



Deck Design Guide

Revised 2018

Municipality of Port Hope

Building Services

5 Mill Street South

Port Hope, ON L1A 2S6

905-885-2431

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.

**Municipality of Port Hope
DECK GUIDE**

*****Prior to Building Department involvement or permit application, documented project approval from the Municipal Planning Department is required. Municipal Planners must be contacted at the Development Team Office – 905-885-2431***

DEFINITIONS

A '**Deck**' is a raised platform that is attached to a dwelling. A deck will generally require a Building Permit, and will require protective guards if it has a walking surface greater than 24" above grade.

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 a 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.

NOTE: All Decks, Porches, Patios, and other structures must conform to Municipal 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.

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.

Remember to call for location of utilities before you dig

**Ontario One Call
(Underground locates)
1-800-400-2255**

GENERAL INFORMATION

PIERS

General:

-Piers used shall be not less than 9" in diameter.

NOTE: Under most circumstances it may be preferable to expand the lower portion of a smaller pier to achieve the required bearing area rather than use a large pier size.

Size: Table 9.15.3.4.

Minimum Footing Size = 0.40^{m^2} (4.3 ft^2) where; the supported joist length is 4.90m (16'), the pier spacing is 3.00m (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. *NOTE: The minimum required bearing area must be doubled where the soil bearing capacity is affected by a high water table.*

| MINIMUM REQUIRED BEARING AREA [ft ²] (Typical Bearing Dimensions) | | | | | | | |
|--|-----|---|---|---|---|---|---|
| 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 ² (10" Ø or 8"x8") | 0.65 ft ² (12" Ø or 10"x10") | 0.86 ft ² (14" Ø or 12"x12") | 1.08 ft ² (14" Ø or 13"x13") | 1.29 ft ² (16" Ø or 14"x14") | 1.51 ft ² (18" Ø or 15"x15") |
| | 6' | 0.65 ft ² (12" Ø or 10"x10") | 0.97 ft ² (14" Ø or 12"x12") | 1.29 ft ² (16" Ø or 14"x14") | 1.61 ft ² (18" Ø or 16"x16") | 1.94 ft ² (20" Ø or 17"x17") | 2.26 ft ² (22" Ø or 19"x19") |
| | 8' | 0.86 ft ² (14" Ø or 8"x8") | 1.29 ft ² (16" Ø or 14"x14") | 1.72 ft ² (18" Ø or 16"x16") | 2.15 ft ² (20" Ø or 18"x18") | 2.58 ft ² (22" Ø or 20"x20") | 3.01 ft ² (24" Ø or 21"x21") |
| | 10' | 1.08 ft ² (14" Ø or 13"x13") | 1.61 ft ² (18" Ø or 16"x16") | 2.15 ft ² (20" Ø or 18"x18") | 2.69 ft ² (24" Ø or 20"x20") | 3.23 ft ² (N/A Ø or 22"x22") | 3.76 ft ² (N/A Ø or 24"x24") |
| | 12' | 1.29 ft ² (16" Ø or 14"x14") | 1.94 ft ² (20" Ø or 17"x17") | 2.58 ft ² (22" Ø or 20"x20") | 2.82 ft ² (24" Ø or 21"x21") | 3.87 ft ² (N/A Ø or 24"x24") | 4.52 ft ² (N/A Ø or 26"x26") |
| | 14' | 1.51 ft ² (18" Ø or 15"x15") | 2.26 ft ² (22" Ø or 18"x18") | 3.01 ft ² (24" Ø or 21"x21") | 3.76 ft ² (N/A Ø or 24"x24") | 4.52 ft ² (N/A Ø or 26"x26") | 5.27 ft ² (N/A Ø or 28"x28") |
| | 16' | 1.72 ft ² (18" Ø or 16"x16") | 2.58 ft ² (22" Ø or 20"x20") | 3.44 ft ² (N/A Ø or 23"x23") | 4.30 ft² (N/A Ø or 25"x25") | 5.16 ft ² (N/A Ø or 28"x28") | 6.02 ft ² (N/A Ø or 30"x30") |

Piers: 9.3.1.6. (1)

-Piers shall consist of poured concrete with a minimum compressive strength of 15 MPa (2200 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 1.2^m (3'-11") below grade.

