Building Wood Decks

middlesex centre

in the centre of it all

Note

It is beyond the scope of this booklet to deal with every possible situation as decks vary in shape and size. The following requirements and construction guidelines are provided to assist in designing and constructing wood decks in accordance with the current regulations. If the nature of the project is different than that contained in this booklet and you are not familiar with the regulations which may be applicable, it is recommended that you contact someone who is knowledgeable in this area.

The Middlesex Centre Building By-law is primarily an administrative document that adopts the Ontario Building Code and related standards to provide construction requirements. Throughout this booklet the information provided is based on the minimum standards set out in the Ontario Building Code and Municipal Zoning By-law. Every effort has been made to ensure the accuracy of information contained in this booklet. In the event of a discrepancy between this booklet and the governing Act, regulation or by-law, the Act, regulation or by-law will take precedence.

We encourage applicants to discuss their specific projects with Middlesex Centre Building Services staff prior to submitting an application.

Municipality of Middlesex Centre
519-666-0190 | 1-800-220-8968
building@middlesexcentre.ca
middlesexcentre.ca/building

Accessibility: If you require this document in a different format, or require assistance with any of the images, please contact Middlesex Centre Building Services staff at the address above.

Acknowledgement: This document is based on the Wood Deck booklet from the City of Sarnia.

Date: March 2022

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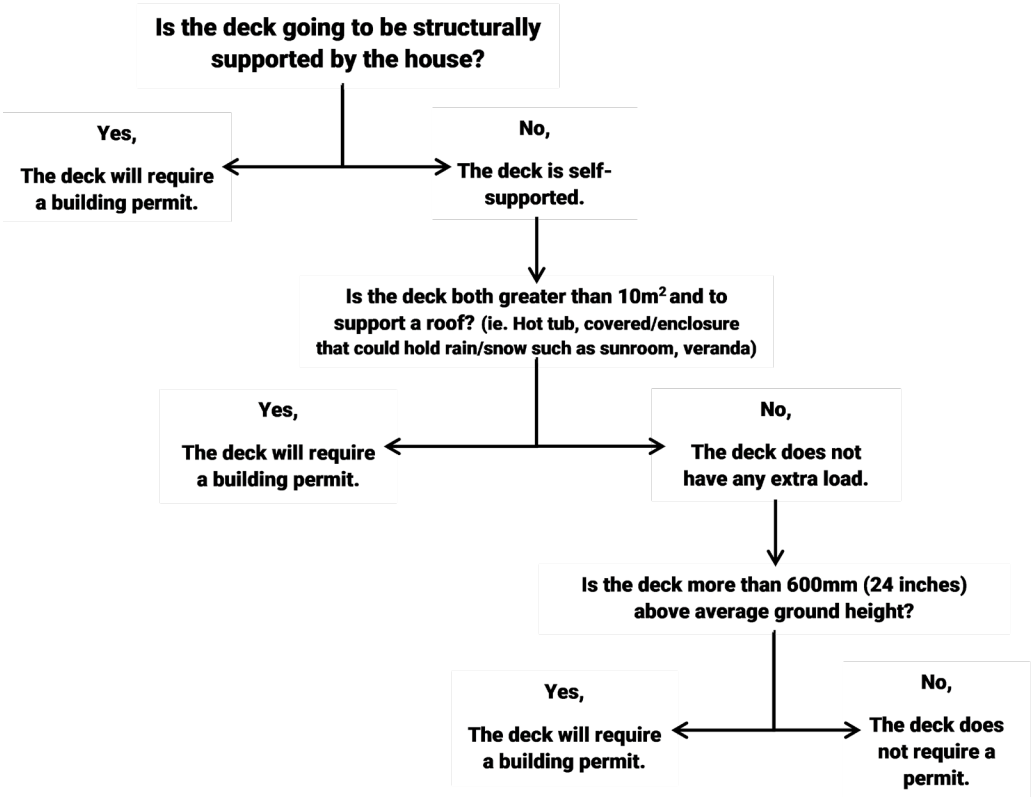
1.0 Getting Started

1.1 Do I Require a Building Permit?

A building permit may be required depending on various factors for each specific project. Use the following flowchart to see if your project requires a permit.

Figure 1: Deck Permit Flowchart



1.2 What is Needed to Apply for a Permit?

Once you have determined that a building permit is required, you need a few items to proceed:

- Site Plan,
- Detailed Structural/Construction Drawings,
- Schedule 1 Form,
- Fully completed application, and
- Approval from the conservation authority (if required, depending on if your project site is in a regulated area and the nature of the project you have planned).

