ILLUSTRATED GUIDE TO DECKS

TOWN OF TOLLAND
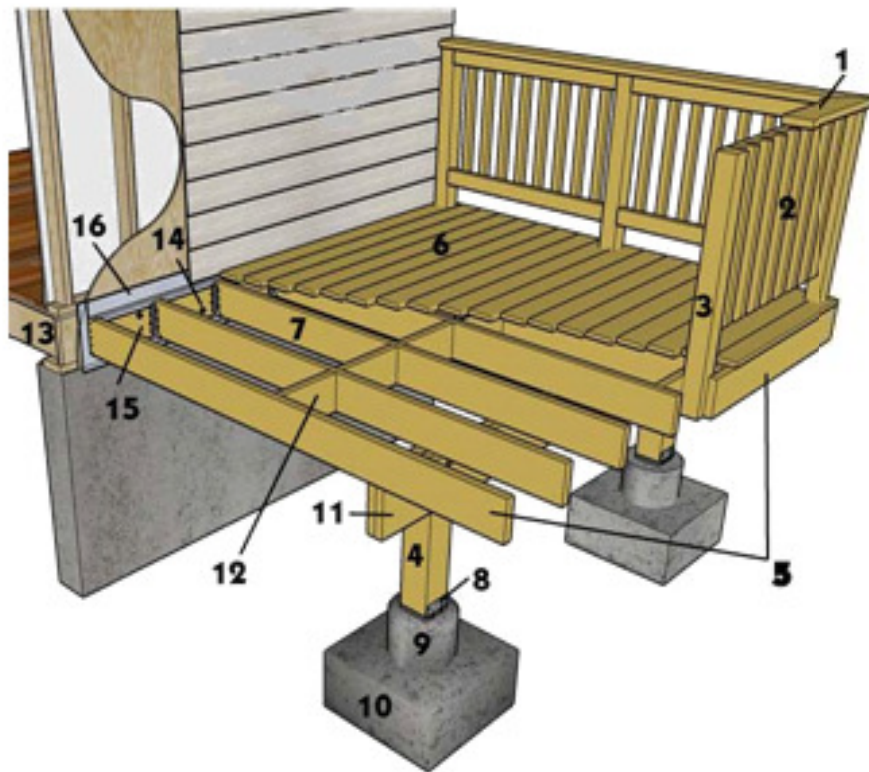**BUILDING DEPARTMENT**
860-871-3601

The purpose of this handout is to provide illustrations of common deck construction techniques. It is not the purpose of this handout to endorse any of the methods show or limit designs to those shown here. The techniques shown may not be suitable for some designs, soil types, or locations. While every attempt has been made to insure the correctness of this handout, no guarantees are made to its accuracy or completeness. Responsibility for compliance with applicable codes and ordinances falls on the owner or contractor. For