Winnipeg

PLANNING, PROPERTY
AND DEVELOPMENT
DEPARTMENT

New House Construction

Guide to the plans required when applying for a Building Permit

November 2015

contents

Every effort has been made to ensure the accuracy of information contained in this booklet. However, in the event of a discrepancy between this booklet and the governing City of Winnipeg By-law, the By-law will take precedence.

This booklet is a guide to the type of plans that are required by the Plan Examination Branch when applying for a building permit to construct a "basic" new home. This booklet does not cover all code requirements. Reference should be made to the City of Winnipeg Building By-law and the Manitoba Building Code for the complete set of code requirements.

How many sets of plans will be required?

Two sets of plans must be presented upon permit application.

Will the homeowner be required to obtain the services of a Professional Engineer?

A professional engineer will be required to seal the plans when:

a) there are any variations from the minimum standards contained within the building code, OR;
b) the construction involves the use of certain structural components (eg. steel beams, glulam beams, microlam beams, LVL beams, I-joist floors, suspended wood floors, tall walls (walls exceeding 11 ft. 10 in.), pre-cast concrete/wood/steel brackets, pile foundations, etc.), OR;
c) where in the opinion of the Authority Having Jurisdiction the nature of the work is complex.

Does the building permit include any electrical or plumbing work that is being completed?

The building permit does **NOT** include the electrical or plumbing work that is being done. Permits for this type of work must be applied for separately.

Who may apply for electrical and plumbing permits?

Permits for electrical and plumbing work may be applied for by:

a) the owner of a detached single family dwelling who will also be the occupant and who will be performing their own work. The permits must be obtained prior to starting the work. Information on the plans required and code requirements for this type of work may be found in the brochures *"Electrical Installations"* or *"Plumbing Installations"*, or;
b) an electrical or plumbing contractor licensed by the City of Winnipeg.

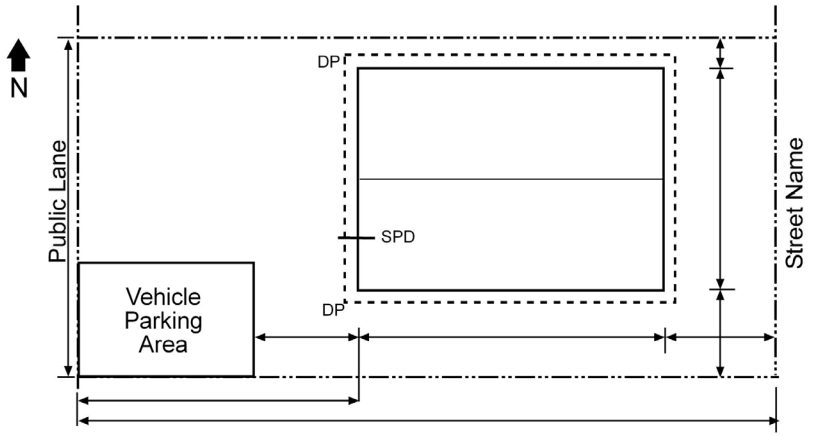
What information should be indicated on the site plan?

The site plan should have the following information (see FIGURE 1):

a) street names, lot dimensions, civic address, legal description, and north arrow;
b) dimensions from building to property lines (building to building if applicable);
c) on irregular shaped lots, dimensions from property lines to the closest projections within side yards must be included;
d) dimensions of all projections, such as alcoves, canopies, eaves, decks, fireplaces, landings, steps, wing walls, etc.;
e) locations of downspouts (DP) and sump pump discharge (SPD) - the sump pump discharge outlet will not be permitted on the side of the foundation adjacent to a public sidewalk;
f) the dimensions and locations of accessory structures (examples are detached garages, sheds, air-conditioning units) that are included in the permit application;
g) the dimension, location and type of surface of existing and proposed approaches, driveways and vehicle parking areas;
h) construction accesses other than lane;
i) location and dimensions of registered easements (eg. swales, land drainage sewer/catch basin lead);
j) the site plan paper size should be 8 $^{1}/_{2}$ x 11 in. or 8 $^{1}/_{2}$ x 14 in.

Note: The site plan and construction drawings must match.

