Permit Center
210 Lottie Street, Bellingham, WA 98225
Phone: (360) 778-8300 Fax: (360) 778-8301 TTY: 711 (WA Relay)
Email: permits@cob.org Web: www.cob.org/permits

Residential Decks

IRC 403 & 507

Includes one- and two-family dwellings only

Building Permit NOT Required: If the deck does not exceed 30" above the lowest point around the deck within six feet (or the property line, if closer than six feet).

If the deck is exempt from a *building* permit, it is still required to meet all code requirements, including setbacks and construction requirements. Additional permits may be required if the deck is located within a Critical Area such as a steep slope or the Lake Whatcom Watershed. Please contact a Permit Technician at 360-778-8300 or permits@cob.org to discuss these requirements.

Building Permit Required: If the deck exceeds 30" above the lowest point around the deck within six feet (or the property line, if closer than six feet).

Permit Types: If the proposed deck requires a permit, it will fall into one of two categories for submittal requirements and fees.

- Subject to Field Inspection (STFI), same day permit if the project:
  - Is an uncovered deck and none of the below items apply

- Plan review is required if the project:
  - Is a covered deck
  - Requires Design Review (i.e. historic building, located in an urban village)
  - Is located within a critical area or buffer (like a steep slope), the Lake Whatcom Watershed, or requires shoreline review
  - Requires additional land use approvals
  - Is determined to be too complex by the City to qualify for the STFI program

Plan review is always available at the applicant's request.

Application Requirements:

All applications should include:

- Application Form
- Site Plan: this plan illustrates the entire property, and **where** the deck will be located
- Floor Plan: this plan illustrates the deck's **size** and **shape**
- Elevation Plan: this plan illustrates the deck's **height**
- All permits are charged a Permit Fee based on the *valuation* of the work being done. The Permit Fee is due at issuance of the permit (see fees handout for complete fees).

Additionally, applications requiring plan review (see previous section, Permit Types) should include:

- Framing Plan: this plan illustrates **how** it will be built, including materials types
- Cross Section: this plan illustrates **how** it will be built
- Detail drawings, including ledger and bracing details
- Plan Review Fee (see fees handout for complete fees)
- Site specific information as applicable, for example a Critical Areas Evaluation and Application if deck is within a regulated critical area or buffer
- **Note: If a covered deck extends more than 6' beyond the exterior walls of the house, a Washington State licensed design professional must provide a lateral analysis of the structure**

Drawing Standards & Requirements:

- One complete PDF version of plans
- Supplemental documents shall be submitted in PDF format and saved as individually-named PDF files separate from the drawing files via email, a CD, flash drive or and FTP website:
- Please see the Electronic Submittal Requirements handout for more information.
- Site plans shall be drawn at 1" = 20' or larger scale
- Floor plans, elevations and sections shall be drawn at ¼" = 1' scale
- Details shall be drawn at a scale large enough to clearly illustrate the particular detail, minimum scale shall be ¾" = 1'

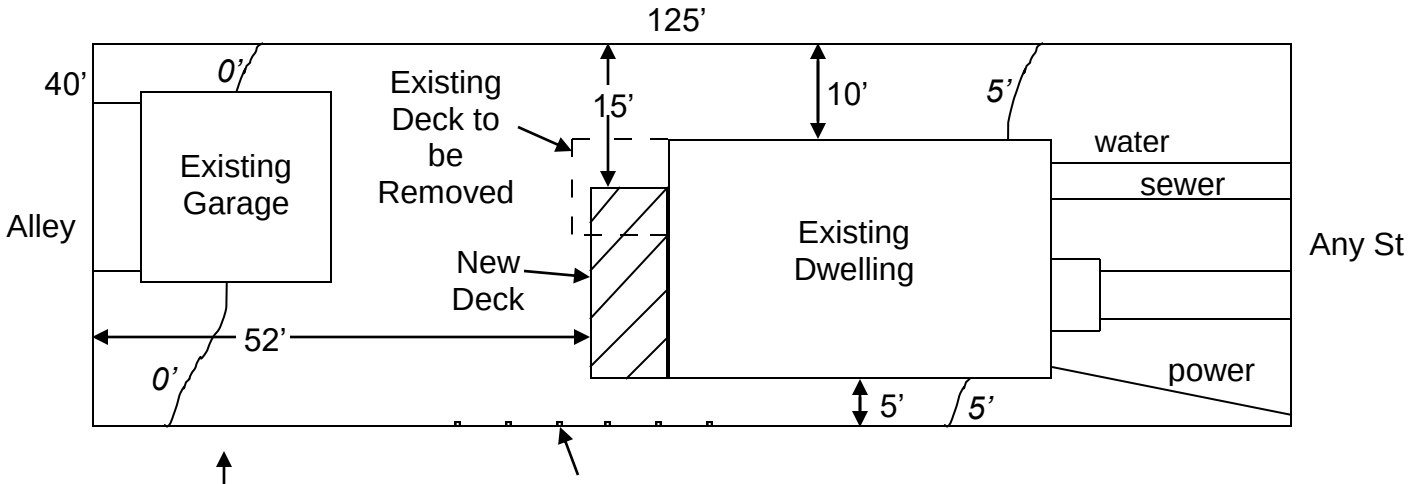
What else do I need to know?