specific questions regarding code requirements, refer to the Minnesota State Building Code or contact your local Building Department.
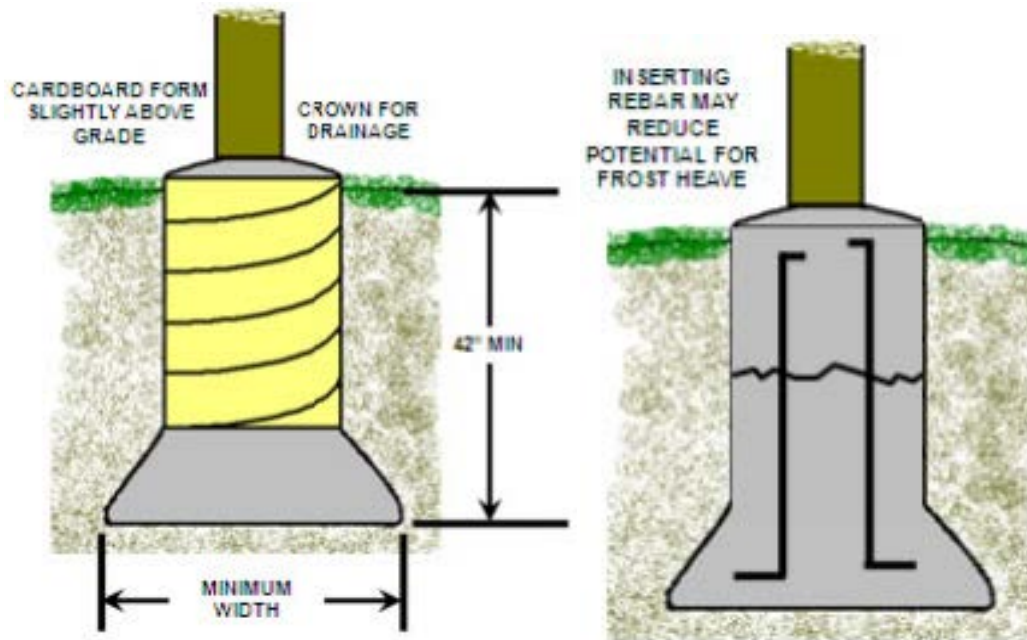
For charts on joist/beam spans, column/footing sizing, and cantilever projections, see the handout "Decks".
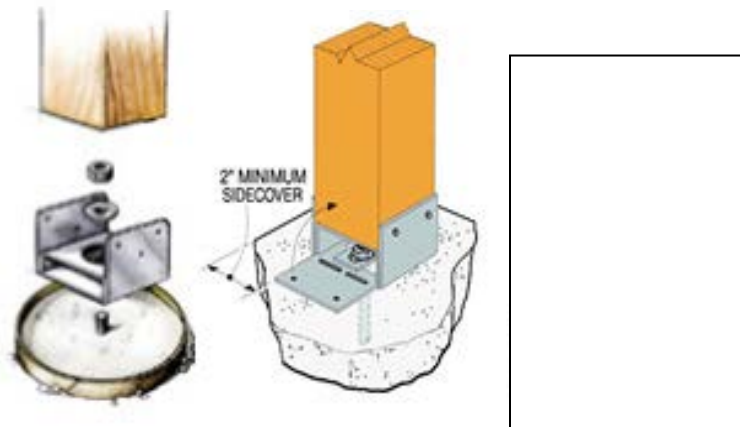
TERMINOLOGY

1. RAIL TOP CAP
2. BALLUSTERS
3. RAIL POST
4. SUPPORT POST
5. RIM OR BAND JOIST
6. DECKING
7. JOISTS
8. POST BASE CONNECTOR
9. PIER
10. FOOTING
11. DROP BEAM
12. BLOCKING
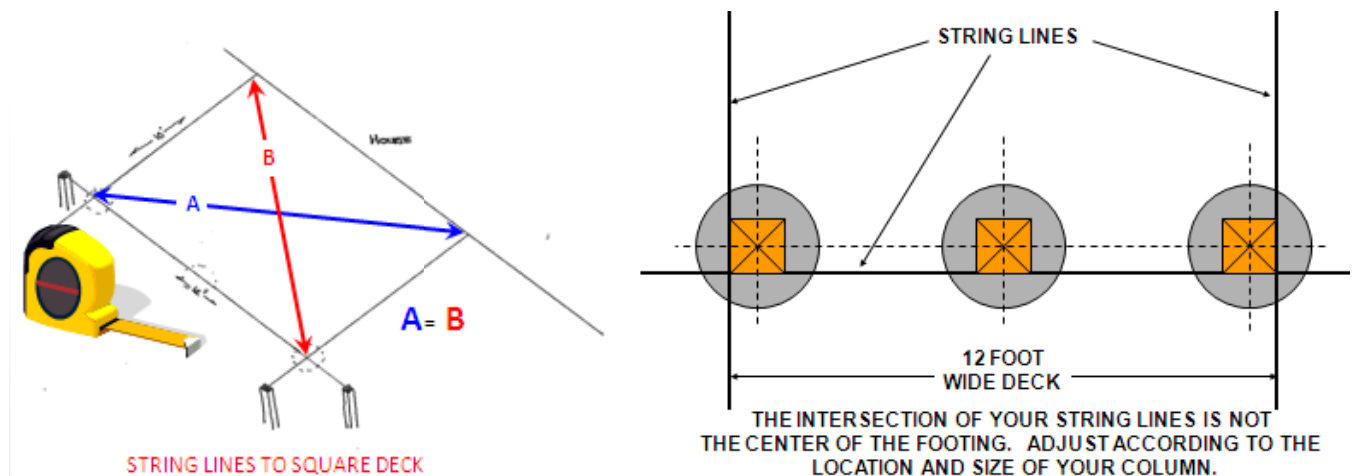13. HOUSE JOIST
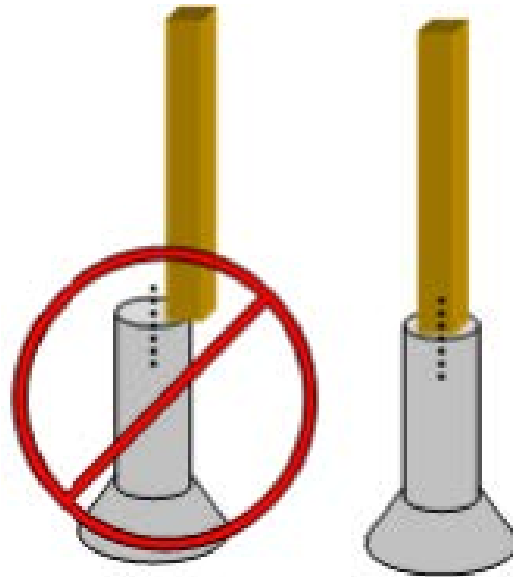14. ½" BOLTS
15. LEDGER BOARD
16. FLASHING

