Deck Building Guide

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.

Definitions

Deck: A raised uncovered platform. All decks require permits in the 6 BISB municipalities.

Porch: A covered structure (enclosed or unenclosed) that usually forms part of the entrance to a dwelling. Porches require a Building Permit issued by the Building department. Protective guards are required if the walking surface is greater than 24" (610mm) above finished grade.

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

Joist: Dimensional lumber placed perpendicular to beam that frames the floor system.

Beam: Laminated dimensional lumber that supports the joists.

OBC: Refers to the current amended version of the Ontario Building Code.

Guard: Refers to a protective barrier around decks, porches and the open side of stairs.

Important notes

The design and construction of a deck and/or porch must comply with Hamilton Township Zoning By-Laws as well as the OBC.

Special consideration must be taken if a deck is to support a hot tub or similar structures due to increased loading.

Building Permit Application Checklist	
Completed application for a 'Permit to Construct or Demolish	
Completed Schedule 1: Designer Information	
Completed Applicable Law checklist	
Site Survey indicating:	
Refer to Figure A	
Location of proposed deck	
Dimension of proposed deck	
Distance to property line(s)	
Other buildings ie Detached garage, shed and or septic system	
Plans & Section drawings indicating:	
Refer to Figures B & C	
Footing & Foundation construction	
Location, depth, size & spacing of piers	
Framing material size, span, locations & spacing	
Height from finished grade	
Method of attachment to dwelling	
Details of guards, stairs & handrails (if applicable)	

General Information

When is a Building Permit required?
A building permit is required for any construction project unless the deck area is less than 108ft^2 (10m^2)

Piers: Shall be not less than 8" (203mm) in diameter. 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 larger pier. Refer to the table below for minimum footing sizes. Values in table are based on a soil bearing capacity of 10.9 psi (75 kPa). Minimum sizes must be double where the soil bearing capacity is affected by a high water table.

Minimum Required Footing Area, (ft^2)							
		Supported Joist Length*, (ft)					
		4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"
Beam Length, (ft)	4'-0"	8"x8"	9"x9"	10"x10"	10"x10"	11"x11"	12"x12"	13"x13"
		10" dia.	10" dia.	12" dia.	12" dia.	12" dia.	12" dia.	14" dia.
	4'-6"	8"x8"	9"x9"	10"x10"	11"x11"	12"x12"	13"x13"	13"x13"
		10" dia.	10" dia.	12" dia.	12" dia.	12" dia.	14" dia.	14" dia.
	5'-0"	9"x9"	10"x10"	11"x11"	12"x12"	13"x13"	13"x13"	14"x14"
		10" dia.	12" dia.	12" dia.	12" dia.	14" dia.	14" dia.	16" dia.
	5'-6"	9"x9"	10"x10"	11"x11"	12"x12"	13"x13"	14"x14"	15"x15"
		10" dia.	12" dia.	12" dia.	12" dia.	14" dia.	16" dia.	18" dia.
	6'-0"	10"x10"	11"x11"	12"x12"	13"x13"	14"x14"	15"x15"	16"x16"
		12" dia.	12" dia.	12" dia.	14" dia.	16" dia.	18" dia.	18" dia.
	6'-6"	10"x10"	11"x11"	12"x12"	13"x13"	14"x14"	15"x15"	16"x16"
		12" dia.	12" dia.	12" dia.	14" dia.	16" dia.	18" dia.	18" dia.
	7'-0"	10"x10"	12"x12"	13"x13"	14"x14"	15"x15"	16"x16"	17"x17"
		12" dia.	12" dia.	14" dia.	16" dia.	18" dia.	18" dia.	20" dia.
	7'-6'	11"x11"	12"x12"	13"x13"	14"x14"	15"x15"	16"x16"	17"x17"
		12" dia.	12" dia.	14" dia.	16" dia.	18" dia.	18" dia.	20" dia.
	8'-0"	11"x11"	13"x13"	14"x14"	15"x15"	16"x16"	17"x17"	18"x18"
		12" dia.	14" dia.	16" dia.	18" dia.	18" dia.	20" dia.	20" dia.
	8'-6"	12"x12"	13"x13"	14"x14"	15"x15"	16"x16"	17"x17"	18"x18"
		12" dia.	14" dia.	16" dia.	18" dia.	18" dia.	20" dia.	20" dia.
	9'-0"	12"x12"	13"x13"	15"x15"	16"x16"	17"x17"	18"x18"	19"x19"
		12" dia.	14" dia.	18" dia.	18" dia.	20" dia.	20" dia.	22" dia.
	9'-6"	13"x13"	14"x14"	15"x15"	16"x16"	17"x17"	18"x18"	19"x19"
		14" dia.	16" dia.	18" dia.	18" dia.	20" dia.	20" dia.	22" dia.
	10'-0"	13"x13"	14"x14"	15"x15"	17"x17"	18"x18"	19"x19"	20"x20"
		14" dia.	16" dia.	18" dia.	20" dia.	20" dia.	22" dia.	22" dia.