- For decks to be considered pervious, they must be uncovered, have boards no wider than 6", maintain ½" spacing, and have open loose soil beneath it.
- Stormwater permits and fees are required for projects that either disturb greater than 500 square feet of land or add/replace more than 300 square feet of impervious surface (thresholds are lower in the Lake Whatcom Watershed).

Site Plan Elements: The following elements must appear on every site plan (see example on following page).

- ❑ The property lines, including dimensions
- ❑ The location of all structures (the proposed deck should be hatched or otherwise clearly identified as new, removed or replaced deck limits should be shown by a dashed line)
- ❑ Distances from all property lines to all proposed and existing structures.
- ❑ A north arrow, the drawing scale (minimum 1" = 20'), the submittal date, the site address, the lot size, the parcel number and the legal description.
- ❑ The street name(s).
- ❑ The location of all utilities (i.e. water and sewer lines)
- ❑ The location of any existing critical areas or buffers affecting the site, both on-site, and on adjacent properties, including, but not limited to, shorelines, wetlands, streams, steep slopes and special habitats.
- ❑ If the project site is within a shoreline designation or has critical areas on-site, all existing vegetation proposed to remain and all proposed landscaping, including location and type.
- ❑ The location of all existing and proposed easements.
- ❑ Five foot contour lines showing existing and proposed grades.
- ❑ Erosion control measures. Indicate on the site plan *locations* of a sediment barrier (like a silt fence or an existing wooden fence that will contain any disturbed soils) and method for keeping dirt onsite, especially if heavy machinery is used. Also, include the *detail drawings* for any standard measures, like a silt fence and a stormwater pollution prevention plan (see examples of these details page 7 of this packet).
- ❑ Impervious surface calculations.

Site Plan (Example): Should be included with all applications



N

Scale: 1” = 20’

Existing 6’ wooden fence will act as sediment barrier. No slope to neighboring lot.

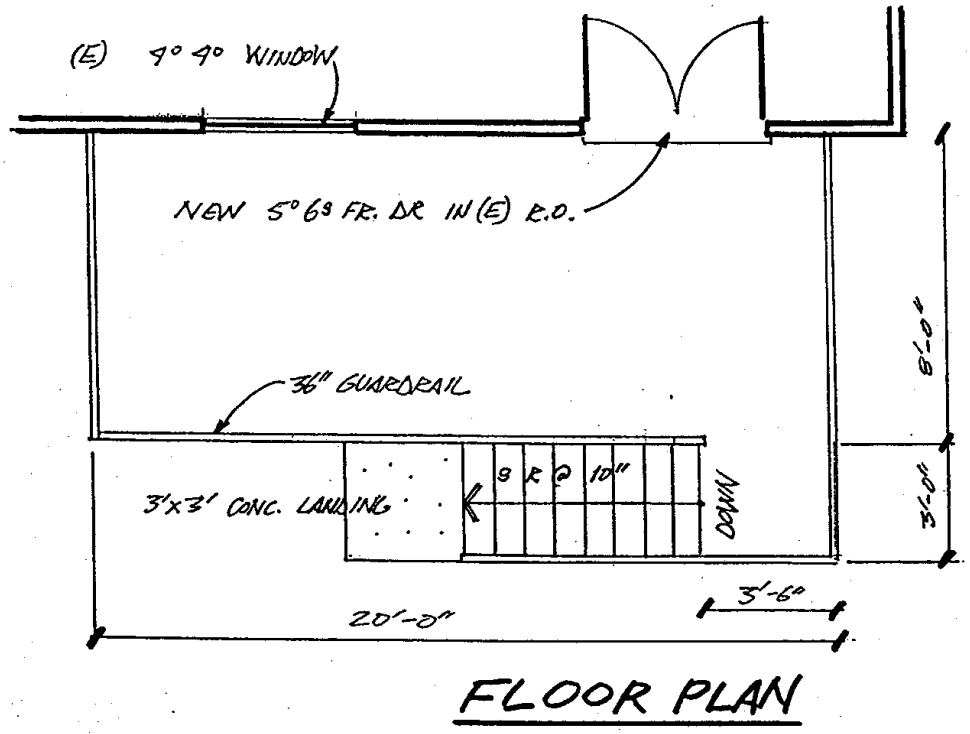
No machinery will be used, all post holes dug by hand. Any sediment deposited onto the right of way will be swept up immediately.

