

TOWNSHIP OF  
**CAVAN MONAGHAN**

*Have it all. Right here.*

## **Deck & Ramp Design Guide**

**October 2017**

**Building and Planning Department**

**988 County Rd 10  
Millbrook, Ontario  
L0A 1G0**

**[www.cavanmonaghan.net](http://www.cavanmonaghan.net)**

**Phone: 705-932-2929**

**Fax: 705-932-3458**

**This guide is for informational purposes only. It is the responsibility of the Applicant / Designer to review the Building Code to ensure all information is complete, accurate and up to date.**



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# Township of Cavan Monaghan Deck and Ramp Guide

## Definitions

**OBC** or **O.B.C.** refers to the Ontario Building Code.

A **'Deck'** is a raised uncovered platform that is attached to a dwelling. A deck will require a Building Permit, and will require protective guards if it has a walking surface greater than 24" above grade. A deck less than 24" above grade does not require a Permit however it will be considered as part of the lot coverage area. You will have to contact the Planning department to confirm you do not exceed lot coverage.

A **'Porch'** is a covered structure that usually forms part of the entrance of a dwelling. It may be enclosed or unenclosed. Any Porch requires a Building Permit and will require protective guards if it has a walking surface greater than 24" above grade.

A **'Patio'** is an uncovered platform at grade level that is usually constructed of concrete or stone. A Patio generally does not require a Building Permit, unless it interferes with an existing structure.

A **'Ramp'** is a slope or inclined plane for joining two different levels, as at the entrance or between floors of a building. For the purposes of this guide, 'ramp' refers to an exterior wheelchair ramp for residential application.

**NOTE: All Decks, Porches, Patios, Ramps and other structures must conform to the Township of Cavan Monaghan Zoning By - law requirements.**

## Important Notes

**A Deck is a floor system, the same as that within the dwelling unit, and must be designed accordingly.**

The design and construction of the Deck must conform to the requirements of the current amended version of the Ontario Building Code as well as all other applicable by-laws.

Special consideration must be taken if the Deck is to be used to support a hot tub or similar structure due to the increased load. Engineering may be required.

This guide is for informational purposes only. It is the responsibility of the Applicant / Designer to review the building code to ensure all information is complete, accurate, and up to date.

\* This Deck Guide should be read in conjunction with the "**Building Permits – Information Pamphlet**". This brochure and an **Application for a Permit to Construct or Demolish** and an accompanying **Permit Checklist** are available at the Planning / Building Department Office and online on the Township of Cavan Monaghan website. [www.cavanmonaghan.net](http://www.cavanmonaghan.net).

## The Approval Process

Depending on the complexity of your project, your application may be reviewed in several stages:

1. Planning Department staff will check for compliance with the regulations of the zoning by-law such as proposed use, minimum setback requirements, lot coverage, building height etcetera.
2. Building Department Staff will review the proposed construction to ensure compliance with the Ontario Building Code.

If during the review an examiner identifies deficiencies on the drawings or requires additional information, the designer and/or applicant will be notified. There will also be accompanying Plans Examiner Design Notes and markups on the drawing.

Please ensure that the necessary information is submitted promptly. Subject to the type of deficiency, no further processing may occur until the information is received.

When the review of your application is complete and all the requirements have been met, your building permit will be available. The Applicant will be notified.

**\* It is unlawful to start construction without the necessary permits. If you start construction without the necessary permits, you may be ordered to stop work, ordered to remove work already done, or be prosecuted.**

**\* The Permit Fee Will Be Doubled \***

## Inspections

Construction may commence upon issuance of the Building Permit. Several inspections are required to make sure the work is completed according to the approved plans including those changes noted by the Plans Examiner. Your permit will list the required inspections.

Inspections do not happen automatically. It is **your responsibility** to ensure that either you or your contractor contacts the Building department to request an inspection at least 24 hours in advance.

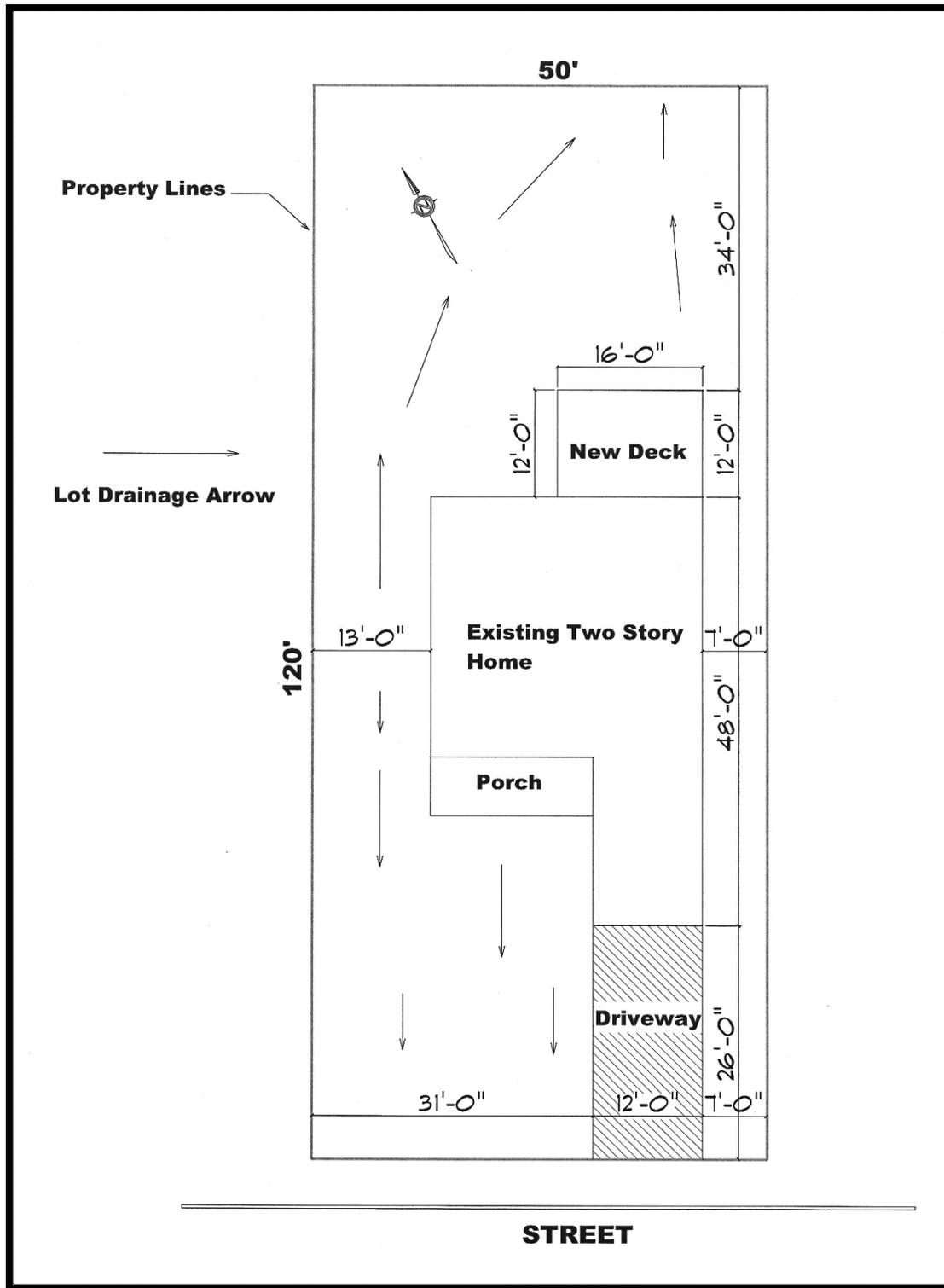
A Final inspection is required in order to close the permit and ensure that the work has been completed to Ontario Building Code standards.

You are required to keep your permit and all and inspection slips for your records.

Failure to have inspections may result in having to **uncover and expose work** for inspections.

## Required Drawings

A site plan is required showing the setbacks from the lot lines and other information as illustrated below.

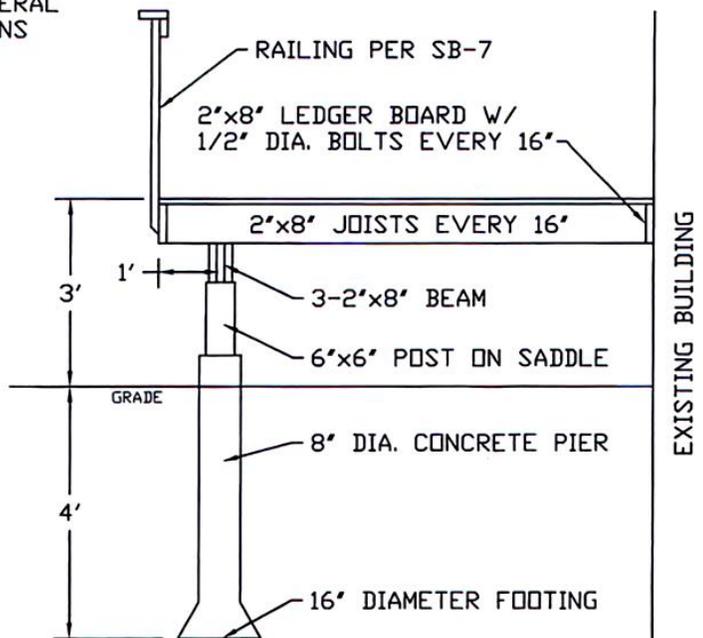
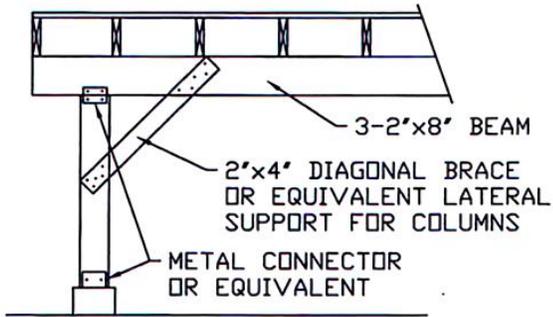
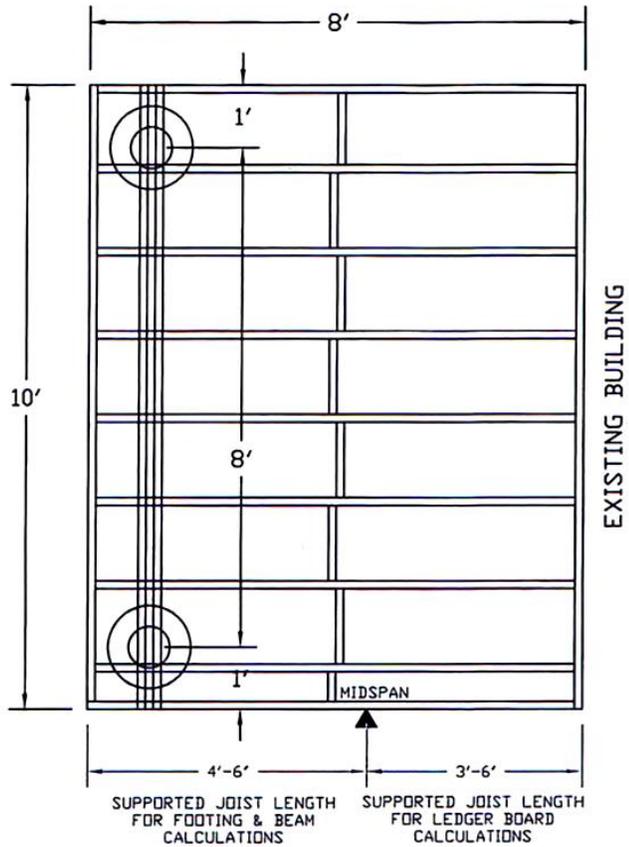


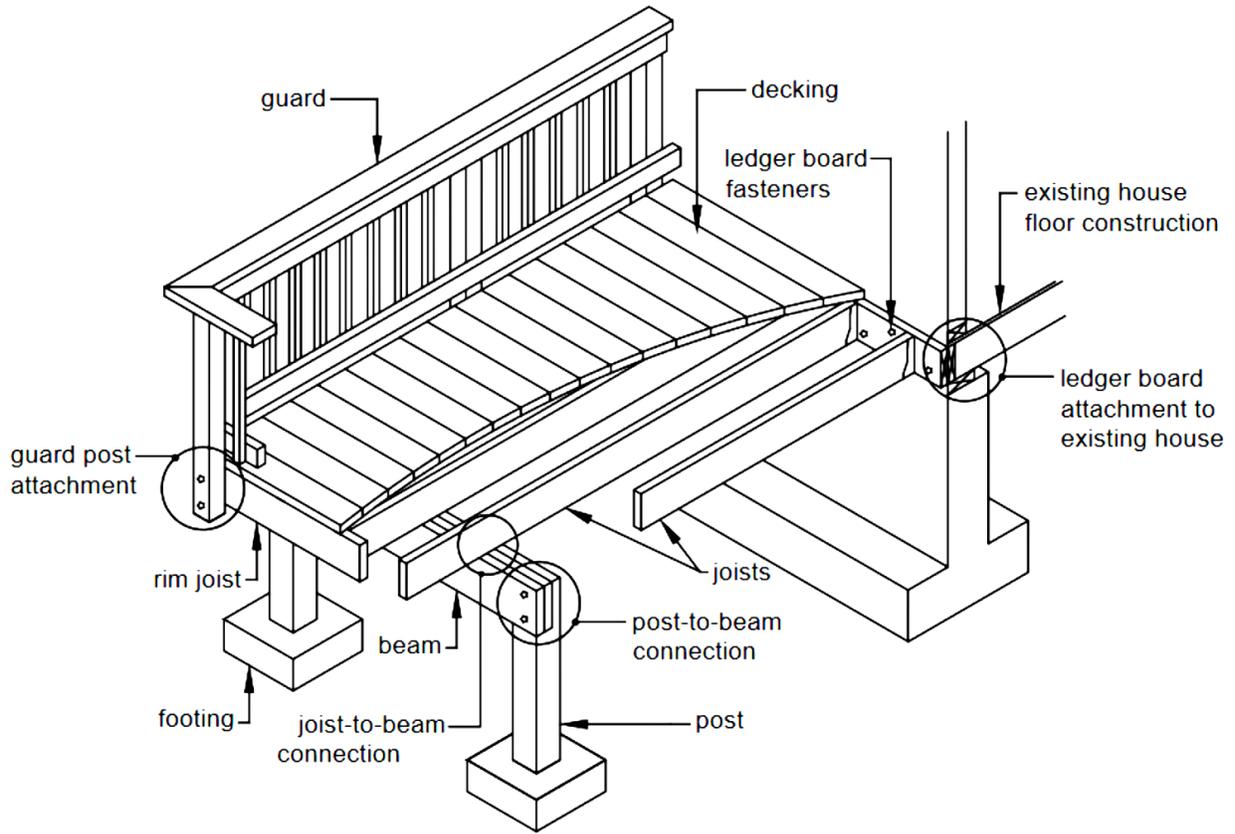
Sample Site Plan

### EXAMPLE DRAWING

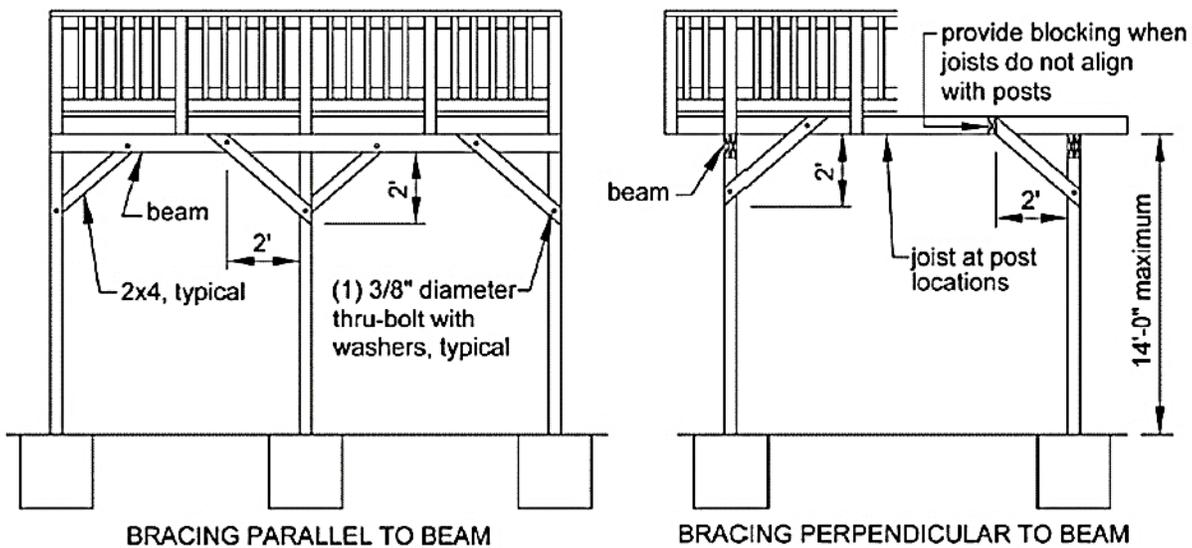
-THIS EXAMPLE DRAWING CONTAINS THE MINIMUM REQUIRED INFORMATION FOR BUILDING PERMIT SUBMISSION.

