

**Rural Municipality of**  
**Whitemouth**

***Wood Decks***  
***& Ramps***

Construction requirements for ramps and non-sheltered  
wood decks for residential dwellings.

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GENERAL INFORMATION

The Manitoba Building Code and related standards provide the construction requirements. Throughout this booklet the Manitoba Building Code will be referred to as the Building Code.

Decks vary in size and area as such it is beyond the scope of this publication to deal with each possible situation. The Rural Municipality of Whitemouth requirements and construction guidelines that follow are provided to assist you in designing a deck which will comply with the regulations.

Decks that serve as a landing for a front or back door and are 50 square feet or less in total area are exempted from permit fees, but their construction must conform to the same code requirements as decks (ie: framing, stairs, guards and rails).

*Do I require a building permit for a deck?*

YES. A building permit is required for any deck which is higher than one riser (approximately 200mm or 8 in.) above average ground level or any deck which will eventually support an enclosed structure with a roof such as a sun room, family room, etc.

*What if the deck is not attached to my house, do I still need a building permit?*

YES. Regardless of whether or not the deck is attached to any other structure on the property, a building permit is required.

*Where can I obtain a building permit?*

Permits may be obtained by submitting the required information to the Rural Municipal office at 49 Railway Avenue in Whitemouth, Manitoba. Please see the back of this booklet for contact information.

*Are overhead power supply conductors or Hydro meters a cause for concern?*

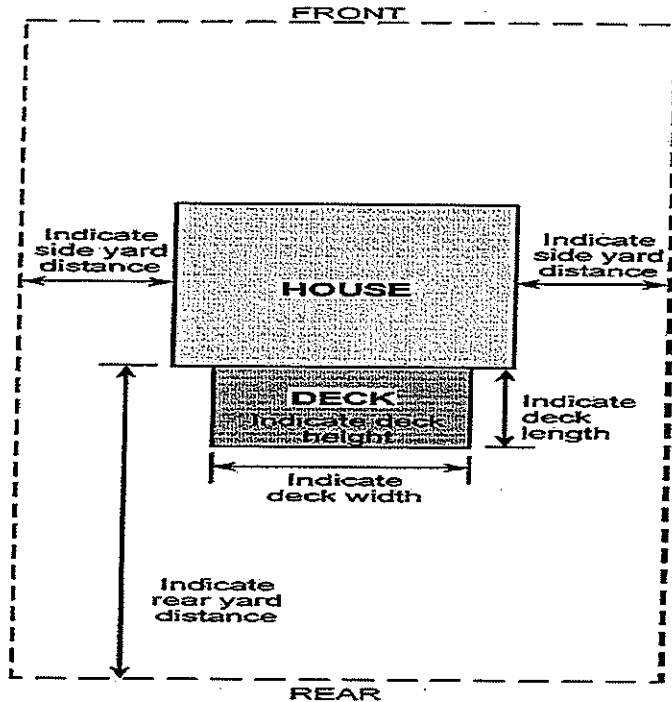
YES. If you plan to build a deck beneath overhead power supply conductors, a clearance of 3.5 m (11 ft. 6 in.) must be maintained between the deck surface and the conductors. If the deck is to be installed beneath a Hydro meter, it may be necessary to relocate the meter to maintain the proper meter height. For more information contact your local Manitoba Hydro District Operating Centre at the phone number listed on your Manitoba Hydro bill

*What information do I have to bring with me in order to make an application for a building permit?*

You must present a copy of a Surveyor's Building Location Certificate (BLC), showing all property dimensions, location of all buildings, and the location and size of the proposed deck.

See Figure 1 for details.

**FIGURE 1 - NOTE THAT A TYPICAL BLC WILL HAVE MORE DETAIL**



In addition to a BLC, two (2) copies of the construction and elevation plans are required if one or both of the following conditions applies to you:

1. If the deck will exceed 600 mm (24 in.) above finished ground level at any point along its perimeter.
2. If the deck (regardless of its height above the adjacent ground level) will eventually support an enclosed structure with a roof such as a sunroom, family room, etc.

*What do the construction and elevation plans have to indicate?*

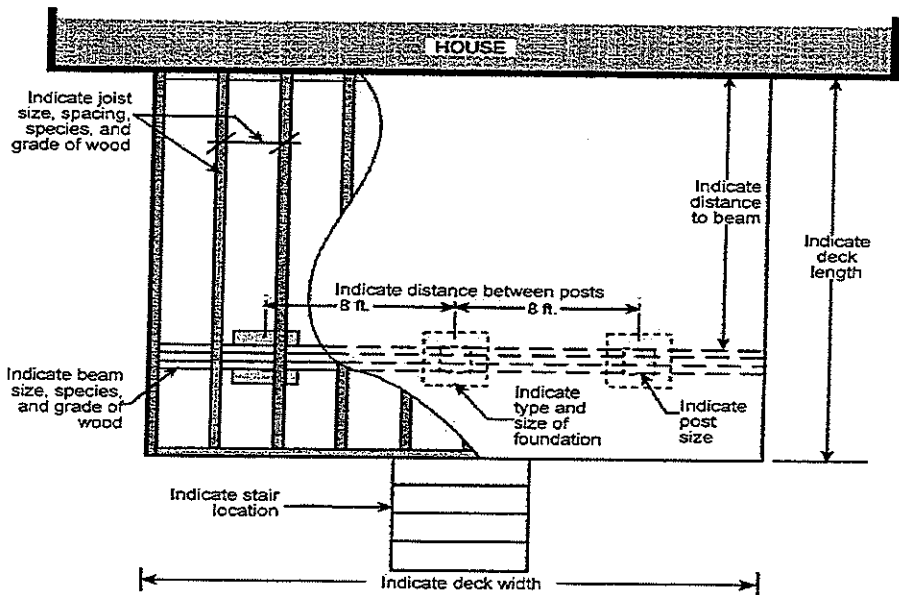
The Construction Plan must show the:

- size of the deck;
- size and spacing of the beams, posts and floor joists;
- species and grade of material being used;
- type of foundation you have chosen to support the deck; and
- location of any stairs leading to or from the deck. The Elevation Plan must show the:

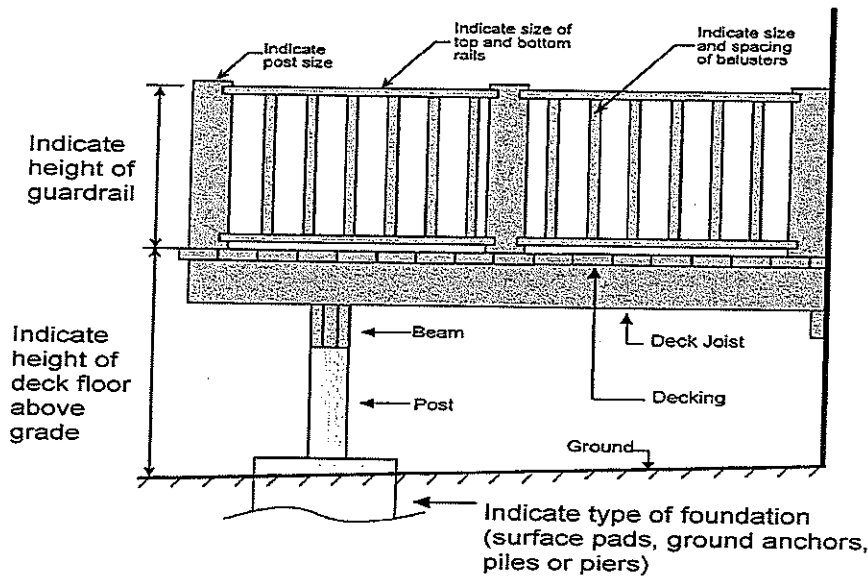
- height of the deck floor above finished ground level at its highest point; and
- height and type of guardrail being used around the perimeter of the deck.

See Figures 2 & 3.

**FIGURE 2 - TYPICAL CONSTRUCTION PLAN**



**FIGURE 3 - TYPICAL DECK ELEVATION**



## ZONING

*Where and how high can I build my deck?*

The local zoning by-laws determine location and height. Contact the Rural Municipality for the minimum and maximum requirements.

*If I cannot meet the zoning requirements, what are my alternatives?*

To reduce or increase these requirements you may apply for a variance. Please note that the local municipal council makes the decision to deny or approve your application. This application can be made at the Rural Municipal office located at 49 Railway Avenue in Whitemouth.

## FOUNDATIONS

*What type of foundations are normally used for wood decks?*

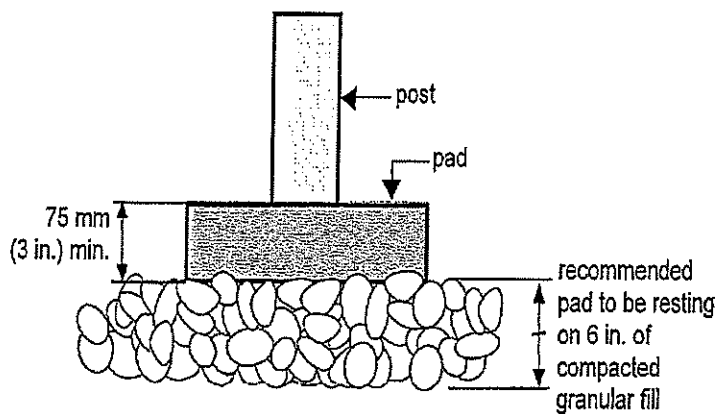
In general, foundations for a wood deck consists of either:

- Surface Pads
- Ground Anchors
- Concrete Piles
- Concrete Piers

*What are the restrictions for the use of a surface pad foundation for a wood deck?*

- The deck cannot be more than one (1) story in height, not more than 590 sq. ft. in area and not supporting a roof and where the distance from finished ground to the underside of the deck joists is not more than 51 in. (4.25') and the supports are provided with lateral resistance.
- The Deck is for a summer cottage on a post and pad foundation or a surface footing and the cottage crawl space is not insulated and is not heated during the winter.
- The deck is not attached to another structure, unless it can be demonstrated that differential movement will not adversely affect the performance of that structure.

**FIGURE 4 - SURFACE PAD FOUNDATIONS**



**What are the recommendations for a surface pad foundation?**

Surface pads should be made of concrete or other material which will not prematurely deteriorate as a result of contact with soil. They should be a minimum of 75mm (3in.) thick and be installed so that the top surface is slightly above finished ground level in order to prevent premature deterioration of the post or beam which will be bearing on the pad. Refer to TABLE 1 to determine the recommended foundation pad size. Foundation pads are available at most lumber dealers.

