not be less than 2 in. (51 mm). Circuit ven loop vent relief vent

7.5.5.8.(1) Except as provided for a *main vent* in Article 7.4.2.1. and 7.4.12.8. and as provided in Sentence (3), the *diameter* of every *stack vent* or *vent stack* shall not be less than the *diameter* set forth in Table 7.5.5.C. according to Stack vent vent stack

(a) the length of the *stack vent* or *vent stack,*

(b) the *diameter* of the lowest section of *soil-or-waste stack* to which it is connected, and

(c) the hydraulic load that is drained to the lowest section of the stack.

(2) The length of a *stack vent* or *vent stack* is its *developed length* from its lower end to open air, and where the *stack vent* or *vent stack* is connected to a *header,* includes any part of the *header* that is between the top of the *stack vent* or *vent stack* and open air.

(3) Where a section of a *stack vent* or *vent stack* connects the top of

one or more *headers* or other *stack vents* or *vent stacks* to open air, the *diameter* of the section shall be at least equal to the value set forth in Table 7.5.5.B. according to the hydraulic load from the *fixtures* that are served by the section and the length of the longest *stack vent, vent stack* or *header* that is connected to it.

Table 7.5.5.C.
Forming Part of Sentence 7.5.5.8.(1)

Diameter of *Soil-or-waste Stack,* in.	Total Hydraulic Load on Stack *fixture units*	Minimum *Diameter* of *Stack Vent* or *Vent Stack,* in.								
		1¼	1½	2	2½	3	4	5	6	8
		Maximum Length of *Vent Pipe,* ft.								
1¼	0-2	30								
1½	0-8	50	100							
2	0-8	30	75	200						
2	9-24	26	50	150						
2½	0-20		45	150	400					
2½	21-42		30	100	300					
3	0-10		30	100	200	600				
3	11-30		15	60	200	500				
3	31-60		15	50	80	400				
4	0-100			35	100	260	1000			
4	101-200			30	90	250	900			
4	201-500			20	70	180	700			
5	0-200				35	80	350	1000		
5	201-500				30	70	300	900		
5	501-1100				20	50	200	700		
6	0-350				25	50	200	400	1300	
6	351-620				15	30	125	300	1100	
6	621-960					24	100	250	1000	
6	961-1900					20	70	200	700	
8	0-600						50	150	500	1300
8	601-1400						40	100	400	1200
8	1401-2200						30	90	350	1100
8	2201-3600						25	60	250	800
10	0-1000							75	125	1000
10	1001-2500							50	100	500
10	2501-3300							30	80	350
10	3301-5600							25	60	250
Column 1	2	3	4	5	6	7	8	9	10	11

NOTE

Yoke vent

7.5.5.9. The *diameter* of every *yoke vent* shall be not less than the *diameter* of the smaller stack to which it is connected.

Fresh air inlet

7.5.5.10. The *diameter* of every *fresh air inlet* shall be not less than 4 in. (102 mm) unless *approved* by the *authority having jurisdiction.*

SECTION 7.6 POTABLE WATER SYSTEM

SUBSECTION 7.6.1. ARRANGEMENT OF PIPING

7.6.1.1.(1) Piping for hot and cold water shall be connected to every kitchen sink, washbasin, bathtub, shower, slop sink and laundry area.

(2) Piping for cold water shall be run to every water closet and hose bib.

(3) Every *fixture* supplied with separate hot and cold water controls shall have the hot water control on the left and the cold on the right.

Hot and col faucets

7.6.1.2.(1) Piping, except a *water service pipe*, shall be graded or pitched so that any part of the system can be drained, and if it is not practicable to avoid a *trap* or a sag in a pipe, provision shall be made to drain it.

Drainage of piping

(2) Where a drain valve is installed it shall be adequate to drain completely the piping that it serves.

7.6.1.3.(1) Every *water service pipe* shall be provided with a shut-off valve and a drip valve, except that a stop-and-waste cock may be installed when the *diameter* of the pipe is 1 in. (25 mm) or less.

Shut-off val and drip valve

(2) The valve or cock described in Sentence (1) shall be located at the inner side of the wall or floor through which the pipe enters the *building*.

7.6.1.4. Where polyethylene pipe is used for a *water service pipe*, a *check valve* shall be installed at the *building* end of the pipe.

Check valve

7.6.1.5. Except for a single-family house, every pipe that extends through more than one *storey* shall be provided with a shut-off valve at the source of supply to the riser.

Valve on ris

7.6.1.6. The supply to every water closet shall be provided with a shut-off valve.

Shut-off val for water closet

7.6.1.7. Except for a single-family house, shut-off valves shall be installed in a *dwelling unit* or in a suite in a motel or hotel as may be necessary to ensure that when the supply to one *dwelling unit* or suite is shut off the supply to the rest of the *building* is not interrupted. Alternatively, shut-off valves may be installed for every *fixture*.

Shut-off va for dwellin unit or suit

7.6.1.8. Except for a *dwelling unit*, motel or hotel, the supply to every *fixture* or device shall be provided with a shut-off valve except that one shut-off valve may control the supply to a group of *fixtures* that are in the same room.

Shut-off val for other buildings

7.6.1.9. Every pipe that is supplied from a water tank shall be provided with a shut-off valve located close to the tank.

Shutt-off valves for water-tank

7.6.1.10. Every pipe that supplies a hot water tank shall be provided with a shut-off valve.

Shut-off val for hot-wat tank

7.6.1.11.(1) Every *water system* shall be protected against freezing.

Stop-and-waste cock for exterior supply

(2) Every pipe that passes through an exterior wall to supply water to the exterior of the *building* shall be provided with a frost-proof hydrant or a stop-and-waste cock located inside the *building* and close to the wall or in an acceptable place.

(3) Except as provided in Sentence 7.6.1.11.(2) no part of a *water system* shall be installed in the external wall of a *building*.

Pressure relief valves and temperature relief valves

7.6.1.12.(1) In addition to the requirements in Sentence (2), every hot water tank of a *storage-type service water heater* shall be equipped with a pressure relief valve designed to open when the water pressure in the tank reaches the rated working pressure of the tank and so located that the pressure in the tank shall not exceed the pressure at the relief valve by more than 5 psi under any condition of flow within the distribution system.

(2) Every hot water tank of a *storage-type service water heater* shall be equipped with

(a) a temperature relief valve with a temperature sensing element located within the top 6 in. (152 mm) of the tank and designed to open and discharge sufficient water from the tank to keep the maximum termperature of the water in the tank at 210 deg. F. (99°C) under all operating conditions, or

Temperature limit control

(b) a device that

(i) is designed to shut off the supply of electricity or fuel to the tank,

(ii) is not connected to and operates independent of the thermostatic control that determines the temperature of the water in the tank, and

(iii) is located and maintained on or within the top 6 in. (152 mm) of the tank so that the maximum temperature of the water in the tank shall not exceed 210 deg. F. (99°C) under all operating conditions.

(3) Every tank equipped as specified in Clause 7.6.1.12.(2)(b) shall bear the information in a clearly visible location that it is so equipped.

Combination pressure and temperature relief valve

(4) A pressure relief valve and a temperature relief valve may be combined where Sentences (1) and (2) are complied with.

Relief valve pipe discharge

(5) Every pipe that conveys water from a temperature relief, pressure relief or a combined temperature and pressure relief valve which is installed on a hot water tank shall:

(a) have a *diameter* equal to or greater than the *diameter* of the outlet of the valve, and

(b) terminate above a floor drain, *sump* or *fixture* or other *approved* safe location.

(6) No shut-off valve shall be installed on the pipe between the tank and the relief valves.

(7) A *back-siphonage* device shall be installed when required by the *authority having jurisdiction.*

Accessibility

7.6.1.13. Every valve shall be readily accessible for service or replacement.

7.6.1.14. Air chambers or shock stops shall be installed in conjunction with spring-action or quick-closing valves and taps to prevent water hammer. Shock stops that are of a mechanical nature shall be located in an accessible place. Shock stops

7.6.1.15. *Water service pipes* over 2 inches in internal *diameter* shall be provided with a properly valved by-pass around the water meter at least 2 inches in *diameter.* Valved by-pass

SUBSECTION 7.6.2. PROTECTION FROM CONTAMINATION

7.6.2.1.(1) No part of a *potable water system* shall be connected so that foreign matter or non-*potable* water may enter, except that a water treatment device or apparatus may be installed with the written permission of the health *authority having jurisdiction.* Connection of system

(2) No private water supply shall be interconnected with a public water supply system without written permission of the *authority having jurisdiction.*

(3) No *potable* water pipe shall be connected to an ejector unless provided with an *approved vacuum breaker.*

(4) Aspirators shall not be *directly connected* to a *waste pipe* that is connected to a sewer but may be connected to the inlet side of a *trap* and shall be equipped with an *approved vacuum breaker* installed at least 6 in. (152 mm) above the aspirator unit. The aspirator unit shall be designed to provide for free flow discharge through an *air gap.* The length of the discharge pipe or tube from the aspirator shall at no time exceed 12 in. (305 mm).

(5) No water operated equipment shall be installed and no foreign chemical or substance that may cause pollution shall be used in a *potable* water supply, except that such equipment may be permitted by the *authority having jurisdiction* when equipped with an *approved backflow preventer.* The use of an *approved* assembly of differential valves and check valves including an automatically opened spillage port to the atmosphere designed to prevent *backflow* is permitted in installations where it is desirable to zone or isolate a multiple of openings or connections.

7.6.2.2. A newly installed part of a *water system* shall be thoroughly cleaned to ensure freedom from contamination before the system is put into operation. Cleaning of system

7.6.2.3.(1) Except for a *fixture* in which the water surface may be exposed to a pressure greater than atmospheric, a water supply inlet including a float-operated inlet shall be: Air gap or back siphonage preventer

- **(a)** located so as to provide an *air gap,* or
- **(b)** provided with a *back-siphonage preventer.*

(2) Except as provided in Sentence (3), an *air gap* shall be provided above, or a *back-siphonage preventer* installed so that its *critical level* is above, the *flood level rim* of the *fixture.*

(3) In a tank or vat an *air gap* may be provided above, or a *back-siphonage preventer* installed so that its *critical level* is above, the maximum water level in the tank or vat where the tank or vat is provided with an overflow that can, when all other inlets are open and the outlet is closed, maintain the water level at a distance above the top of the overflow that does not exceed:

(a) one-half the required *air gap* where an *air gap* is provided, or

(b) the size of the inlet where a *back-siphonage preventer* is installed.

Height of air gap

7.6.2.4.(1) The height of every *air gap* shall be:

(a) not less than twice the *diameter* of the *effective opening* of the water supply inlet except that where the inlet is located so that its inside edge is

(i) within three times the *diameter* of the *effective opening* from the vertical surface, or

(ii) within four times the *diameter* of the *effective opening* from each of two adjacent vertical surfaces,

the height of the *air gap* shall be not less than three times the *diameter* of the *effective opening*, and

(b) not less than 1 in. (25 mm) where the *fixture* is other than a drinking fountain, or

(c) not less than ¾ in. (19 mm) where the *fixture* is a drinking fountain.

Height of back siphonage preventer

7.6.2.5.(1) The height at which the *critical level* of a *back-siphonage preventer* is installed above a *flood level rim* or maximum water level shall be:

(a) not less than four times the *diameter* of the inlet of the fixture, control valve or faucet, and

(b) not less than 4 in. (102 mm) where the *back-siphonage preventer* is installed in other than a water closet tank, or

(c) not less than 1 in. (25 mm) where the *back-siphonage preventer* is installed in a water closet tank.

(2) Where the *critical level* is not marked on a *back-siphonage preventer* the outlet of the *back-siphonage preventer* shall be assumed to be its *critical level.*

Location of back-siphonage preventer

7.6.2.6. Where a *back-siphonage preventer* is installed it shall be located on the downstream side of the *fixture* control valve or faucet so that it will be subject to pressure only when the valve or faucet is open.

Protection of device under pressure

7.6.2.7. Where a water supply pipe is connected to a device which may be subjected to a pressure in excess of atmospheric, the pipe shall be protected with an assembly of differential valves and check valves including an automatically opened spillage port to the atmosphere designed to prevent *backflow.*

SUBSECTION 7.6.3. TANKS

Support of tank

7.6.3.1. Every tank shall be supported independent of the piping that is connected to it.

Protection of nonpressurized tank

7.6.3.2. Every tank that is not under pressure shall:

(a) not be located under drainage or non-*potable* water piping,

(b) be provided with a cover that prevents the entrance of foreign matter, and

(c) be provided with an overflow pipe that will prevent flooding when all inlets to the tank are open and all outlets except the overflow are closed.

7.6.3.3. A cover of a tank that is under pressure shall not be located under drainage or non-*potable* water piping. Protection pressurized tank

SUBSECTION 7.6.4. WELLS

7.6.4.1. Every well shall be constructed so that the well water is protected against surface water contamination or other pollutants.

SUBSECTION 7.6.5. SIZE AND CAPACITY OF PIPES

7.6.5.1.(1) Except as provided in Sentence (2), the *diameter* of a pipe that supplies a *fixture* or device shall conform to Table 7.6.5.A. Fixture supp pipe

(2) A tail piece or connector not more than 18 in. (456 mm) in length and not less than ¼ in. (6 mm) inside *diameter* may be used when exposed between the faucets and the *water system.*

Table 7.6.5.A.

Forming Part of Sentence 7.6.5.1.(1)

Fixture or Device	Minimum *Diameter* of Supply Pipe, in.
Bath tub	½
Combination sink and tray	½
Drinking fountain	⅜
Dishwasher, domestic	½
Kitchen sink, domestic	½
Kitchen sink, commercial	½
Lavatory	⅜
Laundry tray: 1, 2 or 3 compartments	½
Shower, single head	½
Sink, service, slop	½
Sink, flushing rim	¾
Urinal, flush tank	½
Urinal, direct flush valve	½
Water closet, flush valve type	1
Water closet, tank type	⅜
Hose bib	½
Wall hydrant	½

7.6.5.2.(1) Every *potable water system* shall be designed, constructed and installed to conform to good engineering practice. Capacity of system and piping

(2) Every *water service pipe* shall have a capacity not less than the peak demand flow and a *diameter* not less than ¾ in. (19 mm).

(3) The capacity of every pipe that supplies a *fixture* shall be not less than the flow that will flush the *fixture* and keep it in a sanitary condition.

(4) Where static pressures may exceed 80 psi, pressure reducing devices shall be installed to limit the maximum static pressure in habitable areas to 80 psi.

SECTION 7.7 NON-POTABLE WATER SYSTEM

SUBSECTION 7.7.1. CONNECTION

7.7.1.1. A non-*potable water system* shall not be connected to a *potable water system.* Connection between systems

SUBSECTION 7.7.2. IDENTIFICATION

7.7.2.1. Non-*potable* water piping shall be identified by markings that are permanent, distinct and easily recognized. Identificati of system

SUBSECTION 7.7.3. LOCATION

7.7.3.1. Non-*potable* water piping shall not be located: Location of piping

- **(a)** where food is prepared in a food processing plant,
- **(b)** above food-handling equipment,
- **(c)** above a non-pressurized *potable* water tank, or
- **(d)** above a cover of a pressurized *potable* water tank.

7.7.3.2. An outlet from a non-*potable water system* shall not be located where it can discharge into: Location of outlet

- **(a)** a sink or washbasin,
- **(b)** a *fixture* into which an outlet from a *potable water system* is discharged, or
- **(c)** a *fixture* that is used for a purpose related to the preparation, handling or dispensing of food, drink, or products that are intended for human consumption.

INDEX

A

Abbreviations 12
Acrylonitrile-butadiene-styrene (ABS) pipe 23
Air break 40
Air chambers (shock stops) 67
Air gap 67
Air test 36
Application of regulations 13
Approval, certificate of 16
Asbestos cement pipe and fittings 22
Aspirators 67

B

Backfill for piping 45
Backflow
  preventer 6
  protection from 45,67,68
Back-siphonage
  device 6, 67
  preventer 6, 28, 67-68
Backwater valve 38, 45
Ball test 35, 36
Bathtub 18
Bituminized fibre pipe and fittings 23
Branch, hydraulic load on 52
  serving water closets 55
Branch vent 6,62
Brass pipe 25
Brass pipe flanges and fittings 25
Brass plugs for cleanout ferrules 27
Bronze pipe flanges and fittings 25
Building drain
  cleanout 46
  combined 44
hydraulic load on 52, 53
  protection from backflow 45
  protection from damage 35
  size of 55
  trapping of 46
Building sewer
  combined 44
  hydraulic load on 52
  size of 55
  slope of 47
Building trap 21
  cleanout for 46
  location of 45
  venting of 60
Burned lead joint 31

C

Cast brass or bronze fittings
Cast iron pipe and fittings
Caulked lead drainage joint
Caulking compounds
  cold and hot poured
Cement joint
Cement jointing mortar
Certificate of approval
Check valve
Circuit vent 7
Cleaning of water system
Cleanout
  ferrule
  for traps
  types of
Cock, stop-and-waste
Cold caulked joint
Combined building drain
Combined building sewer
Compounds, caulking and sealing
Concrete pipe
Connections
  fixture
  indirect
  to drainage systems
  to horizontal offset
  to lead bend
Continuous vent
Cooling of hot waste
Copper pipe
Copper tube
Corrugated steel pipe
Cross fitting

D

Definitions
Developed length of vents
Diameter (see size)
Dissimilar materials or sizes, joints for pipes
Double Y fitting
Double Y and ⅛th bend fitting
Drain (see building drain, building subdrain, fixture drain)
Downspouts (see leaders)
Drainage joint, caulked lead
Drainage piping
  arrangement of

hydraulic loads on 47
minimum slope 55
sizing of .....
Drainage 38
subsoil 7, 38-56
Drainage system 38
connection of 38
sanitary 38
storm 35-37
testing of 35-37
Drain valve, ... 65
Drilled and tapped joint 32
Drinking fountain 18, 20, 39
Drip pipe, cleanout for 46
Drip valve 65
Dual venting 57

E

Eavestroughs (see gutters, roof)
Effective opening 8
Ejector 67
Electrical insulation at piping supports 33
Expansion joints, plastic pipe 33

F

Faucets 28, 65
Ferrous pipe and fittings 24-25
Ferrule, cleanout 27
Fittings, ... 22-26
brass or bronze pipe 25
downstream of traps 22
ferrous 24-25
flared joint 26
marking 18
non-ferrous 25-26
non-metallic 22-24
restrictions on use 22, 57
screwed 24
solder-joint 26
Fixtures
connections to drainage system 38
connections to vent pipe 38
construction of 18-21
hydraulic load from 43-44, 48
indirectly connected 56
installation of 40-41
location of 40
materials for 18-19
special purpose 19
Fixture drains
bends in 57
cleanouts for 46
connections to continuous vent 57
connections to wet vents 57
fall on 56
for floor outlet fixtures 32
for indirectly connected fixtures 56
length of 56
minimum slope 47
protection from backflow 45-46
size of 55
venting of 56-57
Fixture outlet pipe 8, 55
Fixture unit
conversion to square feet 50
Flared joint 30
Flared joint fittings 26
Flashing, vent pipe 28
Floor drain
connections to drainage system 38
protection from backflow 45
trap for basement 56
Floor flanges 27, 32
Floor outlet fixtures, drain connections 32
Flushing device 20, 41
Forges solder-joint fittings 26
Freezing, protection from 65
Fresh air inlet 64

G

Gallons per minute, conversion to fixture units 48
Garbage grinder 40
Grease interceptor (see interceptors)
Gutters, roof 53

H

Hangers, pipe 33-35
Headers 62-63
Horizontal offset, connections to 39
Horizontal piping, support of 33-34
Hot poured joint 30
Hub and spigot pipe 45
Hydraulic loads 48-54

