City of Peterborough Residential Deck Guide

When applying for a building permit to construct a deck, you must have certain basic information about the construction for the application to be complete and accepted by the Building Division. **If you do not have all this information, your application is incomplete, and a building permit cannot be issued.** The Building Services Division will aid you in this process.

This guide is for informational purposes only and is an aid to the Ontario Building Code (OBC). It does not cover all construction requirements referenced in the code. It is the responsibility of the Applicant/ Designer to review the building code in relation to their project to ensure that all information is complete, accurate and up to date.

You may also visit the City of Peterborough's website to obtain information on applying for a building permit, or to obtain the required forms: http://www.peterborough.ca/Business/Building.htm

Q: **How are Building Permit Applications Processed?**

A: The Building Services Division staff review your application in terms of completeness and compliance. These requirements are set out by:

- The Ministry of Municipal Affairs and Housing (provincial level governance) and are outlined in the Ontario Building Code (OBC).
- The local zoning by-Law (municipal level governance, in this case City of Peterborough)
- All other applicable laws under the authority of the following agencies or City Departments, such as, but not limited to:
  - Otonabee Region Conservation Authority (ORCA)
  - Heritage Preservation
  - Canadian Aeronautics Act (Airport Obstacle Limitation Surface Area)

Depending on the location of your property, you may need to request approvals from other agencies or City Departments. Staff at the Building Services Division can direct you whether this is required for your property. ***If any approvals are required for your proposed construction, these will need to be obtained from the agency or City Department prior to submitting your application to Building Services.***

Otonabee Region Conservation Authority (ORCA) - The City has a Development Control Area designated within the City of Peterborough where Otonabee Region Conservation Authority has jurisdiction. These areas include wetlands, flood plain and hazard lands that have been identified. For more information, contact ORCA at 705-745-5791 or www.otonabee.com**.** To place a general property inquiry, contact https://www.otonabeeconservation.com/property-inquiry-ticket/

Heritage Preservation - Some properties within the City have been designated as Heritage or are within the Heritage Control District. These properties are generally located within historic neighbourhoods in the City. For more information contact the Heritage preservation Officer at ehanson@peterborough.ca.

Urban Forestry – may be contacted treebylaw@peterborough.ca if your proposed construction involves the destruction of any trees.

Q: **Who is permitted to design the deck?**

A: The homeowner (person on title) is permitted to design the deck. If the homeowner is not preparing the design, it must be designed by a qualified designer with a minimum qualification of **BCIN House**. This requirement is set by The Ministry of Municipal Affairs and Housing. A form called Schedule 1: Designer Information, must be completed.

Q: **Who is permitted to construct the deck?**

A: Anyone is permitted to construct the deck once a building permit has been obtained. It is the responsibility of the homeowner to ensure that:

- A building permit has been obtained.
- The work complies with the Ontario Building Code.
- The required building inspections have been scheduled.
- The building permit has been closed once the construction is deemed complete by the building inspector.

Ensure that as the homeowner, you are confident with your contractor's ability to complete the project, prior to commencing the work, to reduce any potential problems that may arise during construction.

If the homeowner is not the applicant on the building permit application, an Authorization to Act as Agent form is required to be completed. The form is available at the Building Services Division, or on the City of Peterborough website.

Q: **Do I need a building permit to reconstruct or repair the same size and style of deck?**

A: Yes, even if you are reconstructing or repairing the same size deck, a building permit is required. If the deck you are repairing or replacing was constructed prior to the current Ontario Building Code, there may be new requirements for the construction in the Ontario Building Code that will need to be met.

Constructing, repairing, or reconstructing without the authority of a building permit may result in extra fees for Building Code Act Orders or extra fees for the building permit application. It may also result in extra costs for additional materials, or for a professional engineer's design (P.Eng review) being required to bring the deck in to compliance with the Ontario Building Code (OBC).

Q: **What size of deck am I permitted to construct on my property?**

A: Contact the Building Services Division. Staff will review the zoning of your property and provide regulations based on the by-law requirements for your property (setbacks to lot lines, permitted height of deck, etc).

Q. **What building materials and construction methods do I want to use to construct my deck?**

A: Considering what building materials and construction methods that you intend on using to construct your deck during the early stages of planning will aid in eliminating delays in obtaining building permit. It will also eliminate frustration on site during construction.

If you are unsure about any building materials or construction practices, Building Services staff will aid you in determining OBC compliance.

<u>Considerations at this stage include:</u>

- □ How high from the finished ground is the deck?
- □ What type of foundation system will be used?
- □ Will it be connected to the house and if so, is it connected to the foundation or rim board?
- □ What type of decking will be used?
- □ What type and style of guard will be used?
- □ Will the deck have stairs?

Q: **Am I allowed to install a hot tub on my deck?**

A: If you are planning to place a hot tub on the proposed deck, it will require a Professional Engineer's review due to the increased weight introduced by the hot tub. A building permit is required to retrofit an existing deck to accommodate a new hot tub. A permit from the Electrical Safety Authority (ESA) will be required for the installation of the electrical service for the hot tub. The ESA may be contacted at 1-877-372-7233. A hot tub may also need a pool enclosure permit. Contact the By-law Enforcement Officer at 705-742-7777 ext.1784 for more information.

Q: **Why do I have to go through all this for a deck?**

A: Decks are very simple structures, and do not have the same structural requirements as buildings. But a deck is also directly subjected to wind, rain, and snow loads, as well as being fully exposed to the elements. Often decks will fail slowly over time resulting in damage to not only the deck, but often the house. Occasionally decks can have catastrophic failures which could not only result in loss of life or injury, but also in liability if the deck was constructed improperly or without a Building Permit. You could also be held personally liable. Don't let this happen to you!

Q: **What drawings are required as part of the building permit application?**

A: When making a building permit application for a deck or platform, the following drawings are required:

1. **Site Plan**
2. **Foundation/Framing plan**
3. **Cross Section Drawing (including any stair and guard information)**

When designing your deck, also consider:

- **The location of any existing overhead wires such as hydro lines**
- **The hydro or gas meter locations**
- **Will any windows or doors become obstructed?**

If any new openings, such as doors are proposed leading to the deck, they must be clearly indicated on the drawing with location, size and required framing (lintel).

1. THE SITE PLAN

The Site Plan is a requirement that must accompany building permit applications to show the proposed construction and or demolition on the property. The plan should be drawn to an appropriate scale. A copy of your location survey plan may be used as a basis to prepare a site sketch, however, only the surveyor may alter the registered copy of the survey for submission with your application. If you are not capable of preparing an accurate site plan, you may hire someone to prepare it for you.

As the property owner, you are responsible for the accuracy of the information provided to the Building Services Division. If a location survey prepared by an Ontario Land Surveyor is not provided, you may be required to provide one showing the limits of your property, the structures, and setbacks to the lot lines.

Please refer to the Building Services Division *Site Plan Requirements* handout for further information on the drawing requirements and a sample drawing for reference.