FOOTINGS

CARDBOARD FORM SLIGHTLY ABOVE GRADE

CROWN FOR DRAINAGE

INSERTING REBAR MAY REDUCE POTENTIAL FOR FROST HEAVE

42" MIN

MINIMUM WIDTH

ANCHORING POST

2" MINIMUM SIDECOVER

WHERE DO I PUT MY FOOTINGS?

B

A

A= B

STRING LINES TO SQUARE DECK

STRING LINES

12 FOOT WIDE DECK

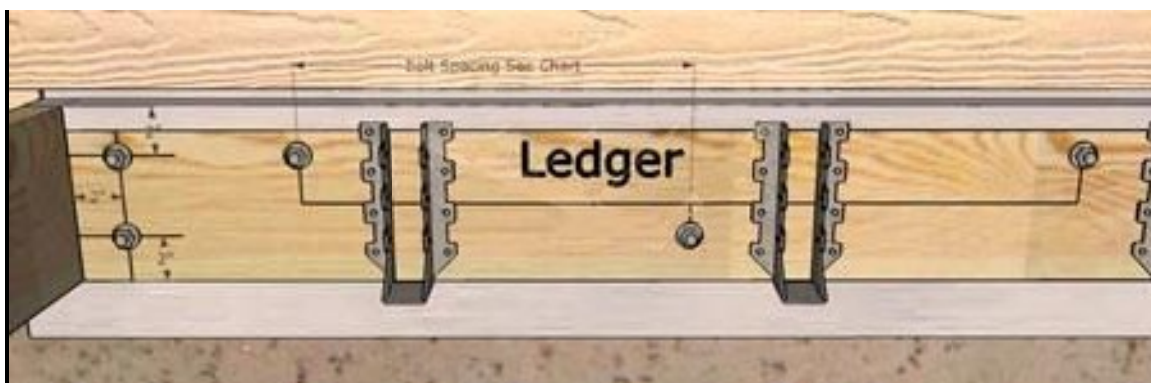THE INTERSECTION OF YOUR STRING LINES IS NOT THE CENTER OF THE FOOTING. ADJUST ACCORDING TO THE LOCATION AND SIZE OF YOUR COLUMN.