2.0 Zoning and Site Plans

2.1 Setbacks on Site Plans

A setback is the distance proposed from property lines to the deck. It is important to indicate this on the site plan to ensure no encroachment will occur. Refer to figures 2, 3, and 4 for examples.

Figure 2: Example of Site Plan with Rear Yard Deck

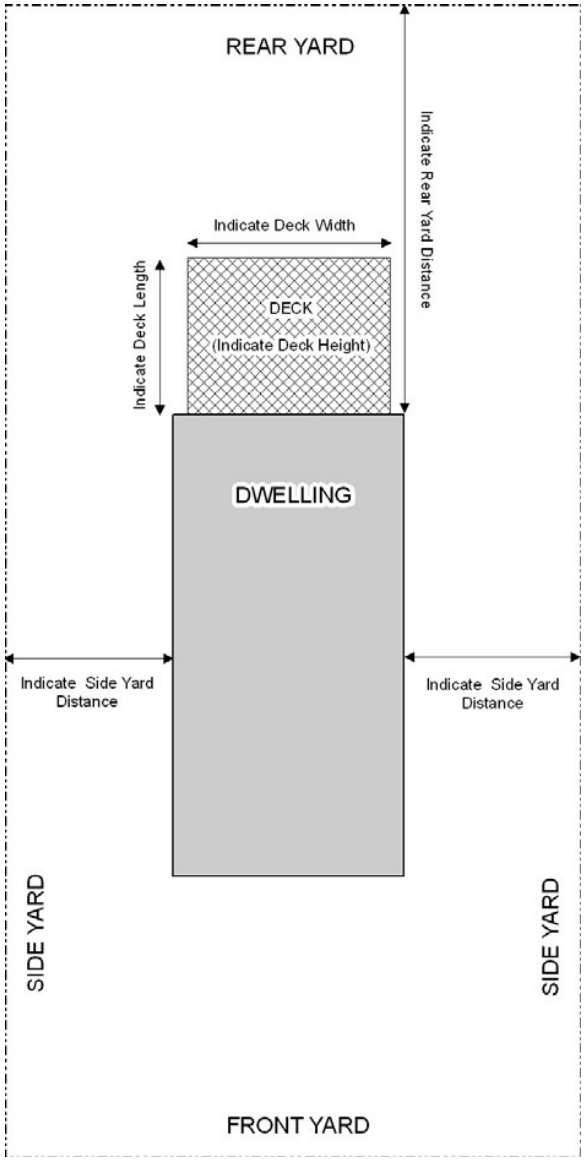


Figure 3: Example of Site Plan with Front Yard Deck

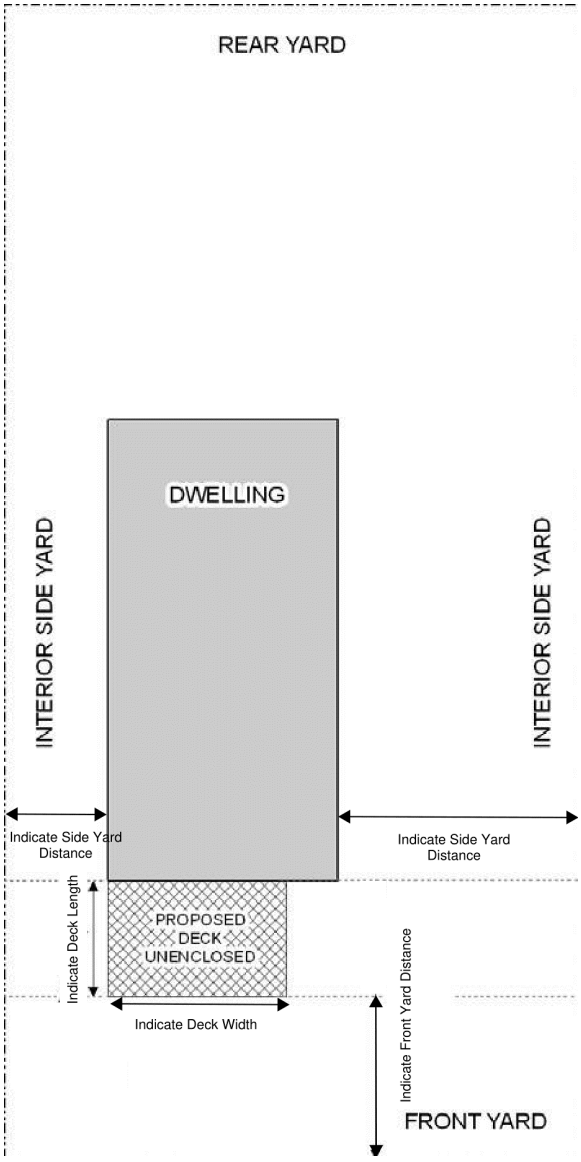
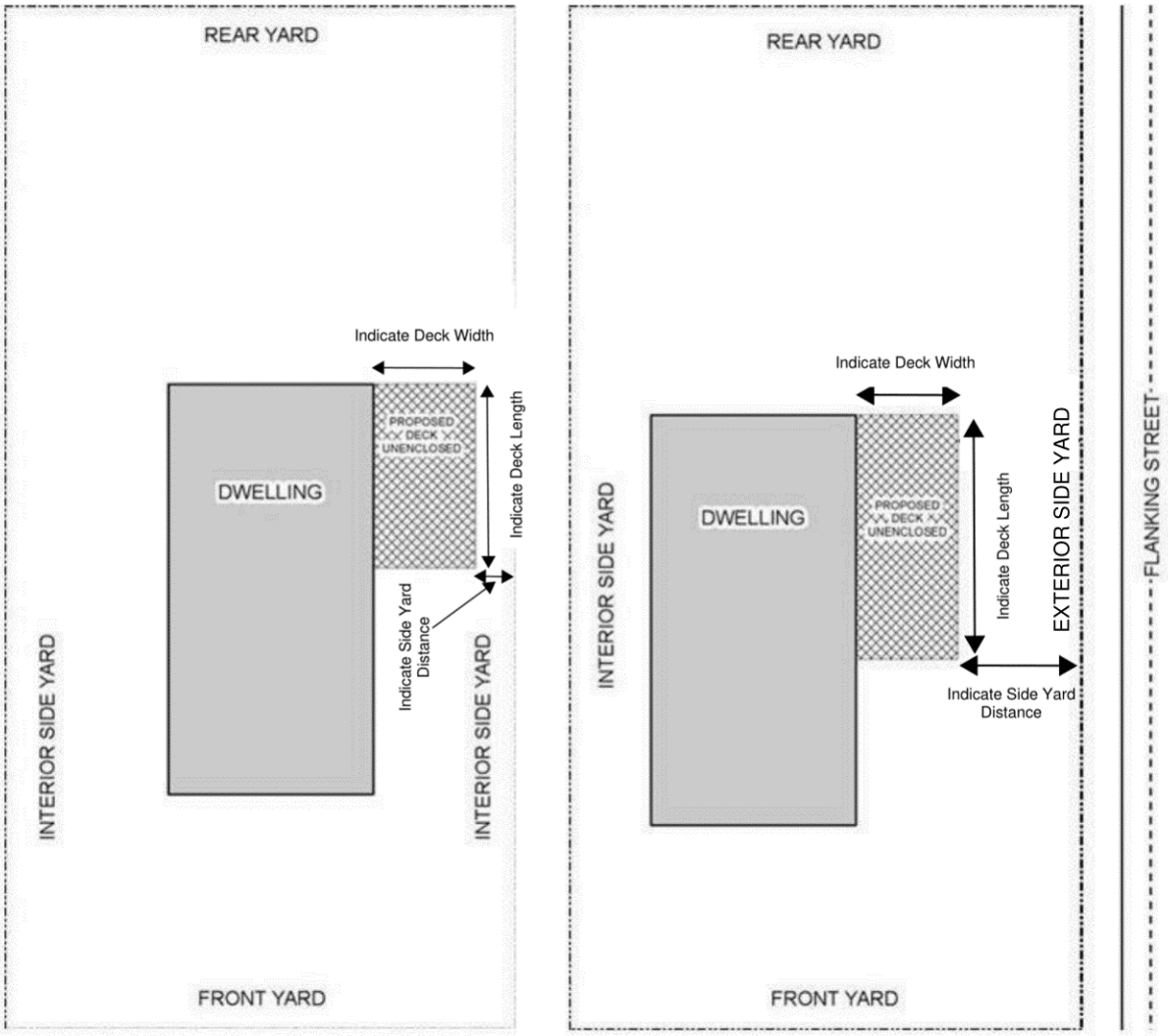


Figure 4: Example of Site Plan with Side Yard Deck



2.2 Lot Coverage

Lot coverage is the total area of enclosed structures on a property. Lot coverage is only affected if the deck has a roof that will hold snow.

2.3 More Information on Zoning Requirements

For more information on site specific zoning please contact Middlesex Centre.

If the zoning requirements for the minimum setbacks or lot coverage are not met, you will need to reduce the size of the deck or contact Middlesex County Planning Department for minor variance options.