-THIS DRAWING IS AN EXAMPLE ONLY AND ALL SUBMISSIONS MUST CONFORM TO THE CURRENT VERSION OF THE ONTARIO BUILDING CODE.





**Sample Deck Elevation and Lateral Support  
For Heights Exceeding 6 Feet**



## Piers & Footings

Piers used shall be not less than 10” in diameter.

### Minimum Footing Size Table 9.15.3.4.

0.40 m<sup>2</sup> (4.3 ft.<sup>2</sup>) Where; the supported joist length is 4.90 m (16’), the pier spacing is 3 m (10’), and the soil bearing capacity is 75 kPa (10.9 psi).

Minimum size specified may be adjusted based on the specific supported joist length, pier spacing, and soil bearing capacity. See chart below for typical bearing areas.

**Note:** The minimum required bearing area must be doubled where the water table is less than the width of the footings below the bearing surface.

Minimum Required Bearing Area [ft <sup>2</sup> ]							
Footing Thickness = footing width <u>minus</u> pier width <u>divided by 2</u> (manufactured footing forms excepted)							
75kPa Soil Bearing Capacity		Beam Length / Pier Spacing (ft)					
		4'	6'	8'	10'	12'	14'
Supported Joist Length (ft) (Refer to Illustration)	4'	0.43 ft <sup>2</sup> (10" Ø or 8"x8")	0.65 ft <sup>2</sup> (12" Ø or 10"x10")	0.86 ft <sup>2</sup> (14" Ø or 12"x12")	1.08 ft <sup>2</sup> (14" Ø or 13"x13")	1.29 ft <sup>2</sup> (16" Ø or 14"x14")	1.51 ft <sup>2</sup> (18" Ø or 15"x15")
	6'	0.65 ft <sup>2</sup> (12" Ø or 10"x10")	0.97 ft <sup>2</sup> (14" Ø or 12"x12")	1.29 ft <sup>2</sup> (16" Ø or 14"x14")	1.61 ft <sup>2</sup> (18" Ø or 16"x16")	1.94 ft <sup>2</sup> (20" Ø or 17"x17")	2.26 ft <sup>2</sup> (22" Ø or 19"x19")
	8'	0.86 ft <sup>2</sup> (14" Ø or 8"x8")	1.29 ft <sup>2</sup> (16" Ø or 14"x14")	1.72 ft <sup>2</sup> (18" Ø or 16"x16")	2.15 ft <sup>2</sup> (20" Ø or 18"x18")	2.58 ft <sup>2</sup> (22" Ø or 20"x20")	3.01 ft <sup>2</sup> (24" Ø or 21"x21")
	10'	1.08 ft <sup>2</sup> (14" Ø or 13"x13")	1.61 ft <sup>2</sup> (18" Ø or 16"x16")	2.15 ft <sup>2</sup> (20" Ø or 18"x18")	2.69 ft <sup>2</sup> (24" Ø or 20"x20")	3.23 ft <sup>2</sup> (25" Ø or 22"x22")	3.76 ft <sup>2</sup> (27" Ø or 24"x24")
	12'	1.29 ft <sup>2</sup> (16" Ø or 14"x14")	1.94 ft <sup>2</sup> (20" Ø or 17"x17")	2.58 ft <sup>2</sup> (22" Ø or 20"x20")	2.82 ft <sup>2</sup> (24" Ø or 21"x21")	3.87 ft <sup>2</sup> (27" Ø or 24"x24")	4.52 ft <sup>2</sup> (29" Ø or 26"x26")
	14'	1.51 ft <sup>2</sup> (18" Ø or 15"x15")	2.26 ft <sup>2</sup> (22" Ø or 18"x18")	3.01 ft <sup>2</sup> (24" Ø or 21"x21")	3.76 ft <sup>2</sup> (27" Ø or 24"x24")	4.52 ft <sup>2</sup> (29" Ø or 26"x26")	5.27 ft <sup>2</sup> (32" Ø or 28"x28")
	16'	1.72 ft <sup>2</sup> (18" Ø or 16"x16")	2.58 ft <sup>2</sup> (22" Ø or 20"x20")	3.44 ft <sup>2</sup> (25" Ø or 23"x23")	4.30 ft <sup>2</sup> (28" Ø or 25"x25")	5.16 ft <sup>2</sup> (31" Ø or 28"x28")	6.02 ft <sup>2</sup> (34" Ø or 30"x30")

### Strength: 9.3.1.6.(1)

-Piers shall consist of poured concrete with a minimum compressive strength of 15 mpa (2,200 psi after 28 days)

### Depth: 9.12.2.2.

-Where a deck is attached to a dwelling unit or requires a guard the piers must extend a minimum of 1.2m (3'-11") below grade.

### Height: 9.15.2.3.(3), 9.35.3.4 (1)

-Piers shall not extend more than 3 times their width above grade.

-Piers shall extend a minimum of 150 mm (6") above grade.

## Columns

**Size:** 9.17.4.1.(2)

-Wood columns shall be not less than 184 mm (7-1/4") for round columns and 140 x 140 mm (5-1/2" x 5- 1/2") for rectangular columns.

**Anchorage:** 9.23.6.2.

-Columns shall be directly fastened to their supporting and supported members to resist uplift.

## Ledger Board

**Size and Attachment:** 9.20.17.5

-A Ledger Board shall have the same dimensions as the floor joists it supports.

-Anchor Bolts shall be embedded at least 100mm (4") into solid concrete, concrete filled masonry, or suitable structural lumber. **NOTE:** The anchor bolts shall **not** be attached to hollow masonry or brick veneer. Bolts must **pass through** hollow masonry or brick veneer and care must be taken to not overtighten bolts. If possible, spacers shall be placed in the air space.

Supported Length, m (ft)	Maximum Anchor Bolt Spacing, mm (in)	
	Staggered 12.7mm (1/2") Ø Anchor Bolts	Staggered 16mm (5/8") Ø Anchor Bolts
1.22 (4'-0")	450 (17-3/4")	500 (20")
1.50 (4'-9")	400 (16")	450 (17-3/4")
2.00 (6'-6")	300 (12")	400 (16")
2.50 (8'-2")	275 (11")	325 (12-3/4")

## Beams

**Spans** 9.23.4.2.(3) Table A-8

Supported Length (m) <sup>(1)</sup>	Maximum Span (m)		
	3-38x184 (3-2"x8")	3-38x235 (3-2"x10")	3-38x286 (3-2"x12")
2.40 (7.87')	3.07 (10'-0")	3.92 (12'-10")	4.57 (14'-11")
3.00 (9.84')	2.85 (9'-4")	3.52 (11'-6")	4.09 (13'-5")
3.60 (11.8')	2.63 (8'-7")	3.22 (10'-6")	3.73 (12'-2")
4.20 (13.7')	2.44 (8'-0")	2.98 (9'-9")	3.46 (11'-4")
4.80 (15.7')	2.28 (7'-5")	2.79 (9'-1")	3.23 (10'-7")
5.40 (17.7')	2.15 (7'-0")	2.63 (8'-7")	3.05 (10'-0")
6.00 (19.6')	2.04 (6'-8")	2.49 (8'-2")	2.89 (9'-5")

<sup>(1)</sup> Supported length means half the sum of the joists spans on both sides of the beam.

\*Spruce-Pine-Fir No.1 or No.2 Grade

**Bearing:** 9.17.4.1. & 9.23.8.1.

-Beams shall a bearing surface on each of their supporting member of not less than their width and not less than 89 (3.5") in length.

**Built-up wood:** 9.23.8.3.

-Where individual members are butted together to form a joint, the joint shall occur over a support.

-Built up beams shall be nailed together with a double row of nails not less than 89 (3.5") in length, not more than 450 (18") apart, and not more than 100 (4") from the end.

## Joists

**Size & Spacing:** 9.23.4.2.(1) & Table A-1

Joist Size	Maximum Span m (ft. & in)		
	300 (12) o.c.	400 (16") o.c.	600 (24") o.c.
38x140 (2"x6")	3.14 (10'-3")	2.85 (9'-4")	2.49 (8'-2")
38x184 (2"x8")	3.81 (12'-6")	3.58 (11'-9")	3.27 (10'-8")
38x235 (2"x10")	4.44 (14'-6")	4.17 (13'-8")	3.92 (12'-10")
38x286 (2"x12")	5.01 (16'-5")	4.71 (15'-5")	4.42 (14'-6")

\*Spruce-Pine-Fir No.1 or No.2 Grade with Bridging

\*The use of floor joists less than 38x184 (2"x8") is not allowed with wood railings.

**Cantilever:** 9.23.9.9.

-38x184 (2"x8") may not be cantilevered more than 400 (16")

-38x235 (2"x10") or larger may not be cantilevered more than 600 (24")

**Bearing:** 9.23.9.1. – 9.23.9.3., 9.23.3.4.(1)

-Floor joists may be supported on the tops of beams or may be supported with proper metal joist hangers.

-The floor joists must be mechanically fastened to the supporting member with two 82 (3-1/4") nails.

**Bridging:** 9.23.9.4.(2), 9.23.3.4.(1)

-Bridging shall consist of 19 x 64 (1"x3") cross bridging, 38 x 38 (2"x2") cross bridging or solid blocking the same dimension as the supported floor joists.

-Bridging shall be located not more than 2100 (6'-11") from each support or other rows of bridging.

-Bridging shall be fastened with two 57 (2-1/4") nails at each end.

## Decking

### Requirements:

-Decking shall consist of solid lumber at least 25.4 mm (1") thick when joists are spaced 400mm (16") or less and at least 38 mm (1 1/2") when joists are spaced 600mm (24"). When decking is installed at an angle, joist spacing shall be reduced from 400mm (16") to 300mm (12") and from 600mm (24") to 400mm (16").

## Fasteners

-All fasteners used must be properly treated/coated to prevent corrosion.

-Equivalent screws may be used in lieu of nails.

## Stairs

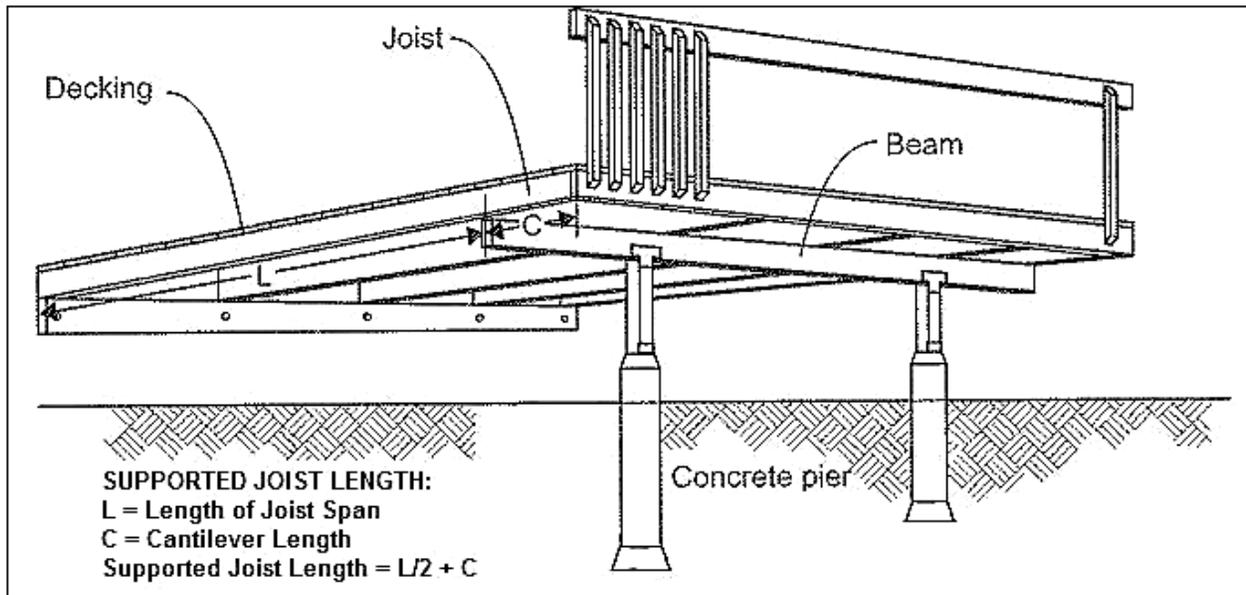
Stairs shall conform to section 9.8 of the Ontario Building Code.

## Railing

Railings shall conform to Supplementary Standard SB-7 of the Ontario Building Code (see explanations and drawings on pages 17 - 39 in this brochure)

### Illustrations

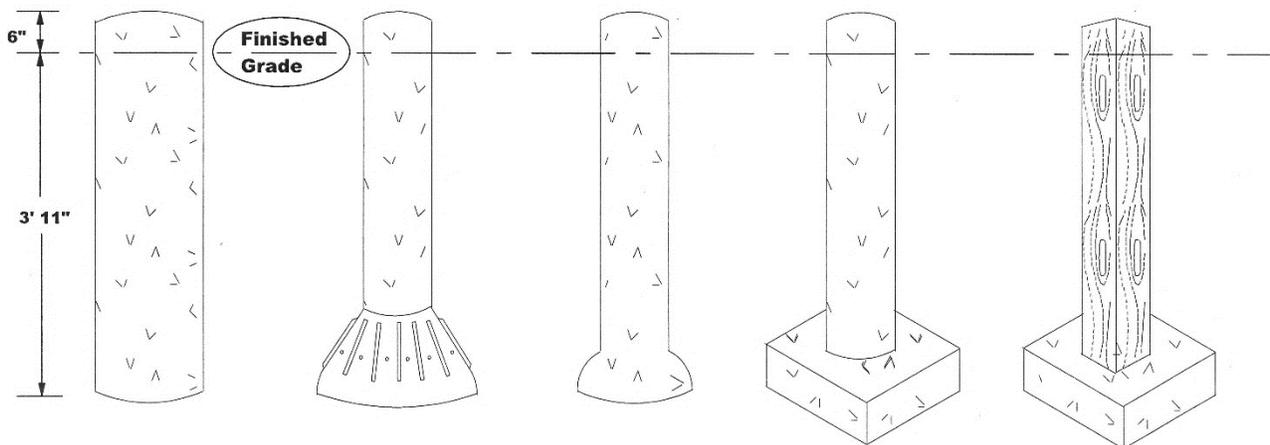
FROM THE "CODE AND CONSTRUCTION - GUIDE FOR HOUSING"



### Piers

Example Shown: Where Required Bearing Area = 1.29 Sq. Ft.

Note: Refer to Required Bearing Area Table & Pier Table For Required Sizes



**16" Dia. Concrete Pier Without Footing**

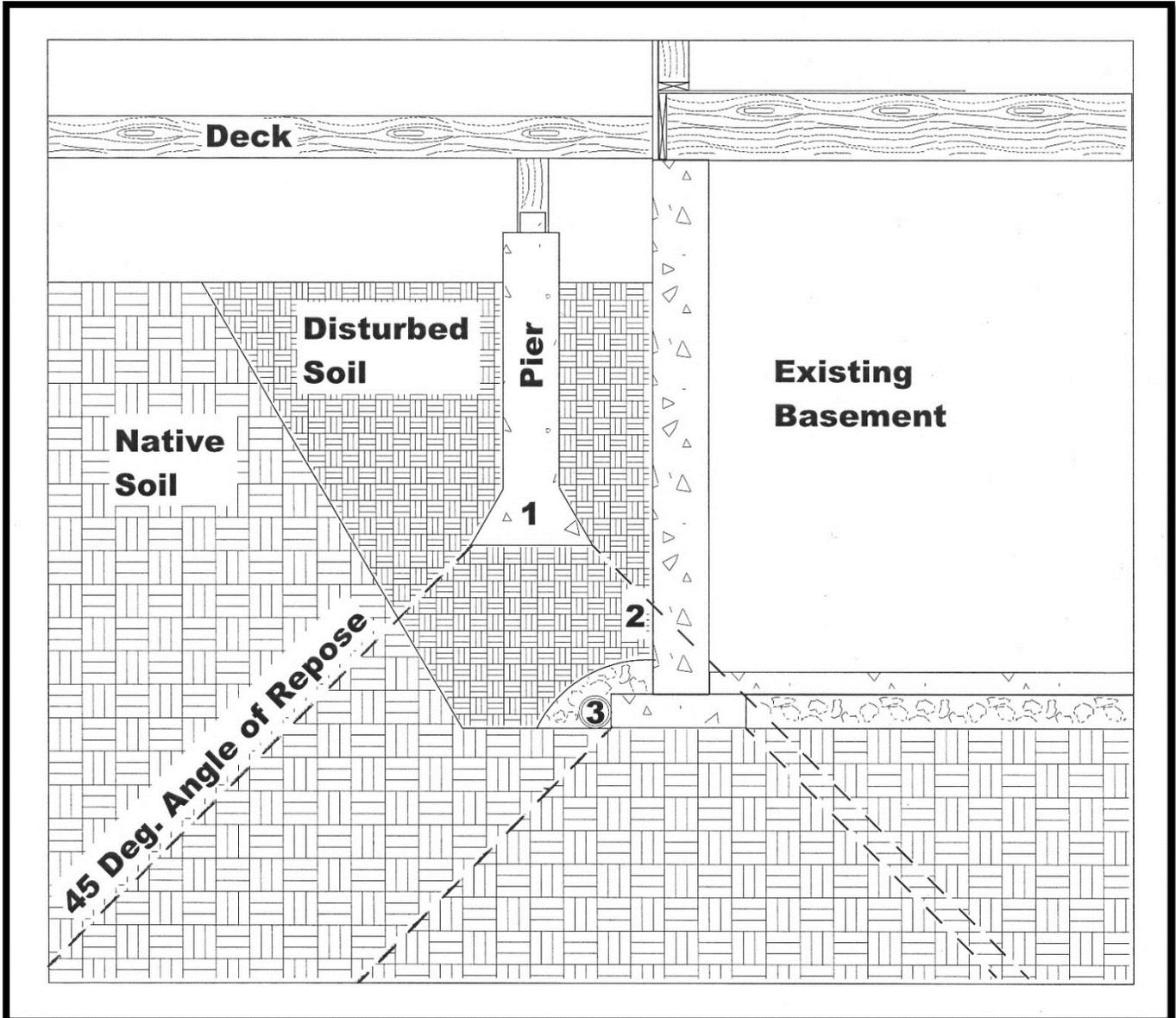
**10" Dia. Concrete Pier With Preformed Footing**