Height: 9.15.2.3. (3)

-Piers shall not extend more than 3 times their width/diameter 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^{mm} x 140^{mm} (5-1/2"x5-1/2") for square or rectangular columns.

-Smaller Decks and Porches **may** be allowed to be constructed using a 90^{mm} x 90^{mm} (4"x4") post sandwiched between two 2"x 8" (minimum size) beam girders which are through bolted with a none corrosive fastener and is less than 1.2m above finished grade. The Chief Building Official will review the make a ruling if this design will be allowed.

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 100^{mm} (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.*

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

| Supported Length (m) (¹) | 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") |

(¹) 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 bear on each of their supporting member of not less than their width and not less than 89^{mm} (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^{mm} (3.5") in length, not more than 450^{mm} (18") apart, and not more than 100^{mm} (4") from the end.

JOISTS

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

| Joist Size | Maximum Span (m) | | |
|-----------------|------------------|----------------|----------------|
| | 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 recommended as it does not allow for the proper attachment of railings.*

Cantilever: 9.23.9.9.

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

-38^{mm}x235^{mm} (2"x10") or larger may not be cantilevered more than 600^{mm} (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^{mm} (3-1/4") nails.

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

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

-Bridging shall be located not more than 2.1m (6'-11") from each support or other rows of bridging.

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

DECKING

-Please confirm with Building Department that the decking material being used is an approved material under the Ontario Building Code.

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

GUARDS AND RAILINGS

-Railings designs and supports shall conform to Supplementary Standard SB-7 of the Ontario Building Code

GUARDS

9.8.8.3. Height of Guards

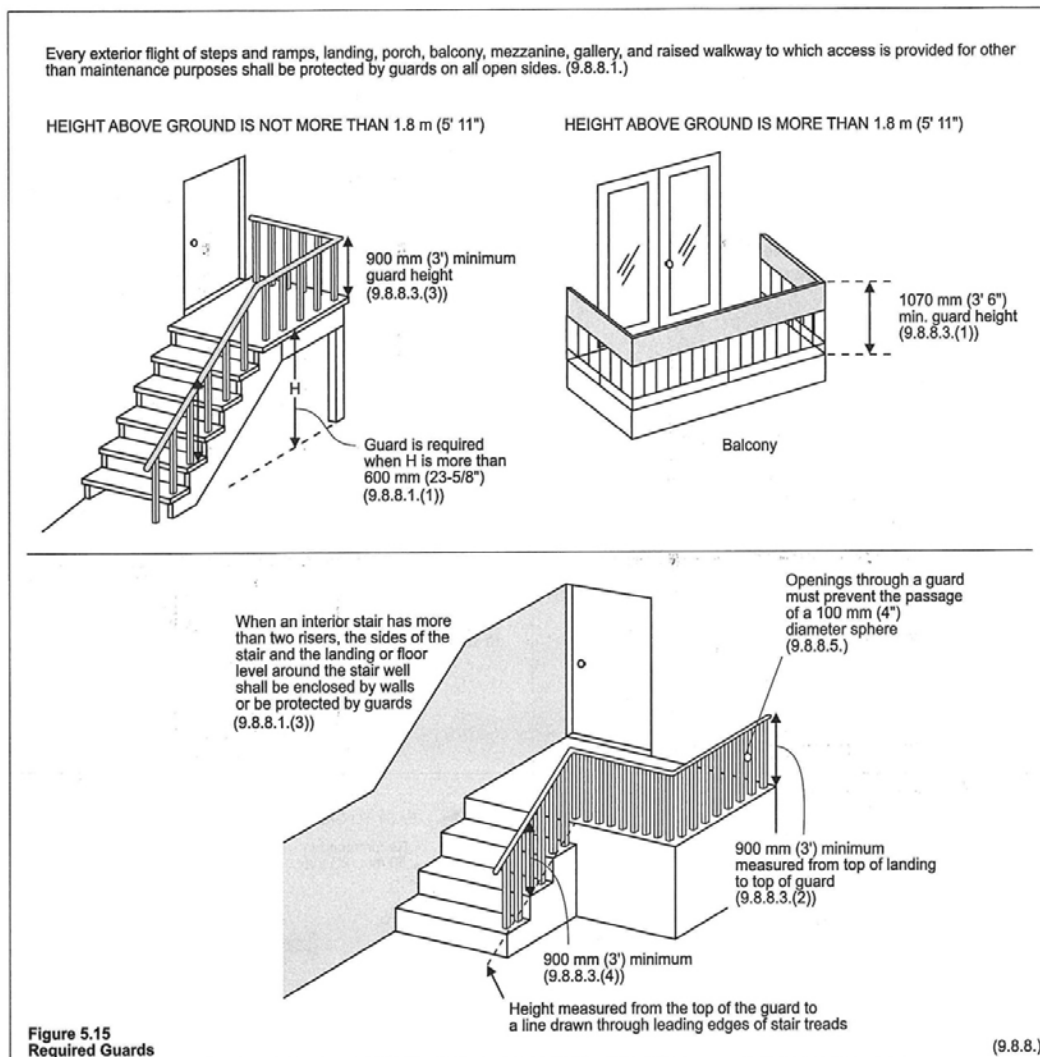
-Exterior guards serving not more than one dwelling unit shall be not less than 900^{mm} (36") high where the walking surface served by the guard is not more than 1.8m (5'-11") mm above the finished ground level, otherwise the guards shall be not less than 1.7m (42") high. If a bench is incorporated into a guard the required height is measured above the bench surface.