I

Increaser fitting 32
Indirect connections 39-40
Individual vent 62
Inlet, fresh air 64
Inspection 15
Installation of fixtures 40-41
Interceptors
design of 21
replacing trap 42

restricted use 41
venting of 60
where required 41

J

Jointing materials 27
Joints, pipe 30-33

L

Laundry tray 19
Lead
caulking 27
flashing 28
pipe 26
Leaders (downspouts)
connections to roof hopper 32
exposed to damage 35
hydraulic load on 54
restricted use of 45
sheet metal 25
trap for 21, 44
Load
hydraulic 48-54
Loop vent 8, 58, 63

M

Main vent 9, 55
Malleable iron fittings 24
Manholes, as cleanouts 47
Markings on pipes and fittings 18, 71
Materials
defects in 18
for fittings 22-26
for fixtures 18-19
for traps and interceptors 21
jointing 27
markings 18
miscellaneous 27-29
used 18
Mechanical joint 31
Mortar, cement jointing 27

N

Non-ferrous pipe and fittings 25-26
Non-metallic pipe and fittings 22-24
Non-potable water system
connections to potable water 67, 71
identification 71
location of pipes and outlets 71
Numbering system 2

O

Offsets in piping 9
Oil interceptor (see interceptors)
Outlet, non-potable water system 7
Overflows
fixture 19-
rainwater tank 3

P

Paved surface, hydraulic load from 4
Permit 1
Pipe
acrylonitrile-butadiene-styrene (ABS) 23,
asbestos-cement drainage 22,
asbestos-cement water 23,
bituminized fibre 23,
brass 2
cast-iron soil 24,
cast-iron water 24,
concrete 2
copper 2
corrugated steel 2
diameter of 5
flanges and fittings, brass or bronze 2
hub and spigot 33,
joints and connections 30-
lead waste 2
marking 1
open ends prohibited 4
plastic sewer 2
polyethylene water 23,
protection 3
sheet metal 2
sizing 5
subsoil drainage 44,
supports 33
underground (see underground pipe)
vitrified clay 23,
water supply 65-
Piping
drainage of 6
service 3
support of 33
Plastic pipe and fittings 23, 32
Plugs, cleanout ferrule 2
Plumbing contractor 15
Plumbing systems
certificate of approval 1
inspection and testing 1
plans and drawings 1
responsibility of contractor 1
Polyethylene pipe 23
Polyvinyl chloride (PVC) pipe 23

Potable water system
arrangement of piping ... 65-67
connections to non-potable water system ... 67, 71
design of ... 69-70
protection from contamination ... 67-68
tanks ... 68
testing of ... 36
wells ... 69
Pressure reducing devices ... 70
Pressure relief valves
specifications ... 28
where required ... 66
Private sewage disposal system ... 55
Private water supply ... 67
Proportional weir roof drains ... 49
Protection of piping ... 35
PVC (see Polyvinyl chloride pipe)

Q

Quarter bend fitting ... 22

R

Reducer fitting ... 32
Relief valves
discharge pipe ... 66
outlets ... 38
specifications ... 28
where required ... 66
Relief vent
connections ... 58
minimum size ... 63-64
Relief venting ... 58
Rooms for sanitary facilities ... 40
Roof gutters ... 53
Roof hopper
leader connections ... 32
proportional weir type ... 49
Roof, hydraulic load from ... 49

S

Saddle hub ... 27
Sanitary building drain or sewer (see building drain or building sewer)
Sanitary drainage system ... 38-55
Sanitary T-Y fitting ... 22
Scope ... 13
Screwed cast-iron drainage fittings ... 24
Screwed joint ... 30
Service piping ... 33-35
Service water heaters ... 66
Sewage disposal system, private ... 55
Sewage, treatment and disposal ... 41
Sewer (see building sewer)
Sheet metal leader ... 25
Shock stops ... 67
Shower receptor ... 19, 21
Shut-off valves ... 65-66
Sink ... 18
Sisson fitting ... 22
Size of
cleanouts ... 47
drainage pipes ... 55
traps ... 42
vent pipes ... 61-64
waste openings ... 19
water supply pipes ... 69-70
Slip joint ... 32
Slope of drainage pipes ... 47
Smoke test ... 36
Soil-or-waste pipe, size of ... 55
Soil-or-waste stack
hydraulic load on ... 50-51
size of ... 55
vent stacks for ... 59
Soil pipe, cast-iron ... 24
Solder ... 27
Soldered joint ... 30
Solder-joint fittings ... 26
Stack, hydraulic load on ... 50-51
Stack vent
extension of stack ... 59
size of ... 59, 63-64
Stack venting ... 57-58
Stop and waste cock ... 65-67
Storage type service water heaters ... 66
Storm drainage system
connection of ... 38
hydraulic load ... 53
sumps ... 45
traps required ... 44-45
Strainer ... 19
Stub, lead water closet ... 33
Subsoil drainage
backflow protection ... 45-46
connection of ... 44
disposal of ... 38
Sumps ... 45
venting of ... 60, 63
Support piping ... 33-35
Symbols ... 12

T

T fitting ... 22
Tanks, potable water ... 68-69
Temperature limit control ... 66

Temperature relief valve
specifications ... 28
where required ... 66
Terminals, vent pipe ... 61
Testing
drainage and venting systems ... 35-36
potable water system ... 36-37
Traps
connections of ... 21, 56
design of ... 21
for fixtures ... 41-45
for storm drainage system ... 44
for subsoil drains ... 44
interceptors used as ... 42
location of ... 42, 45
prohibited ... 41
size of ... 43-44
venting of ... 56-58
Treatment of harmful sewage
and wastes ... 41
Trough urinal ... 20
Tube copper ... 25

U

Underground pipe
protection of ... 35
support of ... 33-35
Unions and slip joints ... 32
Urinals
construction ... 20
installation ... 40
location ... 40
trough ... 20
Used material ... 18

V

Vacuum breaker (see back-siphonage preventer)
Valves
accessibility ... 65
backwater ... 38
check ... 65
pressure reducing ... 70
pressure relief ... 48, 65
shut-off ... 65
temperature relief ... 66
Venting
circuit ... 58
dual ... 57
for traps ... 56-58
loop ... 58
of floor drains ... 56
of oil interceptor ... 60
of sewage sump ... 60
stack ... 57-58
testing of system ... 35
wet ... 57
Vent pipes
arrangement of ... 60-61
fixture connections to ... 38-39
for future fixtures ... 62
location ... 60-61
not required ... 56
sizing of ... 61-64
Support above roof ... 35
Vent stacks
terminals ... 61
sizing of ... 63-64
where required ... 59
Vertical piping, support of ... 33

W

Wash basins ... 18
Waste opening, diameter ... 19
Waste pipe, lead ... 26
Waste, treatment of ... 41
Water closet
bowl ... 18
construction ... 20
installation ... 40
Water heater, storage type ... 66
Water pipe
size and capacity ... 69-70
Water supply
for fixtures ... 69
Water system (see potable water system, non-potable water system)
Water test ... 36
Welded joint ... 32
Wells ... 69
Wet venting ... 57
Wiped joint ... 30

Y

Y and ⅛th bend fitting ... 22
Yoke vent
minimum diameter ... 64
where required ... 59

PART 8

CONSTRUCTION SAFETY MEASURES

H.

PART 8 of The National Building Code of Canada 1970 is varied as follows:

‡ **1.** Delete Article **8.2.1.1.** of The Code and substitute the following:

8.2.1.1.(1) Subject to Articles 8.2.1.5. and 8.2.1.6. when construction or demolitio is being carried out within 60 feet of a public sidewalk of *street* to which the publi has access, the following forms of protection shall be provided at the sidewal or *street* right-of-way:

(a) a railing at least 3 feet high, where the distance between the inside of sidewalk or *street* right-of-way and the construction is equal to or greate than the height of the *building* construction;

(b) a fence equal to the height of the construction or not more than 8 feet i height, whichever is the lesser, with tight boarding and turned in at the end to the building line, where the distance between the inside of the sidewal or *street* right-of-way and the *building* construction is less than the heigh of the construction, but equal to or more than one-half the height of th construction;

(c) a covered way, as specified in article 8.2.1.2., where the distance betwee the inside of the sidewalk or *street* right-of-way and the *building* constructio is less than one-half the height of the construction.

‡ **2.** Delete Clauses **8.2.1.2.** (a) and (b), of The Code and substitute the following:

(a) have a clear height of not less than 7 ft. (2.1 m);

(b) have a clear width of at least 4 ft. (1.2 m) or the width of the publi way whichever is the lesser;

‡ **3.** Add immediately at the end of Subsection **8.2.1.** of The Code the following nev Articles:

8.2.1.5 When, in the opinion of the *authority having jurisdiction,* a covered wa fence or railing is necessary for the protection of the public or others in circumstance other than those specified in article 8.2.1.1. such protection shall be erected upo receipt of instructions from the *authority having jurisdiction.*

8.2.1.6. The *authority having jurisdiction* may, by written order and subject to suc conditions as may be specified in the order, grant a temporary exemption fror articles 8.2.1.1. and 8.2.1.2. and any exemptions shall continue in effect for th period therein specified.

8.2.1.7. Sufficient bracing, either permanent or temporary, shall always be use to support the structure adequately at all stages of its construction so that it wi safely withstand all loads to which it may be subjected.

8.2.1.8. Temporary wiring and lighting facilities on construction sites shall be installe in accordance with the requirements of The Winnipeg Electrical By-law.

‡ **4.** Delete Article **8.2.3.4.** of The Code and substitute the following:

8.2.3.4. If the stability of adjoining structures, walks, walls, or services may b endangered by the work of excavating, adequate underpinning, shoring and bracin shall be provided to prevent damage to, or movement of, any part of the adjoinin property, or the creation of a hazard to the public. The *authority having jurisdictio* may require that the underpinning, shoring or bracing be designed by a Professiona Engineer entitled to practice in the Province of Manitoba.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
‡ Revision by the Council of the City of Winnipeg.

‡ **5.** Add immediately at the end of Section **8.2.** of The Code the following new subsection:

SUBSECTION 8.2.7. WARNING LIGHTS

8.2.7.1. When so required by the *authority having jurisdiction*, warning lights shall be placed and maintained during the hours of darkness at all obstructions on *streets* or other public property.

§ National Building Code Change Series No. 1
† National Building Code Change Series No. 2
‡ Revision by the Council of The City of Winnipeg.

PART 9

HOUSING AND SMALL BUILDINGS

I

PART 9 of The National Building Code 1970 is varied as follows:

†1. Change the title of "SCOPE" for Subsection **9.1.1.** of the Code to read "GENERAL."

†2. Delete Article **9.1.1.1.** of the Code and substitute the following:

9.1.1.1. This Part applies to *buildings* of 3 *storeys* or less in *building height,* havin a *building area* not exceeding 6000 sq ft and which are used or intended to b used for *Residential* (Group C), *Business and Personal Service* (Group D), *Mercanti* (Group E), and *Medium and Low Hazard Industrial Occupancy* (Group F, Divisio 2 and 3). This Part applies both to site assembled and factory made *buildings.*

‡3. Delete Article **9.1.1.4.** of the Code and substitute the following:

9.1.1.4. Section 3.8 of Part 3 of this By-law sets forth the requirements for *buildin* designed to accommodate handicapped persons.

†4. Add to Subsection **9.1.1.** of the Code the following new Article:

9.1.1.5. Where a *building* or a component of a *building* is assembled off the *buildi site* in a manner that it cannot be inspected on site, *approved* off the site inspectic shall be provided when required by the *authority having jurisdiction* to ensu compliance with this By-law.

†5. In the first line of Article **9.3.2.2.** of the Code change standard "CSA A5-1961" t read "CSA A5-1971."

†6. In the third line of Article **9.3.2.8.** of the Code change standard "ASTM C494-68" t read "ASTM C494-71."

§7. Delete Article **9.3.3.1.** of the Code and substitute the following:

9.3.3.1. Lumber for the uses listed in Table 9.3.3.A. and Table 9.3.3.B. shall b identified by the grade stamp of an association or independent grading agen approved to grade stamp lumber by an appropriate organization acceptable to th *authority having jurisdiction.*

§8. Delete Article **9.3.3.2.** of the Code and substitute the following:

9.3.3.2. Lumber grades shall conform to Table 9.3.3.A. or to Table 9.3.3.B. for th particular use as appropriate to the grading rules being applied. On-site cross-cuttir of a piece shall not be considered to affect the grade of the piece as original marked.

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§9. Delete Article **9.3.3.4.** of the Code and substitute the following:

> **9.3.3.4.** Lumber dimensions of less than 1 in. referrred to in this Part are actual dimensions. Lumber dimensions of 1 in. or more referred to in this Part are nominal dimensions. The corresponding actual dimensions shall be those shown in CSA O141-1965, 'Softwood Lumber,' or CSA O141-1970, 'Softwood Lumber,' as appropriate for the grading rules being applied."

§10. Delete Article **9.3.3.5.** of the Code and substitute the following:

> **9.3.3.5.** Joist, rafter, lintel and beam members up to 5 per cent less than the actual Canadian standard sizes may be used provided the allowable spans for the grade and species of lumber under consideration are reduced 5 per cent from those shown in the span tables.

§11. Delete Note (3) for Table **9.3.3.A.** of the Code and substitute a new Note (3) as follows:

> **(3)** Softwood framing lumber may be used for rafters and joists in those sizes, species and grades for which allowable spans are listed in Tables II-A to II-L (see pp. 443 to 463). See Articles 9.23.13.14. and 9.23.13.15. for roof trusses.

§12. Add to Subsection **9.3.3.** of the Code immediately following Table 9.3.3.A. the following new table:

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TABLE 9.3.3.B

Forming part of Article 9.3.3.2.

MINIMUM LUMBER GRADES FOR SPECIFIC END USES[1]

USE	BOARDS				FRAMING	
	Paragraph in the 1971 NLGA grading rules under which boards are graded[2]				2-4 in. thick 2-5 in. wide	2-4 in. thick 6 in. & wider
	All species			Eastern white pine & red pine	All Species	All Species
	Para 111	Para 113	Para 114	Para 115		
Stud wall framing (load-bearing members)	—	—	—	—	Standard, Stud No. 2	No. 2
Stud wall framing (non-load-bearing members)	—	—	—	—	Stud, Utility, No. 3.	No. 3
Floor, roof & ceiling framing	—	—	—	—	[3]	[3]
Plank frame construction (load-bearing members)	Standard	No. 3 Common	—	No. 3	—	No. 2
Plank frame construction (non-load-bearing members)	Economy	No. 5 Common	—	No. 5	Economy, No. 3	Economy, No. 3
Posts and Beams	—	—	—	—	Standard, No. 2 [4]	No. 2 [4]
Roof Sheathing	Standard	No. 3 Common	Standard	No. 4	—	—
Sub-flooring	Standard	No. 3 Common	Standard	No. 3	—	—
Wall Sheathing [5]	Utility	No. 4 Common	Utility	No. 4	—	—

Notes to Table 9.3.3.B

(1) Graded in conformance with the 1971 NLGA Standard Grading Rules for Canadian Lumber, published by the National Lumber Grades Authority, Vancouver.

(2) To identify board grades, the paragraph number of the NLGA rules under which the lumber is graded must be shown in the grade mark. The grade descriptions in paragraph 113 of the NLGA rules are the same as the 1970 Standard Grading Rules for Western Lumber published by WWPA. The grade descriptions in paragraph 114 are the same as the 1970 Standard Grading Rules for West Coast Lumber, No. 16, published by WCLIB. When graded in accordance with WWPA or WCLIB rules, the grade mark will not contain a paragraph number.

(3) Grades to conform to those listed in "Span Tables for Wood Joists, Rafters and Beams," NRCC Publication No. 11862, (1971). (See Articles 9.23.13.14., and 9.23.13.15., for roof trusses).

(4) Where 5 in. or thicker lumber is used for posts or beams, the grade shall be not less than "Standard."

(5) Where wall sheathing is not required as a nailing base, one grade lower than those specified is permitted.

*13. Delete Article **9.4.1.1.** of the Code and substitute the following:

9.4.1.1. When the size of and connections for structural members are not given in this Part, the members and their connections shall conform to Part 4 of this Bylaw, except that design *live loads* and deflection limits shall conform to Subsections 9.4.2. to 9.4.6.

§14. Delete Article **9.4.2.1.** of the Code and substitute the following:

9.4.2.1. The minimum design *live load* on a floor area is the load listed in Table 9.4.2.A. applied uniformly over the entire area, or the load listed in Table 9.4.2.B. applied over an area of 2½ ft by 2½ ft located so as to cause maximum effects, whichever causes the greater stresses.

†15. Delete Article **9.4.3.1.** of the Code and susbstitute the following new articles:

9.4.3.1. Except as provided in Article 9.4.3.2. design snow loads shall be not less than 60 per cent of the appropriate ground snow load listed in NBC Supplement No. 1 (1970) "Climatic Information for Building Design in Canada," but in no case shall the snow load be considered less than 20 lb per sq ft of horizontal roof projection.

9.4.3.2. Where the entire width of a roof does not exceed 14 ft, the design snow load shall not be less than 50 per cent of the appropriate ground snow load listed in NBC Supplement No. 1 (1970), 'Climatic Information for Building Design in Canada' but in no case less than 20 psf of horizontal roof projection.

†16. Add to Section **9.4.** of the Code the following new Subsection:

SUBSECTION 9.4.6. EARTHQUAKE LOADS

9.4.6.1. Except as provided in Articles 9.4.6.2. to 9.4.6.4., two and three *storey buildings* in seismic zone 3 and three *storey buildings* in seismic zone 2 shall be designed for the earthquake loads in Section 4.1 of this By-law.

9.4.6.2. *Buildings* with structural *load-bearing* precast concrete elements (normal or lightweight) shall have connections designed for the earthquake loads in Section 4.1. of this By-law.

9.4.6.3. *Buildings* constructed with *loadbearing* masonry walls which are required to resist the earthquake loads specified in Article 9.4.6.1. may in lieu of engineered design be reinforced as required in Subsection 9.20.18.

9.4.6.4. *Buildings* with structural systems of wood frame construction need not be designed for the earthquake loads in Section 4.1 of this By-law.

§17. Delete Article **9.5.1.3** of the Code and substitute the following:

9.5.1.3. Minimum floor areas, specified in this Section do not include closets or built-in bedroom cabinets unless otherwise indicated.

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§18. Add to Subsection **9.5.1.** of the Code the following new Article:

9.5.1.5. Areas and dimensions of rooms and spaces may be less than required i this Section provided it can be shown to the satisfaction of the *authority havin jurisdiction* that the rooms and spaces are adequate for their intended use, suc as by the provision of built-in furniture to compensate for reduced sizes.

†19. Column 2 of Table **9.5.2.A.** of the Code is amended as follows:

(a) Delete "7 ft 6 in. over at least 75 per cent of the required floor area with a clear height of 7 ft at any point"
and substitute therefor the following:
"7 ft 6 in. over at least 75 per cent of the required floor area with a clear height of 7 ft at any point over the required area."

(b) Delete "7 ft 6 in. over at least 50 per cent of the required floor area."
and substitute therefor the following:
"7 ft 6 in. over at least 50 per cent of the required floor area; or 7 ft over all of the required floor area."

§20. Delete Article **9.5.3.1.** of the Code and substitute the following:

9.5.3.1. Living areas within *dwelling units* either as separate rooms or in combinatio with other spaces shall have at least 145 sq ft of floor area and shall have n dimension less than 9 ft 10 in within the required area. Where the area of a livin space is combined with a kitchen and dining area, the living area alone in a *bachelo dwelling unit* shall be at least 120 sq ft.

§21. Delete Article **9.5.6.1.** of the Code and substitute the following:

9.5.6.1. Except as provided in Article 9.5.6.3. at least one bedroom in every *dwellin unit* shall have at leat 105 sq ft of floor area where built-in cabinets are not provide and 95 sq ft of floor area where built-in cabinets are provided. The minimur dimension within the required area shall be 8 ft 10 in.