* Supported Length means half the sum of the joists supported by the beam & ledger board plus any cantilever.

Concrete: Piers shall consist of poured concrete with a minimum compressive strength of 2200 psi (15 MPa) after 28 days **[OBC 9.3.1.6.]**.

Depth: Where a deck or porch is attached to a dwelling the minimum footing depth shall be 48" (1.2m). Frost protection for footings is not required if the deck meets *all* of the following four conditions:

1. The deck is less than 24" (600mm) in height,
2. The deck is not attached to any structure,
3. The deck is not supporting a roof (which includes a pergola/trellis), and
4. The area of the deck is not more than 592 ft^2 (55m^2).

Height: Piers shall not extend more than 3 times their width above finished grade **[OBC 9.15.2.3 (3)]**.

Columns: Round wood columns shall be not less than 7 ¼" Ø (184mm Ø) or 5 ½"x5 ½" (140mm x 140mm) square **[OBC 9.17.4.1.(2)]**.

Anchorage: Columns shall be directly fastened to their supports as well as to the framing members for which they are supporting to resist uplift and lateral movement **[OBC 9.23.6.2]**.

Ledger Board: Shall consist of the same nominal sized lumber as the deck joists and contain joist hangers to support the deck joists. These hangers shall be coated to prevent corrosion and installed as per the manufacturer's specifications.

Ledger Anchorage: Anchorage for ledger boards shall consist of expandable sleeve anchors for solid concrete or concrete filled masonry or carriage bolts with nuts & washers into suitable structural lumber spaced not more than 1'-4" on centre (staggered). Connectors into concrete shall be embedded minimum 4" (100mm) (refer to Figure D).

Joists: May be supported on either the top of a built-up beam or in a joist hanger coated to prevent corrosion and installed as per the manufacturer's specifications. At no time shall the minimum bearing of joists be less than 1 ½" (38mm). Each joist bearing on a built-up beam must be mechanically fastened to the beam with two (2) galvanized framing nails 3 ¼" (82mm) in length. Refer to the table below for maximum size and spacing of joists.

Maximum joist span*: (ft)				
		12" on centre	16" on centre	24" on centre
Joist size	2x6	10'-3"	9'-4"	8'-2"
	2x8	12'-6"	11'-9"	10'-8"
	2x10	14'-6"	13'-8"	12'-10"
	2x12	16'-5"	15'-5"	14'-6"

* Spans based on Spruce-Pine-Fir (SPF) Grade No1 or No2

Beams: Built-up beams shall have not less than 3 ½" (89mm) of bearing and be fully supported over their width **[OBC 9.23.8.1.]**. Where individual members are butted together to form a joist, the joint must occur over a support. Built-up beams shall be nailed together with a double row of galvanized framing nails not less than 3 ½" (89mm) in length. Spacing shall not be more then 18" (450mm) apart and not more than 4" (100mm) from the end **[OBC9.23.8.3.(7)]**. Refer to the table below for maximum built-up beam sizes and length.

		Maximum beam span** (ft)					
		Size of built-up beam					
		3-2x8	4-2x8	3-2x10	4-2x10	3-2x12	4-2x12
Supported Length*, (ft)	8'-0"	10'-0"	11'-0"	12'-10"	14'-2"	15'-0"	17'-2"
	9'-10"	9'-4"	10'-3"	11'-6"	13'-1"	13'-5"	15'-5"
	11'-9"	8'-7"	9'-8"	10'-6"	12'-2"	12'-2"	14'-1"
	13'-9"	8'-0"	9'-2"	9'-9"	11'-3"	11'-4"	13'-1"
	15'-9"	7'-5"	8'-7"	9'-1"	10'-6"	10'-7"	12'-2"
	17'-8"	7'-0"	8'-1"	8'-7"	9'-11"	10'-0"	11'-6"
	19'-9"	6'-8"	7'-8"	8'-2"	9'-5"	9'-5"	10'-11"

* Supported Length means half the sum of the joists supported by the beam & ledger board plus any cantilever.
**Spans based on Spruce-Pine-Fir (SPF) Grade No1 or No2

Cantilever: 2x8 (38mm x 184mm) joists supporting roof loads shall not cantilever more than 16" (400mm) beyond their supports. Joist sizes larger than 2x8 shall not cantilever more than 24" (600mm) beyond their supports **[OBC9.23.9.9.]**.

Blocking: Where joist spans are greater than 6'-11" (2.1m) cross bridging or solid blocking shall be provided at mid span. Cross bridging or solid blocking shall be:

- -1x3 (19mm x 64mm) cross bridging,
- 2x2 (38mm x 38mm) cross bridging or,
- solid blocking the same size as the joists.

Bridging or blocking shall be fastened with two (2) galvanized framing nails 2 ¼" (57mm) in length at each end.

