RURAL MUNICIPALITY OF MACDONALD

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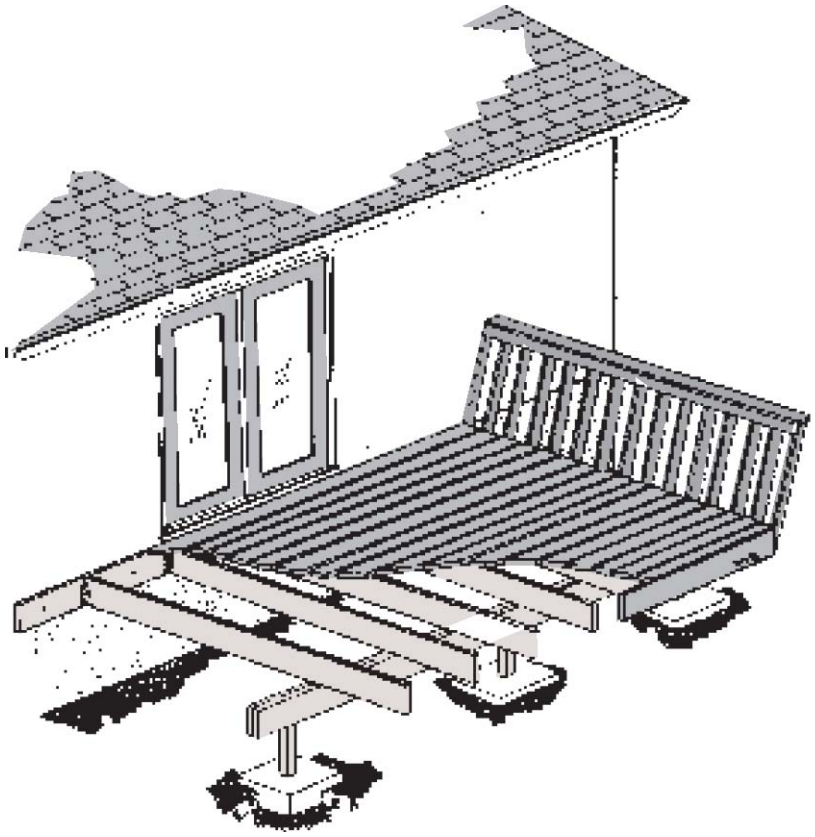
Wood Decks

Zoning and construction requirements for wood decks for residential dwellings.



note

The Rural Municipality of Macdonald Building Code By-law is primarily an administrative document that adopts the Manitoba Building Code and related standards to provide construction requirements. Throughout this booklet the Manitoba Building Code will be referred to as the Building Code.

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

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

Do I require a building permit for a deck?

YES! A building permit is required for any non sheltered deck, or a deck which will eventually support an enclosed structure with a roof such as a sunroom, family room, etc.

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

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 office of the Rural Municipality of Macdonald, 161 Mandan Drive, Sanford, Manitoba, R0G 2J0 Phone (204) 736-2255.

How much does a building permit for a deck cost?

The current minimum permit fee is as follows:
Non-sheltered deck or landing ..... minimum fee $100.00
Please note that these fees are subject to change.

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

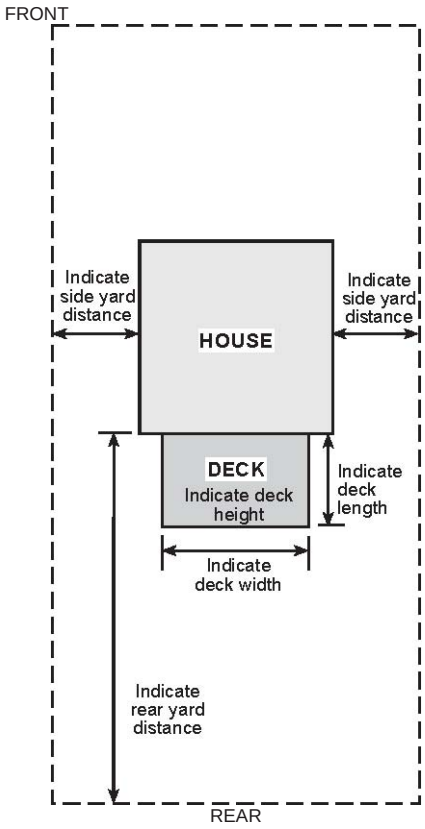
YES! If you plan to build a deck beneath overhead power supply conductors, a clearance of 3.5 m (11 ft. 6 in.) must be maintained between the deck surface and the conductors. If the deck is to be installed beneath a hydro meter, it may be necessary to relocate the meter to maintain the proper meter height. 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 application for a building permit?