**TABLE 1 - Recommended Deck Foundation Pad Sizes<sup>(1)</sup>**

<b>Maximum Supported Joist Length <sup>(2)</sup></b>	<b>Concrete Surface Pad Size <sup>(3)</sup> (length x width x thickness)</b>
1.22 m (4 ft.)	300 mm x 300 mm x 100 mm (12 in. x 12 in. x 4 in.)
2.45 m (8ft.)	450 mm x 450 mm x 75 mm (18 in. x 18 in. x 3 in.)
3.65 m (12 ft.)	600 mm x 600 mm x 150 mm (24 in. x 24 in. x 6 in.)

**Notes to TABLE 1:**

1. This table requires beams that are supported every 2.44 m (8 ft.) or less.
2. Supported joist length means half the span of joists supported by the beam plus the length of the overhang beyond the beam. (See FIGURE 8)
3. Pad sizes are based on industry standards.

*When are piles, piers or ground anchors required for a deck foundation?*

1. If the deck is to be more than 51 in. (4.25') from the finished ground to the underside of the deck joists and the house or cottage foundation consists of a basement, piles or piers, or a surface footing with a heated crawlspace.
2. If the deck is to support a roof or a second storey deck.
3. If your future plans are to enclose all or a portion of the deck with a roof, a screened-in area, a three season room, a sunroom, or an addition to your dwelling area, then a **pile or pier foundation is required for the deck**. If ground anchors are used and you intend to enclose all or a portion of the deck then you will be required to submit with your application **Engineered Plans, with NO disclaimers**.

*Notations:*

- You may use the information in this booklet to design the foundation and deck yourself or you can retain a Professional Architect or Engineer to do the design. Should you decide to retain an Architect or Engineer, bring two (2) copies of the design under seal and signature when applying for your building permit.
- See Figure 5 for more information on piles or piers.

**What are the requirements for a pile or pier foundation?** Piles or piers must be in accordance with FIGURE 5, or alternatively, be designed by a Professional Engineer.

*What are some of the advantages and disadvantages of a pile or pier foundation?*

**Advantages:** Movement of the deck will be minor thus making re-leveling highly unlikely. Piles or piers could satisfy the requirements for a foundation to a dwelling addition.

**Disadvantages:** Piles or piers are considerably more expensive and disruptive to existing landscaping.

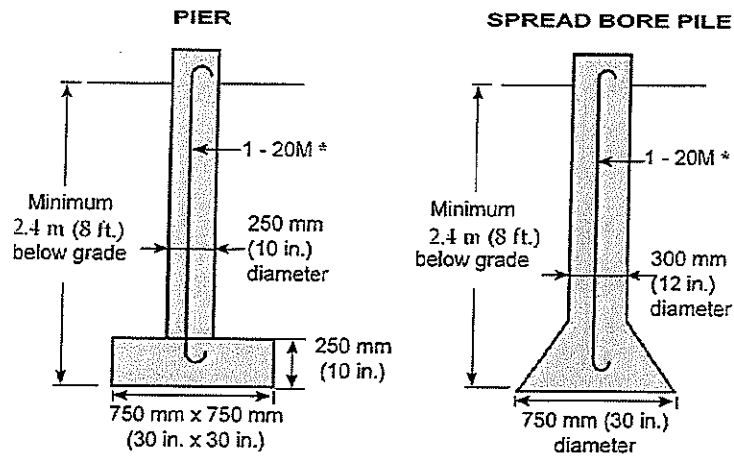
*How far apart can these pads, piles, piers or ground anchors be installed?*

The location of the pads, piles, or piers can vary depending on the size and type of material used for the beam that spans from one pad, pile, or pier to the other; and the amount of the floor area that each individual pad, pile, or pier is required to carry.

**FIGURE 5 - PILES OR PIERS**

If future plans are to enclose all or a portion of your deck with a screened-in area, sunroom, or extension to your dwelling, a pile foundation is recommended. Spread bore piles with a minimum depth of 8 ft. or friction piles that are 16 in. in diameter with a minimum depth of 20 ft. will meet Building Code requirements. The minimum reinforcement requirement for a pile is one 20mm (#6) reinforcing bar.

\* refers to one 20 mm (#6) diameter reinforcing bar



*Can I vary from this 2.44 m (8 ft.) spacing?*

Yes. You can place the pads, piles, or piers closer together and still maintain the beam sizes used in this publication for 2.44 m (8 ft.) spacing or, alternatively, if you wish to place them further apart, you would have to install a beam which is adequate for that longer span. The beam sizes indicated in this publication have been calculated by using common engineering principles. Other variations are possible, provided the deck is designed and installed to carry a live load of 1.9 kPa (40 psf).

If you wish to increase the spacing of the pads, piles, or piers or if you wish to reduce the beam sizes indicated in the beam tables, you may have to retain someone who is familiar with engineering calculations. Whichever design you choose, it must be indicated on your plans at the time of your building permit application.