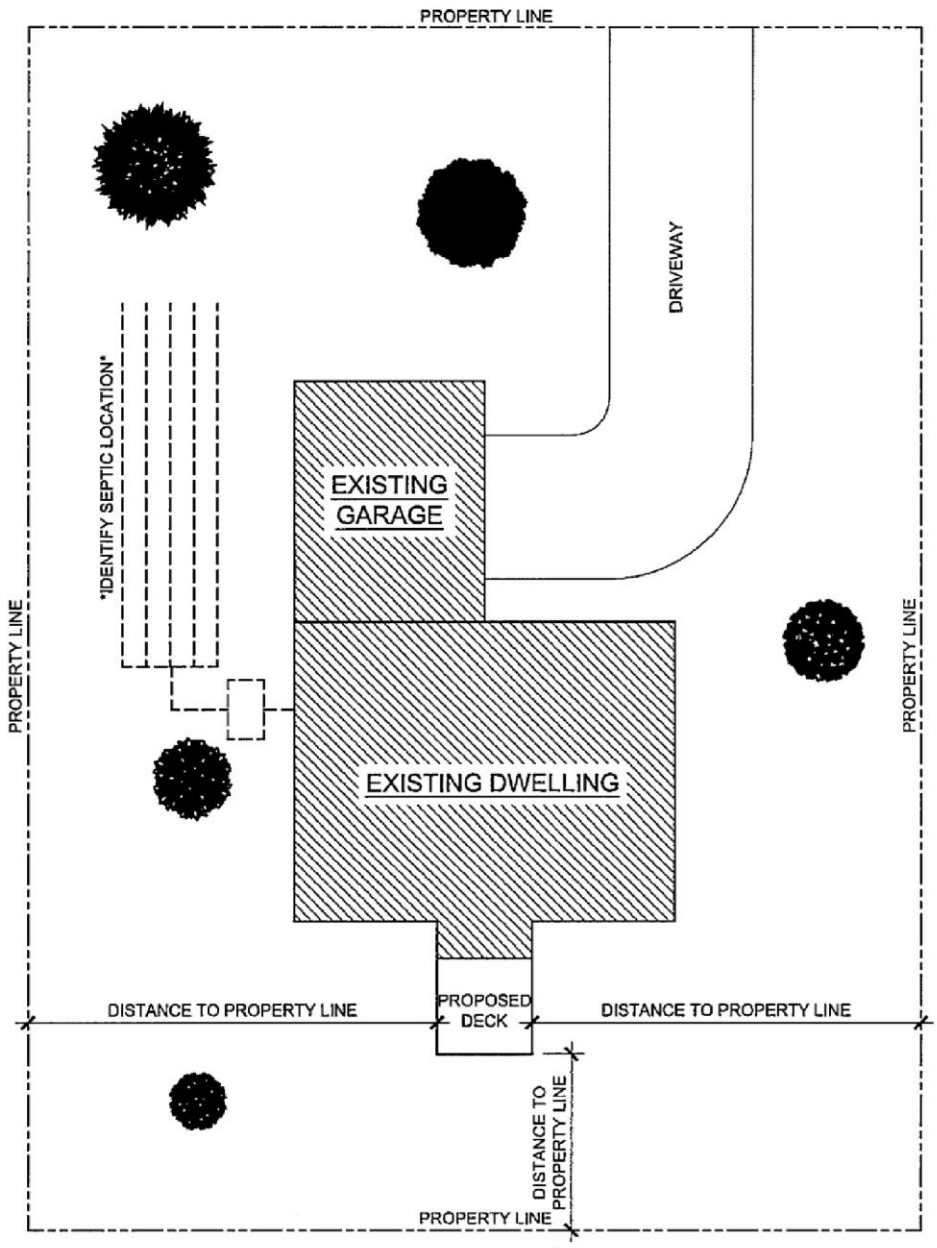
Decking: Plank type decking less than or equal to 7 ¼" (184mm) wide shall be fastened with two (2) galvanized framing nails 2" (51mm) in length or two (2) 1 ¾" (45mm) coated screws. Decking shall be at least 11/16" (17mm) thick when placed on joists spaced 16" (400mm) on centre or less and 3/4" (19mm) thick when placed on joists spaced 24" (600mm) on centre.

Fasteners: Must me treated or coated to prevent corrosion. Screws may be used in lieu of nails so long as they provide equal strength.