Land Use Information:

Address: 1234 Any St
Parcel Number: 3803324441515
Legal Description: Town of New Whatcom, Lot 16, Blk 232

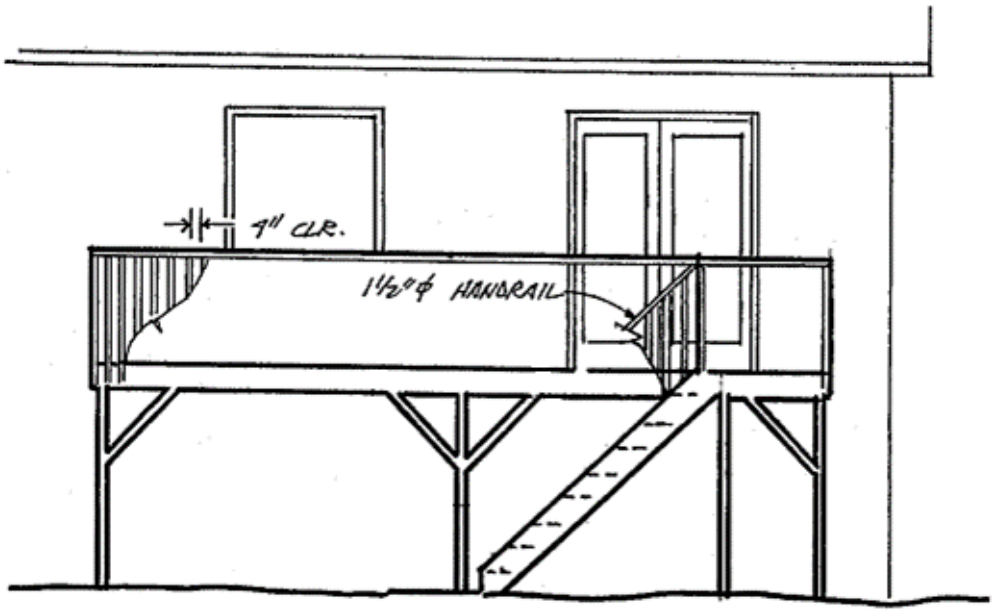
Lot Size: 40’ x 125’	= 5,000 square feet
Impervious Surface:	
Dwelling	= 1,000 square feet
Garage	= 400 square feet
Porch	= 35 square feet
Driveway/Walks	= 150 square feet
NEW DECK	= 160 square feet (replaces 100 square foot deck)
Total	= 1,745 square feet
Lot Coverage	= 1,745 / 5,000 = 34.9%

Floor Plan (Example): Should be included with all applications



FLOOR PLAN

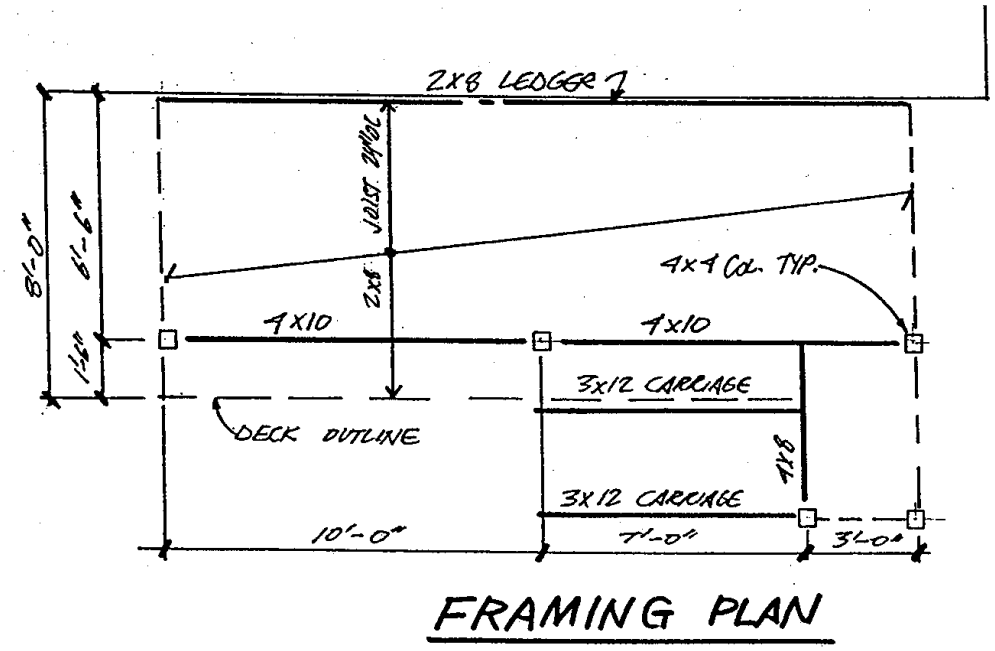
Elevation (Example): Should be included with all applications