You must present one copy of a Surveyor's Building Location Certificate.

As an alternative, a well drawn site plan showing all property dimensions, location of all buildings, and the location and size of the proposed deck may be acceptable. See FIGURE 1 for details. In addition, 1 copy of the construction and elevation plans are required

FIGURE 1 - Typical Site Plan



What do the construction and elevation plans have to indicate?

The construction plans must show the size of the deck, the size and spacing of the beams, posts, and floor joists, the species and grade of material being used, the type of foundation you have chosen to support the deck and the 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 the height and type of guardrail being used around the perimeter of the deck. See FIGURES 2 and 3.

FIGURE 2 - Typical Construction Plan

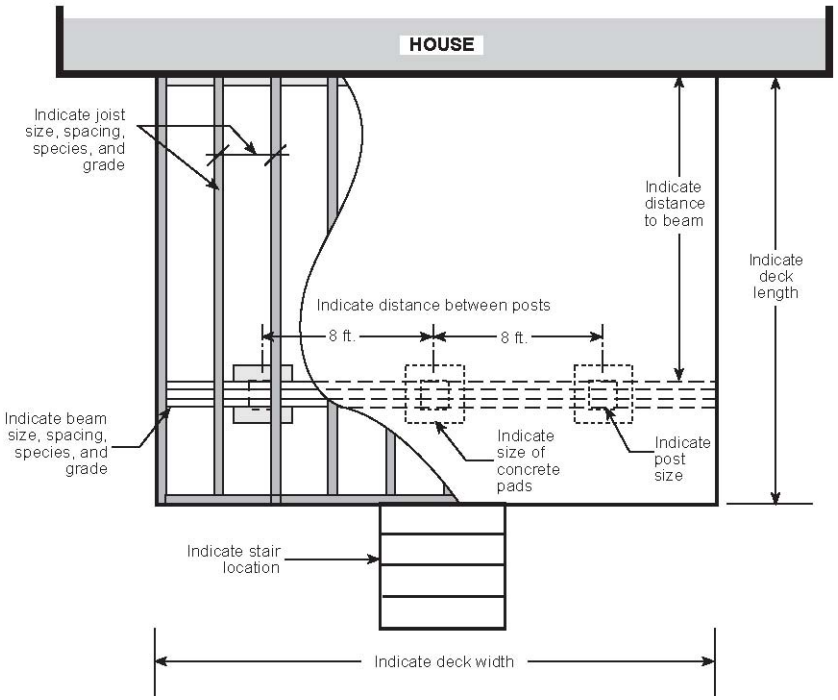
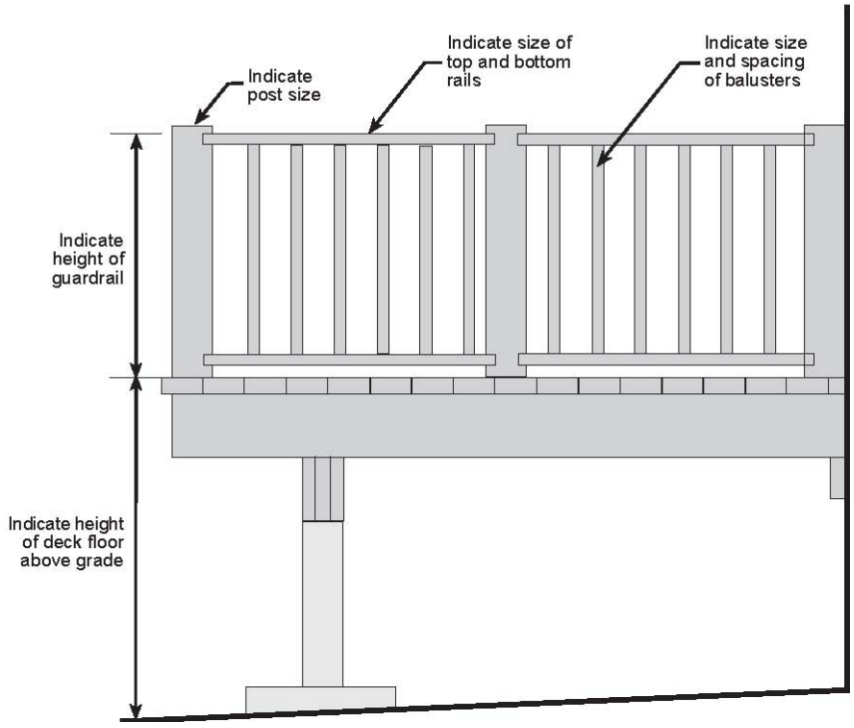