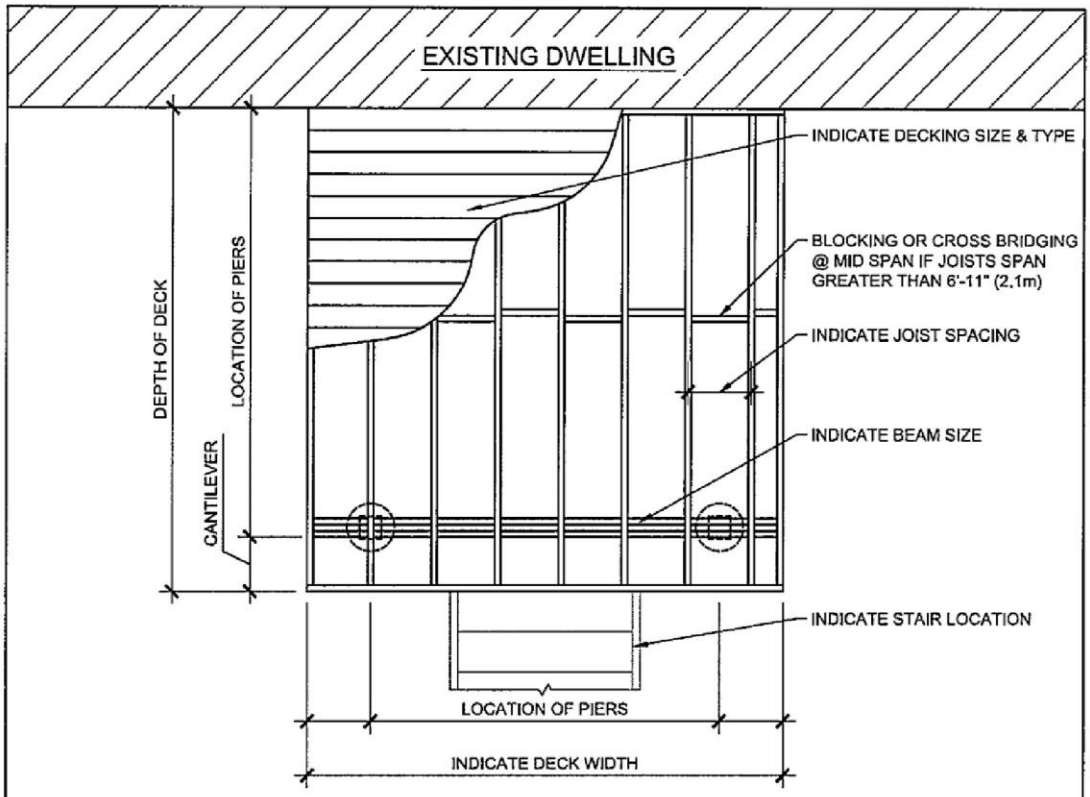
Stairs: Shall have a width not less than 36" (900mm). Risers shall be a minimum of 4 7/8" (125mm) and a maximum of 7 7/8" (200mm). Treads shall be a minimum of 9 ¼" (235mm) and a maximum of 14" (355mm). Stringers shall consist of a minimum 2x10 (38mm x 235mm) lumber.

Railings: Shall conform to Supplementary Standard SB-7 of the Ontario Building Code.

Guards: Exterior guards shall be not less that 36" (900mm) high where the walking surface served by the guard is not more than 5'-11" (1.8m) above finished grade otherwise the guard shall be not less than 42" (1070mm) high. If a bench is incorporated into the guard then the required height is measured from the bench surface **[OBC 9.8.8.3.]**. Opening in guard balusters shall be of a size that will prevent the passage of a spherical object having a diameter of 4" (100mm) **[OBC 9.8.8.5.]**. Guards shall be designed so that no member, attachment or opening will facilitate climbing **[OBC 9.8.8.6.]**. (refer to SB-7)