**10" Dia. Concrete Pier With Base Expanded**

**10" Dia. Concrete Pier on 14" x 14" x 6" Concrete Footing**

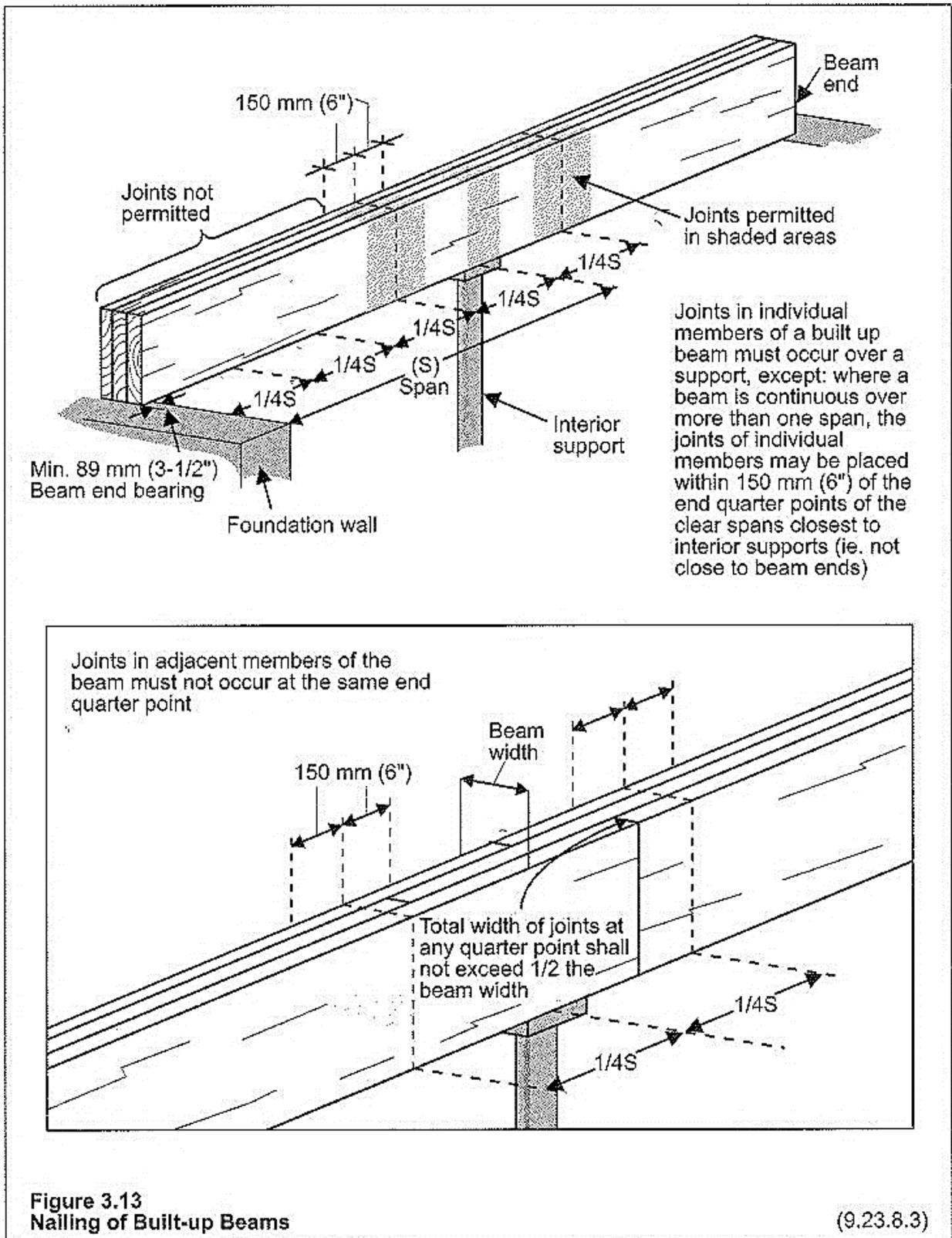
**6" x 6" PT Wood Post on 14" x 14" x 6" Concrete Footing**

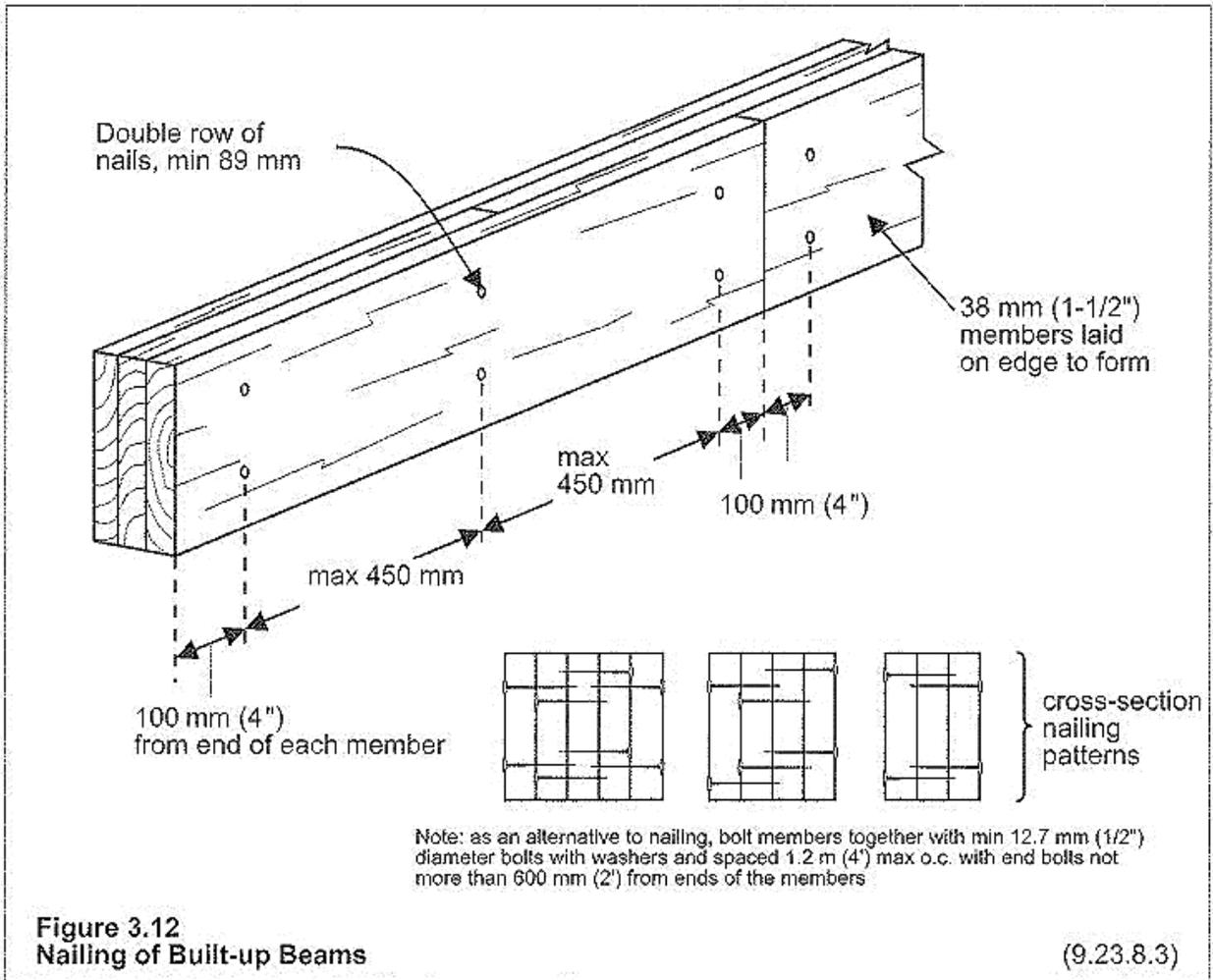
## Unacceptable Pier Installation



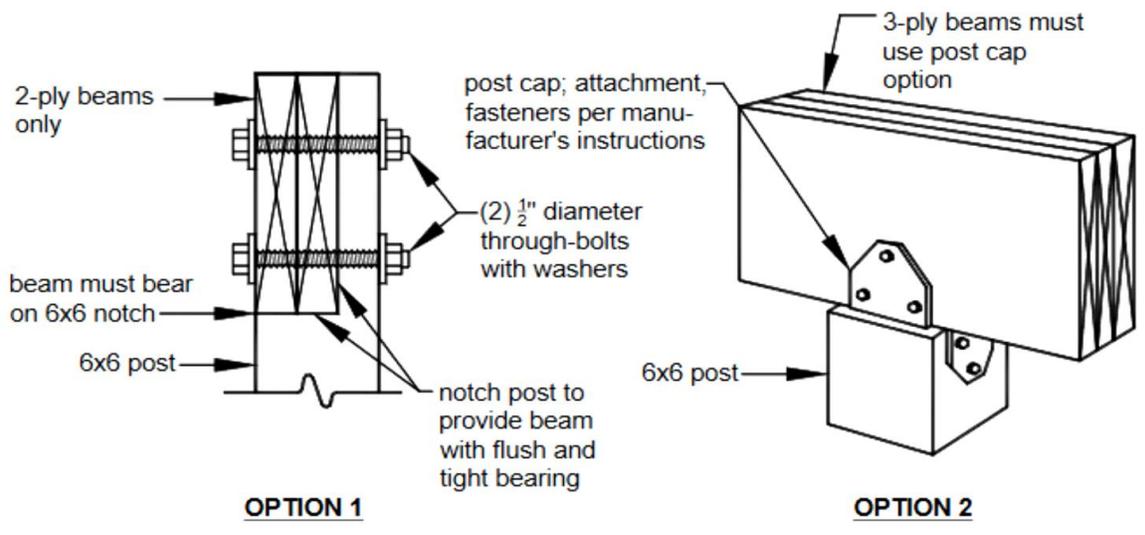
- 1) Foundations must rest on undisturbed native soil
- 2) Foundations within the angle of repose ( $45^{\circ}$ ) require the services of a Professional Engineer
- 3) New foundations must not interfere with existing foundation drainage systems.

### Built Up Beam Nailing

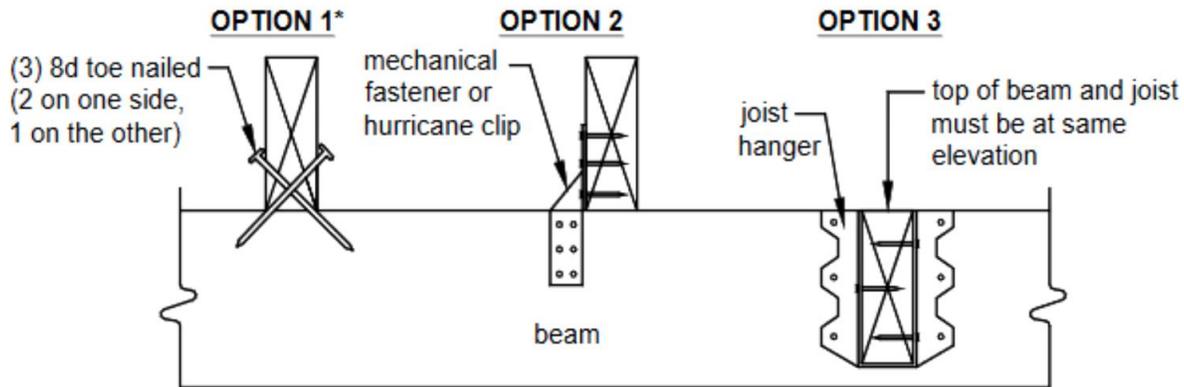




**Post to Beam Connection**



## Connection of Floor Joist to Beam



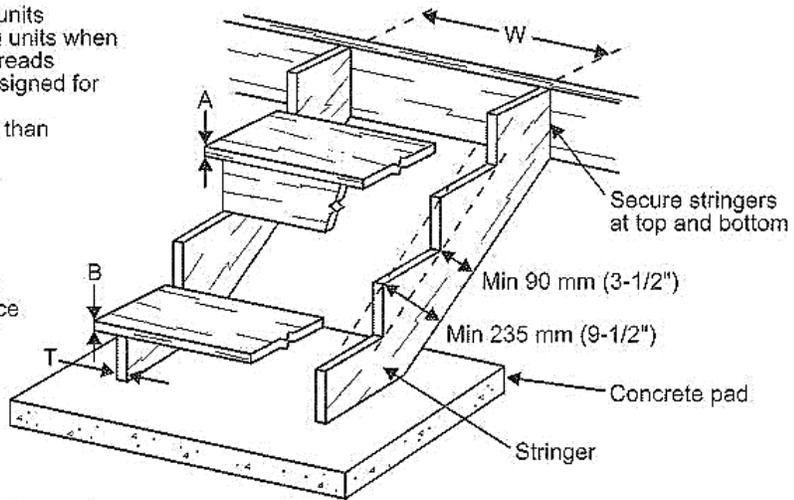
## Stair Requirements

### WOOD STAIRS

- W = max 900 mm (35") in dwelling units
- W = max 1200 mm (47") in dwelling units when risers support the front of the treads unless stringers and treads designed for wider spacing
- W = max 600 mm (23-1/2") in other than dwelling units

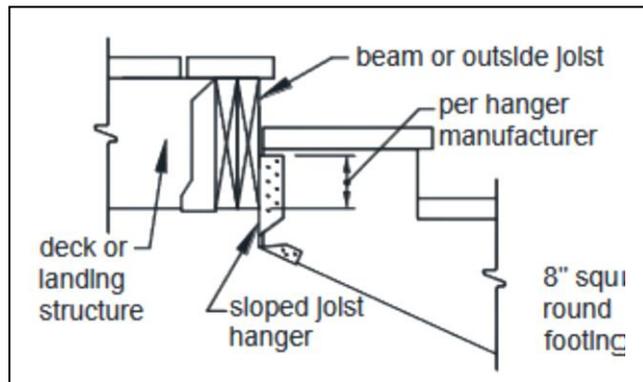
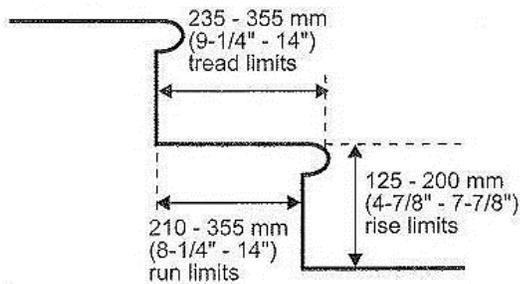
Tread thickness:

- A = min 25 mm (1") when risers support front of tread
- B = min 38 mm (1-1/2") when tread unsupported at front and distance between stringers is no greater than 750 mm (30")



### SINGLE DWELLING UNIT INTERIOR AND EXTERIOR STAIRS

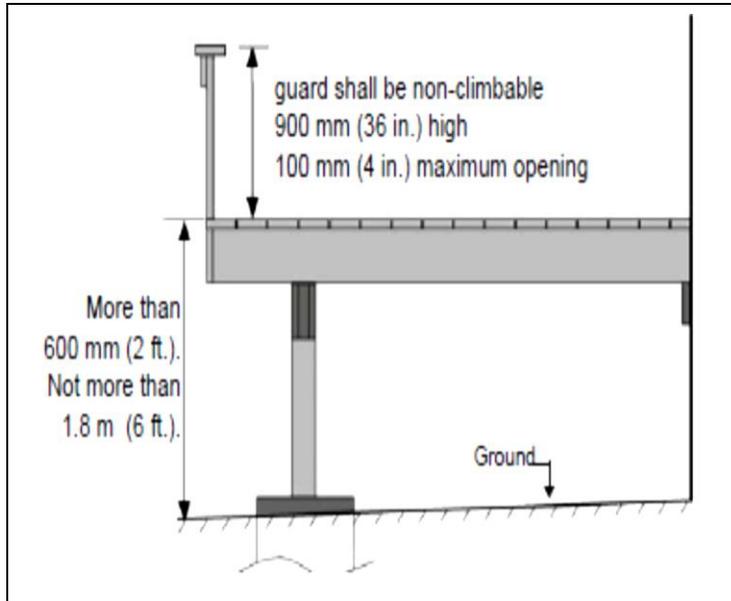
Stair dimensions as shown: (9.8.3.1)



One Method of Attachment

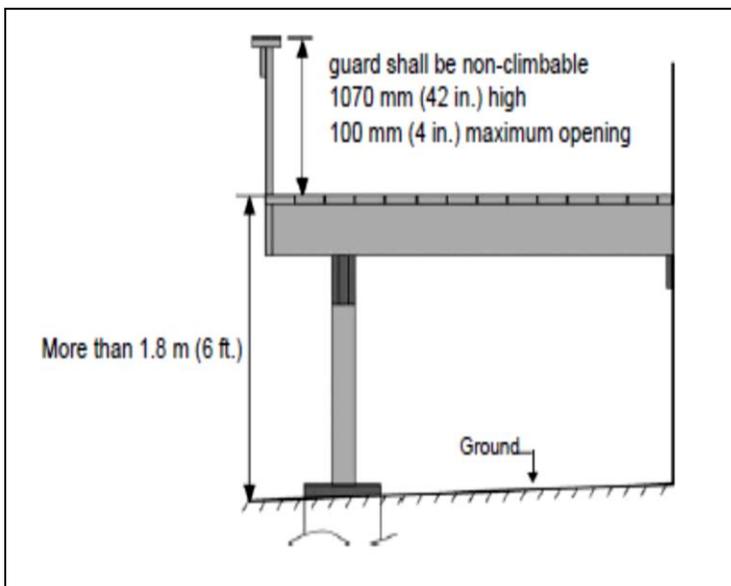
## Required Guards

The OBC requires that guards be installed on walking surfaces on each side that is not protected by a wall where [9.8.8.1(1)]:



- there is a difference in elevation of **more than 23 5/8"** between the walking surface and the adjacent surface, or
- the adjacent surface within 3'-11" from the walking surface has a slope of more than 1/12.