FIGURE 1 - Typical Site Plan



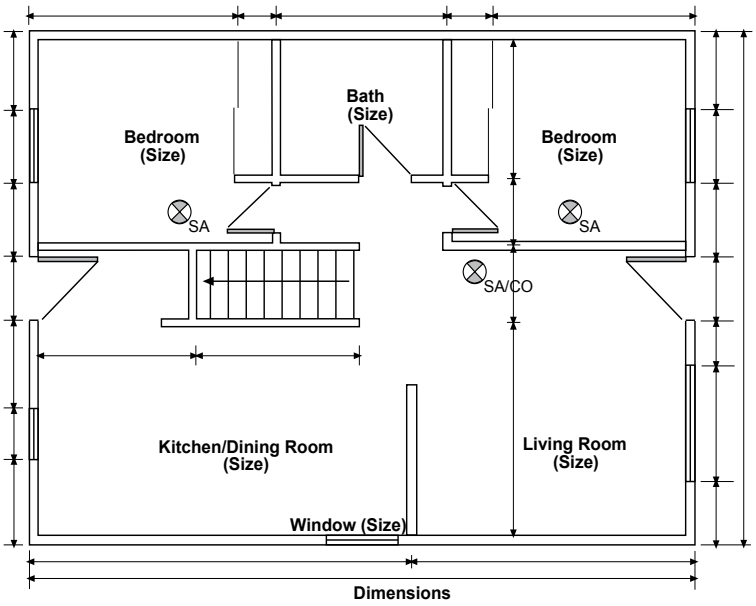
What is required to be shown on the floor plan?

This plan must have the following details (see FIGURE 2):

a) size and type of rooms;
b) location and sizes of windows, doors, closets, etc.; (see TABLE A below) Note: windows are not permitted in walls that are located less than 1.2 m (4 ft) from the property line
c) if there is a fireplace/woodstove, indicate type and location;
d) size of beam/lintel in wall openings, if required.
e) wired-in smoke/CO alarm (SA) location - at least one required per floor level, in each bedroom, and at locations between bedroom and the remainder of the floor level (ie. hallways)

**Note:* *1) Each bedroom must have at least one outside window which provides an unobstructed opening of not less than 0.35 sq. m (3.77 sq. ft.) in area and no dimension less than 380 mm (15 in.).*

FIGURE 2 - Typical Floor Plan



What plans are required for the foundation and do these plans need to be engineered?

A typical house foundation plan and details are shown in FIGURES 3, 4 and 5.

A non-engineered foundation plan will be accepted if the foundation meets the minimum code standards for wall length, wall thickness and reinforcement as shown in FIGURES 4 and 5. However, if you intend to use a variation of the design in FIGURES 4 and 5 or any of several other alternative designs including for example: piles, *insulated concrete forms* or a wood basement, a registered professional engineer must be retained to design and seal the plans. Additionally, a wood basement design will require that an engineer be retained to inspect and certify the installation.

FIGURE 3 - Typical Foundation Plan

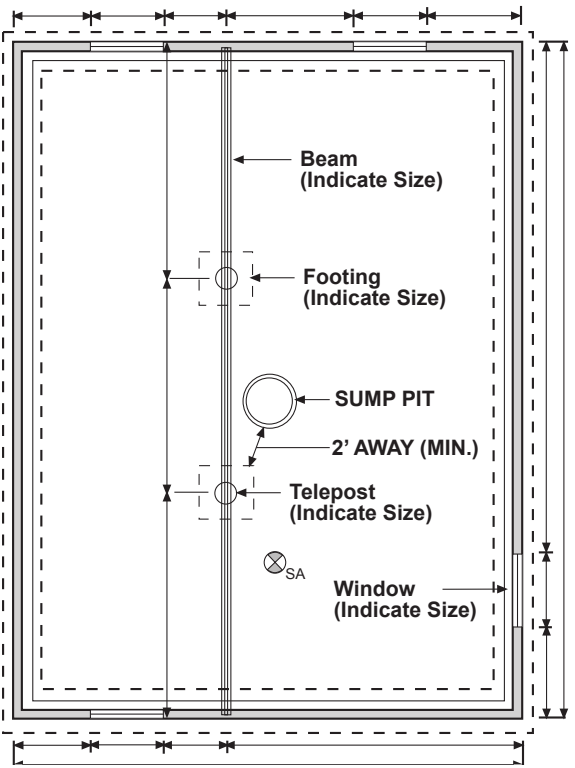
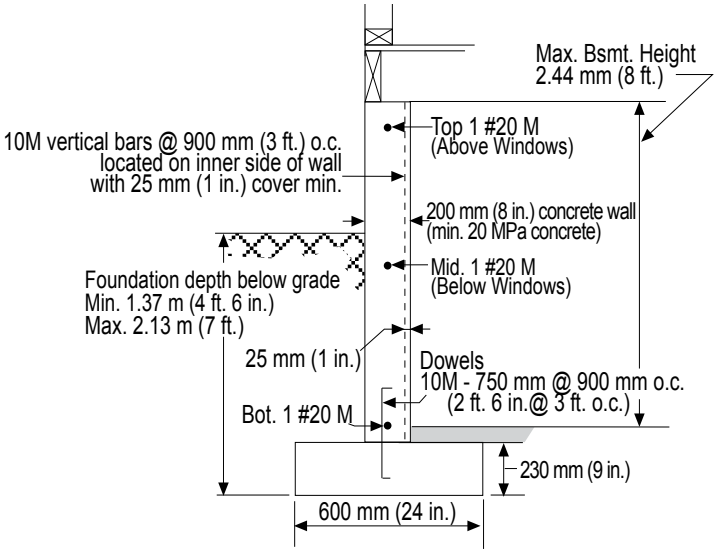
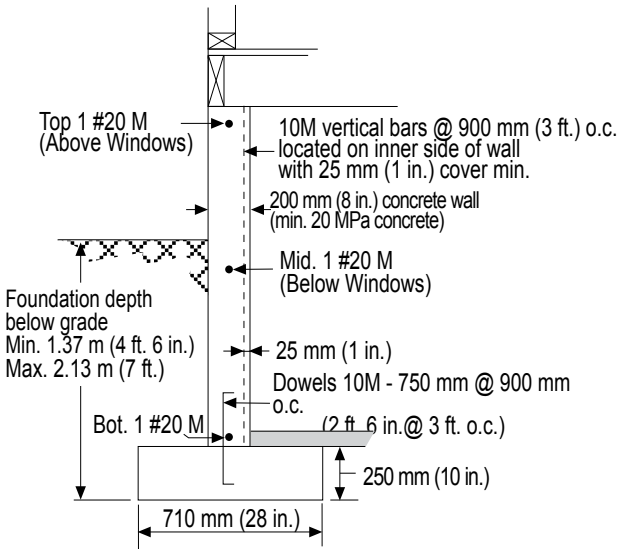