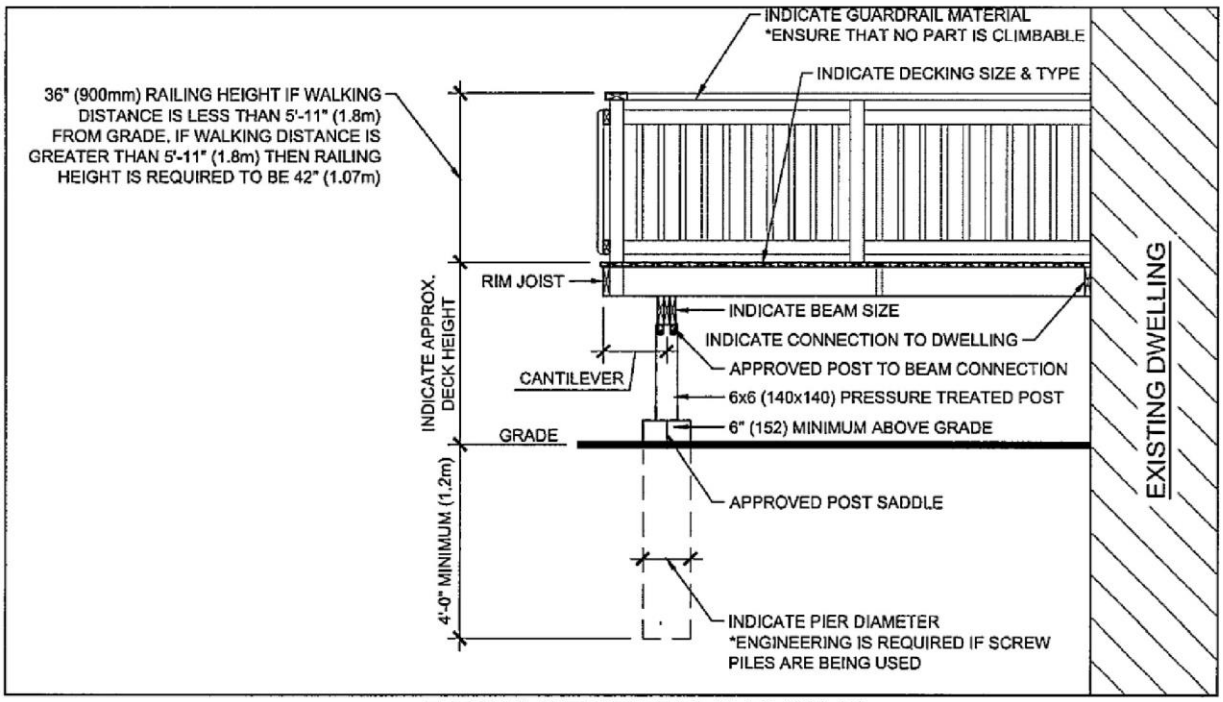


SAMPLE SITE PLAN
(FIGURE A)



DECK PLAN SAMPLE

(FIGURE B)

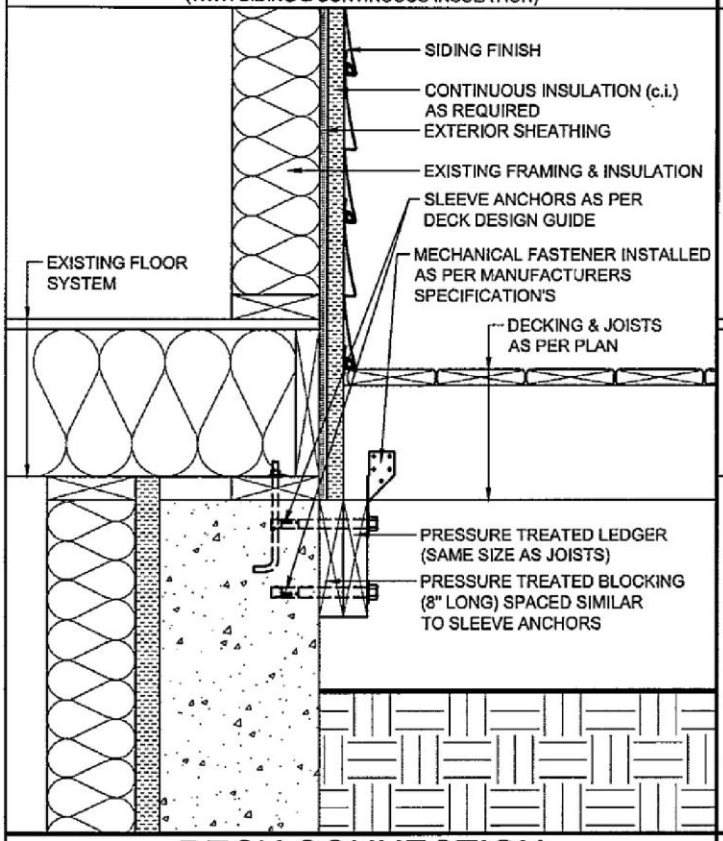


DECK SECTION SAMPLE

(FIGURE C)

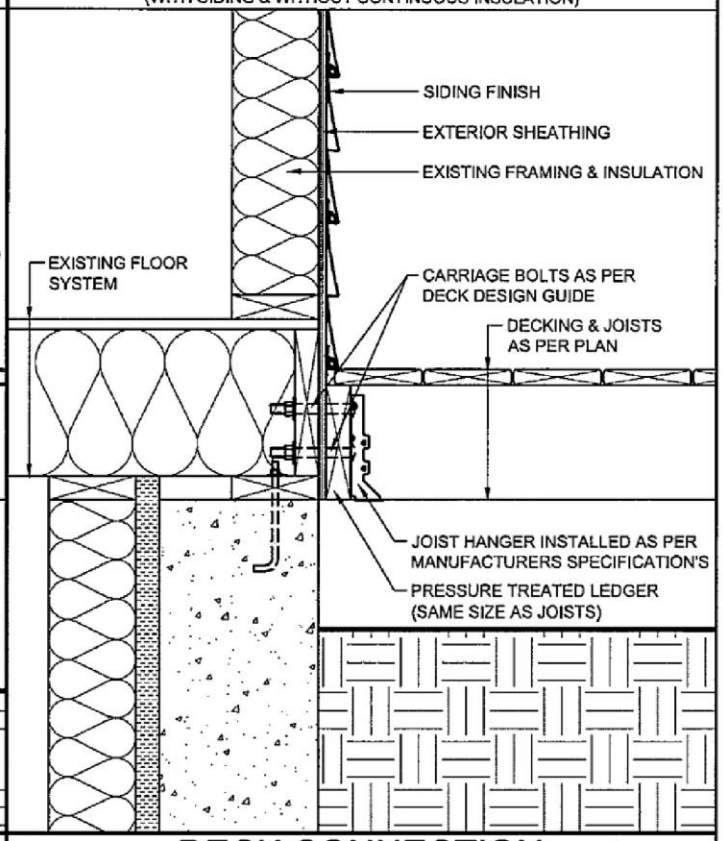
DECK CONNECTION (FIGURE D1)