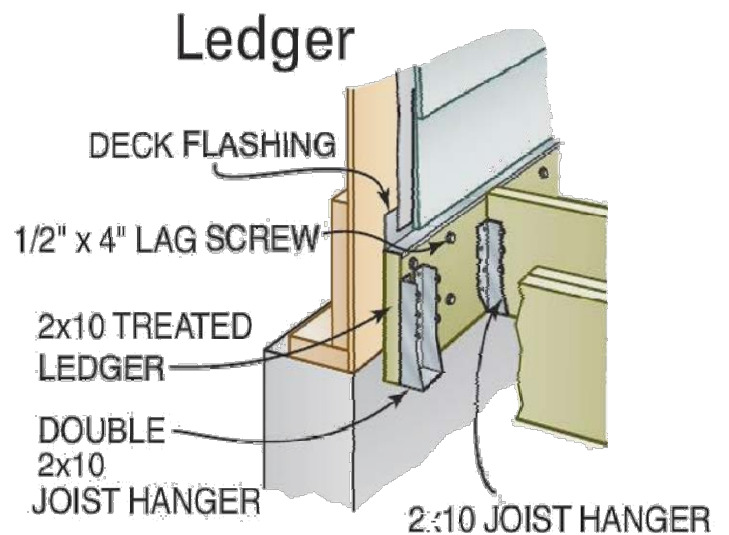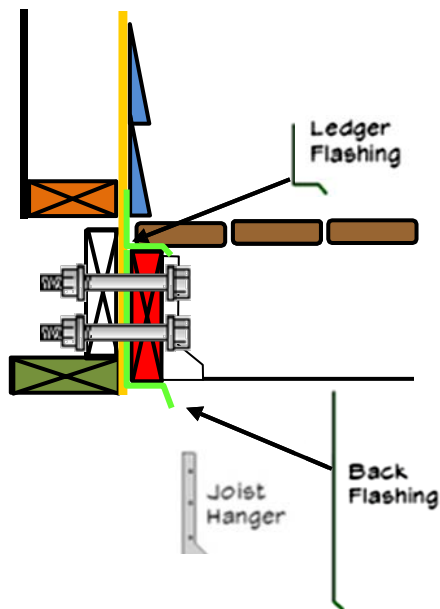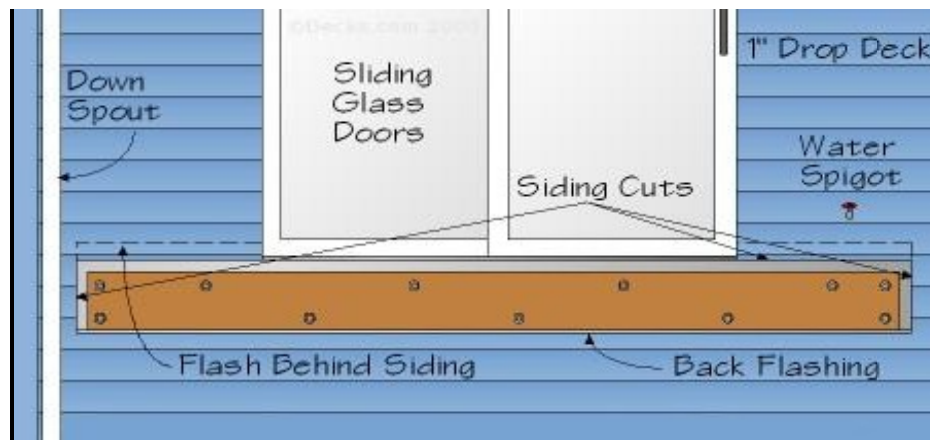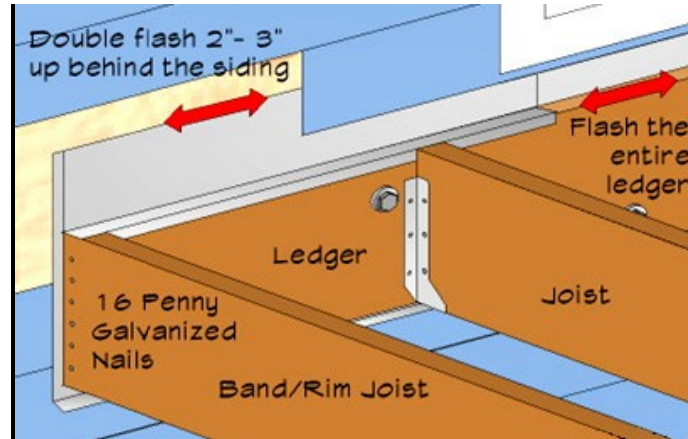# THE REQUIRED AREA OF THE COLUMN SHOULD FULLY BEAR ON THE FOOTING