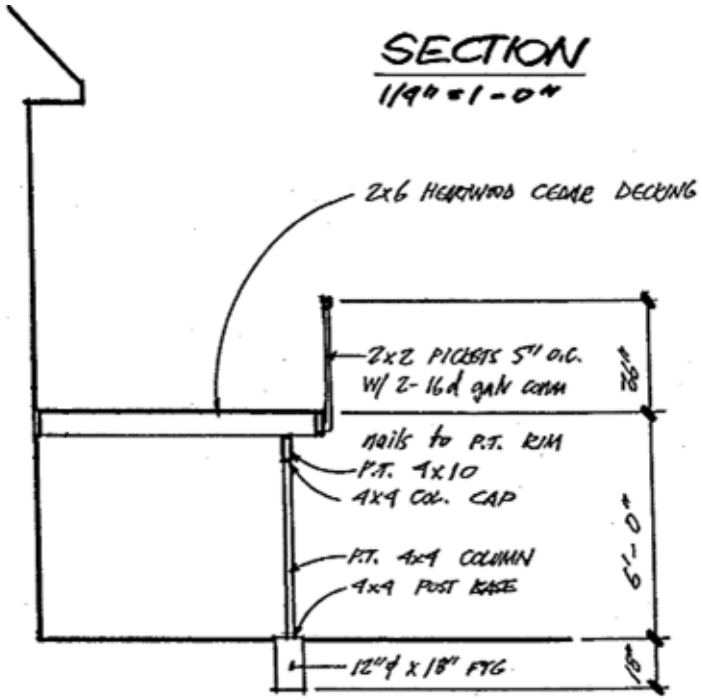
ELEVATION

1/4" = 1'-0"

Framing Plan (Example): Should be included in submittals for plan review

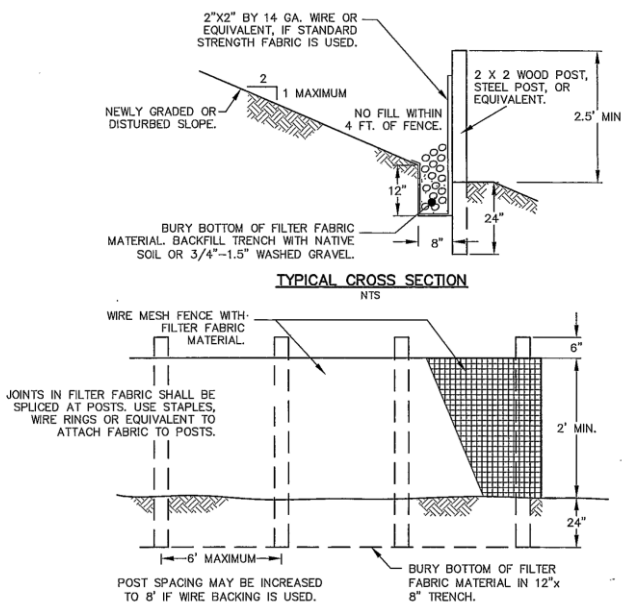


Cross Section (Example): Should be included in submittals for plan review



Stormwater Details:

If necessary, include these details on your plans
(see Site Plan Elements earlier in this packet)



NOTES:

1. FENCE SHALL NOT BE INSTALLED ON SLOPES STEEPER THAN 2:1.
2. JOINTS IN FILTER FABRIC SHALL BE OVERLAPPED 6 INCHES AT POST.
3. USE STAPLES, WIRE RINGS, OR EQUIVALENT TO ATTACH FABRIC TO WIRE FENCE.
4. REMOVE SEDIMENT WHEN IT REACHES 1/3 FENCE HEIGHT.