(WITH SIDING & CONTINUOUS INSULATION)



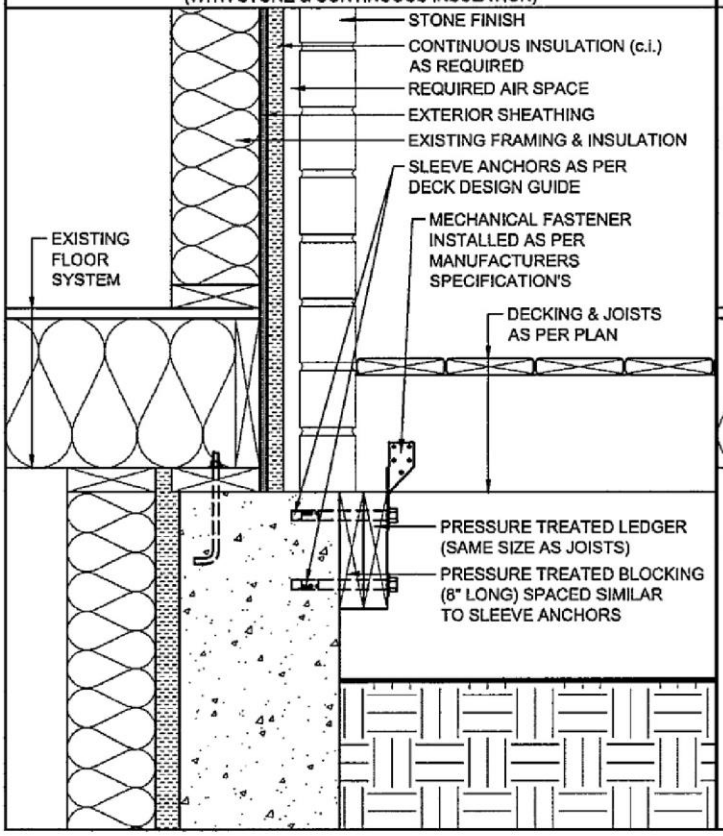
DECK CONNECTION (FIGURE D2)

(WITH SIDING & WITHOUT CONTINUOUS INSULATION)



DECK CONNECTION (FIGURE D3)

(WITH STONE & CONTINUOUS INSULATION)



DECK CONNECTION (FIGURE D4)

(WITH STONE & WITHOUT CONTINUOUS INSULATION)