FIGURE 3 - Typical Deck Elevation



Where can I build my deck?

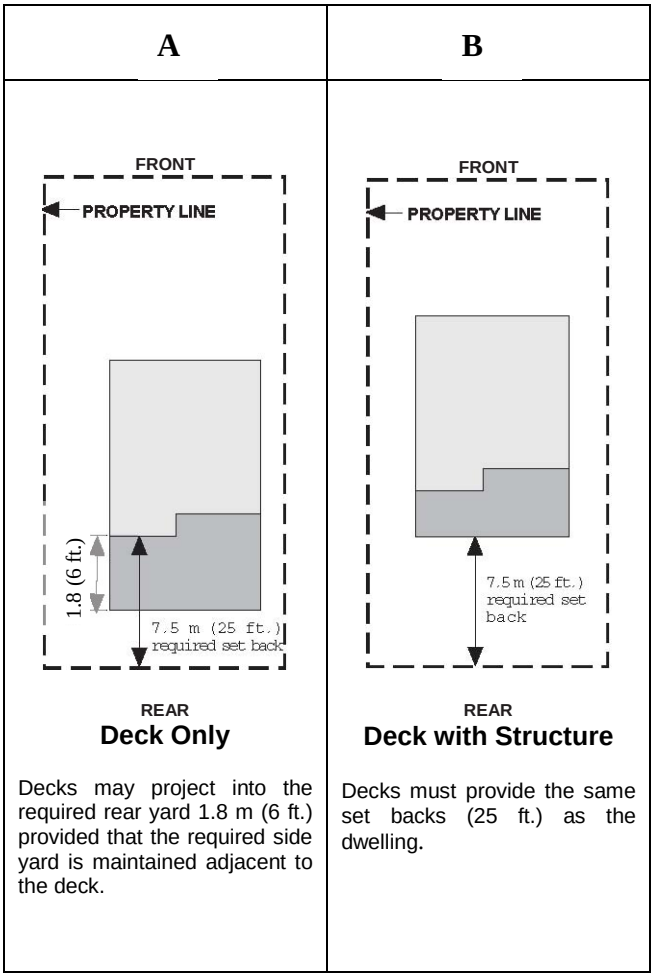
Open, unenclosed porches, platforms or decks, not covered by a roof or canopy, which do not extend above the level of the first floor of the building, may extend or project into any required front or rear yard not more than six (6) feet. See Figure 4A.

As indicated in Figure 4B, a deck with a screened porch, sunroom or similar structure located on it, must provide the same setback as the house (25 feet). No projections are allowed into the required side yards.