9.8.8.5. Openings in Guards

-Openings through a guard shall be of a size that will prevent the passage of a spherical object having a diameter of 100^{mm} (4").

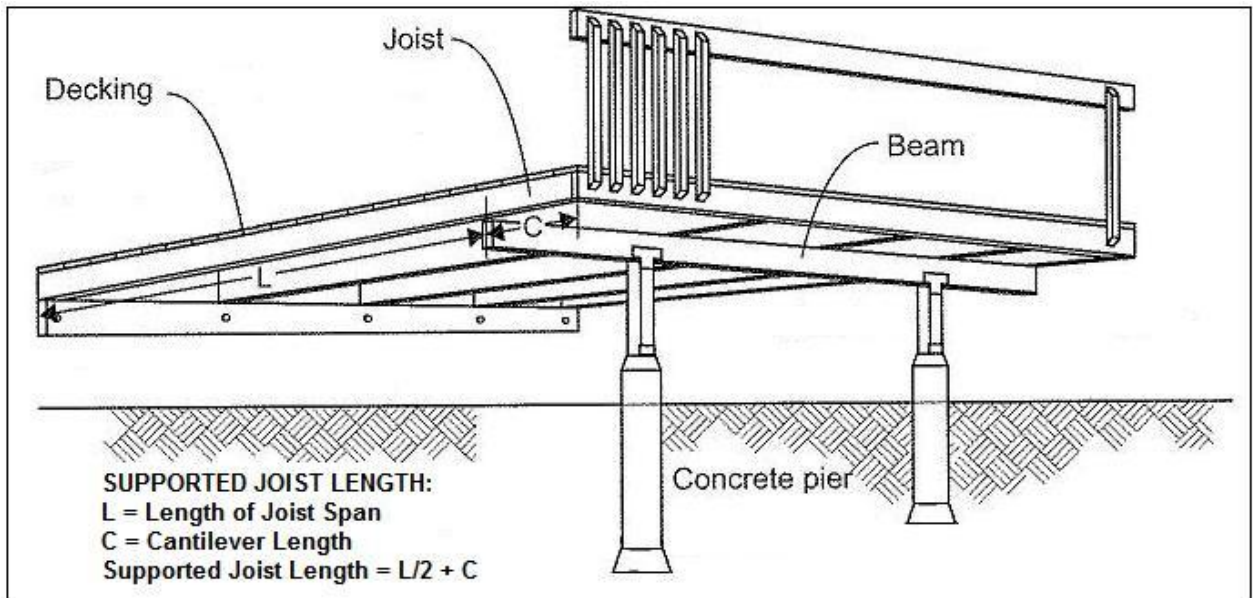
9.8.8.6. Design to Prevent Climbing

-Guards shall be designed so that **no** member, attachment, or opening will facilitate climbing.



