

**Building Services**  
W240N3065 Pewaukee Road  
Pewaukee, WI 53072  
(262)-691-9107 Fax: 691-6039

## **DECK PERMIT**

The following information is necessary to obtain a building permit for a deck. **A building permit application must be complete with all the applicable required information.** Failure to provide all information listed below, 2 plans and 2 surveys, will delay the permit issuance process. The Building Inspector may request additional information as required.

**Processing of permits is usually 7-10 days, but at peak construction times, processing may take longer.**

1. **Two detailed drawings** on an 8 1/2" x 11" sheet of paper showing cross section of deck, footprint of deck, exterior dimensions, elevations, and footing details. The scale used shall be shown on the plan. If the plans are not drawn to scale, exact dimensions shall be given and the plan marked "not to scale". All deck information shall also be included on the Typical Deck Framing Plan. (Figure 35)
2. **Stair and handrail/guardrail details.** All decks more than 24" above grade shall include a guardrail on all open sides of the deck. Rail heights shall be a minimum of 36" above finished deck floor. Intermediate rails shall be spaced no more than 4 3/8". Stairs with more than three (3) risers shall provide handrails and a guardrail on open sides of the stairs. Baluster spacing shall not allow a 4 3/8" sphere to pass through any railing. Open stair riser openings shall not exceed a height of 4".
3. **Survey/Plot Plan.** 2 surveys or plot plans showing the location on the site of the proposed project as well as all existing structures, easements and lot dimensions. Surveys or plot plans shall be drawn on a minimum of an 8 1/2" x 11" sheet of paper and be drawn to scale or have exact dimensions given for distances. The scale used shall be shown on the plan.
4. **Decks must meet setback requirements.** Decks located 10' or more from the principal structure would be considered a detached accessory structure and must meet setback requirements for detached accessory structures.
5. **The application shall state the cost of the deck.**

If you have any questions please contact the Building Services Office at 262.691.9107.

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## DECKS

### GENERAL REQUIREMENTS

#### (1) DEFINITIONS

- (a.) Deck: Any structure which serves as a raised horizontal platform or floor constructed of wood or other materials, without enclosing walls or roof.
- (b.) Attached Deck: Any deck which is physically connected to the principal building or accessory structure.
- (c.) Detached Deck: Any deck which is **not** physically attached to the principal building or accessory structure and is **not** used for exiting the principal building.

#### (2) SOIL AND EXCAVATION REQUIREMENTS FOR DECK PIERS OR FOUNDATIONS

- (a.) No pier shall be placed on soil with a bearing capacity of less than 2,000 lbs. per square foot unless the pad support is designed through structural analysis.
- (b.) All organic material (roots, etc.) shall be cut off at the sidewalls of the borings or trench. All organic and loose material must be removed from the cavity area prior to pouring concrete.

#### (3) DECKS, PIERS, PADS AND FOUNDATIONS

- (a.) General footings, pads or piers shall be of adequate bearing area to safely distribute all live and dead loads to the supporting soil without exceeding the bearing capacity of the soil.
- (b.) Type and size of concrete pads, piers or foundations.
  - 1. Decks attached to principal buildings.
    - a. Concrete Pads – The minimum depth of a pad shall be 48” minimum below grade. The minimum dimensions of this pad shall comply with both footing size & thickness per **Appendix C-Beam & Footing Sizes with Overhangs**.
    - b. Piers – The minimum depth of concrete piers shall be 48” minimum below grade. The minimum diameter shall comply with **Appendix C-Beam & Footing Sizes with Overhangs**. (The concrete pier(s) shall extend above grade with an approved mounting bracket secured at the top surface of the pier(s)).
    - c. Direct burial wood posts may be placed on a concrete pad per **Appendix C-Beam & Footing Sizes with Overhangs**. Treated posts shall be identified by the grade mark of, or certificate of inspection issued by, a professional lumber – grading or inspection bureau or agency ([www.alsc.org](http://www.alsc.org)) & shall be rated as “ground-contact”. Note: Not all treated lumber is rated for ground contact.

