

The Corporation of the Township of
Alwicks/Haldimand

Deck Design Guide

January 2019



Township of Alnwick/Haldimand

Deck Design 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.

As a homeowner, you may choose to build the deck yourself, however Township staff would encourage you to obtain a proper set of construction plans provided by a design professional. This will provide you with sufficient information to complete the project and meet the Ontario Building Code, allowing for a smoother permit application and inspection process.

A Building Permit is required for most deck projects. The design and construction of a deck and/or porch must comply with the Township of Alnwick/Haldimand Zoning By-Laws as well as the Ontario Building Code. Prior to beginning any work, you are encouraged to contact Mr. Daryl Hall, Chief Building Official/By-Law Enforcement Officer at the **Township of Alnwick/Haldimand, Building Department at 1-905-349-2822, Ext. 27** to clarify if a permit is required for your project.

Please note that special consideration must be taken if a deck is to support a hot tub or similar structures due to increased loading.

****Remember to call for location of utilities before you dig. Please call Ontario One Call (underground locates) at 1-800-400-2255.****

Definitions

A “**Deck**” is a raised uncovered platform. To ensure conformity, contact the Township office to see if a permit is required. Protective guards are required if the walking surface is greater than 24” (610 mm) above finished grade.

A “**Porch**” is a covered structure (enclosed or unenclosed) that usually forms part of the entrance to a dwelling. Any porch requires a Building Permit and will require protective guards if it has a walking surface greater than 24” (610 mm) above finished 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 “**Joist**” is a dimensional piece of lumber placed perpendicular to a beam that frames the floor system.

A “**Beam**” is a laminated dimensional piece of lumber that supports the joists.

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Building Permit Application Checklist

- _____ Complete Application for a Permit to Construct or Demolish
- _____ Complete Schedule 1: Designer Information (or Commitment to Review)
- _____ Complete Compliance with Applicable Law

Site Survey showing: (Refer to Figure A on Page 6)

- _____ Location of deck in relation to the house
- _____ Dimensions of proposed deck
- _____ Distance to property line(s)
- _____ Other buildings i.e. detached garage, shed and/or septic

Plans & Section Drawings showing: (Refer to Figures B & C on Page 7)

- _____ Footing & Foundation construction
- _____ Location, depth, size and spacing of piers
- _____ Framing material size, span, locations and spacing
- _____ Height from finished grade
- _____ Method of attachment to dwelling
- _____ Details of guards, stairs and handrails (if applicable)

Specification Requirements

Piers shall not be less than 8" 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 the 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.

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Piers shall consist of poured concrete with a minimum compressive strength of 2200 psi (15 MPa) after 28 days, as per Section 9.3.1.6 of the Ontario Building Code.

Piers shall not extend more than 3 times their width above finished grade, as per Section 9.15.2.3 (3) of the Ontario Building Code.