ILLUSTRATIONS

FROM THE "CODE AND CONSTRUCTION - GUIDE FOR HOUSING"



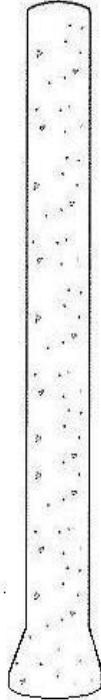
PIERS

EXAMPLE: Where Require Bearing Area = 1.29 Sq. Ft.

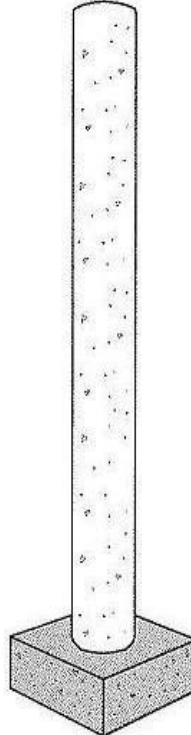
NOTE: REFER TO PIER TABLE FOR REQUIRED SIZES



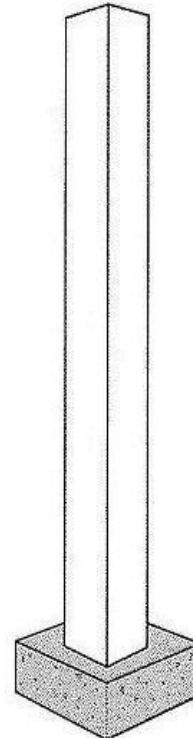
16" Dia. Concrete Pier
Without Footing



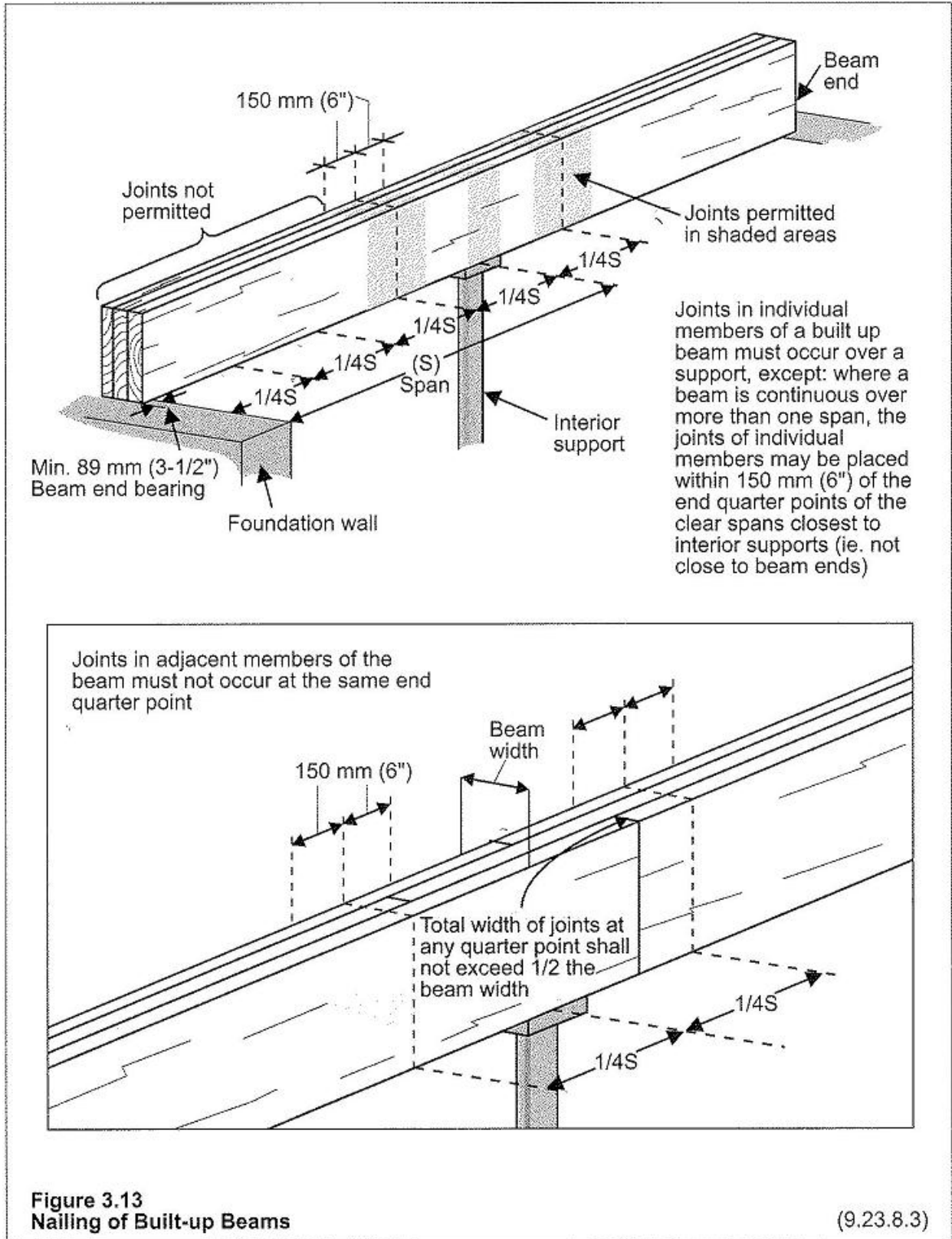
8" Dia. Concrete Pier
With Base Expanded
To 16" Dia.