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

To vary these requirements you must apply for a Zoning variance. This application can be made at the Rural Municipality of Macdonald office located at 161 Mandan Drive in Sanford, Manitoba Phone 736-2255.

FIGURE 4 - Deck Location



OPEN DECKS UNDER 600 MM (2 FT.) IN HEIGHT

Surface pad foundations are only permitted when an open deck is

a) not more than one storey;

b) not more than 55m^2 (592 ft^2) in area;

c) where the distance from finished ground level to the underside of the joist is not more than 1300 mm and the supports are provided with a lateral resistance;

d) not supporting a roof, and

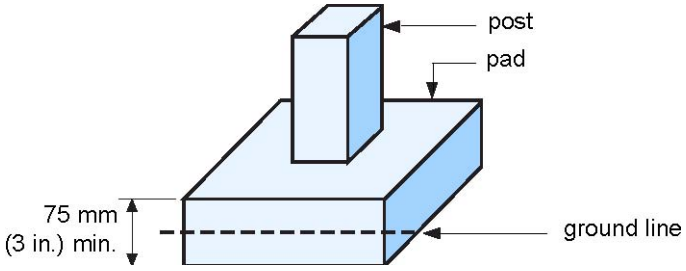
e) not attached to another structure, unless it can be demonstrated that differential movement will not adversely affect the performance of that structure, as determined by the authority having jurisdiction (engineer required).

When using surface foundations, access must be provided to the foundation to permit re-levelling of the deck platform. It can be provided either by:

a) a passageway with a clear height and width under the deck platform of not less than 600 mm (2 ft); or

b) by installing the decking in a manner that allows easy removal (eg. screws)

FIGURE 5 -Surface Pad



What are the recommendations for a surface pad foundation?

Surface pads should be made of concrete. As shown in FIGURE 5 they should be a minimum 75 mm (3 in.) thick and be installed so that the top surface is slightly above adjacent 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[1]

Maximum Supported Joist Length [2]	Concrete Surface Pad Size (length x width x thickness)
1.22 m (4 ft.)	300 mm x 300 mm x 100 mm (12 in. x 12 in. x 4 in.)
3.05 m (10 ft.)	450 mm x 450 mm x 75 mm (18 in. x 18 in. x 3 in.)
4.88 m (16 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 with supports 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.)

Can a pergola or a trellis type structure be added to a deck on pads?

No. A deck on pads is not permitted to support any additional structures unless engineered. If your long term goal is to enclose all or a portion of your deck with a trellis, a screened in area or a sunroom, it is suggested that you use a pile or pier foundation.

What are the requirements for a pile or pier foundation?

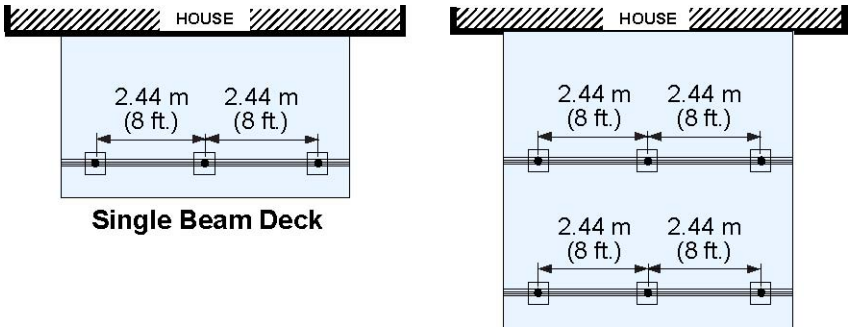
Piles or piers shall comply with the Manitoba Building Code (NBC 2010) requirements. Some styles of pile or pier foundations may require the involvement of a designer (engineer).

How far apart can these pads, piles, or piers 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 floor area that each individual pad, pile, or pier is required to carry.

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

FIGURE 6 - Deck Beam Spacing



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.) spacings 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 (8 ft.) spacing and make my deck deeper and/or wider?