		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" (10" dia.)	9"x9" (10" dia.)	10"x10" (12" dia.)	10"x10" (12" dia.)	11"x11" (12" dia.)	12"x12" (12" dia.)	13"x13" (14" dia.)
	4'-6"	8"x8" (10" dia.)	9"x9" (10" dia.)	10"x10" (12" dia.)	11"x11" (12" dia.)	12"x12" (12" dia.)	13"x13" (14" dia.)	13"x13" (14" dia.)
	5'-0"	9"x9" (10" dia.)	10"x10" (12" dia.)	11"x11" (12" dia.)	12"x12" (12" dia.)	13"x13" (14" dia.)	13"x13" (14" dia.)	14"x14" (16" dia.)
	5'-6"	9"x9" (10" dia.)	10"x10" (12" dia.)	11"x11" (12" dia.)	12"x12" (12" dia.)	13"x13" (14" dia.)	14"x14" (16" dia.)	15"x15" (18" dia.)
	6'-0"	10"x10" (12" dia.)	11"x11" (12" dia.)	12"x12" (12" dia.)	13"x13" (14" dia.)	14"x14" (16" dia.)	15"x15" (18" dia.)	16"x16" (18" dia.)
	6'-6"	10"x10" (12" dia.)	11"x11" (12" dia.)	12"x12" (12" dia.)	13"x13" (14" dia.)	14"x14" (16" dia.)	15"x15" (18" dia.)	16"x16" (18" dia.)
	7'-0"	10"x10" (12" dia.)	12"x12" (12" dia.)	13"x13" (14" dia.)	14"x14" (16" dia.)	15"x15" (18" dia.)	16"x16" (18" dia.)	17"x17" (20" dia.)
	7'-6"	11"x11" (12" dia.)	12"x12" (12" dia.)	13"x13" (14" dia.)	14"x14" (16" dia.)	15"x15" (18" dia.)	16"x16" (18" dia.)	17"x17" (20" dia.)
	8'-0"	11"x11" (12" dia.)	13"x13" (14" dia.)	14"x14" (16" dia.)	15"x15" (18" dia.)	16"x16" (18" dia.)	17"x17" (20" dia.)	18"x18" (20" dia.)
	8'-6"	12"x12" (12" dia.)	13"x13" (14" dia.)	14"x14" (16" dia.)	15"x15" (18" dia.)	16"x16" (18" dia.)	17"x17" (20" dia.)	18"x18" (20" dia.)
	9'-0"	12"x12" (12" dia.)	13"x13" (14" dia.)	15"x15" (18" dia.)	16"x16" (18" dia.)	17"x17" (20" dia.)	18"x18" (20" dia.)	19"x19" (22" dia.)
	9'-6"	13"x13" (14" dia.)	14"x14" (16" dia.)	15"x15" (18" dia.)	16"x16" (18" dia.)	17"x17" (20" dia.)	18"x18" (20" dia.)	19"x19" (22" dia.)
10'-0"	13"x13" (14" dia.)	14"x14" (16" dia.)	15"x15" (18" dia.)	17"x17" (20" dia.)	18"x18" (20" dia.)	19"x19" (22" dia.)	20"x20" (22" dia.)	

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

- The deck is less than 24" (600 mm) in height,
- The deck is not attached to any structure,
- The deck is not supporting a roof (which includes a pergola/trellis), and
- The area of the deck is not more than 592 ft² (55 m²)

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Columns: Round wood columns shall be not less than 7.25" diameter (184 mm) or 5.5"x5.5" (140 mm x 140 mm) square, as per Section 9.17.4.1 (2) of the Ontario Building Code.

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, as per Section 9.23.6.2 of the Ontario Building Code.

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 a minimum 4" (100 mm)

Refer to Figure D

Beams: Built-up beams shall have not less than 3.5" (89 mm) of bearing and be fully supported over their width, as per Section 9.23.8.1 of the Ontario Building Code. 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 3.5" (89 mm) in length. Spacing shall not be more than 18" (450 mm) apart and not more than 4" (100 mm) from the end, as per Section 9.23.8.3 (7) of the Ontario Building Code. Refer to the table below for maximum built-up beam sizes and lengths. (*Spans based on Spruce-Pine-Fir (SPF) Grade No. 1 or No. 2)

		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'-8"	6'-8"	7'-8"	8'-2"	9'-5"	9'-5"	10'-11"

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 1.5" (38 mm). Each joist bearing on a built-up beam must be mechanically fastened to the beam with two (2) galvanized framing nails 3.25" (82 mm) in length. Refer to the table below for maximum size and spacing of joists. (*Spans based on Spruce-Pine-Fir (SPF) Grade No. 1 or No. 2)

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MAXIMUM JOIST SPAN*, (ft)				
		12" on centre	16" on centre	24" on centre
JOIST SIZE	2x8	12'-6"	11'-9"	10'-8"
	2x10	14'-6"	13'-8"	12'-10"
	2x12	16'-5"	15'-5"	14'-6"

Cantilever: 2x8 (38 mm x 184 mm) joists supporting roof loads shall not cantilever more than 16" (400 mm) beyond their supports. Joist sizes larger than 2x8 shall not cantilever more than 24" (600 mm) beyond their supports, as per Section 9.23.9.9 of the Ontario Building Code.

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

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

Bridging or blocking shall be fastened with two (2) galvanized framing nails 2.25" (57 mm) in length at each end.