FIGURE 4 - Laterally Supported Foundation Walls

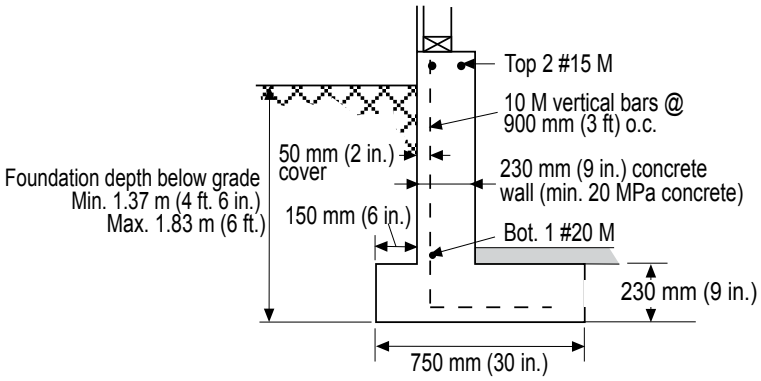


ONE STOREY



TWO STOREY

FIGURE 5 - Laterally Unsupported Foundation Walls



ONE-STOREY
(BI-LEVEL TYPE)

NOTES: (Figure 4 and Figure 5)

1. *Top of foundation shall be at least 150 mm (6 in.) above finished ground level.*
2. *Walls over 12 m (40 ft.) in length shall be designed by a registered professional engineer.*
3. *Length of supported joists shall not exceed 4.9 m (16 ft.).*
4. *Maximum window opening size is 1.2 m (4 ft.) and openings not to exceed 25% of the wall length.*

Interior Footing Sizes

One-Storey - 750 mm x 750 mm x 250 mm deep
(30 in. x 30 in. x 10 in. deep)

Two-Storey - 900 mm x 900 mm x 300 mm deep
(36 in. x 36 in. x 12 in. deep)

What details are required on the floor framing plan?

The details required on this plan are as follows (see FIGURE 6):

a) joist size, grade, spacing and direction;
b) bridging and strapping location, blocking;
c) location of openings and member sizes;
d) beam sizes if not shown on foundation plan;
e) pre-manufactured I-joists require submission of final I-joist layout(s) complete with engineering.

What details are required on the section drawing?

The following details should be indicated on the section drawing (see FIGURE 7):

a) Type and thickness of materials in the roof, walls and floor construction assembly; (see appropriate tables for material selection);
b) If roof is to be a truss system it shall be prefabricated and designed by a Professional Engineer.