2. THE FOUNDATION/FRAMING PLAN

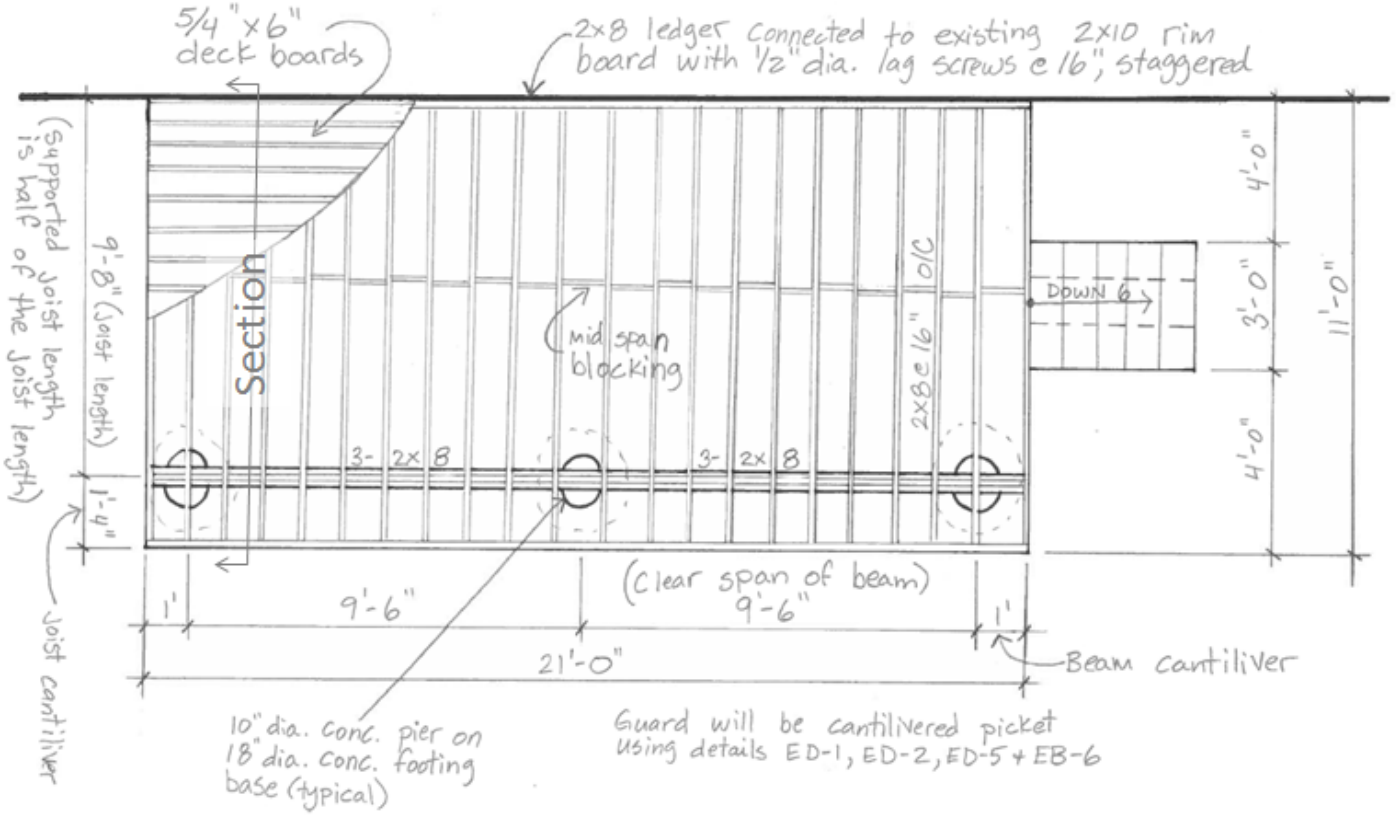
The Foundation/Framing Plan explains the structural components of the proposed construction in a "bird's eye view". This drawing clearly indicates the distance between foundation and post elements and the length and size of framing elements being used (beam length, joist length and sizes).

The Foundation/Framing Plan ***must*** clearly indicate the following information:

- □ Foundation plan detailing
- □ Footing size and location
- □ Size, span, and direction of beams
- □ Size, span, and direction of floor joists
- □ Size, type, and direction of decking
- □ Clear dimensions of all components
- □ Clear overall dimensions of deck design

The items on the check list above will be explained in more detail in the following pages of this guide.

If the proposed deck structure will have stairs and/ or landings, ensure that construction details are also clearly indicated on the Foundation/ Framing plan.



Footing size: Clear span of beam (**9'-6"**) and half of the clear span of the supported joist + the joist cantilever (half of 9'-8" which is 4'-10" + joist cantilever 1'-4" = **6'-2"**). Refer to the Table on Page 12.
Beam size: Clear span of the beam (**9'-6"**) and the supported length of the joists (**6'-2"**). Refer to the first table on Page 13.
Joist size: The clear span of the joist between bearing points (**9'-8")**. Refer to the second table on page 13.

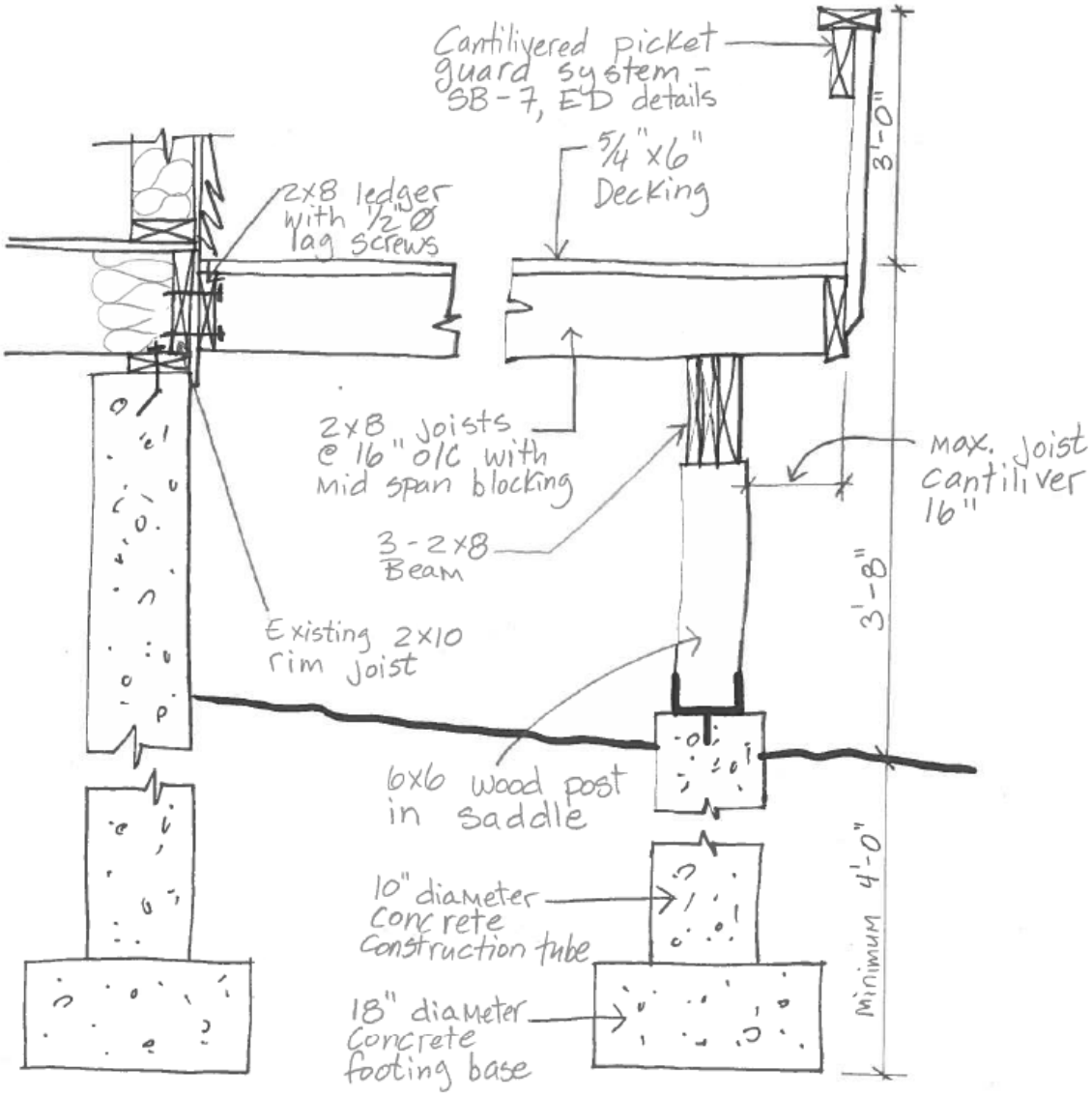
3. THE CROSS-SECTION DRAWING

The Cross Section Drawing clearly indicates the general appearance of the deck and how the proposed components will be constructed. This includes information pertaining to the guard if one is required.

The Cross Section ***must*** clearly indicate the following applicable items:

- □ Type of footing being used and the proposed depth
- □ Height of deck walking surface above finished grade
- □ Height of guard above walking surface (if a guard is required)
- □ Height of the proposed guard
- □ Any details pertaining to the stair construction
- □ Guard construction (type proposed and any details)
- □ Details, such as deck to house (ledger) connection
- □ Lateral bracing if required

The items on the check list above will be explained in more detail in the following pages of this guide.



Foundations Systems

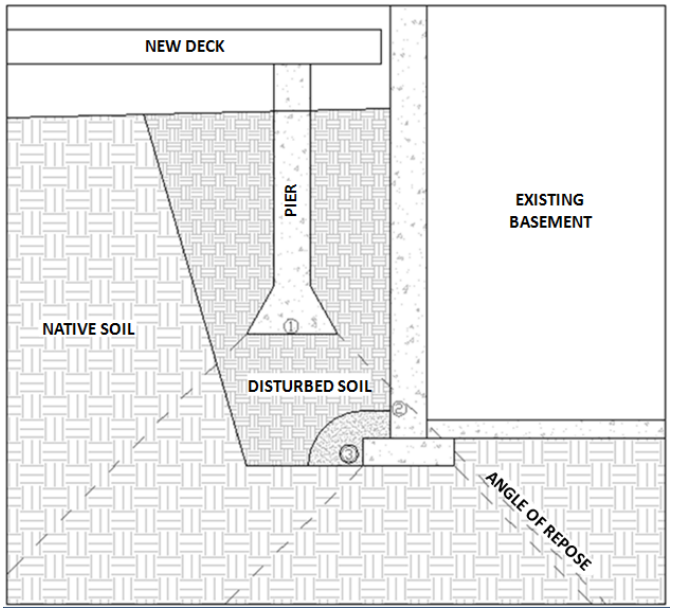
Some of the more commonly used types of foundations that are permitted include:

- Helical Pile (This is an engineered foundation. The building permit application must contain the engineered design from a qualified individual.)
- Pre-engineered bell-shaped foundation forms (examples: Footing Tubes, Bigfoot)
- Construction tubes (Sono Tubes)
- Concrete block

Pre-engineered bell-shaped foundation systems such as Bigfoot or Footing Tube are becoming increasingly popular. These are proprietary systems and ***must be*** installed as per the manufacturer's engineering, as they have determined the allowable loads and/or spacing requirements.