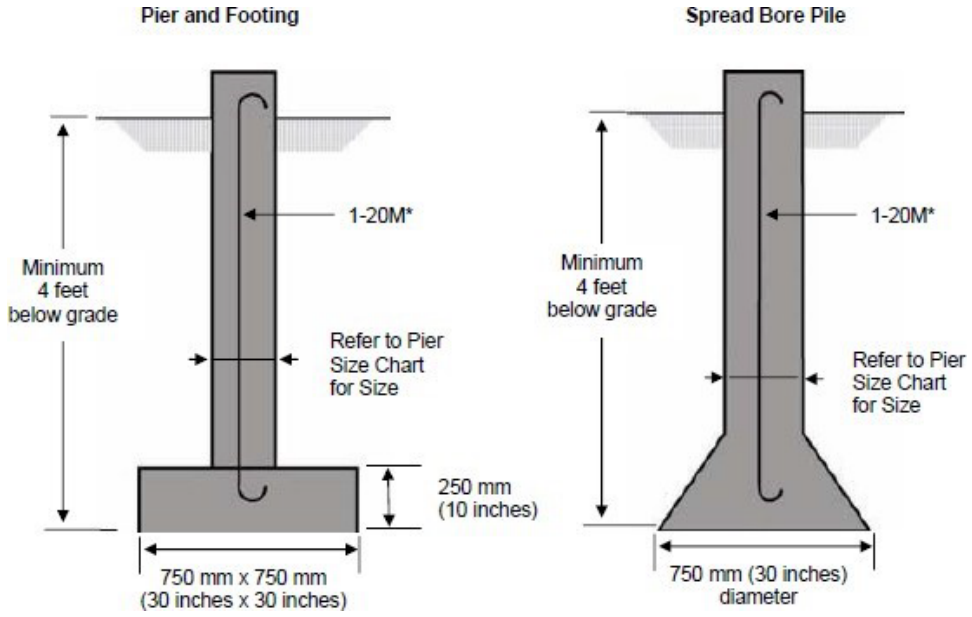
3.0 Structural/Construction Drawings

3.1 Foundations

Piles or Piers

Pile or pier foundations are to be used when building permits are required. The foundation depth must be at least the depth of frost penetration, 1.2m (48”). Alternatively, a foundation designed by a professional engineer can be used. See table below for maximum spacing and sizes for piers.

Figure 5: Pier and Pile Footings



** Refers to one 20mm diameter reinforcing bar (part of the better building practice)*

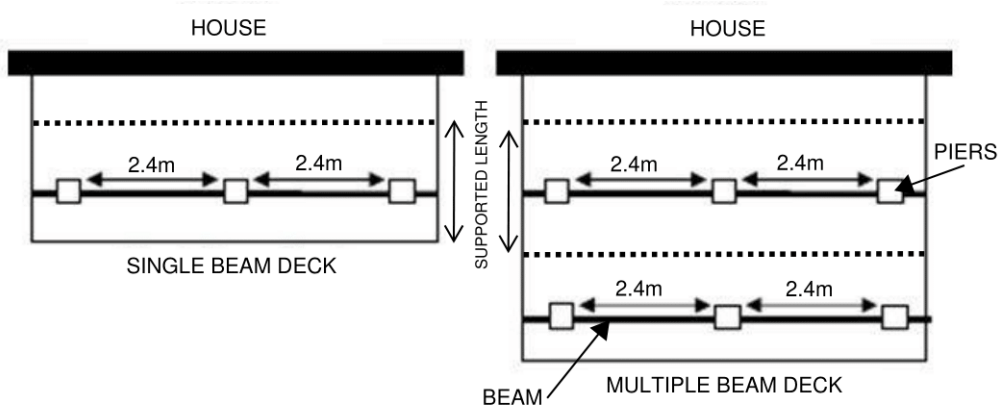
Table 1: Required Pier Sizes (Ø indicates diameter)

Supported Length*	1.2m (4ft.) pier spacing	1.8m (6ft.) pier spacing	2.4m (8 ft.) pier spacing	3.0m (10 ft.) pier spacing
1.2m (4 feet)	203mm Ø (8 in.) Ø	254mm Ø (10 in.) Ø	305mm Ø (10 in.) Ø	305mm Ø (14 in.) Ø
1.85m (6 feet)	203mm Ø (8 in.) Ø	254mm Ø (12 in.) Ø	305mm Ø (12 in.) Ø	305mm Ø (14 in.) Ø
2.4m (8 feet)	254mm Ø (10 in.) Ø	305mm Ø (12 in.) Ø	305mm Ø (14 in.) Ø	356mm Ø (14 in.) Ø
3.0m (10 feet)	254mm Ø (12 in.) Ø	305mm Ø (14 in.) Ø	356mm Ø (16 in.) Ø	406mm Ø (18 in.) Ø
3.7m (12 feet)	305mm Ø (14 in.) Ø	356mm Ø (16 in.) Ø	406mm Ø (18 in.) Ø	458mm Ø (18 in.) Ø