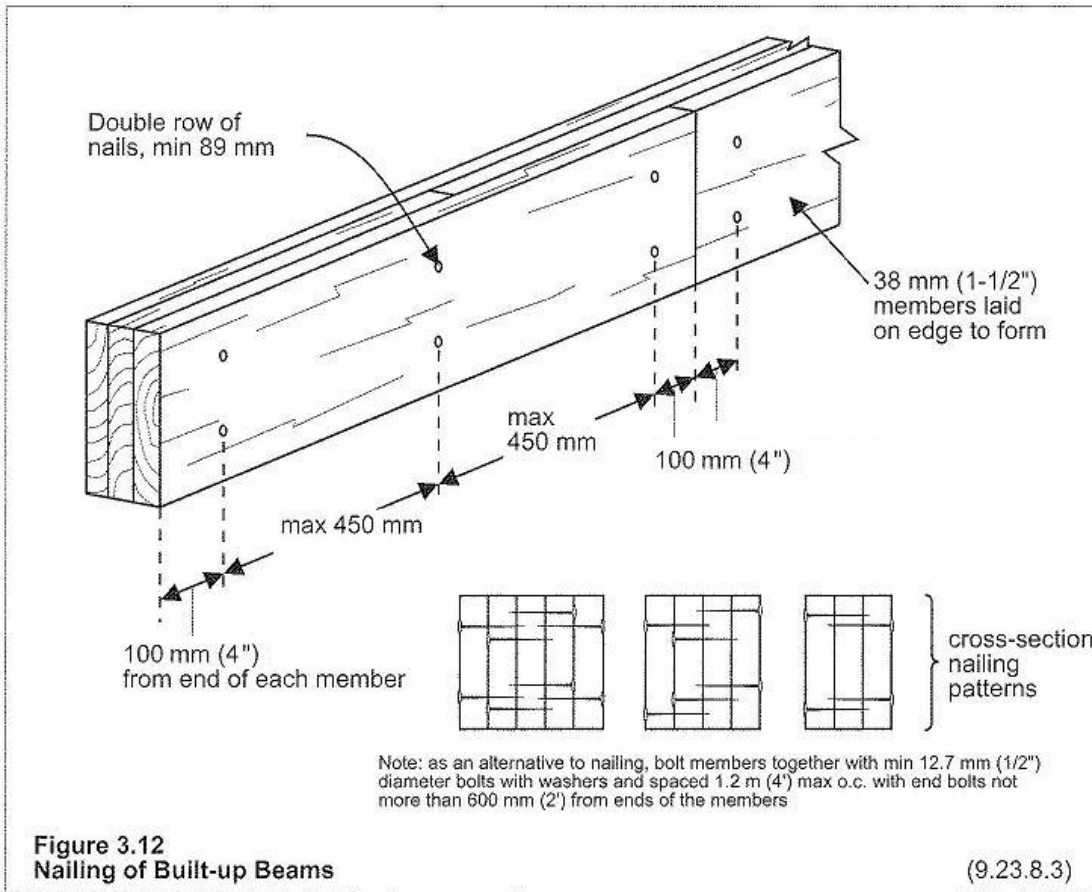


8" Dia. Concrete Pier
On 14" x 14"
Concrete Footing



6" x 6" PT Wood Post
On 14" x 14"
Concrete Footing





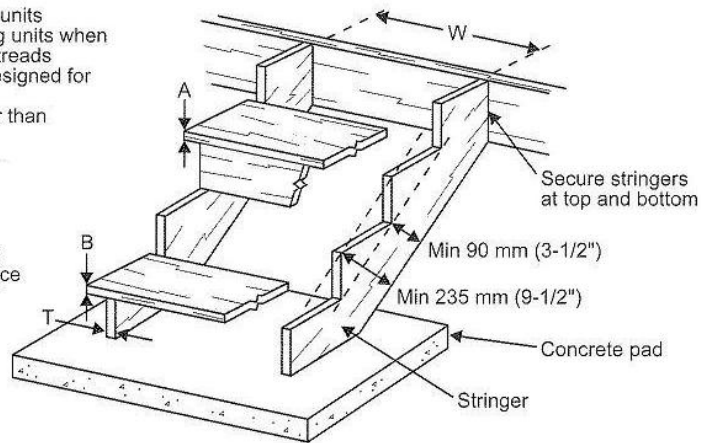
Note: Nails to be a Maximum of 100^{mm} (4") from each end of member (see drawing above)

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

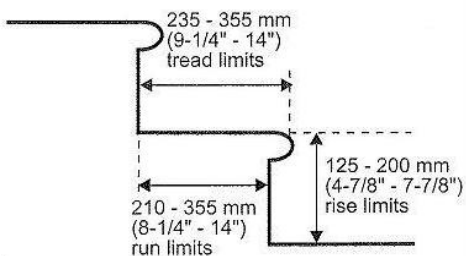
Tread thickness:

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")