Both *The Footing Tube* and *Bigfoot Systems* are proprietary products that have been tested. The Footing Tube testing report is CCMC 13309-R, and Bigfoot Systems testing report is 12839-R. Both explain how these products work, as well as how to calculate the distances for their use.

Unless designed by a professional engineer, any footings that will be located within 1.5m (5'-0") of an existing building, must extend to native bearing soil and the same footing depth as the foundation system that it is adjacent to.



Unacceptable Installation of a Foundation

Regardless of which foundation style is proposed, the footing of the foundation must always bear on undisturbed soil. Disturbed soil is material that has been backfilled, and may compact over time, causing the structure to move.

Foundations must extend to a minimum of 1.2m (4') below the finished grade. This is to prevent frost heave which may cause the deck foundation to fail by pushing it up during the winter and allowing it to settle during the spring. If the deck is connected to the house structure, it may also cause the structure to fail over time.

After installing a foundation system, it must be backfilled in such a way that will prevent damage.

New foundations must not interfere with existing foundation drainage systems.

Floating Decks

Floating decks are constructed without a full depth foundation system (no frost protection)
Floating decks are permitted when the proposed deck ***meets all*** of the following conditions

- The deck is under 600mm (23-5/8") in height,
- The deck is not attached to any structure,
- The deck is not supporting a roof, and
- The area of the deck is not more than 55m² (592 ft²)

A building permit is still required if you are intending on constructing a floating deck.

Framing Design and Materials

A deck is typically constructed using columns, beams, joists, and decking. The section of the OBC pertaining to decks is very specific as to what materials are permitted to be used, and how they are permitted to be used. Any proposed deviations from these may result in the requirement of a Part 4 Design by a Professional Engineer. If a proprietary material or product is proposed, it is required to have documentation indicating its compliance with the OBC.

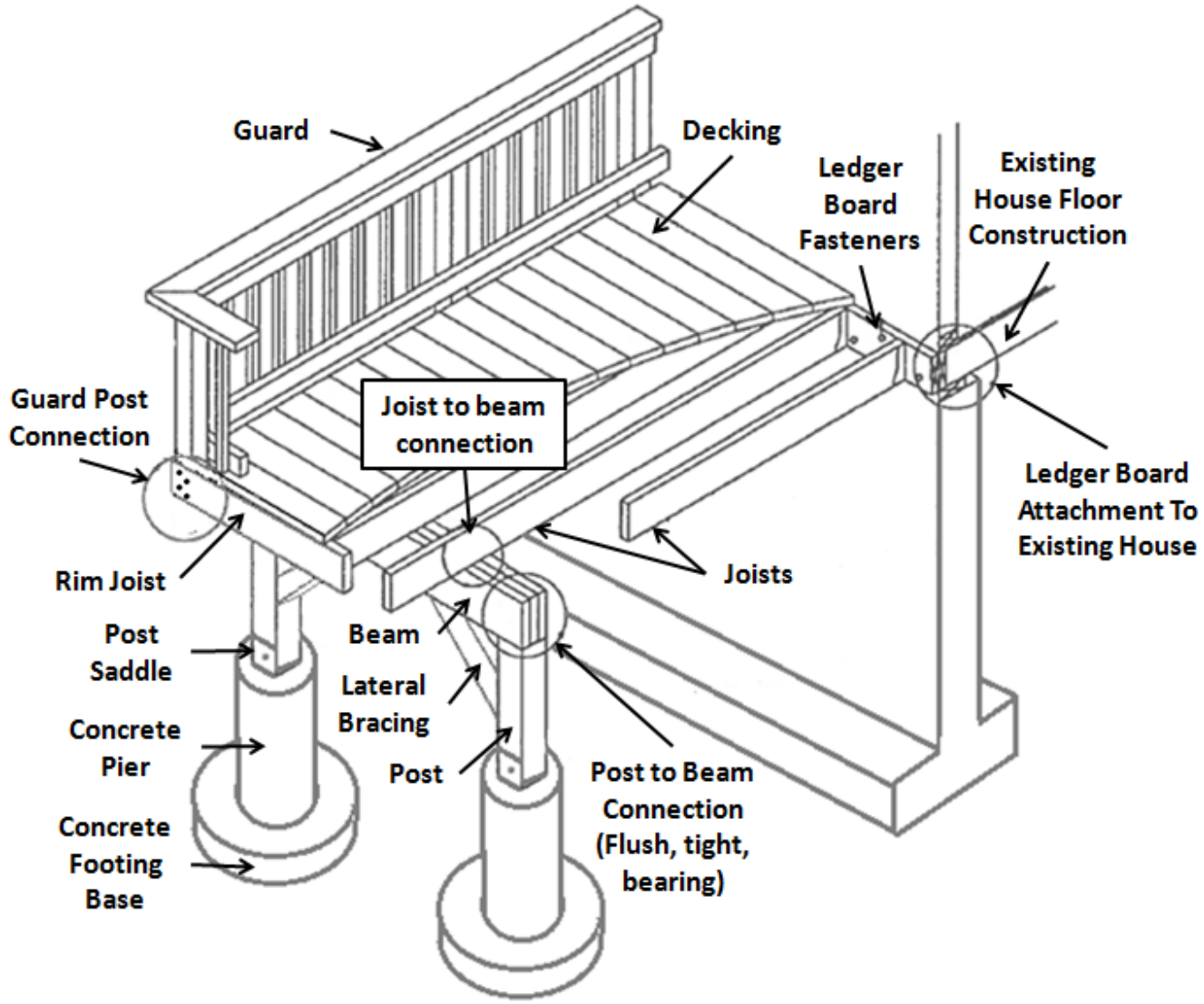


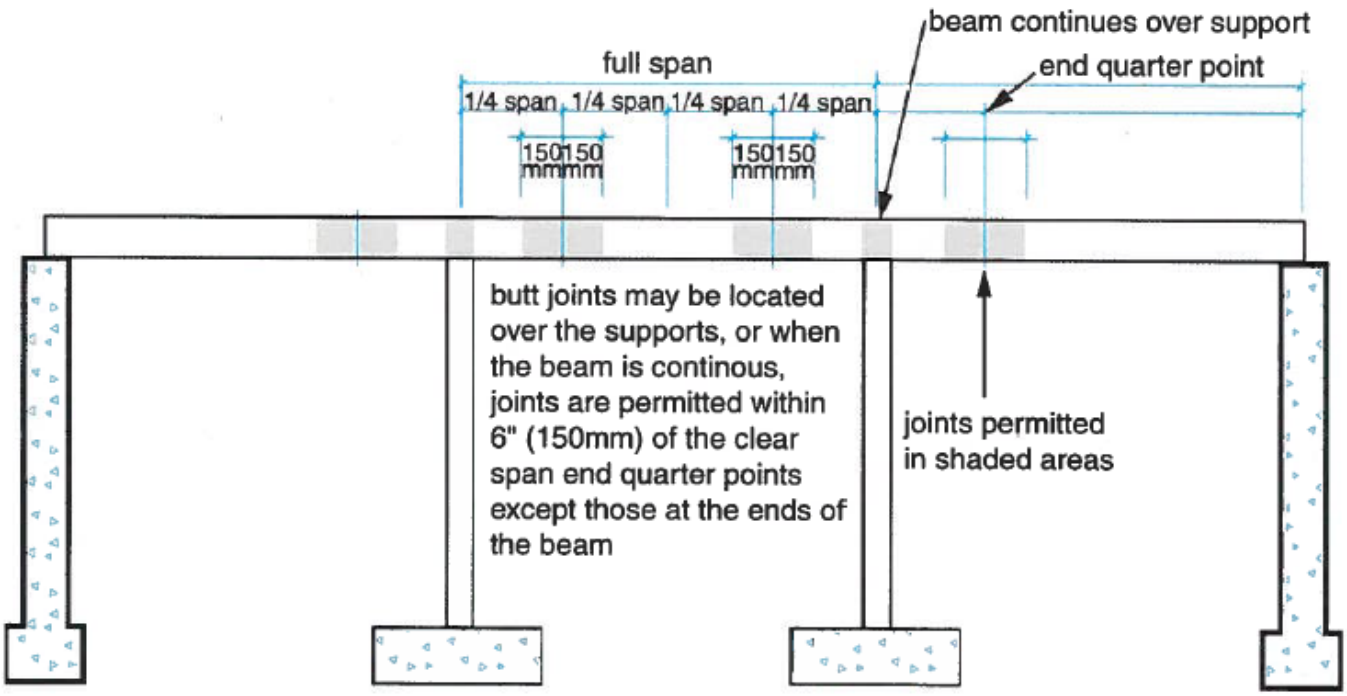
Diagram with terminology of the components that make up a deck

Columns: are the vertical members that transfer and carry the load from the beam system to the foundation system. Columns for decks are typically constructed of wood; but may also be steel, solid concrete, or concrete masonry.