The OBC requires that an exterior guard shall be [9.8.8.3]:



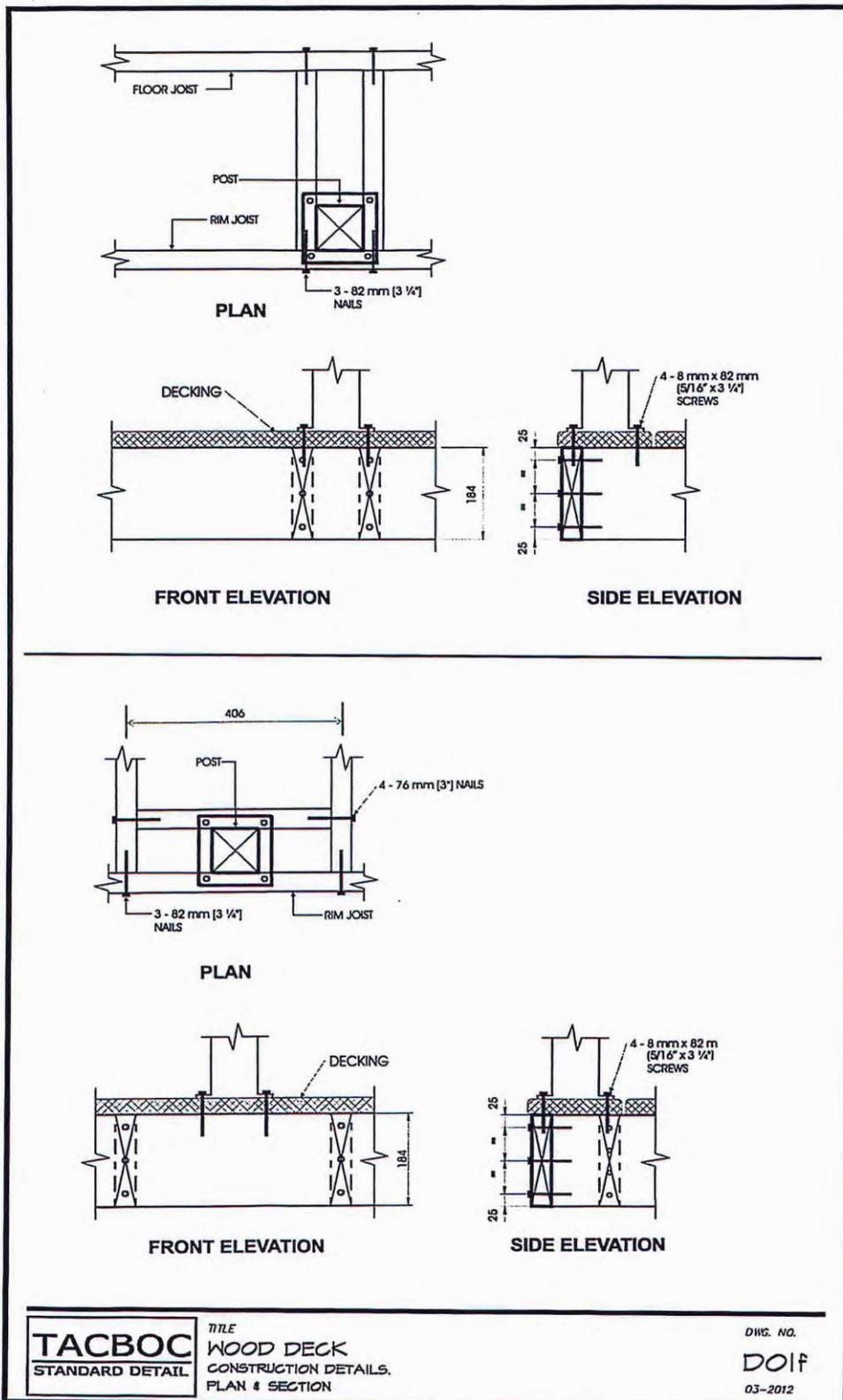
- not less than 36" high where the walking surface served by the guard **is not more than 5'-11" above finished ground level**
- not less than 36" high for guards installed on flights of steps, where the height of a guard on a flight of steps is measured vertically from a line drawn through the leading edge of the treads served by the guard, and
- **not less than 3'-6" in all other situations**

The OBC also requires that guards be constructed so that [9.8.8.5 & 9.8.8.6]:

- openings through any required guard shall be of a size that will prevent the passage of a spherical object having a diameter of more than 4", and
- no member, attachment or opening will facilitate climbing

**Note:** If a bench is incorporated into a guard, the required height is measured from the bench surface to the top of the Guard.

## Typical Attachment for Manufactured Railings See Manufacturer's Specifications



## A Guide to Using Supplementary Standards SB-7

### Guards for Residential Decks

Supplementary Standard SB-7 of the Ontario Building Code illustrates acceptable designs for guards.

There are two acceptable designs for residential decks:

**Post and Rail System (Table 2.2.1)**

**Cantilevered Picket System (Table 2.2.2)**

If a professionally engineered guard is proposed, documentation with an engineer's stamp may be required.

To construct the **Post and Rail System** according to SB-7, follow these steps:

1. Select a Top Rail/Bottom Rail connection (Details EA-1 to EA-5)
2. Select a Post to Floor system (Details EB-1 to EB-6)
3. Select a Picket connection (Details EC-1 to EC-4)

To construct the **Cantilever System** according to SB-7, follow these steps:

1. Select a connection detail (Details ED-1, ED-2 or ED-5 for SPF). (Details ED-3 or ED-4 for Cedar)

#### 2.1.1. Lumber Dimensions

**Table 2.1.2.**  
**Minimum Size of Loadbearing Elements**

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

**Table 2.1.3.**  
**Minimum Size of Floor Elements**

Floor	Minimum size, mm (in)
Dimension Lumber Decking	25 x 140 (5/4" x 6" nominal), when each plank is fastened with 2 - 63 mm (2 1/2") nails
	38 x 89 (2" x 4" nominal), when each plank is fastened with 2 - 76 mm (3") nails
Dimension Lumber Joists	38 x 184 (2" x 8" nominal)
Column 1	2

### 2.1.2. Connectors (See Appendix A.)

- (1) Nails, screws, lag bolts and machine bolts shall not cause splitting of wood elements.
- (2) Fasteners shall be resistant to corrosion.
- (3) All nails shall be common spiral.

(See also A-2.1.4. in Appendix A. for glued joints.)

### 2.1.3. Decay-Resistant Lumber (See Appendix A.)

- (1) Lumber for guard systems and floor systems shall be
  - a) A species resistant to decay,
  - b) Preservative treated to prevent decay, or
  - c) Pressure treated.
- (2) All cut ends of preservative treated lumber shall be treated to prevent decay.

## 2.2. Structural Details

### 2.2.1. Post and Rail System

- (1) An exterior guard constructed as a Post and Rail System shall conform to the applicable connection details listed in Table 2.2.1.

### 2.2.2. Cantilevered Picket System

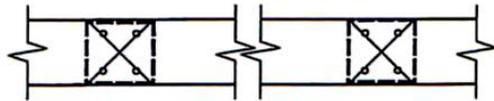
- (1) An exterior guard constructed as a Cantilevered Picket System shall conform to the applicable connection details listed in Table 2.2.2.

**Table 2.2.1.  
Exterior Post and Rail System Connection Details**

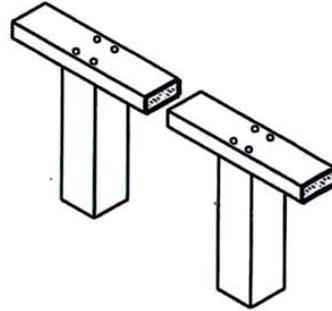
Connection Detail	Detail	Description
Top Rail to Post  and/or Bottom Rail to Post	EA-1	Top rail nailed to post
	EA-2	Top/bottom rail skew nailed to post with 76 mm (3") nails
	EA-3	Top/bottom rail skew nailed to post with 63 mm (2 1/2") nails
	EA-4	Top/bottom rail face nailed or screwed to post
	EA-5	Top/bottom rail fastened to post with framing anchors
Post to Floor	EB-1	Post nailed to rim joist
	EB-2	Post screwed to rim joist
	EB-3	Post bolted to floor joist with 8 mm (5/16") machine bolts
	EB-4	Post bolted to floor joist with 9.5 mm (3/8") machine bolts
	EB-5	Post bolted to 2 floor joists
	EB-6	Post fastened to floor, where guard is parallel to floor joists
Infill Picket	EC-1	Picket nailed to endcap; endcap screwed to rail
	EC-2	Picket nailed to rail
	EC-3	Picket screwed to rail
	EC-4	Picket screwed to top rail and rim joist
Column 1	2	3

**Table 2.2.2.  
Exterior Cantilevered Picket System  
Connection Details**

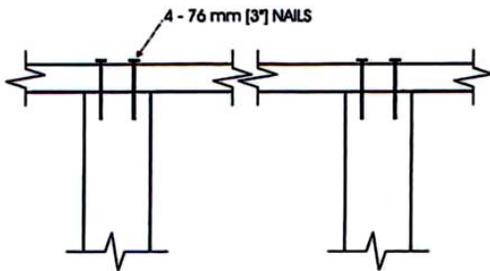
Connection Detail	Detail	Description
Cantilevered Picket (Douglas Fir-Larch, Spruce-Pine-Fir, Hem-Fir Species)	ED-1	Picket screwed to rim joist
	ED-2	Picket screwed to rim joist, where guard is parallel to floor joists
Cantilevered Picket (Northern Species)	ED-3	Picket screwed to rim joist and deck
	ED-4	Picket screwed to rim joist and deck, where guard is parallel to floor joists
Cantilevered Picket (Douglas Fir-Larch, Spruce-Pine-Fir, Hem-Fir Species, Northern Species)	ED-5	Corner
Column 1	2	3



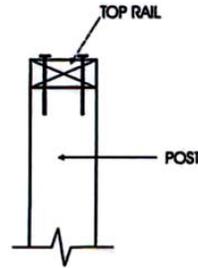
PLAN



AXONOMETRIC



FRONT ELEVATION



SIDE ELEVATION

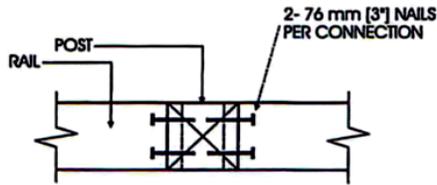
**Detail EA-1**

**Exterior Connection: Top Rail Nailed to Post**

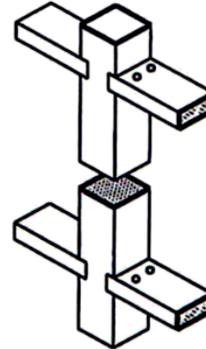
**Notes:**

1. The top rail must be continuous. Use Detail EA-5 at the end spans, where continuity ends.

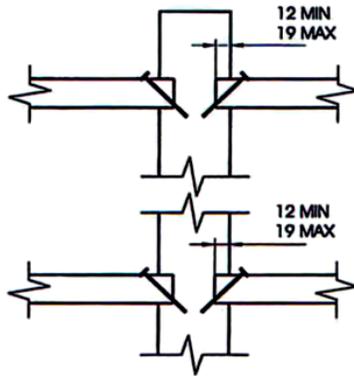
MAXIMUM SPAN OF RAIL BETWEEN POSTS	
Species	Maximum Span, m (ft-in)
Douglas Fir-Larch, Hem-Fir, Spruce-Pine-Fir	1.52 (5'-0")
Northern Species	1.52 (5'-0")
Column 1	2



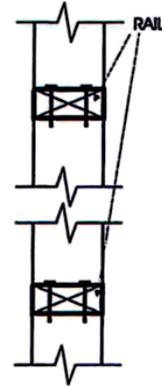
PLAN



AXONOMETRIC



FRONT ELEVATION



SIDE ELEVATION

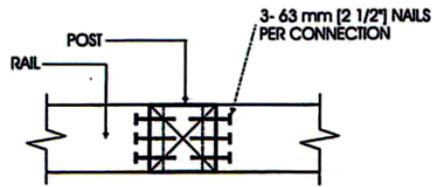
**Detail EA-2**

**Exterior Connection: Top/Bottom Rail Skew Nailed to Post - 76 mm (3") Nails**

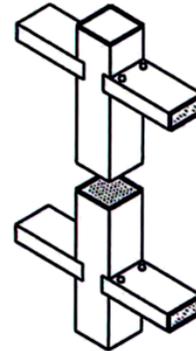
**Notes:**

1. The maximum span is more often governed by post spacing.
2. Provide support to bottom rail at intervals not more than 2.0 m (6'-7").
3. The bottom rail may be bevelled as detailed in Figure 2.1.2.
4. Dimensions shown are in mm unless otherwise specified.

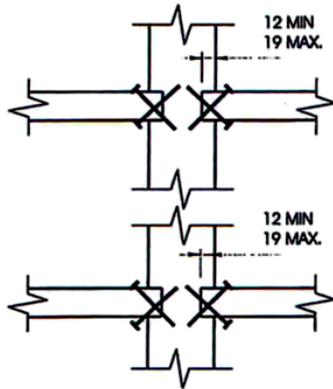
MAXIMUM SPAN OF RAIL BETWEEN POSTS	
Species	Maximum Span, m (ft-in)
Douglas Fir-Larch, Hem-Fir, Spruce-Pine-Fir	2.72 (8'-11")
Northern Species	2.18 (7'-2")
Column 1	2



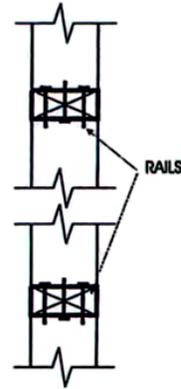
PLAN



AXONOMETRIC



FRONT ELEVATION



SIDE ELEVATION

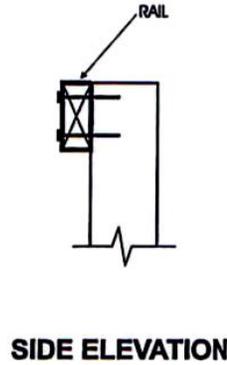
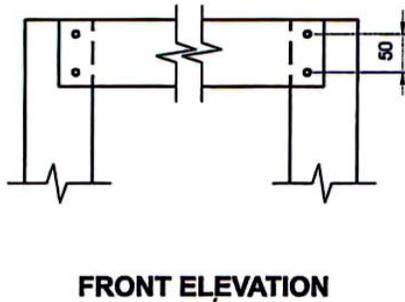
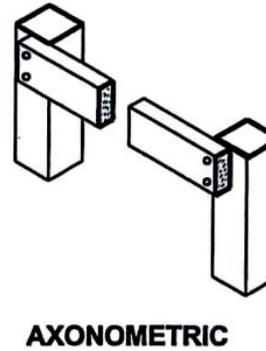
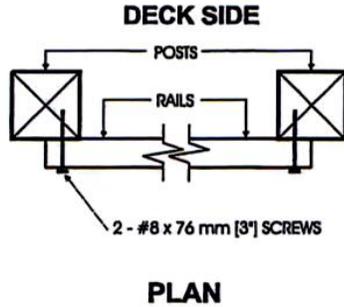
**Detail EA-3**

**Exterior Connection: Top/Bottom Rail Skew Nailed to Post - 63 mm (2½") Nails**

**Notes:**

1. Provide support to bottom rail at intervals not more than 2.0 m (6'-7").
2. The bottom rail may be bevelled as detailed in Figure 2.1.2.
3. Dimensions shown are in mm unless otherwise specified.

