



PROSSER *Washington*
INCORPORATED 1899

Designing a Deck



City of Prosser

Building Department

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Introduction

Many homeowners decide to expand the house of their home by constructing a deck for added enjoyment. Although some homeowners decide to hire out a professional contractor to build their deck, many homeowners find this to be a task that is not too daunting and even something they will be proud of. We have created this document to act as guide when designing and constructing your deck, so that it truly is something to be proud of when finished.

Please be aware that this document is not all-inclusive as there are countless methods that have proven to work, and many products hitting the market which don't fall within the scope of this document. This document is meant to act as a basic guide for deck design. If you are unsure of something you can always contact the City of Prosser Building Department for clarification.

Cost of the Permit

This is a common question that homeowners will ask the Building Department. Unfortunately, it is not an easy answer. The permit cost for a deck, is scaled up or down based on the valuation of the project.

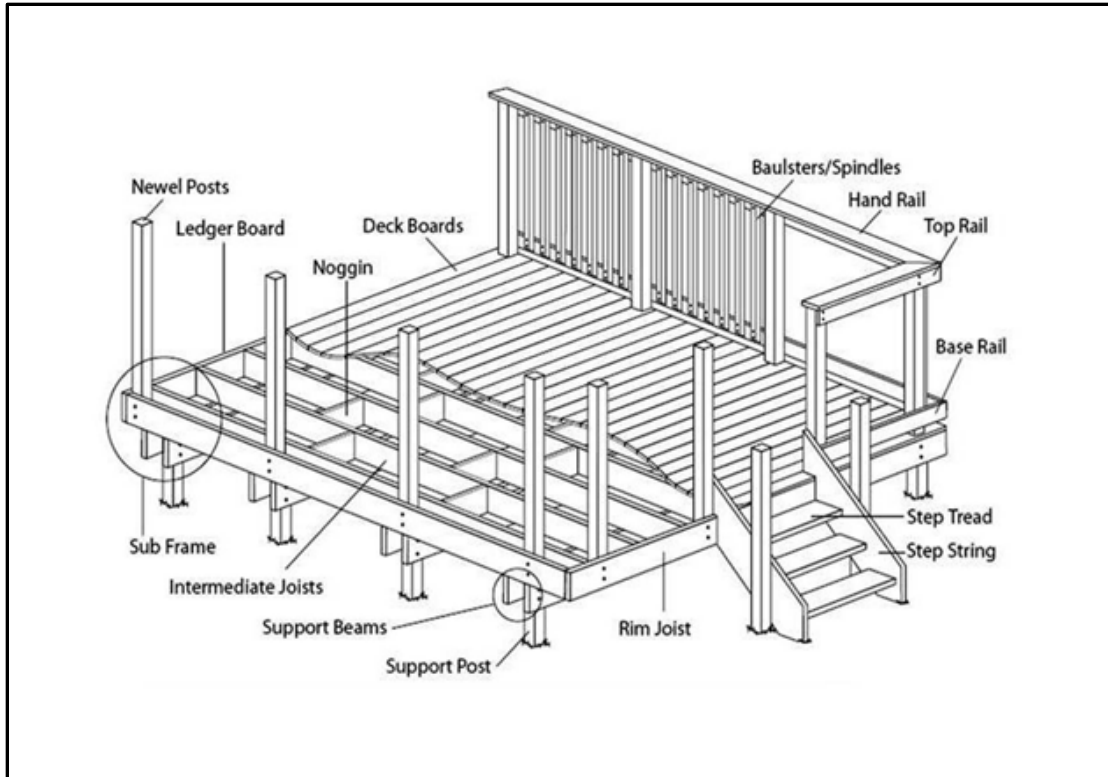
The formula consists of obtaining the total square footage of the deck, multiplied by \$16.03 (the sq. ft. cost) and using that amount to determine where it falls within the City of Prosser's permit fee schedule. Below are a couple of examples of how a permit fee is calculated:

Example 1. 300 sq. ft. (Deck Size) x \$16.03 = \$4,809.00 *valuation*, this equates to a permit fee of \$111.25 (plus \$6.50 Washington State Fee)

Example 2. 800 sq. ft. (deck size) x \$16.03 = \$12,824.00 *valuation*, this equates to a permit fee of \$223.25 (plus \$6.50 Washington State Fee)

Parts of a Deck

Before we begin going through the various details surrounding the design of a deck, we wanted to provide a deck detail for quick reference so you understand the various spacing and size requirements for the different parts of a deck.