*Can I use multiples of the 2.44 m (8ft.) spacing and make my deck deeper and/or wider?*

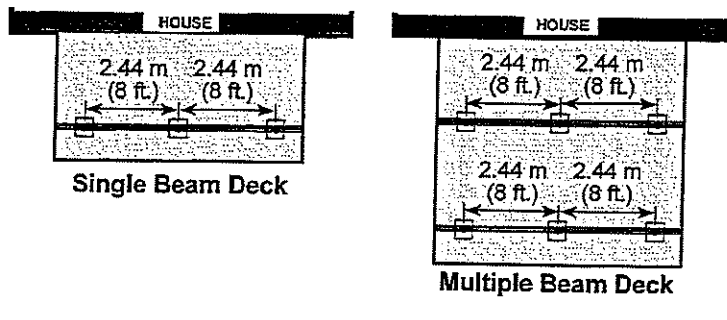
Yes. Provided you continue to meet all of the same construction requirements and provided you do not exceed the area that is permitted for your particular property.

## STRUCTURAL

### **What size posts should I use and how should they be anchored?**

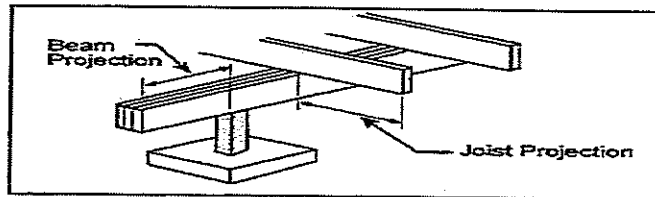
Posts, if used, should be at least the width of the beam, centered on the pad, pile, or pier, and securely fastened to the beam by means of toe nailing, wood gussets, angle brackets, or other equivalent method. Where posts exceed 1.5 m (5ft.) in length, they should be braced to each other or up to the beam and floor or, alternatively, they should be anchored to the pad, pile, or pier in order to prevent them from shifting at the bottom.

**FIGURE 6 - DECK BEAM SPACING**



The examples shown in FIGURE 6 are based on the beam supports having a maximum spacing of 2.44 m (8ft.) on centre. The beam tables that follow indicates beams which are adequate for this spacing.

**FIGURE 7**

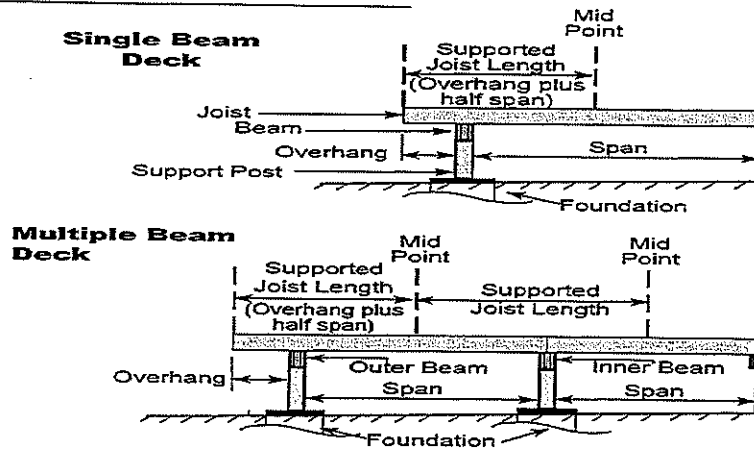


**What size of beams do I need?**

The beam table (TABLE 3) is intended for single beam decks and multiple beam decks having supports at 2.44 m (8ft.) intervals along the beam. See also FIGURE 8.

See TABLE 2 if deck supports are over 8 feet apart.

**FIGURE 8**



*Can I have joints in the beam?*

Yes. However, when joints are necessary, they should be situated on a support (post). On multiple-ply laminated beams the joints should be staggered so that joints occur on alternate supports. If it is intended to project the beam beyond the end supports, there should be no joints on the end support.



**How far can I project the beam beyond the end support?**

The beam can project up to a maximum of 600 mm (2ft.) beyond the end support. See FIGURE 7.

**How should beam laminations be nailed together?**

Individual members must be nailed together with a double row of nails at least 89 mm (3 1/2 in.) in length, spaced not more than 450 mm (18 in.) apart in each row with the end nails located between 100 mm (4 in.) and 150 mm (6 in.) from the end of each piece.

**How far can the joists project beyond the face of the outside beam?**

If you are planning to eventually enclose all or a portion of the deck with a roofed structure which could carry snow, the Building Code states that the joists can only project 400 mm (16 in.) where 2 x 8 joists are used, and 600 mm (2ft.) where 2 x 10 or larger joists are used. The projection of 2 x 4 or 2 x 6 joists would require engineering analysis to determine if the floor assembly would be sufficient to carry the superimposed roof loads. See FIGURE 7.

Note that even if you are not planning to enclose the deck in the future any projections beyond those indicated above would require engineering analysis.