§22. Delete Article **9.5.6.2.** of the Code and substitute the following:

9.5.6.2. Additional bedrooms except as provided in Article 9.5.6.3 shall have a least 75 sq ft of floor area where built-in cabinets are not provided and 65 s ft of floor area where built-in cabinets are provided. The minimum dimension withi the required area shall be 6 ft 6 in.

†23. Delete Article **9.5.8.1.** of the Code and substitute the following:

9.5.8.1. The minimum width of a hall or passage within a *dwelling unit* shall b at least 2 ft 10 in except that in *buildings* not exceeding 14 ft in width the hallwa width may be 2 ft. 4 in. where a second *exit* is provided near the end of the hallwa farthest from the living area.

§24. Delete Article **9.6.3.1.** of the Code and substitute the following:

9.6.3.1. Doorway openings within *dwelling units* shall be designed to accommoda not less than the door sizes in Table 9.6.3.A. for swing-type doors. Where foldin doors are to be provided, the same openings apply.

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†25. Table **9.6.3.A.** of the Code is amended as follows:

(a) In column 3 delete "6-8" and substitute therefor "6-6."

(b) In column 1 delete "Balconies, all other rooms (other than required entrance)" and substitute therefor "Rooms not mentioned above, exterior balconies."

(c) In column 2 delete "2-6" and substitute therefor "2-6 (2)."

(d) Add new Note as follows:

(2) Where 2 ft 4 in. hallways are permitted doors may be 2 ft wide.

*§26. Delete Articles **9.6.4.1.** and **9.6.4.2.** of the Code and substitute the following:

9.6.4.1. Exterior wood doors shall be exterior type conforming to CSA 0132.2-1972, "Wood Doors."

9.6.4.2. All sliding glass doors shall conform to the appropriate requirements in CGSB 82-GP-1a (1972), "Doors: Glass, Aluminum Frame, Sliding Standard Duty," or to CGSB 82-GP-2a (1972), "Doors: Glass, Aluminum Frame, Sliding, Medium Duty."

†27. Delete Subsection **9.6.5.** of the Code and substitute the following:

SUBSECTION 9.6.5. GLASS

9.6.5.1. Glass thickness for doors shall conform to Table 9.6.5.A.

9.6.5.2. Glass in doors, and side lights greater than 18 in. in width that could be mistaken for doors, within or at the entrances to *dwelling units* and which extend to less than 12 in from the floor shall be safety glass of the laminated or tempered type conforming to CGSB 12-GP-1b (1971), 'Glass: Safety for Building Construction,' or shall be wired glass.

9.6.5.3. Every glass door accessible to the public shall be constructed with safety glass or wired glass conforming to Article 9.6.5.2.

9.6.5.4. Every glass or transparent door accessible to and used by the public shall be equipped with hardware, bars or other permanent fixtures designed so that the existence and position of such door will be readily apparent.

9.6.5.5. Glass, other than safety glass, shall not be used for a shower or bathtub enclosure.

§28. Delete Article **9.7.2.2.** of the Code and substitute the following:

9.7.2.2. The minimum window glass area for rooms in *buildings* of *Residential occupancy* or which are used for sleeping shall conform to Table 9.7.2.A. The unobstructed glass area of a door or skylight is considered equivalent to that of a window.

†29. In the sixth line of Article **9.7.3.1.** of the Code change standard "CGSB 63-GP-4 (1962)" to read "63-GP-4a (1971)," and in the seventh line change standard "CGSB 63-GP-5 (1964)" to read "CGSB 63-GP-5a (1970)."

†30. Delete Article **9.7.4.1.** of the Code and substitute the following:

9.7.4.1. Glass shall conform to CGSB 12-GP-2a (1970), 'Glass; Sheet, Flat, Clear;' CGSB 12-GP-3b (1970), 'Glass; Plate, Flat, Polished Plate or Float' or CGSB 12-GP-1b (1971), 'Glass; Safety, for Building Construction.'

§31. Delete Article **9.7.4.2.** of the Code and substitute the following:

9.7.4.2. Thickness of glass in windows shall conform to Table 9.7.4.A. except as provided in Article 9.7.4.3.

†32. In the first and second lines of Article **9.7.4.3.** of the Code change standard "CGSB 63-GP-4 (1962)" to read "CGSB 63-GP-4a (1971)."

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§33. Delete Article **9.7.4.4.** of the Code.

§34. Delete Table **9.7.4.A.** of the Code and substitute the following:

Table 9.7.4.A

Forming Part of Article 9.7.4.2.

MAXIMUM GLASS SIZE FOR VARIOUS THICKNESSES			
Minimum glass thickness or weight of inner and outer panes	Sash type or fixed glazing	Factory sealed double glazing	
		Fused edges	Other than fused edges
18 oz. 24 oz. 32 oz. 3/16 in. 7/32 in. 1/4 in.	120 in. perimeter 168 in. perimeter 240 in. perimeter 280 in. perimeter 50 sq. ft. no limit	180 in. perimeter 252 in. perimeter 360 in. perimeter 420 in. perimeter 113 sq. ft. no limit	150 in. perimeter 210 in. perimeter 300 in. perimeter 350 in. perimeter 78 sq. ft. no limit
Column 1	2	3	4

§35. Delete Article **9.7.5.1.** of the Code and substitute the following:

9.7.5.1. Sealing compound used in the glazing of factory-sealed double-glazed uni shall be of an *approved* type and shall be compatible with the material used edge seal the units.

†36. Add to Section **9.7.** of the Code the following new Subsection:

SUBSECTION 9.7.6. WINDOWS IN PUBLIC AREAS

9.7.6.1. Windows or glass panels that could be mistaken for doors shall be protecte by barriers or railings.

9.7.6.2. Windows in *exit* stairways that extend to less than 42 in. above the landir shall be protected by barriers or railings located approximately 42 in. above suc landings.

*§37. Delete Subsection **9.8.2.** of the Code and substitute the following:

SUBSECTION 9.8.2. GENERAL

9.8.2.1. Treads and risers shall have uniform rise and run in any one flight.

9.8.2.2. Except for interior stairs within a *dwelling unit* at least 3 risers shall provided for interior stairs.

9.8.2.3. Interior stairways extending through the roof of a *building* shall be protected from ice and snow.

§38. Delete Article **9.8.3.5.** of the Code and substitute the following:

9.8.3.5. Public stairways shall have a minimum width between wall faces of at le 3 ft.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

§39. Delete Article **9.8.3.6.** of the Code and substitute the following:

9.8.3.6. At leat one stairway between each floor level in a *dwelling unit* shall have a minimum width between wall faces of at least 2 ft 10 in.

9.8.3.7. The head room measured vertically from a line drawn through the outer edges of the nosings shall be at least 6 ft. 4 in. for stairs located in *dwelling units* and 6 ft 9 in. for all other stairs.

*40. Delete Article **9.8.7.4.** of the Code and substitute the following:

9.8.7.4. Except as permitted in Articles 9.8.7.5. and 9.8.7.6., a handrail shall be provided on at least one side of stairs less than 44 in. in width, and on two sides of stairs 44 in. in width or greater.

*41. Delete Article **9.8.7.15.** of the Code and substitute the following:

9.8.7.15. *Balustrades* or guards around exterior balconies of *buildings* of *residential occupancy* shall be designed so that no member, attachment or opening located between 4 in. and 36 in. above the balcony floor will facilitate climbing.

9.8.7.16. Except for garage floors at ground level and those covered in Section 9.3.6, a continuous curb at least 6 in. in height and a guardrail not less than 3 ft 6 in. in height shall be provided at every opening through a garage floor and around the perimeter of such floors where the exterior walls are omitted.

†42. Delete Articles **9.8.8.2.** and **9.8.8.3.** of the Code and substitute the following:

9.8.8.2. Wooden stair stringers shall have a minimum effective depth of 3½ in. and an over-all depth of at least 9¼ in. Stringers shall be supported and secured top and bottom. Stringers shall be at least 1 in. actual thickness if supported along their length and 1½ in. actual thickness if unsupported along their length. Stringers shall be spaced not more than 3 ft o.c. in *dwelling units* and 2 ft o.c. when located in other than *dwelling units.*

9.8.8.3. Lumber or plywood treads for stairs within *dwelling units* shall be at least 1 in. actual thickness, except that if open risers are used, and the distance between stringers exceeds 2 ft 6 in., the treads shall be at least 1½ in. actual thickness.

†43. Delete Article **9.9.2.2.** of the Code and substitute the following:

9.9.2.2. *Exits* may consist of escalators, doorways, passageways, ramps, stairways, fire escapes (existing *buildings* only), *horizontal exits* inclined moving walkways that move only in the direction of *exit* travel or a combination thereof.

†44. Delete Article **9.9.2.4.** of the Code and substitute the following:

9.9.2.4. An *exit* shall be designed solely for exiting and no other purpose.

†45. Delete Articles **9.9.3.2.** and **9.9.3.3.** of the Code and substitute the following:

9.9.3.2. The *occupant load* of *floor areas* or part of *floor areas* used in determining the minimum required width of a *means of egress* shall be the number of persons for which such areas are designed but not fewer than that determined from Table 9.9.3.A. unless otherwise *approved.*

9.9.3.3. Except as provided in Subsection 9.9.6., the minimum aggregate width of *exits* at ground level shall be not less than one unit (see Article 9.9.3.6.) per 90 persons. The minimum aggregate width of *exits,* other than at ground level, shall be one unit per 30 persons for *residential occupancies* and one unit per 60 persons for other *occupancies.*

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

†**46.** Table **9.9.3.A.** of the Code is varied as follows:

(a) In column 1, delete "Other than shops" and sustitute therefor the word "Offices."

(b) In column 1, delete "Other industrial uses" and opposite same, in column 2, delete "100."

(c) In column 2 opposite *"storage garage"* delete the figure "200" and substitute therefor the figure "500."

§**47.** Delete Article **9.9.6.5.** of the Code and substitute the following:

9.9.6.5. An *exit* door or a door that opens to or is located in a *public corridor* o other facility providing *access to exit* from individually rented rooms, suites of room or *dwelling units* shall be not less than 6 ft 8 in. in height. Except as required i Articles 9.9.6.2. and 9.6.3.1., such doors shall be at least 30 in. and not more tha 48 in. in width. Where more than one door is provided in the width of a doorwa in such *access to exit,* individual doors shall be not less than 24 in. in width.

*§**48.** Delete Articles **9.9.7.5.** and **9.9.7.6.** of the Code and substitute the following:

9.9.7.5. A single *exit* is permitted from every *dwelling unit* where such *exit* is a exterior door located at or near ground level and access to such *exit* is not throug a garage or through a room not under the immediate control of the occupan of the *dwelling unit* served.

9.9.7.6. In *buildings* of one and two *storeys* in *building height,* a single *exit* is permitte from each *storey* having an *occupant load* of 60 persons or less, provided the *buildi* does not contain a *residential occupancy,* except as permitted in Article 9.9.7.5. (s Article 9.9.9.1.).

*49. Delete Article **9.9.8.6.** of the Code and substitute the following:

9.9.8.6. Except as permitted in Article 9.9.7.5. a *dwelling unit* containing more tha one *storey* shall have an *exit* or doorway into a public *access to exit* from eac of its top and bottom *storeys.*

§**50.** Delete Article **9.9.10.5.** of the Code and substitute the following:

9.9.10.5. *Exit* signs shall be installed so as to be visible from the *exit* approac Such signs shall have the word "EXIT" or "SORTIE" in red letters at least 4 in. high, printed in at least ¾-in. wide strokes if the sign is internally lighted, white letters at least 6 in. high printed with at least ¾-in. strokes on a re background if the sign is externally illuminated.

*51. Delete Articles **9.9.11.3.** and **9.9.11.4.** of the Code and substitute the following:

9.9.11.3. In a *building* of *residential occupancy* having an *occupant load* of ov 100 persons, or in a *building* of *mercantile occupancy* that is 3 *storeys* in *buildi height,* or has an *occupant load* of 300 persons or more, every *exit* and *public corrid* shall be provided with emergency lighting.

9.9.11.4. Emergency lighting required in Article 9.9.11.3., shall be provided fro a source of energy separate from the electrical supply for the *building.* Such lightir shall be designed to be automatically activated when the electric lighting in t affected area is interrupted. Illumination from such lighting shall be at least or foot-candle for a period of at least ½ hr. Where incandescent lighting is provide lighting equal to 1 W per 10 sq ft of floor area shall be considered to meet th requirement.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

*52. Delete Article **9.10.1.5.** of the Code and substitute the following:

9.10.1.5. Where fuel-fired *appliances* are installed on a roof, such *appliances* shall be installed to conform to Part 6 of this Bylaw.

†53. Delete Article **9.10.2.1.** of the Code and substitute the following:

9.10.2.1. Except for construction supporting a *service room,* and except as provided in Note 4 to Table 9.10.8.A., construction required to have a *fire resistance rating* shall be supported on construction having at least the same *fire resistance rating.*

†54. Add at the end of Subsection **9.10.4.** of the Code the following new Article:

9.10.4.6. Where a ceiling construction has a suspended membrane ceiling with lay-in panels or tiles which contribute to the required *fire resistance rating,* hold down clips or other *approved* means shall be provided to prevent the lifting of such panels or tiles in the event of a fire.

†55. Delete Article **9.10.5.3.** of the Code and substitute the following:

9.10.5.3. Except as provided in Article 9.10.5.4., a membrane ceiling forming part of an assembly required to have a *fire resistance rating,* may be pierced by openings into *noncombustible* ducts within the ceiling space provided such openings are located not less than 7 ft apart and do not constitute more than 1 per cent of the ceiling area within a *fire compartment.* Individual openings shall not exceed 1 sq ft in area, and if greater than 20 sq in. shall be protected by a *fire stop flap* as described in Article 9.10.14.10.

†56. Delete Articles **9.10.6.1.** to **9.10.6.10.** both inclusive of the Code and substitute the following:

9.10.6.1. Where a wall, floor or roof assembly is required to be of *noncombustible construction, combustible* elements shall be limited in conformance with the requirements in Article 3.1.4.5. in Part 3 of this Bylaw.

9.10.6.2. *Heavy timber construction* shall be considered to have ¾-hr *fire resistance rating* when it is constructed in accordance with the requirements for *heavy timber construction* in Part 3 of this Bylaw.

9.10.6.3. The finish of every garage floor shall be of asphalt, *noncombustible* material or other *approved* material.

†57. Delete Article **9.10.9.10.** of the Code and substitute the following:

9.10.9.10. Every pipe, duct, electrical conduit, electrical outlet box or other similar service equipment that partly or wholly penetrates through a required *fire separation* shall be *noncombustible* except that such equipment may be *combustible* where the assembly has been tested incorporating such *combustible* equipment (see also Subsection 9.10.4.).

†58. Delete Article **9.10.9.21.** of the Code and substitute the following:

9.10.9.21. Except as provided in Articles 9.10.9.22. and 9.10.9.23., a *storage garage* shall be separated from other *occupancies* by a *fire separation* having not less than a 1½-hr *fire-resistance rating.* A *repair garage* shall be separated from other occupancy by a *fire separation* having not less than a 2-hr *fire-resistance rating.* Such separations between a *repair garage* and a *Residential Occupancy* shall have no opening through it.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
† Revision by the Council of the City of Winnipeg.

§59. Delete Article **9.10.9.23.** of the Code and substitute the following:

9.10.9.23. In houses containing a single *dwelling unit,* or two vertically separate *dwelling units,* the *fire separation* required in Article 9.10.9.22. may be omitted wher an attached or built-in garage serves only the *dwelling unit* adjacent to it and th construction between the garage and *dwelling unit* provides an effective barrier t gas and exhaust fumes and any door between the garage and *dwelling unit* conform to Article 9.10.14.12. Where an *attic space* is common to two *dwelling units* an to the garage, the *attic space* adjacent to the garage shall be separated from suc common *attic space* by a membrane at least equivalent to type B, C, D, E, I c K finishes in Tables I-A to I-C (see p. 440), or the ceiling of the garage sha be protected with a similar membrane.

*60. Delete Article **9.10.9.25.** of the Code and substitute the following:

9.10.9.25. *Combustible* drain, waste and vent piping shall not be used in a *plumbin system* within a *building* where part of the system is located within or passes throug a *fire separation,* except that where drain, waste and vent piping penetrates throug a vertical *fire separation,* the piping on one side of the separation may be *combustibl* provided the *combustible* piping is not located in a vertical shaft or in a *fire separatio*

*61. Delete Article **9.10.10.6.** of the Code and substitute the following:

9.10.10.6. The design, construction, installation and alteration of each indoc incinerator shall conform to NFPA 82-1972, "Standard on Incinerators and Rubbis Handling."

†62. Delete Article **9.10.10.9.** of the Code and substitute the following:

9.10.10.9. Rooms for the temporary storage of *combustible* refuse in all *occupancie* or for public storage in *Residential Occupancies* shall be separated from the remainde of the *building* by a *fire separation* having not less than a 1 hr *fire resistance ratin* except that a ¾ hr *fire separation* is permitted where the *fire resistance rating* c the floor assembly is not required to exceed ¾ hr, or where such rooms are *sprinklere*

†63. Delete Article **9.10.10.10.** of the Code and substitute the following:

9.10.10.10. Cooking equipment in kitchens, other than in *dwelling units,* that is use in processes producing smoke or grease-laden vapours shall be equipped with mechanical exhaust system and shall conform to Sections 3, 4, 6, and 10 of NFP 96-1971, 'Standard for the Installation of Equipment for the Removal of Smol and Grease-Laden Vapors from Commercial Cooking Equipment.'

†64. Delete Article **9.10.11.1.** of the Code and substitute the following:

9.10.11.1. Except as provided in Article 9.10.11.2. a *party wall* on a property li shall be constructed as a *firewall.*

§65. Delete Article **9.10.12.12.** of the Code and substitute the following:

9.10.12.12. Refuse and linen chutes exceeding 1 sq ft in cross sectional area sh be vented to the exterior to conform to Part 6 of this By-law.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

†66. Delete Article **9.10.14.1.** of the Code and substitute the following:

9.10.14.1. Openings in required *fire separations* shall be protected with *closures* conforming to Table 9.10.14.A., which shall be installed in accordance with NFPA 80-1970, "Standard for Fire Doors and Windows" unless otherwise specified herein (see also Article 9.10.4.1.).

†67. Delete Table **9.10.14.A.** of the Code and substitute the following:

Table 9.10.14.A.

Forming Part of Article 9.10.14.1.

FIRE PROTECTION RATINGS FOR CLOSURES	
Minimum *Fire-Resistance Rating* of *Fire Separation*, hr.	Minimum *Fire Protection Rating* of *Closure*, hr.
Less than ¾	No minimum
¾	⅓ (1)(2)
1	¾ (1)(2)
1½	1
2	1½
3	2
4	3
Column 1	2

Note to Table 9.10.14.A.:

(1) A 1¾-in.-thick solid core wood door may be used where a minimum *fire-protection rating* of ⅓ hr. is permitted or between a *public corridor* and an individually rented room, *dwelling unit* or suite of rooms. Such door shall have not more than ¼-in. clearance beneath and not more than ⅛ in. at the sides and top.

(2) Doors required to provide a ⅓ hr. *fire protection rating* or permitted to be 1¾ in. solid core wood shall be mounted in a wood frame of at least two in. thickness where the frame has not been tested and rated.

*†68. Delete Articles **9.10.14.9.** to **9.10.14.11.**, both inclusive, of the Code and substitute the following:

9.10.14.9. Except as permitted in Articles 9.10.5.3., 9.10.5.4., 9.10.14.10., 9.10.14.11. and 9.10.14.12., where a duct pierces a required *fire separation*, a fire damper shall be installed in the duct at the *fire separation* in conformance with Article 6.2.4.9. in Part 6 of this By-law.

