DECKS

REQUIRED FORMS:

BUILDING PERMIT PACKAGE
TWO (2) SETS OF PLANS
PLOT PLAN SHOWING NEW STRUCTURE W/SETBACKS

BUILDING REQUIREMENTS:

Footings: Must comply with the 2009 International Residential Building Code.

The footing width shall be twelve (12) inches of concrete placed in the bottom of the 36" deep hole. The post would extend from the top of the concrete to the bottom of the girder. The backfill material must be well compacted around the post. The minimum strength of the concrete shall be 2500 psi.

The diameter of the footing shall be 8 inches larger than the largest dimension of the post.

Example: 4 x 4 post = 12" in diameter
4 x 6 post = 14" in diameter
6 x 6 post = 14" in diameter

Lumber:

All lumber used in the construction of the deck shall be pressure treated with .40 CCA or be of natural decay resistant wood (heartwood of redwood, blackwood, black locust or cedar). All carpentry work shall be in accordance with the adopted building codes.

Metal Connectors:

The following are the locations and model number of the metal connectors to be used. The examples shown are Simpson Connectors. Any approved metal connector can and may be used.

>Post to Concrete Footing . . . . Simpson ABE44 or Equal
>Post to Girder . . . . . Simpson LPC4 or Equal
>Joist to Girder . . . . . Simpson H3 or Equal
>Joist to Ledger Board . . . . . Simpson LU210 or Equal

Girders: Joints in girders must be directly above the support columns. Split girders must be secured with 2 ½" galvanized bolts and supported by 2" nominal cleats.

Maximum Span for One Story		Greater than One Story
2-2" x 6"	5' 0"	4' 0"
3-2" x 6"	6' 0"	5' 2"
2-2" x 8"	6' 4"	5' 6"
3-2" x 8"	8' 0"	7' 0"
2-2" x 10"	8" 0"	7' 0"
3-2" x 10"	9' 0"	8' 0"
2-2" x 12"	9' 0"	8' 0"

Note: 4 x 4 posts may not exceed 8' in height.

Floor Joists: 40 lbs. Live Load (Treated SYP)

Size	spacing – on center	max. clear span
2" x 6"	16"	8' – 6"
	12"	9' – 4"
2" x 8"	16"	11' – 3"
	12"	12' – 4"
2' x 10"	16"	14" – 4"
	12"	15' – 9"
2' x 12"	16"	17' – 5 "
	12"	19' – 0"

Cantilever:

Under floor joist, the maximum cantilever allowed by code is two (2) feet. For longer cantilevers, a set of calculations proving the code design limits and safety of the extended length are being met. These calculations must be signed and sealed by an Architect or Professional Engineer. A cantilever attached to a house cantilever may not exceed four (4) feet.

Ledger:

A board against the house securely attached with ½" diameter galvanized lag bolts of sufficient length to bolt firmly to a rim joist. Lag bolts shall be space 16" on center in a staggered pattern. Provide galvanized washers between the bolt head and wood. Through bolting with a washer on the outside and a washer and nut on the inside of the building is also acceptable and required for houses with engineered wood construction.

Flashing:

Provide continuous corrosion resistant flashing along the ledger in such a manner as to prevent the passage of moisture into the wall, any untreated wood or siding.
Exception: Not required if against vinyl siding, metal siding (provided a shim is used) or masonry. Shims must not crush the siding when bolts are tightened.

Guardrails:

Required on all decks, porches, balconies or raised floors located more than 30" above finished grade.

Top of guardrails must be 36" above decking and have balusters with no more than a 4" spacing between any openings. Guardrails shall not have an ornamental pattern that would provide a ladder effect. Guardrails shall be constructed for a concentrated load of 200 lbs. Applied at any point and direction along the top railing member. The in-fill area of the guard system shall be constructed for a horizontal load of 200 lbs. Applied on a one sq. ft. area at any point.

A stairway with three or more risers is required to have guard-rails on both sides measuring 34" or more in height above the leading edge of the tread. Balusters must have two screws or nails at the top and bottom.

Stairways:

Minimum stairway width is 36"
Maximum riser height is 8 ¼"
Minimum tread is 9". A nosing of ¾" to 1 ¼" is required if the tread width is less than 11".
Solid risers or risers permitting no more than a 4" sphere are required.

