

ADVISORY**LEDGER BOARD ANCHORING
LOW RISE RESIDENTIAL**

BUILDING CODE SERVICES

**LEDGER BOARD ANCHORING
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This advisory provides guidance for the anchoring of ledger boards to suitable supporting structure of low-rise residential buildings.

PURPOSE

The Ontario Building Code prescribes ledger boards for above grade flat insulating concrete form walls (ICF) in article 9.20.17.5. and fastening ledger boards to flush beams outlined in article 9.23.3.4.

The building code does not prescribe anchoring of ledger boards to stud walls, rim boards, over masonry veneer (brick), or connecting to concrete and masonry foundation systems.

Anchoring requires evaluation of fasteners, fastener spacing, maximum joist lengths and any affected substrates.

The table in this document provides acceptable examples for the fastening of ledger boards that are used as structural components in deck construction.

LIMITATIONS

This document does not apply to decks serving more than one dwelling unit, ledger boards supporting multi-storey decks, ledger boards supporting decks with roof structures, or ledger boards supporting cladding systems.

Fastening of structural components to permanent wood foundations are established through CSA Standard S406, 'Specifications of permanent wood foundations for housing and small buildings'.

This advisory is restricted to conditions described in this document.

DESCRIPTION

The table below details fastener type, spacing and embedment for anchoring ledger boards into suitable supporting structures.

Fastener spacing is based upon maximum joist spans.

Anchoring of ledger boards may adversely impact the continuity of existing materials that provide environmental separation.

Reinstatement or repair of materials such as air barriers, vapour or moisture barriers, insulation, flashing, and sealants is required to limit potential damage.

LEDGER BOARD ANCHORING		(See footnotes on next page)			
Structural Support of Ledger Board by Substrate Type <small>(1)(3)</small>		Fastener Type and Embedment <small>(2)(3)</small>	Maximum Centre Spacing of Fasteners (inch)		
		Staggered vertically in "W" pattern refer to figure [A] in table footnotes	Maximum Joist Span Between Ledger Board and Opposite Supporting Member (feet) ⁽³⁾		
			Max 8 feet	Max 12 feet	Max 16 feet
1.	Floor Rim Board:	½ inch galvanized lag screw or through bolts with washer, lag screw tips be fully inside the rim board	24 inches	16 inches	12 inches
	<ul style="list-style-type: none"> 1-½ inch Spruce/Pine/Fir wood, or. 1-½ inch engineered wood 	Proprietary structural screws with a minimum shank diameter of 0.22 inch, and minimum length of 3.5 inch ⁽¹⁾	8 inches	5 inches	4 inches
2.	Wood Stud Wall:	½ inch galvanized lag screw with washer, and minimum 3-inch embedment into studs	Studs not exceeding 24 inches on centre	Studs not exceeding 16 inches on centre	Studs not exceeding 16 inches on centre
3.	Foundation Wall:	½ inch concrete screw, wedge, or adhesive anchor, galvanized, and minimum 3-inch embedment in concrete	30 inches	24 inches	18 inches
4.	Foundation Wall:				
5.	Foundation Wall:	½ inch threaded steel rod with screen tube and masonry injectable adhesive, galvanized, and minimum 2-inch of nominal embedment in masonry	24 inches	16 inches	12 inches

Footnotes to Table

(1) **Ledger boards** are,

- a. 1-½" thick to support minimum end bearing for floor joists as set out in Article 9.23.9.1.(1) of the Ontario Building Code,
- b. Matching the joist depth and installed directly over supporting structure, rim boards, or over ½" oriented strand board (OSB) or plywood on studs, or
- c. Made of pressure-treated lumber and in conjunction with other requirements set out in this table, and
- d. protected with a prescribed flashing material which includes vinyl, aluminum, copper, and galvanized steel as set out in article 9.27.3.7 in the Ontario Building Code when using non-treated lumber.

(2) **Fasteners** used to attach the ledger board are,

- a. Made of galvanized steel coated with zinc in accordance with ASTM A153/A153M-16a, "Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware" (hot dip galvanized), or
- b. Comprising of an equivalent level of corrosion protection that is compatible with treated lumber wood preservatives and compatible with existing materials used as environmental separators. (i.e., aluminum flashing, air barriers, etc.), or
- c. Proprietary structural screws shown to have a minimum factored lateral resistance of 230 lbs (1.0kN) when tested with 1 ½" embedment in Spruce-Pine-Fir (SPF) wood and the equivalent level of corrosion protection as noted in sentences a & b.

(3) **Qualified engineer review required** for:

- a. Ledger boards supporting concentrated point loads (example: end bearing for beam),
- b. Joist spans exceeding 16'-0" (4.87 m) to supporting ledger boards,
- c. Fasteners of a material that provides an equivalent level of performance other than those noted in this table or in sentence (2),
- d. structural conditions other than those noted in this table supporting ledger boards (ex. Stone foundations, Structural Insulated Panels (SIPs), cold formed steel, etc.),
- e. Installing ledger boards over rigid foam insulation or cladding materials including vinyl, composite, or aluminum siding, Exterior Insulation Finish Systems (EIFS), etc.
- f. Installing ledger boards over non-load bearing masonry brick veneer,
- g. Ledger boards serve more than one-storey (or roof & deck in combination),
- h. Ledger board serve more than one dwelling unit, **or**
- i. Loads on ledger board design exceeds maximum specified live load of 40 pounds per square foot & specified dead load of 10 pounds per square foot.

Figure [A]: Examples of Ledger Board Fastener Spacing and Clearances