## Appendix C Beam & Footing Sizes with Overhangs

| Beam and Footing Sizes with Overhangs  |  |       |       |       |        |        |        |        |        |        |        |        |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|--|--|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Based on No. 2 or better Southern Pine, Douglas Fir-Larch2, and Ponderosa Pine |  |       |       |       |        |        |        |        |        |        |        |        |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Joist Length (JL) <sup>1</sup>   | Post Spacing (Measured Center to Center) |       |       |       |        |        |        |        |        |        |        |        |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | 4'                                       | 5'    | 6'    | 7'    | 8'     | 9'     | 10'    | 11'    | 12'    | 13'    | 14'    |        |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6'   | Southern Pine Beam                       | 1-2x6 | 1-2x6 | 1-2x8 | 2-2x6  | 2-2x8  | 2-2x8  | 2-2x10 | 2-2x10 | 2-2x12 | 3-2x10 | 3-2x12 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Douglas Fir-Larch Beam                   | 1-2x6 | 1-2x8 | 1-2x8 | 2-2x8  | 2-2x8  | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 | 3-2x10 | 3-2x12 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Ponderosa Pine Beam                      | 1-2x6 | 1-2x8 | 1-2x8 | 2-2x8  | 2-2x8  | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 | 3-2x10 | 3-2x12 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Corner Footing                           | 8     | 7     | 6     | 9      | 8      | 7      | 10     | 8      | 7      | 11     | 9      | 8  | 11 | 9  | 8  | 12 | 10 | 9  | 12 | 10 | 9  | 13 | 11 | 9  | 14 | 11 | 10 | 14 | 12 | 10 | 15 | 12 | 10 |
|  | Intermediate Footing                     | 10    | 8     | 7     | 11     | 9      | 8      | 12     | 10     | 9      | 13     | 11     | 9  | 14 | 12 | 10 | 15 | 12 | 11 | 16 | 13 | 11 | 16 | 13 | 12 | 17 | 14 | 12 | 17 | 14 | 13 | 18 | 15 | 13 |
|  | Footing Thickness                        | 6     | 6     | 6     | 6      | 6      | 6      | 6      | 6      | 6      | 6      | 6      | 8  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7'   | Southern Pine Beam                       | 1-2x6 | 1-2x8 | 1-2x8 | 2-2x8  | 2-2x8  | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 | 3-2x12 | 3-2x12 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Douglas Fir-Larch Beam                   | 1-2x6 | 1-2x8 | 2-2x8 | 2-2x8  | 2-2x8  | 2-2x10 | 2-2x10 | 2-2x12 | 3-2x10 | 3-2x12 | 3-2x12 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Ponderosa Pine Beam                      | 1-2x6 | 1-2x8 | 2-2x6 | 2-2x8  | 2-2x8  | 2-2x10 | 2-2x12 | 2-2x12 | 3-2x10 | 3-2x12 | Eng Bm |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Corner Footing                           | 9     | 7     | 7     | 10     | 8      | 7      | 11     | 9      | 8      | 11     | 9      | 8  | 12 | 10 | 9  | 13 | 11 | 9  | 13 | 11 | 10 | 14 | 12 | 10 | 15 | 12 | 10 | 15 | 12 | 11 | 16 | 13 | 11 |
|  | Intermediate Footing                     | 11    | 9     | 8     | 12     | 10     | 9      | 13     | 11     | 9      | 14     | 12     | 10 | 15 | 12 | 11 | 16 | 13 | 11 | 17 | 14 | 12 | 17 | 14 | 12 | 18 | 15 | 13 | 19 | 15 | 13 | 19 | 16 | 14 |
|  | Footing Thickness                        | 6     | 6     | 6     | 6      | 6      | 6      | 6      | 6      | 6      | 8      | 8      | 8  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 8'   | Southern Pine Beam                       | 1-2x6 | 1-2x8 | 2-2x6 | 2-2x8  | 2-2x8  | 2-2x10 | 2-2x12 | 2-2x12 | 3-2x12 | 3-2x12 | Eng Bm |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Douglas Fir-Larch Beam                   | 1-2x6 | 1-2x8 | 2-2x8 | 2-2x8  | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 | 3-2x12 | 3-2x12 | Eng Bm |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Ponderosa Pine Beam                      | 1-2x6 | 1-2x8 | 2-2x8 | 2-2x8  | 2-2x10 | 2-2x10 | 2-2x12 | 3-2x10 | 3-2x12 | 3-2x12 | Eng Bm |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Corner Footing                           | 10    | 8     | 7     | 10     | 9      | 8      | 11     | 9      | 8      | 12     | 10     | 9  | 13 | 11 | 9  | 14 | 11 | 10 | 14 | 12 | 10 | 15 | 12 | 11 | 15 | 13 | 11 | 16 | 13 | 12 | 17 | 14 | 12 |
|  | Intermediate Footing                     | 12    | 10    | 8     | 13     | 11     | 9      | 14     | 12     | 10     | 15     | 12     | 11 | 16 | 13 | 11 | 17 | 14 | 12 | 18 | 15 | 13 | 19 | 15 | 13 | 19 | 16 | 14 | 20 | 16 | 14 | 21 | 17 | 15 |
|  | Footing Thickness                        | 6     | 6     | 6     | 6      | 6      | 6      | 6      | 8      | 8      | 8      | 8      | 8  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 9'   | Southern Pine Beam                       | 1-2x6 | 1-2x8 | 2-2x8 | 2-2x8  | 2-2x10 | 2-2x12 | 2-2x12 | 3-2x10 | 3-2x12 | Eng Bm | Eng Bm |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Douglas Fir-Larch Beam                   | 1-2x8 | 1-2x8 | 2-2x8 | 2-2x8  | 2-2x10 | 2-2x12 | 2-2x12 | 3-2x12 | 3-2x12 | Eng Bm | Eng Bm |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Ponderosa Pine Beam                      | 1-2x8 | 2-2x6 | 2-2x8 | 2-2x8  | 2-2x10 | 2-2x12 | 2-2x12 | 3-2x12 | 3-2x12 | Eng Bm | Eng Bm |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Corner Footing                           | 10    | 8     | 7     | 11     | 9      | 8      | 12     | 10     | 9      | 13     | 11     | 9  | 14 | 11 | 9  | 14 | 12 | 10 | 15 | 12 | 11 | 16 | 13 | 11 | 16 | 13 | 12 | 17 | 14 | 12 | 18 | 14 | 13 |
|  | Intermediate Footing                     | 12    | 10    | 9     | 14     | 11     | 10     | 15     | 12     | 11     | 16     | 13     | 11 | 17 | 14 | 12 | 18 | 15 | 13 | 19 | 15 | 13 | 20 | 16 | 14 | 20 | 17 | 15 | 21 | 17 | 15 | 22 | 18 | 16 |
|  | Footing Thickness                        | 6     | 6     | 6     | 6      | 6      | 6      | 8      | 8      | 8      | 8      | 8      | 8  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 10'  | Southern Pine Beam                       | 1-2x6 | 1-2x8 | 2-2x8 | 2-2x8  | 2-2x10 | 2-2x12 | 2-2x12 | 3-2x12 | 3-2x12 | Eng Bm | Eng Bm |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Douglas Fir-Larch Beam                   | 1-2x8 | 2-2x6 | 2-2x8 | 2-2x10 | 2-2x10 | 2-2x12 | 3-2x10 | 3-2x12 | 3-2x12 | Eng Bm | Eng Bm |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Ponderosa Pine Beam                      | 1-2x8 | 2-2x6 | 2-2x8 | 2-2x10 | 2-2x10 | 2-2x12 | 3-2x10 | 3-2x12 | Eng Bm | Eng Bm | Eng Bm |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Corner Footing                           | 10    | 9     | 8     | 12     | 10     | 8      | 12     | 10     | 9      | 13     | 11     | 10 | 14 | 12 | 10 | 15 | 12 | 11 | 16 | 13 | 11 | 16 | 14 | 12 | 17 | 14 | 12 | 18 | 15 | 13 | 18 | 15 | 13 |
|  | Intermediate Footing                     | 12    | 10    | 9     | 14     | 11     | 10     | 15     | 12     | 11     | 16     | 13     | 11 | 17 | 14 | 12 | 18 | 15 | 13 | 19 | 15 | 13 | 20 | 16 | 14 | 20 | 17 | 15 | 21 | 17 | 15 | 22 | 18 | 16 |