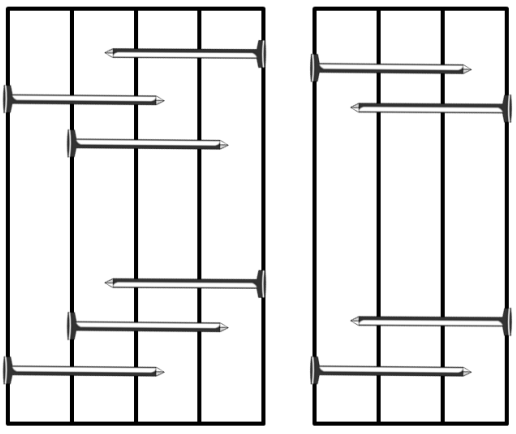
- Wood columns must be the greater of 140mm x 140mm (5.5" x 5.5" and are commonly referred to as 6"x6") **or** the width of the supported member (ex: 3-2x8 beam).
- Columns that are greater than 600mm (23 5/8") in length are required to be laterally supported.

Beams: are the horizontal structural members that transfer the load from the floor system to the columns. Beams are typically constructed of built-up pieces (ply's) of graded lumber (ex: 3-2x8).

- Two ply beams are **not permitted** without an engineer design.
- It is recommended that beams be installed so that they are comprised of full-length plies. When it is not feasible to use a full length, it is permissible to splice a beam to increase the length. Ideally it would be spliced directly over a mid-support (ex. center column in a deck with 3 or more supports).



PERMISSIBLE JOINT LOCATIONS IN BUILT-UP BEAMS



If using nails to fasten the beam plies the nailing pattern indicated in the end view of both 4 ply and 3 ply beams above are required.

When beams are continuous over more than one span, joints are permitted at or within 150mm of the end quarter of the clear span, provided the joints are not those closest to the ends of the beam.

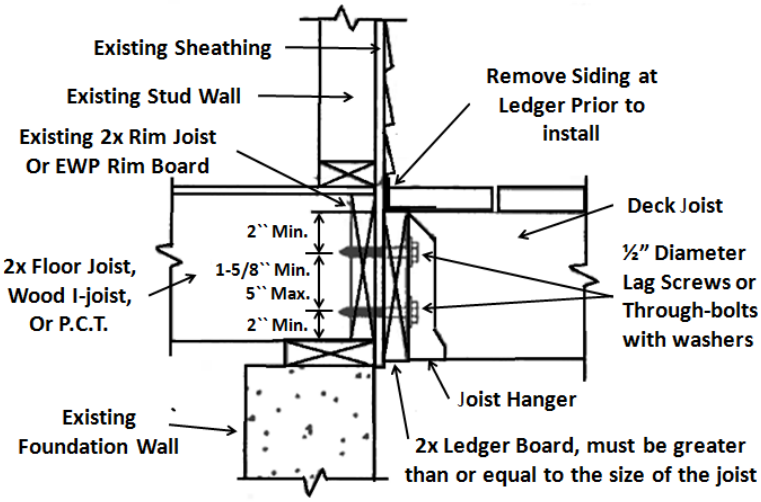
Beams are permitted to be fastened using nails that are a minimum of 89mm in length and spaced not more than 450mm apart. Nails are also required to be between 100mm to 150mm from the end of each piece.

Beams are also permitted to be fastened together with 12.7mm diameter bolts and must be equipped with washers. Bolt spacing is a maximum of 1200mm. Bolts must also be located not more than 600mm from the ends of members.

Joists: Are the part of the flooring system that transfers the load of the decking to the beams. The spacing of the joists will often be determined based on the choice of decking and installation.

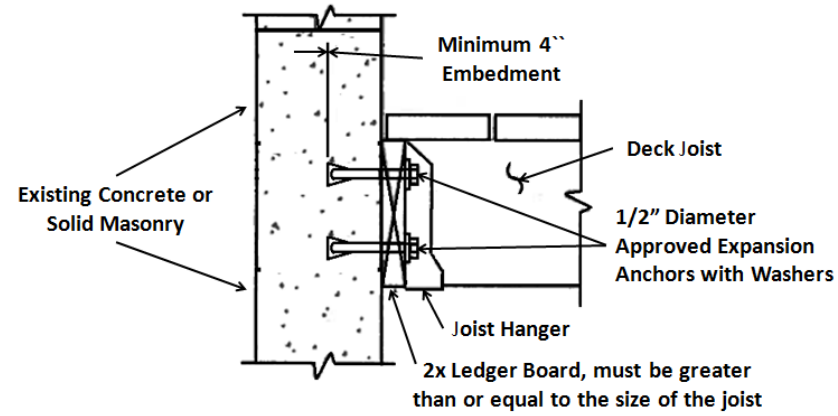
- Typically, joists are permitted to cantilever 400mm (16”) if 2x8 is used, or 600mm (24”) if the joist depth is 2x10 or greater.
- If your deck will require a guard (often referred to as a railing), the minimum joist depth permitted is 2x8. Refer to the SB-7 Guards for Residential Decks handout.

Ledger plate: is a 2x board that at a minimum matches the depth of the joist being used. It is fastened to the exterior wall of a building, usually to the foundation or through to the rim board of the floor system of the building.

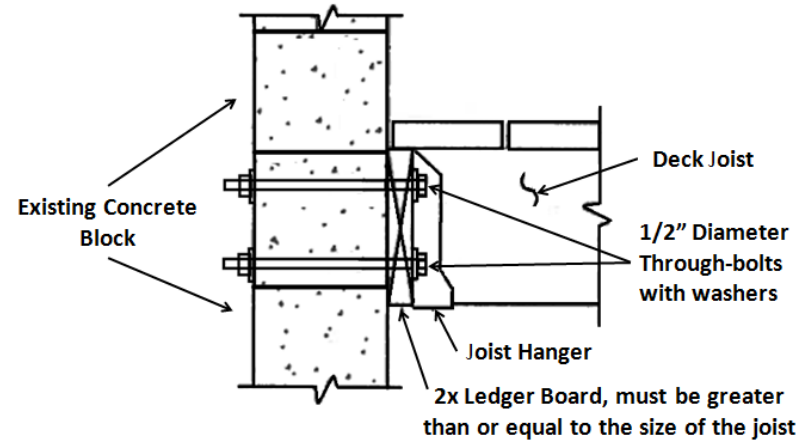


A typical ledger connection through to the rim board.

Part 4 Detail may be required for Engineered Wood Product (EWP) Rim Board Applications



A typical ledger connection into a poured concrete foundation wall.

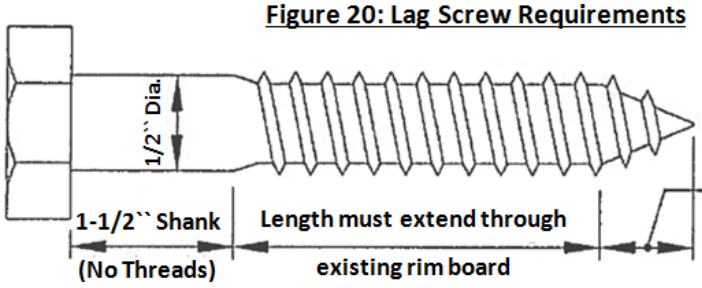


A typical ledger connection through concrete block.