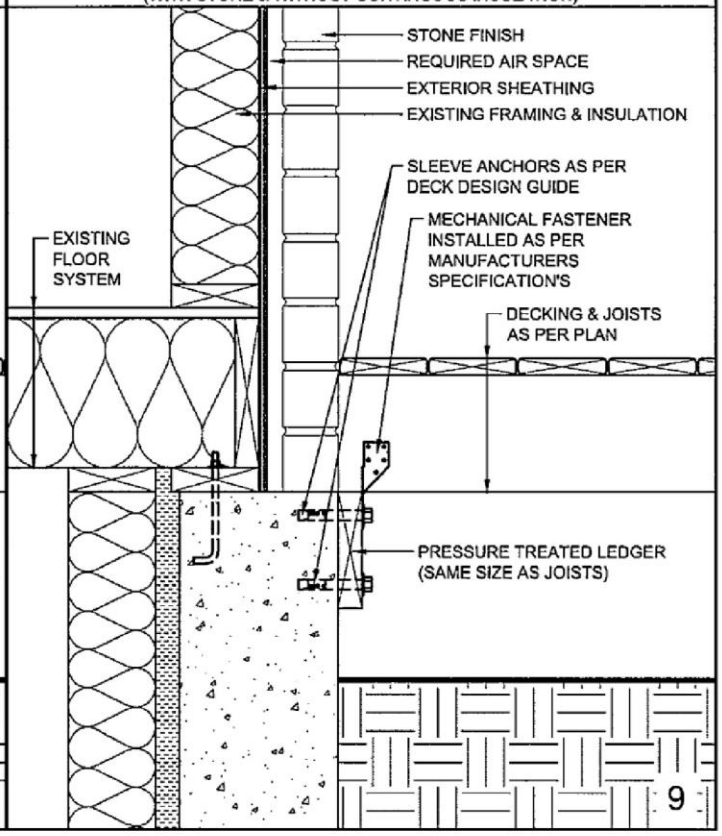
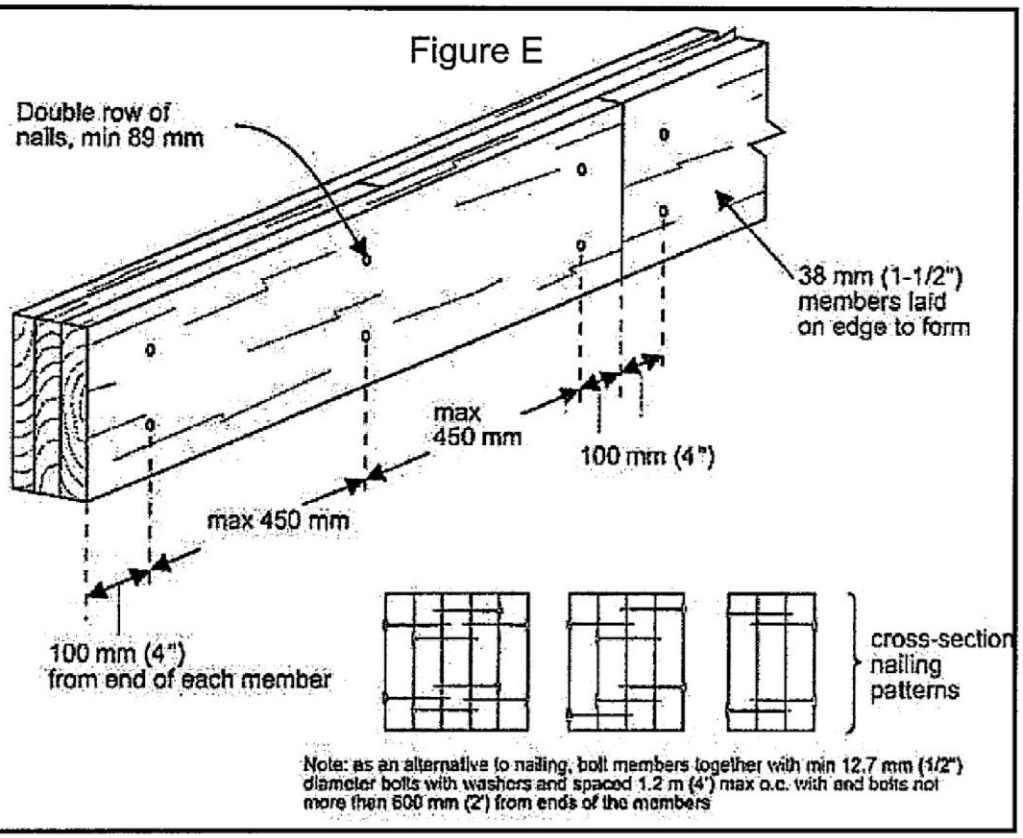
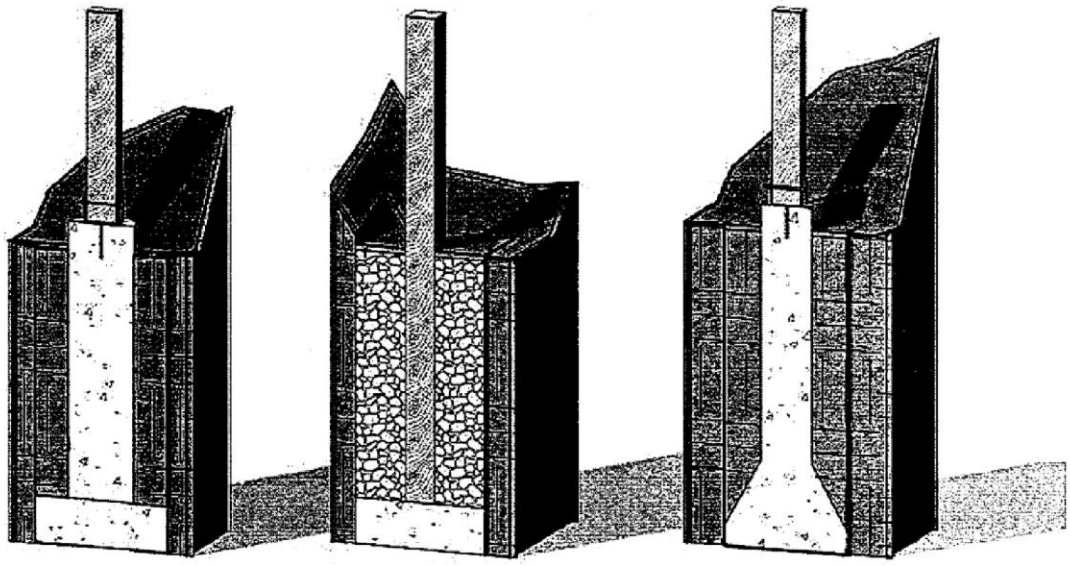


Figure E



Note: as an alternative to nailing, bolt members together with min 12.7 mm (1/2") diameter bolts with washers and spaced 1.2 m (4') max o.c. with end bolts not more than 600 mm (2') from ends of the members