|                        |                        |       |    |       |       |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |    |
|------------------------|------------------------|-------|----|-------|-------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|----|
|                        | Intermediate Footing   | 13    | 11 | 9     | 14    | 12 | 10     | 15     | 13 | 11     | 17     | 14 | 12     | 18     | 15 | 13     | 19     | 15 | 13     | 20     | 16 | 14     | 21     | 17 | 15     | 21     | 18 | 15     | 22     | 18 | 16     | 23     | 19 | 16 |
|                        | Footing Thickness      | 6     |    |       | 6     |    |        | 6      |    |        | 6      |    |        | 8      |    |        | 8      |    |        | 8      |    |        | 8      |    |        | 8      |    |        | 8      |    |        | 10     |    |    |
|                        | Southern Pine Beam     | 1-2x8 |    |       | 2-2x6 |    |        | 2-2x8  |    |        | 2-2x10 |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 3-2x12 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
|                        | Douglas Fir-Larch Beam | 1-2x8 |    |       | 2-2x6 |    |        | 2-2x8  |    |        | 2-2x10 |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 3-2x12 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
|                        | Ponderosa Pine Beam    | 1-2x8 |    |       | 2-2x6 |    |        | 2-2x8  |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 2-2x12 |    |        | 3-2x12 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
| Corner Footing         | 11                     | 9     | 8  | 12    | 10    | 9  | 13     | 11     | 9  | 14     | 12     | 10 | 15     | 12     | 11 | 16     | 13     | 11 | 16     | 14     | 12 | 17     | 14     | 12 | 18     | 15     | 13 | 19     | 15     | 13 | 19     | 16     | 14 |    |
| 11'                    | Intermediate Footing   | 13    | 11 | 10    | 15    | 12 | 11     | 16     | 13 | 12     | 17     | 14 | 12     | 19     | 15 | 13     | 20     | 16 | 14     | 21     | 17 | 15     | 22     | 18 | 15     | 22     | 18 | 16     | 23     | 19 | 17     | 24     | 20 | 17 |
|                        | Footing Thickness      | 6     |    |       | 6     |    |        | 6      |    |        | 6      |    |        | 8      |    |        | 8      |    |        | 8      |    |        | 8      |    |        | 8      |    |        | 10     |    |        | 10     |    |    |
|                        | Southern Pine Beam     | 1-2x8 |    |       | 2-2x6 |    |        | 2-2x8  |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 2-2x12 |    |        | 3-2x12 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
|                        | Douglas Fir-Larch Beam | 1-2x8 |    |       | 2-2x6 |    |        | 2-2x8  |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 3-2x10 |    |        | 3-2x12 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
|                        | Ponderosa Pine Beam    | 1-2x8 |    |       | 2-2x6 |    |        | 2-2x8  |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 3-2x10 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
|                        | Corner Footing         | 11    | 9  | 8     | 12    | 10 | 9      | 14     | 11 | 9      | 15     | 12 | 10     | 15     | 13 | 11     | 16     | 13 | 12     | 17     | 14 | 12     | 18     | 15 | 13     | 19     | 15 | 13     | 19     | 16 | 14     | 20     | 17 | 14 |
|                        | Intermediate Footing   | 14    | 12 | 10    | 15    | 13 | 11     | 17     | 14 | 12     | 18     | 15 | 13     | 19     | 16 | 14     | 20     | 17 | 15     | 21     | 18 | 16     | 22     | 18 | 16     | 23     | 19 | 17     | 24     | 20 | 17     | 25     | 21 | 18 |
| Footing Thickness      | 6                      |       |    | 6     |       |    | 6      |        |    | 8      |        |    | 8      |        |    | 8      |        |    | 8      |        |    | 8      |        |    | 10     |        |    | 10     |        |    | 10     |        |    |    |
| 13'                    | Southern Pine Beam     | 1-2x8 |    |       | 2-2x6 |    |        | 2-2x8  |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 3-2x10 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
|                        | Douglas Fir-Larch Beam | 1-2x8 |    |       | 2-2x6 |    |        | 2-2x10 |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 3-2x10 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