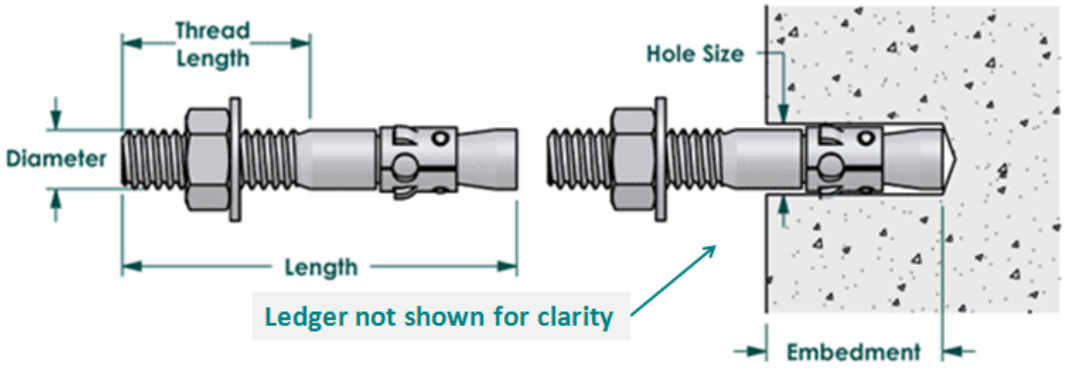
If the ledger is connected to a rubble foundation or multiple wythes of masonry a Part 4 P.Eng. Design is required

Fastening a Ledger plate through masonry veneer is a Part 4 connection.

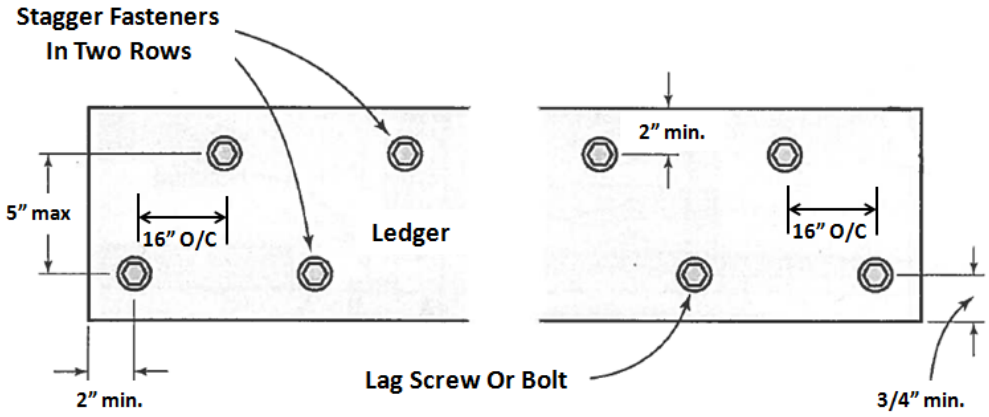
Figure 20: Lag Screw Requirements



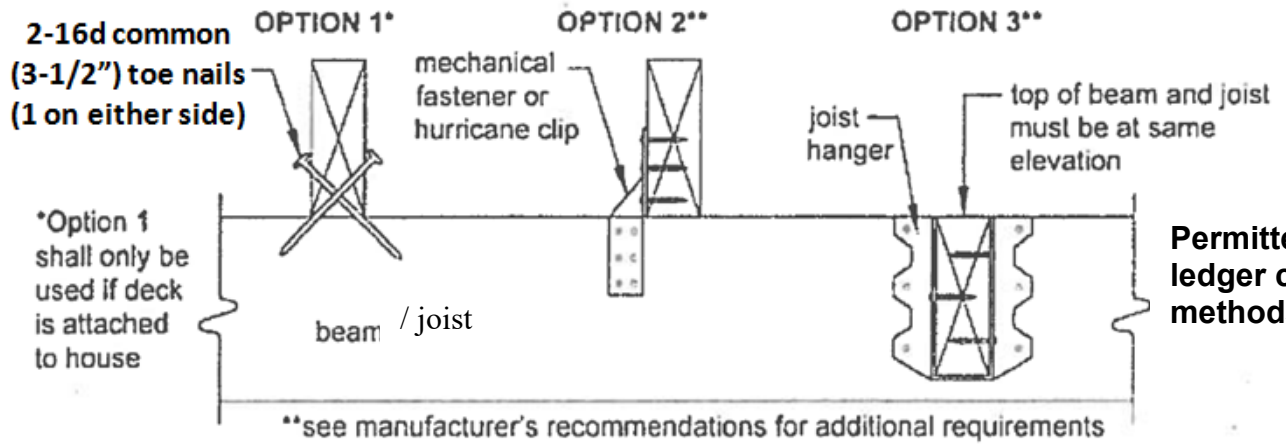
Lag Screws:
are designed to go through ledger board into solid wood rim boards.



Wedge Anchors:
are designed to go through the ledger board and be embedded into the concrete of a foundation wall.



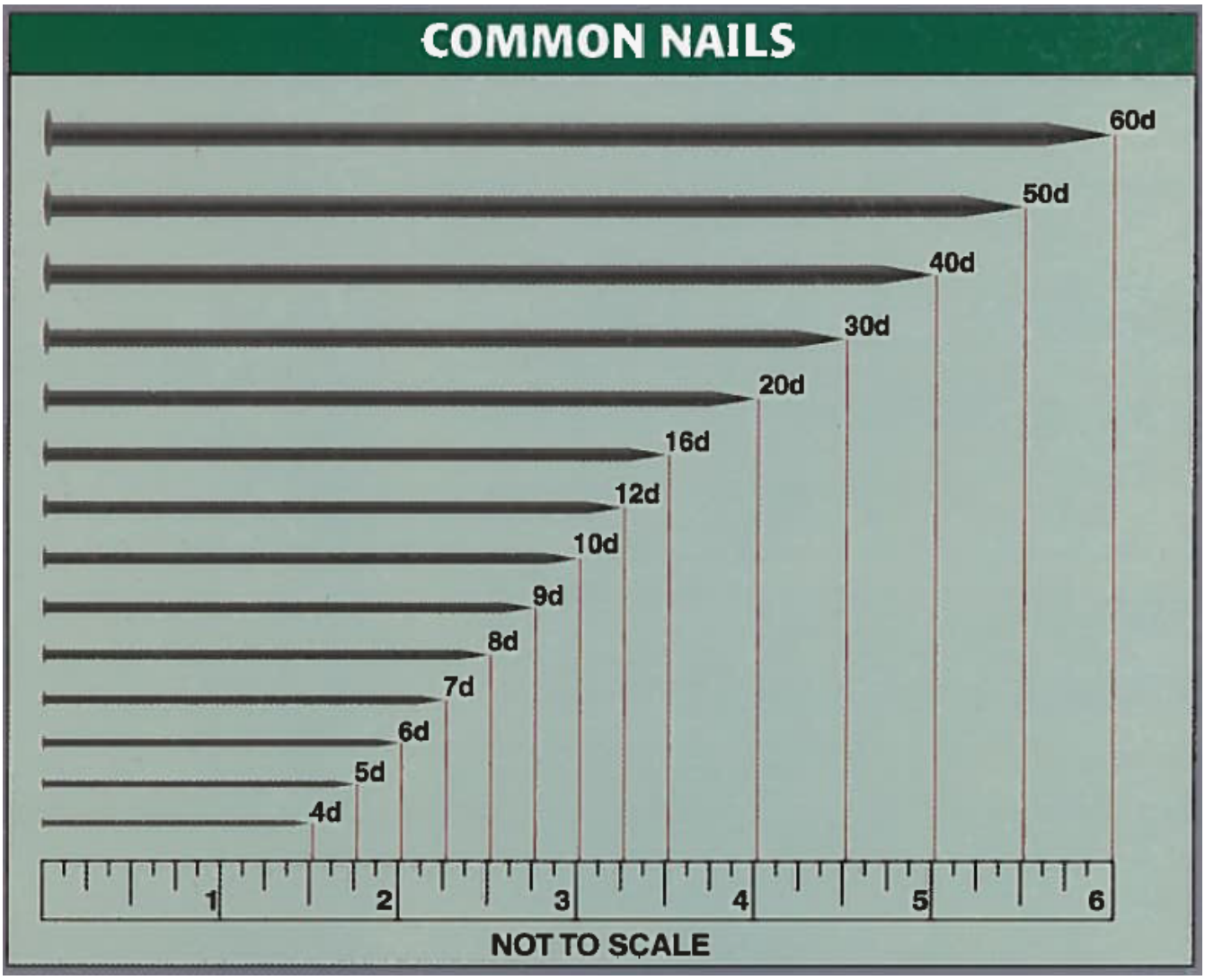
Positioning of the 1/2" anchors through the ledger plate @ 16" o/c staggered into the framing beyond.



Permitted joist to ledger connection methods.

Decking: is the walking surface, or floor of the deck. It is often made of Spruce/Pine/Fir (SPF) species conventional lumber such as 2x6 or 2x8, but can also be constructed of Northern Species such as cedar, or a composite material. Decking is also permitted to be made of 5/4" thick material, which many lumber yards stock specifically for decking. The type of decking that you choose to use will determine what the permitted spacing of the joists will be.