**TABLE 2 - Beam Table for deck supports over 8 ft. apart.**

		BEAMS (Size of beams are in inches)								
		2 x 8			2 x 10			2 x 12		
Grade	Supported Length (ft)	3-Ply	4-Ply	5-Ply	3Ply	4-Ply	5-Ply	3-Ply	4-Ply	5-Ply
	8	10-0	11-0	11-11	12-10	14-1	15-2	14-11	17-2	18-3
No. 1	10	9-4	10-3	11-0	11-6	13-1	14-1	13-4	15-4	17-2
& 2	12	8-7	9-8	10-5	10-6	12-1	13-3	12-2	14-0	15-8
	14	7-11	9-2	9-10	9-8	11-2	12-6	11-3	13-0	14-6
	16	7-5	8-7	9-5	9-1	10-6	11-8	10-6	12-2	13-7
	18	7-0	8-1	9-0	8-7	9-10	11-0	9-11	11-5	12-10
	20	6-8	7-8	8-7	8-1	9-4	10-6	9-5	10-10	12-2

**TABLE 3 - Deck Beam Sizes <sup>(1)</sup>  
- Design Floor Live Loads for 1.9 kPa (40 psf)**

Maximum Supported Joist Length <sup>(2)</sup>	Beam Size <sup>(3)</sup>
1.82 m (6 ft.)	2 - 38 x 140 mm (2 - 2 x 6)
2.44 m (8ft.)	3 - 38 x 140mm (3 - 2 x 6) OR 2 - 38 x 184 mm (2 - 2 x 8)
3.05 m (10 ft.)	4 - 38 x 140 mm (4 - 2 x 6) OR 3 - 38 x 184 mm (3 - 2 x 8)

**Notes to TABLE 3:**

1. This table requires beams to be supported every 2.44m (8 ft.) or less.
2. Supported joist length means half the span of joists supported by the beam plus the length of the overhang beyond the beam. (See FIGURE 8.)
3. This table is for use with spruce, pine and fir lumber grades 1 and 2.

**What size of floor joists do I require?**

The size of the floor joists are governed by the distance they have to span and the spacing at which the floor joists are installed. TABLE 4 indicates some common species and sizes of wood and the acceptable span distances for wood decks. Joist spans are measured from face of support to face of support (in the case of a wood deck from face of beam to face of beam, or from face of beam to face of ledger).

Another item you should take into consideration when selecting the type, size, and spacing of your floor joists is the type of material you intend to use as decking. Check with your lumber dealer to ensure that the decking you select will not sag significantly between the joists as a result of the joist spacing you have chosen.

The Ledger Board must be protected with flashing to keep water from getting between the ledger and the house wall or have spacers between the ledger and the house.

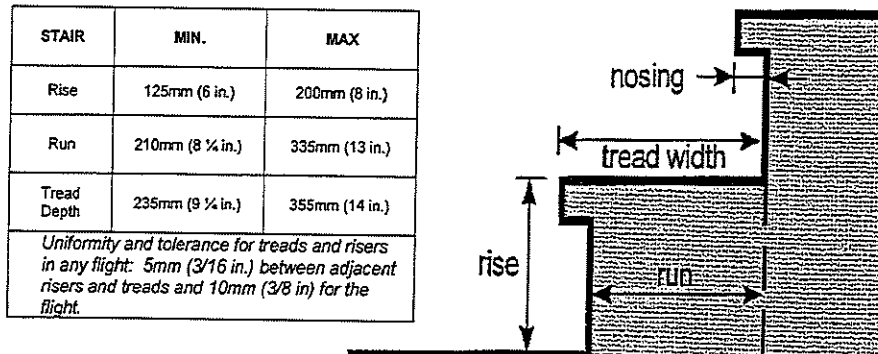
**TABLE 4 - Deck Floor Joist Spans  
- Design Floor Live Loads for 1.9 kPa (40 psf)**

Commercial Designation	Grade	Joist Size (in)	Maximum Span (ft-in.)			Joist Size (mm)	Maximum Span (m)		
			Joist Spacing				Joist Spacing		
			12 in	16 in	24 in		300 mm	400 mm	600 mm
Douglas Fir - Larch	No. 1 and No. 2	2x4	7' 11"	7' 2"	6' 1"	38 x 89	2.41	2.19	1.86
		2x6	12' 4"	10' 6"	8' 9"	38 x 140	3.76	3.26	2.66
	2x8	15' 1"	13' 0"	10' 8"	38 x 184	4.58	3.96	3.24	
		18' 5"	15' 11"	13' 0"	38 x 235	5.6	4.85	3.96	
Spruce - Pine - Fir	No. 1 and No. 2	2x4	7' 6"	6' 10"	5' 11"	38 x 89	2.29	2.08	1.82
		2x6	11' 10"	10' 9"	9' 4"	38 x 140	3.61	3.28	2.86
	2x8	15' 7"	14' 2"	11' 7"	38 x 184	4.74	4.31	3.52	
		19' 11"	17' 4"	14' 2"	38 x 235	6.06	5.27	4.3	
Column 1	2	3	4	5	6	7	8	9	10

**Are there any requirements for stairs?**

The Building Code requires stair width to be at least 900 mm (35 in.) and that treads and risers have uniform rise and run in any one flight with riser heights not exceeding 200 mm (8 in.). The Building Code also requires the minimum run of each tread to be 210 mm (8 X in.) and the minimum tread width to be 235mm (9 X in.).

**FIGURE 9 - STAIR DETAIL**



**Note:** If the run is less than 250mm (10 in.) then a nosing of at least 25mm (1 in.) must be provided.

*What is the difference between guardrails and handrails?*

**Guardrails** are intended to prevent persons from falling off the edge of a stair or raised floor area such as a deck. The guardrail must be able to withstand the pressure of a human body applied horizontally to it.