MAXIMUM SPAN OF RAIL BETWEEN POSTS	
Species	Maximum Span, m (ft-in)
Douglas Fir-Larch, Hem-Fir, Spruce-Pine-Fir	2.72 (8'-11")
Northern Species	2.18 (7'-2")
Column 1	2



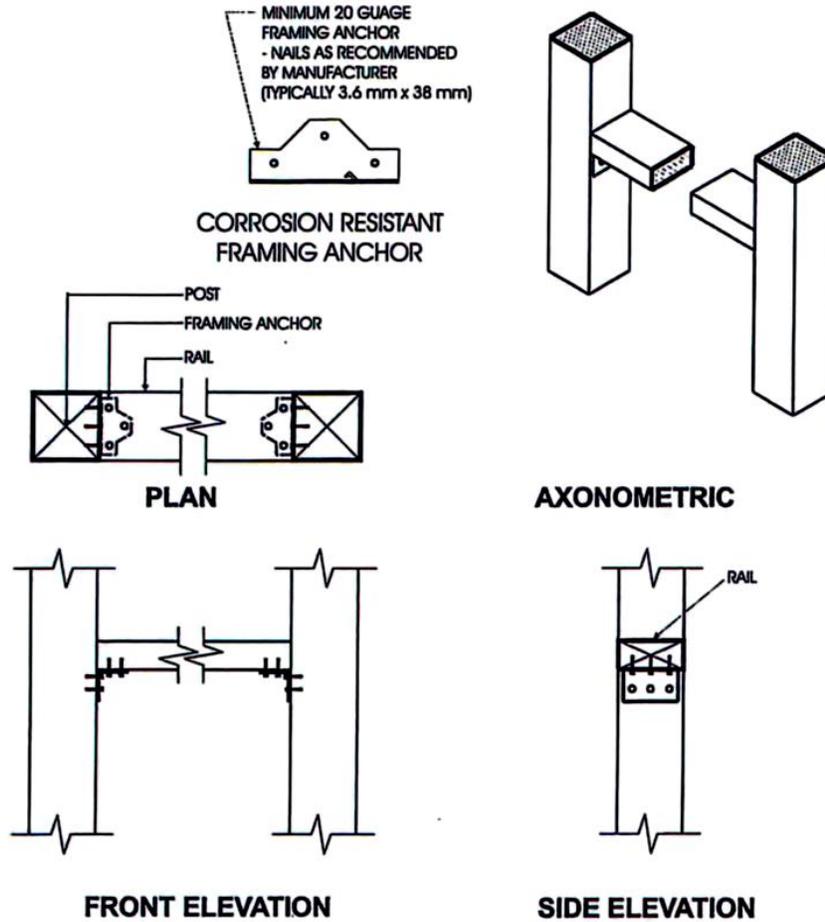
**Detail EA-4**

**Exterior Connection: Top/Bottom Rail Face Nailed or Screwed to Post**

**Notes:**

1. If the rails are located on the deck side of the posts, 76 mm (3") nails may be used in place of the screws.
2. Where the top rail is continuous, the top rail may be fastened to each post with 3 - #8 x 76 mm (3") screws.
3. Dimensions shown are in mm unless otherwise specified.

MAXIMUM SPAN OF RAIL BETWEEN POSTS	
Species	Maximum Span, m (ft-in)
Douglas Fir-Larch, Hem-Fir, Spruce-Pine-Fir	1.77 (5'-10")
Northern Species	1.41 (4'-8")
Column 1	2



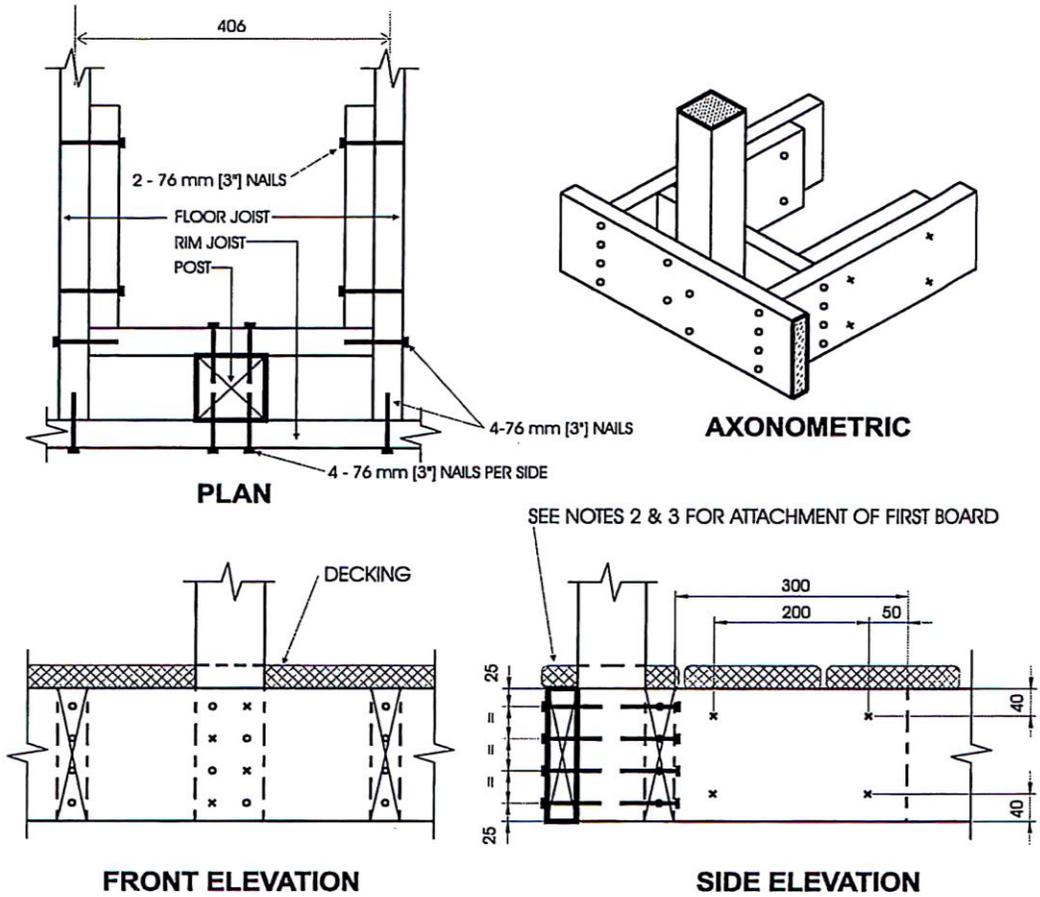
**Detail EA-5**

**Exterior Connection: Top/Bottom Rail Fastened to Post with Framing Anchors**

**Notes:**

1. Provide support to bottom rail at intervals not more than 2.0 m (6'-7").
2. The bottom rail may be bevelled as detailed in Figure 2.1.2.
3. Dimensions shown are in mm unless otherwise specified.

MAXIMUM SPAN OF RAIL BETWEEN POSTS	
Species	Maximum Span, m (ft-in)
Douglas Fir-Larch, Hem-Fir, Spruce-Pine-Fir	2.72 (8'-11")
Northern Species	2.18 (7'-2")
Column 1	2

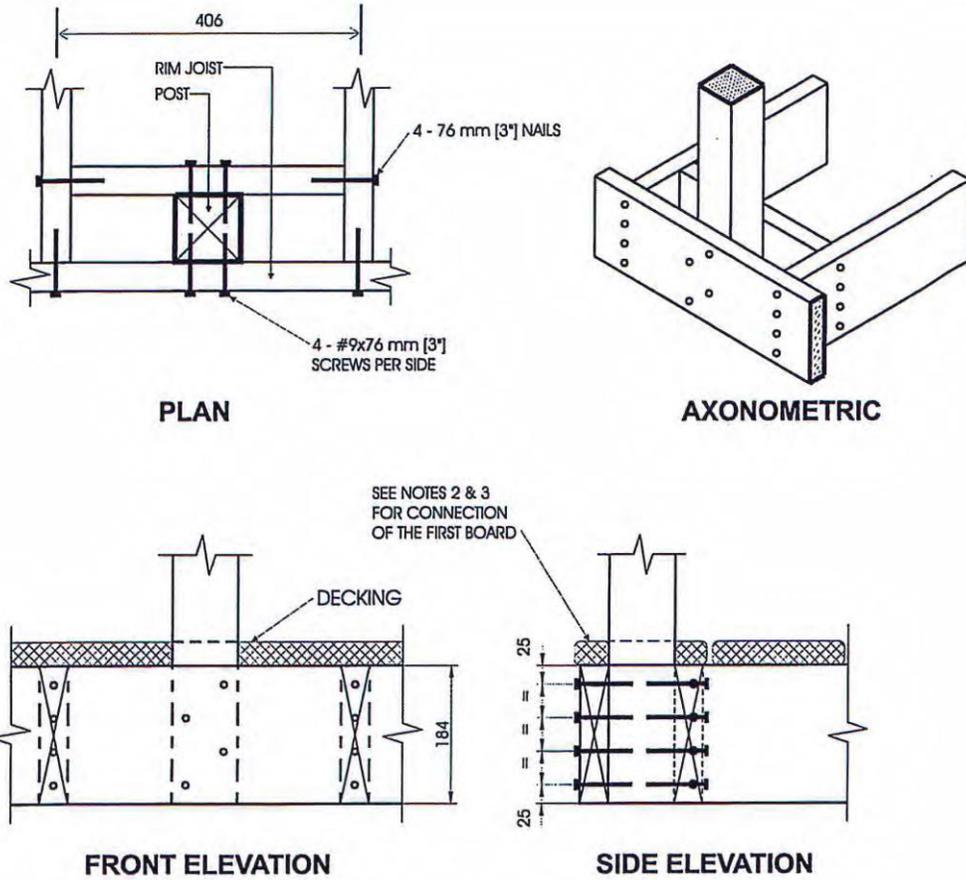


**Detail EB-1**  
**Exterior Connection: Post Nailed to Rim Joist**

**Notes:**

1. Decking is omitted from the plan view and the axonometric view for clarity.
2. Fasten 25 mm x 140 mm (5/4" x 6" nominal) outer deck board to rim joist with 63 mm (2 1/2") nails at 300 mm (12").
3. Fasten 25 mm x 140 mm (5/4" x 6" nominal) outer deck board to floor joist with 1 - 63 mm (2 1/2") nail at each joist.
4. The post may be positioned anywhere between the joists.
5. Dimensions shown are in mm unless otherwise specified.

MAXIMUM SPAN OF RAIL BETWEEN POSTS	
Species	Maximum Span, m (ft-in)
Douglas Fir-Larch, Hem-Fir, Spruce-Pine-Fir	1.22 (4'-0")
Northern Species	1.20 (3'-11")
Column 1	2

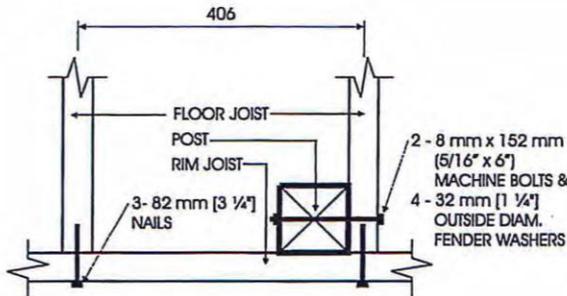


**Detail EB-2**  
**Exterior Connection: Post Screwed to Rim Joist**

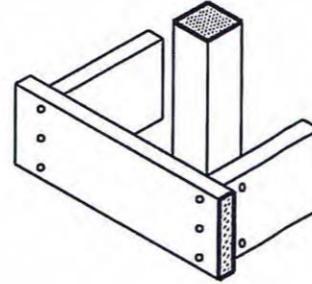
**Notes:**

1. Decking is omitted from the plan view and the axonometric view for clarity.
2. Fasten 25 mm x 140 mm (5/4" x 6" nominal) outer deck board to rim joist with 63 mm (2 1/2") nails at 300 mm (12").
3. Fasten 25 mm x 140 mm (5/4" x 6" nominal) outer deck board to floor joist with 1 - 63 mm (2 1/2") nail at each joist.
4. The post may be positioned anywhere between the joists.
5. #9 screws may be replaced by #8 screws if the maximum spacing between posts is not more than 1.20 m (3'-11").
6. Dimensions shown are in mm unless otherwise specified.

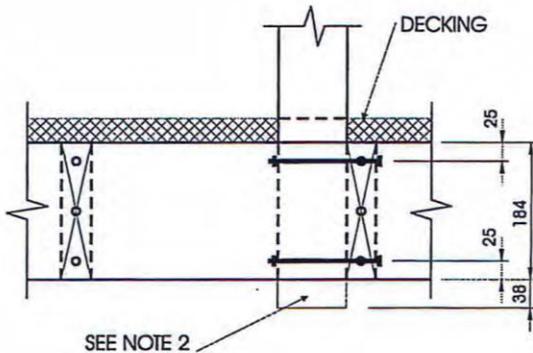
MAXIMUM SPAN OF RAIL BETWEEN POSTS	
Species	Maximum Span, m (ft-in)
Douglas Fir-Larch, Hem-Fir, Spruce-Pine-Fir	1.56 (5'-1")
Northern Species	1.20 (3'-11")
Column 1	2



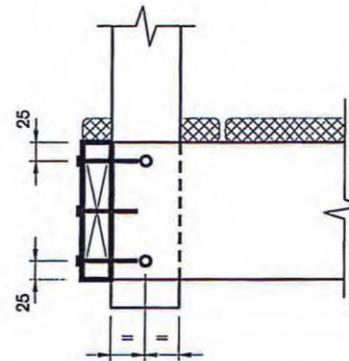
PLAN



AXONOMETRIC



FRONT ELEVATION



SIDE ELEVATION

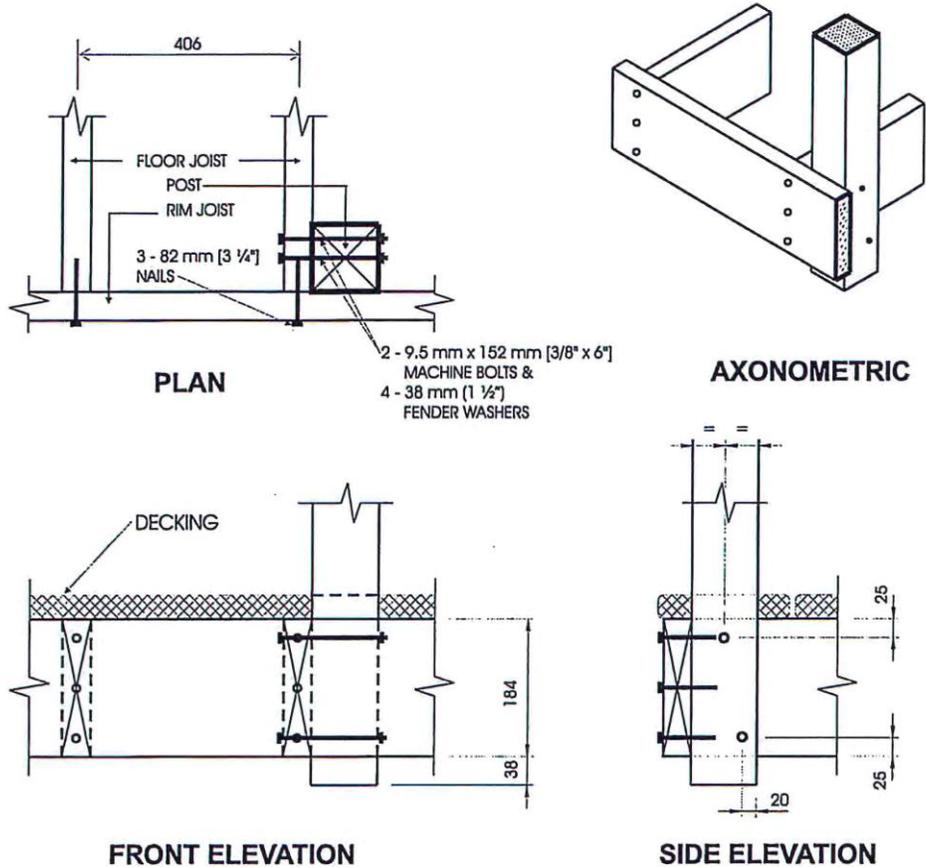
**Detail EB-3**

**Exterior Connection: Post Bolted to Floor Joist - 8 mm (5/16") Bolts**

**Notes:**

1. Decking is omitted from the plan view and the axonometric view for clarity.
2. 38 mm (1 1/2") post projection is not required where the maximum spacing between posts does not exceed 1.20 m (3'-11").
3. Joists may be spaced at 610 mm (24") o.c. or 406 mm (16") o.c.
4. Where floor joists are spaced at 610 mm (24") o.c., decking shall have a minimum thickness of 38 mm (1 1/2") and shall be fastened to the floor with 2 - 76 mm (3") nails.
5. Dimensions shown are in mm unless otherwise specified.