Yes you can, 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.

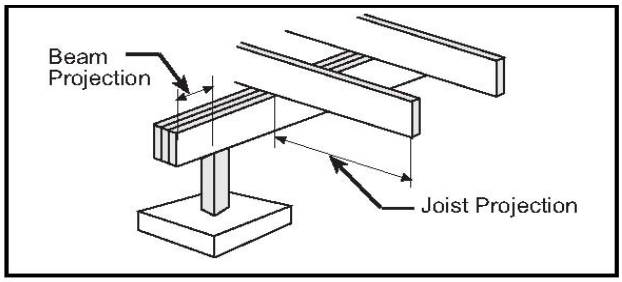
What size posts should I use and how should they be anchored?

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 toenailing, wood gussets, angle brackets, or other equivalent method. Where posts exceed 1.5 m (5 ft.) 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.

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

The beam can project up to a maximum of 600 mm (2 ft.) beyond the end support with no structure above. See FIGURE 7.

Figure 7



What size of beams do I need?

The beam table (TABLE 2) is intended for single beam decks and multiple beam decks having supports at 2.44 m (8 ft.) intervals along the beam. See also FIGURE 8

Figure 8

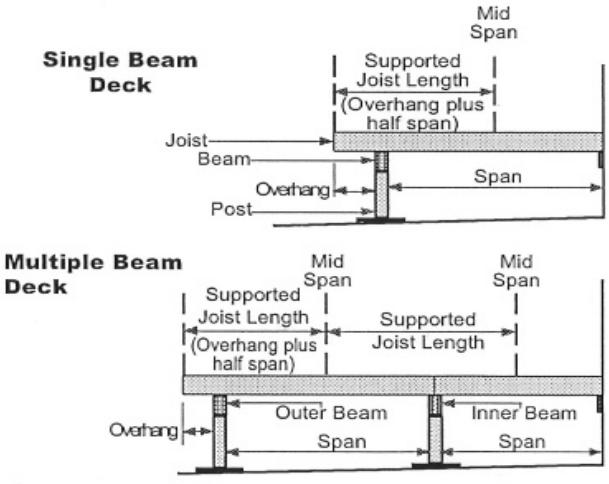


TABLE 2 – Minimum Deck Beam Sizes[1]
-Design Floor Live Loads for 1.9 kPa (40 psf)

Max. Supported Joist Length[2]	Beam Size[3]
2.44 m (8 ft.)	3 - 38 x 140 mm (3 - 2 x 6)
3.05 m (10 ft.)	4 - 38 x 140 mm (4 - 2 x 6) or 3 ply 2 x 8
3.66 m (12 ft.)	3 - 38 x 184 mm (3 - 2 x 8)
4.27 M (14 ft.).)	4 - 38 x 184 mm (4 - 2 x 8)
4.88 m (16 ft.)	3 - 38 x 235 mm (3 - 2 x 10)

Notes to TABLE 2:

1) *This table requires beams with supports 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 9.)*
3) *This table is for use with Spruce-Pine-Fir lumber grades 1 and 2.*

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 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 2x8 joists are used, and 600 mm (2 ft.) where 2x10 or larger joists are used. The projection of 2x4 or 2x6 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***.

What size of floor joists do I require for an open deck?

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 3 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.

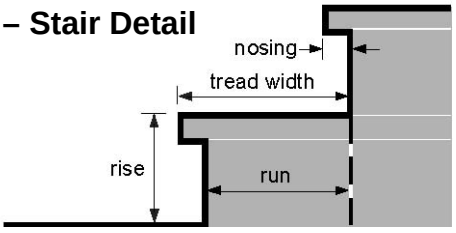
TABLE 3 -Deck Floor Joist Spans
-Design Floor Live Loads for 1.9 kPa (40 psf)