Figure F



Round concrete pier on square concrete pad

P.T. wood post on square concrete pad

Round concrete pier with expanded

Figure G

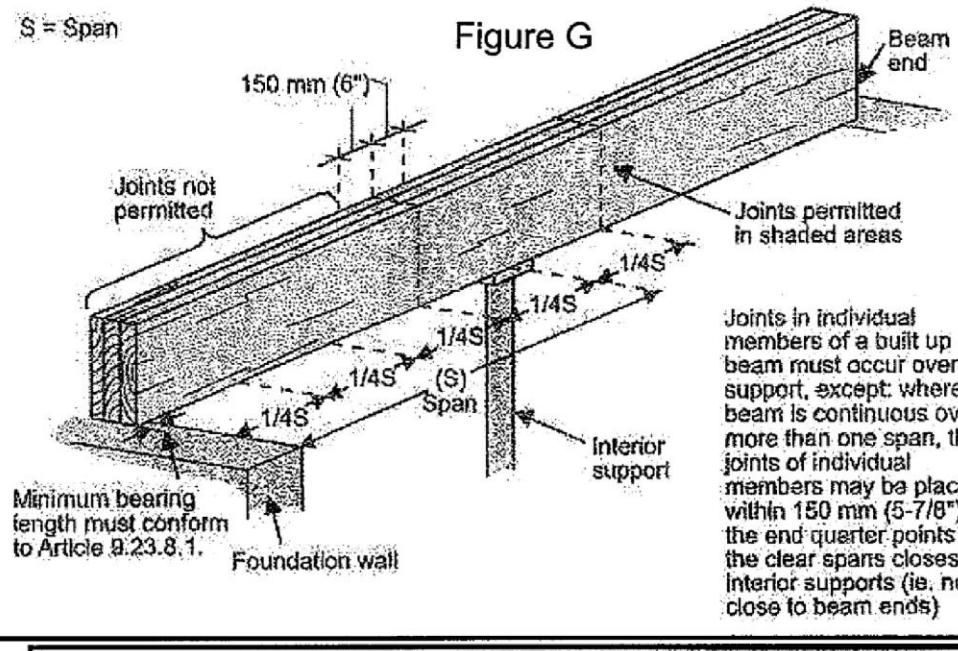


Figure H

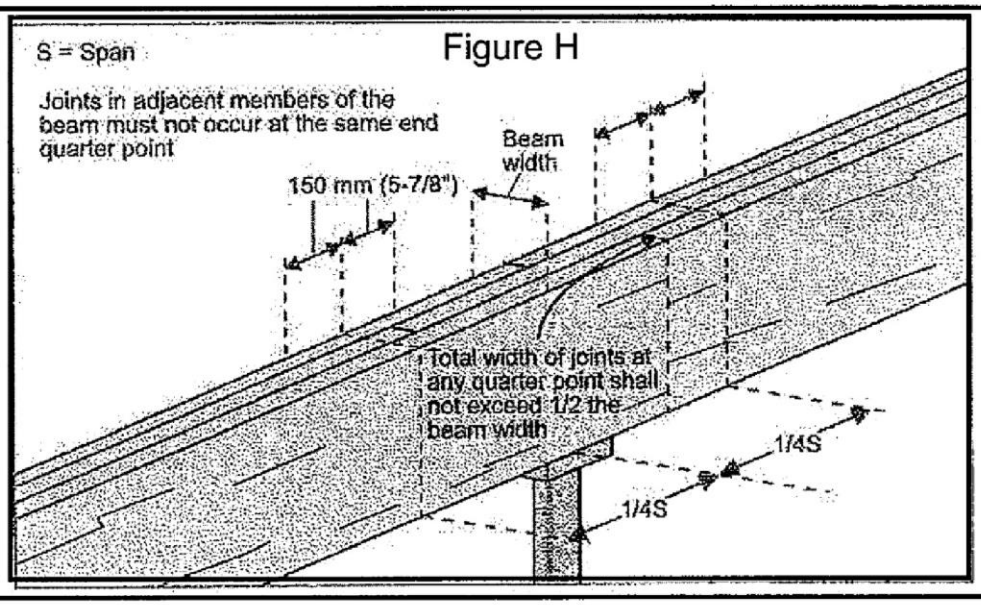
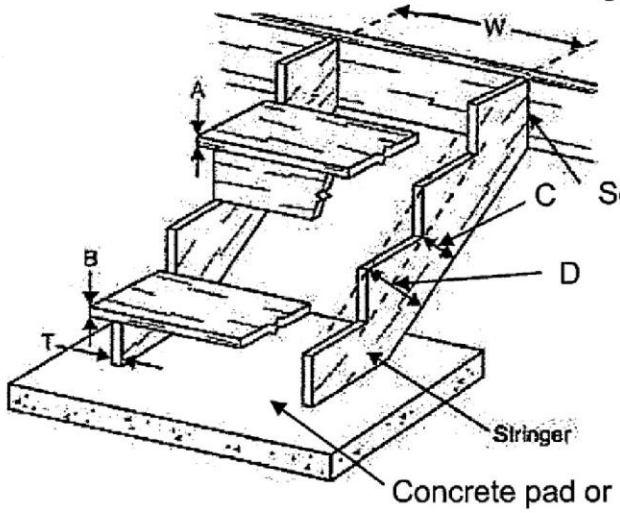


Figure I



Secure stringers to rim joist

Wood stairs:

A=min. 1" (25mm) when risers support front of tread.

B=min. 1 ½" (38mm) when tread is unsupported at front.

C=min. 3 ½" (89mm)

D=min. 9 ¼" (235mm)

T=min. 1 ½" (38mm)

W=min 36" (900mm)