MAXIMUM SPACING BETWEEN POSTS	
Species	Maximum Span, m (ft-in)
Douglas Fir-Larch, Hem-Fir, Spruce-Pine-Fir	1.29 (4'-3")
Northern Species	1.20 (3'-11")
Column 1	2

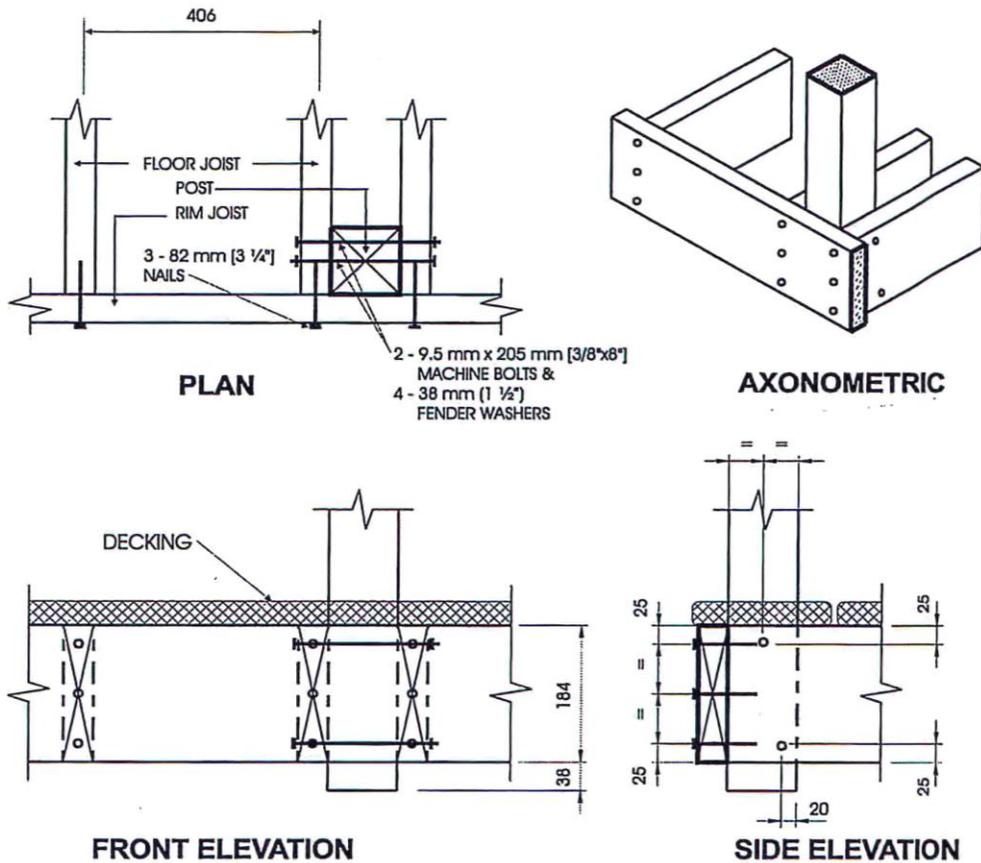


**Detail EB-4**  
**Exterior Connection: Post Bolted to Floor Joist - 9.5 mm (3/8") Bolts**

**Notes:**

1. Decking is omitted from the plan view and the axonometric view for clarity.
2. 38 mm (1 1/2") post projection is not required where the maximum spacing between posts does not exceed 1.20 m (3'-11").
3. Joists may be spaced at 610 mm (24") o.c. or 406 mm (16") o.c.
4. Where floor joists are spaced at 610 mm (24") o.c., decking shall have a minimum thickness of 38 mm (1 1/2") and shall be fastened to the floor with 2 - 76 mm (3") nails.
5. Dimensions shown are in mm unless otherwise specified.

MAXIMUM SPACING BETWEEN POSTS	
Species	Maximum Span, m (ft-in)
Douglas Fir-Larch, Hem-Fir, Spruce-Pine-Fir	1.49 (4'-11")
Northern Species	1.20 (3'-11")
Column 1	2

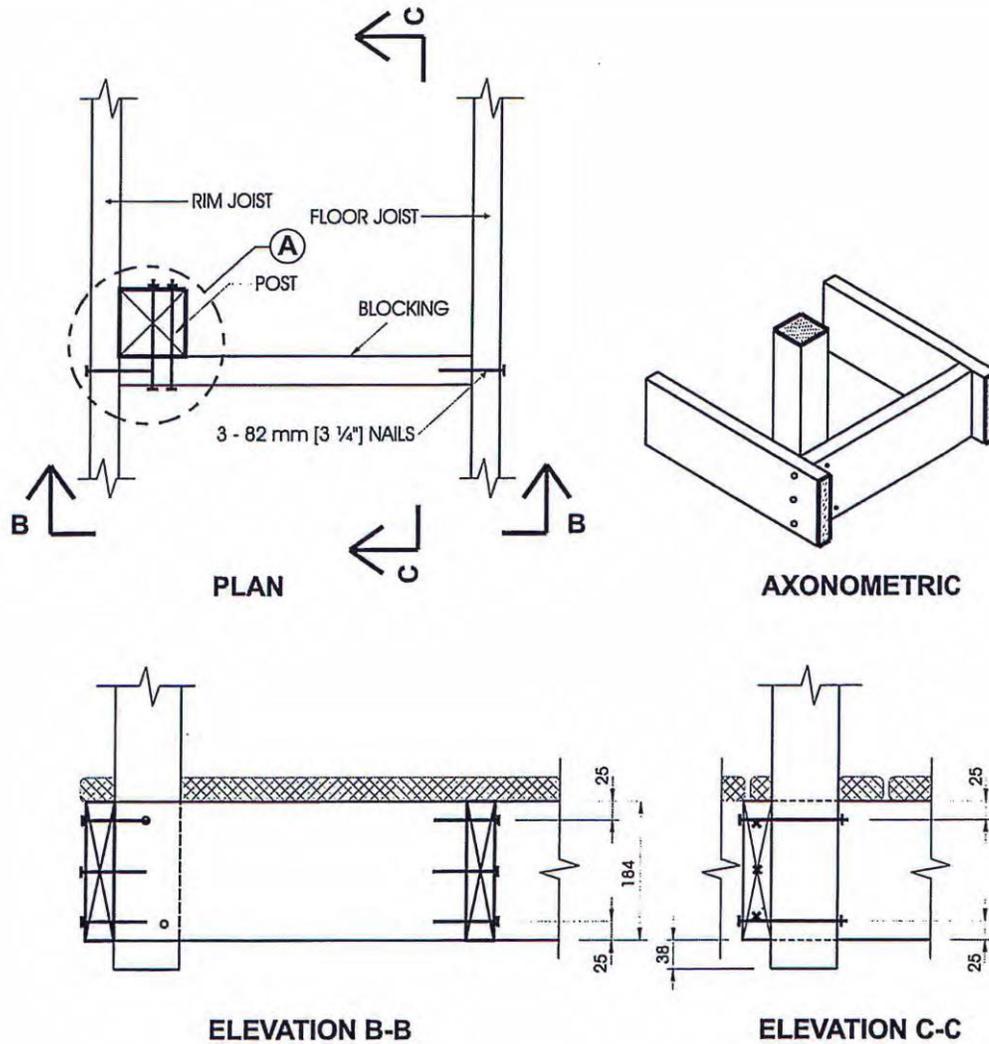


**Detail EB-5**  
**Exterior Connection: Post Bolted to 2 Floor Joists**

**Notes:**

1. Decking is omitted from the plan view and the axonometric view for clarity.
2. 38 mm (1½") post projection is not required where the maximum spacing between posts does not exceed 1.20 m (3'-11").
3. Joists may be spaced at 610 mm (24") o.c. or 406 mm (16") o.c..
4. Where floor joists are spaced at 610 mm (24") o.c. decking shall have a minimum thickness of 38 mm (1½") and shall be fastened to the floor with 2 - 76 mm (3") nails.
5. Dimensions shown are in mm unless otherwise specified.

MAXIMUM SPACING BETWEEN POSTS	
Species	Maximum Span, m (ft-in)
Douglas Fir-Larch, Hem-Fir, Spruce-Pine-Fir	2.14 (7'-0")
Northern Species	1.20 (3'-11")
Column 1	2

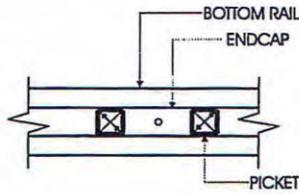


### Detail EB-6

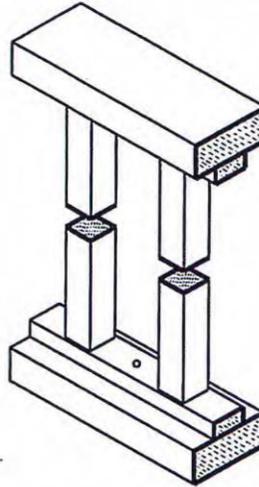
#### Exterior Connection: Post Fastened to Floor, Guard Parallel to Floor Joists

##### Notes:

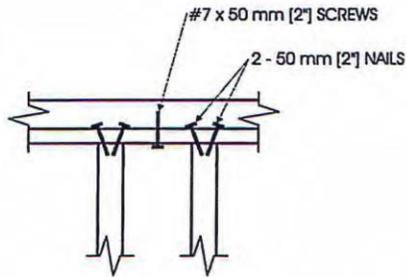
1. Use any of the connection details shown on Details EB-1 to EB-5 at location "A". Connection Detail EB-4 is shown in this detail, as an example.
2. Maximum spacing between posts is determined from connection detail used at location "A".
3. Decking is omitted from the plan view and the axonometric view for clarity.
4. Blocking shall be not less than 38 mm x 184 mm (2" x 8" nominal).
5. Dimensions shown are in mm unless otherwise specified.



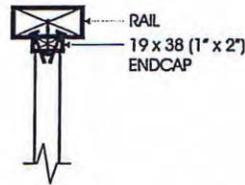
**PLAN  
BOTTOM RAIL**



**AXONOMETRIC**



**FRONT ELEVATION**



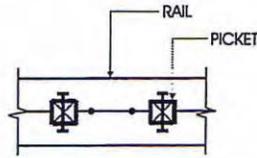
**SIDE ELEVATION**

**Detail EC-1**

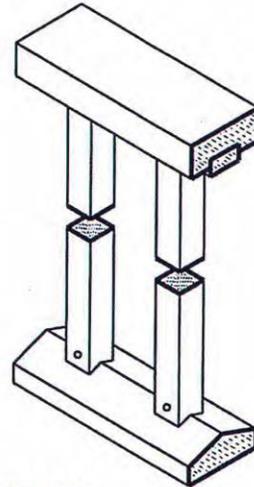
**Exterior Connection: Infill Picket Nailed to Endcap - Endcap Screwed to Rail**

**Notes:**

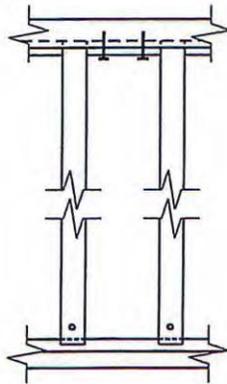
1. Fasten each end of each picket to endcaps with 2 - 50 mm (2") nails.
2. Fasten endcaps to rails with #7 x 50 mm (2") screws at 300 mm (12") o.c.
3. See Table 2.1.2. for minimum sizes of pickets.



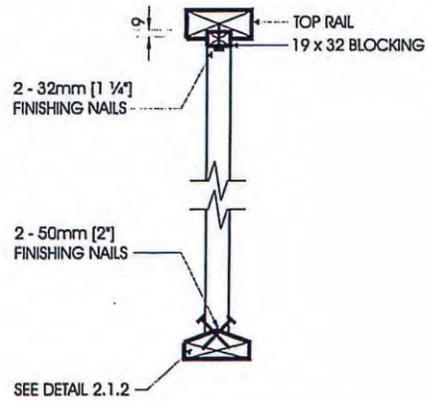
**PLAN  
BOTTOM RAIL**



**AXONOMETRIC**



**FRONT ELEVATION**



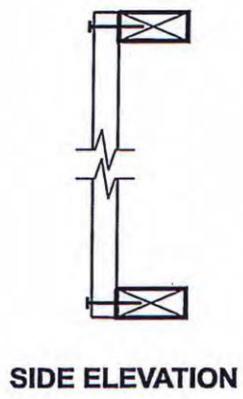
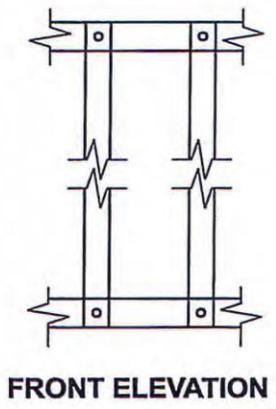
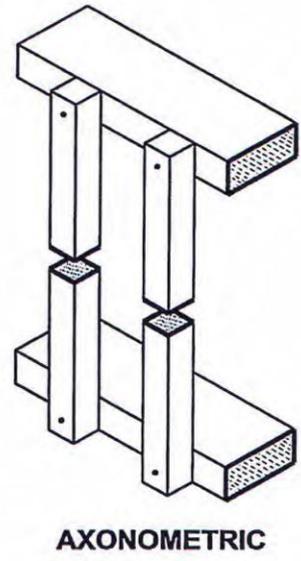
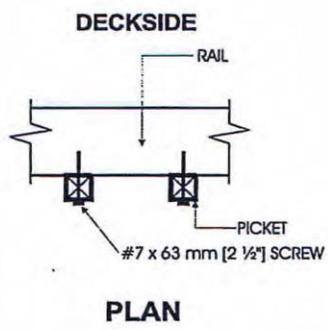
**SIDE ELEVATION**

**Detail EC-2**

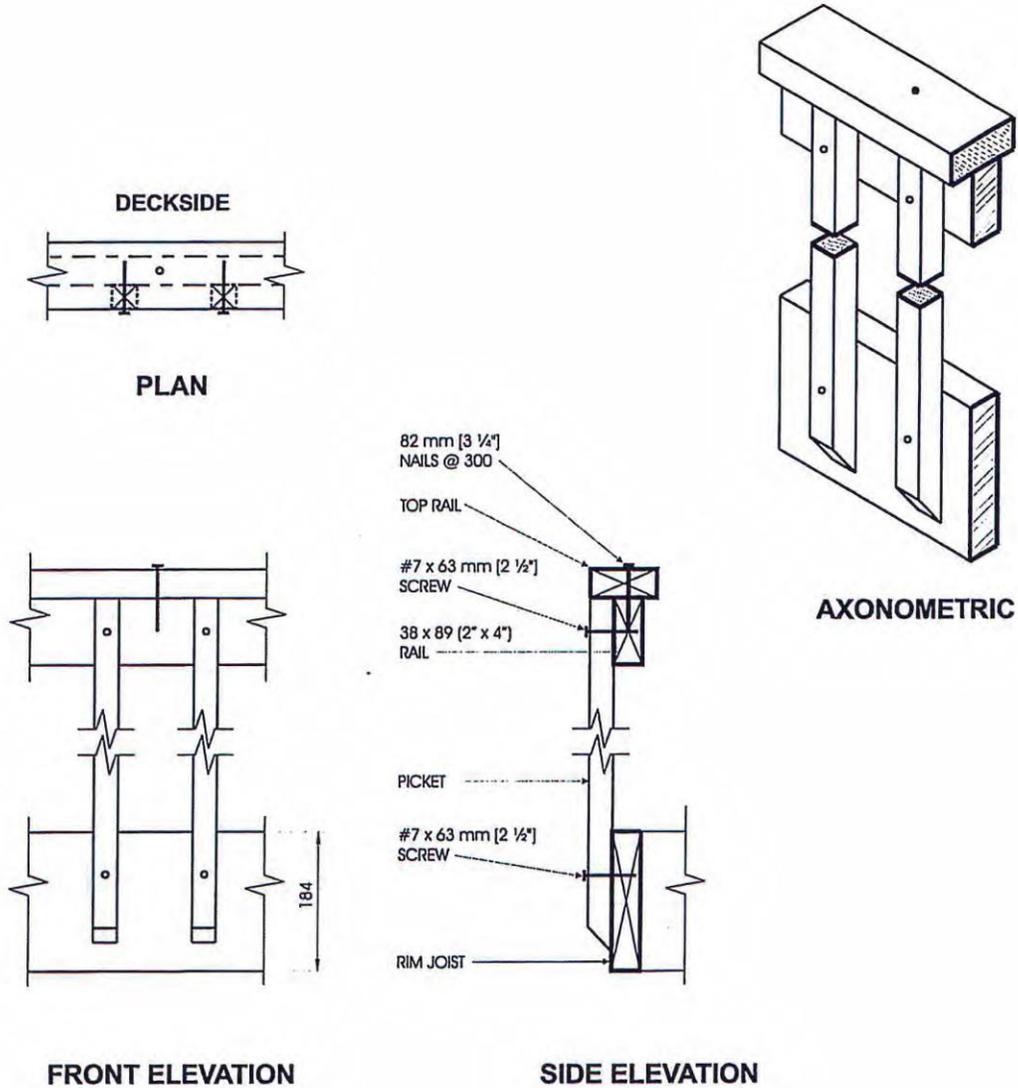
**Exterior Connection: Infill Picket Nailed to Rail**