9.10.14.10 *Fire stop flaps* in ceiling membranes required in Article 9.10.5.3. shall be constructed of not less than 0.0667 in. thick sheet steel with ⅛ in. thick asbestos on the unexposed side and be equipped with corrosion resistant pins and hinges. Such dampers shall be designed to close automatically at a temperature 50°F above the maximum temperature that will normally be encountered in the system.

9.10.14.11. When a *noncombustible* branch duct having a melting point of at least 1200°F and a cross-sectional area less than 20 sq in. supplies only air-conditioning units discharging air at not more than 4 ft above the floor, no fire damper is required where the branch duct pierces a required *fire separation*, provided the duct does not pierce the floor at more than one place.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
† Revision by the Council of the City of Winnipeg.

9.10.14.12 Where a *noncombustible* branch duct having a melting point of at leas 1200°F pierces a required *fire separation* around an exhaust duct riser in whic the air flow is upward, no fire damper is required provided the branch duct i carried up the riser at least 22 in.

9.10.14.13. A door between an attached or built-in garage and a *dwelling unit* sha be tight fitting and weather-stripped to provide an effective barrier against the passag of gas and exhaust fumes, and shall be fitted with a self-closing device. A doorwa between an attached or built-in garage and a *dwelling unit* shall not be locate in a room intended for sleeping.

9.10.14.14. Openings shall not be permitted through doors in required *fire separatio* unless such openings are protected with *approved* covers which will not significant reduce the *fire protection rating* or increase the passage of smoke through the doc assembly.

9.10.14.15. Where a 1¾ in. thick solid core wood door is permitted in a require *fire separation,* the requirement for a *noncombustible* sill in NFPA 80-1970, 'Standa for Fire Doors and Windows,' shall not apply.

*69. Delete Aricle **9.10.15.3.** of the Code and substitute the following:

9.10.15.3. The *limiting distance* shown in Table 9.10.15.A. may be reduced provid it is not less than the square root of the aggregate area of *Unprotected openin* in an *exposing building face* in *residential occupancies, business and personal servic occupancies* and *low hazard industrial occupancies,* and is not less than the squa root of twice the aggregate area of *unprotected openings* in *mercantile occupanc* and *medium hazard industrial occupancies.*

*70. Delete Articles **9.10.15.7.** and **9.10.15.8.** of the Code and substitute the following:

9.10.15.7. In *buildings* containing only *dwelling units* in which there is no *dwelli unit* located above another *dwelling unit,* the *exposing building face* may be *combustible construction.* Such *exposing building face* shall have a minimu *fire-resistance rating* of ¾ hr except that where the *limiting distance* is 4 ft or mo no minimum *fire-resistance rating* is required. Where the *limiting distance* is l than 2 ft, the *exposing building face* shall be clad with *noncombustible* materi Walls having a *limiting distance* of less than 4 ft shall have no *unprotected opening*

9.10.15.8. The *exposing building face* of a detached garage that serves one *dwelli unit* only shall have a *fire-resistance rating* of at least ¾ hr except that no *fire-resistar rating* is required where the *limiting distance* is 2 ft or greater. The exterior claddi of such garages is not required to be of *noncombustible* material.

†71. Delete Articles **9.10.16.2.** and **9.10.16.3.** of the Code and substitute the following:

9.10.16.2. Fire stops shall be provided at the ceiling and floor level of furred w and *partitions.* The maximum vertical dimension of any concealed space in a v or *partition* of *combustible construction* shall not exceed 10 ft.

9.10.16.3. *Fire stops* shall be provided at the top and bottom of each run of st where they pass through a floor containing concealed space.

9.10.19.4. Except when otherwise *approved,* every *building* shall be located so it has access to a *street,* either directly, or indirectly by a yard at least 30 ft. v designed to be capable of carrying fire trucks at all times.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

*72. Delete Article **9.11.1.1.** of the Code and substitute the following:

9.11.1.1. Sound transmission class ratings for construction shall be determined in accordance with ASTM E-90-70, "Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions."

*73. Delete Article **9.12.1.1.** of the Code and substitute the following:

9.12.1.1. The top soil and vegetable matter in all unexcavated areas under a *building* shall be removed. In localities where termites are known to occur, all stumps, roots and other wood debris shall be removed from the soil to a minimum depth of 1 ft in unexcavated areas under a *building*.

¦74. Delete Table **9.12.2.A.** of the Code and substitute the following:

Table 9.12.2.A.
Forming Part of Article 9.12.2.2.

MINIMUM DEPTHS OF FOUNDATIONS				
	Foundation Containing Heated Basements, Cellars, or Crawl Space		Foundation Containing No Heated Space	
Type of Soil(1)	Good Soil Drainage to at Least the Depth of Frost Penetration(2)	Poor Soil Drainage	Good Soil Drainage to at Least the Depth of Frost Penetration(2)	Poor Soil Drainage
Rock	No limit	No limit	No limit	No limit
Coarse grained soils	No limit	No limit	No limit	Below the depth of frost penetration(2)(3)
Silt	No limit	No limit	Below the depth of frost penetration(2)(3)	Below the depth of frost penetration(2)(3)
Clay or soils not clearly defined(4)	4 ft.-6 in.(3)	4 ft.-6 in.(3)	4 ft.-6 in. but not less than the depth of frost penetration(2)(3)	4 ft.-6 in. but not less than the depth of frost penetration(2)(3)

Notes to Table 9.12.2.A.:

(1) These soils may be identified according to Guide to the Field Description of Soils, published by the Associate Committee on Geotechnical Research, National Research Council of Canada (NRC No. 3813).

(2) Depth of frost penetration is hereby established as six (6) feet.

(3) Does not apply to non-residential accessory *buildings* of one *storey* in height and not more than 500 sq. ft. *floor area* or to *buildings* not more than 14 ft. wide with a floor structure that will permit foundation movement without damage to the superstructure.

(4) Intended to apply to soils that are subject to significant volume change with change in soil moisture content.

§ National Building Code, Revision Change Series No. 1
† National Building Code, Revision Change Series No. 2
* National Building Code, Revision Change Series No. 3
¦ Revision by the Council of the City of Winnipeg

§75. Delete Article **9.13.1.4.** of the Code and substitute the following:

9.13.1.4. When hydrostatic pressure does not occur, floor slabs in unfinishe basements or cellars need not be dampproofed when the slab is supported on base of granular fill as described in Subsection 9.16.2.

†76. Delete Article **9.13.1.5.** of the Code and substitute the following:

9.13.1.5. The method of application of all bituminous waterproofing an dampproofing materials shall conform to one of the following:

CGSB 37-GP-3b(1971), "Application of Emulsified Asphalts fo Dampproofing or Waterproofing."
CGSB 37-GP-12b(1971), "Application of Unfilled Cutback Asphalt fo Dampproofing."
CGSB 37-GP-22b(1971), "Application of Unfilled Tar Cutback Foundatio Coating for Dampproofing."

†77. Delete Article **9.13.2.1.** of the Code and substitute the following:

9.13.2.1. Bituminous materials used for dampproofing or waterproofing shall confor to one of the following:

CGSB 37-GP-2c(1971), "Emulsified Asphalt: Mineral Colloid Type, Unfille for Dampproofing and Waterproofing and for Roof Coatings,"
CGSB 37-GP-6c(1971), "Cutback Asphalt: Unfilled, for Dampproofing,"
CGSB 37-GP-16c(1971), "Cutback Asphalt: Filled, for Dampproofing an Waterproofing Systems,"
CGSB 37-GP-17b(1971), "Asphalt: Hot Application, for Dampproofing an Waterproofing Systems,"
CGSB 37-GP-18c(1971), "Cutback: Tar, Unfilled, for Dampproofing."

*78. Delete Subsection **9.13.7.**

*79. Delete Articles **9.14.1.3.** and **9.14.1.4.** of the Code and substitute the following:

9.14.1.3. Drainage requirements beneath floor slabs shall conform to Section 9.16.

†80. Delete Article **9.14.3.1.** of the Code and substitute the following:

9.14.3.1. Drain tile and drain pipe used for *foundation* drainage shall conform the following:

ASTM C4-62, "Clay Drain Tile,"
ASTM C211-68, "Standard and Extra Strength Perforated Clay Pipe,"
ASTM C412-72, "Concrete Drain Tile,"
ASTM C444-68, "Perforated Concrete Pipe,"
CGSB 34-GP-22a(1970), "Pipe: Asbestos-Cement, Drain,"
CGSB 56-GP-1b(1970), "Pipe: Bituminized Fibre, Drain and Sewer,"
CGSB 56-GP-10a(1970), "Pipe: Bituminized Fibre, Perforated,"
CSA B182.1-1967, "Plastic Drain and Sewer Pipe and Pipe Fittings for use Underground."

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

‡81. Add immediately to the end of Subsection **9.14.4.** of the Code the following:

9.14.4.5. Exterior foundation walls supported on footings may be drained by laying drain tile or pipe around the exterior of the foundation on the top ledge of the footing and touching the *foundation* wall; where the drainage connection is to the inside of the building, it shall be made by means of a sloping pipe placed in the footing so that the top of the pipe is level with the top of the footing at the exterior of the wall and projects inside the footing sufficiently to allow a leakproof connection to the interior drain pipes.

‡82. Delete Article **9.14.5.1.** of the Code and substitute the following:

9.14.5.1. Perimeter drain pipe or tile shall drain to a sewer or an *approved* drainage ditch or well through connections every fifty (50) feet, or part thereof around the *foundation.*

‡83. Add immediately to the end of Subsection **9.14.5.** of the Code the following:

9.14.5.4. Connections required in sentence 9.14.5.1. leading to a sewer shall be made by means of straight non-porous, non-corrosive 3 inch I.D. drain pipe with water-tight joints, laid with a minimum fall of ¼-inch per foot of run leading to a catch basin or sump; One of such drain pipes shall serve the midpoint of the wall furthest from the catch basin or sump.

‡84. Delete Section **9.15.** of the Code and substitute the following new section:

SECTION 9.15 FOOTINGS AND FOUNDATIONS FOR HOUSING

SUBSECTION 9.15.1. SCOPE

9.15.1.1. This Section applies to foundations designed and constructed for a single-family dwelling, a two-family dwelling and rowhousing (See Section 9.36 for small garages and carports, and Part 4 for other buildings.)

SUBSECTION 9.15.2. GENERAL

9.15.2.1. The foundation walls and footings shall not be less than the minimum requirements contained in this section unless designed under a seal of a Professional Engineer registered in the Province of Manitoba.

9.15.2.2. Foundation walls and footings shall be constructed of concrete or other *approved* material.

9.15.2.3. All concrete shall conform to Section 9.3. and shall have a minimum compressive strength of 2000 psi after 28 days.

9.15.2.4. The design of the following are dependent on soil conditions, therefore they shall be designed by a Professional Engineer registered in the Province of Manitoba:

(a) step footings,

(b) *friction* and *end bearing piles*, and

(c) continuous footings under interior load bearing walls in *basements*, *cellars* or crawl spaces.

SUBSECTION 9.15.3. FOOTINGS

9.15.3.1.(1) Footings, except as permitted in (2), shall be provided under foundation walls, columns, piers, fireplaces, chimneys and exterior steps that bear on soil.

(2) Footings may be omitted under:

(a) *concrete foundation* walls supported on piles,

(b) exterior steps adequately supported by the *foundation* wall, and

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† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
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(c) exterior steps laid on *grade* consisting of not more than two risers and tw treads.

9.15.3.2. Footings shall rest on undisturbed soil or rock except that they may b supported on consolidated fill or unstable soil only if the footings are designe for existing conditions in a manner acceptable to the *authority having jursidiction.*

9.15.3.3. Depths to bottom of footings shall conform to Table 9.12.2.A., except fo surface type *foundations* which follow an *approved* engineering design for lesse depths.

9.15.3.4 In cases where the *foundation* is not immediately adjacent to a heated portio of the *building* the minimum depth required below the finished *grade* to the botton of the footing shall conform to Table 9.12.2.A. excepting again *approved* engineerin designed surface type foundations which are free standing and are so connecte to the remainder of the *building* to allow differential movement.

9.15.3.5.(1) Footings shall have the minimum sizes indicated in Figures 9.15.(a to (c).

(2) Mechanically excavated pier footings may be *approved* provided the area c the base is not less than the minimum area required in (1).

SUBSECTION 9.15.4 FOUNDATION WALLS

9.15.4.1. Exterior foundation walls shall be of reinforced concrete with a minimu thickness as indicated in Figures 9.15.(a) and (b).

9.15.4.2. Foundation walls shall not be subjected to any loads until sufficient strengt has developed in the concrete to support the loads.

9.15.4.3.(1) Reinforcing for exterior *foundation* walls laterally supported at the to shall be in accordance with Figure 9.15.(a) except that keys not less than thr inches (3″) in width and two inches (2″) in depth (nominal 2 x 3) may be substitute for the required dowels. Keys shall be free of all debris, ice and snow before th wall may be poured. *Foundation* walls are considered to be laterally supported the top if the floor joists are imbedded in the top of the *foundation* walls or the floor system is anchored to the top of the *foundation* walls with anchor bolt The joists may run either parallel or perpendicular to the *foundation* wall in suc cases.

9.15.4.5.(1) Reinforcing for exterior *foundations* walls laterally unsupported at th top shall be in accordance with Figure 9.15.(b). Where a *foundation* wall contai openings greater than 4 ft. in length or contains openings in more than 25 p cent of the length of the wall, that portion of the wall beneath such opening sha be considered as being laterally unsupported unless the wall around the openi is reinforced to withstand the lateral loads due to earth pressure. When the leng of solid wall between windows is less than 50 per cent of the distance betwe the centre lines of the windows, the maximum size of window is considered be the combined length of such windows.

9.15.4.6. Exterior foundation walls shall extend not less than six (6) inches abo finished ground level.

9.15.4.7. Where the top of a foundation wall is reduced in thickness to permit th installation of floor joists, the reduced section shall not be higher than 14 in. ar not less than 3⅝ in. thick.

9.15.4.8. Where the top of a foundation wall is reduced in thickness to permit th installation of a masonry exterior facing, the reduced section shall be not less tha 3⅝ in. thick and tied to the facing material with metal ties conforming to Artic 9.20.9.5. spaced not more than 8 in. o.c. vertically and 36 in. o.c. horizontally. Th space between wall and facing shall be filled with mortar.

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* National Building Code. Revision Change Series No. 3
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9.15.4.9. Corbelling of foundation walls supporting cavity walls shall conform to Article 9.20.12.2.

9.15.4.10. Crack control joints shall be provided in foundation walls exceeding 80 ft. in length at intervals of not more than 40 ft. Such joints shall be designed to resist moisture penetration and shall be keyed to prevent relative displacement of the wall portions adjacent to the joint.

9.15.4.11. Interior masonry foundation wall not subject to lateral earth pressure shall conform to Section 9.20.

9.15.4.12. All form ties shall be removed at least flush with the concrete surface and the exposed exterior surface shall be parged.

9.15.4.13. Unit masonry shall not be used for exterior foundation walls below grade.

SUBSECTION 9.15.5 PIERS AND PERIMETER GRADE BEAMS

9.15.5.1.(1) Piers shall be of reinforced concrete mixed and placed in conformance with Part 4.

(2) Piers shall:

(a) be designed, spaced and constructed to support the imposed loads;

(b) have a cross-section not less than 9 in. by 9 in.;

(c) have a width not less than that of the supported member;

(d) be supported on *concrete* footings conforming to the requirements of Subsection 9.15.3.,

(e) be centrally located on the footings; and

(f) be securely fastened to the supported member and the footing to prevent lateral movement.

9.15.5.3.(1) Perimeter grade beams shall be of reinforced concrete mixed and placed in conformance with Part 4.

(2) Perimeter grade beams shall;

(a) be designed and constructed to support the imposed loads;

(b) extend at least 6 inches above final *grade*;

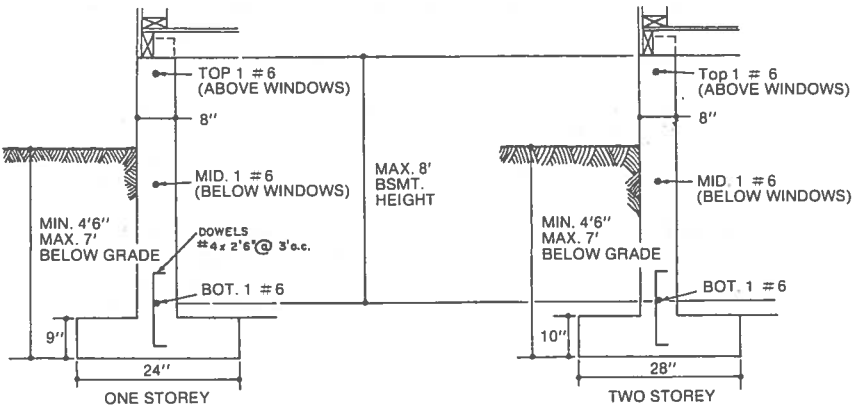
(c) have a minimum width of 9 inches; and

(d) have an adequate void space under grade beams in contact with the ground.

9.15.5.4 Minimum reinforcing for piers and perimeter grade beams shall be in accordance with Figure 9.15.(c), if greater spacing is desired between piers the reinforcing shall be designed by a Professional Engineer registered in the Province of Manitoba, but in no case shall be less than shown in Figure 9.15.(c).

Figure 8.15.(a).

MINIMUM REINFORCEMENT FOR LATERALLY SUPPORTED FOUNDATION WALLS



Minimum interior column footing size supporting: (a) one storey 30 in. x 30 in. x 10 in.
(b) two storey 36 in. x 36 in. x 12 in.

FIGURE 9.15.(b).

MINIMUM REINFORCEMENT FOR LATERALLY UNSUPPORTED FOUNDATION WALLS

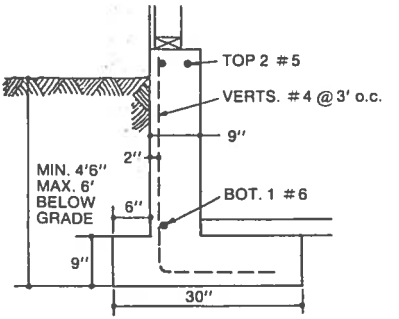
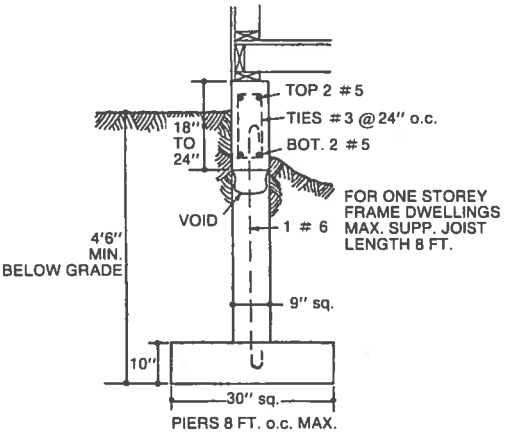
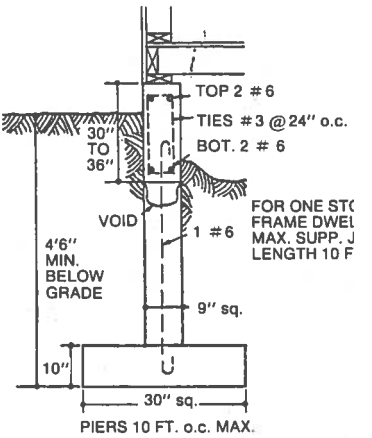


FIGURE 9.15.(c).

MINIMUM REINFORCEMENT FOR PIERS AND PERIMETER GRADE BEAMS





SUBSECTION 9.15.6. COLD WEATHER REQUIREMENTS

9.15.6.1.(1) In the construction of footings during cold weather the following sh be complied with:

(a) footings shall not be placed on frozen ground;
(b) a maximum of 5" slump concrete shall be used;
(c) concrete shall be heated to a minimum temperature of +60°F;
(d) when the temperature is expected to fall below +32°F but not below +10 footings shall be protected with covers; and
(e) when the temperature is expected to fall below +10°F, footings shall protected with covers and insulated.