Commercial Designation	Grade	Member Size (in.)	Joist Spacing			Member Size (mm)	Joist Spacing		
			12 in ft.-in.	16 in ft.-in..	24 in ft.-in.		300mm m	400mm m	600mm m
Douglas Fir-Larch	No. 1 and No. 2	2 x 4	8 - 6	7 - 9	6 - 9	38x89	2.59	2.36	2.06
		2 x 6	13 - 5	11 - 10	9 - 8	38x140	4.08	3.60	2.94
		2 x 8	16 - 7	14 - 4	11 - 9	38x184	5.06	4.38	3.58
		2 x 10	20 - 4	17 - 7	14 - 4	38x235	6.19	5.36	4.38
Spruce-Pine-Fir	No. 1 and No. 2	2 x 4	8 - 1	7 - 4	6 - 5	38x89	2.47	2.24	1.96
		2 x 6	12 - 9	11 - 7	10 - 1	38x140	3.89	3.53	3.08
		2 x 8	16 - 9	15 - 3	12 - 9	38x184	5.11	4.64	3.89
		2 x 10	21 - 5	19 - 1	15 - 7	38x235	6.52	5.82	4.75
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 (8¼ in.) and the minimum tread width to be 235 mm (9¼ in.). See FIGURE 9 for details.

Figure 9 – Stair Detail



IF: The run is less than 250 mm (10 in.)
THEN: A nosing of at least 25 mm (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 a 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 600 mm (2 ft.) above the finished ground 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 100 mm (4 in.) 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 that are more than 600 mm (2 ft.) but not more than 1.8 m (6 ft.) above the finished ground level at any point around their perimeter require a guardrail at least 900 mm (35 in.) in height. (See FIGURE 10.)