|                        | Ponderosa Pine Beam    | 1-2x8 |    |       | 2-2x6 |    |        | 2-2x10 |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 3-2x12 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
|                        | Corner Footing         | 12    | 10 | 8     | 13    | 11 | 9      | 14     | 12 | 10     | 15     | 12 | 11     | 16     | 13 | 12     | 17     | 14 | 12     | 18     | 15 | 13     | 19     | 15 | 13     | 19     | 16 | 14     | 20     | 17 | 14     | 21     | 17 | 15 |
|                        | Intermediate Footing   | 14    | 12 | 10    | 16    | 13 | 12     | 17     | 14 | 13     | 19     | 15 | 13     | 20     | 16 | 14     | 21     | 17 | 15     | 22     | 18 | 16     | 23     | 19 | 17     | 24     | 20 | 17     | 25     | 21 | 18     | 26     | 21 | 19 |
|                        | Footing Thickness      | 6     |    |       | 6     |    |        | 6      |    |        | 8      |    |        | 8      |    |        | 8      |    |        | 8      |    |        | 10     |    |        | 10     |    |        | 10     |    |        | 10     |    |    |
|                        | Southern Pine Beam     | 1-2x8 |    |       | 2-2x6 |    |        | 2-2x8  |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 3-2x12 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
| Douglas Fir-Larch Beam | 1-2x8                  |       |    | 2-2x6 |       |    | 2-2x10 |        |    | 2-2x10 |        |    | 2-2x12 |        |    | 3-2x12 |        |    | 3-2x12 |        |    | Eng Bm |        |    | Eng Bm |        |    | Eng Bm |        |    | Eng Bm |        |    |    |
| Ponderosa Pine Beam    | 1-2x8                  |       |    | 2-2x6 |       |    | 2-2x10 |        |    | 2-2x12 |        |    | 2-2x12 |        |    | 3-2x12 |        |    | Eng Bm |        |    | Eng Bm |        |    | Eng Bm |        |    | Eng Bm |        |    | Eng Bm |        |    |    |
| Corner Footing         | 12                     | 10    | 9  | 13    | 11    | 10 | 15     | 12     | 10 | 16     | 13     | 11 | 17     | 14     | 12 | 18     | 14     | 13 | 18     | 15     | 13 | 19     | 16     | 14 | 20     | 17     | 14 | 21     | 17     | 15 | 22     | 18     | 15 |    |
| Intermediate Footing   | 15                     | 12    | 11 | 17    | 14    | 12 | 18     | 15     | 13 | 19     | 16     | 14 | 21     | 17     | 15 | 22     | 18     | 16 | 23     | 19     | 16 | 24     | 20     | 17 | 25     | 21     | 18 | 26     | 21     | 19 | 27     | 22     | 19 |    |
| Footing Thickness      | 6                      |       |    | 6     |       |    | 8      |        |    | 8      |        |    | 8      |        |    | 8      |        |    | 10     |        |    | 10     |        |    | 10     |        |    | 10     |        |    | 10     |        |    |    |
| 15'                    | Southern Pine Beam     | 1-2x8 |    |       | 2-2x6 |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 2-2x12 |    |        | 3-2x12 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
|                        | Douglas Fir-Larch Beam | 2-2x6 |    |       | 2-2x6 |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 2-2x12 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
|                        | Ponderosa Pine Beam    | 2-2x6 |    |       | 2-2x6 |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 3-2x10 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |
|                        | Corner Footing         | 12    | 10 | 9     | 14    | 11 | 10     | 15     | 12 | 11     | 16     | 13 | 12     | 17     | 14 | 12     | 18     | 15 | 13     | 19     | 16 | 14     | 20     | 16 | 14     | 21     | 17 | 15     | 22     | 18 | 15     | 22     | 18 | 16 |
|                        | Intermediate Footing   | 15    | 13 | 11    | 17    | 14 | 12     | 19     | 15 | 13     | 20     | 17 | 14     | 21     | 18 | 15     | 23     | 19 | 16     | 24     | 20 | 17     | 25     | 21 | 18     | 26     | 21 | 19     | 27     | 22 | 19     | 28     | 23 | 20 |
| Footing Thickness      | 6                      |       |    | 6     |       |    | 8      |        |    | 8      |        |    | 8      |        |    | 10     |        |    | 10     |        |    | 10     |        |    | 10     |        |    | 10     |        |    | 12     |        |    |    |
| 16'                    | Southern Pine Beam     | 1-2x8 |    |       | 2-2x6 |    |        | 2-2x10 |    |        | 2-2x12 |    |        | 3-2x10 |    |        | 3-2x12 |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |        | Eng Bm |    |    |