APPROVED		CITY OF BELLINGHAM	DRAWING
City Engineer	11/29/04 Date	REINFORCED SILT FENCE	EC–615

GENERAL CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

Purpose

To prevent the discharge of sediment and other pollutants to the maximum extent practicable from small construction projects.

Design and Installation

Plan and implement proper clearing and grading of the site. It is most important only to clear the areas needed, keeping exposed areas to a minimum. Phase clearing so that only those areas that are actively being worked are uncovered.

Note: Clearing limits shall be flagged on the lot or project area prior to initiating clearing

- From October 1 through April 30, no soils shall remain exposed and unworked for more than two days. From May 1 to September 30, no soils shall remain exposed and unworked for more than seven days.
- Soil shall be managed in a manner that does not permanently compact or deteriorate the final soil and landscape system. If disturbance and/or compaction occur the impact must be corrected at the end of the construction activity. This shall include restoration of soil depth, soil quality, permeability, and percent organic matter. Construction practices must not cause damage to or compromise the design of permanent landscape or infiltration areas.
- Locate any soil piles away from drainage systems. Soil piles should be tarped or mulched until the soil is either used or removed. Piles should be situated so that sediment does not run into the street or adjoining yards.
- Backfill foundation walls as soon as possible and rough grade the lot. This will eliminate large soil mounds, which are highly erodible, and prepares the lot for temporary cover, which will further reduce erosion potential.
- Remove excess soil from the site as soon as possible after backfilling. This will eliminate any sediment loss from surplus fill.
- The construction entrance shall be stabilized where traffic will be leaving the construction site and traveling on paved roads or other paved surfaces.
- Provide for periodic street cleaning to remove any sediment that may have been tracked out. Sediment should be removed by shoveling or sweeping and carefully removed to a suitable disposal area where it will not be re-eroded. Street washing is prohibited without special permission from SSW utility, call 360-778-7900.

Residential Deck Code Information & Details:

To meet code requirements the following minimum details or values (or engineered equivalents) must be used for all decks, regardless of permit exemption or permit type. You may use these details as shown in your construction.

Wood:

Wood used in decks must be pressure treated of a species naturally resistant to decay such as cedar or redwood. Metal fasteners and connectors for pressure treated wood must be approved by the manufacturer for such installations.

Minimum Footing Sizes:

Based on tributary area supported

The tributary area is the square footage of deck supported by a footing. To determine tributary area, multiply ½ of the beam span (in feet) by ½ of the joist span. Include all of the length of any cantilevered joists.

Example: A center post has beams on both sides. Each beam is 8’ long and supported by the center post and one exterior post. The joists they support are 12’ long, with no cantilever. Using ½ of each beam (4’ x 2) and multiplying it by ½ the joist span (6’) the tributary area is 4x2x6=48 sq. ft.

Multiply the tributary area supported by the live and dead loads for the deck. Live loads are the weight of things that are not permanent such as people, portable cooking equipment, furniture and even snow. Dead loads are the weight of the deck itself along with permanently fixed equipped equipment.

The required design live load for a residential deck is 60 pounds per square foot (psf). For standard decking materials, assume a dead load of 10 psf, for a total load of 70 psf. If the actual weight of the decking exceeds 10 psf, use the actual weight. In the example above, the tributary area of 48 sq. ft. would be multiplied by 70 psf to arrive at a total load of 3,360 pounds. This is the total weight the footing must support.

While most soils can support more weight, since we do not know the soil profile of all properties in Bellingham, the building code requires an assigned soil bearing capability of 1,500 psf. Divide 3,360 by 1,500 and the required footing size will be 2.24 square feet (approximately 18" x 18" square). Footings are required to extend at least 12” below ground.

Allowable Joist Spans

TABLE R507.5
DECK JOIST SPANS FOR COMMON LUMBER SPECIES[f] (ft. - in.)