9.15.6.2.(1) In the construction of exterior foundation walls during cold weather the following shall be complied with:

(a) footings, forms and re-enforcing steel shall be free of ice and snow;

(b) a maximum of 5" slump concrete shall be used;

(c) concrete shall be heated to a minimum temperature of +60°F;

(d) when the temperature is expected to fall below +32°F, but not below +10°F, forms shall be protected with covers for a minimum period of 48 hours; and

(e) when the temperature is expected to fall below +10°F, forms shall be covered and the inside heated to an average of +70°F, and shall be maintained for a minimum of 48 hours.

‡**85.** Add immediately at the end of Subsection **9.16.4.** of the Code the following:

9.16.4.4.(1) Slabs below *grade* for single-family and two-family dwellings, and row housing shall be drained by at least one separate porous drain line so placed that:

(a) it is directed towards the furthest wall intersection, and

(b) the length be equal to one-half the distance between the *catch basin* connection and the wall intersection towards which it is directed.

*__86.__ Add thereto immediately at the end of Section **9.16.** of the Code a new subsection as follows:

SUBSECTION 9.16.9. JOINTS

9.16.9.1. In localities where termites are known to occur, joints between slabs-on-ground and *foundation* walls, and spaces around pipes, conduit or ducts that penetrate such slabs shall be filled with bitumen or other filler *approved* for this purpose.

*__87.__ Delete Article **9.17.4.2.** of the Code and substitute the following:

9.17.4.2. Wood columns shall be either solid, glued laminated, or built up. Built-up columns shall consist of not less than 2-in.-thick full-length members bolted together with not less than ⅜-in. diam. bolts spaced not more than 18 in. o.c., or nailed together with not less than 3 in. nails spaced not more than 12 in. o.c. Glued laminated columns shall conform to Section 4.3 of this Bylaw.

*__88.__ Delete Article **9.18.4.1.** of the Code and substitute the following:

9.18.4.1. The ground level in a crawl space shall be not less than 12 in. below the level of all joists and beams except that in localities where termites are known to occur, the clearance shall be not less than 18 in., unless the joists are pressure treated with an *approved* chemical that is toxic to termites.

‡**89.** Delete Article **9.18.5.1.** of the Code and substitute the following:

9.18.5.1. Unless groundwater levels and site conditions are such that water will not accumulate in the crawl space, the crawl space floor and access trenches shall be sloped to drain to a sewer, *approved* ditch or dry well.

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* National Building Code. Revision Change Series No. 3
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†90. Delete Article **9.19.1.1.** of the Code and substitute the following:

9.19.1.1. Except as provided in Article 9.19.1.2., every attic or roof space abo an insulated ceiling shall be ventilated with openings to the exterior to provi unobstructed vent area of not less than 1/300 of the insulated ceiling area. Ver may be roof type, eave-type, gable-end type or any combination thereof, and sh be uniformly distributed on opposite sides of the *building*. Vents shall be design to prevent the entry of rain, snow or insects.

†91. Add immediately at the end of subsection **9.19.1.** of the Code the following:

9.19.1.2. A roof space in a *building* containing not more than one *storey* need n be vented provided the vapour barrier protecting the ceiling insulation is Ty I (see Article 9.26.3.3.) and is applied as a single continuous sheet without openin over the entire ceiling area. Openings such as for plumbing vents may be cut such vapour barrier provided the perimeter of such openings are sealed in a mann that will maintain the effectiveness of the vapour barrier.

†92. Add immediately at the end of Subsection **9.20.1.** of the Code the following:

9.20.1.3. In seismic zone 3, *loadbearing* elements of masonry *buildings* more th one *storey* in height shall be reinforced with at least the minimum amount reinforcement as required in Subsection 9.20.18.

9.20.1.4. In seismic zone 2, *loadbearing* elements of three *storey* masonry *buildin* shall be reinforced with at least the minimum amount of reinforcement as requir in Subsection 9.20.18.

†93. In the fourteenth line of Article **9.20.2.1.** of the Code change standard "ASTM C212-6 to read "ASTM C212-60(1970)."

†94. In the fifth line of Article **9.20.3.1.** of the Code change standard "CSA A5-1961" read "CSA A5-1971.

†95. Delete Article **9.20.6.2.** of the Code and substitute the following:

9.20.6.2. Cavity walls shall have not less than 3⅝-in.-thick wythes separated by cavity of not less than 2 in. nor more than 3 in. except that where the wyth are bonded together with masonry units the cavity shall not be less than thi in. and not more than four in. The minimum thickness of cavity walls above t supporting base shall be 10 in. for the top 25 ft and 14 in. for the remaining portio

†96. Add immediately at the end of Subsection **9.20.10.** of the Code the following:

9.20.10.2. Floor and roof constructions providing required lateral support for wa as required in Article 9.20.10.1. shall be constructed to transfer lateral loads walls or buttresses approximately at right angles to the laterally supported walls.

†97. Delete Article **9.20.12.3.** of the Code and substitute the following:

9.20.12.3. Masonry veneer resting on a bearing support shall not project more th 1 in. beyond the supporting base where the veneer is at least 3⅝ in. thick, a ½ in. beyond the supporting base where the veneer is less than 3⅝ in. thick th 1 in. beyond the supporting base. In the case of rough stone veneer, the projecti measured as the average projection of the stone units, shall not exceed ⅓ the t width beyond the supporting base.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
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*98. Delete Article **9.20.15.1.** of the Code and substitute the following:

9.20.15.1. Where the interior finish of the exterior walls of a *building* is a type which may be damaged by moisture, exterior masonry walls, other than cavity walls or walls that are protected for their full height by a roof of a carport or porch, shall be parged on the interior surface and covered with No. 15 breather-type asphalt-saturated paper or felt conforming to CGSB 9-GP-2(a)(1971), "Paper: Building, Cellulostic Fibre, Water Repellent (Breather Type)" lapped at least 4 in. at the joints. Where the insulation effectively limits the passage of water vapour and is applied by a waterproof adhesive or by mortar directly to the masonry, the requirements for parging and building paper do not apply.

†99. Add immediately at the end of Section **9.20.** of the Code the following new Subsection:

SUBSECTION 9.20.18. REINFORCEMENT FOR EARTHQUAKE RESISTANCE

9.20.18.1. Where reinforcement is required in this Section, masonry walls shall be reinforced horizontally and vertically with steel having a total cross sectional area of not less than 0.002 times the cross sectional area of the wall, so that not less than ⅓ of the required steel area is installed horizontally and vertically.

9.20.18.2. Where reinforcement for masonry is required in this Section, it shall be installed in conformance with the requirements for reinforced masonry as contained in Part B of NBC Supplement No. 4 (1970).

†100. Delete Articles **9.21.1.4.** and **9.21.1.5.** of the Code and substitute the following:

9.21.1.4. Where a metal *gas vent* is used for venting of gas-burning *appliances*, such *appliances* shall be vented in accordance with CSA B149.1-1970, "Installation Code for Natural Gas Burning Appliances and Equipment," or CSA B149.2-1969, 'Installation Code for Propane Burning Appliances and Equipment,' and Supplement No. 1, 1971."

9.21.1.5. Dampers and draft regulators in *flue pipes* serving oil-fired *appliances* shall conform to CSA B139-1971, "Installation Code for Oil Burning Equipment."

†101. Delete Article **9.21.2.1.** of the Code and substitute the following:

9.21.2.1. A *chimney flue* serving a fireplace or incinerator shall not serve any other *appliance*.

†102. Delete Article **9.21.2.4.** of the Code and substitute the following:

9.21.2.4. The size of a *chimney flue* shall conform to Table 9.21.2.A. unless calculations are provided to show that smaller sizes can be justified.

*103(a) Delete Articles **9.21.3.1., 9.21.3.2.** and **9.21.3.3.** of the Code and substitute the following:

9.21.3.1. Every *masonry* or *concrete chimney* shall have a *lining* of clay, firebrick, asbestos cement or other *approved* material.

9.21.3.2. Clay liners shall conform to the requirements in ASTM C315-56 (1972), "Clay Flue Linings." Such *liners* shall be not less than ⅝ in. thick and shall be capable of resisting without softening or cracking a temperature of 2000°F.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
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9.21.3.3.(1) Firebrick *liners* shall conform to ASTM C64-61, "Fireclay Bric Refractories for Heavy Duty Stationary Boiler Service," or to ASTM C153-6 "Fireclay Brick Refractories for Moderate Duty Stationary Boiler Service."

(2) Such fire brick shall be laid with fire clay mortar or high temperature ceme mortar.

(b) Renumber former Articles **9.21.3.4.** and **9.21.3.5.** of the Code as Articles 9.21.3. and 9.21.3.6.

***104.** In Table **9.21.6.A.** of the Code in Column 1 for items 2, 3, and 4 change figu "0.0129-in." to "0.013-in."; and for item 6 change figure "0.0259-in." to "0.027-in.

†**105.** Delete Article **9.22.8.1.** of the Code and substitute the following:

9.22.8.1. Factory-built fireplaces shall comply with ULI 127-1970, "Fireplac Factory-Built."

***106.** Delete Article **9.23.2.3.** of the Code and substitute the following:

9.23.2.3. Wood framing members that are not pressure treated with a woo preservative, and which are supported on concrete in contact with the ground fill, shall be separated from the concrete by at least 2-mil polyethylene film, 45- roll roofing or other *approved* dampproofing material, except that such dampproofi is not required where the wood member is at least 6 in. above the ground.

***107.** Delete Article **9.23.3.1.** of the Code and substitute the following:

9.23.3.1. Nails specified in this Section shall be common steel wire nails or comm spiral nails, conforming to CSA B111-1967, "Wire Nails, Spikes and Staples," unl otherwise indicated. Other nails providing at least equivalent performance may al be used.

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* National Building Code. Revision Change Series No. 3
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*† **108.** Delete Table **9.23.3.A.** of the Code and substitute the following:

Table 9.23.3.A.
Forming Part of Article 9.23.3.4.

NAILING FOR FRAMING		
Construction Detail	Minimum Length of Nails (in.)	Minimum Number or Maximum Spacing of Nails
Floor joist to plate—toe nail	3¼	2
Wood or metal strapping to underside of floor joists	2¼	2
Cross bridging to joists	2¼	2 each end
Doubled header or trimmer joists	3	12 in. o.c.
Floor joist to stud (balloon construction)	3	2
Ledger strip to wood beam	3¼	2 per joist
Joist to joist splice (see also Table 9.23.13.A.)	3	2 at each end
Tail joist to adjacent header joist	3¼	5
(end nailed) around openings	4	3
Each header joist to adjacent trimmer joist	3¼	5
(end nailed) around openings	4	3
Stud to wall plate (each end) toe nail	2½	4
or end nail	3¼	2
Doubled studs at openings, or studs at partition or wall intersections and corners	3	30 in. o.c.
Doubled top wall plates	3	24 in. o.c.
Bottom wall plate or sole plate to joists or blocking (exterior walls)	3¼	16 in. o.c.
Interior partitions to framing or subflooring	3¼	24 in. o.c.
Horizontal member over openings in non-load bearing partitions—each end	3¼	2
Lintels to studs	3¼	2 at each end
Ceiling joist to plate—toe nail each end	3¼	2
Roof rafter, roof truss, or roof joist to plate—toe nail	3¼	3
Rafter plate to each ceiling joist	4	2
Rafter to joist (with ridge supported)	3	3
Rafter to joist (with ridge unsupported)	3	see Table 9.23.13.A.
Gusset plate to each rafter at peak	2¼	4
Rafter to ridge board—toe nail	2¼	4
—end nail	3¼	3
Collar tie to rafter —each end	3	3
Collar tie lateral support to each collar tie	2¼	2
Jack rafter to hip or valley rafter	3¼	2
Roof strut to rafter	3	3
Roof strut to bearing partition—toe nail	3¼	2
2 by 6 or less plank decking to support	3¼	2
Plank decking wider than 2 by 6 to support	3¼	3
2-in. edge laid plank decking to support (toe nail)	3	1
2-in. edge laid plank to each other	3	18 in. o.c.
Column 1	2	3

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† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
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§109. Delete Articles **9.23.4.1.** and **9.23.4.2.** of the Code and substitute the following:

9.23.4.1. Except as required in Article 9.23.4.4., the spans for wood beams, joi and rafters shall conform to Tables IIA to IIK (page 442) for the uniform *li loads* shown in the tables for lumber graded under the grading rules shown Table 9.3.3.A.

9.23.4.2. Except as required in Article 9.23.4.4., the spans for wood joists, rafte and beams shall conform to the spans shown in "Span Tables for Wood Jois Rafters and Beams," NRCC publication No. 11862, 1971 for the uniform *live loa* shown in the tables for lumber graded under the grading rules shown in Tat 9.3.3.B.

9.23.4.3. The spans for steel beams in basements, cellars and crawl spaces in o and two *storey* dwellings shall conform to Table II-L.

9.23.4.4. Where a floor is required to be designed to support a concentrated lo as specified in Table 9.4.2.B., or supports a uniform *live load* in excess of thc shown in the span tables, such spans shall be determined in conformance wi Section 4.3 of this Bylaw.

*110. Delete Article **9.23.6.2.** of the Code and substitute the following:

9.23.6.2. Except as provided in Article 9.23.6.4. anchorage shall be provided embedding the ends of the first floor joists in concrete, or fastening the sill pl to the foundation with not less than ½-in. diam. anchor bolts spaced not mc than 8 ft o.c. Such anchor bolts shall be embedded not less than 4 in. in the foundati and so designed that they may be tightened without withdrawing the bolt fro the foundation.

*111. Add thereto immediately at the end of Subsection **9.23.6.** of the Code a new Artic as follows:

9.23.6.4. *Buildings* not more than 14 ft in width and not more than one *stor* in *building height* may be anchored by means of corrosion-resistant steel rods cables of at least ½-in. diameter, attached to the *building* frame near each corr of the *building* in a manner that will develop the full strength of the rod or cab Each such rod or cable shall be anchored to the ground by means of ground anch having a withdrawal resistance of not less than 35 lb per lineal foot length of t *building.*

§112. Delete Articles **9.23.8.3.** and **9.23.8.4.** of the Code and substitute the following:

9.23.8.3. Wood beams may be solid, glued laminated or built up. Built-up bea for *dwelling units* shall consist of nominal 2-in. lumber, vertically nail-laminat Except as provided in Article 9.23.8.4., the joints in built-up beams shall occ over supports or within 6 in. of the quarter points of the clear span. Where locat near the quarter points, the joints in built-up beams shall be separated by at le one lamination and shall not exceed half the beam width.

9.23.8.4. When the number of laminations in a built-up beam exceeds the numl shown in Tables 2J and 2K (page 461), or in 'Span Tables for Wood Joists, Raft and Beams,' NRCC publication No. 11862, 1971, the joints may be at locatic other than described in Article 9.23.8.3. The distance between joints shall be less than 4 times the depth of the beam when located in adjacent vertical laminatic and not less than twice the depth of the beam when not in adjacent verti laminations.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
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†113. Delete Table **9.23.10.A.** of the Code and substitute the following:

Table 9.23.10.A.

Forming Part of Article 9.23.10.6.

SIZE AND SPACING OF STUDS				
Type of Wall	Supported Loads (including *dead loads*)	Minimum Stud Size in.	Maximum Stud Spacing, in.	Maximum Unsupported Height, ft.
Interior	No Load	2 by 2 2 by 4 flat	16 16	8 12
	Limited Attic Storage(1)	2 by 3 2 by 4	24 24	10 12
	Full attic storage,(2)or roof-load, or limited attic storage(1) plus one floor	2 by 4	24	12
	Full attic storage(2)plus one floor, or roof load plus one floor or limited attic storage' plus two floors	2 by 4	16	12
	Full attic storage(2)plus two floors, or roof load plus two floors	2 by 4 3 by 4 2 by 6	12 16 16	12 12 14
	Full attic storage(2) plus three floors, or roof load plus three floors	2 by 6	12	14
Exterior	Roof, with or without attic storage	2 by 3 2 by 4	16 24	8 10
	Roof, with or without attic storage plus one floor	2 by 4	16	10
	Roof, with or without attic storage plus two floors	2 by 4 3 by 4 2 by 6	12 16 16	10 10 12
	Roof, with or without attic storage plus three floors	2 by 6	12	6
Col. 1	2	3	4	5

Notes to Table 9.23.10.A

(1)applies to attics not accessible by a stairway

(2)applies to attics accessible by a stairway

†**114.** Delete Article **9.23.11.1.** of the Code and substitute the following:

9.23.11.1. Wall plates shall be not less than 2 in. thick and the same width as th wall studs except that in *non-loadbearing partitions* and in *loadbearing* walls wher the studs are located directly over framing members, the bottom wall plate ma be ¾ in. thick.

*†**115.** Delete Articles **9.23.12.1.** and **9.23.12.2** of the Code and substitute the following:

9.23.12.1. Except as provided in Article 9.23.12.4. openings in non-*load-bearing wal* shall be bridged with not less than 2-in. material, the same width as the stud securely nailed to adjacent studs.

9.23.12.2. Openings in *load-bearing* walls shall be bridged with lintels designed t carry the superimposed loads to adjacent studs. Except as provided in Articl 9.23.12.4., where two or more members are used in lintels, they shall be fastene together with not less than 3¼ in. nails in a double row with nails not more tha 18 in. apart in each row. The lintel members may be separated by filler pieces.

9.23.12.3. In *buildings* of *residential occupancy* where the wall studs exceed 2 ir by 3 in. in size and where the spans of supported joists do not exceed 16 ft an the spans of trusses do not exceed 32 ft, the spans for wood lintels shown in Tabl 9.23.12.A. may be used except that where the lumber is graded in conformanc with the grading rules shown in Table 9.3.3.B., the lintel spans for exterior wal shall be reduced by at least 1 in. per ft of span.

9.23.12.4. In *load-bearing* exterior and interior walls of 2 in. by 3 in. framing member lintels shall consist of solid 3 in. thick members on edge or 2 in. thick and in. thick members securely nailed together. Such lintels shall be at least 2 in. greate in depth than those shown in Table 9.23.12.A. for the allowable spans and sha not exceed 8 ft in length.

§**116.** Heading for Table **9.23.12.A.** of the Code amended to read as follows:

Forming Part of Article 9.23.12.3.

*†**117.** Delete Article **9.23.13.1.** of the Code and substitute the following:

9.23.13.1. Roof rafters and joists and ceiling joists shall be continuous, or shal be spliced over vertical supports that extend to suitable bearing.

*†**118.** Delete Article **9.23.13.9.** of the Code and substitute the following:

9.23.13.9. When dwarf walls are used for the rafter support, they shall be framed i the same manner as *load-bearing* walls and securely fastened top and bottom t the roof and ceiling framing to prevent over-all movement. Solid blocking sha be installed between floor joists beneath dwarf walls that enclose finished rooms.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

*119. Delete Table **9.23.13.A.** of the Code and substitute the following:

Table 9.23.13.A.
Forming Part of Article 9.23.13.11.