|     |                        |          |          |          |          |          |          |          |          |          |          |          |
|-----|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|     | Douglas Fir-Larch Beam | 2-2x6    | 2-2x8    | 2-2x10   | 2-2x12   | 3-2x10   | 3-2x12   | Eng Bm   | Eng Bm   | Eng Bm   | Eng Bm   | Eng Bm   |
|     | Ponderosa Pine Beam    | 2-2x6    | 2-2x8    | 2-2x10   | 2-2x12   | 3-2x12   | 3-2x12   | Eng Bm   | Eng Bm   | Eng Bm   | Eng Bm   | Eng Bm   |
| 16' | Corner Footing         | 13 11 9  | 14 12 10 | 15 13 11 | 17 14 12 | 18 15 13 | 19 15 13 | 20 16 14 | 20 17 15 | 21 18 15 | 22 18 16 | 23 19 16 |
|     | Intermediate Footing   | 16 13 11 | 18 15 13 | 19 16 14 | 21 17 15 | 22 18 16 | 23 19 17 | 26 20 18 | 26 21 18 | 27 22 19 | 28 23 20 | 29 24 21 |
|     | Footing Thickness      | 6        | 8        | 8        | 8        | 8        | 10       | 10       | 10       | 10       | 12       | 12       |

Notes:

1. Joist Length ( $J_L$ ) is Joist Span ( $L_J$ ) plus any cantilever at the beam that is being sized.
2. Incising assumed for refractory species Douglas Fir-Larch.
3. All footing sizes above are base diameters (in inches) and are listed for THREE SOIL CAPACITIES. Soil capacity is based on the requirements of State of Wisconsin SPS 321.15(3).<sup>4</sup>
4. For square footings, insert the diameter (d) into the following formula:  $\sqrt{((d/2) \times \pi)}$ . This number will give you the square dimension and shall be rounded up to the nearest inch.

|                      |   |   |   |                              |
|----------------------|---|---|---|------------------------------|
|                      | ⇓ | ⇐ | ⇐ | ⇐ 2000 psf Soil <sup>3</sup> |
|                      | ⇓ | ⇓ | ⇐ | 300 psf Soil <sup>3</sup>    |
|                      | ⇓ | ⇓ | ⇓ | 400 psf Soil <sup>3</sup>    |
|                      | ⇓ | ⇓ | ⇓ |                              |
| Corner Footing       | 0 | 0 | 0 |                              |
| Intermediate Footing | 0 | 0 | 0 |                              |

(4.) FRAMING

(a.) General Requirements.