** 38mm x 184mm (2" x 8") joists required for wood railing support as per SB-7 of the Ontario Building Code*

** Please see Figure 8 for an example of supported length*

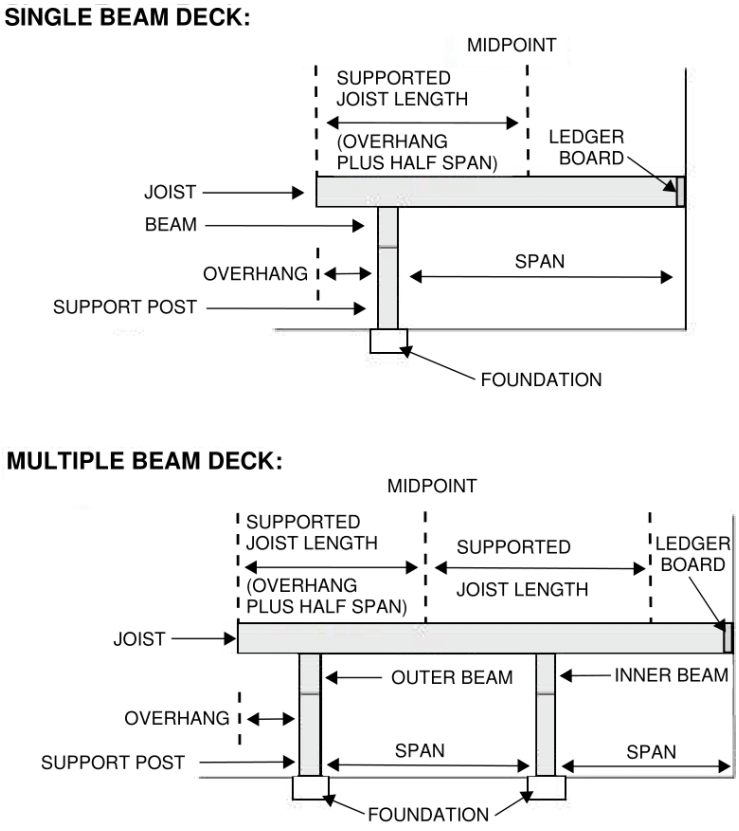
Figure 6: Deck indicating Beam Span and Foundation Spacing (Sample Floor Plan)



3.2 Structure

Once the footings are calculated, the deck structure is next. Use the figure below to indicate the required spans on deck drawings.

Figure 7: Deck indicating Joist Spans and Supported Length (Sample Elevation)



Posts

Posts should be 140mm x 140mm (6" x 6") and centered on the pile or pier and fastened to the beam by means of toe-nailing, wood gussets, angle brackets, or other equivalent method. Posts exceeding 1.5m (5ft.) in height should be braced to each other or to the beam and floor above. Alternatively, they should be anchored to the foundation/footings in order to prevent shifting at the bottom.

Beam Joints

Beam joints are only permitted on multi-span beams.

When joints are necessary, they should be situated on a support post.

- On multi-ply laminated beams, the joints should be staggered so the 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. The beam can project up to a maximum of 600mm (24") beyond the end support.
- Individual members must be nailed together with a double row of nails at least 89mm (3.5") apart in each row with the end nails located between 100mm (4") and 150mm (6") from the end of each piece.

The ledger board must be minimum of 38mm (2") thick and should be the depth of floor joist. It must be anchored to concrete foundation wall with staggered 12.7mm (1/2") anchors bolts 400mm (16") on centre and embedded no less than 100mm (4"). Alternatively, professional engineered connection may be permitted.