SPECIES[a]	SIZE	SPACING OF DECK JOISTS WITH NO CANTILEVER[b] (inches)			SPACING OF DECK JOISTS WITH CANTILEVERS[c] (inches)		
		12	16	24	12	16	24
Southern pine	2 × 6	8-6	7-9	6-9	7-7	6-10	6-0
	2 × 8	11-2	10-2	8-11	9-10	8-11	7-9
	2 × 10	14-4	13-0	10-11	15-5	13-4	10-11
	2 × 12	17-5	15-5	12-7	17-11	15-6	12-8
Douglas fir-larch[d], hem-fir[d] spruce-pine-fir[d]	2 × 6	8-1	7-0	5-9	7-5	6-9	5-9
	2 × 8	10-10	9-5	7-8	9-7	8-8	7-7
	2 × 10	13-3	11-6	9-4	13-3	11-6	9-5
	2 × 12	15-4	13-4	10-10	15-5	13-4	10-11
Redwood, western cedars, ponderosa pine[e], red pine[e]	2 × 6	7-6	6-9	5-6	6-10	6-2	5-4
	2 × 8	9-10	8-6	6-11	8-10	8-0	6-11
	2 × 10	12-0	10-5	8-6	12-1	10-6	8-7
	2 × 12	13-11	12-1	9-10	14-0	12-2	9-11

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. No. 2 grade with wet service factor.
b. Ground snow load, live load = 60 psf, dead load = 10 psf, L/Δ = 360.
c. Ground snow load, live load = 60 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220-pound point load applied to end.
d. Includes incising factor.
e. Northern species with no incising factor
f. Cantilevered spans not exceeding the nominal depth of the joist are permitted.

- Joist cantilevers cannot exceed ¼ of actual joist span
- Lateral restraint required at joist ends and bearing locations
- Joists must bear on not less than:
  - 1 ½” on wood or metal
  - 3” on concrete or masonry
  - By approved joist hangers into ledger
- Joists must be connected to beams to prevent lateral displacement
- Maximum allowable spacing for joists supporting decking shall be in accordance with Table R507.4.

Allowable Beam Spans for Supporting Deck (Floor) Loads

TABLE R507.6
DECK BEAM SPAN LENGTHS[a, b] (ft. - in.)

SPECIES[c]	SIZE[d]	DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet)						
		6	8	10	12	14	16	18
Southern pine	2 – 2 × 6	6-4	6-0	5-6	4-7	3-11	3-5	3-0
	2 – 2 × 8	8-11	8-5	7-2	6-0	5-2	4-6	4-0
	2 – 2 × 10	11-11	10-9	9-2	7-8	6-7	5-9	5-1
	2 – 2 × 12	14-5	12-7	11-2	9-4	8-0	7-0	6-3
	3 – 2 × 6	8-1	7-8	7-3	6-10	5-10	5-1	4-7
	3 – 2 × 8	11-3	10-4	9-5	8-10	7-9	6-9	6-0
	3 – 2 × 10	14-5	12-10	11-10	10-10	9-10	8-7	7-8
	3 – 2 × 12	17-3	15-4	13-10	12-7	11-7	10-6	9-4
Douglas fir-larch[e], hem-fir[e], spruce-pine-fir[e], redwood, western cedars, ponderosa pine[f], red pine[f]	3 × 6 or 2 – 2 x 6	5-5	4-5	3-6	2-11	2-6	2-2	1-11
	3 × 8 or 2 – 2 × 8	7-3	5-9	4-8	3-10	3-4	2-11	2-7
	3 × 10 or 2 – 2 × 10	8-11	7-5	5-11	4-11	4-3	3-8	3-3
	3 × 12 or 2 – 2 × 12	10-4	8-11	7-2	6-0	5-2	4-6	4-0
	4 × 6	6-3	5-11	4-11	4-1	3-6	3-1	2-9
	4 × 8	8-9	7-9	6-6	5-5	4-8	4-1	3-7
	4 × 10	11-0	9-6	8-3	6-11	5-11	5-2	4-7
	4 × 12	12-10	11-1	10-0	8-5	7-2	6-3	5-7
	3 – 2 × 6	6-11	6-6	6-1	5-3	4-6	3-11	3-6
	3 – 2 × 8	9-8	8-6	7-8	6-11	5-11	5-3	4-8
	3 – 2 × 10	11-11	10-4	9-4	8-5	7-7	6-8	5-11
	3 – 2 × 12	13-10	12-0	10-10	9-10	9-1	8-1	7-2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. Ground snow load, live load = 60 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220-pound point load applied at the end.
b. Beams supporting deck joists from one side only.
c. No. 2 grade, wet service factor.
d. Beam depth shall be greater than or equal to depth of joists with a flush beam condition.
e. Includes incising factor.
f. Northern species. Incising factor not included.