1. Materials. All wood framing used in deck construction shall be pressure treated against decay or shall be a species of wood that is naturally decay resistant or shall be protected from weather.
2. Design Loading. Decks shall be designed for a minimum of 40 pounds per square foot live load & 10 pounds per square foot dead load.
3. See fastener schedule for nailing requirements.

(b.) Column Posts.

1. Column Spacing. Column posts shall be spaced per **Appendix C-Beam & Footing Sizes with Overhangs**.
2. Column Size.
  - a. All column posts shall comply with **Table 2-Maximum Post Height**.

**Table 2  
Maximum Post Height**

| Post Size | Maximum Height |
|-----------|----------------|
| 4"x4"     | 6'             |
| 4"x6"     | 8'             |
| 6"x6"     | 14'            |

3. Lateral Support. Column posts shall be constructed in such a manner or mechanically attached to the deck foundation to resist lateral movement.

(c.) Beams.

1. Beam Size – All beams shall be sized per **Appendix C-Beam & Footing Sizes with Overhangs**.
2. Bearing. Beams bearing directly on the posts shall be attached by means of approved metal anchors or other approved methods.
3. Ledger Boards. Ledger boards attached directly to the house or other structure may be used to replace a beam or beams. The ledger board must be greater than or equal to the depth of the deck joist, but not less than a 2x8. The ledger board shall be attached per **Table 6-Ledger Board Fastener Spacing, On Center**. Flashing shall be installed on the top edge of the ledger board & extend up behind the house siding.
4. Beams shall not be cantilevered past the center line of the column post(s) more than one-fourth of the actual beam span.

**Table 6**  
**LEDGER BOARD FASTENER SPACING, ON CENTER<sup>1,2,3</sup>**

| Fastener                                    | Band Board | Joist Span: less than or equal to |     |     |     |     |     |     |
|---|------------|-----------------------------------|-----|-----|-----|-----|-----|-----|
|   |            | 6'                                | 8'  | 10' | 12' | 14' | 16' | 18' |
| Lag screws                                  | 1" EWP     | 24"                               | 18" | 14" | 12" | 10" | 9"  | 8"  |
|   | 1 1/8" EWP | 28"                               | 21" | 16" | 14" | 12" | 10" | 9"  |
|   | 2x Lumber  | 30"                               | 23" | 18" | 15" | 13" | 11" | 10" |
| Through-Bolts                               | 1" EWP     | 24"                               | 18" | 14" | 12" | 10" | 9"  | 8"  |
|   | 1 1/8" EWP | 28"                               | 21" | 16" | 14" | 12" | 10" | 9"  |
|   | 2x Lumber  | 36"                               | 36" | 34" | 29" | 24" | 21" | 19" |
| Through-Bolts with 1/2" stacked washers 4,5 | 2x Lumber  | 36"                               | 36" | 29" | 24" | 21" | 18" | 16" |
| Adhesive anchors                            | _____      | 32"                               | 32" | 32" | 24" | 24" | 16" | 16" |

<sup>1</sup>These values are valid for deck ledgers consisting of Douglas fir/larch, hem/fir, or southern pine; and for band boards consisting of Douglas fir- larch, hem-fir, spruce-pine-fir, southern pine, or engineered wood product (EWP).

<sup>2</sup>Where solid-sawn pressure-preservative-treated deck ledgers are attached to engineered wood products (minimum 1" thick wood structural panel band joist or structural composite lumber including laminated veneer lumber), the ledger attachment must be designed in accordance with accepted engineering practice. These tabulated values are in accordance with that practice and are based on 300 lbs and 350 lbs for 1" and 1 1/8" EWP rim board, respectively.

1. The thickness of the sheathing over the band board must not exceed 15/32".
2. The maximum gap between the face of the ledger board and face of the wall sheathing is 1/2".
3. Wood structural panel sheathing, gypsum board sheathing, or foam sheathing is permitted between the ledger board and the band board. Stacked washers are permitted in combination with wood structural panel sheathing, but are not permitted in combination with gypsum board or foam sheathing. The maximum distance between the face of the ledger board and the face of the band board is 1".

(d.) Joists.

1. Joist Size. All joists shall be sized and spaced per **Table 4-Maximum Joist-Span Length**.
2. Bearing. Deck joists shall bear a minimum of one and one half (1½) inches on the beam or ledger board. Joists fastened to the face of the beam or ledger shall be attached with approved metal hangers (zinc coating/hot dip galvanized or stainless steel).