**Notes:**

1. See Table 2.1.2. for minimum sizes of pickets.
2. Dimensions shown are in mm unless otherwise specified.



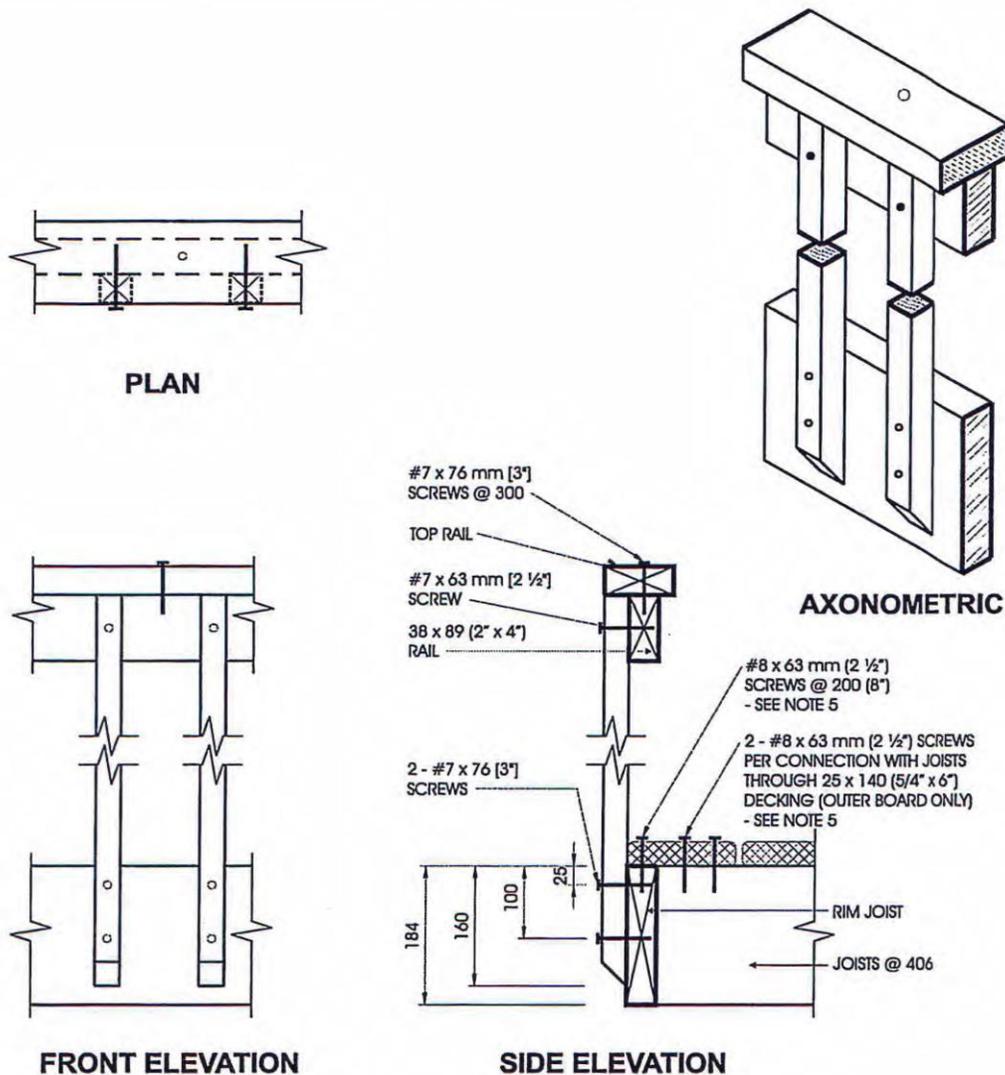
**Detail EC-3**  
**Exterior Connection: Infill Picket Screwed to Rail**



**Detail EC-4**  
**Exterior Connection: Infill Picket Screwed to Top Rail and Rim Joist**

**Note:**

1. Dimensions shown are in mm unless otherwise specified.

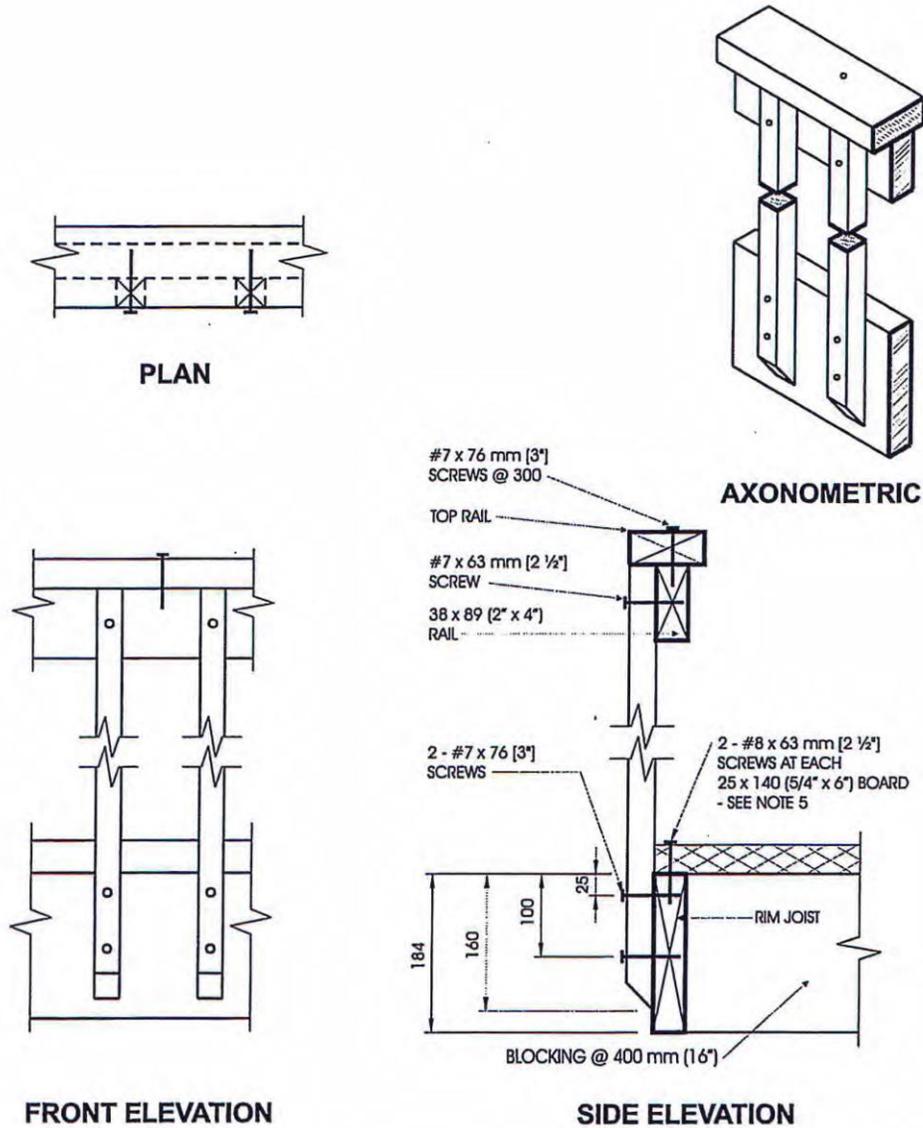


### Detail ED-1

#### Exterior Connection: Cantilevered Picket Screwed to Rim Joist

##### Notes:

1. Provide a suitable post, return, or solid support at each end of the guard.
2. Wood for cantilevered pickets shall be Douglas Fir-Larch, Spruce-Pine-Fir, or Hem-Fir Species.
3. Fasten rim joist to each floor joist with 3 - 82 mm (3 1/4") nails.
4. Dimensions shown are in mm unless otherwise specified.
5. The outer deck board shall not be less than 140 mm (6" nominal) wide. Where 38 mm (2" nominal) thick boards are used, the length of the wood screws shall be not less than 76 mm (3").

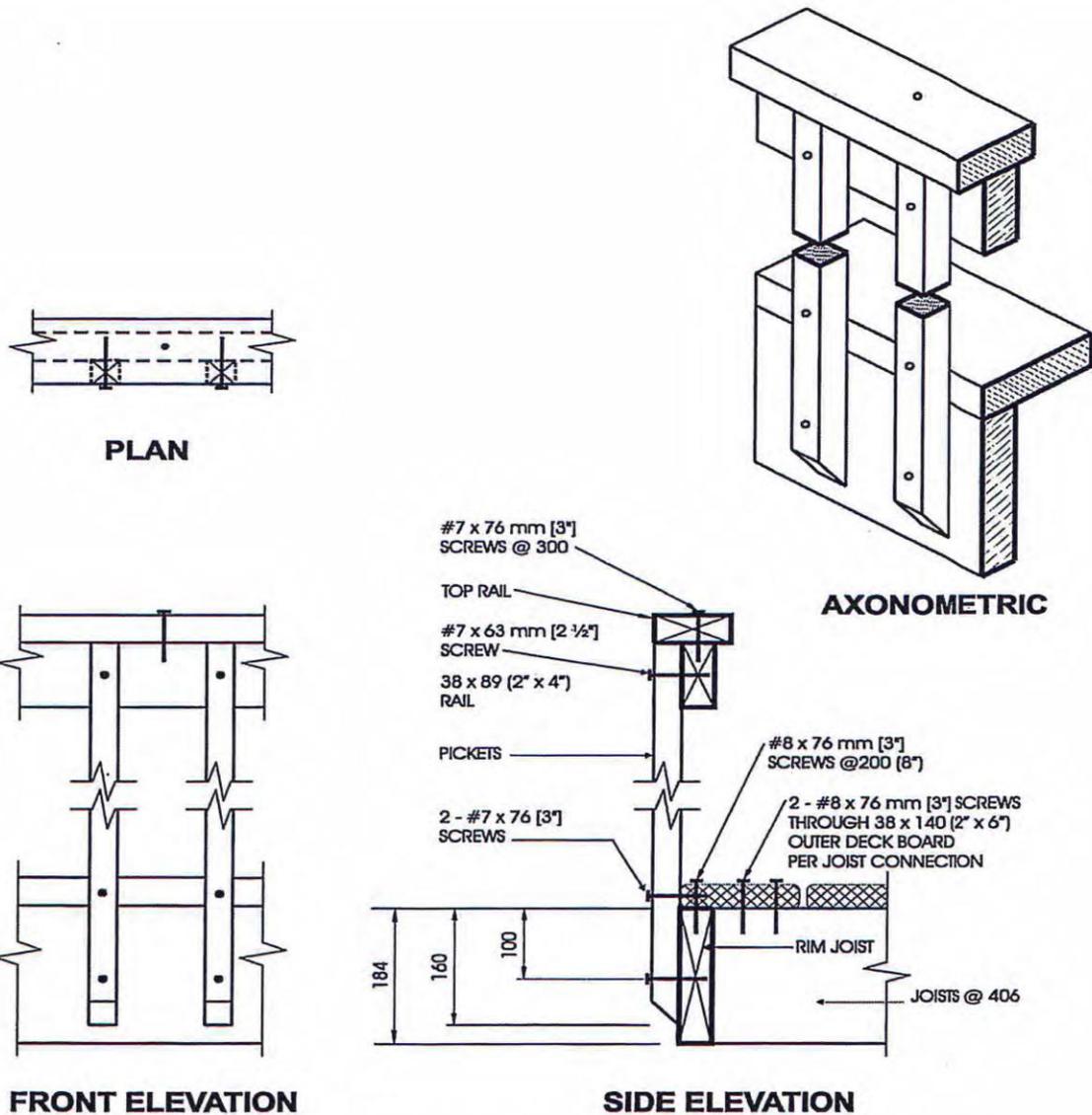


**Detail ED-2**

**Exterior Connection: Cantilevered Picket Screwed to Rim Joist,  
Guard Parallel to Floor Joists**

**Notes:**

1. Provide a suitable post, return, or solid support at each end of the guard.
2. Wood for cantilevered pickets shall be Douglas Fir-Larch, Spruce-Pine-Fir, or Hem-Fir Species.
3. Fasten rim joist to blocking with 3 - 82 mm (3 1/4") nails.
4. Dimensions shown are in mm unless otherwise specified.
5. Where 38 mm (2" nominal) thick boards are used, the length of the wood screws shall be not less than 76 mm (3").

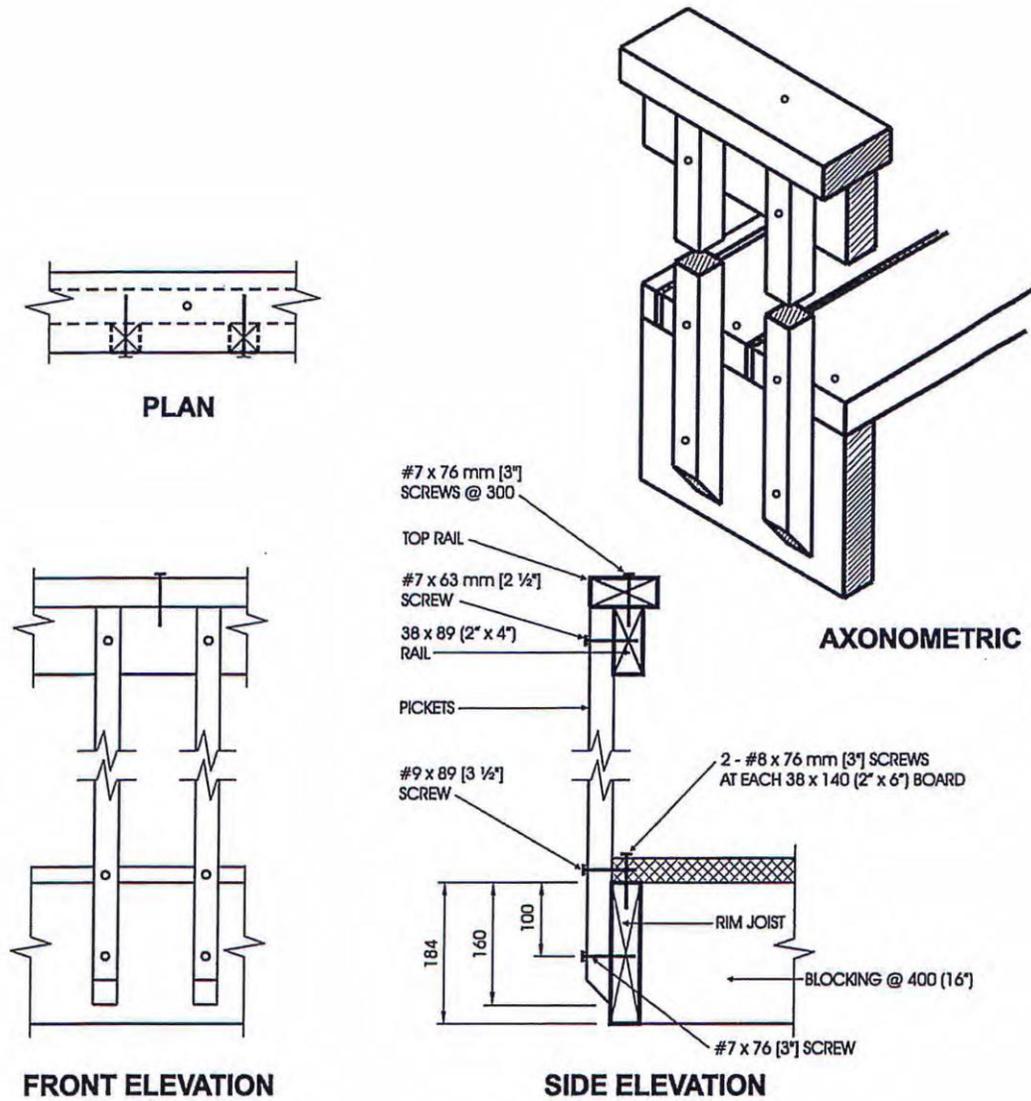


**Detail ED-3**

**Exterior Connection: Cantilevered Picket Screwed to Rim Joist and Deck**

**Notes:**

1. Provide a suitable post, return, or solid support at each end of the guard.
2. Wood for cantilevered pickets shall be Northern Species.
3. Fasten rim joist to each floor joist with 3- 82 mm (3 1/4") nails.
4. Dimensions shown are in mm unless otherwise specified.

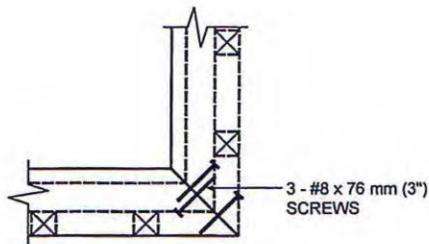


**Detail ED-4**

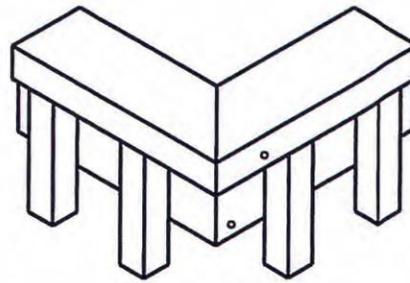
**Exterior Connection: Cantilevered Picket Screwed to Rim Joist and Deck, Guard Parallel to Floor Joists**

**Notes:**

1. Provide a suitable post, return, or solid support at each end of the guard.
2. Wood for cantilevered pickets shall be Northern Species.
3. Fasten rim joist to blocking with 3 - 82 mm (3 1/4") nails.
4. Dimensions shown are in mm unless otherwise specified.