Dimensional uniformity: There shall not be a variation exceeding 3/16" in the depth of adjacent treads or in the height of adjacent risers. The tolerance between the largest and smallest riser or tread shall not exceed 3/8" in any flight of stairs.

Exception: Where the bottom riser adjoins a sloping walk or driveway that has an established grade and serves as a landing the variation in height of the bottom riser shall exceed 3 inches in every 3 feet of stairway width.
There shall be a floor or landing at the top and bottom of each stairway. The width of each landing shall not be less than the stairway served.

Handrails:

All stairways with four or more risers require continuous handrails and guardrails (on both sides). All handrails shall have a circular cross section with an outside of at least 1 ¼" and not greater than 2". Any other shape shall have a perimeter of at least 4" and not greater than 6 ¼" with the largest cross-sectional dimension not exceeding 2 ¼". Handrails to be smooth and free of any sharp edges or splinters. A handrail and any wall or any other surface adjacent to the handrail shall be free of any sharp or abrasive elements. The clear space between the handrail and adjacent wall or surface shall not be less than 1 ½". Edges shall have a minimum radius of 1/8".

Handrails shall be continuous the full length of the stairs and both ends to be returned to posts. Handrails shall not be less than 34" nor more than 38", measured vertically, above the leading edge of the treads.

Lateral Bracing:

All detached decks, decks 8' above grade, or where situations warrant require diagonal bracing between girder and posts.

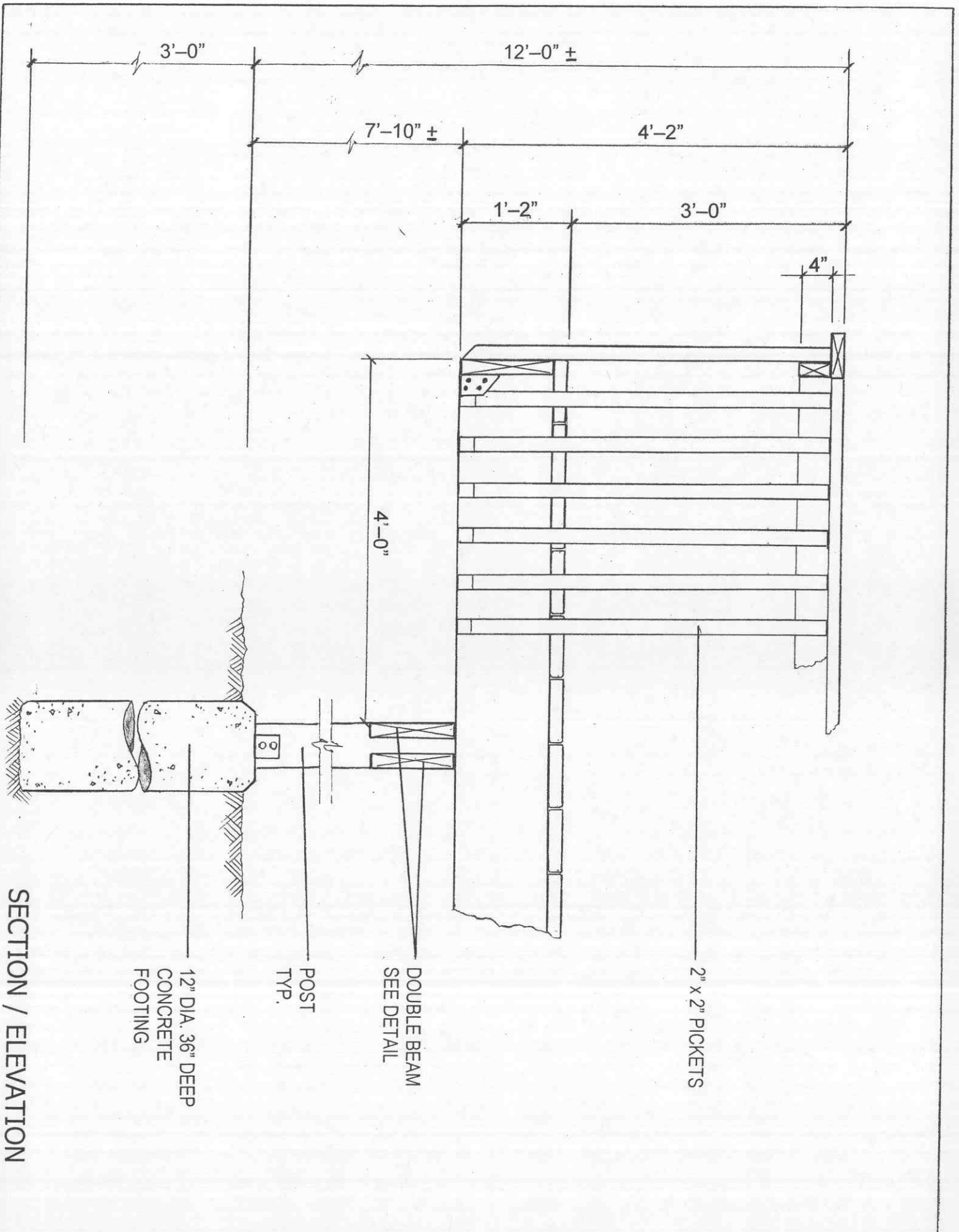
Connections:

All connectors, nails, screws, bolts, and related hardware shall be hot-dipped zinc coated (galvanized), stainless steel, silicon bronze, copper or other corrosion resistant materials suitable for the type of lumber being used.

BUILDING INSPECTION REQUIREMENTS:

1) **FOOTINGS – The bottom of the footing before placing concrete.**
2) **FRAME – Before covering with decking.**
3) **FINAL INSPECTION**

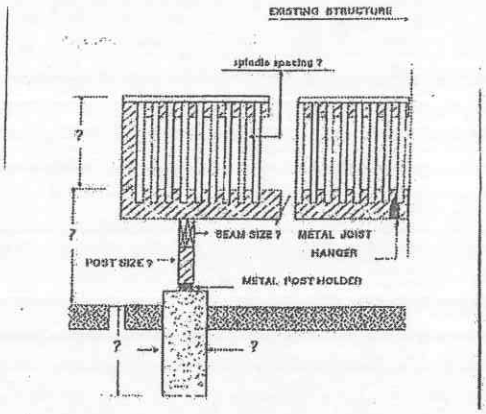
PLEASE FEEL FREE TO CONTACT THE TOWNSHIP OFFICE TO CHECK ON THE STATUS OF YOUR PROJECT OR WITH ANY QUESTIONS OR CONCERNS REGARDING THE INSPECTION PROCESS.



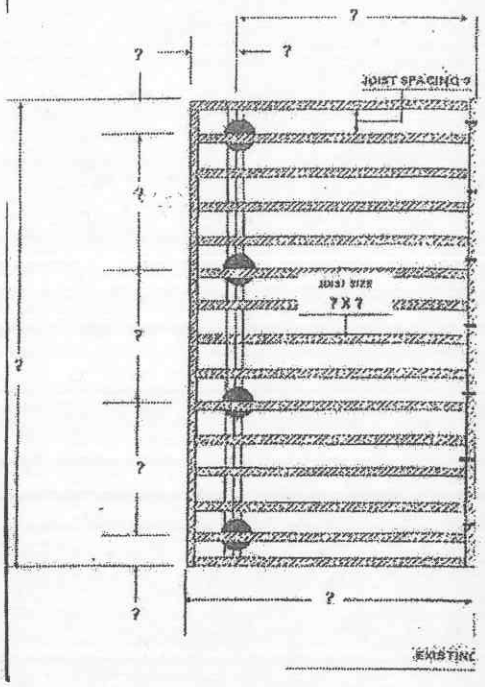
SECTION / ELEVATION

EXAMPLES OF SPINDLES & JOIST SPACING:

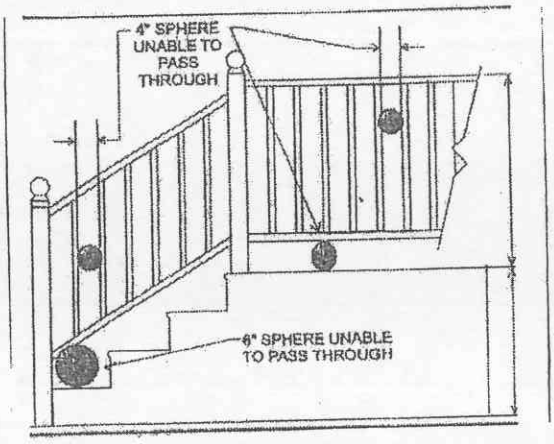
Example #1:



Example #2:



STAIR EXAMPLE:



FLASHING EXAMPLES:

Example #1:

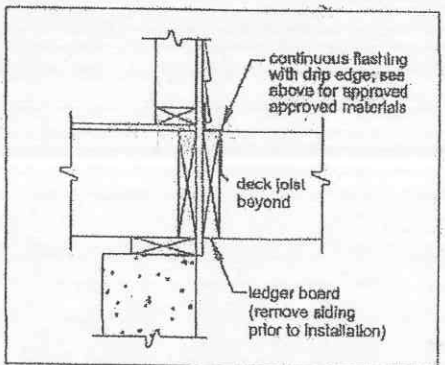


FIGURE 13: TYPICAL FLASHING DETAIL

Example #2:

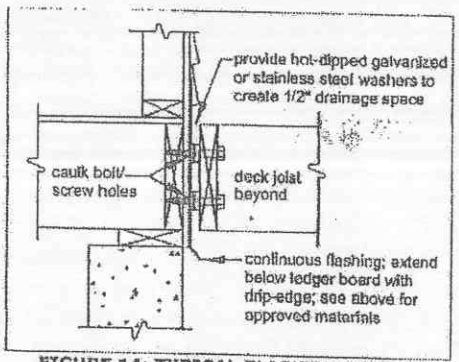
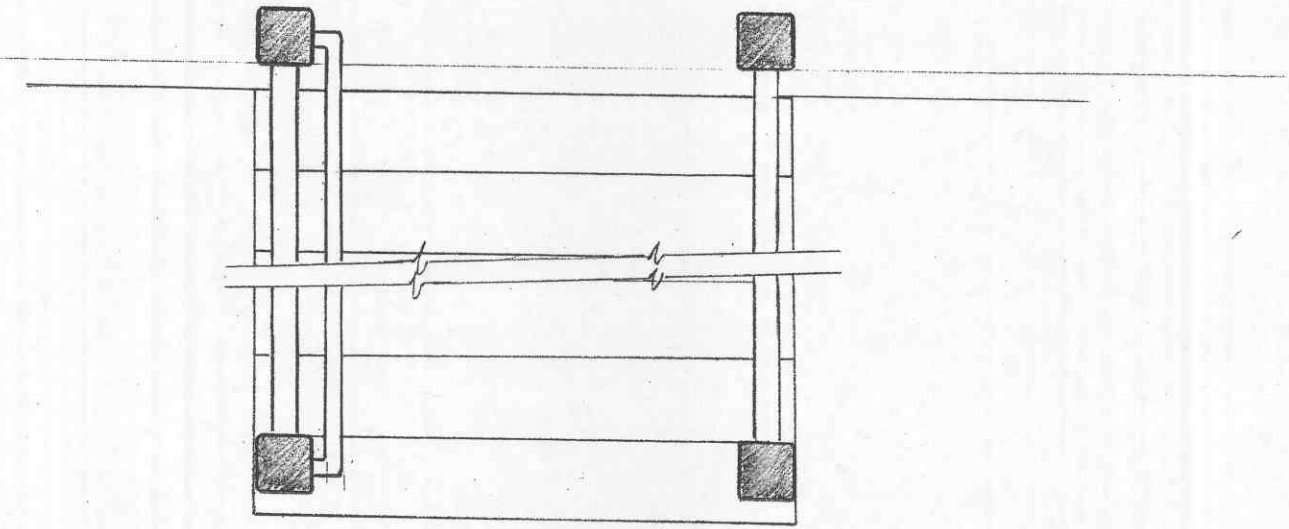


FIGURE 14: TYPICAL FLASHING DETAIL WITH DRAINAGE SPACE

3092 Sugan Road P.O. Box 139 Solebury, Pennsylvania 18963 Phone (215) 297-5656 Fax (215) 297-8402
soleburytownship@soleburytwp.org



Graspable Handrail Detail

CHAPTER 5
FLOORS

SECTION R501
GENERAL

R501.1 Application. The provisions of this chapter shall control the design and construction of the floors for all buildings including the floors of *attic* spaces used to house mechanical or plumbing fixtures and *equipment*.

R501.2 Requirements. Floor construction shall be capable of accommodating all loads according to Section R301 and of transmitting the resulting loads to the supporting structural elements.

SECTION R502
WOOD FLOOR FRAMING

R502.1 Identification. Load-bearing dimension lumber for joists, beams and girders shall be identified by a grade *mark* of a lumber grading or inspection agency that has been *approved* by an accreditation body that complies with DOC PS 20. In lieu of a grade *mark*, a certificate of inspection issued by a lumber grading or inspection agency meeting the requirements of this section shall be accepted.