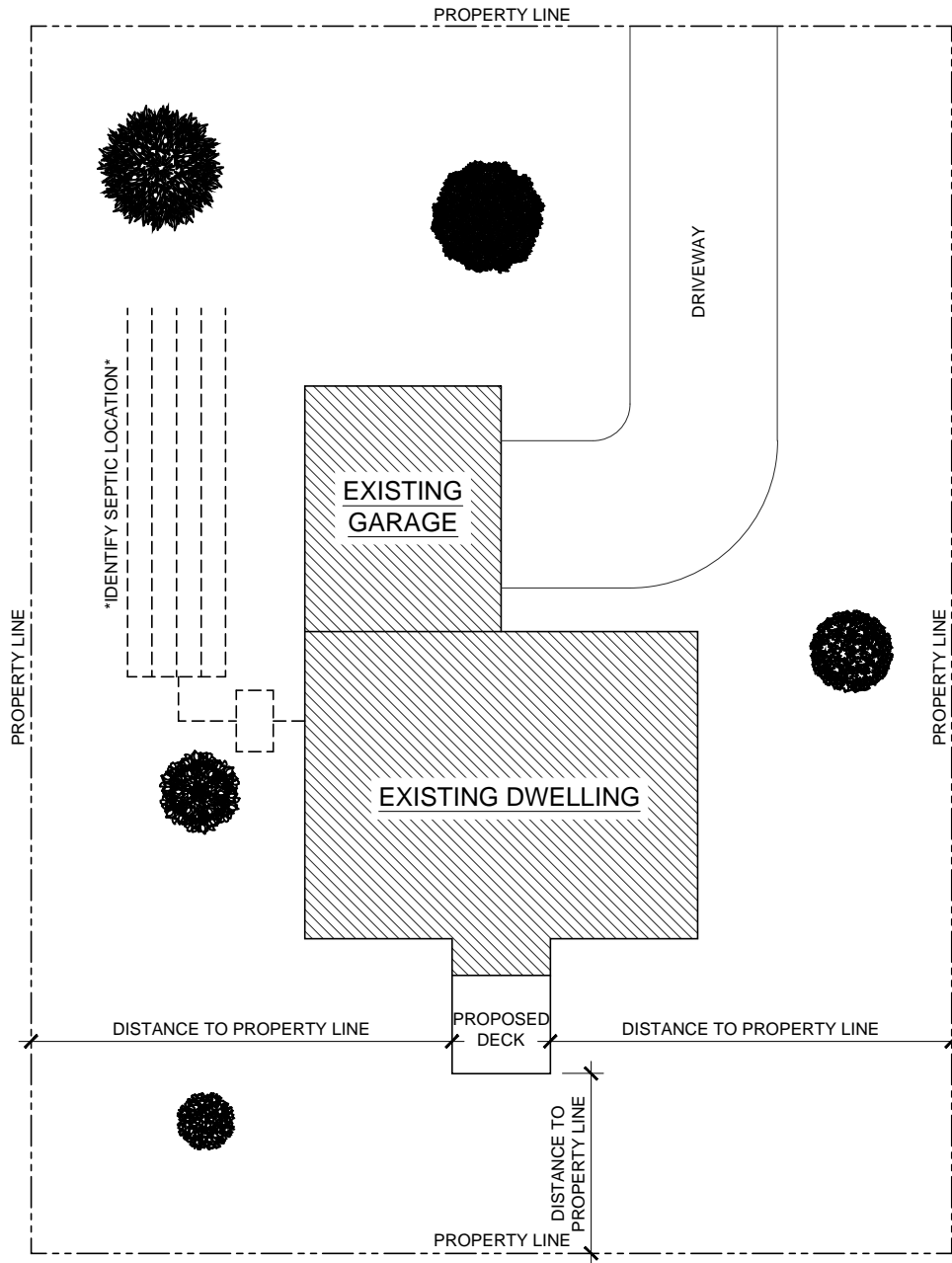
Decking: Plank type decking less than or equal to 7.25" (184 mm) wide shall be fastened with two (2) galvanized framing nails 2" (51 mm) in length or two (2) 1.75" (45 mm) coated screws. Decking shall be at least 11/16" (17 mm) thick when placed on joists spaced 16" (400 mm) on centre or less and 0.75" (19 mm) thick when placed on joists spaced 24" (600 mm) on centre.