Different Components Used in Deck Construction

Joist Spans

Please refer to the attached drawings for designing a deck and verify with the City of Prosser Planning/Building department regarding where you can construct a deck. A permit is **not required** for a deck which is *less than 200 sq. ft. in size, not attached to the house, not more than 30 inches above grade at any point, or in a location that serves the exit door of the residence.*

Joists are the structural supports that usually run perpendicular to your finished decking material. However, some homeowners prefer to run the decking diagonally across the joists. The following table gives the spans **only** for **HEM-FIR #2 or better** joists of various sizes. Pressure-treated joists you buy at the lumber store at typically **HEM-FIR Standard or better** that is a lesser grade of lumber than #2. You do **not** have to use pressure-treated joists on an outside deck. In fact, the #2 lumber will allow you to span farther between beams. Any posts or joists in direct contact with concrete or within 6" of the ground should be decay resistant to prevent rot.

Composite decking typically requires supporting joists to be 16" o.c. (on center) however; homeowners should verify manufacturer's installation instructions prior to commencing work. Below are maximum joist spans for HEM-FIR #2 or better lumber:

Joist Size	On-Center Spacing	Maximum Joist Span
2x6	16" o.c.	7ft 0in

2x6	24" o.c.	5ft 9in
2x8	16" o.c.	9ft 5in
2x8	24" o.c.	7ft 8in
2x10	16" o.c.	11ft 6in
2x10	24" o.c.	9ft 4in
2x12	16" o.c.	13ft 4in
2x12	24" o.c.	10ft 10in

**Note: As mentioned above, special care should be taken on 24" o.c. joist spans as some decking material may be too thin and will either be too bouncy when walking on it, or not approved by the manufacturer if using composite decking. Verify the joist spacing if using something other than HEM-FIR #2 or better lumber.

Beams

Beams are perhaps the most important part of the deck structure, as they carry all of the weight from the floor joists for the deck. Beam should be designed utilizing the best lumber possible to ensure adequate strength. You do not have to use pressure-treated beams for your deck design, however, exposure to the elements should be taken in consideration when deciding what type of lumber to use. The table below is based on **HEM-FIR #2 or better**:

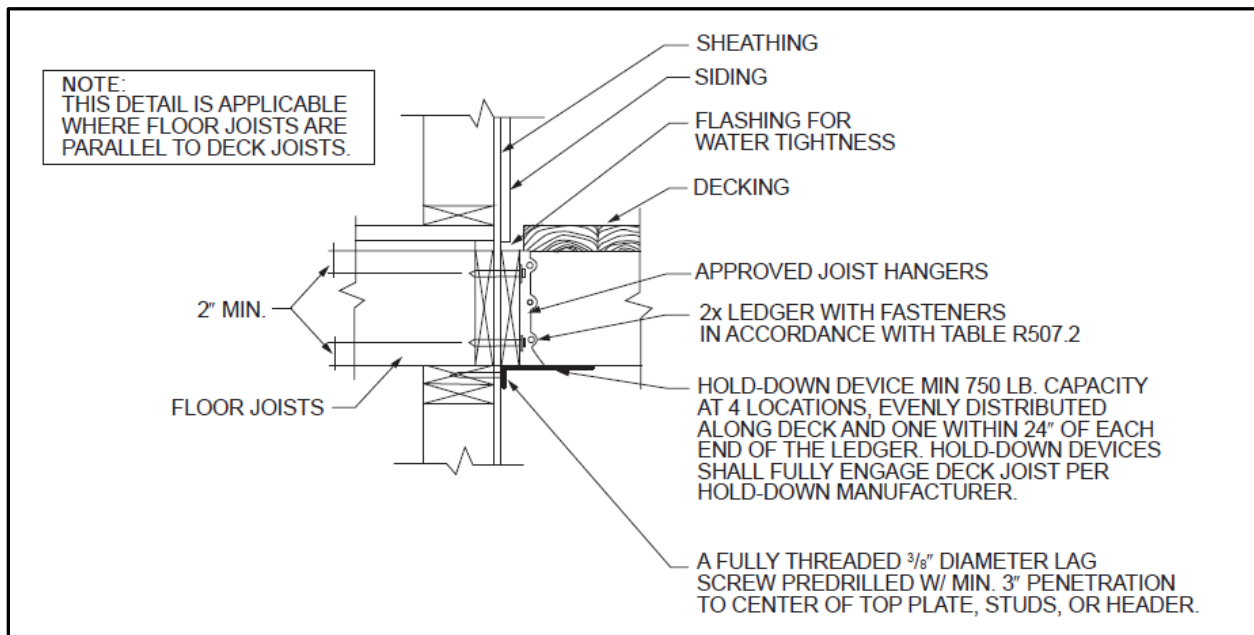
Span of Joist Resting on Beam	Size of Beam	Maximum Span
6 feet	4x6	6ft 3in
8 feet	4x6	5ft 11in
10 feet	4x6	4ft 11in
12 feet	4x6	4ft 1in
14 feet	4x6	3ft 6in
16 feet	4x6	3ft 1in
18 feet	4x6	2ft 9in
6 feet	4x8	8ft 9in
8 feet	4x8	7ft 9in
10 feet	4x8	6ft 6in
12 feet	4x8	5ft 5in
14 feet	4x8	4ft 8in
16 feet	4x8	4ft 1in