Table 2: Required Beam Sizes

Supported Length	1.2m (4ft.) pier spacing	1.8m (6ft.) pier spacing	2.4m (8 ft.) pier spacing	3.0m (10 ft.) pier spacing
1.85m (6 feet)	2-38x140 (2-2x6)	2-38x140 (2-2x6)	2-38x184 (2-2x8)	2-38x235 (2-2x10)
2.4m (8 feet)	2-38x140 (2-2x6)	2-38x184 (2-2x8)	2-38x235 (2-2x10)	2-38x286 (2-2x12)
3.0m (10 feet)	2-38x140 (2-2x6)	2-38x184 (2-2x8)	2-38x235 (2-2x10)	2-38x286 (2-2x12)
3.7m (12 feet)	2-38x140 (2-2x6)	2-38x184 (2-2x8)	2-38x235 (2-2x10)	2-38x286 (2-2x12)

** 38mm x 184mm (2" x 8") joists required for wood railing support as per SB-7 of the Ontario Building Code*

Deck Joists

Deck joist sizes are governed by the joist span and the spacing at which the joists are installed. Joist spans are measured from face of support to face of support. (In the case of a wood deck, from face of beam to the face of beam, or from face of the beam to the face of the ledger board.) Use the provide tables below to help decide joist sizes.

Another consideration when selecting the type, size and spacing of the joists is the type of material intended 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 selected.

Table 3: Required Joist Sizes

Joist Size	Joist Spacing 400mm (16") on centre	Joist Spacing 600mm (24") on centre
38mm x 140mm (2" x 6")*	2,845mm (9' 4")	2,489mm (8' 2")
38mm x 184mm (2" x 8")	3,353mm (11' 0")	3,200mm (10' 6")
38mm x 235mm (2" x 10")	3,962mm (13' 0")	3,759mm (12' 4")

** 38mm x 184mm (2" x 8") joists required for wood railing support as per SB-7 of the Ontario Building Code*

Joists are limited to a 600mm (24") projection. If you are planning to eventually enclose all or a portion of the deck with a roofed structure which could carry snow, the Ontario Building Code states that the joists can only project:

- 400mm (15.8") where 38mm x 184mm (2" x 8") joists are used
- 600mm (24") where 38mm x 235mm (2" x 10") or larger joists are used.
- The projection of 38mm x 140mm (2" x 6") joists would require engineering analysis to determine if the floor assembly would be sufficient to carry the superimposed roof loads.

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 4: Minimum Size of Floor Elements

Floor Element	Minimum Size mm (in)	Maximum Joist Spacing mm (in)
Dimension Lumber Decking	25mm x 140mm (5/4" x 6"), when each plank is fastened with 2-63mm (2-1/2") nails	406mm (16") on centre
Dimension Lumber Decking	38mm x 89mm (2" x 4"), when each plank is fastened with 2 -76mm (3") nails	610mm (24") on centre

3.3 Pressure Treated Deck Elements

When the vertical clearances between the wood elements and the finished ground level is less than 150mm (6”), in contact with concrete, or when elements are not protected from exposure to precipitation, they must be pressure treated with a preservative to resist decay.

All cut ends of preservative treated lumber shall be treated to prevent decay.

3.4 Stairs, Guardrails & Handrails

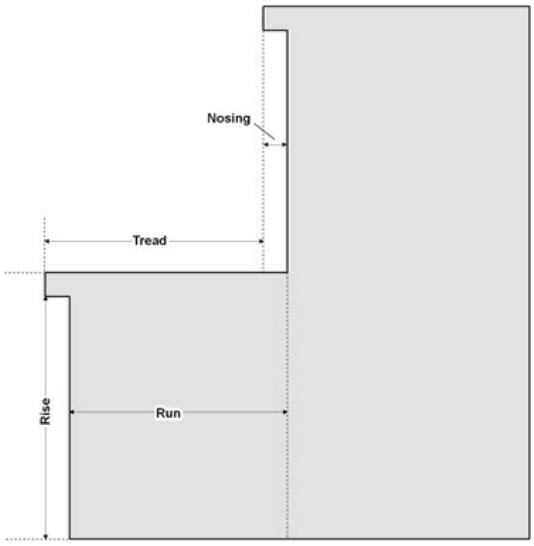
Stairs

Stairs must comply with the Ontario Building Code. Stairs shall not be less 860mm (2.8ft.) wide and with a tread to be between the minimum and maximum run, plus 25mm.

Table 5: Minimum Stair Rise and Run

Stair	Minimum	Maximum
Rise	125mm 4.9”	200mm 7.8”
Run	255mm 10”	355mm 14”

Figure 8: Stair Tread Detail



Guardrails and Handrails

Guardrails are intended to prevent people from falling off the edge of a stair or raised floor area such as a deck whereas handrails are installed in areas for graspable support. The guardrail must be able to withstand the pressure of a human body applied horizontally to it.