R502.1.1 Preservative-treated lumber. Preservative treated dimension lumber shall also be identified as required by Section R319.1.

R502.1.2 Blocking and subflooring. Blocking shall be a minimum of utility grade lumber. Subflooring may be a minimum of utility grade lumber or No. 4 common grade boards.

R502.1.3 End-jointed lumber. *Approved* end-jointed lumber identified by a grade *mark* conforming to Section R502.1 may be used interchangeably with solid-sawn members of the same species and grade.

R502.1.4 Prefabricated wood I-joists. Structural capacities and design provisions for prefabricated wood I-joists shall be established and monitored in accordance with ASTM D 5055.

R502.1.5 Structural glued laminated timbers. Glued laminated timbers shall be manufactured and identified as required in ANSI/AITC A190.1 and ASTM D 3737.

R502.1.6 Structural log members. Stress grading of structural log members of nonrectangular shape, as typically used in log buildings, shall be in accordance with ASTM D 3957. Such structural log members shall be identified by the grade *mark* of an *approved* lumber grading or inspection agency. In lieu of a grade *mark* on the material, a certificate of inspection as to species and grade issued by a lumber-grading or inspection agency meeting the requirements of this section shall be permitted to be accepted.

R502.1.7 Exterior wood/plastic composite deck boards. Wood/plastic composites used in exterior deck boards shall comply with the provisions of Section R317.4.

R502.2 Design and construction. Floors shall be designed and constructed in accordance with the provisions of this chapter, Figure R502.2 and Sections R317 and R318 or in accordance with AF&PA/NDS.

R502.2.1 Framing at braced wall lines. A load path for lateral forces shall be provided between floor framing and *braced wall panels* located above or below a floor, as specified in Section R602.10.6.

R502.2.2 Decks. Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads as applicable. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting. For decks with cantilevered framing members, connections to exterior walls or other framing members, shall be designed and constructed to resist uplift resulting from the full live load specified in Table R301.5 acting on the cantilevered portion of the deck.

R502.2.2.1 Deck ledger connection to band joist. For decks supporting a total design load of 50 pounds per square foot (2394 Pa) [40 pounds per square foot (1915 Pa) live load plus 10 pounds per square foot (479 Pa) dead load], the connection between a deck ledger of pressure-preservative-treated Southern Pine, incised pressure-preservative-treated Hem-Fir or *approved* decay-resistant species, and a 2-inch (51 mm) nominal lumber band joist bearing on a sill plate or wall plate shall be constructed with $^1/_2$-inch (12.7 m) lag screws or bolts with washers in accordance with Table R502.2.2.1. Lag screws, bolts and washers shall be hot-dipped galvanized or stainless steel.

R502.2.2.1.1 Placement of lag screws or bolts in deck ledgers. The lag screws or bolts shall be placed 2 inches (51 mm) in from the bottom or top of the deck ledgers and between 2 and 5 inches (51 and 127 mm) in from the ends. The lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger.

R502.2.2.2 Alternate deck ledger connections. Deck ledger connections not conforming to Table R502.2.2.1 shall be designed in accordance with accepted engineering practice. Girders supporting deck joists shall not be supported on deck ledgers or band joists. Deck ledgers shall not be supported on stone or masonry veneer.

R502.2.2.3 Deck lateral load connection. The lateral load connection required by Section R502.2.2 shall be permitted to be in accordance with Figure R502.2.2.3. Hold-down tension devices shall be installed in not less than two locations per deck, and each device shall have an allowable stress design capacity of not less than 1500 pounds (6672 N).

R502.2.2.4 Exterior wood/plastic composite deck boards. Wood/plastic composite deck boards shall be installed in accordance with the manufacturer's instructions.