FIGURE 6 - Typical Floor Framing Plan

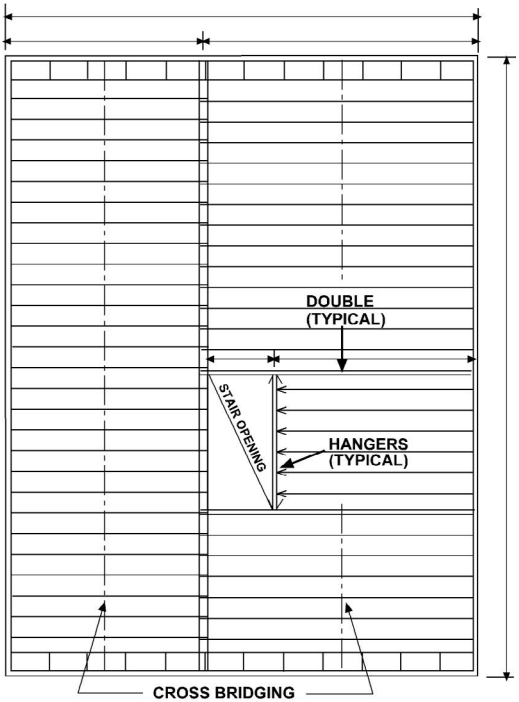
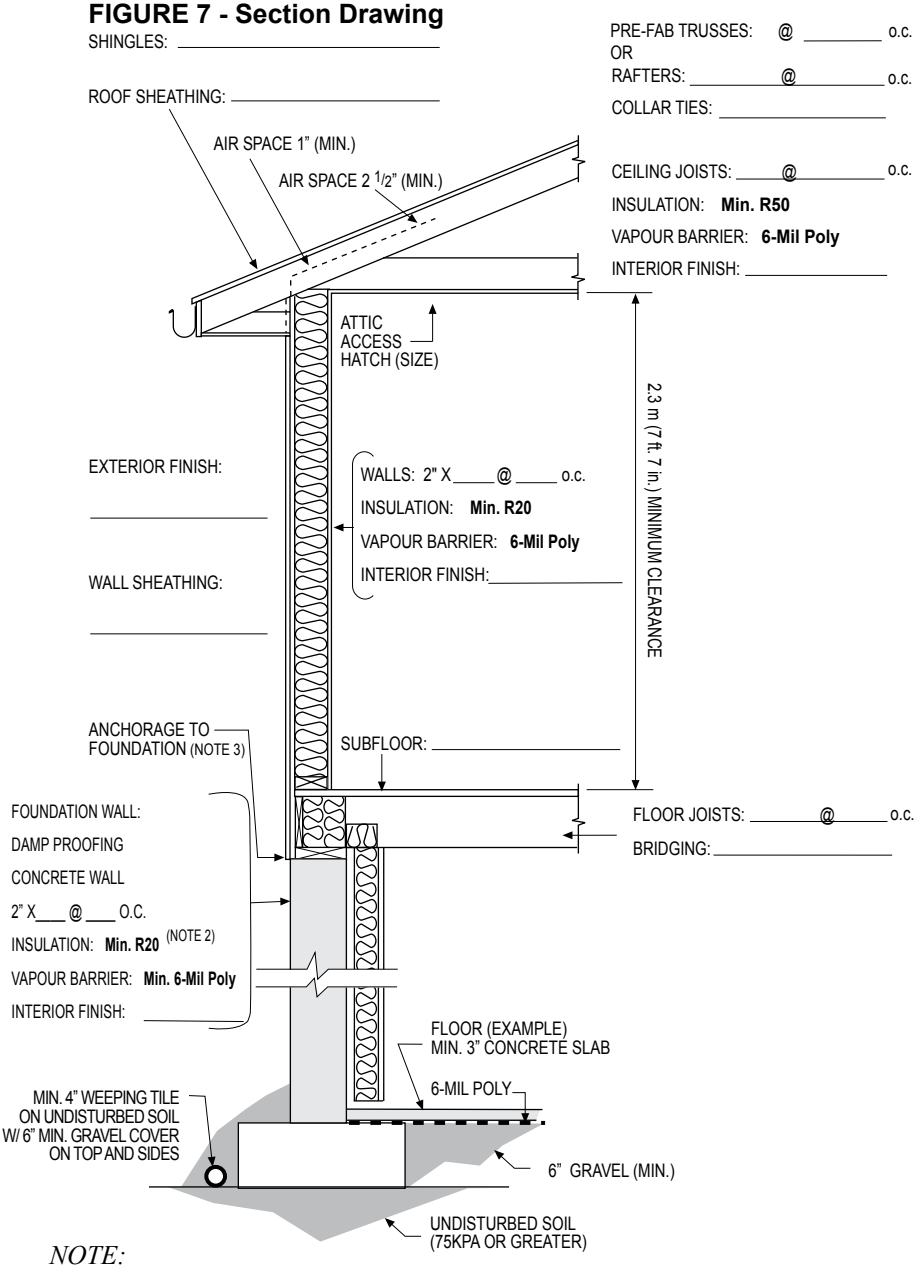


FIGURE 7 - Section Drawing



NOTE:

1. *Attic space shall be vented in conformance to 9.19.1.1.*
2. *Insulation required for dwellings where the foundation wall does not extend more than 1.2 m (4 ft.) above ground level and where natural gas is used as a heating source.*
3. *Joists are to be anchored to the foundation by embedment or sill plate in conformance to 9.23.6.1.*

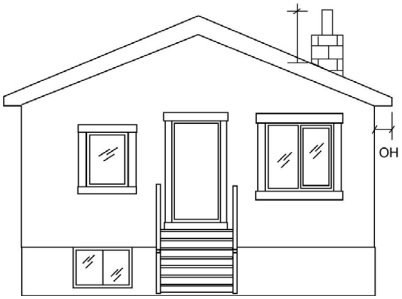
What information should be indicated on the elevation drawing?