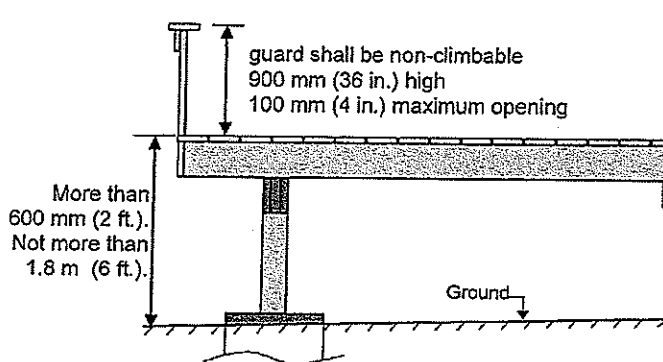
**Handrails** are required to assist persons in ascending or descending stairs. They offer a continuous handhold to support persons who may stumble on the stair.

*Will my deck require guardrails?*

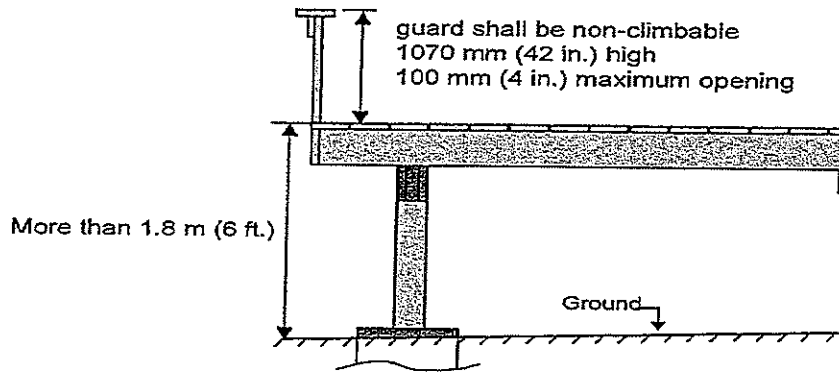
The need for guardrails is determined according to the height of the deck floor surface above the finished ground level as follows:

- a) Decks with floor surfaces that do not exceed 600mm (2ft.) above the finished ground level at any point around their perimeter do not require guardrails. However, if guardrails are provided, any openings to the underside of the top horizontal member must be such as to prevent the passage of a spherical object having a diameter of 100mm (4in.) or permit the passage of a spherical object having a diameter of 200mm (8in.). For example the openings must either be less than 100mm (4in.) or greater than 200mm (8in.). These requirements must be met unless it can be shown that the location and size of openings which exceed these limits do not represent a hazard.
- b) Decks with floor surfaces which are more than 600mm (2ft.) but not more than 1.8m (6ft.) above the finished ground level at any point around their perimeter requires a guardrail at least 900mm (36in.) in height. (See FIGURE 10.) Openings to the underside of the top horizontal member of the guardrail must be such as to prevent the passage of a spherical object having a diameter of 100mm (4in.). There must be no member or attachment between 100mm (4in.) and 900mm (36in.) measured from the floor surface of the deck which will facilitate climbing.
- c) Decks with floor surfaces which are more than 1.8m (6ft.) above finished ground level at any point around their perimeter require a guardrail at least 1070mm (42in.) in height (see FIGURE 11). Openings to the underside of the top horizontal member of the guardrail must be such as to prevent the passage of a spherical object having a diameter of 100mm (4in.). There must be no member or attachment between 100mm (4in.) and 900mm (36in.) measured from the floor surface of the deck which will facilitate climbing.

**FIGURE 10 - GUARDRAIL HEIGHT**



**FIGURE 11 - GUARDRAIL HEIGHT**



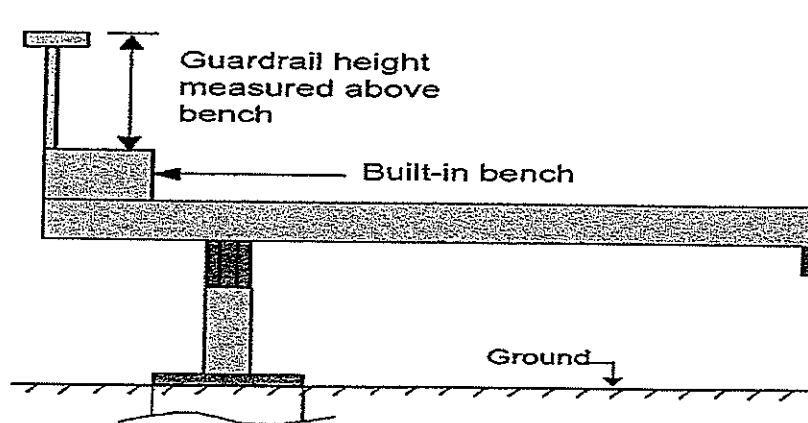
*Can a built-in bench serve as a guardrail?*

No. Unless a guardrail meeting the previously described height and opening requirements is provided above the flat surface of the bench and any openings below the bench also meet the maximum opening requirements. (See FIGURE 12)

*But what is the difference between a built-in bench and a chair or a table?*

If a chair or table are in a hazardous position you have the option of moving them. A built-in bench does not give you that option.

**FIGURE 12 - GUARDRAIL AND BENCH**



*Are guardrails required for stairs?*

Stairs which have more than three risers and which exceed 600 mm (2 ft.) above the finished ground level also require guardrails. These guards are to be located at least 900 mm (36 in.) in height measured vertically above a line drawn through the outside edges of the stair nosing. If the stairs have an intermediate landing, the guardrail must be at least 1070 mm (42 in.) in height over the landing area.