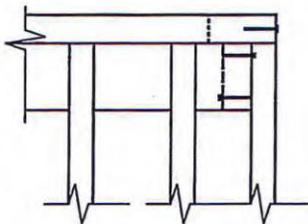


PLAN TOP RAIL

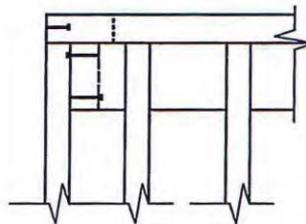


AXONOMETRIC

ONE FASTENER IN HORIZONTALLY ORIENTATED PORTION OF TOP RAIL AND TWO IN VERTICALLY ORIENTATED PORTION.



FRONT TOP RAIL



SIDE TOP RAIL

**Detail ED-5**  
**Exterior Connection: Corner Joint**

**Notes:**

- 1. Screws fastening pickets are omitted for clarity.
- 2. Provide a minimum of 10 pickets beyond the return if end restraint of the guard is provided by this return detail only.

## Ramps

**NOTE:** The following information is for exterior ramps only. Pictures are for illustration purposes only. Your ramp may vary depending on site conditions and customer preferences. However, the dimensions and values used are minimum and/or maximum Ontario Building code requirements. The following are requirements based on OBC regulations.

\* For ramp structural details, use the Deck Guide for footings, spans etcetera.

**3.8.3.4 Ramps** (R1), (R2), (R3) Refer to the Drawings in this section.

**Width** - Minimum 900 mm (35 7/16") between handrails (R3)

**Slope** - Maximum 1:12 (R1)

**Landings** - At the top and bottom – minimum 1670 mm x 1670 mm (65 3/4" x 65 3/4") (R1), (R2)

- See figure (R2) for landings with doors adjacent to the landing.
- At intervals of maximum 9 meters (29'6") or at a change in direction. The same width as the ramp x minimum 1670 mm (65 3/4"). (R1)

**Handrails** - Required on both sides. (R3)

- Where the ramp is wider than 2200 mm (86 5/8"), an intermediate handrail is required with minimum 900 mm (35 7/16") between the intermediate handrail and one of the other handrails
- Be continuously graspable along their entire length.
- Be circular in cross-section or non-circular within the dimensions illustrated. (R3)
- Be a minimum of 865 mm (34") and a maximum of 965 mm (38") high measured vertically above the surface of the ramp. (R3)
- Be terminated in such a manner that it will not obstruct traffic or cause a hazard.
- Extend horizontally a minimum of 300 mm (11 3/4") beyond the top and bottom of the ramp.
- Have a minimum clearance of 50 mm (2") between the handrail and any wall or guard to which it is attached. (R3)

**Walls / Guards** - Required on both sides. (See Deck section for guard details)

- Minimum 1070 mm (42") high measured vertically above the surface of the ramp. (R3)
- Designed so that no member, attachment or opening located between 140 mm (5 1/2") and 900 mm (35 7/16") will facilitate climbing.

**Curbs** - Required on each side where no solid wall or guard is provided.

- Minimum 50 mm (2") high. (R3)
- Not required where the railings or other barriers are within 50 mm (2") of the ramp surface. (R3)

### Ramp Detail Drawings

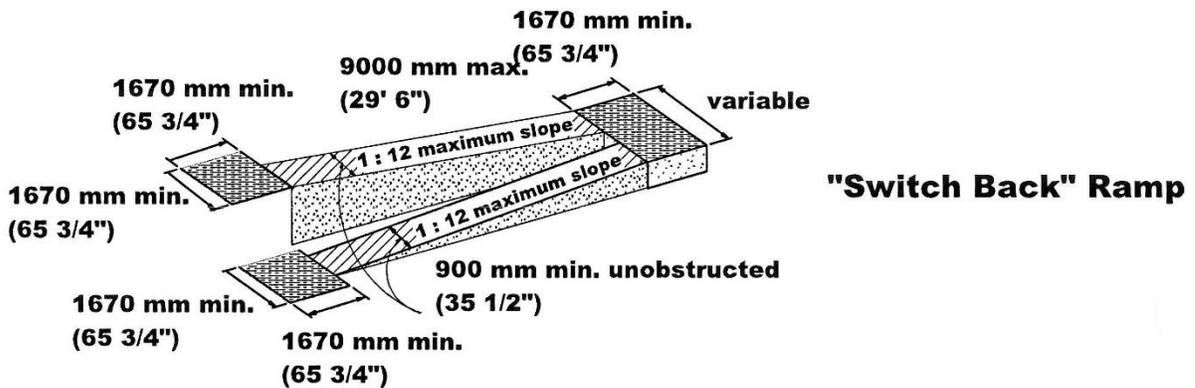
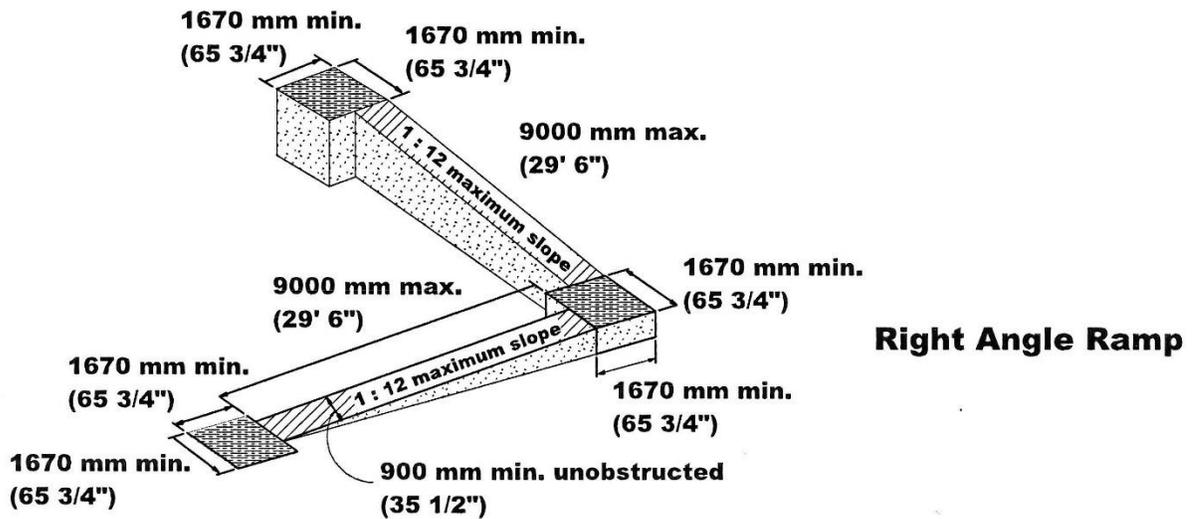
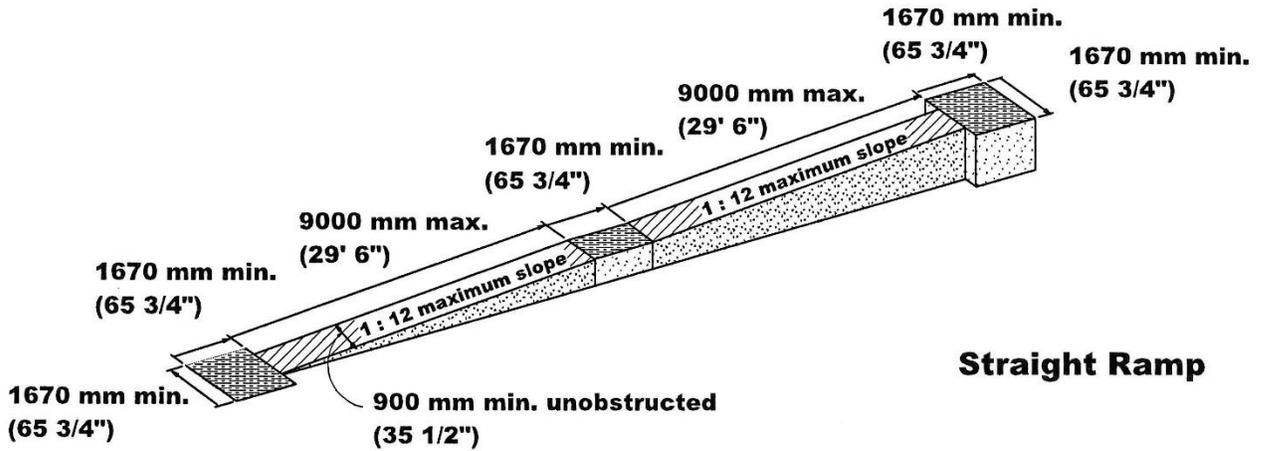
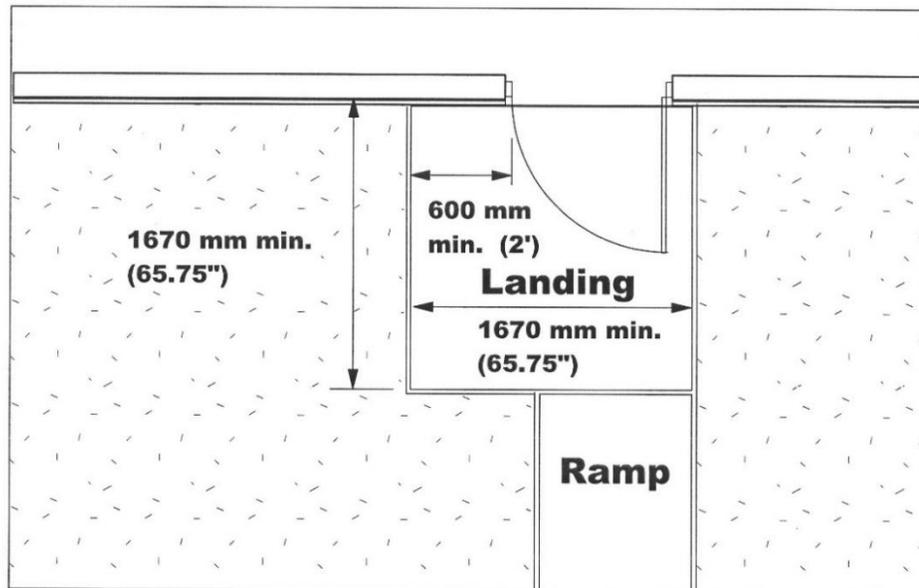
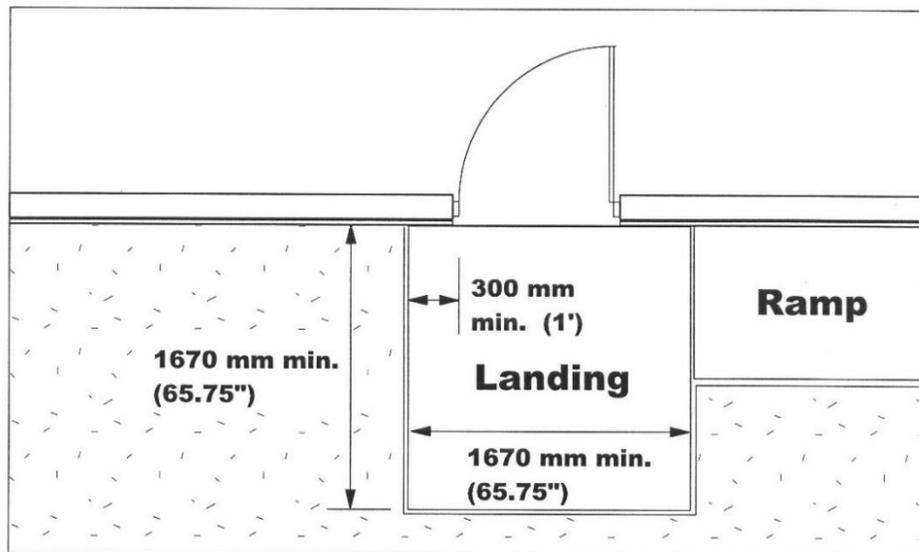


Figure – R1

## Landing Details

**Door Swings Into Ramp Landing - Plan View****Door Swings Away From Ramp Landing - Plan View****Figure - R2**

### Guard and Handrail Details

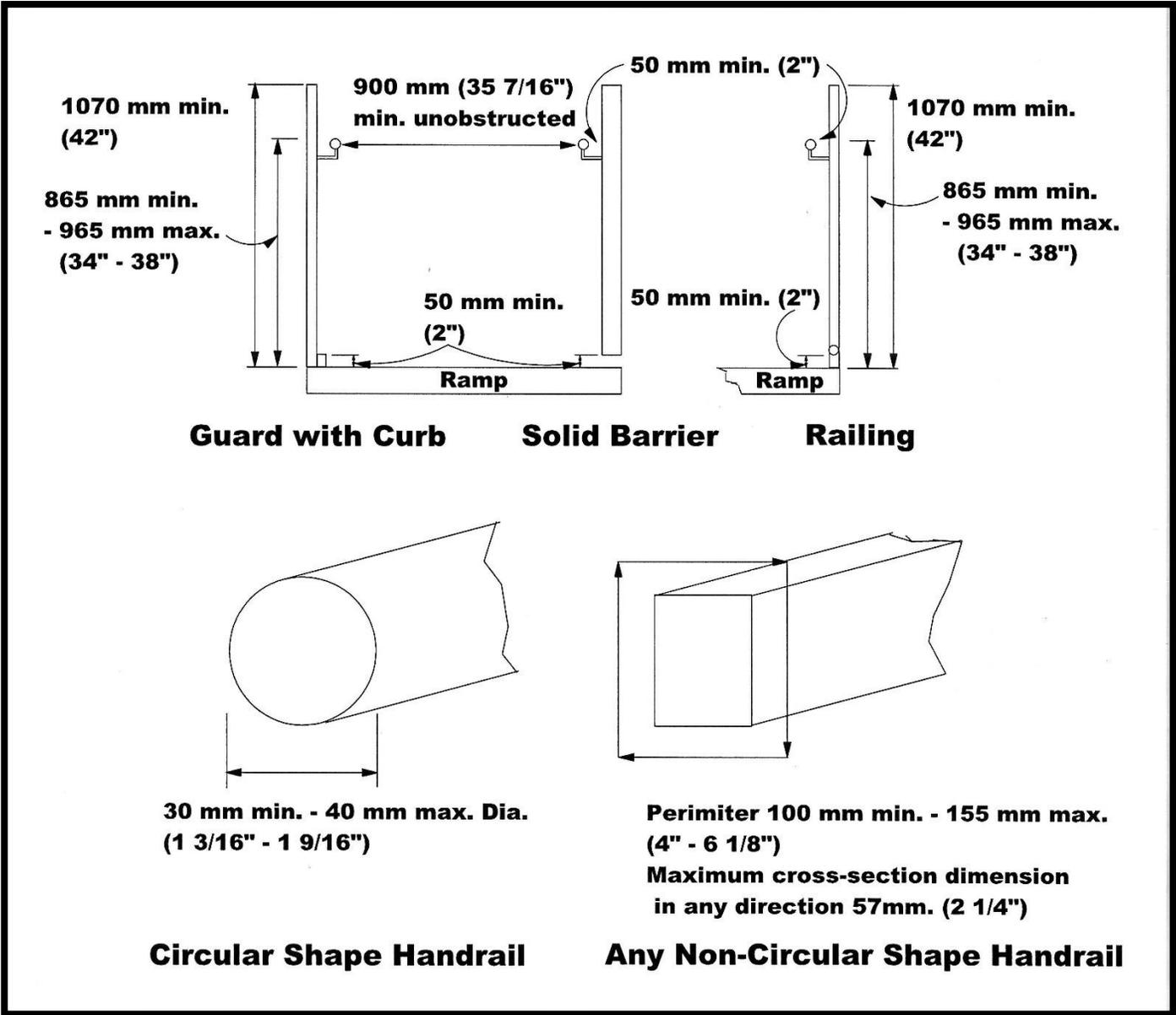


Figure - R3

## Contact Information

**Kyle Phillips** (Chief Building Official)  
705-932-9319  
Email: [kphillips@cavanmonaghan.net](mailto:kphillips@cavanmonaghan.net)

**Frick Heilingbrunner** (Plans Examiner)  
705-932-9331  
Email: [fheilingbrunner@cavanmonaghan.net](mailto:fheilingbrunner@cavanmonaghan.net)

**Christina Coulter** (Planning Technician)  
705-932-9321  
Email: [ccoulter@cavanmonaghan.net](mailto:ccoulter@cavanmonaghan.net)

**Karen Ellis** (Township Director of Planning)  
705-932-9334  
Email: [kellis@cavanmonaghan.net](mailto:kellis@cavanmonaghan.net)

**Otonabee Region Conservation Authority (ORCA)**  
250 Milroy Drive, Peterborough, On. K9K 7M9  
705-745-5791  
Permits are required within regulated areas.

**Ontario 1 Locate**  
**Contractors** <https://www.on1call.com/contractors/>  
**Homeowners** <https://www.on1call.com/homeowners/>

**Call Before You Dig!**

**More contacts are available in the Building Information Pamphlet which is to be used in conjunction with this brochure.**

## Acknowledgements

This booklet is a compilation of original text and drawings as well as text, excerpts and drawings from other sources including but not limited to the following:

Ontario Building Code

Ontario Building Code SB-7

Cobourg Deck Guide

Canadian Wood Council

American Wood Council

Tacvoc Standard Details.