TABLE R502.2.2.1
FASTENER SPACING FOR A SOUTHERN PINE OR HEM-FIR DECK LEDGER AND A 2-INCH NOMINAL SOLID-SAWN SPRUCE-PINE-FIR BAND JOIST[c, f, g]
(Deck live load = 40 psf, deck dead load = 10 psf)

JOIST SPAN	6′ and less	6′1″ to 8′	8′1″ to 10′	10′1″ to 12′	12′1″ to 14′	14′1″ to 16′	16′1″ to 18′
Connection details	On-center spacing of fasteners[d, e]						
$^1/_2$ inch diameter lag screw with $^{15}/_{32}$ inch maximum sheathing[a]	30	23	18	15	13	11	10
$^1/_2$ inch diameter bolt with $^{15}/_{32}$ inch maximum sheathing	36	36	34	29	24	21	19
$^1/_2$ inch diameter bolt with $^{15}/_{32}$ inch maximum sheathing and $^1/_2$ inch stacked washers[b, h]	36	36	29	24	21	18	16

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

a. The tip of the lag screw shall fully extend beyond the inside face of the band joist.

b. The maximum gap between the face of the ledger board and face of the wall sheathing shall be $^1/_2$″.

c. Ledgers shall be flashed to prevent water from contacting the house band joist.

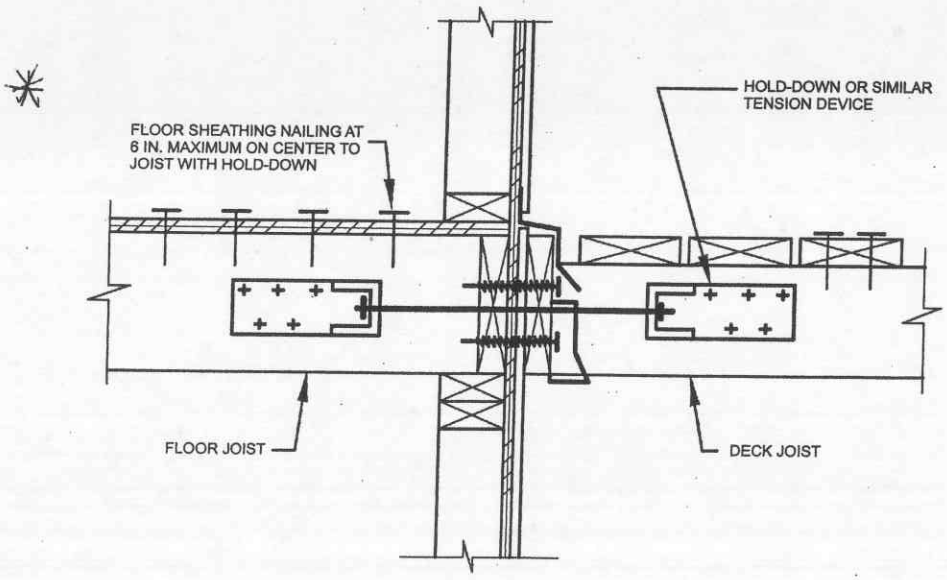
d. Lag screws and bolts shall be staggered in accordance with Section R502.2.2.1.1.

e. Deck ledger shall be minimum 2 × 8 pressure-preservative-treated No.2 grade lumber, or other approved materials as established by standard engineering practice.

f. When solid-sawn pressure-preservative-treated deck ledgers are attached to a minimum 1 inch thick engineered wood product (structural composite lumber, laminated veneer lumber or wood structural panel band joist), the ledger attachment shall be designed in accordance with accepted engineering practice.

g. A minimum 1 × $9^1/_2$ Douglas Fir laminated veneer lumber rimboard shall be permitted in lieu of the 2-inch nominal band joist.

h. Wood structural panel sheathing, gypsum board sheathing or foam sheathing not exceeding 1 inch in thickness shall be permitted. The maximum distance between the face of the ledger board and the face of the band joist shall be 1 inch.



For SI: 1 inch = 25.4 mm.

FIGURE 502.2.2.3
DECK ATTACHMENT FOR LATERAL LOADS

R502.3 Allowable joist spans. Spans for floor joists shall be in accordance with Tables R502.3.1(1) and R502.3.1(2). For other grades and species and for other loading conditions, refer to the AF&PA Span Tables for Joists and Rafters.

R502.3.1 Sleeping areas and attic joists. Table R502.3.1(1) shall be used to determine the maximum allowable span of floor joists that support sleeping areas and *attics* that are accessed by means of a fixed stairway in accordance with Section R311.7 provided that the design live load does not exceed 30 pounds per square foot (1.44 kPa) and the design dead load does not exceed 20 pounds per square foot (0.96 kPa). The allowable span of ceiling joists that support *attics* used for limited storage or no storage shall be determined in accordance with Section R802.4.