The information to be indicated on the elevation drawing is as follows (see FIGURE 8):

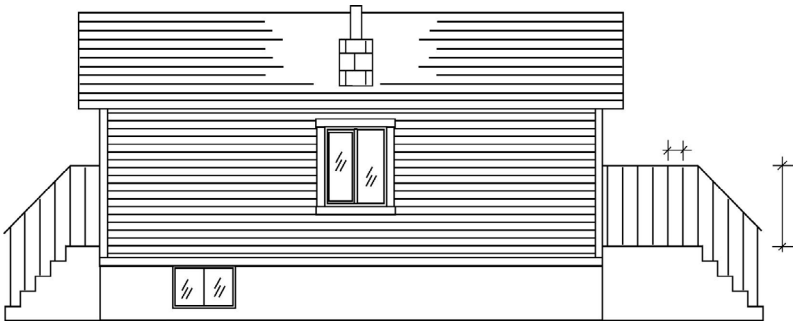
a) type of finish siding material;
b) chimney height, if any;
c) window and door location;
d) indicate roof slope and overhang (OH); soffit requirements?
e) guard rail height/picket spacing.

FIGURE 8 - Elevations

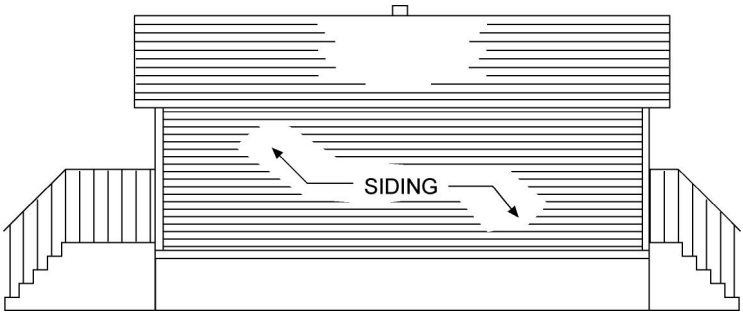
FRONT ELEVATION



REAR ELEVATION



SIDE ELEVATION



SIDE ELEVATION

Is it essential to adequately ventilate a house?

Yes, it is important to have a properly designed heating, ventilating, and air conditioning (HVAC) system to control condensation and maintain proper indoor air quality (IAQ).

This system design should be done by a HRAI Certified Designer, Professional Engineer or other designer with formal training in residential HVAC design.

Heat or energy recovery ventilators (HRV'S) shall be installed in all single and two family dwelling units.

Phone number for the Housing Inspections Branch is 204-986-5300. The office hours for the Inspections Branch are 8:30 a.m. to 4:00 p.m. Monday to Friday.

MINIMUM THICKNESS OF ROOF SHEATHING					
Maximum Spacing of Supports	Plywood		Waferboard and Strandboard		Lumber
	Edges Supported	Edges Unsupported	Edges Supported	Edges Unsupported	
mm	mm	mm	mm	mm	mm
300	7.5	7.5	9.5	9.5	17.0
400	7.5	9.5	9.5	11.1	17.0
600	9.5	12.5	11.1	12.7	19.0

in.	in.	in.	in.	in.	in.
12	5/16	5/16	3/8	3/8	11/16
16	5/16	3/8	3/8	7/16	11/16
24	3/8	1/2	7/16	1/2	3/4
Column 1	2	3	4	5	6

THICKNESS OF WALL SHEATHING				
Type of sheathing	Minimum Thickness			
	Supports @ 16 in. o.c.	Supports @ 24 in. o.c.	Supports @ 400 mm o.c.	Supports @ 600 mm o.c.
	in.	in.	mm	mm
Lumber	11/16	11/16	17.0	17.0
Fibreboard	3/8	7/16	9.5	11.1
Plywood	1/4	5/16	6.0	7.5
Waferboard/Strandboard	1/4	5/16	6.35	7.9
Column 1	2	3	4	5

THICKNESS OF SUBFLOORING			
Maximum Spacing of Supports	Plywood	Waferboard and Strandboard	Lumber
mm	mm	mm	mm
400	15.5	15.9	17.0
500	15.5	15.9	19.0
600	18.5	19.0	19.0

in.	in.	in.	in.
16	5/8	5/8	11/16
20	5/8	5/8	3/4
24	3/4	3/4	3/4
Column 1	2	3	4

CEILING JOIST SPANS

Commercial Designation	Grade	Member Size (in.)	Rafter Spacing 12 in. ft.-in.	16 in. ft.-in.	24 in. ft.-in.	Member Size (mm)	Rafter Spacing 300 mm m	400 mm m	600 mm m
Douglas Fir -Larch	No.1 and No. 2	2 x 4	10 - 9	9 - 9	8 - 6	38x89	3.27	2.97	2.59
		2 x 6	16 - 10	15 - 4	13 - 5	38x140	5.14	4.67	4.08
		2 x 8	22 - 2	20 - 2	17 - 7	38x184	6.76	6.14	5.36
		2 x 10	28 - 4	25 - 8	22 - 6	38x235	8.63	7.84	6.85
Spruce-Pine-Fir	No.1 and No. 2	2 x 4	10 - 3	9 - 3	8 - 1	38x89	3.11	2.83	2.47
		2 x 6	16 - 1	14 - 7	12 - 9	38x140	4.90	4.45	3.89
		2 x 8	21 - 1	19 - 2	16 - 9	38x184	6.44	5.85	5.11
		2 x 10	27 - 0	24 - 6	21 - 5	38x235	8.22	7.47	6.52
Column 1	2	3	4	5	6	7	8	9	10