3. Bridging. Bridging shall be provided at intervals not exceeding eight (8) feet.
4. Overhanging of Joists. Joists may overhang past the center of the beam up to one-fourth of the actual joist span.

**Table 4**  
**Maximum Joist-Span Length**

| Joist Spacing<br>(on center) | Joist Size | Douglas Fir/Larch,<br>Hem/Fir, SPF <sup>2</sup> |                     | Southern Pine       |                     |
|------------------------------|------------|---|---------------------|---------------------|---------------------|
|                              |            | Without<br>Overhang                             | With Over-<br>hangs | Without<br>Overhang | With Over-<br>hangs |
| 12"                          | 2"x6"      | 9'-1"   | 8'-1"               | 9'-6"               | 8'-7"               |
|                              | 2"x8"      | 12'-6"  | 9'-5"               | 13'-1"              | 10'-1"              |
|                              | 2"x10"     | 15'-8"  | 13'-7"              | 16'-2"              | 14'-6"              |
|                              | 2"x12"     | 18'-0"  | 18'-0"              | 18'-0"              | 18'-0"              |
| 16"                          | 2"x6"      | 8'-3"   | 8'-0"               | 8'-7"               | 8'-7"               |
|                              | 2"x8"      | 11'-1"  | 9'-5"               | 11'-10"             | 10'-1"              |
|                              | 2"x10"     | 13'-7"  | 13'-7"              | 14'-0"              | 14'-0"              |
|                              | 2"x12"     | 15'-9"  | 15'-9"              | 16'-6"              | 16'-6"              |
| 24"                          | 2"x6"      | 6'-9"   | 6'-9"               | 7'-6"               | 7'-6"               |
|                              | 2"x8"      | 9'-1"   | 9'-1"               | 9'-8"               | 9'-8"               |
|                              | 2"x10"     | 11'-1"  | 11'-1"              | 11'-5"              | 11'-5"              |
|                              | 2"x12"     | 12'-10"   | 12'-10"             | 13'-6"              | 13'-6"              |

<sup>1</sup>Spans are based on 40 psf live load, 10 psf dead load, normal loading duration, wet service conditions, and deflections of  $\Delta = L/360$  for main span and  $L/180$  for overhang with a 220 lb. point load.

<sup>2</sup>Incising is assumed.

(e) Decking

1. Material. All decking material shall be a minimum of one and one quarter (1¼) inches thick, nominal thickness. One inch decking may be used provided that the joists are spaced no more than 16" O.C.
2. Decking Orientation.
  - a. Decking shall be installed diagonally or at right angles to the joists.
  - b. Decking shall be centered over joists with cuts made parallel to joists. Not more than two adjacent boards may break joints on the same joist except at ends and at openings.

(f) Guardrails and Handrails

1. Guardrails. All decks which are more than twenty four (24) inches above grade shall be protected with guardrails.
2. Handrails. Every stairway of more than three (3) risers shall be provided with at least one handrail. Handrails shall be provided on the open sides of stairways.
3. Guardrails and handrail detail.
  - a. Height. Handrails shall be located at least thirty (30) inches, but not more than thirty eight (38) inches, above the nosing of the treads. Guardrails shall be located at least thirty six (36) inches above the surface of the deck.

- b. Open Railings. Open guardrails or handrails shall be provided with intermediate rails or an ornamental pattern to prevent the passage of a sphere with a diameter greater than 4 3/8".
- c. Railing Loads. Handrails and guard rails shall be designed and constructed to withstand a 200 pound load applied in any direction.
- d. Railing post spacing shall not exceed 6'-0" O.C.

(g.) Stairway, Treads and Risers

- 1. Risers. Risers shall not exceed eight (8) inches in height measured from tread to tread.
- 2. Treads. Treads shall be at least nine (9) inches wide, measured horizontally from nose to nose.
- 3. Variation. There shall be no variation in uniformity exceeding 3/8" in the width of a tread or in the height of risers.
- 4. Stair stringers shall be supported in accordance to the same manner as used for the deck. All stairs shall have a 36" minimum clear width & have a minimum of three stringers.