MINIMUM RAFTER-TO-JOIST NAILING[1, 2]
(Unsupported Ridge)

Roof Slope	Rafter Spacing	Rafter tied to Every Joist						Rafter tied to Joist Every 4 Ft					
		Building Width up to 26 ft			*Building* Width up to 32 ft			*Building* Width up to 26 ft			*Building* Width up to 32 ft		
		Roof Snow Load, lb/sq ft											
		20 psf or less	30 psf	40 psf or more	20 psf or less	30 psf	40 psf or more	20 psf or less	30 psf	40 psf or more	20 psf or less	30 psf	40 psf or more
4/12	16 in.	4	5	6	5	6	8	11	—	—	—	—	—
	24 in.	6	8	9	8	11	—	11	—	—	—	—	—
5/12	16 in.	4	4	5	5	6	7	7	9	—	9	—	—
	24 in.	5	6	8	7	8	11	7	9	—	—	—	—
6/12	16 in.	4	4	4	4	4	5	6	8	9	8	11	—
	24 in.	4	5	6	5	6	8	6	8	9	8	11	—
7/12	16 in.	4	4	4	4	4	4	5	6	8	7	8	11
	24 in.	4	4	5	5	6	7	5	6	8	7	8	11
9/12	16 in.	4	4	4	4	4	4	4	5	6	5	6	7
	24 in.	4	4	4	4	4	5	4	5	6	5	6	7
12/12	16 in.	4	4	4	4	4	4	4	4	4	4	4	5
	24 in.	4	4	4	4	4	4	4	4	4	4	4	5
Col. 1	2	3	4	5	6	7	8	9	10	11	12	13	14

Notes to Table 9.23.13.A.:
(1) Nails not less than 3 in.
(2) Ceiling joists shall be fastened together with at least one more nail per joist splice than required for the rafter-to-joist connection.

§†120. Delete Articles **9.23.13.13.** and **9.23.13.14.** of the Code and substitute the following:

9.23.13.13. Ceiling joists supporting part of the roof load from the rafters shall be not less than 1 in. greater in depth than required for ceiling joists not supporting part of the roof load except that when the roof slope is 3/12 or less the ceiling joist sizes shall be determined from the span tables for roof joists.

9.23.13.14. Roof trusses shall be designed in accordance with the appropriate requirements in Part 4 of this Bylaw, except that where the span of a roof truss does not exceed 40 ft and the roof truss spacing does not exceed 24 in. o.c., roof trusses are acceptable provided they conform to the requirements in Article 9.23.13.15.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

9.23.13.15. Where lumber roof trusses not designed in conformance with Part of this bylaw are used as permitted in Article 9.23.13.14., they shall be capabl of withstanding a load equal to the ceiling load plus 2⅔ times the design roc snow load, but not less than 60 psf for 24 hr. Such trusses shall not deflect mor than 1/360 of the span after being loaded with the ceiling load plus 1⅓ the desig roof snow load after 1 hr in the case of trusses supporting a gypsum board c plastered ceiling and not more than 1/240 of the span for other types of ceilin finish. Where such trusses do not exceed 14 ft span, the deflection is permitted t be not more than 1/180 of the span when loaded with the ceiling load plus 1⅓ th design roof load where the trusses do not support a gypsum board or plastere ceiling. Where lumber roof trusses are tested, such tests shall be in accordanc with Technical Note No. 423 published by the Division of Building Research c the National Research Council of Canada, July 1964.

*†**121.** Delete Articles **9.23.15.2.** to **9.23.15.4.** of the Code and substitute the following:

9.23.15.2. Plywood roof sheathing shall be installed with the surface grain at rigl angles to the roof framing, and with not less than a 1/16-in. gap between buttir edges.

9.23.15.3. Particleboard and plywood roof sheathing shall be installed with at lea a 1/16-in. gap between sheets.

9.23.15.4. Where panel-type roof sheathing requires edge support, the support sha be not less than 2-in. by 2-in. blocking securely nailed between framing member or metal H clips. Such supports are not required when tongued-and-grooved edg plywood is used.

9.23.15.5. The thickness of roof sheathing on a flat roof used as a walking dec shall conform to the requirements in Table 9.23.14.A. for subfloors. The thickne of roof sheathing on a roof not used as a walking deck shall conform to Tab 9.23.15.A.

9.23.15.6. Asphalt-coated or asphalt-impregnated fibreboard at least 7/16 in. thic conforming to CSA A247.2-1969, 'Insulating Fibreboard Sheathing,' may be use as a roof sheathing over supports spaced not more than 16 in. o.c., provided th roofing consists of a continuous sheet of galvanized steel of at least 30 GSG a continuous sheet of aluminum of at least 0.024 in. in thickness. All edges such sheathing shall be supported by blocking or framing.

§**122.** In the column "Material Standards" of Table **9.23.16.A.** of the Code for the lir "Lumber" strike out the words "See Table 9.3.3.A." and substitute therefor the word "See Tables 9.3.3.A. and 9.3.3.B."

§**123.** Delete Article **9.23.17.1.** of the Code and substitute the following:

9.23.17.1. Sheathing paper shall conform to CGSB 9-GP-2a(1971), "Paper: Buildir Cellulosic Fibre, Water Repellent (Breather Type)."

*†**124.** Delete Article **9.23.17.4.** of the Code and substitute the following:

9.23.17.4. Sheathing paper may be omitted beneath siding where the joints in t siding are formed in such a manner as to effectively resist the passage of wi and rain. This requirement may be met by having all edges of panel type sidi directly supported by framing members with joints between adjacent panels caulk and the vertical joints covered with battens or shiplapped or otherwise matched.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

§125. Delete Article **9.24.2.4.** of the Code and substitute the following:

9.24.2.4. Lumber shall conform to the appropriate requirements in Subsection 9.3.3.

§126. Delete Article **9.25.1.2.** of the Code and substitute the following:

9.25.1.2. Lumber shall conform to the appropriate requirements in Subsection 9.3.3.

*127. Delete Article **9.25.3.3.** of the Code and substitute the following:

9.25.3.3. Corners shall be formed by butting and fastening together the face and edge of two planks.

§128. Delete Articles **9.25.4.2.** and **9.25.4.3.** of the Code and substitute the following:

9.25.4.2. Openings in *load-bearing* walls shall be bridged with lintels designed to carry superimposed loads to adjacent vertical members.

9.25.4.3. In *buildings* of *residential occupancy* where the spans of supported joists do not exceed 16 ft and the spans of trusses do not exceed 32 ft, the spans for wood lintels shown in Table 9.25.4.A. may be used except that when the lumber is graded in conformance with the grading rules shown in Table 9.3.3.B. the lintel spans shall be reduced by at least 1 in. per foot of span.

9.25.4.4. Non-*load-bearing* horizontal members (fillers) shall be securely fastened to the vertical framing.

§129. Heading for Table **9.25.4.A.** of the Code amended to read as follows "Forming Part of Article 9.25.4.3."

†130. Delete Article **9.26.1.1.** of the Code and substitute the following:

9.26.1.1. This Section applies to the thermal insulation of *buildings* of *residential occupancy.*

†131. Delete Articles **9.26.3.2.** and **9.26.3.3.** of the Code and substitute the following:

9.26.3.2. Insulating materials shall conform to one of the following:

CSA A101-1968, "Mineral Wool Thermal Building Insulation,"
CSA A247.1-1969, "Fibreboard Roof Insulation,"
CSA A247.2-1969, "Insulating Fibreboard Sheathing,"
CGSB 41-GP14a(1972), "Thermal Insulation, Expanded Polystyrene.
CGSB 41-GP-16a(1971), "Polyurethane: Rigid, Cellular, for Thermal Insulation and Other Applications."

9.26.3.3. Vapour barriers shall conform to CGSB 70-GP-1a(1970), "Vapor Barriers: Sheet, for Use in Above-Grade Building." Type I vapour barriers shall be used where a high resistance to vapour movement is required, such as in wall constructions that incorporate exterior cladding or sheathing having a low water vapour permeance. Type II vapour barriers may be used in all other locations.

*132. Delete Article **9.26.6.2.** of the Code and substitute the following:

9.26.6.2. Lightweight cellular plastic-type insulation may be used without additional vapour barrier protection provided such insulation has a permeance rating of not more than 4 perm-inches and is installed in continuous contact with masonry or concrete walls.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

*133. Delete Articles **9.26.6.4.** to **9.26.6.6.** of the Code and substitute the following:

9.26.6.4. Where an interior frame wall meets an exterior wall required to have vapo barrier protection, the vapour barrier protection shall extend between the exteri and interior walls to form continuous protection at the wall intersection.

9.26.6.5. Where an interior frame wall meets a ceiling required to have vapo barrier protection, the vapour barrier protection shall extend over the top of t wall or beneath the top wall plate to form continuous vapour protection for t ceiling.

9.26.6.6. Every vapour barrier joint shall lap not less than 1 in. when located ov supporting members and shall be covered with a strip of vapour barrier whi shall extend not less than 4 in. on both sides of the joint where not located ov supporting members.

9.26.6.7. Openings such as for electrical boxes and registers shall be cut so th the vapour barrier fits snugly around them.

*134. Delete Article **9.27.2.1.** of the Code and substitute the following:

9.27.2.1. Roofing materials shall conform to the following:

CGSB 9-GP-2a(1971), "Paper, Building, Cellulosic Fibre, Water Repelle (Breather Type),"

CGSB 37-GP-4b(1971), "Cement: Lap, Asphalt Cutback, Fibrated, f Asphalt Roofing,"

CGSB 37-GP-5c(1971), "Cement: Plastic, Cutback Asphalt,"

CGSB 37-GP-8c(1971), "Asphalt, Cutback: Filled, for roof coating,"

CGSB 37-GP-9c(1971), "Asphalt Primer for Asphalt Roofing, Dampproofi or Waterproofing,"

CGSB 37-GP-21c(1971), "Roof Coating: Tar Cutback, Fibrated,"

CGSB 41-GP- 6b(1973) "Sheets: Thermosetting, Polyester Plasti Glass Fiber Reinforced"

CSA A123.1-1964, "Asphalt Shingles Surfaced with Mineral Granules,"

CSA A123.2-1966, "Asphalt Roofing Surfaced with Mineral Granules,"

CSA A123.3-1973,, "Asphalt Roofing Surfaced with Fine Mineral Matter,"

CSA A123.4-1965, "Wide Selvage Asphalt Roofing Surfaced with Mine Granules,"

CSA A123.6-1953, "Asphalt-Saturated Roofing Felt for Use in Waterproofi and in Constructing Built-Up Roofs,"

CSA A123.7-1962, "Asphalt for Use in Construction of Built-Up Rc Coverings,"

CSA A123.8-1953, "Coal-Tar Saturated Roofing Felt for Use Waterproofing and in Constructing Built-Up Roofs,"

CSA A123.9-1953, "Asphalt-Saturated Asbestos Felts for Use Waterproofing and in Constructing Built-Up Roofs,"

CSA A123.10-1953, "Coal-Tar Saturated Asbestos Felts for Use Waterproofing and in Constructing Built-Up Roofs,"

CSA A123.11-1969, "Asphalt-Saturated and Coated Asbestos Felts for U in Constructing Built-Up Roofs,"

CSA A123.13-1953, "Coal-Tar Pitch for Roofing, Dampproofing a Waterproofing,"

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

CSA A123.17-1963, "Asphalt-Saturated Felted Glass-Fibre Mat for Use in Construction of Built-Up Roofs,"
CSA O118-1960, "Western Red Cedar Shingles, Machine Grooved Shakes, and hand-split Red Cedar Shakes."

*135. Delete Table **9.27.3.A.** of the Code and substitute the following:

Table 9.27.3.A.

Forming Part of Article 9.27.3.1.

ROOFING TYPES AND SLOPE LIMITS OF ROOFS		
Type of Roofing	Minimum Slope	Maximum Slope
Built-up Roofing:		
Asphalt base (gravelled)	0 in 12	3 in 12
Asphalt base (without gravel)	½ in 12	6 in 12
Asphalt base (surfaced with wide selvage asphalt roofing)	2 in 12	no limit
Coal-tar base (gravelled)	0 in 12	½ in 12
Cold process	½ in 12	9 in 12
Asphalt Shingles:		
Normal application	4 in 12	no limit
Low slope application	2 in 12	no limit
Roll Roofing:		
Smooth and mineral surfaced	3 in 12	no limit
19-in. wide selvage asphalt roofing	2 in 12	no limit
Cold application felt	¼ in 12	9 in 12
Wood Shingles	3 in 12	no limit
Hand-split Shakes	4 in 12	no limit
Asbestos-Cement Shingles	4 in 12	no limit
Asbestos-Cement Corrugated Sheets	3 in 12	no limit
Sheet Metal Roofing	0 in 12	no limit
Corrugated Metal Roofing	3 in 12	no limit
Sheet Metal Shingles	3 in 12	no limit
Slate Shingles	6 in 12	no limit
Clay Tile	6 in 12	no limit
Glass Fibre Reinforced Polyester Roofing Panels	3 in 12	no limit

†136. Delete Article **9.27.4.1.** of the Code and substitute the following:

9.27.4.1. Sheet metal flashing shall consist of not less than 4-lb, sheet lead, 30-GSG galvanized steel, 14-oz. copper, 11-oz. zinc, or 0.019-in.-thick aluminum.

§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
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*137. Delete Articles **9.27.5.1.** and **9.27.5.2.** of the Code and substitute the following:

9.27.5.1. Except as provided in Article 9.27.5.3., eave protection shall be provid on shingle, shake or tile roofs, extending from the edge of the roof to a line th is not less than 12 in. inside the inner face of the exterior wall, and in all cas not less than 3 ft up the roof slope.

9.27.5.2. Eave protection shall consist of not less than 6-mil polyethylene laid a continuous sheet without the use of cement, or No. 15 asphalt-saturated felt la in two plies lapped 19 in. and cemented together with lap cement, or 45-lb r roofing. Roll roofing shall be laid with not less than 4-in. head and end laps cement together with lap cement.

*138. Delete Article **9.27.10.1.** of the Code, and renumber Articles 9.27.10.2. to 9.27.1C as Articles 9.27.10.1. to 9.27.10.7., thence Delete Article **9.27.10.2** and substitu therefor the following:

9.27.10.2. A breather-type underlay shall be provided beneath roof shakes. Underl shall be laid as a strip not less than 36 in. wide along eaves and 12 in. wide alo hips and ridges. Underlay shall be laid as a strip not less than 18 in. wide betwe each course of shakes with the bottom edge of the underlay positioned above t butt line, a distance equal to double the exposure of the shakes.

*139. Reference to Table **9.27.10.A.** of the Code is hereby changed to read as follows:

Forming Part of Article 9.27.10.6.

†140. Delete Article **9.27.11.7.** of the Code and substitute the following:

9.27.11.7. A gravel stop or a cant strip shall be provided at the edges of ro and shall be cemented to the roofing membranes. Flashing shall extend over t edge of the roof to form a drip.

*141. Delete Note (1) of Table **9.27.11.A.** of the Code and substitute the following:

(1) 2 layers of felt laid dry over the sheating and 2 layers mopped with bitumen. Where the deck consis plywood or particleboard no dry felts or dry sheathing paper need be provided where the joints in the plyv or particleboard are taped, the plywood or particleboard deck primed with asphalt, and 3 plies of as paper mopped with asphalt, and flood coated as described in the table.

†142. Delete Article **9.27.14.1.** of the Code and substitute the following:

9.27.14.1. Sheet metal roofing shall be not less than 30 GSG galvanized sheet ste 14-oz. copper, 11-oz. zinc, or 0.019-in.-thick aluminum.

*143. Delete Subsection **9.27.15.** of the Code and substitute the following:

SUBSECTION 9.27.15. GLASS REINFORCED POLYESTER ROOFING

9.27.15.1. Where glass reinforced polyester roofing panels are not supported roof decking but span between spaced supports, the panels shall be designed support the design roof load in conformance with good engineering practice.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

SUBSECTION 9.27.16. DOWNSPOUTS AND ROOF DRAINS

9.27.16.1. Where downspouts are provided and are not connected to a sewer, extensions shall be provided to carry rainwater away from the *building* in a manner which will prevent soil erosion.

9.27.16.2. When roof drains are provided they shall conform to Part 7 of this Bylaw.

†**144.** Delete Subsection **9.28.3.** of the Code and substitute the following:

SUBSECTION 9.28.3. FLASHING

9.28.3.1. Flashing shall consist of not less than 4-lb sheet lead, 30-GSG galvanized steel, 14-oz. copper, 11-oz. zinc or 0.019-in.-thick aluminum.

9.28.3.2. Flashing shall be installed at every horizontal junction between two different exterior finishes except where the upper finish overlaps the lower finish.

9.28.3.3. Except as provided in Article 9.28.3.5. flashing shall be applied over exterior wall openings where the vertical distance from the bottom of the eave to the top of the trim is more than ¼ of the horizontal overhang of the eave.

9.28.3.4. Flashing shall be installed so that it extends upwards not less than 2 in. behind the sheathing paper and forms a drip on the outside edge.

9.28.3.5. Where a window or exterior door is designed to be installed without head flashing, the exterior flange of the window or door frame shall be bedded into a non-hardening type calking material and the exterior flange screwed down over the caulking material to the wall framing to form a waterproof joint.

*145. Delete Article **9.28.4.3.** of the Code and substitute the following:

9.28.4.3. Caulking shall conform to one of the following:

CGSB 19-GP-3b(1972), "Sealing Compound: Two Component, Polysulphide Base, Chemical Curing,"

CGSB 19-GP-5b(1971), "Sealing Compound: One Component, Acrylic Base, Solvent Curing,"

CGSB 19-GP6a(1970), "Compound: Caulking, Oil Base," or

CGSB 19-GP-9b(1971), "Sealing Compound: One Component, Silicone Base, Chemical Curing."

CGSB 19-GP-13(1968), "Sealing Compound: Elastomeric, One Component, Polysulphide Base, Chemical Curing,"

CGSB 19-GP-14(1970), "Sealing Compound: One Component, Butyl-Polyisobutylene Base, Solvent Curing."

CGSB 19-GP-15a(1971), "Sealing Compound: Multicomponent, Polyurethane Base, Chemical Curing."

§**146.** Delete Articles **9.28.5.7.** and **9.28.5.8.** of the Code and substitute the following:

9.28.5.7. Where wood shingles or shakes are applied to sheathing which is not suitable for attaching the shingles or shakes, the shingles or shakes may be attached to a wood lath not less than 2 in. by ⅜ in. thick securely nailed to the framing, and applied as described in Article 9.28.7.5.

9.28.5.8. Where asbestos-cement shingles are applied to sheathing that is not suitable for attaching the shingles, the shingles may be fastened to a wood lath not less than 4 in. by ⅜ in. thick securely nailed to the framing. Such lath shall be applied so that it overlaps the preceding shingle course by not less than ¾ in.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

*147. Delete Note (1) to Table **9.28.5.A.** of the Code and substitute the following:

(1) Shall penetrate through the nail-holding base or not less than 1 in. into the framing. Staples of the si length as required for nails may also be used, provided the staples are corrosion-resistant and compati with the siding material and positioned to permit expansion and contraction of the siding.

*148. Delete Article **9.28.8.1.** of the Code and substitute the following:

9.28.8.1. Asbestos-cement shingles and sheets shall conform to one of the followi
CGSB 34-GP-4b(1970) 'Siding: Asbestos Cement, Shingles and Clapboards,'
CGSB 34-GP-5c(1970) 'Sheets: Asbestos Cement, Corrugated,'
CGSB 34-GP-14a(1969) 'Sheets: Asbestos Cement, Flat, Decorative,'
CGSB 34-GP-16b(1970) 'Sheets: Asbestos Cement, Flat, Fully Compressed,'
CGSB 34-GP-17c(1970) 'Sheets: Asbestos Cement, Flat, Semicompressed,'
CGSB 34-GP-21a(1970) 'Sheets: Sandwich, Asbestos Cement and Fibreboard'."

*149. Delete Article **9.28.10.1.** of the Code and substitute the following:

9.28.10.1. Hardboard siding shall conform to CGSB 11-GP-5(1972) 'Precoa Hardboard for Exterior Use.'

§150. Delete Articles **9.28.10.3.** and **9.28.10.4.** of the Code and substitute the following:

9.28.10.3. Hard-pressed fibreboard siding applied in panels shall have all ed supported. Not less than a 3/16-in. gap shall be provided between sheets. Verti joints in such siding shall be protected with batten strips or caulking when joints are not matched. Horizontal joints shall be lapped not less than 1 in. shall be suitably flashed.