Maximum Joist Spacing	
SPF wood decking that is minimum 1 1/2" thick (example: 2x6 decking)	600mm (24") on center
SPF wood decking that is 5/4" thick	400mm (16") on center
Decking installed at a 45-degree angle to the joists ***may*** require the joist spacing to be reduced	300mm (12") ***or*** 400mm (16") on center
If a cantilever picket guard from SB-7 is specified, the required joists spacing ***may*** need to be	400mm (16") on center
Composite decking must follow the manufacturer's specifications for the joist spacing. In some cases, it ***may*** be	300mm (12") on center



Example: 16d (aka 16 penny) = 3 1/2" long

Determining Footing Size

The table below will aid you in determining the required footing size for your deck. This table assumes that the soil bearing capacity meets the minimum of 75kPa (1560psf). The spans that you select for the joists and beams will determine the footing size. **The shorter the spans selected will allow for smaller footings but will mean that more concrete piers and footings are required.**

Minimum Required Footing Area								
		Supported Joist Length						
		4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"
Supported Beam Length	3'-0"	7" x 7"	8" x 8"	8" x 8"	9" x 9"	10" x 10"	10" x 10"	11" x 11"
		8" dia.	9" dia.	9" dia.	10" dia.	11" dia.	12" dia.	12" dia.
	3'-6"	7" x 7"	8" x 8"	9" x 9"	10" x 10"	10" x 10"	11" x 11"	12" x 12"
		8" dia.	9" dia.	10" dia.	11" dia.	12" dia.	13" dia.	13" dia.
	4'-0"	8" x 8"	9" x 9"	10" x 10"	10" x 10"	11" x 11"	12" x 12"	13" x 13"
		9" dia.	10" dia.	11" dia.	12" dia.	13" dia.	13" dia.	14" dia.
	4'-6"	8" x 8"	9" x 9"	10" x 10"	11" x 11"	12" x 12"	13" x 13"	13" x 13"
		9" dia.	11" dia.	12" dia.	13" dia.	13" dia.	14" dia.	15" dia.
	5'-0"	9" x 9"	10" x 10"	11" x 11"	12" x 12"	13" x 13"	13" x 13"	14" x 14"
		10" dia.	11" dia.	12" dia.	13" dia.	14" dia.	15" dia.	16" dia.
	5'-6"	9" x 9"	10" x 10"	11" x 11"	12" x 12"	13" x 13"	14" x 14"	15" x 15"
		11" dia.	12" dia.	13" dia.	14" dia.	15" dia.	16" dia.	17" dia.
	6'-0"	10" x 10"	11" x 11"	12" x 12"	13" x 13"	14" x 14"	15" x 15"	15" x 15"
		11" dia.	12" dia.	13" dia.	15" dia.	16" dia.	16" dia.	17" dia.
	6'-6"	10" x 10"	11" x 11"	12" x 12"	13" x 13"	14" x 14"	15" x 15"	16" x 16"
		11" dia.	13" dia.	14" dia.	15" dia.	16" dia.	17" dia.	18" dia.
	7'-0"	10" x 10"	12" x 12"	13" x 13"	14" x 14"	15" x 15"	16" x 16"	17" x 17"
		12" dia.	13" dia.	15" dia.	16" dia.	17" dia.	18" dia.	19" dia.
	7'-6"	11" x 11"	12" x 12"	13" x 13"	14" x 14"	15" x 15"	16" x 16"	17" x 17"
		12" dia.	14" dia.	15" dia.	16" dia.	17" dia.	18" dia.	19" dia.
	8'-0"	11" x 11"	13" x 13"	14" x 14"	15" x 15"	16"x16"	17" x 17"	18" x 18"
		13" dia.	14" dia.	16" dia.	17" dia.	18" dia.	19" dia.	20" dia.
	8'-6"	12" x 12"	13" x 13"	14" x 14"	15" x 15"	16" x 16"	17" x 17"	18" x 18"
		13" dia.	15" dia.	16" dia.	17" dia.	18" dia.	20" dia.	21" dia.
	9'-0"	12" x 12"	13" x 13"	15" x 15"	16" x 16"	17" x 17"	18" x 18"	19" x 19"
		13" dia.	15" dia.	16" dia.	18" dia.	19" dia.	20" dia.	21" dia.
	9'-6"	13" x 13"	14" x 14"	15" x 15"	16" x 16"	17" x 17"	18" x 18"	19" x 19"
		14" dia.	15" dia.	17" dia.	18" dia.	20" dia.	21" dia.	22" dia.
	10'-0"	13" x 13"	14" x 14"	15" x 15"	17" x 17"	18" x 18"	19" x 19"	20" x 20"
		14" dia.	16" dia.	17" dia.	19" dia.	20" dia.	21" dia.	22" dia.
	10'-6"	13" x 13"	14" x 14"	16" x 16"	17" x 17"	18" x 18"	19" x 19"	20" x 20"
		15" dia.	16" dia.	18" dia.	19" dia.	21" dia.	22" dia.	23" dia.
	11'-0"	13" x 13"	15" x 15"	16" x 16"	17" x 17"	19" x 19"	20" x 20"	21" x 21"
		15" dia.	17" dia.	18" dia.	20" dia.	21" dia.	22" dia.	23" dia.
	11'-6"	13" x 13"	15" x 15"	16" x 16"	18" x 18"	19" x 19"	20" x 20"	21" x 21"
		15" dia.	17" dia.	19" dia.	20" dia.	21" dia.	23" dia.	24" dia.
	12'-0"	14" x 14"	15" x 15"	17" x 17"	18" x 18"	19" x 19"	21" x 21"	22" x 22"
		16" dia.	17" dia.	19" dia.	21" dia.	22" dia.	23" dia.	25" dia.

Determining footing size: Clear span of beam and half of the clear span of the joist + any joist overhang.

The tables provided on pages 12 and 13 show shaded information. These are the required footing size, joist size and span, and beam size based on the sample drawings shown on pages 4 and 5.

Determining Beam Size

The following table will assist you in determining what size beam is required based on the spans that You have determined.

Maximum Beam Span, m (ft) – SPF No. 2 Lumber			
Supported Length of Joists	3-38x184 (2”x8”)	3-38x235 (2”x10”)	3-38x286 (2”x12”)
2.4 (7’-10”)	3.07 (10’-0”)	3.92 (12’-10”)	4.57 (15’-0”)
3.0 (9’-10”)	2.85 (9’-4”)	3.52 (11’-6”)	4.09 (13’-5”)
3.6 (11’-9”)	2.63 (8’-7”)	3.22 (10’-6”)	3.73 (12’-3”)
4.2 (13’-9”)	2.44 (8’-0”)	2.98 (9’-9”)	3.46 (11’-4”)
4.8 (15’-9”)	2.28 (7’-6”)	2.79 (9’-2”)	3.23 (10’-7”)

Remember that the maximum permitted beam cantilever in most cases is 1’-0”

Determining Joist Size

The following table will assist in determining the minimum joist depth based on the size and spans that You have selected.

Maximum Joist Span, m (ft) – SPF No. 2 Lumber	
Joist Size & Spacing	Maximum Span
38x184 (2”x8”) at 305mm (12”) o.c.	3.71 (12’-2”)
38x184 (2”x8”) at 406mm (16”) o.c.	3.53 (11’-7”)
38x184 (2”x8”) at 610mm (24”) o.c.	3.36 (11’-0”)
38x235 (2”x10”) at 305mm (12”) o.c.	4.38 (14’-4”)
38x235 (2”x10”) at 406mm (16”) o.c.	4.16 (13’-7”)
38x235 (2”x10”) at 610mm (24”) o.c.	3.96 (13’-0”)
38x286 (2”x12”) at 305mm (12”) o.c.	4.99 (16’-4”)
38x286 (2”x12”) at 406mm (16”) o.c.	4.75 (15’-7”)
38x286 (2”x12”) at 610mm (24”) o.c.	4.52 (14’-10”)

Keep in mind the maximum allowable joist cantilever for the joist size proposed. Refer to page 9.

Don’t forget the maximum joist spacing is also determined based on what decking material is proposed to be used. Refer to page 11.

Note that incised lumber (lumber that has been pretreated with an increased amount of wood preservative) is ***not*** referenced in Part 9 of the O.B.C. but does have slightly shorter span values when being used. If you intend on using incised lumber, the maximum allowable spans will need to be reduced. Please contact Building Services to discuss your proposed design.

