



# Residential Deck Permit Application Packet

Please complete and submit this packet to apply for your permit.

Check off and fill in all items appropriate for your deck.

**\* Incomplete plans will not be reviewed. Submit packet for each deck. \***

**This packet is for simple square or rectangular decks without a roof.** For more complex projects, please submit plans.

To obtain a permit, you need the following (All included in this packet):

- 1. Residential Deck Permit Application Packet (This packet)
- 2. Residential Building Permit Application
- 3. Deck Plan – Top down view of your proposed deck
- 4. Standard Details – Building Code specifications for connections, stairs, guardrails, and handrails
- 5. Deck Section Drawing – Cross section of your proposed deck
- 6. Site Plan – Top down view of your property
- 7. Helical Pile Spec and Designation Form - ONLY REQUIRED FOR DECKS USING HELICAL PILES

Additional information is included in this packet to assist your design process.

## Your Deck Plan must include all of the following:

**Deck Dimensions:** overall width, overall length, joist length, joist spacing, joist cantilever, post spacing, beam span, beam cantilever, stair width.

**Structural Elements:** beam size, joist size, post size, footing size (both corner & intermediate), stair stringer size & spacing.

**Materials Used:** Species of wood for beams & joists, material & direction of decking (perpendicular or diagonal), specific connection products, stair handrail.

## Your Deck Section Drawing must include all of the following:

**Deck dimensions:** Deck surface height above grade, guard rail height, footing depth, footing thickness & width, pier thickness & width.

**Structural Elements:** Connection used for pier/post connection, connection used for post/beam connection, specific lateral load connectors, type of footing.

**For decks greater than or equal to 6 feet above grade:**

Include locations of diagonal bracing.



## Residential Deck Information Sheet – One and Two Family Dwellings

**Building Permits:** A permit is required if the deck is attached to the dwelling or is 30 inches (or more) above grade. A building permit application must be completed and submitted to Construction Services. Allow a minimum of 3 business days for review of the plans. You will be contacted when the building permit is ready to be issued. Cost of the permit is based upon the size of the deck. With your permit you will receive a copy of your approved plan. Please be aware that if you later decide to make changes to your plan, these changes must also be approved.

A Permit Application Checklist outlining all application requirements is provided with this handout and must be completed and submitted with your application. See pages within for sample Ledger Connection, Lateral Load Connection, Framing / Foundation Plan and Standard Details.

**Setbacks:** Always site specific. Check with Construction Services (730-5240) for your project.

**Height Above Grade:** For decks > 14 feet above grade, a complete design of the framing, connections, and foundation by a Minnesota licensed structural engineer is required. For decks greater than 6' above grade, corner bracing shall be required connecting the beam to the posts.

**Multi-level Decks:** If the area of any level of a multi-level deck exceeds 120 square feet or if the vertical distance between the top of the floor of the lower level and the bottom of the joist of the upper level exceeds ten (10) feet, design must be by a Minnesota licensed engineer. If proposed deck does not require an engineer, footings must be sized to carry the load from all levels. Design for 42-pound live load plus 10-pound dead load, assuming 1500 psf soil bearing capacity.

**Loads:** All decks shall be designed to support a live load (people, furniture, grills, etc.) of 40 lbs per square foot, and a dead load (wood, decking, etc.) of actual weight of materials (R301.4, R301.5).

**Joists, Beams & Footings:** See *JOIST SPAN* table for minimum joist size and spacing requirements. See *BEAM* table for beam size and footing table for *FOOTING* requirements. Ask your lumber supplier about species and grade.

**Cantilevers Beam & Joists:** Cantilevers are addressed in the Beam Table. Joist Cantilevers are addressed in the Joist Table.

**Cantilever Attachment:** Decks shall not be supported by cantilevers extending from the primary structure or from another deck unless the structure is analyzed and approved by a license professional engineer.

**Ledger & Attachment:** Ledger to be a minimum of 2 X 8 nominal lumber. Deck Ledger shall not support concentrated loads from beams and girders. If ledger is to be attached to a portion of the building on posts, engineering is needed or deck to be self supporting.

**Deck Lateral Load Connection:** A minimum of two lateral load connections are required per deck. Please refer to the *DECK LATERAL LOAD CONNECTION* requirements provided in this handout.

**Flashing:** Needed where exterior porches, decks, or stairs attach to a wall or floor assembly of wood frame construction. R703.4.

**Frost Footings:** Footings are required for any deck attached to a dwelling or to any other structure that has frost footings. The minimum depth to the bottom of the footings is 60 inches. The footing bottom diameter shall be based upon the attached table. If the materials used for posts are not rated for ground contact, the concrete piers must protrude above grade a minimum of 6 inches. See attached *FOOTING SIZE FOR DECKS* table for footing size and spacing requirements. Minimum thickness of footing pad is 8 inches but a thicker pad is required for larger footings (see chart). Reinforce concrete piers with a minimum of (1) - #4 vertical.

**Post and Beams:** Posts must be centered on the concrete piers without portions overhanging and attached with a mechanical fastener (post base) and anchor bolt (or approved equal). Beams must be positively connected to the top of the posts. Options include a mechanical fastener (post cap) or notch the top of the post leaving 2 inches (2 ½ inches for double beam) of post material and thru-bolt the beam with a minimum of (2) – ½ inch diameter bolts (two 2x8) or (3) – ½ inch diameter bolts (two 2x10 or greater). Splices in beams must be centered over a post. Each joist must be connected to the beam with the proper fastening method using nails, joist hangers or hurricane clips. Beam members shall be nailed or screwed together. Attach with a minimum of (2) – rows 10d common nails or (2) – rows #10 screws at 16 inches on center from each side, stagger. Split beam attachment to the side of posts is not allowed.

**Stairs:** Minimum width is 36 inches. Maximum riser height is 7¾ inches. Minimum tread depth is 10 inches. Treads with a depth less than 11 inches must have compliant nosing. Largest tread depth or riser height shall not exceed the smallest by more than ¾ inch across the run of the stairs. Treads shall be level with a slope no greater than 2%. Lighting capable of illuminating the treads and landings is required, shall be located in the immediate vicinity of the top landing (R303.8). There shall be a landing at the top and bottom of stairs. Landings must be as wide as the stairs they serve, have a minimum length of 36 inches in direction of travel and have a slope no steeper than one-unit vertical in 48 inches horizontal (2% slope). R311.7.7

**Handrails:** (R311.7.8). Stairways having 4 or more risers shall have at least 1 handrail. The top of the handrail shall not be less than 34 inches or more than 38 inches above the nosing of the treads (to the top of the gripping surface). Handrails shall be continuous for the full length of the stairs and shall protrude from the adjoining surface by at least 1½ inches, but no more than 4½ inches, and the ends shall be returned or terminated into posts. Handrails with a circular cross section shall have an outside diameter of not less than 1¼ inches or more than 2 inches. Other handrails may be acceptable. See the specific code language to be sure your handrail does comply.

**Guardrails:** (R312.1) A guardrail is required on all decks or any portion of a deck more than 30 inches above grade or above a lower deck. Deck guardrails must be a minimum of 36 inches high. Open guardrails on decks must have intermediate rails (balusters) or an ornamental pattern that a 4-inch sphere cannot pass through. Guardrails on stairs cannot have an opening between balusters that a 4<sup>3</sup>/<sub>8</sub>-inch sphere can pass through.

**Structural Details:** Header beams and joists that frame into beams shall be supported by approved framing anchors such as joist hangers. **Beams supporting deck joists shall not be supported on deck ledgers or band joists.** Posts shall be attached to concrete piers with a post base and anchor bolt (or approved equal). Installation of these framing anchors shall be in accordance with the manufacturer's installation instructions; typically, special nails are required. **Note:** Decks must be positively anchored to the primary structure or be self-supporting. Please see drawings provided.

**Nails, Screws and All Connection Hardware:** Fasteners for pressure-preservative wood shall be hot dipped zinc coated galvanized steel (HDG), stainless steel, silicon bronze or copper. Ask your materials supplier for an approved fastener (R317.3.1). Screws cannot be used to attach joist hangers unless specifically approved for such application.