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

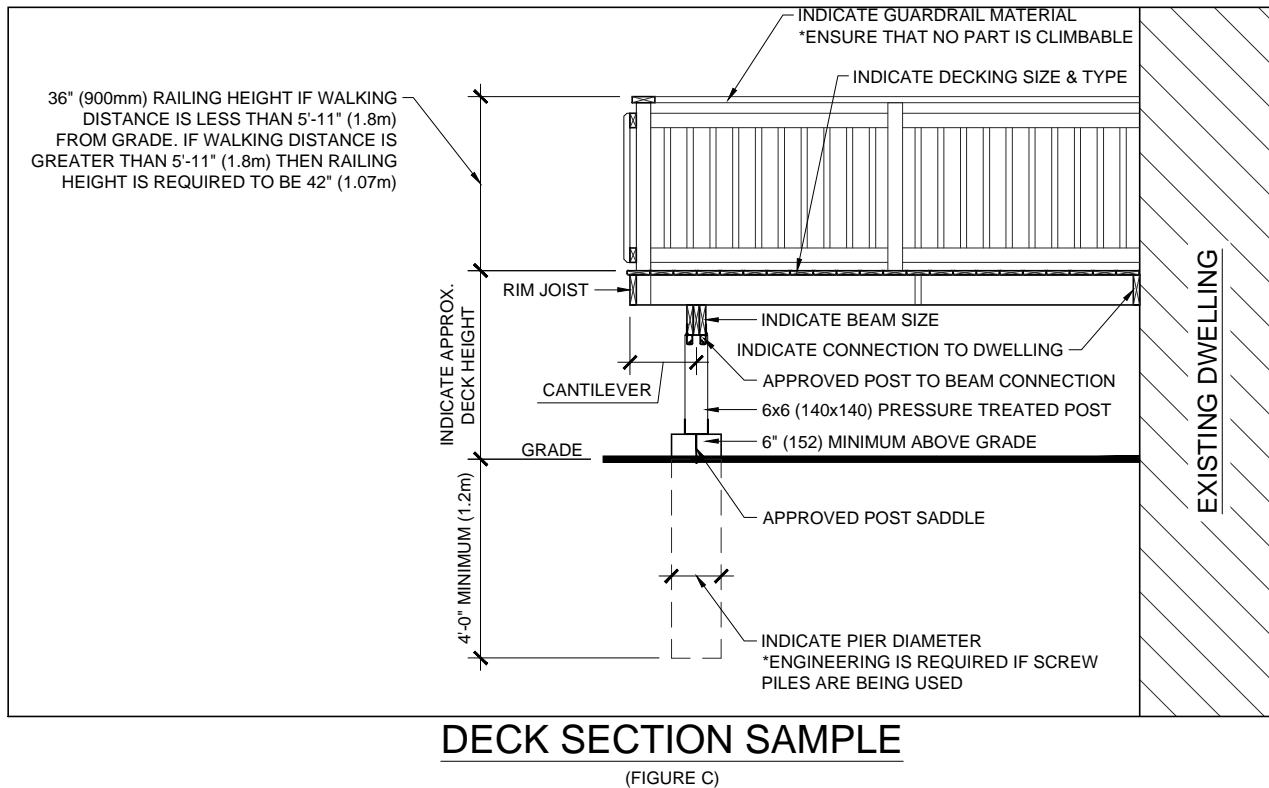
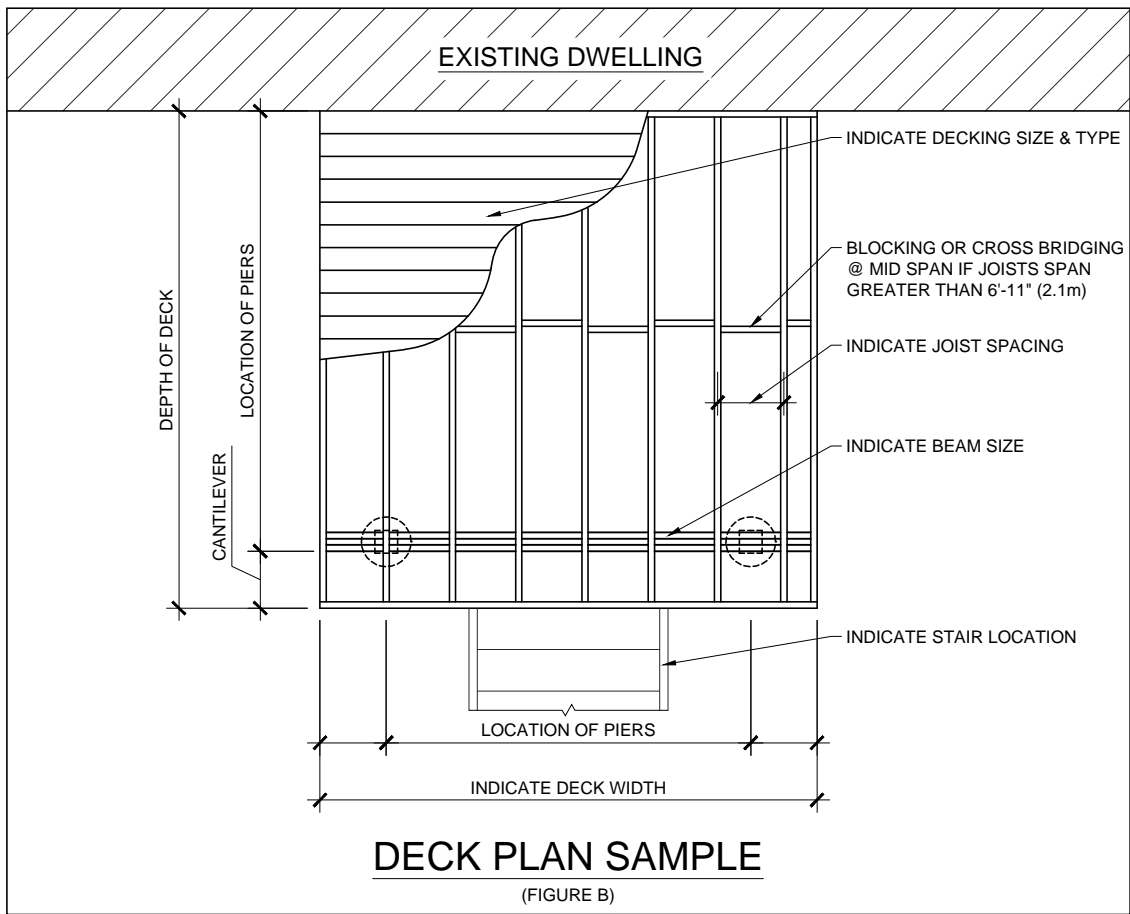
Stairs: Shall have a width not less than 36" (900 mm). Risers shall be a minimum of 4 7/8" (125 mm) and a maximum of 7 7/8" (200 mm). Treads shall be a minimum of 9.25" (235 mm) and a maximum of 14" (355 mm). Stringers shall consist of a minimum 2x10 (38 mm x 235 mm) lumber.