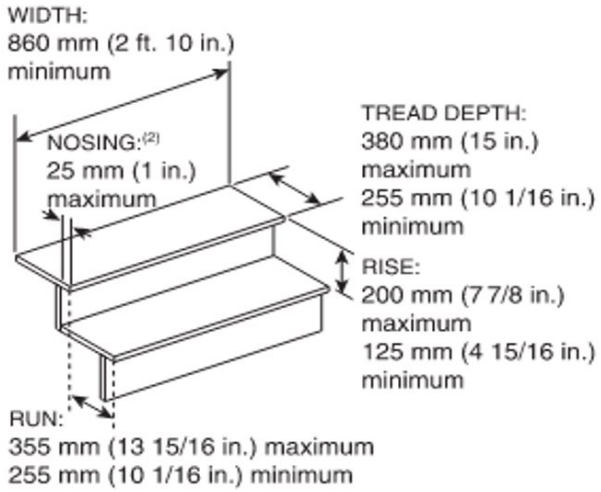
Stairs

If the proposed deck design will be incorporating stairs and/or a ramp, the drawings must incorporate them into the design. It is important that the proposed design is reviewed to ensure the stairs are constructed in accordance with the OBC to prevent injury/accident to people that may be using them.

STAIR CODE CHANGE 2022

Stairs must be designed to have:

- Uniform rise and run (same height for each step, same tread depth for each step)
- A minimum width of 860mm (2'-10")
- A level landing or base at the top and bottom of each run of stairs
- Adequate foundation and framing
- Be provided with a handrail if there are more than 3 risers
- Have a compliant guard system if the difference in elevation exceeds 600mm (23 5/8")
- If 5/4" or composite decking is used, the stringer spacing must match the joist spacing



Private stairs

Stair rise

Minimum: 125mm (4 7/8")
Maximum: 200mm (7 7/8")

Stair run

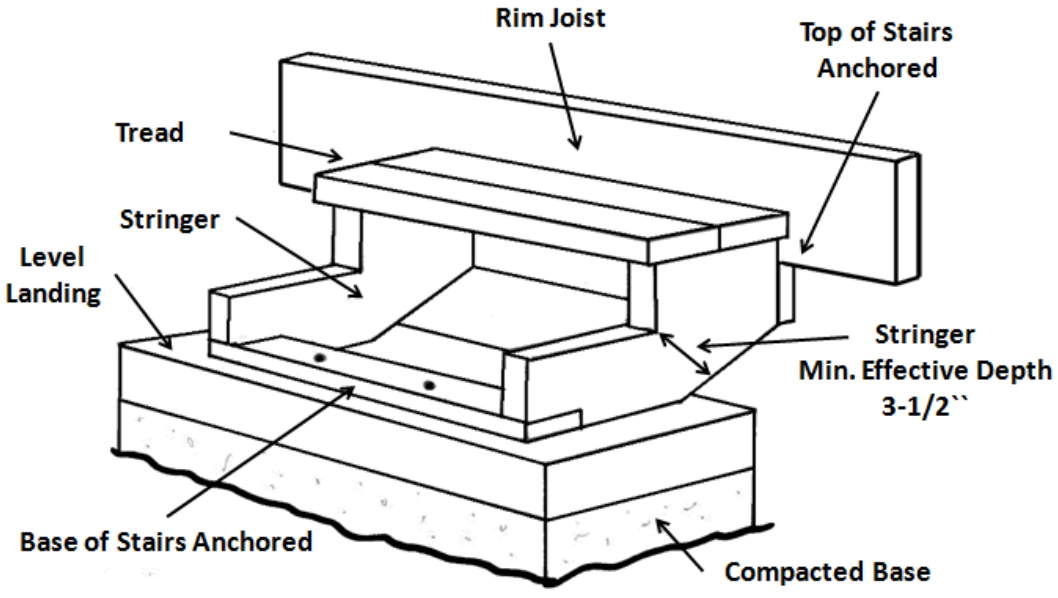
Minimum: 255mm (10")
Maximum: 355mm (14")

Depth of rectangular treads shall not be less than its run and not more than its run + 25mm.

For other stair configuration, refer to O.B.C. 9.8.4.

The vertical height between landings on stairs cannot exceed 3.7m (12'-1 1/2").

The base of the stringer is required to be supported and secured to a foundation. Depending on the number of risers, the necessary foundation for the stairs will vary. All stairs that are constructed must be supported and secured at the top and bottom. The top support is most easily achieved by using a mechanical hanger that is designed to support stairs. The bottom support can be done by notching a 2"x4" into the bottom stringer that is anchored to a concrete pad.



Guards (Often referred to as railings)
A Guard is the component of a deck that is designed to prevent someone from falling off the walking surface. If you intend to construct a wooden guard, please see our SB-7 Guards for Residential Decks handout of the Ontario Building Code for the requirements for installation.

Building services has some examples of typical SB-7 Guard/Post Connections available in our office for viewing upon request to help add clarity when constructing the guard.

If the guard you select is not listed in the SB-7 guidelines, two copies of the manufacturer's installation instructions or proprietary products stamped and signed by an engineer licensed in the province of Ontario must be submitted. These details should be available where you intend to purchase the product. Examples of this are pre-manufactured guards constructed out of glass or aluminum. As previously mentioned, these are proprietary products that require testing to ensure compliance with the OBC.

A guard system must be provided on a deck if:

Elevation of the walking surface exceeds 600mm (23 5/8")	Minimum Height Req. 900mm (35 7/16")
Elevation of walking surface exceeds 1800mm (5'-11")	Minimum Height Req. 1070mm (42 1/8")
On flights of stairs shall be	Minimum Height Req. 900mm (35 7/16")

If a guard is being installed on a deck that has an elevation that is less than 600mm (23 5/8") it must still be installed to comply with SB-7 Guidelines or the manufacturer's engineered details.

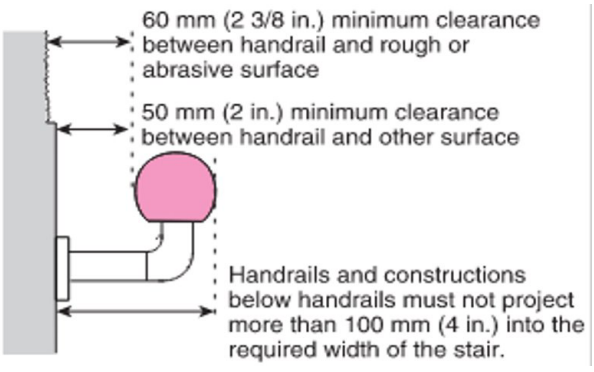
Handrails
A handrail is a structural element and is designed to provide guidance and support for the person navigating the stair throughout the entire flight (run) of stairs. Though not always required, it is recommended that a handrail be installed regardless of the number of risers. A handrail is required when an exterior flight of stairs has more than 3 risers, or if a ramp rises more than 400mm (16"). A handrail must be graspable and continuous along the entire length of the flight of stairs. Materials such as the following would be acceptable when installed correctly:

A piece of galvanized pipe (2" diameter **or** 2"x2" square)
A piece of steel stock (2" diameter **or** 2"x2" square)
A piece of wood (2" diameter **or** 2"x2" square)
A 5/4" board ripped down to 2 1/4"

Installing a 2"x4" on edge ***is not*** a suitable handrail.

The handrail must have a clearance of at least 50mm (2") where the surface behind the handrail is smooth, and 60mm (2.5") where the surface is rough.

The height of the handrail must be between 865mm (34") and 1070mm (42"), measured vertically at the nosing of the tread, or the surface of the ramp.



A handrail on a landing is permitted to be between 865mm (34") and 1070mm (42"), which allows for the proper transitioning of stairs between landings.

Handrails are required to be supported at attachment points no farther than 1.2m (4') apart and with support required within 300mm (12") of each end of the handrail.

HANDRAIL CODE CHANGE 2022

Proprietary Products and Materials

There are many products on the market that are referred to as proprietary products and materials. These are construction materials, elements or products that have been designed for specific applications in construction.

The OBC recognizes testing performed by the Canadian Construction Materials Centre (CCMC), as well as by Intertek. Some proprietary products or materials may have been reviewed by a professional engineer. In these cases, details bearing the seal of the professional engineer (P.Eng) are acceptable.

Some common examples of Proprietary Products and Materials are:

- Footing systems such as deck blocks, footing tubes, bigfoot, helical piles
- Pre-engineered guard systems and/ or handrails (steel, glass, aluminum)
- PVC or composite decking

Not all construction materials, elements or products sold in Ontario are approved for use in the Ontario Building Code. It is the responsibility of the designer or homeowner to ensure that any proposed proprietary product or material meets the OBC.

Ensure that all fasteners are approved for the specific connection that they are being used for. Many proprietary products on the market have testing for specific applications.

When a Professional Engineer (P.Eng) is Required

If the proposed deck or platform is constructed outside of the scope of Part 9 of the Ontario Building Code, a structural engineer may be required to perform structural design as part of the permit application drawing package for the portions of the design that fall under Part 4.