18 feet	4x8	3ft 7in
6 feet	4x10	11ft 0in
8 feet	4x10	9ft 6in
10 feet	4x10	8ft 3in
12 feet	4x10	6ft 11in
14 feet	4x10	5ft 11in
16 feet	4x10	5ft 2in
18 feet	4x10	4ft 7in

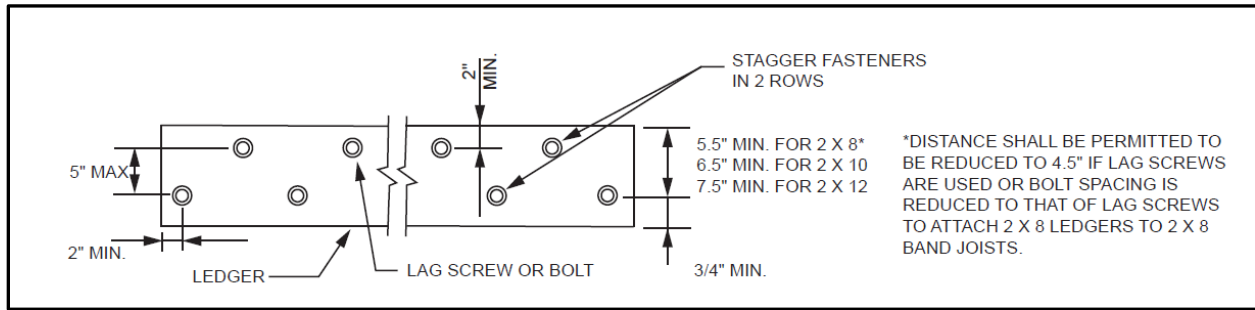
Note: Maximum span in the above table refers to spacing between the posts, which support the structure from the beam to the ground.

Ledger Attachment

Should you decide to support your deck from the band joist of your home, some considerations need to be made in regards to bolt sizing, spacing, and location. Additionally, homeowners should install flashing where the house siding meets the ledger to prevent water from draining onto the exposed wood. Below are a couple details showing these items:



Deck Ledger to Band Joist Detail

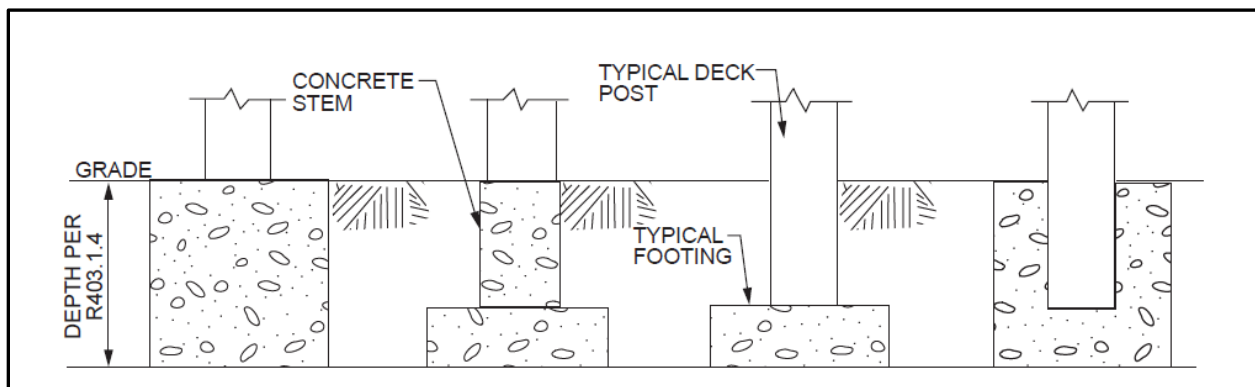


Deck Ledger to Band Joist Bolt Detail

Footings

There are several different ways to support your deck structure depending on the load on the footing itself. Below is a detail showing different methods which can be utilized for deck footings. Keep in mind that due to our climate zone, footings should be at least 24" in depth to avoid frost damage. If a post is not embedded into the concrete then a mechanical connection (i.e. a bracket) must be used to secure the post to the footing.

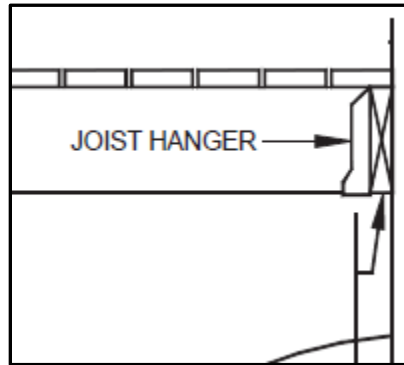
Pre-cast concrete pier blocks may be used, but must be installed per the manufacturer's instructions, and often times more blocks are required when using them in lieu of a traditional poured footing.