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

Guards: Exterior guards shall be not less than 36" (900 mm) high where the walking surface served by the guard is not more than 5'-11" (1.8 m) above finished grade otherwise the guard shall be not less than 42" (1,070 mm) high. If a bench is incorporated into the guard then the required height is measured from the bench surface, as per Section 9.8.8.3 of the Ontario Building Code. Opening in guard balusters shall be of a size that will prevent the passage of a spherical object having a diameter of 4" (100 mm), as per Section 9.8.8.5 of the Ontario Building Code. Guards shall be designed so that no member, attachment or opening will facilitate climbing, as per Section 9.8.8.6 of the Ontario Building Code (refer to SB-7).

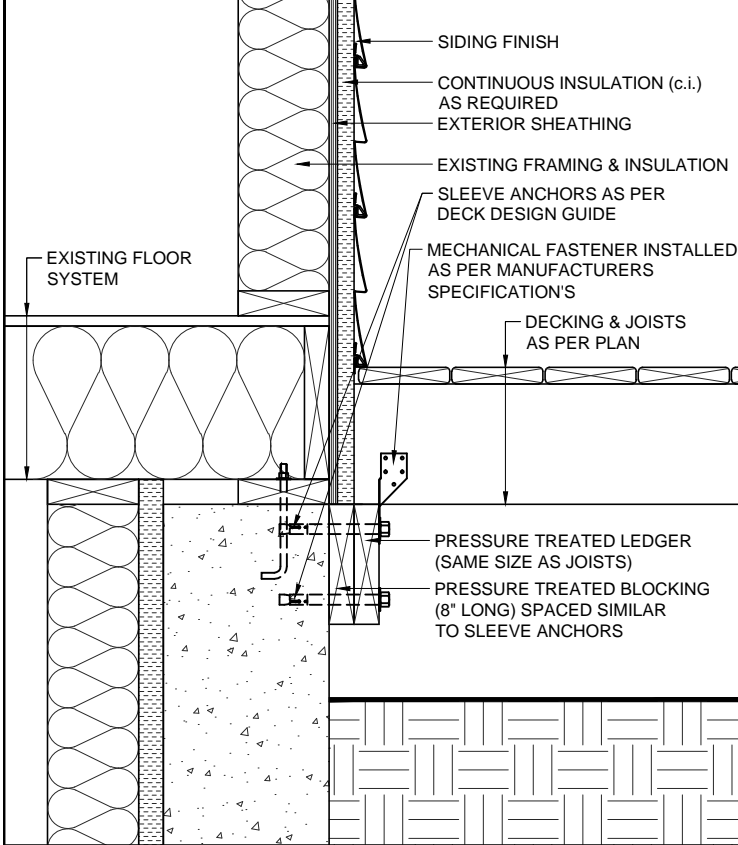


SAMPLE SITE PLAN
(FIGURE A)



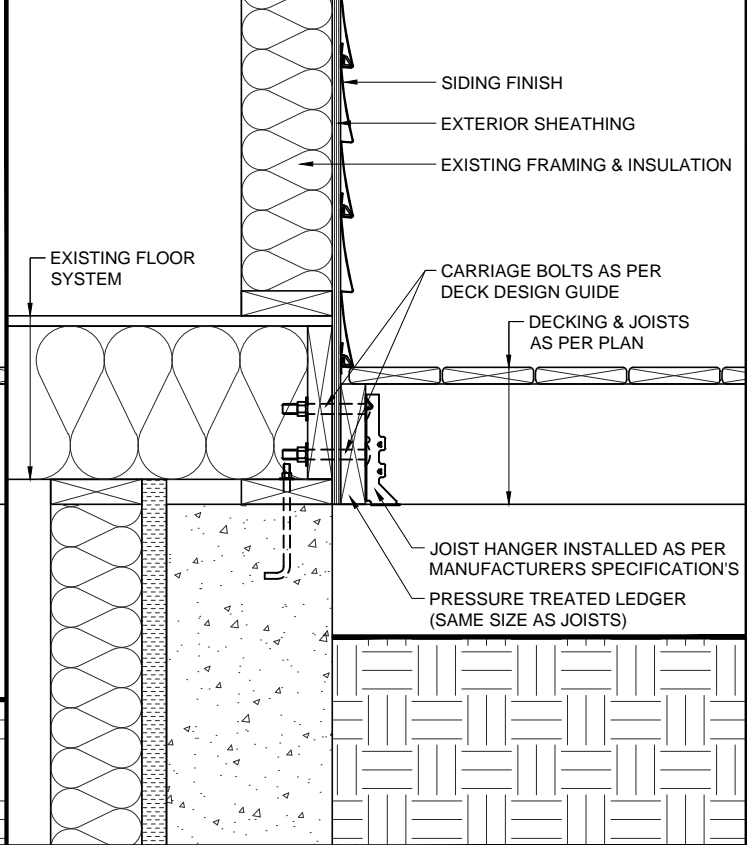
DECK CONNECTION (FIGURE D1)

(WITH SIDING & CONTINUOUS INSULATION)



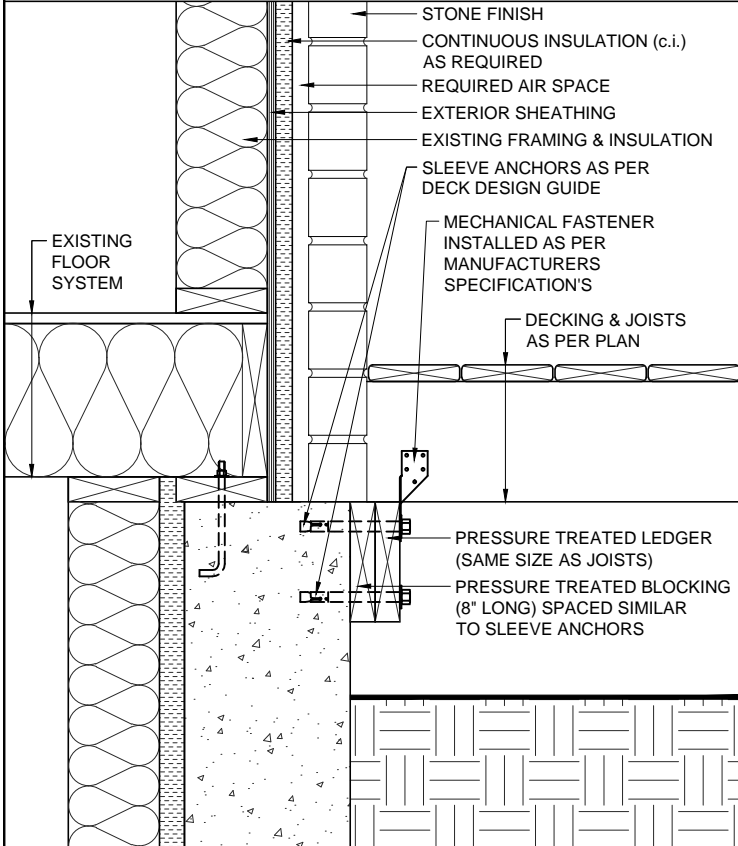
DECK CONNECTION (FIGURE D2)

(WITH SIDING & WITHOUT CONTINUOUS INSULATION)



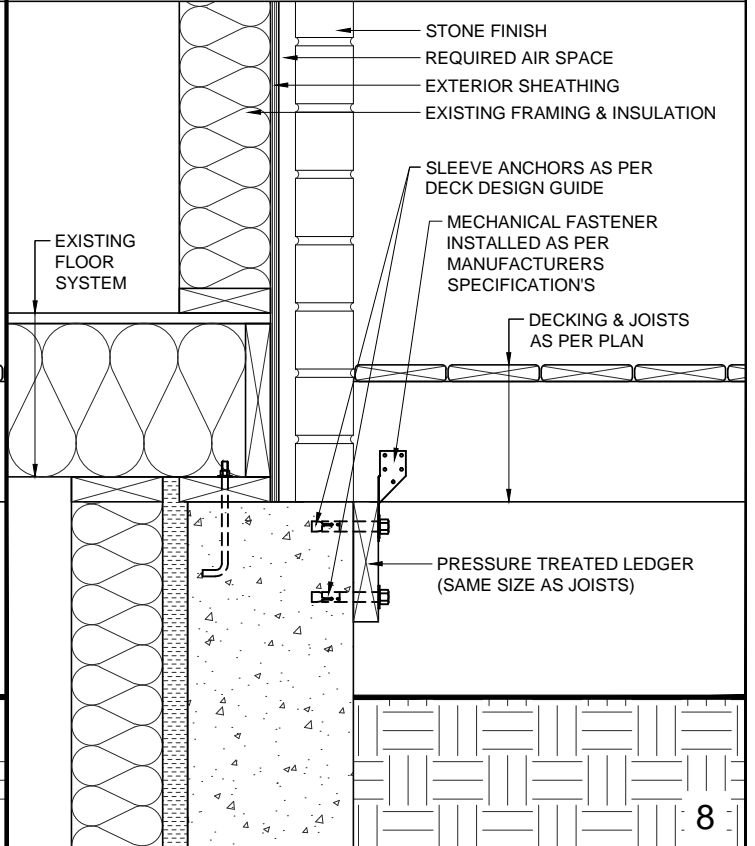
DECK CONNECTION (FIGURE D3)

(WITH STONE & CONTINUOUS INSULATION)



DECK CONNECTION (FIGURE D4)

(WITH STONE & WITHOUT CONTINUOUS INSULATION)



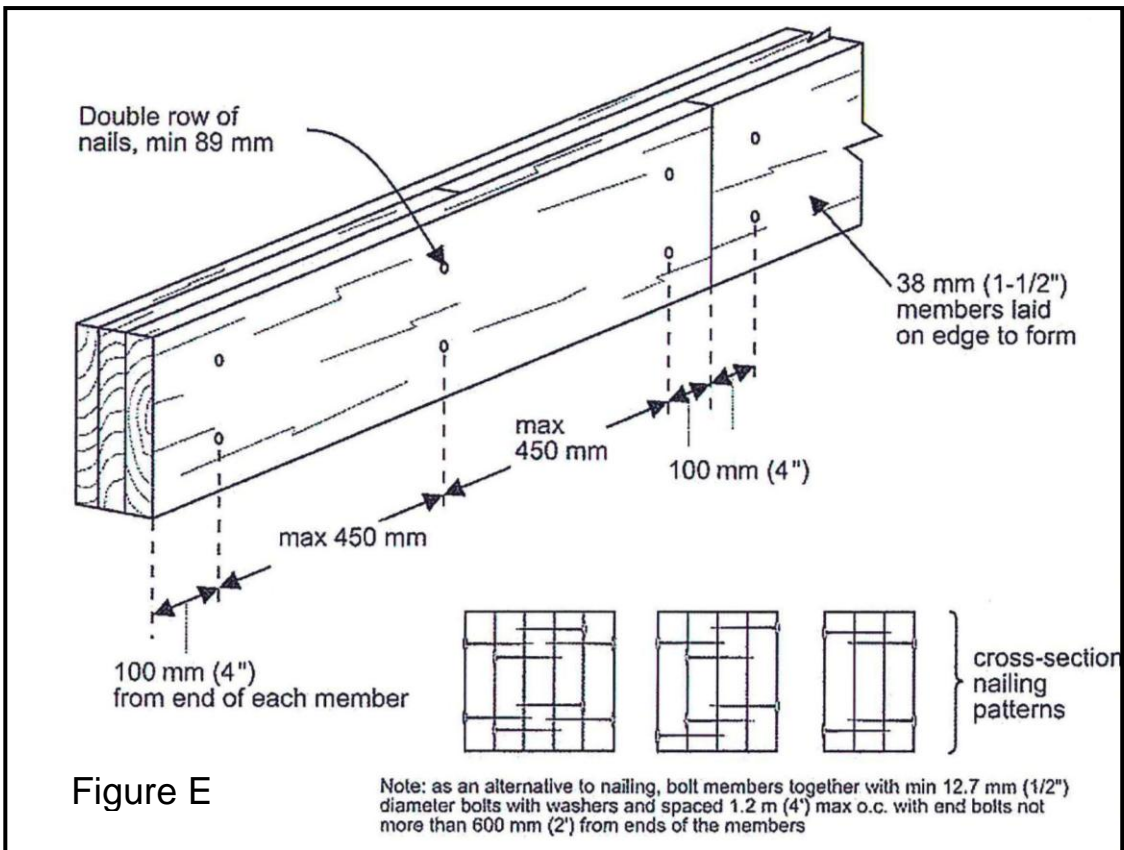


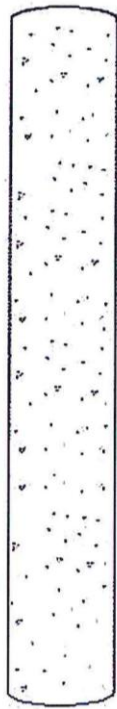
Figure E

PIERS

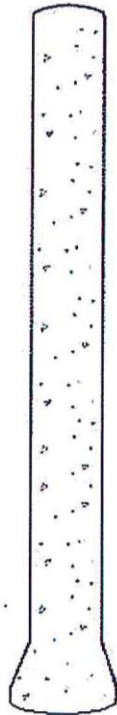
EXAMPLE: Where Require Bearing Area = 1.29 Sq. Ft.

NOTE: REFER TO PIER TABLE FOR REQUIRED SIZES

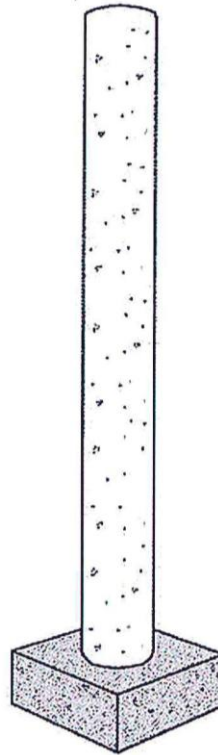
Figure F



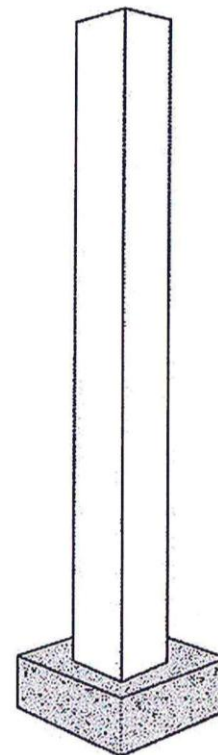
Round concrete pier without footing



Round concrete pier with expanded base



Round concrete pier on square concrete pad



P.T. wood post on square concrete pad