ROOF RAFTER SPANS
Rafter not supporting ceiling
(Design Roof Snow Loads for 1.5 kPa (30 psf)

Commercial Designation	Grade	Member Size (in.)	Rafter Spacing 12 in. ft.-in.	16 in. ft.-in.	24 in. ft.-in.	Member Size (mm)	Rafter Spacing 300 mm m	400 mm m	600 mm m
Douglas Fir -Larch	No.1 and No. 2	2 x 4	9 - 4	8 - 6	7 - 5	38x89	2.86	2.59	2.27
		2 x 6	14 - 9	13 - 5	10 - 11	38x140	4.49	4.08	3.34
		2 x 8	18 - 10	16 - 4	13 - 4	38x184	5.74	4.97	4.06
		2 x 10	23 - 0	19 - 11	16 - 3	38x235	7.02	6.08	4.96
Spruce-Pine-Fir	No.1 and No. 2	2 x 4	8 - 11	8 - 1	7 - 1	38x89	2.72	2.47	2.16
		2 x 6	14 - 0	12 - 9	11 - 2	38x140	4.28	3.89	3.40
		2 x 8	18 - 5	16 - 9	14 - 6	38x184	5.62	5.11	4.41
		2 x 10	23 - 7	21 - 5	17 - 8	38x235	7.18	6.52	5.39
Column 1	2	3	4	5	6	7	8	9	10

ROOF JOIST SPANS
(Design Roof Snow Loads for 1.5 kPa (30 psf)

Commercial Designation	Grade	Member Size (in.)	Rafter Spacing 12 in. ft.-in.	16 in. ft.-in.	24 in. ft.-in.	Member Size (mm)	Rafter Spacing 300 mm m	400 mm m	600 mm m
Douglas Fir -Larch	No.1 and No. 2	2 x 4	7 - 5	6 - 9	5 - 11	38x89	2.27	2.06	1.80
		2 x 6	11 - 8	10 - 8	9 - 3	38x140	3.57	3.24	2.83
		2 x 8	15 - 4	14 - 0	12 - 2	38x184	4.69	4.26	3.72
		2 x 10	19 - 8	17 - 10	15 - 7	38x235	5.98	5.44	4.74
Spruce-Pine-Fir	No.1 and No. 2	2 x 4	7 - 1	6 - 5	5 - 7	38x89	2.16	1.96	1.71
		2 x 6	11 - 2	10 - 1	8 - 10	38x140	3.40	3.08	2.69
		2 x 8	14 - 8	13 - 4	11 - 7	38x184	4.46	4.05	3.54
		2 x 10	18 - 8	17 - 0	14 - 10	38x235	5.70	5.18	4.52
Column 1	2	3	4	5	6	7	8	9	10

BUILT-UP FLOOR BEAM SPANS
Supporting ONE Floor in Houses

Douglas Fir-Larch Grade No. 1 & 2

Size of Beam	Supported Joist Length					Size of Beam	Supported Joist Length				
	8 ft.	10 ft.	12 ft.	14 ft.	16 ft.		2.4 m	3.0 m	3.6 m	4.2 m	4.8 m
	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.		m	m	m	m	m
3-2x 8	9 - 9	8 - 8	7 - 11	7 - 4	6 - 11	3-38x184	2.99	2.67	2.44	2.26	2.11
4-2x 8	11 - 3	10 - 1	9 - 2	8 - 6	7 - 11	4-38x184	3.45	3.09	2.82	2.61	2.44
3-2x10	11 - 11	10 - 8	9 - 9	9 - 0	8 - 5	3-38x235	3.66	3.27	2.98	2.76	2.59
4-2x10	13 - 9	12 - 3	11 - 3	10 - 5	9 - 9	4-38x235	4.22	3.78	3.45	3.19	2.98
3-2x12	13 - 10	12 - 4	11 - 3	10 - 5	9 - 9	3-38x286	4.24	3.79	3.46	3.21	3.00
4-2x12	15 - 11	14 - 3	13 - 0	12 - 1	11 - 3	4-38x286	4.90	4.38	4.00	3.70	3.46