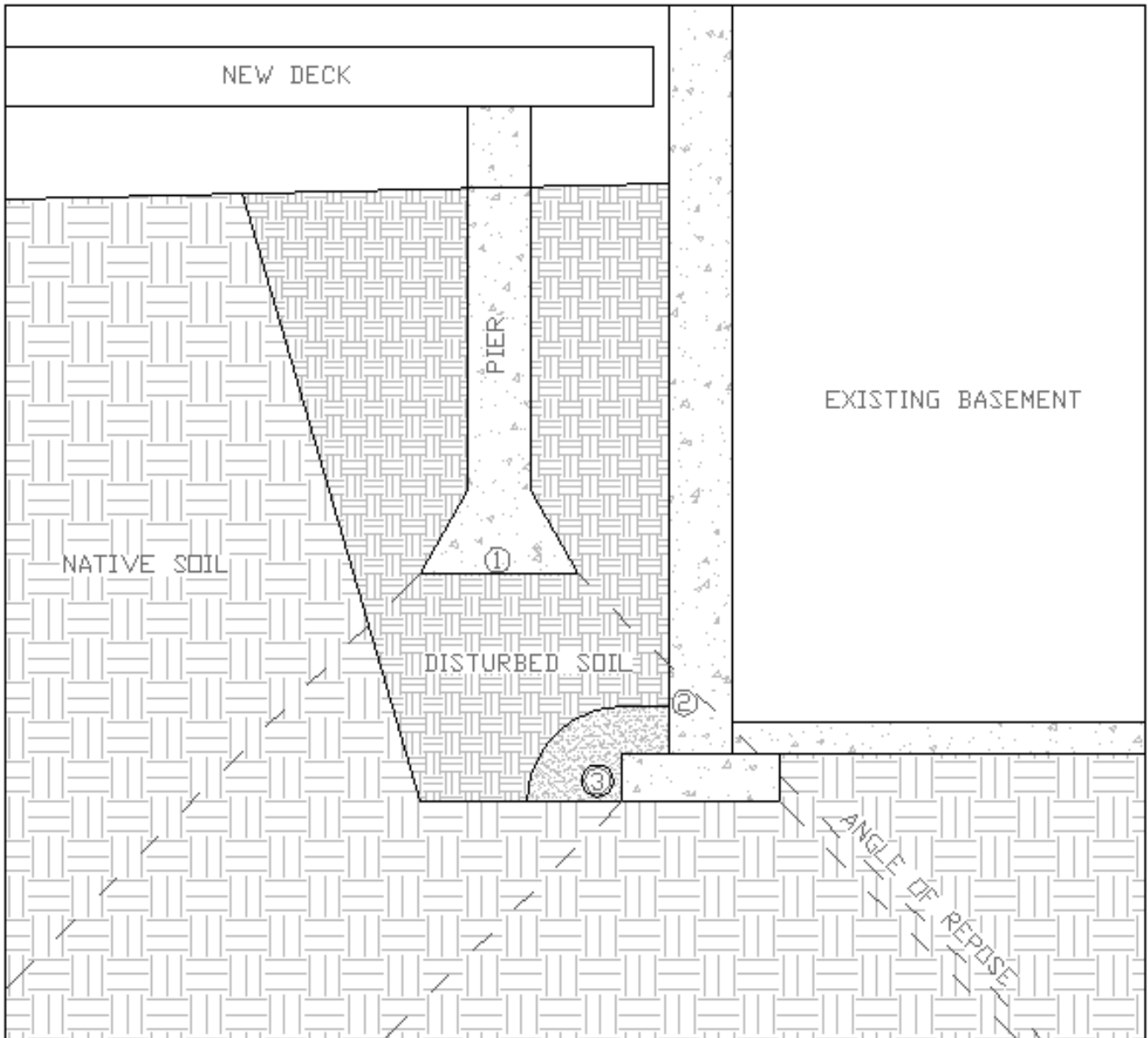


SINGLE DWELLING UNIT INTERIOR AND EXTERIOR STAIRS

Stair dimensions as shown:
 (9.8.3.1)



UNACCEPTABLE INSTALLATION



- 1) FOUNDATIONS MUST REST ON UNDISTURBED NATIVE SOIL.
- 2) FOUNDATIONS WITHIN THE ANGLE OF REPOSE REQUIRE THE SERVICES OF A PROFESSIONAL ENGINEER.
- 3) NEW FOUNDATIONS MUST NOT INTERFERE WITH EXISTING FOUNDATION DRAINAGE SYSTEMS.

THE APPROVAL PROCESS

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

- 1) Planning Department staff **will** check for compliance with the regulations and provisions of the zoning by-law such as proposed use, minimum setback requirements, lot coverage and building height, etc.
- 2) Engineering Department staff **will** review the project for compliance with lot grading and servicing requirements
- 3) Building Department staff **will** review the proposed construction to ensure compliance with the Ontario Building Code.

NOTE: All excavations in the urban area require approval from the Construction Monitoring Program. Please call 905-885-9488

If during review and the plans examiner identifies deficiencies on the drawing or requires additional information, the designer and/or applicant will be notified.

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

When review of the application is completed and all requirements have been met, the Building Permit will be available. 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 Uncover” work already done, and/or prosecuted. THE PERMIT FEE WILL BE DOUBLED.***
- ***Once you have received your permit. Ensure that the permit and approved drawings are available on the construction site.***
- ***You must call for inspection at identified periods of construction (this will be reviewed with applicant at building permit issuance)***

Inspections

Construction may commence upon issuance of the Building Permit. Several inspections are required to ensure that all work is done according to the approved plans including changes noted by the plans examiner. You will be issued a list of the required inspections for your specific project.

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 48 hours before work proceeds from one inspection stage to the next.

Failure to have inspections performed may result in having to **uncover and expose work for inspection.** For inspection call 905-885-2431.