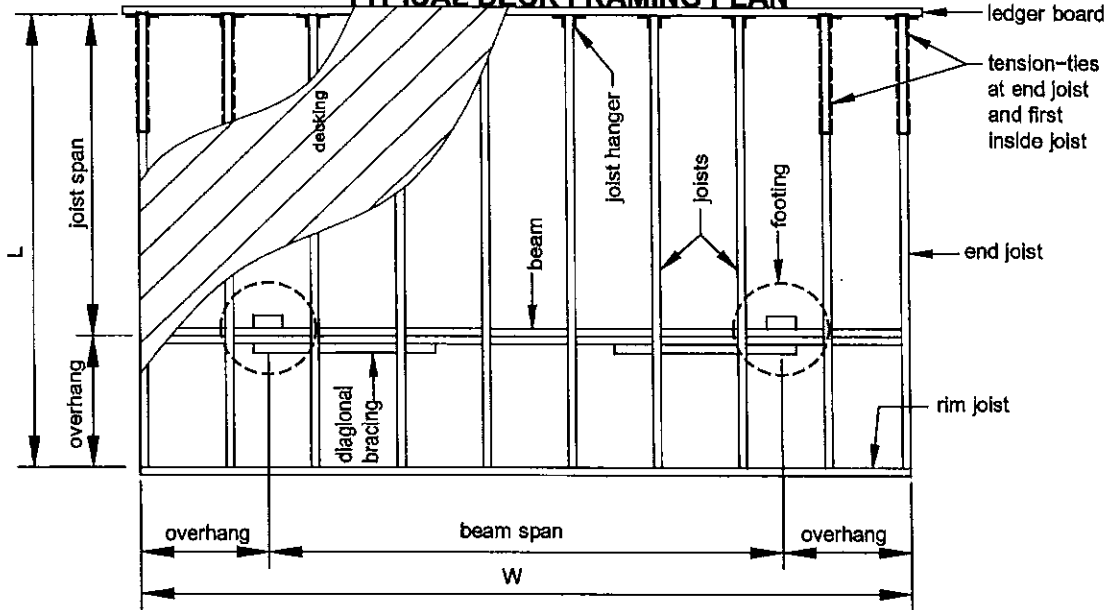
(h.) Alternative Provisions and Methods

- 1. Wood Decks. Wood decks attached to the dwelling & detached decks may be constructed to the Uniform Dwelling Code standards listed below.
  - a. Excavation requirements of SPS. 321.14
  - b. Footing requirements of SPS. 321.15(2)f
  - c. Frost penetration requirements of SPS. 321.16
  - d. Load requirements of SPS. 321.02
  - e. Stair, handrail and guardrail requirements of SPS. 321.04
  - f. Decay protection requirements of SPS. 321.10
- 2. Detached Decks
  - a. Concrete pads shall be provided at a uniform depth below grade with all loose or organic material moved from the pad area prior to placement of concrete. The pad shall have a minimum footing size & thickness per **Appendix C-Beam & Footing Sizes with Overhangs**.
  - b. Piers – The minimum thickness in diameter of concrete piers shall be sized per **Appendix C-Beam & Footing Sizes with Overhangs**.
  - c. Direct burial wood posts may be placed on a concrete pad per **Appendix C-Beam & Footing Sizes with Overhangs**. Treated posts shall be identified by the grade mark of, or certificate of inspection issued by, a professional lumber – grading or inspection bureau or agency ([www.alsc.org](http://www.alsc.org)) & shall be rated as "ground-contact". Note: Not all treated lumber is rated for ground contact.
  - d. Ground contact framing shall be allowed for decks which are less than 24" above grade. All materials in direct contact with the soil shall be treated to the requirements of the American Wood Preservers' Association (AWPA) Standards C2 and C15.



Figure 35

TYPICAL DECK FRAMING PLAN



**Decking:**  2x4  2x6  Five-quarter board  Wood-plastic composite (per ASTM D 7032)

Other decking, evaluation report number: \_\_\_\_\_

**Joists:** Size:  2x6  2x8  2x10  2x12 Spacing:  12 in.  16 in.  24 in.  
Joist Span Dimension: \_\_\_\_\_ ft. \_\_\_\_\_ in.

Overhang:  Yes  No Overhang Dimension: \_\_\_\_\_ ft. \_\_\_\_\_ in.

Rim Joist:  2x6  2x8  2x10  2x12

**Beam(s):** Number of piles:  2  3 Size:  2x6  2x8  2x10  2x12

Overhang:  Yes  No Overhang Dimension: \_\_\_\_\_ ft. \_\_\_\_\_ in.

**Posts:** Size:  4x4  4x6  6x6 Height: \_\_\_\_\_ ft. \_\_\_\_\_ in.

**Footings:** Size: \_\_\_\_\_ in.  Square  Round Thickness: \_\_\_\_\_ in.

**Ledger:** Ledger Board Size:  2x8  2x10  2x12  Not applicable (free-standing deck)

Fastener:  Through Bolt  Lag Screw  Wood Screw  Expansion Anchor

Adhesive Anchor

**Lateral support:**  Tension-tie (not permitted for free-standing deck)

Diagonal Bracing, size:  2x \_\_\_\_\_

**Deck size:** L= \_\_\_\_\_ ft. \_\_\_\_\_ in. W= \_\_\_\_\_ ft. \_\_\_\_\_ in.