Spruce-Pine-Fir Grade No. 1 & 2

Size of Beam	Supported Joist Length					Size of Beam	Supported Joist Length				
	8 ft.	10 ft.	12 ft.	14 ft.	16 ft.		2.4 m	3.0 m	3.6 m	4.2 m	4.8 m
	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.		m	m	m	m	m
3-2x 8	10 - 7	9 - 5	8 - 8	8 - 0	7 - 6	3-38x184	3.25	2.90	2.65	2.45	2.30
4-2x 8	12 - 2	10 - 11	10 - 0	9 - 3	8 - 8	4-38x184	3.75	3.35	3.06	2.83	2.65
3-2x10	12 - 11	11 - 7	10 - 7	9 - 9	9 - 2	3-38x235	3.97	3.55	3.24	3.00	2.81
4-2x10	14 - 11	13 - 4	12 - 2	11 - 3	10 - 7	4-38x235	4.59	4.10	3.74	3.47	3.24
3-2x12	15 - 0	13 - 5	12 - 3	11 - 4	10 - 7	3-38x286	4.61	4.12	3.76	3.48	3.26
4-2x12	17 - 4	15 - 6	14 - 2	13 - 1	12 - 3	4-38x286	5.32	4.76	4.34	4.02	3.76
1	2	3	4	5	6	7	8	9	10	11	12

BUILT-UP FLOOR BEAM SPANS
Supporting TWO Floors in Houses

Douglas Fir-Larch Grade No. 1 & 2

Size of Beam	Supported Joist Length					Size of Beam	Supported Joist Length				
	8 ft.	10 ft.	12 ft.	14 ft.	16 ft.		2.4 m	3.0 m	3.6 m	4.2 m	4.8 m
	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.		m	m	m	m	m
3-2x 8	7 - 5	6 - 7	6 - 0	5 - 7	5 - 3	3-38x184	2.27	2.03	1.85	1.71	1.60
4-2x 8	8 - 6	7 - 8	7 - 0	6 - 5	6 - 0	4-38x184	2.62	2.34	2.14	1.98	1.85
3-2x10	9 - 0	8 - 1	7 - 4	6 - 10	6 - 5	3-38x235	2.77	2.48	2.26	2.10	1.96
4-2x10	10 - 5	9 - 4	8 - 6	7 - 11	7 - 4	4-38x235	3.20	2.86	2.62	2.42	2.26
3-2x12	10 - 6	9 - 4	8 - 7	7 - 11	7 - 5	3-38x286	3.22	2.88	2.63	2.43	2.28
4-2x12	12 - 1	10 - 10	9 - 11	9 - 2	8 - 7	4-38x286	3.72	3.32	3.03	2.81	2.63

Spruce-Pine-Fir Grade No. 1 & 2

Size of Beam	Supported Joist Length					Size of Beam	Supported Joist Length				
	8 ft.	10 ft.	12 ft.	14 ft.	16 ft.		2.4 m	3.0 m	3.6 m	4.2 m	4.8 m
	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.		m	m	m	m	m
3-2x 8	8 - 0	7 - 2	6 - 7	6 - 1	5 - 9	3-38x184	2.46	2.20	2.01	1.86	1.74
4-2x 8	9 - 3	8 - 3	7 - 7	7 - 0	6 - 7	4-38x184	2.85	2.55	2.32	2.15	2.01
3-2x10	9 - 10	8 - 9	8 - 0	7 - 5	6 - 10	3-38x235	3.01	2.70	2.46	2.28	2.11
4-2x10	11 - 4	10 - 2	9 - 3	8 - 7	8 - 0	4-38x235	3.48	3.11	2.84	2.63	2.46
3-2x12	11 - 5	10 -2	9 - 4	8 - 7	7 - 9	3-38x286	3.50	3.13	2.85	2.64	2.38
4-2x12	13 - 2	11 - 9	10 - 9	9 - 11	9 - 4	4-38x286	4.04	3.61	3.30	3.05	2.85
1	2	3	4	5	6	7	8	9	10	11	12