**Overhead Wires:** All overhead wires (i.e. power lines) must have a minimum clearance of 10 feet from the deck floor.

**Gas Meters:** Gas meters cannot be located above or below a new deck. Contact City of Duluth Engineering for meter relocation.

**Inspections:** You must call for a scheduled appointment time (please try to schedule inspections a minimum of 24 hours in advance). The approved plan must be on site for all inspections. **Typically, 3 inspections are required:**

1. **Footings** – These will be checked for proper diameter, depth, belled bottom, a flat surface at the base, and no water in the holes. The form (sonotube) and reinforcement must be in place. The post bases and anchor bolts (or approved equal) must be on-site.
2. **Framing** – If your deck surface is 4 feet or closer to the ground, you must pass a framing inspection before the decking material may be applied to the deck surface. Structural integrity and proper attachment of all connectors will be inspected.
3. **Final** – For decks that are 4 feet or greater off the ground, framing and final inspections may be completed together. A final inspection must be completed to be sure that the deck complies with the current *Minnesota State Building Code*.

**TABLE R507.6  
DECK JOIST SPANS FOR COMMON LUMBER SPECIES (ft. - in.)**

| SPECIES <sup>a</sup>   | SIZE   | ALLOWABLE JOIST SPAN <sup>b</sup> |       |       | MAXIMUM CANTILEVER <sup>c, f</sup>                            |      |      |
|--|--------|-----------------------------------|-------|-------|---|------|------|
|  |        | SPACING OF DECK JOISTS (inches)   |       |       | SPACING OF DECK JOISTS WITH CANTILEVERS <sup>e</sup> (inches) |      |      |
|  |        | 12                                | 16    | 24    | 12  | 16   | 24   |
| Southern pine  | 2 × 6  | 9-11                              | 9-0   | 7-7   | 1-3   | 1-4  | 1-6  |
|  | 2 × 8  | 13-1                              | 11-10 | 9-8   | 2-1   | 2-3  | 2-5  |
|  | 2 × 10 | 16-2                              | 14-0  | 11-5  | 3-4   | 3-6  | 2-10 |
|  | 2 × 12 | 18-0                              | 16-6  | 13-6  | 4-6   | 4-2  | 3-4  |
| Douglas fir-larch <sup>d</sup> ,<br>hem-fir <sup>d</sup><br>spruce-pine-fir <sup>d</sup> , | 2 × 6  | 9-6                               | 8-8   | 7-2   | 1-2   | 1-3  | 1-5  |
|  | 2 × 8  | 12-6                              | 11-1  | 9-1   | 1-11  | 2-1  | 2-3  |
|  | 2 × 10 | 15-8                              | 13-7  | 11-1  | 3-1   | 3-5  | 2-9  |
|  | 2 × 12 | 18-0                              | 15-9  | 12-10 | 4-6   | 3-11 | 3-3  |
| Redwood,<br>western cedars,<br>ponderosa pine <sup>e</sup> ,<br>red pine <sup>e</sup>      | 2 × 6  | 8-10                              | 8-0   | 7-0   | 1-0   | 1-1  | 1-2  |
|  | 2 × 8  | 11-8                              | 10-7  | 8-8   | 1-8   | 1-10 | 2-0  |
|  | 2 × 10 | 14-11                             | 13-0  | 10-7  | 2-8   | 2-10 | 2-8  |
|  | 2 × 12 | 17-5                              | 15-1  | 12-4  | 3-10  | 3-9  | 3-1  |

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 = 40 psf, dead load = 10 psf, L/Δ = 360.
- c. Ground snow load, live load = 40 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.

**TABLE R507.7  
MAXIMUM JOIST SPACING FOR DECKING**

| DECKING MATERIAL TYPE AND NOMINAL SIZE | MAXIMUM ON-CENTER JOIST SPACING   |  |
|--|-----------------------------------|--|
|  | Decking perpendicular to joist    | Decking diagonal to joist <sup>a</sup> |
| 1 1/4-inch-thick wood                  | 16 inches                         | 12 inches                              |
| 2-inch-thick wood                      | 24 inches                         | 16 inches                              |
| Plastic composite                      | In accordance with Section R507.2 | In accordance with Section R507.2      |

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.01745 rad.

- a. Maximum angle of 45 degrees from perpendicular for wood deck boards.

**TABLE R507.4  
DECK POST HEIGHT<sup>a</sup>**

| DECK POST SIZE | MAXIMUM HEIGHT <sup>a, b</sup> (feet-inches) |
|----------------|--|
| 4 × 4          | 6-9 <sup>c</sup>                             |
| 4 × 6          | 8  |
| 6 × 6          | 14   |
| 8 × 8          | 14   |

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

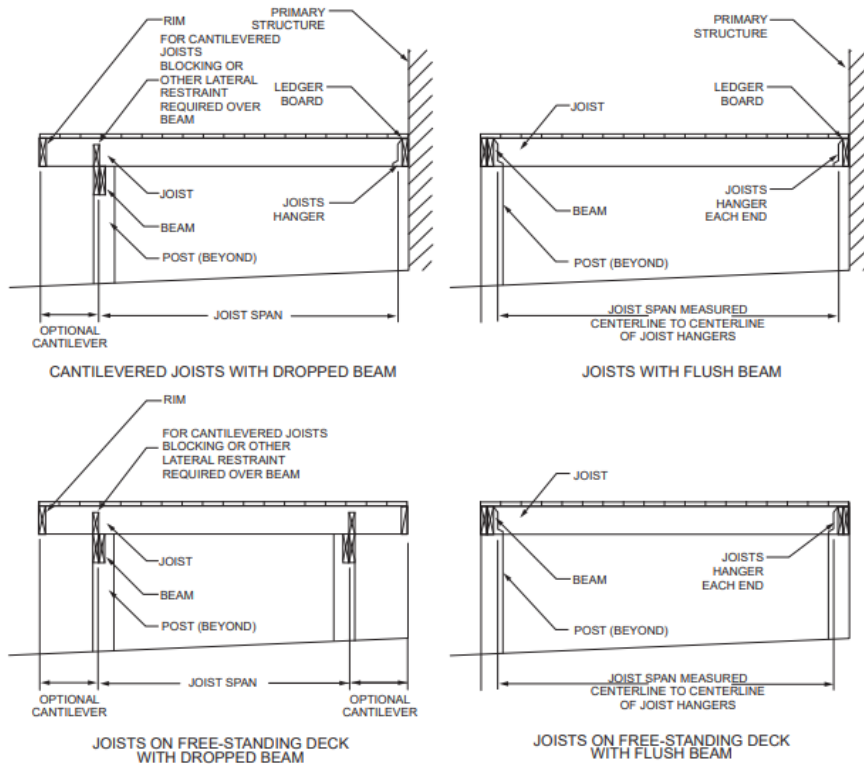
- a. Measured to the underside of the beam.
- b. Based on 40 psf live load.
- c. The maximum permitted height is 8 feet for one-ply and two-ply beams. The maximum permitted height for three-ply beams on post cap is 6 feet 9 inches.

