



**BuildTECH**

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## Plan Review Checklist – DECK

**Home Owner/Builders:** The following information is required when submitting an application for a residential building permit and before a building permit is issued. The plan review will not begin until all required information is provided.

APPLYING FOR A BUILDING PERMIT DOES NOT EQUATE TO PERMISSION TO START CONSTRUCTION – BUILDING PERMITS WILL BE ISSUED BY THE MUNICIPALITY ONCE ALL ZONING AND BUILDING APPROVALS ARE COMPLETE.

### Required Information:

2 complete sets of deck plans are required to be submitted along with the **Building Permit Application** for review and record. The plans shall include:

- **Site Plans** with the following information
  - Show size and location of proposed deck
  - Show size and location of existing buildings on property
  - Show lot dimensions and shape
  - Show distance between deck and property lines
  - Show North direction arrow
- **Deck Layout Drawings** with the following information
  - Interior wall location (if enclosed)
  - Window sizes and locations (if enclosed)
  - Door sizes, location and swing direction
- **Deck Checklist** properly filled out
  - Piles or an engineer's design may be required for specific deck situations; i.e. deck supporting roof, deck height > 72", use of screw piles.
  - See the BuildTECH Brochure, "Decks – Frequently Asked Questions" for information on specific construction requirements.

**Required On-Site Inspections:** (inspection requirements may change depending on the project type and size)

- Final; all structural and life safety components are generally visible upon completion of a deck – contact BuildTECH to arrange for inspection prior to any cladding or finishes that may cover substantial portions of the framing.

**DECK DEVELOPMENT CHECKLIST, PAGE 2**  
**CODE ARTICLES**

Article	Description
NBCC 2010	The following NBCC Article descriptions are summaries of the articles and sentences, not the actual NBCC 2010 code article.
9.3.2.9.	Structural wood framing members shall be pressure-treated to resist decay where the vertical clearance between the framing members and the ground is less than 150 mm (6").
9.8.7.1.	A handrail is required for exterior steps with more than 3 risers. The handrail height is to be between 865 mm (34") and 965 mm (38") high.
	Guard rails are required around decks & landings where the surface is more than 600 mm (24") higher than the adjacent ground. Guard rails are required to be minimum 900 mm high (36"), and 1070 mm (42") high where the surface is more than 1800 mm (72") above the adjacent ground.
	900 mm (36") high guard rails (measured vertically from a line drawn through the stair nosings) are required on flights of steps where the tread height is more than 600 mm (24") above the adjacent ground.
9.8.8.	Openings through any guard shall be of a size that will prevent the passage of a spherical object having a diameter of 100 mm (4").
	Guards are to be constructed so that they will not facilitate climbing, where all elements protruding from the vertical and located within the area between 140 mm and 900 mm above the floor or walking surface protected by the <i>guard</i> conform to at least one of the following Clauses:
	a) they are located more than 450 mm horizontally and vertically from each other,
	b) they provide not more than 15 mm horizontal offset,
	c) they do not provide a toe-space more than 45 mm horizontally and 20 mm vertically, or
	d) they present more than a 2-in-1 slope on the offset.
9.17.2.2.	The wood posts are required to be laterally supported if the distance from finished ground to the underside of the joists is more than 600 mm (24"). Toe-nailing beams to posts is not considered adequate lateral support. Provide mechanical connections that will provide lateral support, or lateral bracing (i.e. knee bracing) connecting the posts to the deck frame.
9.17.2.2.	Where the distance from grade to the underside of the deck joists is more than 2 m (6'), then posts supporting the deck beam shall be minimum 6x6, or 3-ply 2x6 built-up columns. 4x4 posts are not permitted.
	Decks where the distance from grade to the underside of the deck joists is more than 2 m (6') shall be supported on concrete piles, minimum 10" diameter x 10' deep c/w Sonotube and re-bar, and adequate means of securing the post to the piles.
9.23.1.1.	The maximum spacing for stair stringers is 30" o.c.
9.23.4.2.	The maximum span (distance between posts) for a 2 ply 2x10 beam is 9'-4". The maximum span (distance between posts) for a 2 ply 2x8 beam is 7'-8". Other beam spans are to be designed in accordance with Sentence 9.23.4.2. of the NBCC 2010, or the Canadian Wood Council's "Span Book".
9.23.9.4.	The joists are required to be blocked, strapped, or cross-bridged at mid-span.
9.23.9.9.	The maximum length of the joist cantilever past the beam is 600 mm (24") for 2x8 joists, and 750 mm (30") for 2x10 joists.

### BuildTECH Bulletin

#### DECKS – Frequently Asked Questions

This is not meant to be explicit "How To" construction advice. Providing building code enforcement services does not permit BuildTECH to 'design' projects for owners. If you require additional information, or you are unsure of or confused by the information provided, please consult with a qualified contractor for all details concerning construction of a deck. Material suppliers can also be good sources of information regarding construction of decks.

**Q: Do I need to use piles or will surface deck blocks be adequate?**

**A:** Deck foundations are not specifically prescribed in the building code. And although there could be noticeable deck movement from frost, typically, surface mounted deck foundation systems like "deck blocks" or concrete pads have been proven to function as adequate foundations for decks. However, as decks get higher off the ground or support additional loads from a roof, the movement can become more noticeable, and be more of a structural concern.