ATTACHING LEDGERS

The lag screws or bolts shall be placed 2 inches in from the bottom or top of the deck ledgers and between 2 and 5 inches 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.
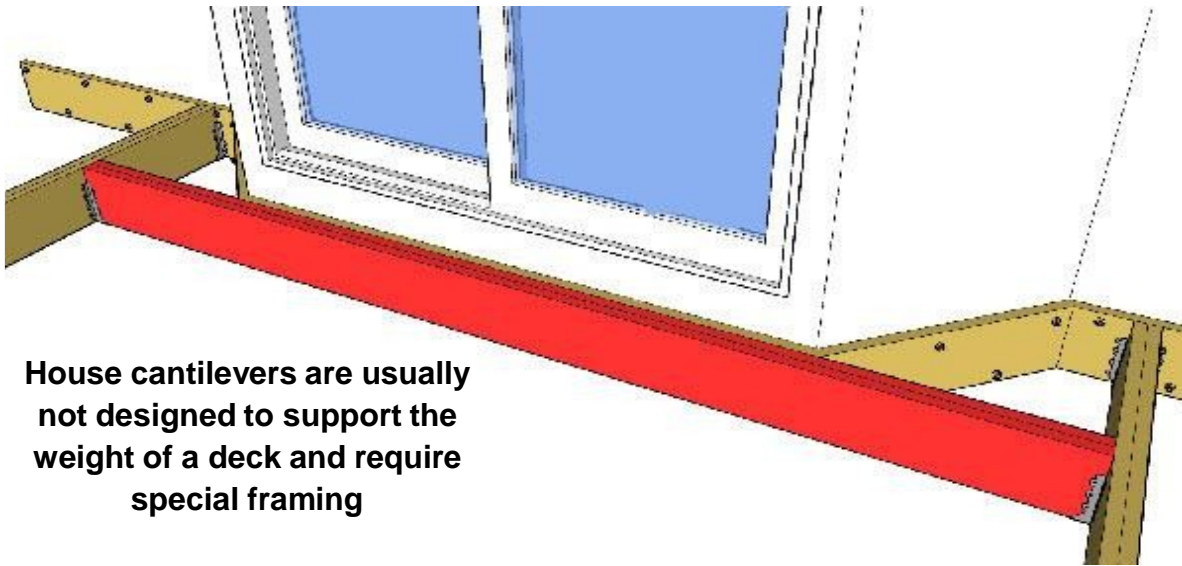
Ledger

½" DIAMETER LAG SCREWS MINIMUM

Lag screws must be hot-dipped galvanized or stainless steel only

1-1/2" shank (no threads)

Length must extend through existing band joist
400# MAXIMUM LOAD PER LAG

Screw must penetrate beyond band board a minimum of ½"
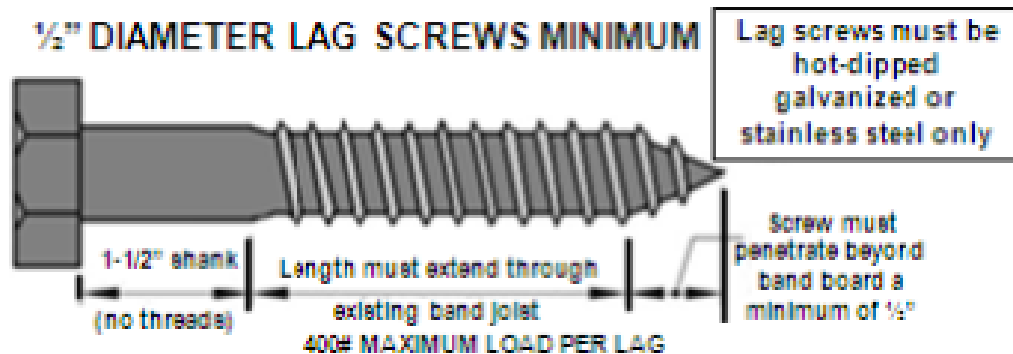
OR EQUIVALENT "LEDGERLOK"-TYPE SCREWS
TYPICALLY ONE OR TWO PER JOIST BAY