Requirements of guardrails/handrails:

- They are only required on decks that are more than 600mm above finished ground level.
- Guardrails shall not be less than 900mm (3ft.) high where the walking surface of the deck is not more than 1800mm (6ft.) above the finished ground level, and 1070mm (3.5ft.) high where the walking surface exceeds 1800mm (6ft.)
- Openings in the guardrail must prevent the passage of a spherical object having a diameter of 100mm (4").
- Required guardrails shall be designed so no member attached or opening will facilitate climbing.
- Pre-manufactured guardrails must have CSA, ULC OR MEC approval. If you are purchasing a system please provide a copy of approvals from the supplier to provide the Municipality of Middlesex Centre at the time of inspection.
- Benches cannot serve as a guardrail 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.

For further questions about guardrail/handrails refer to SB-7 of the Ontario Building Code (which you can find online) or consult with the Municipality of Middlesex Centre Building Department.

Table 6: Minimum size of Loadbearing Elements

Guard Element	Minimum Size mm (in)
Top Rail	38mm x 89mm (2" x 4")
Bottom Rail	38mm x 89mm (2" x 4")
Picket/Baluster	32mm x 32mm (1-9/32" x 1-9/32")

Figure 9: Example of Guardrail Height Depending on Height from Ground

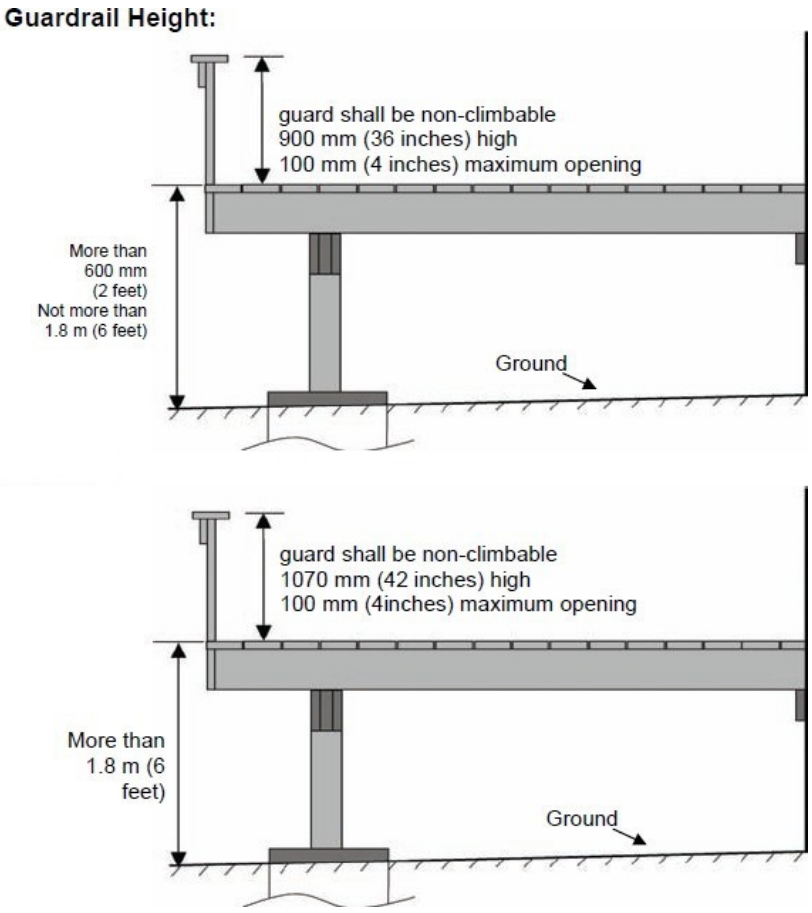
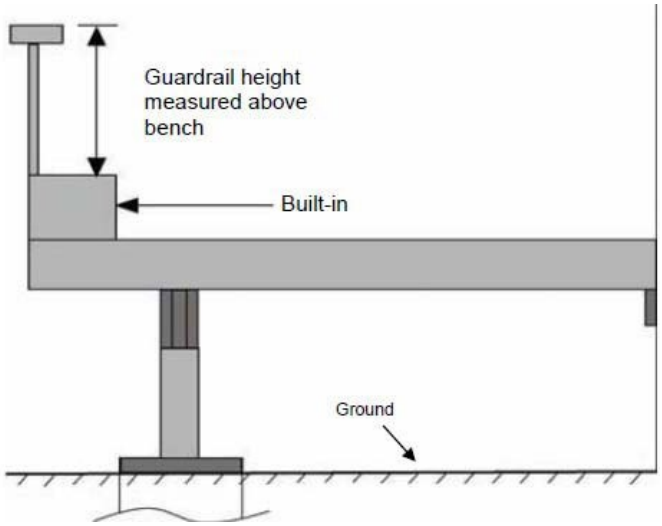
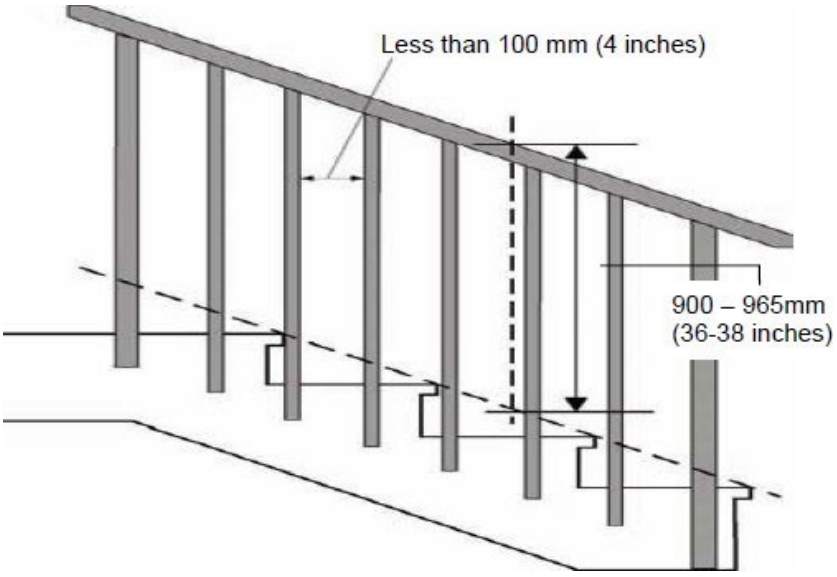