When the height measured from ground to the underside of the joists is more than 72" (1800mm) or a roof is being supported, concrete piles or screw piles are required, and posts shall be at least 6"x6" or 3-ply 2"x6" – no 4"x4" posts.

Lateral bracing is very important as well; lateral bracing could be met with proper knee bracing or an appropriate mechanical connection bracket. Toe-nailing is not adequate lateral support.

**Q: How should my ledger be attached to the house rim joist?**

**A:** Generally speaking, 3 x 3-1/2" nails installed every joist space will support the ledger board, or 1/2" lag or through bolts installed @16" o.c. alternating stagger at 2" from top and 2" from bottom. If you have an Emercore rim joist you will need to reference the manufacturer's literature on how to properly attach a deck.

**Q: How big does my beam need to be? How many posts do I need? What size joists do I need?**

**A:** There are many variables that determine the size and spacing of deck frame components. Attached are tables showing the distance a beam or joist can span between supports. Please refer to these when designing your deck.

**Q: Can I use screws to mount my joist hangers and deck brackets?**

**A:** No. Screws do not provide enough shear strength to properly support joist hangers or other brackets with shear forces on them. Hangers are designed to be secured with high-shear hanger nails – hot dipped galvanized should work best with galvanized metal hangers and brackets.

**Q: How high does my guard rail need to be on my deck?**

**A:** The height of guardrails is dependent on the height of the deck, measured between the deck surface and the adjacent ground level. If the distance is between  $\geq 24"$  (600mm) and  $\leq 72"$  (1800mm) the height of the guardrail is required to be at least 36" (900mm) high, and if it is  $\geq 72"$  (1800mm) the guardrail is required to be 42" (1060mm) high. Also, it must be constructed so no part can facilitate climbing and the maximum distance between the vertical rails is 4" (100mm).

**Q: When do I need a handrail on my steps? When do I need a guardrail on my steps?**

**A:** A handrail is required when there are **more than 3** risers, and a guardrail is required when the tread height is more than 24" (600mm) above the adjacent ground.

**Q: What dimensions do I need for my steps?**

**A:** The dimension of the riser must be between 5" and 8", while the dimension of the tread must be between 9.25" and 14". All steps must have uniform rise and uniform run. This means that in a flight of stairs, every riser must be the same height, and every tread must have the same depth. For this reason pre-fabricated metal stringers may not always fit properly at the top and/or bottom of the steps.

**Joist Sizing Table**

Joist Sizes	2x6			2x8			2x10			2x12		
	12"o.c.	16"o.c.	24"o.c.	12"o.c.	16"o.c.	24"o.c.	12"o.c.	16"o.c.	24"o.c.	12"o.c.	16"o.c.	24"o.c.
Joist Span	10'-4"	9'-4"	8'-2"	13'-6"	12'-4"	10'-9"	17'-3"	15'-8"	13'-9"	20'-4"	18'-9"	16'-8"

\*Joist span – distance between supports

**2-Ply Beam Sizing Table**

Supported Joist Length	2 ply 2"x6"	2 ply 2"x8"	2ply 2"x10"	2 ply 2"x12"
8'-0"	6'-1"	7'-8"	9'-4"	10'-10"
10'-0"	5'-7"	6'-10"	8'-4"	9'-8"
12'-0"	5'-1"	6'-3"	7'-7"	8'-10"
14'-0"	4'-9"	5'-9"	7'-1"	8'-2"
16'-0"	4'-5"	5'-5"	6'-7"	7'-8"
18'-0"	4'-2"	5'-1"	6'-3"	7'-1"
20'-0"	4'-0"	4'-10"	5'-9"	6'-7"

\*Supported Joist Length – ½ joist span measured between supports.

**Large Beam Sizing Table**

Supported Joist Length	2"x8"			2"x10"			2"x12"		
	3 ply	4 ply	5 ply	3 ply	4 ply	5 ply	3 ply	4 ply	5 ply
8'-0"	10'-7"	12'-2"	13'-8"	12'-11"	14'-11"	16'-8"	15'-0"	17'-4"	19'-4"
10'-0"	9'-5"	10'-11"	12'-2"	11'-7"	13'-4"	14'-11"	13'-5"	15'-6"	17'-4"
12'-0"	8'-8"	10'-0"	11'-2"	10'-7"	12'-2"	13'-7"	12'-3"	14'-2"	15'-10"
14'-0"	8'-0"	9'-3"	10'-4"	9'-9"	11'-3"	12'-7"	11'-4"	13'-1"	14'-8"
16'-0"	7'-6"	8'-8"	9'-8"	9'-2"	10'-7"	11'-10"	10'-7"	12'-3"	13'-8"
18'-0"	7'-1"	8'-2"	9'-1"	8'-7"	9'-11"	11'-1"	10'-0"	11'-7"	12'-11"
20'-0"	6'-8"	7'-9"	8'-8"	8'-2"	9'-5"	10'-8"	9'-6"	10'-11"	12'-3"

\*Supported Joist Length – ½ joist span measured between supports.