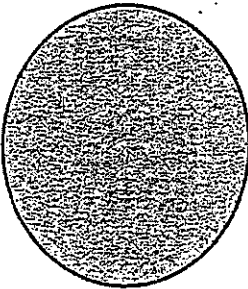
Openings situated below these heights are to be such as to prevent the passage of a spherical object having a diameter of 100 mm (4 in.).

*Will the stair also require a handrail?*

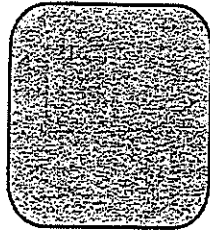
The Building Code states that if any outside stair has more than three (3) risers, a handrail is required on one side of the stair. The handrail is to be located between 865 mm (34 in.) and 965 mm (38 in.) in height measured vertically above a line drawn through the outside edges of the stair nosing's. Stairs with 3 risers or less do not require handrails. There must be no member or attachment between 100 mm (4 in.) and 900 (35 in.) measured from the floor surface of the deck which will facilitate climbing.

All handrails shall be constructed so as to be continually graspable along their entire length with no obstruction on or above them to break a hand hold, except where the hand rail is interrupted by newels at changes in direction. A clearance of not less than 50mm (2") shall be provided between the hand rail and the surface behind it. Acceptable hand rail sections include but are not limited to those shown below in FIGURE 13.

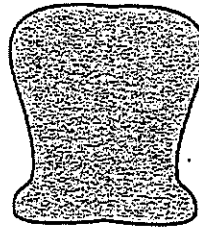
**FIGURE 13 - HANDRAILS**



acceptable round section of 30 mm to 50 mm diameter



acceptable regular non-round section of 100 mm to 155 mm perimeter

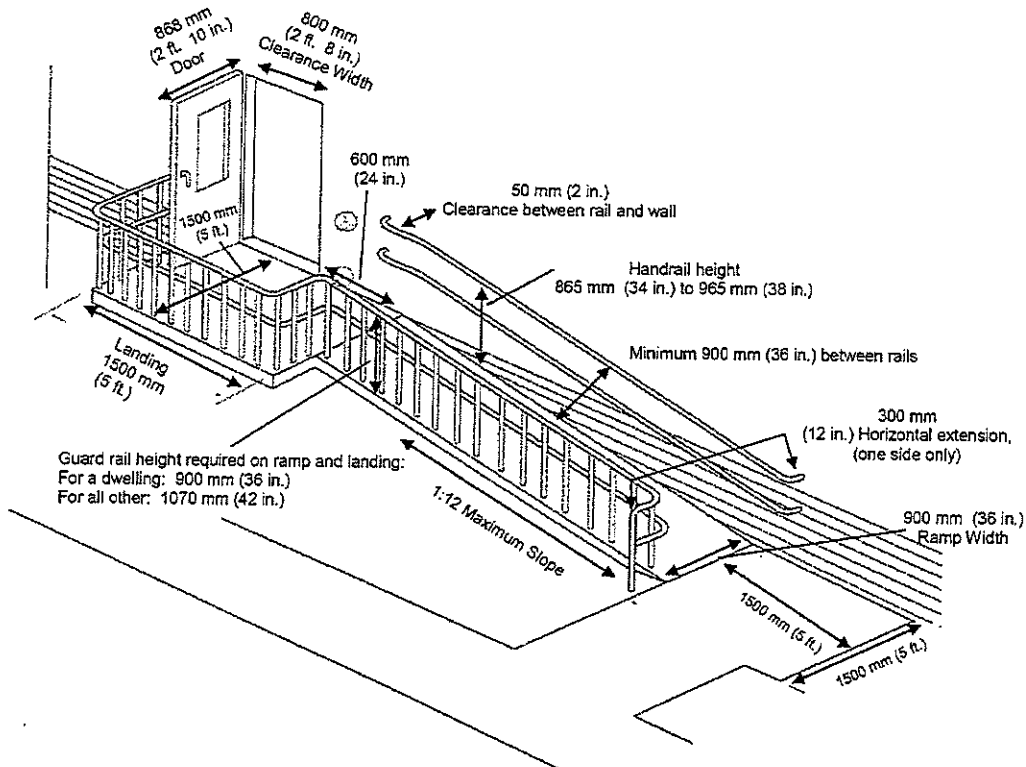


acceptable non-regular section of 100 mm to 155 mm perimeter



acceptable section with 55 mm cross-section dimension and 155 mm perimeter

**WHEELCHAIR RAMP**



### General Notes:

1. A ramp with a 1 in 12 slope means that for each one-inch rise of the ramp, one foot of ramp length is required. Therefore, a ramp with a rise of 12 inches would have to be 12 feet long.
2. The surface of the ramp must have a finish that is slip resistant.
3. A ramp must have a level area not less than 1.2 m (47 in.) long and at least the same width as the ramp at intervals not more than 9m (29 ft. 6 in.) along its length and where there is an abrupt change in direction.
4. Barrier free wheel chair ramps should have a maximum width of 44 inches (1100mm).
5. Ramps not supported directly on the ground (ie. raised above grade) shall have all structural elements designed by a Manitoba Professional Engineer.
6. Wheel chair ramps for a dwelling unit to be constructed per this booklet.
7. A building permit is required for the construction of a wheelchair ramp.