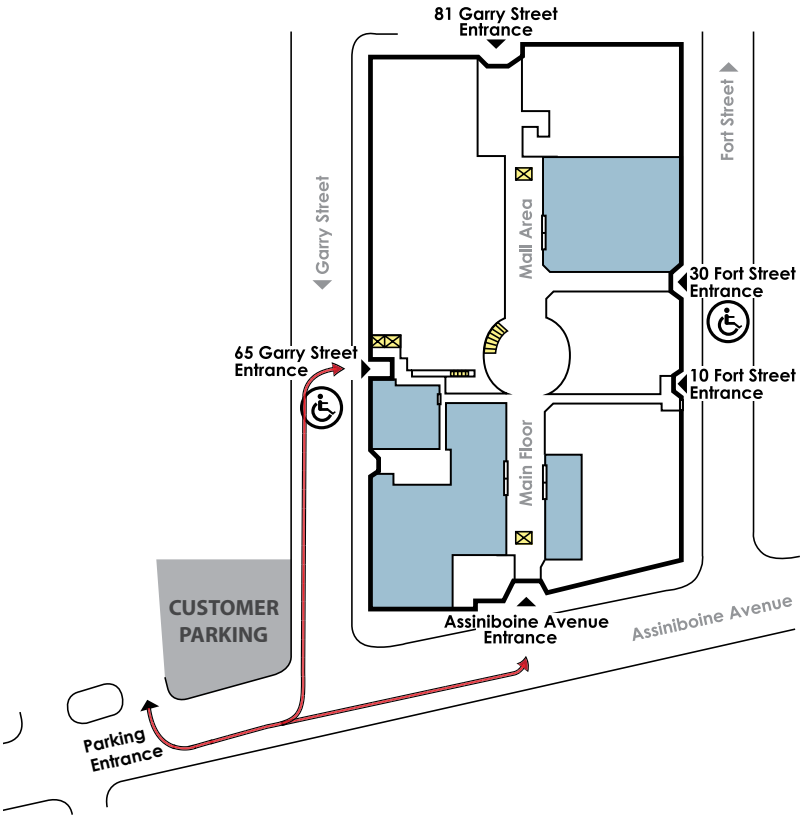
FLOOR JOIST SPANS

Commercial Designation	Grade	Member Size (in.)	Joist Spacing with Strapping			Joist Spacing with Bridging			Joist Spacing with Strapping & Bridging		
			12 in.	16 in.	24 in.	12 in.	16 in.	24 in.	12 in.	16 in.	24 in.
			ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.
Douglas Fir -Larch	No. 1 and No. 2	2 x 4	6 - 7	6 - 0	5 - 5	6 -10	6 - 3	5 - 5	6 - 10	6 - 3	5 - 5
		2 x 6	10 - 2	9 - 7	8 - 7	10 - 10	9 - 10	8 - 7	10 - 10	9 - 10	8 - 7
		2 x 8	12 - 2	11 - 7	11 - 0	13 - 1	12 - 4	11 - 3	13 - 9	12 - 10	11 - 3
		2 x 10	14 - 4	13 - 8	13 - 0	15 - 3	14 - 4	13 - 6	15 - 10	14 - 10	13 - 10
		2 x 12	16 - 5	15 - 7	14 - 10	17 - 2	16 - 2	15 - 3	17 - 10	16 - 7	15 - 6
		(mm)	300mm	400mm	600mm	300mm	400mm	600mm	300mm	400mm	600mm
		38x89	2.00	1.85	1.66	2.09	1.90	1.66	2.09	1.90	1.66
		38x140	3.09	2.91	2.62	3.29	2.99	2.62	3.29	2.99	2.62
		38x184	3.71	3.53	3.36	3.98	3.75	3.44	4.19	3.90	3.44
		38x235	4.38	4.16	3.96	4.64	4.37	4.11	4.84	4.51	4.21
		38x286	4.99	4.75	4.52	5.24	4.93	4.64	5.43	5.07	4.72
			12 in.	16 in.	24 in.	12 in.	16 in.	24 in.	12 in.	16 in.	24 in.
		(in.)	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.
Spruce- Pine- Fir	No. 1 and No. 2	2 x 4	6 - 1	5 - 8	5 - 2	6 - 6	5 - 11	5 - 2	6 - 6	5 - 11	5 - 2
		2 x 6	9 - 7	8 - 11	8 - 2	10 - 4	9 - 4	8 - 2	10 - 4	9 - 4	8 - 2
		2 x 8	11 - 7	11 - 0	10 - 6	12 - 5	11 - 9	10 - 9	13 - 1	12 - 2	10 - 9
		2 x 10	13 - 8	13 - 0	12 - 4	14 - 6	13 - 8	12 - 10	15 - 1	14 - 1	13 - 2
		2 x 12	15 - 7	14 - 10	14 - 1	16 - 4	15 - 5	14 - 6	17 - 0	15 - 10	14 - 9
		(mm)	300mm	400mm	600mm	300mm	400mm	600mm	300mm	400mm	600mm
		38x89	1.86	1.72	1.58	1.99	1.81	1.58	1.99	1.81	1.58
		38x140	2.92	2.71	2.49	3.14	2.85	2.49	3.14	2.85	2.49
		38x184	3.54	3.36	3.20	3.79	3.57	3.27	3.99	3.72	3.27
		38x235	4.17	3.96	3.77	4.41	4.16	3.92	4.61	4.30	4.01
		38x286	4.75	4.52	4.30	4.99	4.70	4.42	5.17	4.82	4.50
Column 1	2	3	4	5	6	7	8	9	10	11	12

In-Person Customer Service Hours are:

Tuesday to Friday 8:30 am to 4:30 pm - All Zoning, Permits and Plan Examination services are available at Unit 31 – 30 Fort Street.

Mondays 8:30 am to 4:30 pm are reserved for telephone inquiries and completed application drop-offs. This enables Zoning and Permits staff to process building and development applications received throughout the week.



notes

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Winnipeg

For more information on the plans required to build a new house please call:

Plan Examination Branch
PH: 204-986-5140
FAX: 204-986-7307

or

311
Non-Emergency City Services

Winnipeg at your service.

City of Winnipeg
Planning, Property and Development Department
Unit 31 - 30 Fort Street
Winnipeg, Manitoba
R3C 4X7

www.winnipeg.ca/ppd