- Cantilevers permitted at each end up to ¼ of the actual beam span
- Beams must bear on not less than:
  - 1 ½” on wood or metal
  - 3” on concrete or masonry
- Locate splices at interior posts

Allowable Deck Post Sizes based on Height

TABLE R507.8
DECK POST HEIGHT[a]

DECK POST SIZE	MAXIMUM HEIGHT[a]
4 × 4	8'
4 × 6	8'
6 × 6	14'

For SI: 1 foot = 304.8 mm.

a. Measured to the underside of the beam.

- Post must be connect to beam to prevent lateral displacement, with either:
  - Manufactured connectors sized for post and beam
  - Notched post (2 ½" minimum remains)
  - Washers required under the head and nut for all bolts
- Posts must bear on footings
- Restraint is required at bottom of posts to prevent lateral displacement, with either
  - Manufactured connectors
  - Minimum 12" embedment in concrete or soils.

Allowable Beam Spans for Supporting Roof Loads

TABLE R602.7(1) GIRDER SPANS[a] AND HEADER SPACES FOR EXTERIOR BEARING WALLS (Maximum spans for Douglas fir-larch, hem-fir, southern pine and spruce-pine-fir[b] and required number of jack studs)

GIRDERS AND HEADERS SUPPORTING	SIZE	GROUND SNOW LOAD (psf)					
		30					
		Building width (feet)					
		20		28		36	
		Span	NJ[d]	Span	NJ[d]	Span	NJ[d]
Roof and ceiling	1-2 × 8	4-6	1	3-10	1	3-5	1
	1-2 × 10	5-8	1	4-11	1	4-4	1
	1-2 × 12	6-11	1	5-11	2	5-3	2
	2-2 × 4	3-6	1	3-2	1	2-10	1
	2-2 × 6	5-5	1	4-8	1	4-2	1
	2-2 × 8	6-10	1	5-11	2	5-4	2
	2-2 × 10	8-5	2	7-3	2	6-6	2
	2-2 × 12	9-9	2	8-5	2	7-6	2
	3-2 × 8	8-4	1	7-5	1	6-8	1
	3-2 × 10	10-6	1	9-1	2	8-2	2
	3-2 × 12	12-2	2	10-7	2	9-5	2
	4-2 × 8	9-2	1	8-4	1	7-8	1
	4-2 × 10	11-8	1	10-6	1	9-5	2
	4-2 × 12	14-1	1	12-2	2	10-11	2

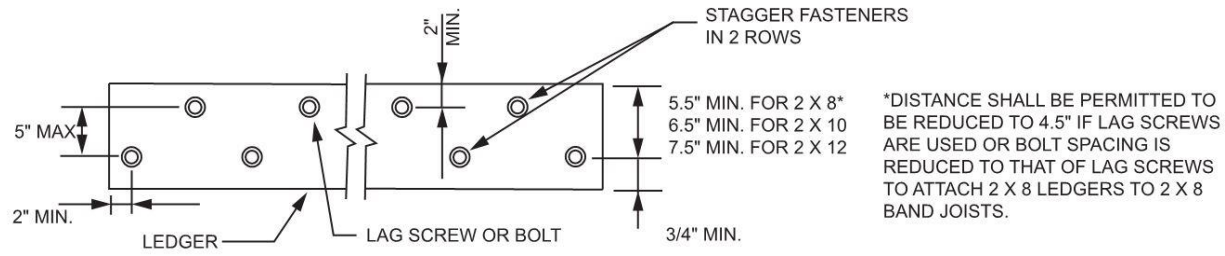
a. Spans are given in feet and inches

b. Tabulated values assume #2 grade lumber

c. NJ = Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

Deck Ledger:

This detail shows the requirements for the ledger at the connection to the home. The following table shows the required spacing for the lag screws or bolts on the ledger. The minimum ledger size is 2x8 and must be connected to a 2x band joist that is fully supported by a wall or sill plate. Toenails may not be used.



For SI: 1 inch = 25.4 mm.

FIGURE R507.2.1(1)
PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS

TABLE R507.2
DECK LEDGER CONNECTION TO BAND JOIST[a, b] (Deck live load = 60 psf, deck dead load = 10 psf, snow load ≤ 60 psf)

CONNECTION DETAILS	JOIST SPAN						
	6′ and less	6′1″ to 8′	8′1″[2] to 10′	10′1″ to 12′	12′1″ to 14′	14′1″ to 16′	16′1″ to 18′
	On-center spacing of fasteners						
½ inch diameter lag screw with ½ inch maximum sheathing [c,d]	22	16	13	11	9	8	7
½ inch diameter bolt with ½ inch maximum sheathing[d]	30	22	18	15	13	11	10
½ inch diameter bolt with 1 inch maximum sheathing[e]	26	19	16	13	11	10	9