Figure 10 – Guardrail Height

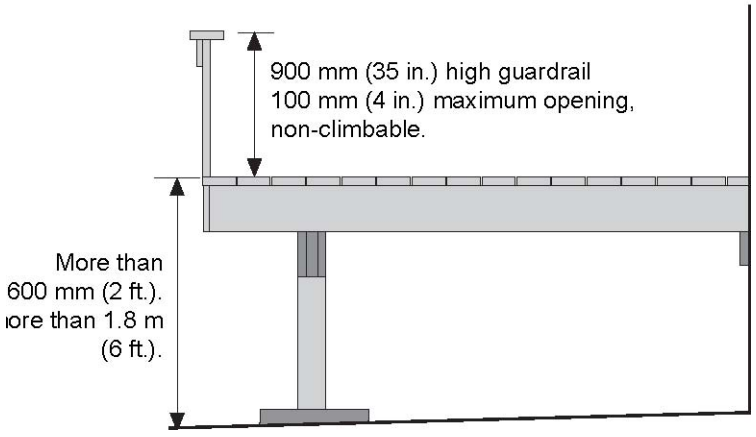


Figure 11 – Guardrail Height

FIGURE 12 - Guardrail Height

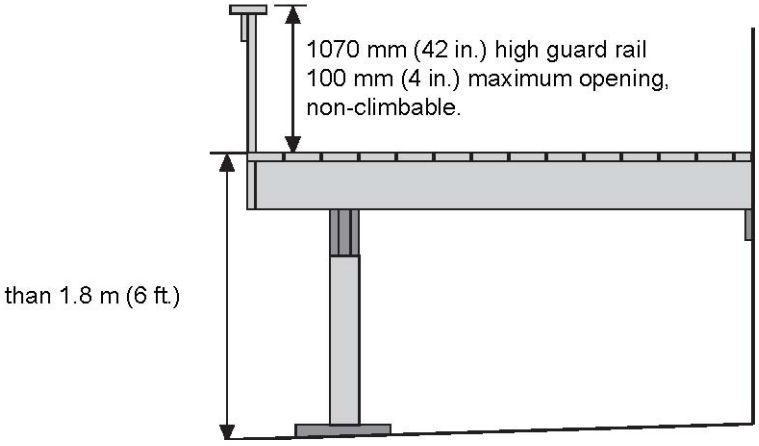
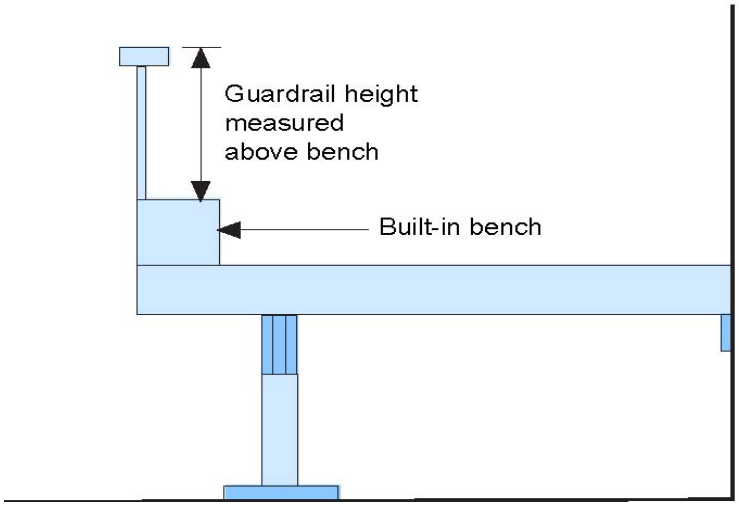


FIGURE 12 - Guardrail and Bench

E 13



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 100 mm (4 in.).

There must be no member or attachment between 100 mm (4 in.) and 900 mm (35 in.) measured from the floor surface of the deck which will facilitate climbing.

c) Decks with floor surfaces which are more than 1.8 m (6 ft.) above finished ground level at any point around their perimeter require a guardrail at least 1070 mm (42 in.) 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 100 mm (4 in.).

There must be no member or attachment between 100 mm (4 in.) and 900 mm (35 in.) measured from the floor surface of the deck which will facilitate climbing.

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

Are guardrails required for stairs?

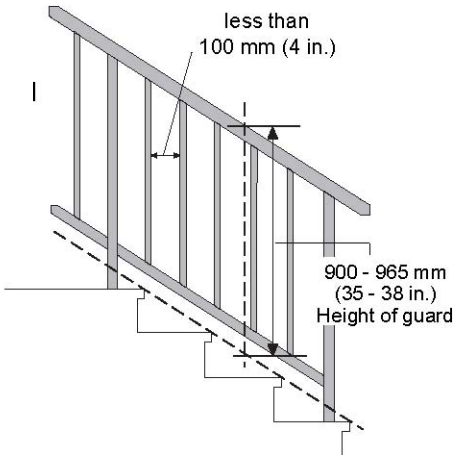
Stairs which have more than six (6) risers and which exceed 600 mm (2 ft.) above the finished ground level also require guardrails. These guards are to be located at least 900 mm (35 in.) in height measured vertically above a line drawn through the outside edges of the stair nosings. If the stairs have 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 800 mm (32 in.) and 965 mm (38 in.) in height measured vertically above a line drawn through the outside edges of the stair nosings. Stairs with 3 risers or less do not require handrails. There must be no member or attachment between 100 mm (4 in.) and 900 mm (35 in.) measured from the floor surface of the deck which will facilitate climbing.

In those cases where a stair also requires a guardrail, a reasonable solution is to provide a guardrail which also acts as a handrail, as shown in FIGURE 13.

Figure 13 – Combined Guardrail/handrail



Who enforces all of these requirements?

The Building Inspector of the Rural Municipality of Macdonald is assigned the responsibility of monitoring construction for compliance with the various Building Codes and By-Laws. This monitoring is carried out by means of the permit approval process and periodic site inspections.

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

Failure to obtain a building permit will result in the fee being doubled and the deck shall have to comply with the Manitoba Building Code (NBC 2010) minimum requirements.

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

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

For more information on the regulations for wood decks please contact:

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161 Mandan Drive
Sanford, Manitoba R0G 2J0

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