FLASHING LEDGERS

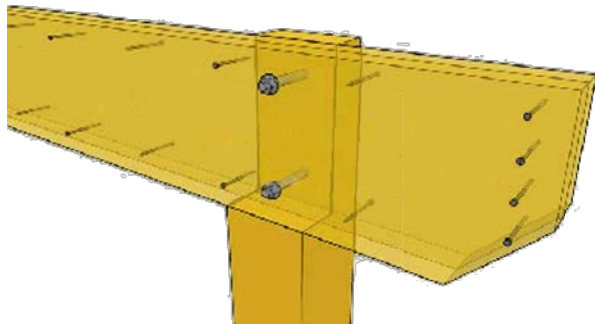Double flash 2"- 3" up behind the siding

Flash the entire ledger

Ledger

16 Penny Galvanized Nails

Joist

Band/Rim Joist

Down Spout

Sliding Glass Doors

1" Drop Deck

Water Spigot

Siding Cuts

Flash Behind Siding

Back Flashing

Ledger Flashing

Joist Hanger

Back Flashing

Ledger

DECK FLASHING

1/2" x 4" LAG SCREW

2x10 TREATED LEDGER

DOUBLE 2x10 JOIST HANGER

2x10 JOIST HANGER

HOUSE CANTILEVERS

House cantilevers are usually not designed to support the weight of a deck and require special framing

MAX 7-3/4" RISE

2" min to 5" max from each end

2" min from top or bottom

Cantilever

Do not exceed capacity of connectors when supporting ends of beams

Alternate design: Cut beam into house framing with solid blocking to wall plates
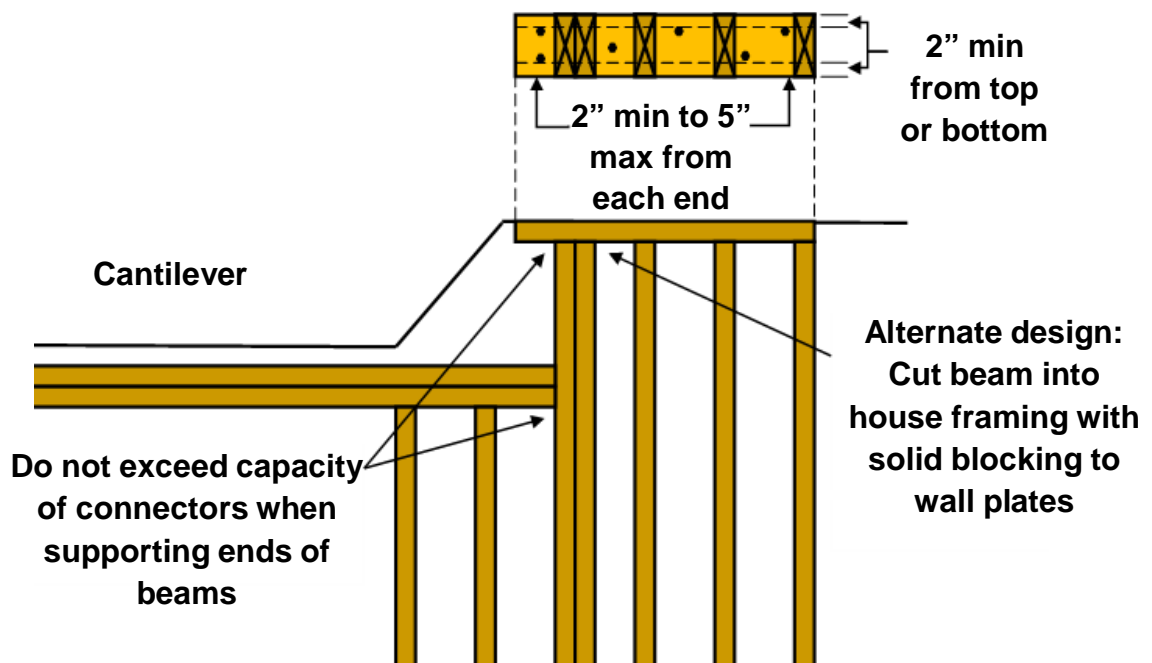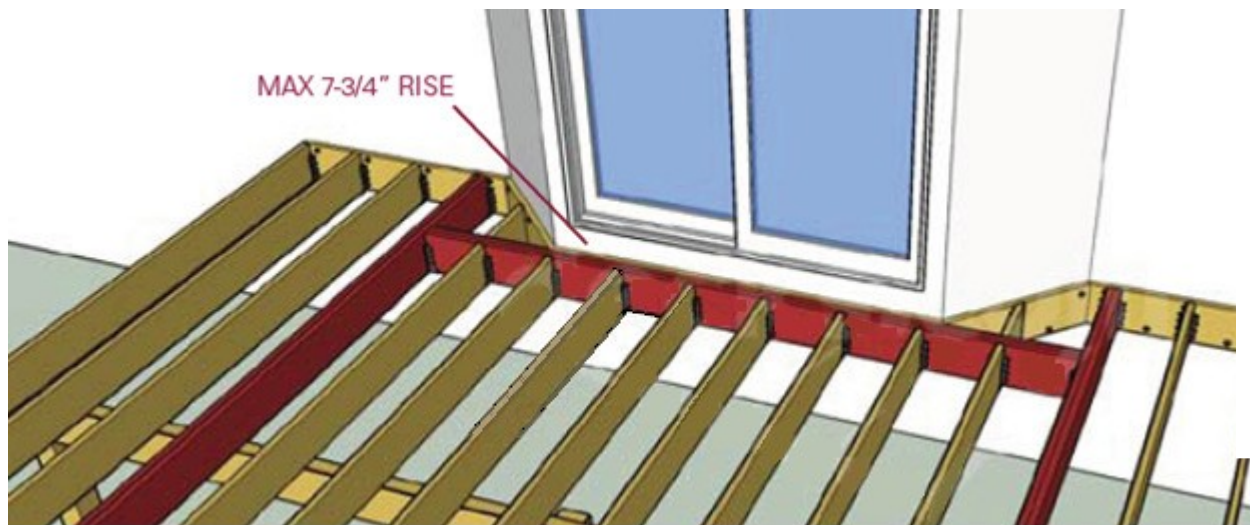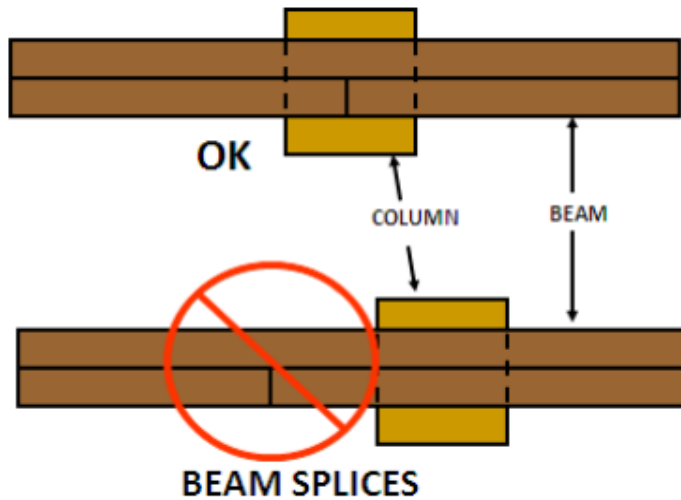
BEAMS