9.28.10.4. Hard-pressed fibreboard applied in horizontal lapped strips shall h not less than 3/16-in. gap provided at butted ends, which shall be caulked or otherw protected with suitable mouldings. The horizontal joints shall be lapped not than 1 in. Wedges shall be inserted under all vertical butt joints and corners.

*151. Delete Subsection **9.28.12.** of the Code and substitute the following:

SUBSECTION 9.28.12. METAL SIDING

9.28.12.1. Steel siding, including flashing and trim accessories shall conform to CC 93-GP-4(1971), 'Siding, Soffit and Fascia, Steel, Zinc Coated, (Galvanized) Stand Duty.'

9.28.12.2. Aluminum siding, including flashing and trim accessories shall conf to CGSB 93-GP-2(1970), 'Siding, Soffit and Fascia, Aluminum, Coated, Stand Duty.'

9.28.12.3. Aluminum siding in contact with masonry or concrete shall be effecti coated or separated from the masonry or concrete by an impervious membrane.

SUBSECTION 9.28.13. VINYL SIDING

9.28.13.1. Vinyl siding, including flashing and trim accessories, shall conforn CGSB 41-GP-24(1972) 'Siding, Soffits and Fascia, Rigid Vinyl.'

9.28.13.2. The attachment of vinyl siding shall conform to the requirement Subsection 9.28.5. for metal siding.

9.28.13.3. Vinyl siding shall be applied over sheathing or other backing that provide continuous support for the siding.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

†152. Delete Article **9.29.2.1.** of the Code and substitute the following:

9.29.2.1. Portland cement shall conform to CSA A5-1971, "Portland Cements."

†153. Column 1 of Table **9.29.4.A.** of the Code is amended to change the line heading "Vertical and Horizontal Surfaces" to read "Vertical Surfaces," and in addition, the line heading "Horizontal Surfaces Only" is changed to read "Horizontal Surfaces."

*154. Delete Article **9.29.4.6.** of the Code and substitute the following:

9.29.4.6. Stucco lath shall be fastened in conformance with Subsection 9.28.5.

§155. Delete Article **9.30.2.1.** of the Code and substitute the following:

9.30.2.1. Waterproof finish shall be provided to a height of not less than 6 ft above the floor in shower stalls, 46 in. above the rims of bathtubs equipped with showers, and 16 in. above the rims of bathtubs not equipped with showers.

§156. Delete Article **9.30.3.1.** of the Code and substitute the following:

9.30.3.1. Wood furring for the attchment of wall finishes shall be not less than ⅝ in. by 2 in. where applied to solid backing such as masonry or to supports spaced not more than 16 in. o.c., and ⅝ in. by 4 in. where applied to supports spaced not more than 24 in. o.c."

§157. Delete Article **9.30.7.5.** of the Code and substitute the following:

9.30.7.5. When plaster is applied over concrete or concrete masonry a special bond coat shall be used as the first coat or an *approved* liquid bonding agent shall be applied before application of the first coat of plaster. Normal finishing hydrated lime shall not be used in plaster applied to exterior masonry or concrete walls.

*158. Delete Article **9.30.8.1.** of the Code and substitute the following:

9.30.8.1. Gypsum board shall conform to CSA A82.27-1972, "Gypsum Wallboard."

*†159. Delete Subsection **9.30.9.** of the code and substitute the following:

SUBSECTION 9.30.9. PLYWOOD FINISH

9.30.9.1. The minimum thickness of plywood interior finish shall conform to Table 9.30.9.A., except that no minimum thickness is required when the plywood is applied over solid backing.

9.30.9.2. Where plywood for interior finish is grooved, the grooves shall not extend through the face ply and into the plies below the face ply unless the thickness of the plywood exceeds the value shown in Table 9.30.9.A. by an amount equal to at least the depth of penetration of the grooves into the plies below the face ply.

9.30.9.3. Nails for attaching plywood finishes shall be not less than 1½ in. casing or finishing nails spaced not more than 6 in. o.c. along edge supports and 12 in. o.c. along intermediate supports, except that staples providing equivalent lateral resistance may also be used.

9.30.9.4. All plywood edges shall be supported by furring, blocking or framing.

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

Table 9.30.9.A.

Forming Part of Article 9.30.9.1.

MINIMUM THICKNESS OF INTERIOR PLYWOOD FINISH		
Maximum Spacing of Supports	On Supports with no Horizontal Blocking	On Supports with Blocking at Vertical Intervals not Exceeding 4 ft.
16 in. o.c. 24 in. o.c.	3/16 in. 3/8 in.	5/32 in. 3/16 in.
Column 1	2	3

*160. Delete Article **9.30.10.1.** of the Code and substitute the following:

9.30.10.1. Hard-pressed fibreboard shall conform to CGSB 11-GP-3b(197 'Hardboard.'

*161. Delete Article **9.30.12.2.** of the Code and substitute the following:

9.30.12.2. Particleboard shall be not less than ¼ in. thick on supports not mo than 16 in. o.c. and not less than ⅜ in. thick on supports not more than 24 o.c. except that in walls where blocking is provided at mid-wall height, particleboa shall have a thickness of not less than ¼ in. on supports not more than 24 o.c.

*†162. Delete Article **9.30.13.4.** of the Code and substitute the following:

9.30.13.4. The joints between wall tiles and the bathrub shall be suitably caulk with material conforming to CGSB 19-GP-3b(1972), "Sealing Compound: T Component, Polysulphide Base, Chemical Curing" or CGSB 19-GP-9b(197 "Sealing Compound: One Component, Silicone Base, Chemical Curing."

*†163. Delete Articles **9.31.2.2.** and **9.31.2.3.** of the Code and substitute the following:

9.31.2.2. A panel-type underlay shall be provided under resilient flooring, parq flooring, felted-synthetic-fibre floor coverings, carpeting or ceramic tile on panel-ty subflooring whose edges are unsupported (see Article 9.23.14.3.).

9.31.2.3. Panel-type underlay shall be not less than ¼ in. thick and shall confo to one of the following:

CSA O115-1967, "Hardwood Plywood,"
CSA O121-1961, "Douglas Fir Plywood,"
CSA O151-1961, "Western Softwood Plywood,"
CSA O153-1963, "Poplar Plywood,"
CSA O188-1968, "Mat-Formed Wood Particleboard,"
CGSB 11-GP-3b(1972) "Hardboard"

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

†**164.** Delete Table **9.31.3.A.** of the Code and substitute the following:

Table 9.31.3.A.

Forming Part of Article 9.31.3.2.

WOOD STRIP FLOORING			
Type of Flooring	Maximum Joist Spacing, in.	Minimum Actual Thickness of of Flooring, in.	
		with subfloor	no subfloor
Matched Hardwood (Interior use only)	16 24	5/16 5/16	3/4 1-1/4
Matched Softwood (interior or exterior use)	16 24	3/4 3/4	3/4 1-5/16
Square Edge Softwood (exterior use only)	16 24	– –	1 1-1/2
Column 1	2	3	4

†**165.** Delete Table **9.31.3.B.** of the Code and substitute the following:

Table 9.31.3.B.

Forming Part of Article 9.31.3.5.

NAILING OF WOOD STRIP FLOORING		
Finish Floor Thickness, in.	Minimum Length of Flooring Nails, in.	Maximum Spacing of Flooring Nails, in.
5/16 7/16 3/4 1 1-1/4 1-1/2	1-1/2(') 2 2-1/4 2-1/2 2-3/4 3-1/4	8 12 16 16 24 24
Column 1	2	3

Note to Table 9.31.3.B.:

(') Staples not less than 1-1/8 in. long, 18 gauge, 3/16 in. crown may be used in lieu of nails.

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§ National Building Code. Revision Change Series No. 1
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‡ Revision by the Council of the City of Winnipeg.

*166. Delete Article **9.31.5.1.** of the Code and substitute the following:

9.31.5.1. Resilient floor shall conform to one of the following:
CSA A100-1962, "Asphalt Floor Tile,"
CSA A146-1965, "Linoleum Products,"
CSA A126.1-1967, "Vinyl Asbestos Floor Tile,"
CSA A145-1959, "Rubber Floor Tile,"
FSL-F-00450A(1970), "Flooring, Vinyl Plastic."

*167. Delete Article **9.31.6.3.** of the code and substitute the following:

9.31.6.3. Ceramic tile installed with an adhesive shall be applied over a smoc base of concrete or over a panel-type underlay as described in Subsection 9.31. except that particleboard shall be limited to Type 1 particleboard in CSA O188-19 'Mat-Formed Wood Particleboard.' The adhesive shall be applied to both the b and the tile.

*168. Change Heading **"SECTION 9.32 PLUMBING"** of the Code to read as follows:

"SECTION 9.32 PLUMBING FACILITIES"

*169. Delete Subsection **9.32.2.** of the Code and substitute the following:

SUBSECTION 9.32.2. GENERAL

9.32.2.1. The construction, extension, alteration, renewal or repair of *plumb systems* shall conform to Part 7 of this Bylaw.

§170. Delete Subsection **9.32.5.** of the Code and renumber Subsection 9.32.6. and Artic thereof as Subsection 9.32.5. and Articles accordingly.

†171. Column three of Table **9.33.4.A.** of the Code is amended by striking out the wo "1% of the floor area" and inserting therefor the following new words "0.2% the floor area."

*†172. Delete Article **9.34.2.3.** of the Code and substitute the following:

9.34.2.3. Oil-burning, gas-burning and electric equipment shall be installed conform to the following:
CSA B51-1972, "Code for the Construction and Inspection of Boilers Pressure Vessels,"
CSA B52-1965, "Mechanical Refrigeration Code,"
CSA B139-1971, "Installation Code for Oil Burning Equipment,"
CSA B149.1-1970, "Installation Code for Natural Gas Burning Applian and Equipment,"
CSA B149.2-1969, "Installation Code for Propane Burning Appliances Equipment, and Supplement No. 1-1971,"
CSA C22.1-1972, "Canadian Electrical Code, Part I."

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§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

*173. Delete Article **9.34.3.2.** of the Code and substitute the following:

9.34.3.2. Except for heating *supply ducts* serving not more than one *dwelling unit* and encased in concrete slabs-on-ground, heating *supply ducts* shall be *noncombustible* or shall be Class 1 ducts installed in conformance with Part 6 of this Bylaw. *Combustible* ducts in concrete slabs-on-ground that are connected to a furnace supply *plenum* shall be located not closer than 2 ft from that *plenum,* and not less than 2 ft from its connection to a riser or register. Ducts in or beneath concrete slabs-on-ground shall be water tight, corrosion resistant, decay resistant and mildew resistant.

†174. Delete Article **9.34.3.7.** of the Code and substitute the following:

9.34.3.7 The clearance of *furnace plenums* from *combustible* material shall conform to one of the following:

CSA B139-1971, "Installation Code for Oil Burning Equipment,"

CSA B149.1-1970, "Installation Code for Natural Gas Burning Appliances and Equipment,"

CSA B149.2-1969, "Installation Code for Propane Burning Appliances and Equipment, Supplement No. 1-1971."

Part 6 of this Bylaw, for solid-fuel-burning furnaces.

§175. Delete Article **9.34.6.1.** of the Code and substitute the following:

9.34.6.1. *Supply ducts* and *return ducts* in exterior walls shall be insulated on the three cold sides to provide an "R" value of not less than 1.5. *Supply ducts* and *return ducts* in attic spaces or unheated crawl spaces shall be insulated to provide an "R" value of not less than 7 units.

*176. Delete Article **9.34.4.6.** of the Code and substitute the following:

9.34.4.6. The temperature of supply air at the warm-air supply outlets shall not exceed 160°F.

*177. Delete Article **9.34.8.2.** of the Code and substitute the following:

9.34.8.2. Insulation or other covering for steam or hot water pipes shall be *noncombustible* except that *combustible* insulation may be used, provided such insulation conforms to the requirements in Part 6 of this Bylaw for *combustible* pipe insulation.

‡178. Delete Article **9.35.1.1.** of the Code and substitute the following:

9.35.1.1. Electrical installations, including the service capacity of the installation and the number and distribution of circuits shall meet the requirements of The Winnipeg Electrical By-law.

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§ National Building Code. Revision Change Series No. 1
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* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

†**179.** Delete Article **9.35.2.8.** of the Code and substitute the following:

9.35.2.8. A lighting outlet with fixture shall be provided for an attached, built-i or detached garage or carport. Such outlet shall be controlled by a wall switc near the doorway where the fixture is ceiling mounted above an area normal occupied by a parked car; otherwise a switched lampholder may be used. Whe a carport is lighted at the entrance to a *dwelling unit,* additional carport lightir is not required.

†**180.** Delete Table **9.35.2.A.** of the Code and substitute the following:

Table 9.35.2.A.

Forming Part of Article 9.35.2.9.

MINIMUM LIGHTING FOR PUBLIC AREAS		
Room or Space	Footcandles	Watts per square foot of floor area (Incandescent Lighting
Storage Rooms	5	½
Service Rooms and Laundry Areas	20	2
Garages	5	½
Public Water Closet Rooms	10	—
Public Corridors and Stairways	5	—
Service Hallways and Stairways	5	—
Recreation Rooms	10	—
Column 1	2	3

‡**181.** Delete Articles **9.35.3.3.** to **9.35.3.8.,** both inclusive, of the Code and substitute th following:

9.35.3.3. Receptacles installed in kitchens in *dwelling units* shall comply with t requirements of the Winnipeg Electrical By-law.

9.35.3.4. A duplex receptacle shall be provided in every laundry room or are utility room or area or combined laundry-utility room. When grouped laund facilities are provided, sufficient outlets shall be provided to serve adequately t equipment to be installed by the building owner or tenants.

9.35.3.5. Except for stairs leading to unfinished basements or cellars, no point a hall or stairway in a *dwelling unit* shall be more than 15 ft from a receptacle.

9.35.3.6. A special purpose outlet shall be provided in the space where an elect range is to be installed.

9.35.3.7. *Public corridors* and public stairs shall have at least one duplex receptac for each 35-ft length or fraction thereof.

9.35.3.8. At least one receptacle shall be provided adjacent to the basin locati in each bathroom and washroom in *dwelling units.*

9.35.3.9. In an attached garage, detached garage, or carport at least one receptac shall be provided for each parking space, and if a garage or carport is not provide at least one receptacle shall be suitably located on the exterior of the *building* f automobile use.

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§ National Building Code. Revision Change Series No. 1
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* National Building Code. Revision Change Series No. 3
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†182. Delete Article **9.36.1.1.** of the Code and substitute the following:

9.36.1.1. This Section applies to garages and carports serving not more than one *dwelling unit.*

†183. Delete Article **9.36.2.1.** of the Code and substitute the following:

9.36.2.1. Where a roofed enclosure used for the storage or parking of a car or cars has more than 60 per cent of the total perimeter enclosed by walls, doors or windows, the enclosure shall be considered a garage.

‡184. Delete Articles **9.36.3.2.** and **9.36.3.3.** of the Code and substitute the following:

9.36.3.2. The foundation depth of carports or garages connected to a *dwelling unit* by a breezeway shall be approximately the same depth as the main *building* foundation. Where slab-on-grade construction is used, a construction joint shall be provided between the main *building* slab and the garage or breezeway or carport slab.

9.36.3.3.(1) Foundation slabs on *grade* for detached, one-storey garages shall be as follows:

(a) less than four hundred and ninety nine (499) square feet in plan area – no special *foundation* design requirements unless the *authority having jurisdiction* requests same to ensure the safety of the resulting *foundation* for the intended purpose;

(b) five hundred (500) square feet to seven hundred (700) square feet in plan area, the *foundation* slab shall be:

(i) designed by an Architect or Professional Engineer registered in the Province of Manitoba, or

(ii) comply with Figure 9.36.3.(a).

(c) seven hundred and one (701) square feet or more in plan area shall be designed by an Architect or Professional Engineer registered in the Province of Manitoba.

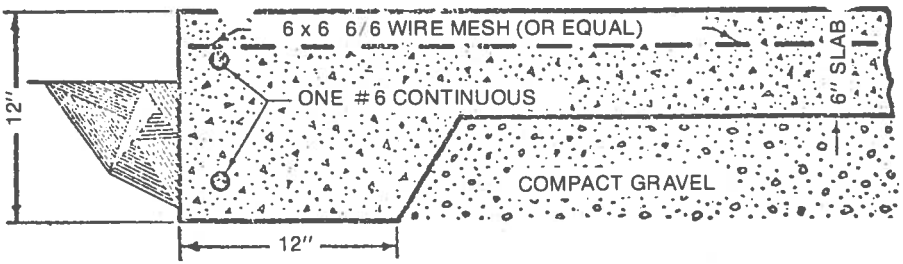


Figure 9.36.3.(a) Foundation slab 500-700 sq. ft.

*185. Table **1A** of the Code is amended by striking out the words "same as 31" opposite Item No.35, and in Column 5, opposite Item No. 14, change "1 hr" to read "1½ hr," and in Column 5, opposite Item No. 22, change "1 hr" to read "3 hr."

§ National Building Code. Revision Change Series No. 1
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* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

*186. Table **1B** of the Code is amended in Column 3, opposite Item No. 1, in the secon line, by adding thereto the dimension "7/16 in." before the word "fibreboard."

§187. On page 442 of the Code, Foreword to Tables **11-A** to **11-L.** add a new sentenc to the first paragraph as follows:

> Spans for lumber dressed to Canadian standard sizes for yard lumber in accordan with CSA 0141-1970, 'Softwood Lumber' are contained in 'Span Tables for Woo Joists, Rafters and Beams', NRCC publication No. 11862, 1971.

‡188. Add thereto immediately at the end of Subsection **9.26.5.** the following:

> **9.26.5.10** Wall, ceiling and floor construction (excluding windows and doors) sha provide a minimum thermal resistance in accordance with Table 9.26.5.A.
> **9.26.5.11.** Material for insulation that is in contact with the ground shall be ine to the action of soil and water. The insulating property shall not be significant reduced by moisture.
> **9.26.5.12** The edges of slabs supported on ground at or near grade level in heat buildings shall be insulated with material providing a thermal resistance value not less than 5.

Table 9.26.5.A

MINIMUM THERMAL RESISTANCE ("R" VALUE)

Type of Heating			
Other than Electrical		Electrical	
Walls Floors	Ceilings Roofs	Walls Floors	Ceilings Roofs
9.09*	11.11	12.50	16.67

*May be reduced to 7.14 for masonry walls.

§ National Building Code. Revision Change Series No. 1
† National Building Code. Revision Change Series No. 2
* National Building Code. Revision Change Series No. 3
‡ Revision by the Council of the City of Winnipeg.

PART 10

SPECIAL CONSTRUCTION STANDARDS

J.
The National Building Code of Canada 1970 is varied by adding thereto, immediately at the end thereof, a new PART, as follows:

SECTION 10.1. GENERAL

SUBSECTION 10.1.1. SCOPE

10.1.1.1. This Part applies to various aspects of structural design characteristic to *building* construction. The use of this Part shall be in conjunction with the rest of this By-law and the most restrictive provisions shall prevail. Scope

SUBSECTION 10.1.2. DEFINITIONS

10.1.2.1. Definitions of words and phrases in italics in this Part are contained in Part 2 of this By-law. Definitions

SECTION 10.2. SIGNS

SUBSECTION 10.2.1. GENERAL

10.2.1.1. This Section shall apply to the erection of all *signs* except as varied herein. General

10.2.1.2.(1) Except as varied herein, the following shall not be subject to the provisions of this Section but shall not relieve the *owner* or *person* in control of such *signs* from erecting and maintaining the *sign* in a safe condition: Types of si not requiri permits

- **(a)** *Signs* of a duly constituted governmental body, including traffic or similar regulating devices, legal notices, or warnings at railroad crossings.
- **(b)** *Signs* in display windows including writing, representation, painting or lettering directly on the surface of any window or door, or other figure or similar character within a *building* visible from the exterior.
- **(c)** Memorial *signs* or tablets of bronze, brass, stone or other *noncombustible* materials when built into or attached to the walls of a *building* or other structure provided such tablets bear only the name of the *owner*, the name or use of the *building*, the date of the erection of the *building* and/or reading matter commemorating a person or event.
- **(d)** *Signs* denoting architect, engineer, contractor or the services and products of the *owner*, when placed on construction sites. These *signs* must be removed on completion of construction.
- **(e)** *Signs* required to be maintained by law or governmental order, rule or regulation.
- **(f)** Small *signs* displayed for the direction of the public including *signs* which identify rest rooms, freight entrances, and such other similar directional *signs*.
- **(g)** Single or double face unlighted *sign* or *signs* appertaining only to the prospective rental or sale of the *property* on which it is located.
- **(h)** *Signs* painted directly on the exterior wall of a *building*.