Figure 10: Example of Guardrail on Built-in Bench



Guardrails are also required on stairs where there is a difference in elevation of more than 600mm (2ft.) to finished ground level. The height of guards for flights of steps shall be 900mm (3ft.) and be measured vertically from the top of the handrail to a line drawn through the leading edge of the treads served by the guard. The Building Code states that if any outside stair has more than three risers, a handrail is required on one side of the stair. The handrail is to be located between 800mm and 965mm in height measured vertically above a line drawn through the outside edges of the stair nosing. Stairs with 3 risers or less do not require handrails.

Figure 11: Guardrail on Stairs

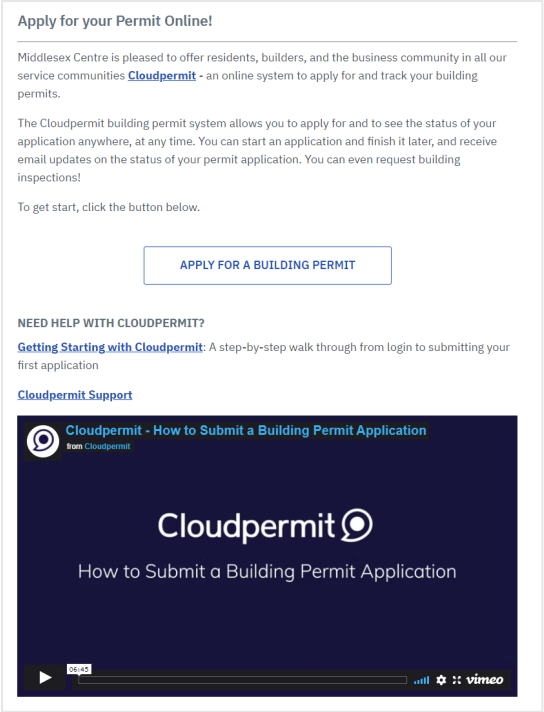


4.0 Applying for a Permit

Once the site plan and the construction drawings are complete, visit the Middlesex Centre website (middlesexcentre.ca/building) to apply for your building permit

On the building page, scroll down until you see "Apply for your Permit Online" and click on the box "APPLY FOR A BUILDING PERMIT." If you are new to the online building permit system, make sure to check out the step-by-step video showing the process of applying through Cloudpermit.

Figure 12: Middlesex Centre Building Page with Link to Cloudpermit and How to Apply Video



4.1 Application Form, Schedule 1, and Conservation Authority Approval

At Middlesex Centre there are NO paper application forms. Applications are completed once submitted through Cloudpermit.

A Schedule 1 must be filled by a qualified designer or the homeowner. You can download a fillable PDF through the building page on the municipality's website.

Please note that if you are constructing in a Conservation Authority regulated area such as a floodplain you may require additional approval in the form of a letter or permit. Please contact Middlesex Centre or your Conservation Authority to see if your property is regulated.