Some common examples of when a P.Eng is required are:

- When a deck will have a hot tub on it
- If a gazebo or pergola is proposed (may not always require P.Eng)
- If the ledger connection will be into a rubble foundation
- If the ledger connection will be into masonry veneer
- If the ledger connection will be into wood stud framing instead of the rim board
- Site built guards are constructed (example: glass guard)
- A privacy screen is proposed in place of a guard
- Proposed guard does not meet the requirements in SB-7
- A designed beam does not comply with the OBC (example: a box beam or 2 ply beam)
- Columns do not comply with the OBC (example: 4x4 are used when 6x6 are required)
- Fasteners approved under Part 9 of the OBC are not used
- Spacing of framing members (joists or beams) exceeds what is allowable under Part 9

Scheduling Building Inspections

The Ontario Building Code (OBC) outlines when an inspection is required to take place. It is the owner(s) responsibility to ensure calls for inspections have been made. **A minimum of 48 hours notice is required when booking an inspection for your site.** Building Services will provide the contact information of the building inspector assigned to your building permit at the time of building permit issuance.

Once you have obtained a building permit ensure that the building permit card is posted on site in a conspicuous location, such as the inside of a window at the front of the house.

For a deck, the required inspections are:

1 **Excavation (pre-footing) Inspection**

This inspection takes place once the holes have been dug to the required depth in preparation for pouring concrete. If any forms are required for the placement of concrete (sono tube, footing tube, bigfoot, or a conventional pad form), they should be set in place at this stage as part of the inspection. ***Do NOT place concrete until this excavation inspection has taken place and the Building Inspector has given you permission to proceed.*** The Building Inspector will be checking the depth of the hole, ensuring that it is free of water, leaves, and loose material, and that the size and location match the approved drawings.

During your Excavation Inspection, the Building Inspector will ask some key questions that will aid in determining what additional inspections will be required. The Building Inspector may also "walk through" the entire construction process with the deck builder to assist in eliminating any possible foreseeable issues that may arise.

2 **Framing (platform) Inspection**

Every element of the framing is required to be inspected at this stage (columns, beams, and joists). They will review the connections and ensure that the proper fasteners and hardware have been used.

3 **Framing (Guards) Inspection**

If guards have been installed, they will need to be inspected fully. All components of the guard system are inspected, including the posts, rails, and balusters. They will review the connections and ensure that the proper fasteners and hardware have been used. This applies to both pre-engineered guard systems as well as guards constructed using SB-7.

4 **Final Inspection**

At the last inspection, the Building Inspector will review any remaining elements and verify that construction has been completed. The Inspector will review the final framing, including the stairs, handrails, and decking.

Building Services recommends whenever possible to have the builder present at time of each inspection. This will assist in relaying any important information to both the Building Inspector and the builder and will aid in eliminating delays in completion of the permit process.

***If any changes are proposed from the approved building permit drawings*, contact Building Services Division staff *prior to proceeding* with any work to ensure that the proposed change(s) comply with the OBC. Revised drawings will likely be required.**

Some of the most common inspection deficiencies include:

- Notching of guard posts
- Use of improper, split, or undersized pickets in guards
- Improper splicing of built-up beams
- Cut ends of pressure treated lumber have not been treated with preservative
- Use of unauthorized materials or systems
- Site changes made to the deck design without authorization from Building Services Division
- Improper stair construction
- SB-7 Guard requirements not being followed
- Improper fasteners or hangers being used
- Beam or joist cantilevers more than maximums permitted in OBC
- Footing depth insufficient
- Foundation system installed does not match approved plans (ex: footing size changed)

Ontario Building Code (O.B.C.) Reference Index

The following are references that relate to the construction of a deck and are found in Division B of the O.B.C.

Footings and Foundations	O.B.C. Reference	Columns	O.B.C. Reference
Concrete	9.15.2.1.	Locations	9.17.2.1.
Unit Masonry Construction	9.15.2.2.	Lateral Support	9.17.2.2.
Pier Type Foundations	9.15.2.3.	Wood Columns	9.17.4.
Wood Frame Foundations	9.15.2.4.	Column Sizes	9.17.4.1.
Footings Required	9.15.3.1.	Materials	9.17.4.2.
Support of Footings	9.15.3.2.	Columns in Contact with Concrete	9.17.4.3.
Application of Footing Width and Area Requirements	9.15.3.3.	Wood Column Termite protection	9.17.4.4.
Basic Footings Width and Area	9.15.3.4.	Unit Masonry Columns	9.17.5.
Adjustments to Footings area for Columns	9.15.3.7.	Materials	9.17.5.1.
Footing thickness	9.15.3.8.	Sizes	9.17.5.2.
Extension Above ground Level	9.15.4.6.	Solid Concrete Columns	9.17.6.
Support of Beams	9.15.5.2.	Materials	9.17.6.1.
		Sizes	9.17.6.2.

Framing	O.B.C. Reference	Framing Continued	O.B.C. Reference
Limitations	9.23.1.1.	Anchorage of Columns and Posts	9.23.6.2.
Strength and Rigidity	9.23.2.1.	Beams to Support Floors	9.23.8.
Protection from Decay	9.23.2.2.	Bearing for Beams	9.23.8.1.
Termite Protection	9.23.2.4.	Built-up Wood beams	9.23.8.3.
Fasteners	9.23.3.	Floor Joists	9.23.9.
Standards for nails and Screws	9.23.3.1.	End Bearing for Joists	9.23.9.1.
Length of nails	9.23.3.2.	Joists Supported by Beams	9.23.9.2.
Prevention of Splitting	9.23.3.3.	Restraint of Joist Bottoms	9.23.9.3.
Nailing of Framing	9.23.3.4.	Strapping and Bridging	9.23.9.4.
Maximum Spans	9.23.4.	Cantilevered Floor Joists	923.9.9.
Spans for Joist, Rafter and Beams	9.23.4.2.		
Notching and Drilling	9.23.5.		
Holes Drilled in Framing Members	9.23.5.1.		
Notching of Framing Members	9.23.5.2.		

Stairs	**O.B.C. Reference**	**Handrails**	**O.B.C. Reference**
Stair Dimensions	9.8.2.	Reference	
Stair Width	9.8.2.1.	Handrails	9.8.7.
Stair Configuration	9.8.3.	Required Handrails	9.8.7.1.
Straight and Curved Run in Stairs	9.8.3.1.	Continuity of Handrails	9.8.7.2.
Maximum height of Flights	9.8.3.3.	Termination of Handrails	9.8.7.3.
Step Dimensions	9.8.4.	Height of Handrails	9.8.7.4.
Dimensions for Risers	9.8.4.1.	Ergonomic Design	9.8.7.5.
Dimensions for Runs and Rectangular Treads	9.8.4.2.	Projection into Stairs and Ramps	9.8.7.6.
Dimensions for Tapered Treads	9.8.4.3.	Design and Attachment of Handrails	9.8.7.7.
Uniformity and Tolerance for Risers, Runs and Treads	9.8.4.4.	**Guards**	**O.B.C. Reference**
Spiral Stairs	9.8.4.5A.	Guards	9.8.8.
Leading Edge of Treads	9.8.4.6.	Required Guards	9.8.8.1.
Landings	9.8.6.	Loads on Guards	9.8.8.2.
Required Landings	9.8.6.2.	Height of Guards	9.8.8.3.
Dimensions of Landings	9.8.6.3.	Openings in Guards	9.8.8.5.
Height over landings	9.8.6.4.	Guards Designated Not to Facilitate Climbing	9.8.8.6.
		Glass in Guards	9.8.8.7.

Notes, Questions or Sketches:

Remember that the more time spent pre-planning your deck project will help minimize frustration during the building permit application review process. This time spent at the planning stage will also reduce any frustration on site once you have obtained a building permit and have commenced work.

Checklist for a Complete Building Permit Application

When applying for a building permit to construct a deck, the following items must be included for the application to be complete and accepted by the Building Division. **If you do not have all this information, your application is incomplete and cannot be processed.**

- □ A completed Building Permit application form
- □ Any approvals that are required from all other applicable law under the authority of agencies or City Departments
- □ Schedule 1: Designer Information (The person that prepares the drawings must either be the homeowner, or a qualified and/or registered designer as per the requirements under Bill 124)
- □ A completed Authorization to act as agent form if the owner is not the applicant
- □ Payment ready (Cash, cheque, or Interac Debit)
- □ Two (2) complete sets of drawings including any engineered design if required (one set is returned to you as your approved building set and must be available on site during the construction)
- □ *Site Plan* (Refer to Site Plan Requirements handout for further information)
- □ *Foundation/Framing Plan* (Refer to sample drawing on page 4)
- □ *Cross Section Drawing* (Refer to sample drawing on page 5)

This guide is for informational purposes only and is an aid to the Ontario Building Code (OBC). It does not cover all construction requirements referenced in the code. It is the responsibility of the Applicant/ Designer to review the building code in relation to their project to ensure that all information is complete, accurate and up to date.

Notes, Questions or Sketches:

NO CONSTRUCTION IS TO COMMENCE BEFORE A PERMIT IS ISSUED

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