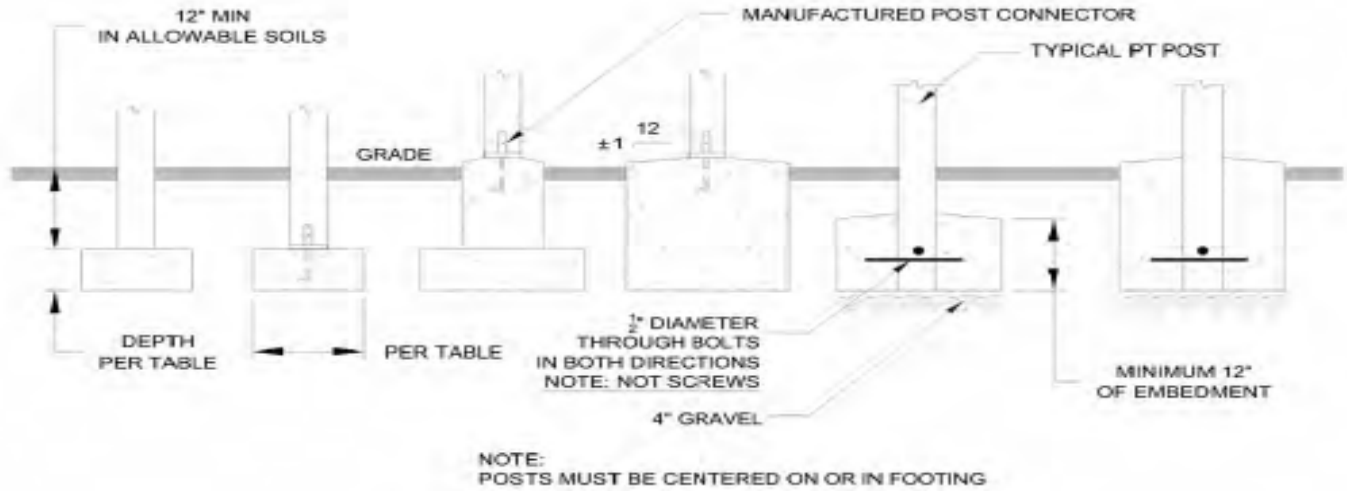
**TABLE R507.5**  
**DECK BEAM SPAN LENGTHS<sup>a, b, g</sup> (feet - inches)**

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

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. Live load = 40 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.
- g. Beam cantilevers are limited to the adjacent beam's span divided by 4.





**TABLE R507.3.1  
MINIMUM FOOTING SIZE FOR DECKS**

| LIVE LOAD <sup>b</sup> (psf) | TRIBUTARY AREA (sq. ft.) | LOAD BEARING VALUE OF SOILS <sup>a,c,d</sup> (psf) |                                      |                    |                                   |                                      |                    |                                   |                                      |                    |                                   |                                      |                    |
|------------------------------|--------------------------|--|--------------------------------------|--------------------|-----------------------------------|--------------------------------------|--------------------|-----------------------------------|--------------------------------------|--------------------|-----------------------------------|--------------------------------------|--------------------|
|                              |                          | 1500*  |                                      |                    | 2000*                             |                                      |                    | 2500*                             |                                      |                    | ≥ 3000*                           |                                      |                    |
|                              |                          | Side of a square footing (inches)                  | Diameter of a round footing (inches) | Thickness (inches) | Side of a square footing (inches) | Diameter of a round footing (inches) | Thickness (inches) | Side of a square footing (inches) | Diameter of a round footing (inches) | Thickness (inches) | Side of a square footing (inches) | Diameter of a round footing (inches) | Thickness (inches) |
| 40                           | 20                       | 12   | 14                                   | 6                  | 12                                | 14                                   | 6                  | 12                                | 14                                   | 6                  | 12                                | 14                                   | 6                  |
|                              | 40                       | 14   | 16                                   | 6                  | 12                                | 14                                   | 6                  | 12                                | 14                                   | 6                  | 12                                | 14                                   | 6                  |
|                              | 60                       | 17   | 19                                   | 6                  | 15                                | 17                                   | 6                  | 13                                | 15                                   | 6                  | 12                                | 14                                   | 6                  |
|                              | 80                       | 20   | 22                                   | 7                  | 17                                | 19                                   | 6                  | 15                                | 17                                   | 6                  | 14                                | 16                                   | 6                  |
|                              | 100                      | 22   | 25                                   | 8                  | 19                                | 21                                   | 6                  | 17                                | 19                                   | 6                  | 15                                | 17                                   | 6                  |
|                              | 120                      | 24   | 27                                   | 9                  | 21                                | 23                                   | 7                  | 19                                | 21                                   | 6                  | 17                                | 19                                   | 6                  |
|                              | 140                      | 26   | 29                                   | 10                 | 22                                | 25                                   | 8                  | 20                                | 23                                   | 7                  | 18                                | 21                                   | 6                  |
| 160                          | 28                       | 31   | 11                                   | 24                 | 27                                | 9                                    | 21                 | 24                                | 8                                    | 20                 | 22                                | 7                                    |                    |

- For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m<sup>2</sup>, 1 pound per square foot = 0.0479 kPa.
- Interpolation permitted, extrapolation not permitted.
  - Live load = 40 psf, dead load = 10 psf.
  - Assumes minimum square footing to be 12 inches x 12 inches x 6 inches for 6 x 6 post.
  - If the support is a brick or CMU pier, the footing shall have a minimum 2-inch projection on all sides.
  - Area, in square feet, of deck surface supported by post and footings.

## Deck Ledger Connection to Band Joist<sup>a</sup> (Deck Live Load = 40 psf, Deck Dead Load = 10 psf)

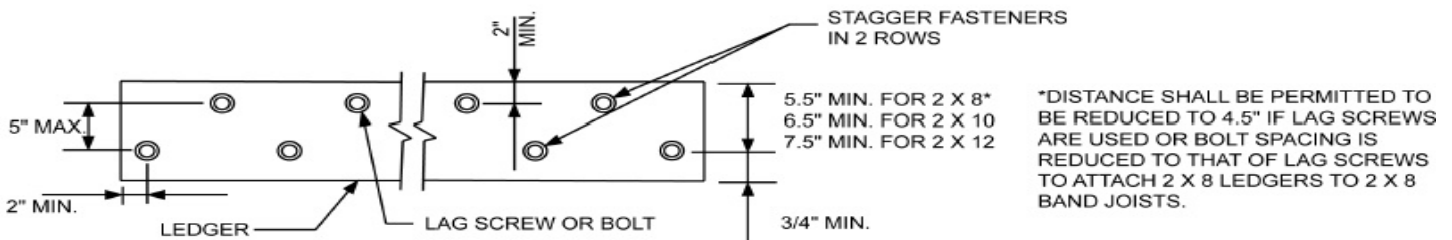
- a. Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
- b. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- c. Sheathing shall be wood structural panel or solid sawn lumber.
- d. Sheathing shall be 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 1/2-inch of allowable sheathing thickness where combined with wood structural panel or lumber sheathing.

**TABLE R507.9.1.3(1)**  
**DECK LEDGER CONNECTION TO BAND JOIST<sup>a</sup>**  
 (Deck live load = 40 psf, deck dead load = 10 psf)

| CONNECTION DETAILS   | 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' |
|  | On-center spacing of fasteners |            |             |              |              |              |              |
| 1/2-inch diameter lag screw with 1/2-inch maximum sheathing <sup>b,c</sup> | 30                             | 23         | 18          | 15           | 13           | 11           | 10           |
| 1/2-inch diameter bolt with 1/2-inch maximum sheathing <sup>c</sup>        | 36                             | 36         | 34          | 29           | 24           | 21           | 19           |
| 1/2-inch diameter bolt with 1-inch maximum sheathing <sup>d</sup>          | 36                             | 36         | 29          | 24           | 21           | 18           | 16           |

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

- a. Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
- b. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- c. Sheathing shall be wood structural panel or solid sawn lumber.
- d. 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 1/2 inch of allowable sheathing thickness where combined with wood structural panel or lumber sheathing.



### Lag Screws:

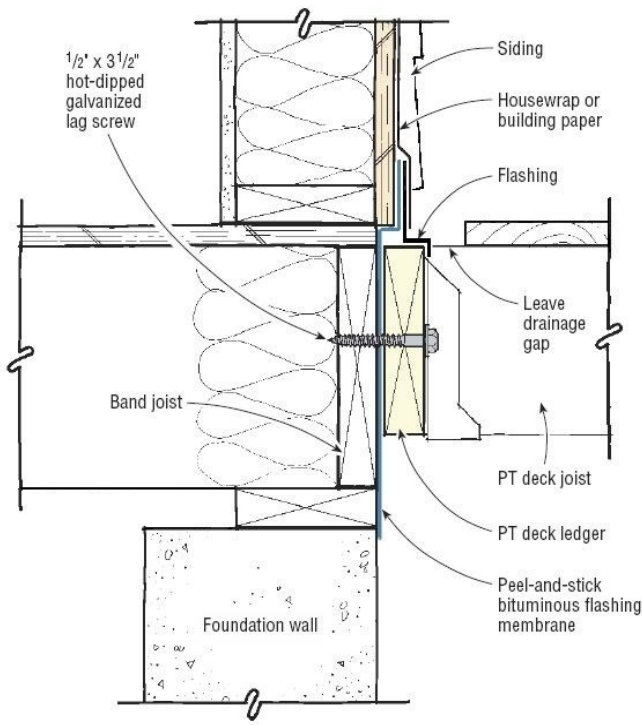
Lag screws shall have a minimum diameter of 1/2 inch. Lag screws may be used only when the field conditions conform to those shown above. All lag screws shall be with washers.

### Thru-Bolts:

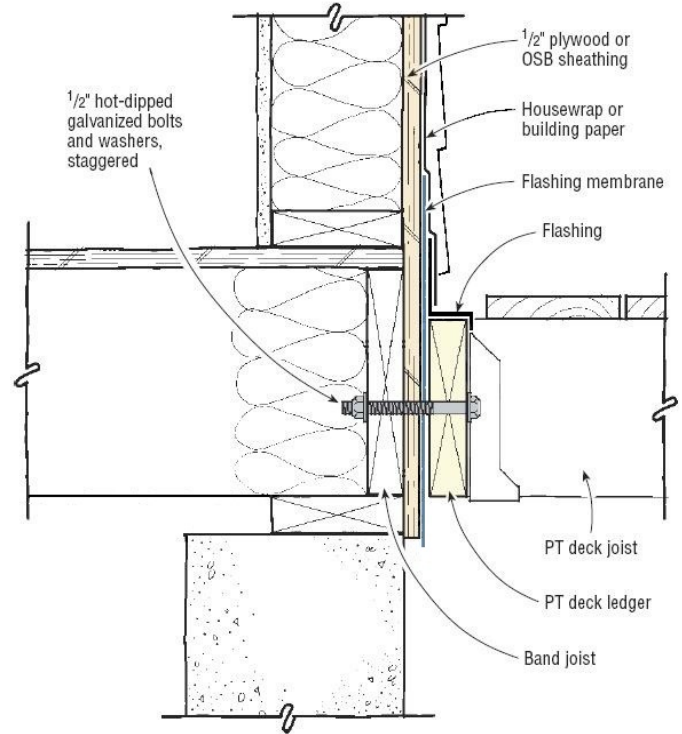
Thru-bolts shall have a diameter of 1/2 inch. Pilot holes for thru-bolts shall be 17/32 inch to 9/16 inch in diameter. Thru-bolts require washers at the bolt head and nut.

# Ledger Attachment Requirements

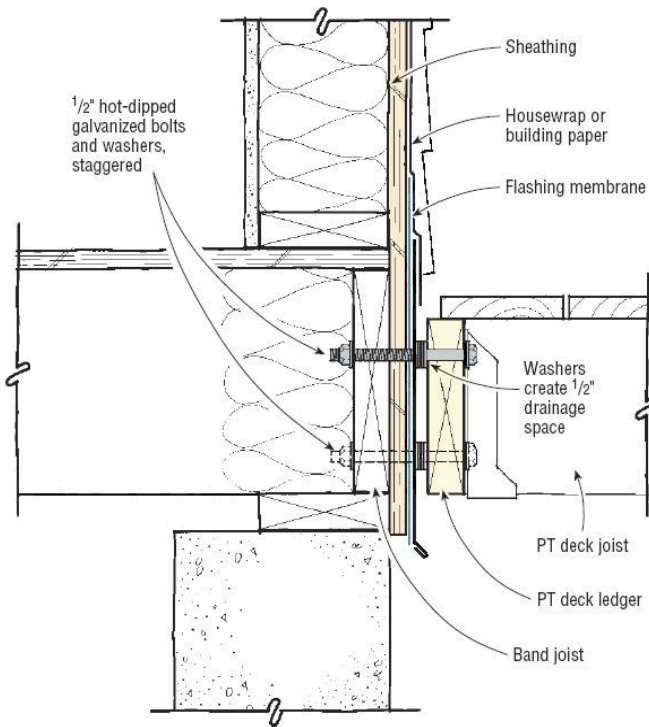
## Detail 1: Attaching Ledger Directly to Band Joist



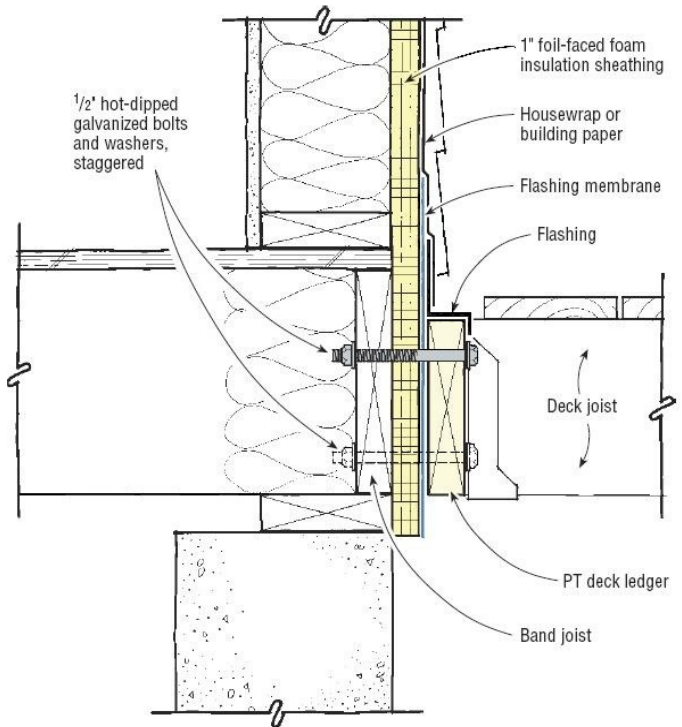
## Detail 2: Attaching Ledger to Band Joist Over Structural Sheathing



## Detail 3a: Attaching Ledger With Drainage Spacers



## Detail 3b: Attaching Ledger Over Foam Sheathing





## Deck Lateral Load Connection

The building code requires that decks be designed for both vertical and lateral loads. A minimum of two lateral load connections are required for each deck. The intention of the lateral load connection is to tie the deck and ledger into the residence's floor system. The primary deck failure mode is the ledger pulling away from the residence. Figures 507.2.3(1) & 507.2.3(2) (below) are **TWO POSSIBLE OPTIONS** for complying with the lateral load connection requirement. Coordinate the lateral load connection requirement with the Construction Inspector. Complying with the lateral load connection requirement will be on a case by case basis dependent on the type of and direction of floor framing to be attached to. Where a ledger is expansion anchored to a concrete wall, a deck lateral load connection is only required to connect to the ledger expansion anchors.

- R507.1 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. 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.
- R507.2.3 Deck Lateral Load Connection.** The lateral load connection required by Section R507.1 shall be permitted to be in accordance with Figures 507.2.3(1) or 507.2.3(2). Where the lateral load connection is provided in accordance with Figure 507.2.3(1), 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 1,500 pounds. Where the lateral load connections are provided in accordance with Figure 507.2.3(2), the hold-down tension devices shall be installed in not less than four locations per deck, and each device shall have an allowable stress design capacity of not less than 750 pounds.

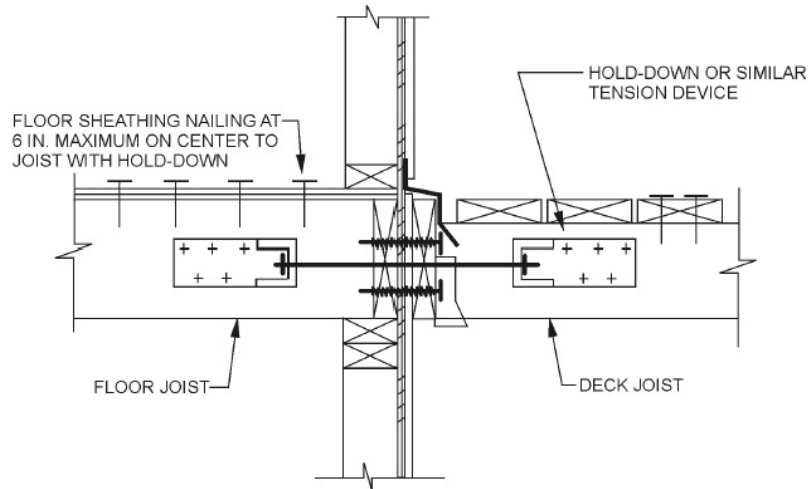


Figure 507.2.3(1)

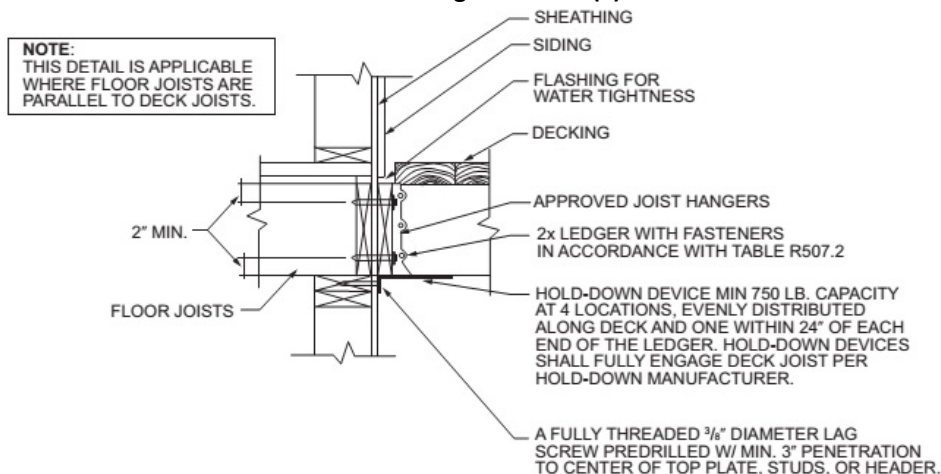
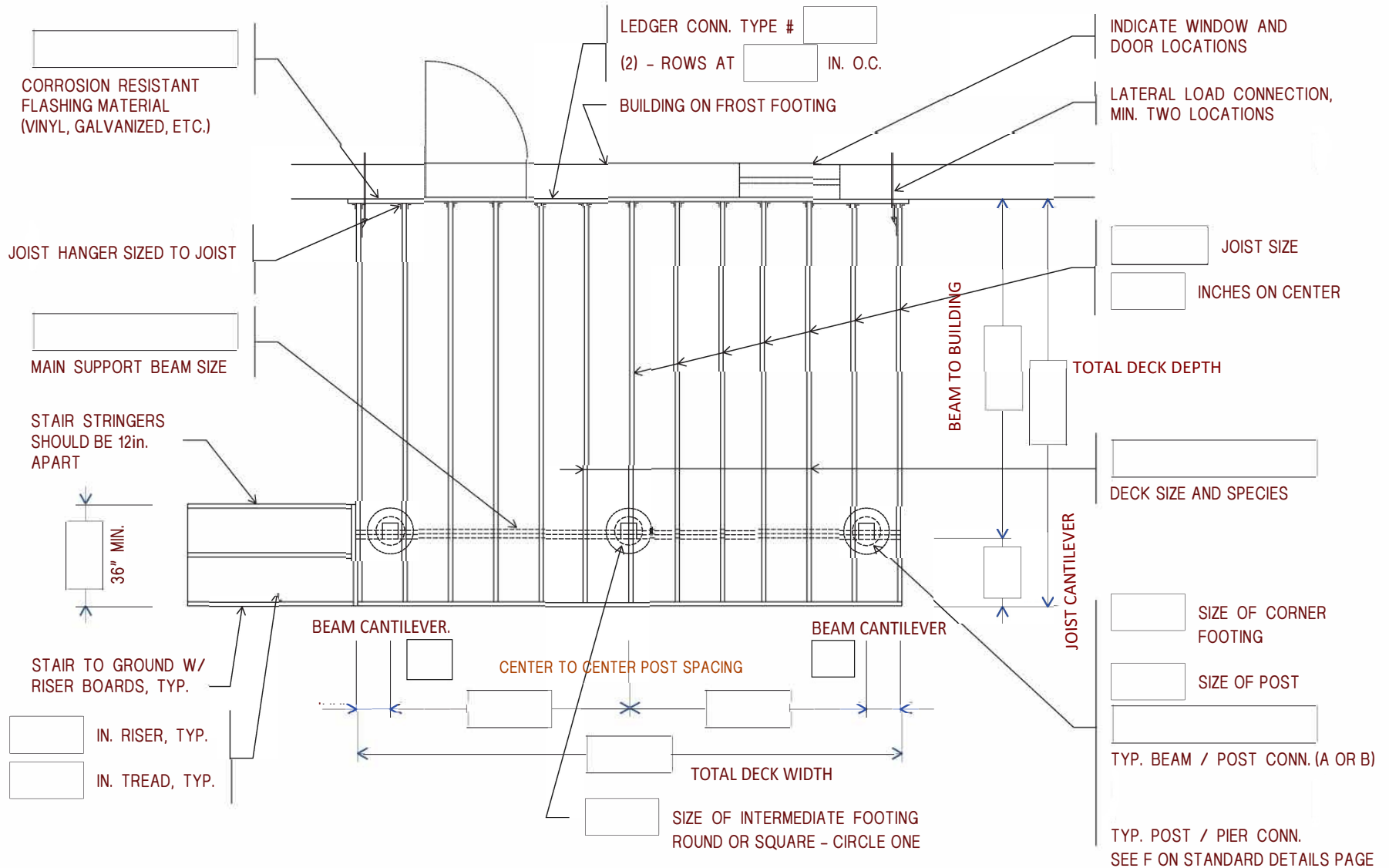


Figure 507.2.3(2)

IF YOUR DECK IS MORE COMPLICATED, DO NOT USE THIS FORM. SUMBIT SIMILAR PLAN FOR YOUR SPECIFIC DECK.  
SUBMIT THIS PAGE WITH YOUR PERMIT APPLICATION

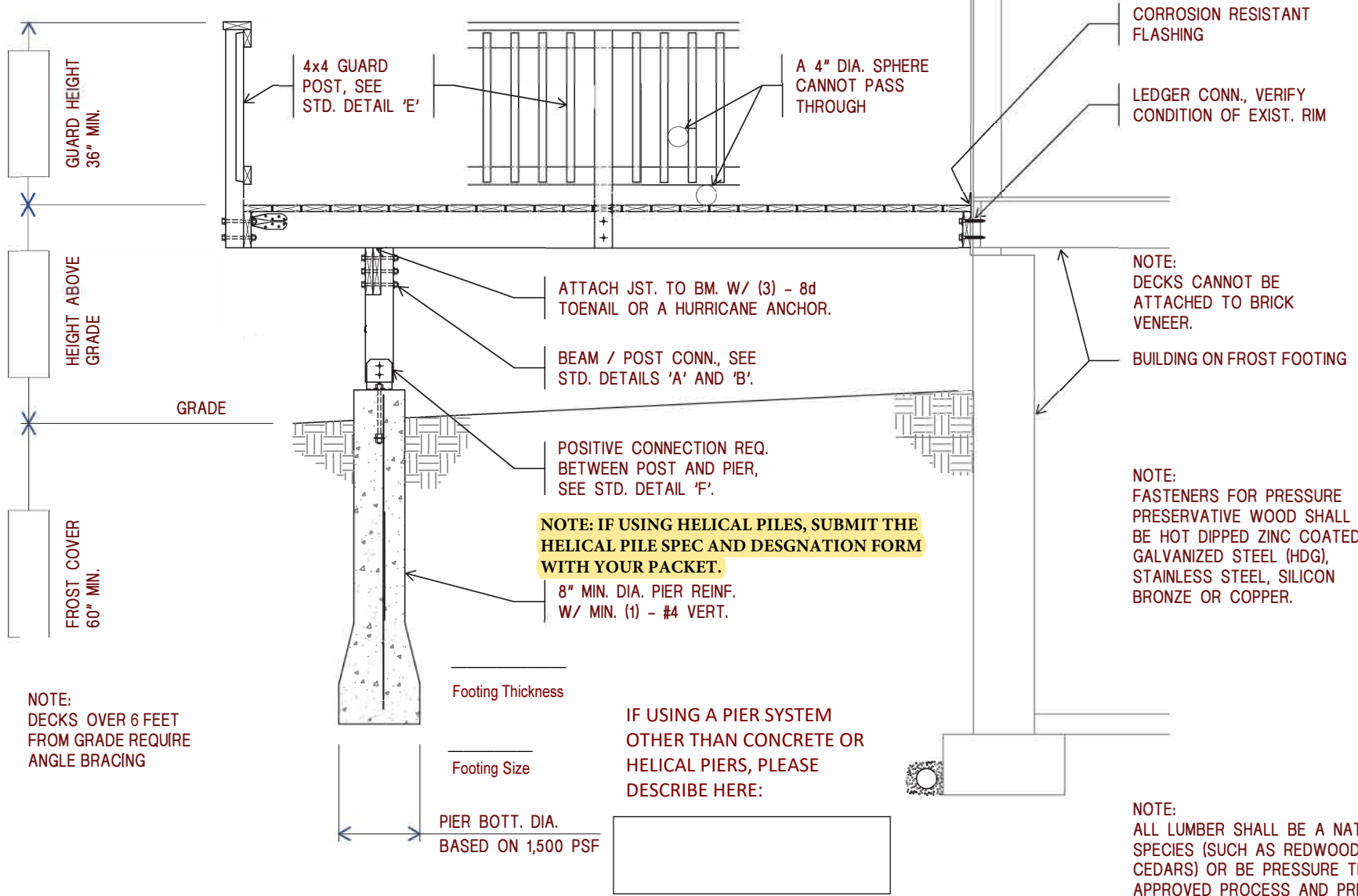


NOTE:  
FILL IN ALL BOXES [ ]

1 DECK PLAN  
NOT TO SCALE

**SUBMIT THIS PAGE WITH YOUR PERMIT APPLICATION**

NOTE:  
GUARDS ARE REQ. FOR  
DECKS W/ SURFACES  
LOCATED MORE THAN 30"  
ABOVE THE GRADE BELOW.  
(R312.1)



CORROSION RESISTANT  
FLASHING

LEDGER CONN., VERIFY  
CONDITION OF EXIST. RIM

NOTE:  
DECKS CANNOT BE  
ATTACHED TO BRICK  
VENEER.

BUILDING ON FROST FOOTING

NOTE:  
FASTENERS FOR PRESSURE  
PRESERVATIVE WOOD SHALL  
BE HOT DIPPED ZINC COATED  
GALVANIZED STEEL (HDG),  
STAINLESS STEEL, SILICON  
BRONZE OR COPPER.

NOTE:  
ALL LUMBER SHALL BE A NATURALLY DURABLE  
SPECIES (SUCH AS REDWOOD OR WESTERN  
CEDARS) OR BE PRESSURE TREATED WITH AN  
APPROVED PROCESS AND PRESERVATIVE IN  
ACCORDANCE WITH AMERICAN WOOD PROTECTION  
ASSOCIATION STANDARDS (TABLE 1) (R319.1 AND  
R320.1). ALL LUMBER IN CONTACT WITH THE  
GROUND SHALL BE APPROVED PRESERVATIVE  
TREATED WOOD SUITABLE FOR GROUND  
CONTACT. R317

NOTE:  
DECKS OVER 6 FEET  
FROM GRADE REQUIRE  
ANGLE BRACING

**NOTE: IF USING HELICAL PILES, SUBMIT THE  
HELICAL PILE SPEC AND DESIGNATION FORM  
WITH YOUR PACKET.**

IF USING A PIER SYSTEM  
OTHER THAN CONCRETE OR  
HELICAL PIERS, PLEASE  
DESCRIBE HERE:

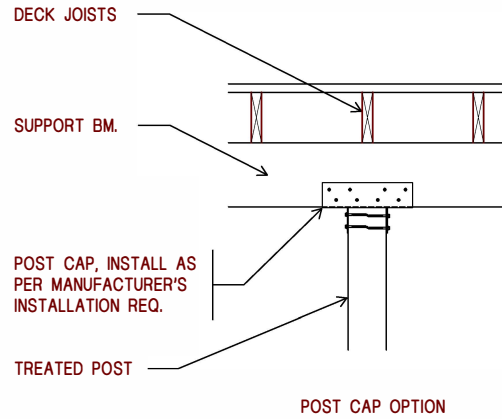
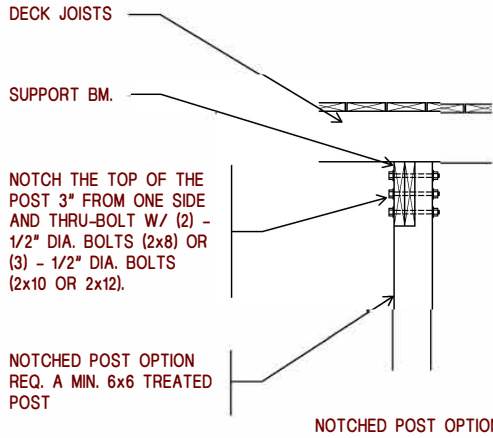
NOTE:  
FILL IN ALL BOXES

2

**DECK SECTION -  
NOT TO SCALE**

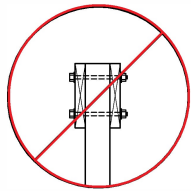
STANDARD DETAILS

Deck **MUST** be built to these standards



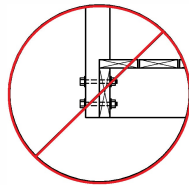
A BEAM / POST CONNECTION

B BEAM / POST CONNECTION



SPLIT BEAM CONNECTION IS NOT ALLOWED

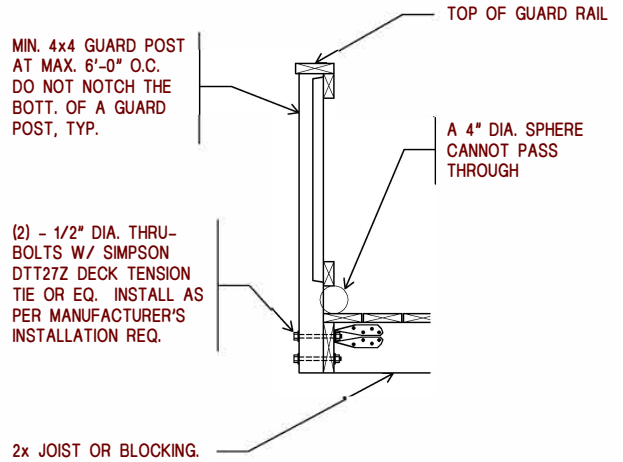
SEE STD. DETAILS 'A' AND 'B'.



DO NOT NOTCH THE BOT. OF A GUARD POST, TYP.

SEE STD. DETAIL 'E'.

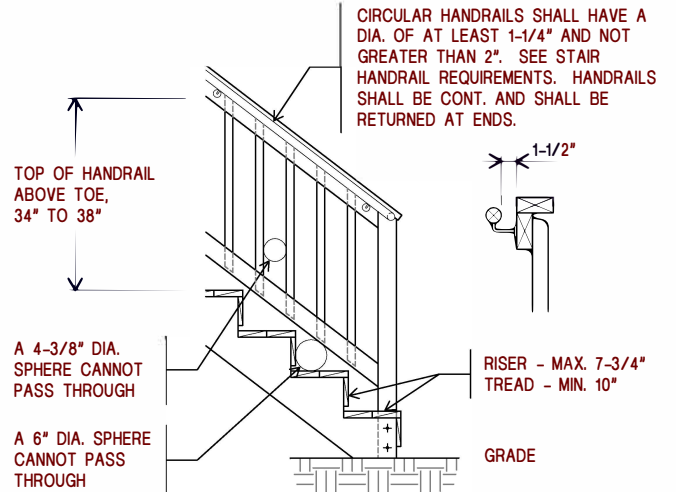
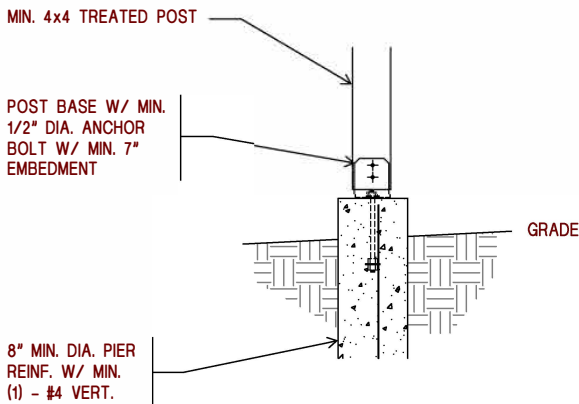
**DO NOT DO C OR D. SEE B AND E FOR CORRECT CONNECTION**



C BEAM CONN.

D GUARD CONN.

E GUARD POST CONNECTION



F POST / PIER CONNECTION

G STAIR / HANDRAIL

The Minnesota State Building Code requires that the construction documents submitted with the application for permit be accompanied by a site plan, drawn to scale, showing the size and location of new construction and existing structures on the site, distances from lot lines, the established street grades, and the proposed finished grades. The State Building Code requires that the site plan shall be drawn according to an accurate boundary line survey.

## **Minnesota State Building Code requires a Site Plan based on a Legal Boundary Survey.**

### **New Principal Buildings, Large Additions, and Accessory Structures**

Site plans showing locations for new principal buildings and accessory buildings, including detached garages, must be based on a survey drawing showing monumentation placed by a surveyor marking the boundaries of the lot on the ground. *Surveyed monumentation must be located in the field, by the applicant, in order to be useful for layout of structures and in order for inspectors to verify that buildings are constructed in accordance with approved plans.* Surveys should show any buildings or easements on the property. Survey requirements are for commercial and residential buildings and their associated accessory buildings or structures (retaining walls, monument signs, etc.).

The surveyed monumentation must be located at the site AND the corresponding survey drawing and site plan must be submitted with the permit application. If either the monumentation or the survey drawing are not available, the lot must be surveyed by a MN licensed surveyor, monumentation placed, and a certified survey drawing prepared and submitted at the time of permit application.

### **Decks and Small Additions Attached to Existing 1 or 2 Family Dwellings**

When approved by code officials, a survey may not be warranted for small additions and decks attached to existing 1 or 2 family dwellings if all the following conditions are met:

- Existing surveyed monumentation is located or the property owner locates the property boundaries based on accurate measurements from identifiable known surveyed markers.
- The method used to identify property boundaries is clearly shown on the submitted site plan.
- The method used to identify property boundaries can be easily recreated in the field by the inspector.
- Distances from required setbacks are sufficient to accommodate a reasonable margin of error, ensuring all setback requirements are met.

### **Shoreland and Floodplain Construction**

Additions and new buildings in certain shoreland and/or the flood plain areas require two surveys. The first is to identify the boundaries and elevations of the lot. This information is then used to plan the construction of the building. The lowest finished floor needs to meet elevation standards developed by the DNR & other government entities. The second survey is done after construction to certify the elevation of the lowest finished floor of the building meets shoreland and/or floodplain criteria after construction is complete. The Elevation Certificate is required for the final inspection, Certificate of Occupancy, and by the National Flood Insurance Program.

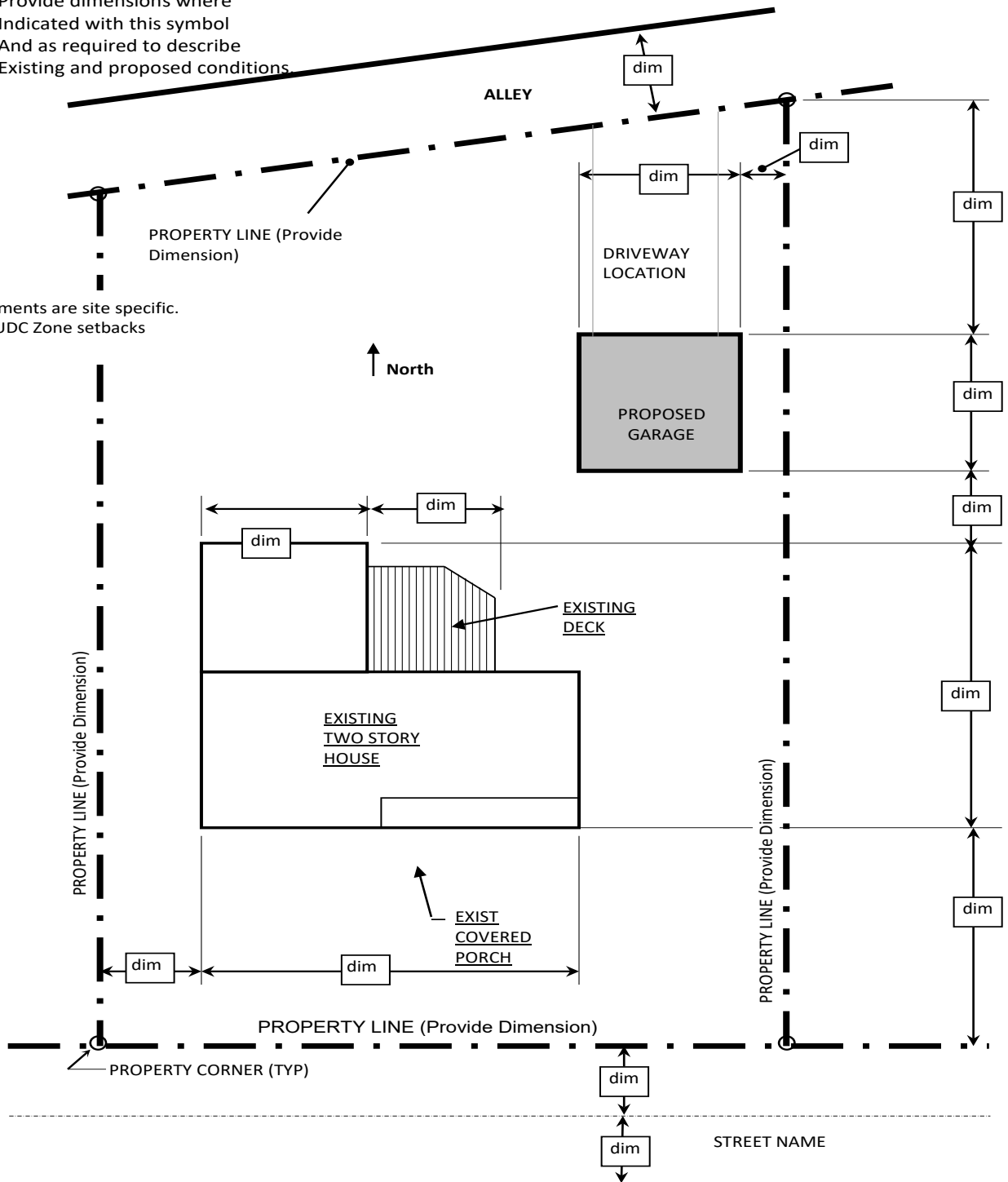
# Sample Site Plan

Don't use this sheet-create your own drawing.

SCALE: 1" = \_\_\_\_\_ FEET

dim Provide dimensions where indicated with this symbol and as required to describe existing and proposed conditions.

Setback requirements are site specific. Show required UDC Zone setbacks



**Note: See Site Plan Instruction Sheet for items required to be shown on the Site Plan**

## Site Plan Instructions

### **Minnesota State Building Code requires a Site Plan based on a Legal Boundary Survey.**

This can be in the form of a new survey, found survey pins with supporting plat document or a survey done for a neighboring property owner which located the pins separating your property from your neighbors.

**If the footprint of the building will not be changed**, the site plan must be drawn to scale and must include the following:

*These items are needed for window wells & similar items*

- Dimensions of lot - Property lines must be consistent with the legal description of the property
- All existing buildings on the lot, their exterior dimensions, and distances to property lines
- All projections and accessory structures (decks, garages, sheds, etc.)
- New window wells – Location and dimensions
- The legal description of the property
- Scale
- North arrow

**If the footprint of the building will be changed**, in addition to the above:

*These items are needed for any addition or new buildings*

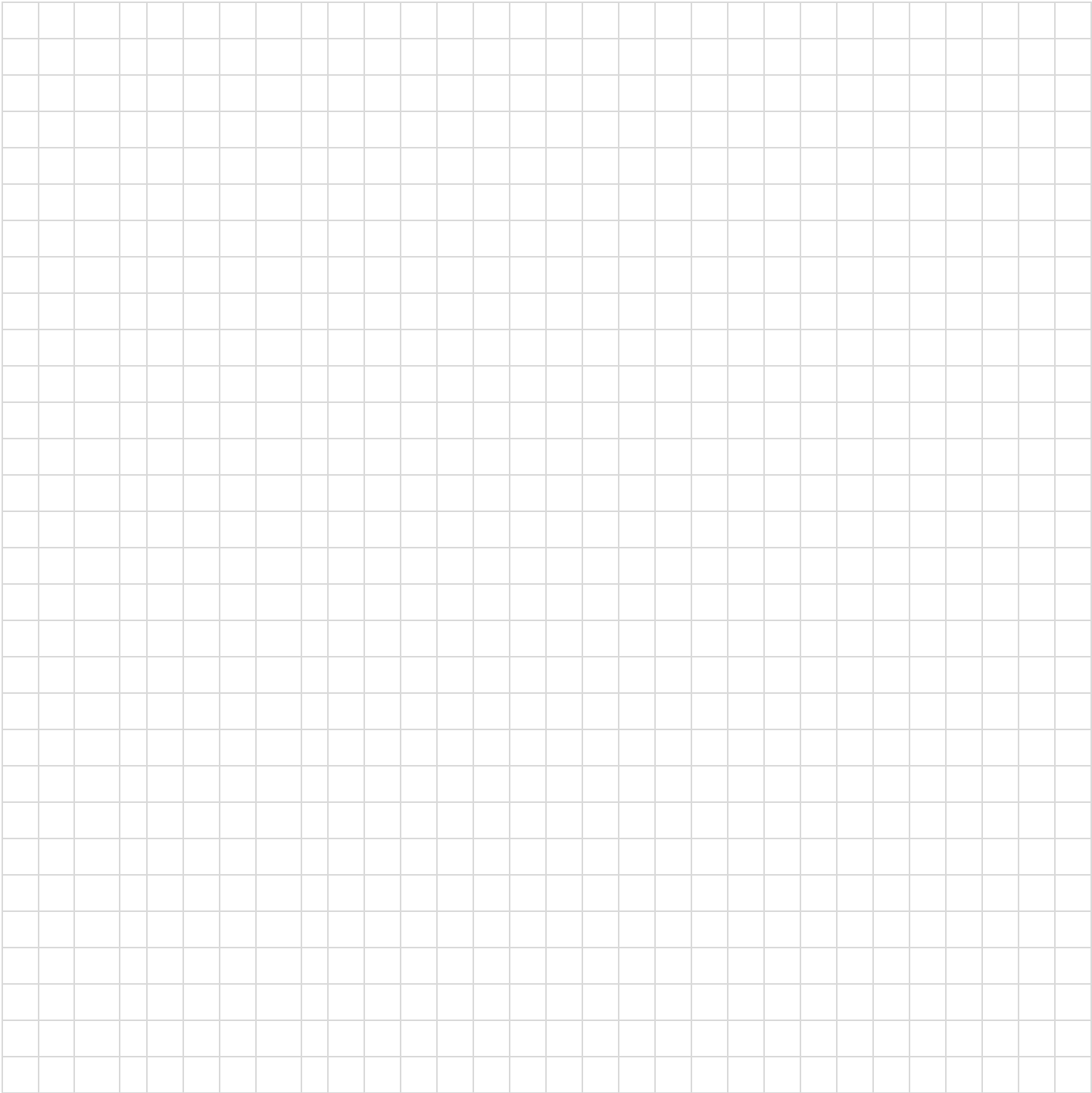
- Dimensions of lot and survey monuments on which the site plan is based (ex: found property corner pins placed according to a recorded survey or plat)
- Complete exterior dimensions of all proposed structures, projections, and additions as well as their dimensions to all property lines
- Adjacent streets or alleys with right-of-way widths shown, if known
- Any known easements on the property (existing utility or access) with dimensions
- Existing and proposed drainage patterns - Use contour lines or arrows to indicate direction that water would flow
- Setback distances (front, rear, and side) required by applicable codes
- Indicate the location of any utilities in the vicinity of the proposed work
- Attach all prior Planning Commission or Council approvals related to the site if applicable

Other information may be required for certain sites and will be requested during the plan review process.

**Commercial and 3+ Multi Family projects** require these additional elements in addition to the above:

- Life Safety Elements - Fire hydrant locations, fire truck access, building address, Knox Box location
- Accessible Elements - Accessible route, accessible entrance, accessible parking with loading zones and signage
- UDC Compliance Elements - Downcast lighting Information, bike rack (if applicable), parking & tree screening

***This is not a complete list of requirements. Please work with your Design Professional to determine all items that may be needed.***



**Show North Arrow & Pins**

**RESIDENTIAL SITE PLAN PAPER**

**Use Pen & Ruler**

|   |  |
|---|--|
| <p><b>Site Address:</b> _____</p>   | <p><b>Plat / Parcel No.</b><br/>_____</p>  |
| <p><b>Owner's Name:</b> _____</p>   |  |
| <p>This Site Plan is an accurate and complete representation of the footprint(s) of all existing and proposed structure(s) and their location(s) on the subject property.</p> | <p><b>Grid is ¼" per square</b><br/><b>Scale: 1" = _____ Feet</b><br/><b>Date:</b> _____</p> |





# Helical Pile Specification and Installer Designation Form

Form required prior to permit issuance.

### Design Requirements When Applicable

Some helical pile support systems require design by an engineer. Helical pile foundations supporting structures regulated by the IRC (MN Rules Chapter 1309) which are over 120 SF, and all structures regulated by the IBC (MN Rules Chapter 1305) must be designed and plans certified by a MN licensed engineer.

### Special Inspection Requirements When Applicable

IBC (MN Rules Chapter 1305) projects that do not meet the exceptions for special inspections in IBC 1704.2 must comply with IBC 1705.9 for Helical Pile Foundations; a Special Inspection Project Summary and Acknowledgment form must be submitted prior to the permit being issued.

### Please provide the following information:

Permit Number \_\_\_\_\_

Project Description \_\_\_\_\_

Project Address \_\_\_\_\_

Owner Name \_\_\_\_\_

Specify Brand of Helical Pile \_\_\_\_\_

Installer Name \_\_\_\_\_

Email \_\_\_\_\_ Phone \_\_\_\_\_

Installer Signature \_\_\_\_\_

Name of Person Testing Installation \_\_\_\_\_

Phone \_\_\_\_\_

**Residential Projects:** Helical torque documentation to be submitted before permit is finalized.  
Exception: Single tier, uncovered residential decks.

**Commercial Projects:** All Helical piles supporting IBC MN Rules Chapter 1305 structures must be designed with plans certified by a MN licensed engineer in accordance with MN design professional licensing requirements.

Helical torque documentation and applicable Special Inspection Report to be submitted before permit is finalized.