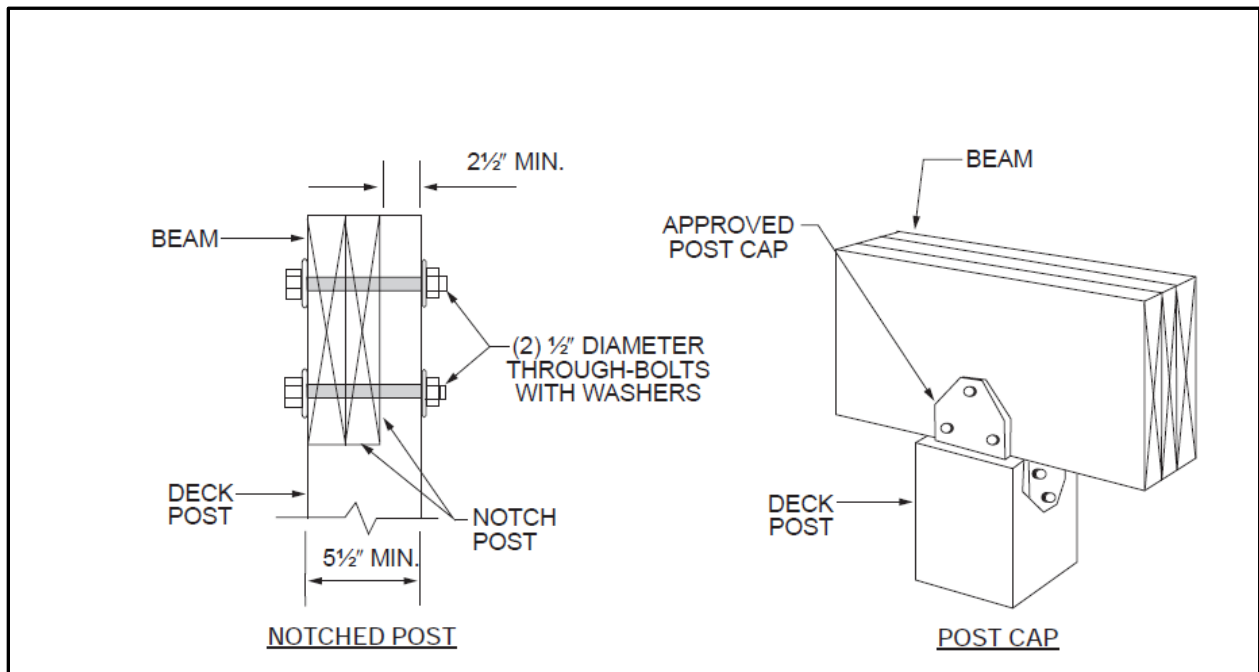
Typical Post to Footing Detail (for Decks)

Connections

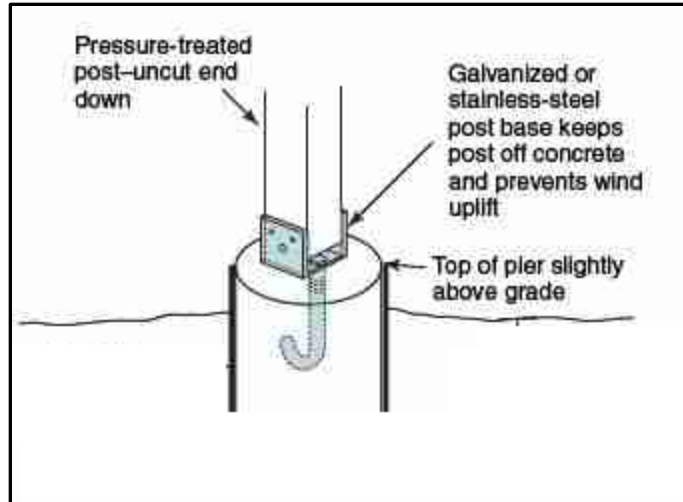
The last detail in this document covers the mechanical connections (i.e. brackets) between the different meeting points of your deck framing. Having mechanical connections for your deck is important in preventing different things such as uplift, racking, and other problems that occur during high winds, earthquakes, and other natural occurrences. Below are common methods for making the connection between two points on your deck structure:



Joist to Beam Connection Detail



Beam to Post Connection Detail



Post to Footing Detail

Additional Resources

AWC – Decay Resistance: <https://www.awc.org/pdf/education/mat/AWC-MAT104-Decay-071024.pdf>

AWC – Prescriptive Deck Design: <https://www.awc.org/pdf/codes-standards/publications/dca/AWC-DCA62015-DeckGuide-1804.pdf>