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

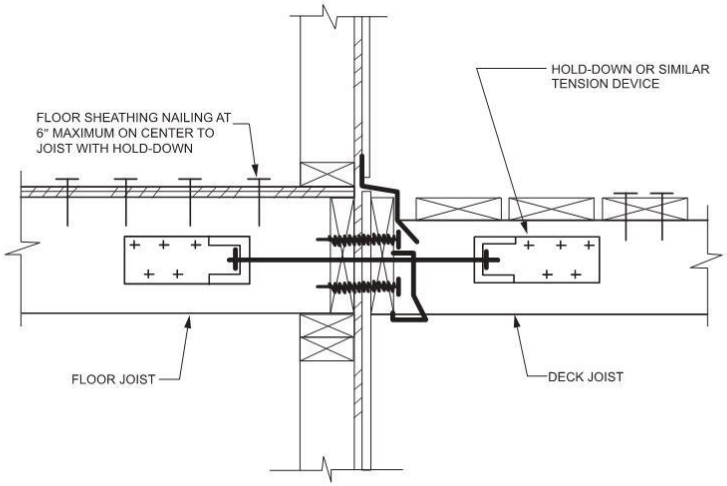
a. Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
b. Snow load shall not be assumed to act concurrently with live load.
c. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
d. Sheathing shall be wood structural panel or solid sawn lumber.
e. Sheathing shall be permitted to be wood structural panel, gypsum board, fiberboard, lumber or foam sheathing. Up to 1/2-inch thickness of stacked washers shall be permitted to substitute for up to ½-inch of allowable sheathing thickness where combined with wood structural panel or lumber sheathing.

Lateral Load Connection

Where supported by attachment to an exterior wall, decks must be positively anchored to the primary structure and designed for both vertical and lateral loads. Two options for the lateral load connection are shown below.

Decks not more than 30" above grade do not require the lateral load connection.

Option #1:

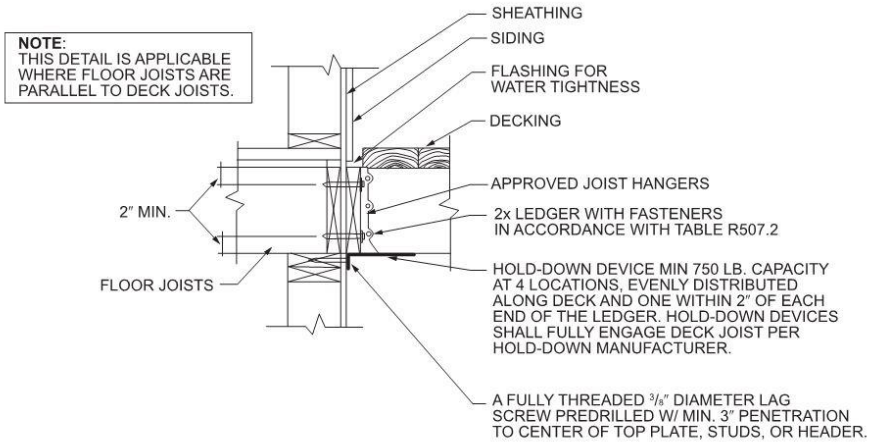


For SI: 1 inch = 25.4 mm.

FIGURE 507.2.3(1)
DECK ATTACHMENT FOR LATERAL LOADS

1. Install hold down per manufacturer's installation instructions. Attachment of hold down device to I-joist should follow manufacturer's installation instructions; blocking or web stiffeners may be required. For specific framing/site conditions which are not addressed by the prescriptive lateral load connection, please provide alternate equivalent detail (design by a licensed design professional may be required).
2. There should be no less than two connections per deck within 24" of each end of the deck, with a 1500 lb capacity each

Option #2:



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE R507.2.3(2)
DECK ATTACHMENT FOR LATERAL LOADS

1. There should be no less than four connections per deck, with a 750 lb capacity each

Decking

- Plastic composite decking to comply with ASTM D 7032
    - Label should indicate compliance with ASTM D 7032, the allowable load and maximum allowable span
    - Shall have flame spread index not more than 200
    - Decay resistant
    - Installed per manufacturer's instructions
- Wood decking
    - Minimum 1 ¼ inch thick
    - Joist spacing maximum based on decking thickness and direction (perpendicular or diagonal to joist)
    - Attached to each supporting member with not less than (2) 8d threaded nails or (2) No. 8 wood screws.

Deck Guard Detail: