DECK CEMENT PILLAR LAYOUT

Scale: 3/8" = 1'

Outstanding Interior Design and Home Décor Ideas

Interior Design and Home Decor Ideas - Home Stratosphere
Deck Framing Plan

Scale: 3/8" = 1'

1 - Deck Joist Where Decking Will Butlen

2 x 8 Rim Joist

1-1/4" O.C. Typ.

Existing Wall Line
SEE DETAIL D03 PAGE 7.0
TYP. JOIST CONNECTION RIM JOIST

Scale: 3" = 1'

1
BALLASTER CONNECTION
Scale: 1-1/2" = 1'

2
STAIR STRINGER @ CORNER
2 REQ'D LEFT & RIGHT
Scale: 1-1/2" = 1'

3
HAND RAIL SECTION
Scale: 1-1/2" = 1'

#10X2-1/2" SCREWS @ EACH BALLASTER
2X2 BALLASTER
2X4 HANDRAIL
2X4 BRACING & BALLASTER CONNECTION

#10X2-1/2" SCREWS @ EACH BALLASTER
LUS28Z AT EACH JOIST BOTH ENDS

2X8 DECKING TOP OF DECK

LUS28Z AT EACH JOIST BOTH ENDS
2X8 RIM JOIST
2X8 JOIST
1. Outdoor environments are generally more corrosive to steel. If you choose to use ZMAX® or HDG finish or stainless steel material on an outdoor project, you should periodically inspect your connectors and fasteners or have a professional inspection performed. Regular maintenance, including waterproofing of the wood used in your outdoor project is also a good practice.

2. Coatings Available:
   2.1. ZMAX®: Galvanized (G185) 1.85 oz. of zinc per square foot of surface area. (Hot-dip galvanized per ASTM A653 total both sides). These products require hot-dip galvanized fasteners (fasteners which meet the specifications of ASTM A153).
   2.2. HDG - Hot Dip Galvanized: Products are hot-dip galvanized after fabrication (14 ga. and thicker). The coating weight increases with material thickness. The minimum specified coating weight is 2.0 oz. per square foot. (per ASTM A123 total both sides). These products require hot-dip galvanized fasteners (fasteners which meet the specifications of ASTM A153).
   2.3. SS - Stainless Steel: Connectors are manufactured from Type 316L stainless steel, and provide greater durability against corrosion. Stainless-steel nails are required with stainless-steel products, and are available from Simpson Strong-Tie.

3. When using stainless steel connectors, use stainless steel fasteners. When applications allow the use of ZMAX/HDG galvanized connectors, use HDG fasteners that meet the specifications of ASTM A153 or equivalent coating offered on Simpson Strong-Tie fasteners.

4. Due to many variables involved with outdoor construction, Simpson Strong-Tie cannot provide estimates on service life of connectors, anchors or fasteners.

5. To obtain optimal performance from Simpson Strong-Tie products, the products must be installed properly and used in accordance with the installation instructions and design limits provided by Simpson Strong-Tie.

6. All installation notes and guidelines within the Construction Connectors blog shall apply for the connectors, anchors, and fasteners shown.

7. Simpson Strong-Tie reserves the right to change the specifications, design and models shown without notice or liability for such changes.

8. Simpson Strong-Tie does not guarantee the performance or safety of products that are modified, improperly installed or not used in accordance with the design.

9. All references to bolts or machine bolts (MB) are structural quality through bolts (not lag screws or carriage bolts) equal to or better than ASTM A307. Grade A. Bolt holes shall be at least a minimum 1/8" larger than the bolt diameter per 2005 NDS Section 11.1.2.

10. Unless noted otherwise, all references to standard cut washers refer to Type A plain washers (W) conforming to the dimensions shown in ASTM B18.22.1 for the appropriate rod sizes.

11. Unless stated otherwise, Simpson Strong-Tie cannot and does not make any representation regarding the suitability of use or load-carrying capacities of connectors installed with improper fasteners.

### Fastener Notes:

1. The specified quantity, type and size of fastener must be installed in the correct holes on the connector to achieve published loads.

2. Incorrect fastener selection or installation can compromise connector performance and could lead to failure.

3. Fastener diameter assumes no coating. See tool guides for more information.

4. The Simpson Strong-Tie SD-structured connector screw is the only screw approved for use with our connectors.

5. NAIL refers to mechanical = 16d common, 18d = 16d common

### Fastening Identification

- **Dome Nailing**: This feature guides the fastener through the connector, providing a secure connection.
- **Double Shear Nailing**: The nail is installed in the fastener, then driven through the connector at a specified angle, with NAIL referring to mechanical = 16d common.
### LUS Joist Hangers

[Diagram of LUS Joist Hangers]

**Installation:**
- The joint may be square cut or beveled cut.
- These hangers will normally accommodate a 40° to 90° skew.

#### Fasteners

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Dimensions (in.)</th>
<th>Nails</th>
<th>SD Screws</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUS28Z</td>
<td>1 3/16 x 4 3/16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUS32Z</td>
<td>1 3/16 x 4 1/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUS36Z</td>
<td>1 3/16 x 4 5/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUS40Z</td>
<td>1 3/16 x 5 1/16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Indicates connector is available in stainless steel. Replace 2 in model number with SS when ordering.
2. Refer to current Wood Construction Connectors Catalog for additional information.

### LUC, HUC Joist Hangers

[Diagram of LUC, HUC Joist Hangers]

**Installation:**
- For HUC installations, models have triangle and round hollo. To achieve maximum loads, fit both round and triangle holes (fastener quantity listed for both holes).
- For installations into single 2x headers or ledgers, use the specified full length fasteners into the header and the following fasteners into the header for reduced loads in accordance with www.strongtie.com.

#### Fasteners

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Dimensions (in.)</th>
<th>Nails</th>
<th>SD Screws</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUC28Z</td>
<td>1 3/16 x 4 3/16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUC32Z</td>
<td>1 3/16 x 4 1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUC36Z</td>
<td>1 3/16 x 4 5/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUC40Z</td>
<td>1 3/16 x 5 1/16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Indicates connector is available in stainless steel. Replace 2 in model number with SS when ordering.
2. Refer to current Wood Construction Connectors Catalog for additional information.

### SUR/SUL 45° Skewed Joist Hangers

[Diagram of SUR/SUL 45° Skewed Joist Hangers]

**Installation:**
- Field penetrations and one time only.
- Joist must be fastened against rotation (per substrate, use self-locking fastener for single LS per connection).

#### Fasteners

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Dimensions (in.)</th>
<th>Fasteners</th>
</tr>
</thead>
<tbody>
<tr>
<td>SURL18Z</td>
<td>2 x 4 x 8</td>
<td>3 1/8</td>
</tr>
<tr>
<td>SURL210Z</td>
<td>2 x 10 x 12</td>
<td>3 1/8</td>
</tr>
</tbody>
</table>

1. Indicates connector is available in stainless steel. Replace 2 in model number with SS when ordering.
2. Refer to current Wood Construction Connectors Catalog for additional information.

### LS Framing Angles

[Diagram of LS Framing Angles]

**Installation:**
- Field penetrations and one time only.
- Joist must be fastened against rotation (per substrate, use self-locking fastener for single LS per connection).

#### Fasteners

<table>
<thead>
<tr>
<th>Model No.</th>
<th>L (in.)</th>
<th>Fasteners</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSNZ</td>
<td>3 1/8</td>
<td>2 1/2</td>
</tr>
<tr>
<td>LSNZ</td>
<td>6 3/8</td>
<td>2 1/2</td>
</tr>
</tbody>
</table>

1. Indicates connector is available in stainless steel. Replace 2 in model number with SS when ordering.
2. Refer to current Wood Construction Connectors Catalog for additional information.
D07  LSU, LSSU Adjustable Joist Hangers

Model No. Dimensions (in.) Fasteners
LSU210Z  1 1/8  4 1/8  1 1/2  6-1/4d  5-10d x 1/2
LSU210Z  1 5/8  5 1/2  1 5/8  10-16d  7-10d x 1/2

1. For sawed LSUU, the inner most face fasteners on the acute angle slips are not installed.
2. Refer to current Wood Construction Connectors catalog for additional information.

D08  ABA, ABU Post Bases

D09  PBS Post Bases
**D14  CCQ, ECCQ Post Caps**

Installation:
- Use all specified fasteners.

**D15  CC, ECC Post Caps**

Installation:
- Before fastening, position the start stringer with the LSCZ on the ceiling member to verify where the band should be located.
- The fastener that is installed into the bottom edge of the stringer must go into the second-to-last hole.
- A minimum distance of \( \Delta \) measured from the lowest rim joist fastener to the edge of the joist is required.

**D16  H Hurricane Ties**

**D17  LSC Stair Stringer Connector**
### TA10Z Inverted Installation

Installation:
- Use all specified fasteners.
- For double 2½'' through, install TA10Z inverted with 4 screws installed into the throughs.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Fasteners</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA10Z</td>
<td>3-3DS ⅛''x1⅜''</td>
</tr>
<tr>
<td>TA10Z</td>
<td>4-3DS ⅛''x1⅜''</td>
</tr>
</tbody>
</table>

### TA9Z Installation

Installation:
- Use all specified fasteners.
- For double 2½'' through, install TA9Z inverted with 4 screws installed into the throughs.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Fasteners</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA9Z</td>
<td>2-2DS ¼''x1⅜''</td>
</tr>
<tr>
<td>TA9Z</td>
<td>3-2DS ¼''x1⅜''</td>
</tr>
</tbody>
</table>

### TA9Z Fasteners

<table>
<thead>
<tr>
<th>Size (in.)</th>
<th>Model No.</th>
<th>Thread Length (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>⅛'' x 1⅜''</td>
<td>TA9Z</td>
<td>2⅛''</td>
</tr>
<tr>
<td>½'' x 1⅛''</td>
<td>TA9Z</td>
<td>2⅛''</td>
</tr>
</tbody>
</table>

### D18 TA Tread Angle

Installation:
- Install Simpson Strong-Tie SDR wood screws with a 2½'' hex head drive, SDR screws should be installed with a low speed high torque drill.
- A standard cut washer (provided) must be installed between the bolt and the DTT2Z seat.
- Bolt holes shall be a minimum ⅛'' larger than the bolt diameter.

### D19 SDS Screws

Installation:
- Install Simpson Strong-Tie SDS wood screws with a 2½'' hex head drive.
- SDS screws should be installed with a low speed, ⅛'' drill.

<table>
<thead>
<tr>
<th>Size (in.)</th>
<th>Model No.</th>
<th>Thread Length (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>⅛'' x 3⅝''</td>
<td>SDS22312</td>
<td>2⅛''</td>
</tr>
<tr>
<td>½'' x 5⅝''</td>
<td>SDS25500</td>
<td>2⅛''</td>
</tr>
</tbody>
</table>

### D20 DTT2Z Deck Tension Tie

**Installation:**
- Install Simpson Strong-Tie SDR wood screws with a 2½'' hex head drive.
- SDS screws should be installed with a low speed, ⅛'' drill.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>CL</th>
<th>Anchor Dia.</th>
<th>Fasteners</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTT2Z</td>
<td>13/16</td>
<td>⅛''</td>
<td>8-3DS ⅛''x1⅜''</td>
</tr>
</tbody>
</table>

1. Indicates connector is available in stainless steel. Replace 2'' in model number with SS when ordering.
2. Refer to current 3''-GDR, 5GDR, and 6GDR for additional information.
Inches above ground (grade) level, if posts will be embedded into concrete, the posts must be treated for rot resistance (such as termites).

**READY THE SITE**
Clean away all trees, shrubs, grass, big rocks, and other debris before you order material.
The ground should slope away from the house slightly for adequate drainage.
If a lot of soil must be moved to provide this slope, it is recommended that you have the soil moved professionally. The cost may not be as prohibitive as you might think. It's worth a check and three bids.

**STAKE OUT THE DECK**
With wooden stakes and chalk line, square the deck to the house. By doing this, you also have created the shape of the deck with string.
Take your time with this task. Getting it correct at this point can save you plenty down the line. The stake-out will be used to determine all other deck dimensions as you proceed.

**STAKE OUT THE FOOTINGS**
Using the stakes again, locate the footing positions. Most posts are set back from the leading edge of the deck by 18 to 24 inches.
If the footing location happens to coincide with an underground utility, you may get the utility moved, or you will have to relocate the deck.
The size and number of footings are determined by the size of the deck and its expected load. Generally, for most decks, footings are placed on 5-foot centers, front, middle, and back. If there will be lots and lots of weight on the deck, the footings can be 4-foot on-center for support. Don't skimp. It's better to overdo it slightly than to underdo it.
When you have determined position, stake the posts where the stakes are "on-center" within the footing area. An auger or clamshell type posthole digger can be used to dig the footing holes.

**JOINTS**
Joists, at 2 end and 4 foot intervals. It is recommended that you use 16d hot-dipped galvanized nails to assemble the deck. You also can use metal connectors to attach or support joints at beams. See drawings.

**DOWN WITH THE DECKING**
Once the joints are in position, the decking goes down. Make sure that the curved end grain of the wood faces downward to eliminate cupping.
Make the nailing pattern uniform. First lay a chalkline along each joint span. Drive two nails at each joint, along the line. The butt joints of the decking should line up over the joint and be centered. After you nail the first deck board, leave 1/8- to 1/4-inch space between each board. Use 16d hot-dipped galvanized casing nails; they can be used to space between deck boards since they're about 1/8-inch thick.
If your deck boards are not exactly parallel, don't try to correct all of them by adjusting the next board. Adjust gradually over the next two, three boards. Keep checking dimensions, based on the first board; chances of misalignment will be much less.
When you're about 8 feet from finishing, plan how to make the last piece of decking fit flush with the skirt. Space the remaining boards to coincide with the edge of the skirt.
In a double, lay out the boards to fit the skirt before nailing them down. You are now ready to trim the deck to final dimensions. See the drawing at bottom far right.

**TRIMMING THE DECKING**
Check all dimensions TWICE before you start the trimming procedures. Trim from the house out.
When you saw, try to keep the saw away from the skirt, unless the deck boards will overlap the skirt. A chalkline will help you see the cut line. To cap the end of the cutting, as well as to provide an edging strip, you can install a molding piece around the edge of the deck boards.
Railing, steps, and benches are usually added after the deck is completed. If a railing is planned, it can be attached to the skirting or joists—and sometimes the beams. It also can be part of the post structure, but plan it his way at the start.

**INSTALLING THE JOISTS**
Joists are set on the beams. Simplify the job by installing the skirt joists first. toenail the beam and where they cross at each floor joist. If your layout calls for it. Then put down the joist pattern (usually on 24-inch centers) if your layout calls for it. Slip down the joist pattern on the beam, and lay the beam so that the next one will be 24 inches.
Start at one end of the deck and work to the opposite end. Don't be upset if the last two joists have less space than 24 inches. If your decking pattern will be zig-zag, herringbone, or diamond, use blocking between joists. Sight down each joist and see if the "crowns" is facing up.
The joists are nailed to the skirts and at the beams, where possible; the blocking is nailed.

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**Interior Design and Home Décor Ideas**

Interior Design and Home Decor Ideas - Home Stratosphere
**TOOL & MATERIAL CHECKLIST**

- Deck Lumber, Fasteners
- Hangers
- Hammer/Saw/Level
- Carpenter's Square
- Shovel/Trowel
- Cement
- Chalkline
- Tape Measure
- Drill/Drill Bits
- Adjustable Wrench
- Safety Glasses
- Marking Pencils

**Read This Entire How-To Booklet for Specific Tools and Materials Not Listed Above**

Think of a deck as a floor structure. It has joists to support the flooring material (decking) and posts to hold the unit up off the ground—slightly elevated or higher.

The lumber can be redwood, cedar, cypress, or pressure treated fir, hemlock, spruce. The footings should be concrete, and any support posts 6x6-inches square. You can use 4x4-inch posts up to about 6 feet of deck height; the larger size is recommended just to make sure the support is always adequate. Refer to the beam, post, and span tables included.

The deck design can be square, rectangular, and, perhaps, somewhat free-form or two-level. Plan and design the deck before buying any tools and materials. By doing so, you will eliminate many mistakes and save time and money throughout the project.

This booklet is about building basics only. It does not address deck design in any detail.

**NOTE:** You may need a building permit to construct a deck in your community. Check with the Building Department authority in the community. The usual procedure is to submit a drawing of the proposed deck structure to the building inspector in the Building Department. Any changes to meet local codes and requirements will be indicated. If okay, you will be issued a building permit usually for a fee. The permit may be time limited—probably not to exceed 3, 6, 9, or 12 months.

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**MINIMUM BEAM SIZES AND SPANS**

<table>
<thead>
<tr>
<th>SPECIES GROUP 1</th>
<th>SPACING BETWEEN BEAMS, FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam size</td>
<td>4</td>
</tr>
<tr>
<td>4x6” X</td>
<td>6</td>
</tr>
<tr>
<td>4x8” X</td>
<td>8</td>
</tr>
<tr>
<td>4x8” X</td>
<td>10</td>
</tr>
<tr>
<td>3x10” X</td>
<td>12</td>
</tr>
<tr>
<td>2x12” X</td>
<td>12</td>
</tr>
<tr>
<td>2x12” X</td>
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<tr>
<td>2x12” X</td>
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<tr>
<td>2x12” X</td>
<td>12</td>
</tr>
</tbody>
</table>

**MINIMUM BEAM SIZES AND SPANS**

<table>
<thead>
<tr>
<th>SPECIES GROUP 3</th>
<th>SPACING BETWEEN BEAMS, FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam size</td>
<td>4</td>
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<tr>
<td>4x6” X</td>
<td>6</td>
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<tr>
<td>4x8” X</td>
<td>8</td>
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<td>4x8” X</td>
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<td>4x10” X</td>
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<td>3x10” X</td>
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<td>3x10” X</td>
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<td>12</td>
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<tr>
<td>6x12” X</td>
<td>12</td>
</tr>
<tr>
<td>6x14” X</td>
<td>12</td>
</tr>
</tbody>
</table>

**CONCRETE FOOTINGS**

The building codes in your community will be very specific about this deck component (footing). However, there are several rules of thumb for footing purposes:

If possible, footings should be placed on undisturbed soil or rock. The footings must extend below frost line in your area, which ranges from 24 inches minimum to 48 inches maximum. You can find out the frost line depth in your area by phoning the National Weather Service. If this agency is not conveniently reachable, your local Building Department will know the frost line depth.

Footings are usually placed concrete in rectangular, square, or circular shapes depending on the post connection. Most footings extend 2 to 6 feet on edge. Spans are center to center distances between posts on supports.

Grade is No. 2 or Better; No. 2 - medium grain Southern pine.

**Species Group 1:** Douglas fir, larch, Southern pine.

**Species Group 2:** Hemlock fir, Douglas fir, south.

**Species Group 3:** Western pines and cedars, redwood, spuces. Example: If the beams are 9 feet 6 inches apart and the Species is Group 2, use the 10 foot column; 3X6 up to 6 foot spans, 4X6 or 3X12 up to 7 foot spans, 4X12 or 6X6 up to 9 foot spans, 6X12 up to 11 foot spans.