SUBSECTION 10.2.2. BUILDING PERMITS FOR SIGNS

Sign permits

10.2.2.1.(1) No *alteration* or addition or any erection or re-erection of *signs* including any of the accessories shall be made unless the *owner* of the *building* or site upon which such *sign* is erected or his agent, has obtained a permit.

Application

10.2.2.2.(1) The application for a *building* permit as they apply to signs shall:

(a) be made on the prescribed form;

(b) include in duplicate a plot plan showing the *street* lines or other boundaries of the *property* upon which it is proposed to erect such *sign* and location thereof upon the *property* in relation to the other structures upon such *property* and upon the premises immediately adjoining, and

(c) when required, in duplicate, complete drawings and specifications covering the construction of the *sign* and its supporting framework and other information with respect to the *building* upon which it is proposed to locate the *sign* as to determine whether the structure of such *building* will carry the additional loads and *stresses* imposed thereon by the erection of the *sign* without exceeding the *stress* requirements. Such drawings shall in all cases have marked thereon in figures the height of such *building*.

(2) No permit or license issued pursuant to this By-law, no approval of plans or specifications of work done or to be done in connection with a *sign* or any inspection of such work shall relieve the permittee, licensee or *owner* of the *sign* from full responsibility for the carrying out of the work and maintaining the *sign* in accordance with this or any other by-law of the *City*.

(3) No *owner or agent* shall interfere in any way with the *Supervisor of Building Inspections* or anyone acting under his authority or by his instructions, in the performance of any of the duties imposed upon him by this By-law.

SUBSECTION 10.2.3. MAINTENANCE OF SIGNS

Maintenance of signs

10.2.3.1.(1) All *signs* shall be kept in proper *repair* and appearance and in the case of *electric signs*, the lamps and other electrical apparatus connected thereto shall be maintained in efficient operative condition.

(2) No *owner or agent* shall maintain a *sign* heretofore erected unless the same be supported in an adequate manner by supports, braces, and guys of suitable size and strength, and properly fastened.

(3) No *owner or agent* shall maintain or permit any *sign* to be maintained including any guys, stay or attachment connected therewith which interferes with any light, power, telephone, telegraph or transit pole or wire or any *fire escape* or any apparatus or appliance connected therewith.

SUBSECTION 10.2.4. REMOVAL OF SIGNS

Safe and Unsafe signs

10.2.4.1.(1) All existing *signs* which are in a safe condition as far as fire safety, structural and location requirements are concerned may be

maintained, but no such *sign* when once removed shall be replaced either on the same *building* or elsewhere without complying in all respects with the provisions of this By-law.

(2) Any existing *sign* which is unsafe from the standpoint of fire safety, structural safety or location may be ordered to be removed. If not removed or made safe in accordance with the requirements of this By-law, the *Supervisor of Building Inspections* may institute condemnation proceedings.

(3) Any *owner*, firm or corporation who contravenes or disobeys or refuses or neglects to obey or commits an offence against the provisions of this Section shall be subject to the penalty set forth in Part 1.

SUBSECTION 10.2.5. ALTERATIONS

10.2.5.1.(1) No *sign* structure shall hereafter be structurally *altered,* re-built, enlarged, extended or re-located except in conformity with the provisions of this By-law. Alteration c signs

(2) The changing of movable parts of *signs* that are designed for changes, or the repainting of display matter shall not be deemed to be *alterations* within the meaning of this Section.

SUBSECTION 10.2.6. CONSTRUCTION AND DESIGN

10.2.6.1. All *signs* shall be designed and constructed as herein provided and in accordance with Part 4, "Design" of this By-law to resist live and dead loads. All bracing systems shall be designed and constructed to transfer lateral forces to the *foundations.* For *signs* on *buildings,* the load shall be transmitted through the structural frame of the *building* to the ground in such manner as not to overstress any of the elements thereof. General

10.2.6.2. Every *sign,* hereinafter erected shall be plainly marked with the name of the contractor or erector, size and weight, voltage and wattage and said information must be readily visible after its erection. Sign plate

10.2.6.3. All *signs* and any of their supporting structures must be fastened with non-corrosive fasteners or otherwise have the fastening devices protected from corrosion.

10.2.6.4. *Approved* combustible plastics may be used in the *construction* of *signs* where, in this By-law it requires *noncombustible* material, providing they are only those combustible plastic materials: Plastic sign

- **(a)** which, when tested in accordance with the American Society for Testing Materials, Standard Method of Test for Flammability of Plastics over 0.050 inches in thickness, burn no faster than 2.5 inches per minute in sheets of 0.060 inches in thickness; or
- **(b)** which conform to the Canadian Standards Association Specification of Electric Signs, C 22.2, #2.

10.2.6.5 All *electrical signs* shall be constructed in accordance with the provisions of The Winnipeg Electrical By-law. Electrical signs

Sign clearance from power lines

10.2.6.6.(1) Unless special permission is obtained from the appropriate *authority having jurisdiction* for lesser clearances, all *sign* structures including accessories shall have the following clearances from electrical power lines:

(a) 0 to 750 volts
- (i) horizontally ..... 1 ft.
- (ii) vertically ..... 3 ft.

(b) 750 to 22,000 volts
- (i) horizontally ..... 3 ft.
- (ii) vertically ..... 8 ft.

(c) 22,000 to 50,000 volts
- (i) horizontally ..... 5 ft.
- (ii) vertically ..... 8 ft.

These minimum design clearances apply under conditions of maximum sag and maximum swing of the conductor for vertical and horizontal clearances respectively.

(2) A clearance of at least 3 ft. shall be maintained between poles and other fixtures lawfully erected and any part of a *sign* structure and its accessories.

(3) No *sign* structure shall be erected, constructed or maintained in any manner which will obstruct any *fire escape* or any window or door or opening used as a required *means of egress* or so as to prevent free passage from a roof to any other part thereof. No *sign* structure shall be attached in any form, shape or manner to a *fire escape,* nor be placed in such manner as to interfere with any opening for required light or ventilation.

SUBSECTION 10.2.8. SIGN SPECIFICATIONS

Awning and Sun Visor Signs

Awnings and Sun Visors

10.2.8.1.(1) No *sign* shall be attached in any manner to awnings or *sun visors,* except to an awning or *sun visor* constructed entirely of concrete or metal and steel, with the design certified by an Engineer entitled to practice in the Province of Manitoba.

(2) *Signs* permitted in accordance with Sentence (1) above shall comply with the regulations for *marquee* or *canopy signs* (see 10.2.8.3).

Hoarding Signs

Hoarding signs

10.2.8.2. No *sign* shall be placed on any hoarding except those permitted in clauses 10.2.1.2.(1) (d), (f) and (g).

Marquee and Canopy Signs

Marquee and Canopy signs

10.2.8.3. If any *sign* other than a *projecting sign* (as provided in this By-law) is attached to the roof of a *marquee* or *canopy,* placed flat against the face or edge of the *marquee* or *canopy* or erected over or under a *marquee* or *canopy,* such *sign* shall be constructed in compliance with the following provisions:

(a) Construction. The *sign construction* shall be of *noncombustible materials* throughout except that the *construction* may be equivalent to what is required for the *marquee* or *canopy* construction.

(b) Height above grade. The lowest part of any *sign* attached to the face or edge or under a *marquee* or *canopy* shall be not less than eight feet six inches (8'6") above *grade*.

(c) Projection. No *sign* attached to a *marquee* or *canopy* shall project beyond the face or edges more than sixteen (16) inches horizontally.

Free-Standing Signs

Free-standir sign constructio requiremen

10.2.8.4.(1) All *free-standing signs* shall be constructed of *noncombustible* material throughout except that:

(a) *signs* not exceeding fifteen (15) feet above the surface of the ground at any point may be constructed of combustible material;

(b) *signs* not exceeding twenty-five (25) feet above the ground at any point shall be constructed with *noncombustible columns* and braces and supports, and may have the display area including backing of combustible materials.

(2) All *free-standing signs* exceeding 25 feet in height above the adjacent finished ground shall be structurally designed by a Registered Professional Engineer of the Province of Manitoba.

(3) The *foundation* of all *free-standing signs* exceeding 15 ft. in height shall be of *concrete*.

(4) The minimum clearances of *free-standing signs* shall be as follows:

(a) No portion of any *free-standing sign* shall hereafter be erected within one foot of any *property* line abutting a *street*.

(b) No portion of any *free-standing sign* shall hereafter be erected within 4 feet of any *property* line or from a wood frame *building* which is on the same *property*, unless such *sign* is constructed entirely of *noncombustible* materials except for the display area and backing.

(c) No portion of any *free-standing sign* with structural members of combustible materials shall hereafter be erected within a distance equivalent to the height of the *sign* structure from any *property* line abutting a *street*.

(d) There shall be a clearance of at least 4 feet between any portion of a *free-standing sign* in fromt of any required opening in the exterior wall face of a *building* erected on the same *property*.

(e) Projections associated with *free-standing signs* such as guys, stays and other attachments such as reflectors used to illuminate shall not be permitted less than eight feet six inches (8'6") above the surface of the ground at any point.

Facia Signs

Facia sign constructic requiremer

10.2.8.5.(1) All *facia signs* shall be constructed of *noncombustible* materials throughout when such *signs*:

(a) exceed forty (40) sq. ft. on walls required to be of *noncombustible construction*, or

(b) are located more than twenty-five (25) feet above *grade*, or

(c) are located within two (2) feet of any window, *fire escape* or *exit* above the second *storey* floor line.

(2) No *facia sign* of wood construction may be erected on any wall of wood frame or of *noncombustible construction* in locations where the *limiting distance* precludes the use of *combustible cladding*.

(3) No *facia sign* shall be permitted to be supported by an unbraced parapet wall unless the structural stability of the parapet wall is adequate.

(4) *Facia signs* may project above the top of the roof or parapet wall immediately adjacent thereto a distance not exceeding thirty-six (36") inches provided that the *means of egress* to and egress from the said roof are adequate, and that the structural stability of the parapet wall is adequate. (Also see 10.2.7.6.(3).)

(5) Projections associated with *facia signs* such as guys, stays and other attachments such as reflectors used to illuminate, shall not be permitted less than eight feet six inches (8'6") above the surface of the ground at any point.

(6) *Facia signs* shall be securely attached to the *building* or *structure* by means of metal anchors, bolts or expansion screws. Such *signs* shall not be fastened by nails or staples to wooden blocks or nailing strips built into *masonry*.

Roof Signs

Roof sign construction requirements

10.2.8.6.(1) All *roof signs,* including uprights, supports and braces and display area shall be of *noncombustible construction,* except:

- **(a)** that *approved* combustible plastics may be used as facing material and as letters and decorations.
- **(b)** that the display area and molding may be of combustible materials provided such sign:
  - (i) is less than twenty-five (25) feet in height measured from the roof surface, and
  - (ii) is less than 400 sq. ft. on any one side.

(2) All *roof signs* shall be structurally designed by a Registered Professional Engineer of the Province of Manitoba when exceeding either 250 lbs. in weight or 100 sq. ft. in area on any one side.

(3) The dead and live loads of any *roof sign* shall be transmitted to *concrete foundations* by *noncombustible* walls, *columns,* beams and girders, except that timber beams and *columns* shall be acceptable provided such timber members shall be creosoted or painted and all connections shall be by means of bolts and the *sign* and its supports are designed by a Registered Professional Engineer of the Province of Manitoba.

(4) Clearance and access about *roof signs* shall be as herein provided:

- **(a)** passage clear of all obstructions, except for necessary horizontal supports not more than 2 feet from the roof surface, shall be left under or around and immediately adjacent to all *roof signs* exceeding 3 feet above the roof surface. Such passage shall be not less than 3 feet wide by 6 feet high and shall be at parapet or roof level.
- **(b)** there shall be one such passage or access opening as follows:
  - (i) for each *roof sign* upon a *building;*
  - (ii) for every fifty lineal feet (50) of horizontal *roof sign* extension;

(iii) within twenty (20) feet of walls and parapets when *roof signs* are located at an angle of 45° or greater to a face of the *building*.

(c) there shall be a clearance of at least 4 feet between any portion of the *roof sign* and any opening in the exterior wall face or roof of the *building* on which it is erected.

(d) no portion of any *roof sign* shall be erected within 4 feet of any wood frame wall extending above the roof line of the same *building* unless such *sign* is constructed entirely of *noncombustible* material, and that the clearances specified in (c) above and article 10.2.7.6.(3) are maintained.

(5) In no case shall a *roof sign* or any part thereof including any supports and braces project beyond the exterior surface of the exterior wall of the *building* to which it is attached.

Projecting Signs

Projecting sign constructio requiremer

10.2.8.7.(1) All *projecting signs* including frames, braces and supports shall be constructed of *noncombustible* materials except that:

(a) *approved* combustible plastics (see article 10.2.7.4.) may be used as facing materials, letters and decorations.

(b) non structural members of *signs* not exceeding twenty square feet (20 sq. ft.) in area may be of wood, metal, *approved* plastics or combination thereof.

(2) Covers of the service opening shall be securely fastened by chains and/or hinges.

(3) *Projecting signs* shall not be attached or fastened in any manner to parapet walls unless designed by a Registered Professional Engineer of the Province of Manitoba.

(4) *Projecting signs* weighing more than 250 pounds shall be structurally designed by a Registered Professional Engineer of the Province of Manitoba.

(5) *Projecting signs* shall be adequately supported by cables, rods, chains or other *approved* method. In all cases, each *projecting sign* weighing more than 50 pounds shall have at least one *approved* fastener passing entirely through the wall or roof of the *building* to which it is attached.

(6) The "A" frames or other similar methods of support used in the *construction* of *projecting signs* shall not exceed 6 feet in overall height above an exterior wall.

(7) Unless otherwise *approved* by the *Supervisor of Building Inspections*, each cable, rod, chain or equivalent shall have a reputed breaking strength as specified in Table 10.2.A.

(8) *Projecting signs* shall be at least eight feet (8') above grade.

TABLE 10.2.A

BREAKING STRENGTH OF CABLE, ROD, CHAIN, ETC.
FOR VARIOUS WEIGHTS OF SIGNS

Weight of Signs (lbs.)	Projection of Signs	Breaking Strength (lbs.)
50 max.	2 ft. max.	600
50 max.	Over 2 feet	1,250
Over 50 but less than 100	Over 2 feet	2,000
Over 100 but less than 250	Over 2 feet	2,500
Over 250 but less than 400	Over 2 feet	3,500
Over 400	Over 2 feet	Design required
Column 1	2	3

10.2.8.7.(8) Where *signs* and supports are not under design of a Registered Professional Engineer, the supporting cable and turnbuckles, when used, shall meet the following minimum requirements. The number of supports and fittings shall be dependent on the size, shape, projection and loads of the *sign* and the various loads acting on same.

TABLE 10.2.B

Forming Part of Sentence 10.2.8.7.(8)
GALVANIZED 7 STEEL WIRE STRAND CABLE

Nominal Strand Diameter (inches)	Breaking Strength (lbs.)
3/16	1,100
1/4	1,800
9/32	2,350
5/16	3,100
3/8	3,750
Column 1	2

TABLE 10.2.C

Forming Part of Sentence 10.2.8.7.(8)
TURNBUCKLES
Drop Forged—Galvanized

Diameter of Screw in Inches	Breaking Strength Eyes and Shackles (lbs.)
1/4 5/16 3/8	1,600 2,700 4,000
Column 1	2

Combination Signs

10.2.8.8. Any *combination sign,* not specifically allowed by this By-law, may be permitted provided that the *construction* of the whole *sign* complies with the most restrictive provisions of the type of *sign* so combined. Combinati signs

Warning Signs

10.2.8.9.(1) At every vehicle entrance within five (5) feet of a *street* right-of-way to any *building,* except accessory *buildings* having access from a lane, there shall be erected in a conspicuous location a *projecting sign* at least three (3) feet long by one (1) foot wide bearing the words "DANGER LOOK OUT FOR CARS" in large red letters on a white background. Warning signs

(2) As an alternate to Sentence (1) above, a large red-coloured globe with the word "DANGER" printed thereon in white letters may be used in such location so as to be easily legible at all times.

(3) In all cases, such *sign* or globe shall be illuminated at all times during the working hours of the premises from sundown continuously during the night hours.

SECTION 10.3. MARQUEES, CANOPIES AND AWNINGS

SUBSECTION 10.3.1. MARQUEES

10.3.1.1.(1) Construction. All *marquees* and *canopies* shall be constructed of *noncombustible* materials except that where it is attached to an exterior wall of a *building* of *wood construction* and provided such wall does not exceed two *storeys* in height, such *marquee* and *canopy* construction shall have the equivalent fire resistance. Marquee requireme

(2) Clearances. No portion of a *marquee* or *canopy* shall be less than 8'6" above the sidewalk or established *grade.*

(3) Drainage. The roofs of all *marquees* and *canopies* shall be drained in such a manner that the water flowing therefrom shall be carried back into the *building.*

(4) Thickness. The vertical dimension of a *marquee* or *canopy* shall not be more than five (5) feet.

SUBSECTION 10.3.2. CANOPIES AND AWNINGS

Canopy Awning Requirements

10.3.2.1 No electrical wiring, illuminated device, electrical equipment or apparatus shall be attached to or be incorporated in a canopy or awning except as required for the operation of *collapsible awnings* or for a *sign* permitted under Article 10.2.8.1.

SECTION 10.4. SWIMMING POOLS

SUBSECTION 10.4.1. DEFINITION

Definition

10.4.1.1.(1) For the purposes of this section, any pool containing water more than 24 inches in depth shall be deemed to be a swimming pool.

SUBSECTION 10.4.2. REGULATIONS

Swimming Pool Requirements

10.4.1.2.(1) All outdoor swimming pools shall be completely enclosed with a fence constructed in accordance with Sentences (3), (4) and (5) of this Article and any additional requirements that are necessary in the opinion of the *Supervisor of Building Inspections.*

(2) The fence shall be at least five (5) feet in height. Reference should be made to the applicable Zoning By-laws which also regulate fence heights and thus may indirectly affect the location of the pool.

(3) The outside of the fence shall be such as to make it difficult to climb except that chain link fabric may be used providing the mesh is not greater than two inches.

(4) Gates in the fence shall be capable of being securely locked and shall be so maintained except when a responsible person is in attendance.

(5) All metallic parts of the swimming pool including reinforcing steel shall be electrically grounded in accordance with the requirements of The Winnipeg Electrical By-law.

(6) A swimming pool shall not be placed under or within ten (10) feet horizontally of any overhead electrical wiring except as may be permitted by The Winnipeg Electrical By-law.

(7) All electrical installations shall comply with the requirements of The Winnipeg Electrical By-law.

(8) Structural and plumbing details shall be in accordance with the other appropriate requirements of this By-law.

RECIEVED FIRST READING on this 21st day of AUGUST A.D.

RECEIVED SECOND READING on this 21st day of AUGUST A.D.

RECEIVED THIRD READING on this 21st day of AUGUST A.D.

DONE AND PASSED in Council assembled this 21st day

of AUGUST A.D.

MAYOR

CITY CLERK

Certified as to Planning Details

DIRECTOR OF ENVIRONMENTAL PLANNING

Certified as to form:

for CITY SOLICITOR