### Ramp Slopes

Ramps with a slope of more than 1 in 16 can be very difficult for persons with upper body mobility to manage and can be unsafe to descend, especially in cold climates. Slopes of 1 in 20 are safer and less strenuous and if space is available are recommended.

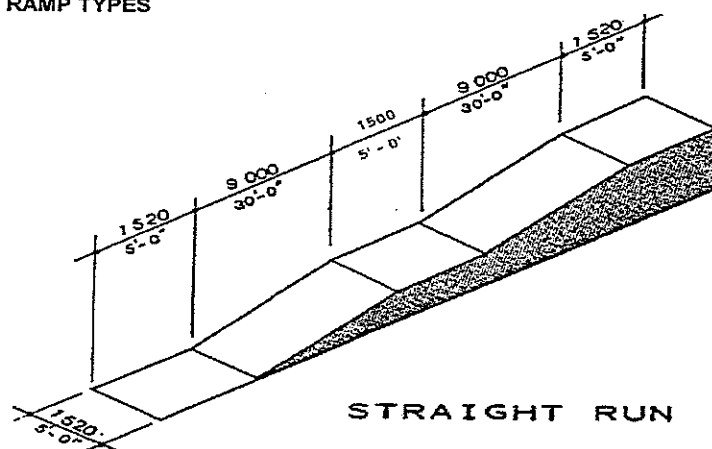
### Hand Rails

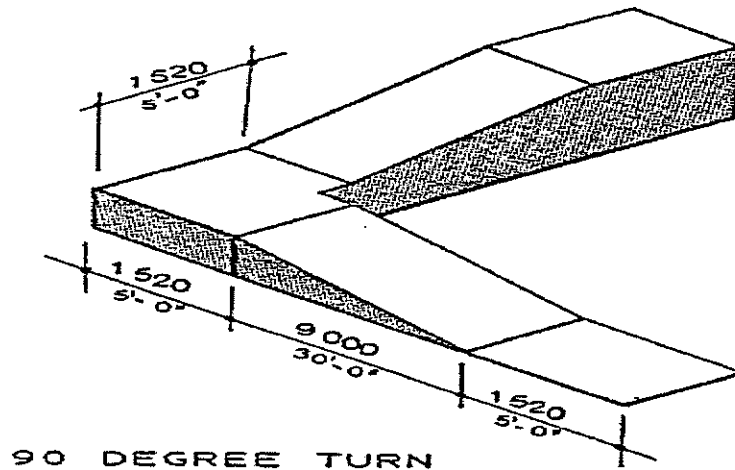
Hand rails are to be constructed so as to be continually graspable along their entire length with no obstructions on or about them to break a hand hold, except where the hand rail is interrupted by newels at changes in direction. See figure 13.

### Wheelchair Ramps for a Dwelling Unit

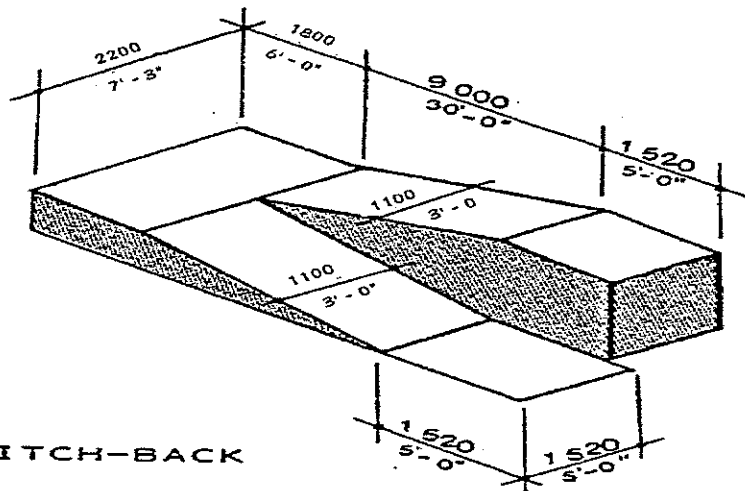
1. Guard height of 900 mm (36 in.) is permitted where the difference in elevation between the landing/ramp and the ground is less than 1.8 m (6ft.).
2. Handrail height shall be between 865 mm (34 in.) and 965 mm (38 in.).
3. Horizontal extension of handrail is not required.
4. Hand rail to be continually graspable.

### RAMP TYPES





90 DEGREE TURN



SWITCH-BACK

### COMPLIANCE

*Who enforces all of these requirements?*

The Building Inspector of the Rural Municipality of Whitemouth is responsible for monitoring construction for compliance with the Building Code and By-Laws.

This monitoring is carried out by means of a permit approval process and site inspections.

The ultimate responsibility for compliance rests with the owner and contractor.

*Is there any way that compliance with a certain aspect of the Building Code can be waived?*

The Rural Municipality of Whitemouth does not have the authority to waive the requirements but it does have the authority to accept equivalents which meet the intent of the Building Code. If you feel you can satisfy a Building Code requirement by using an equivalent building material or construction method, contact the Building Inspector.

*Just a final inspection is required for decks and ramps.*

*Contact The Rural Municipality of Whitemouth office when you are ready for your inspection.*