ONE FOOT MAXIMUM CANTILEVER BEYO D COLUMN

OK

COLUMN   BEAM

BEAM SPLICES

Beam Pocket Cut Into A 6x6 Support Post

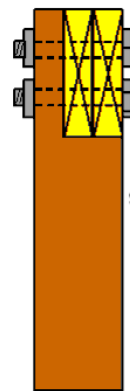Section View   Elevation View   Top View

Beam

Cut 3" deep beam pocket for Beam to rest on
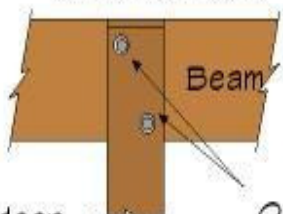
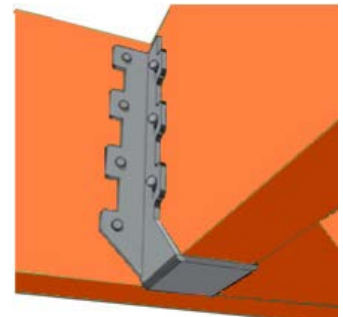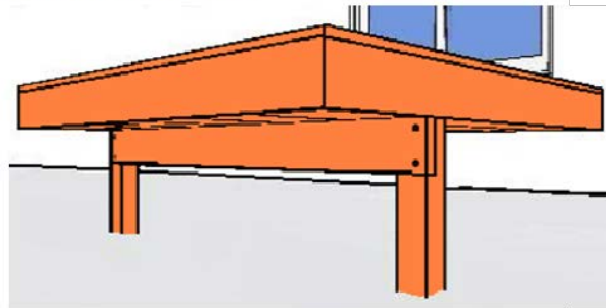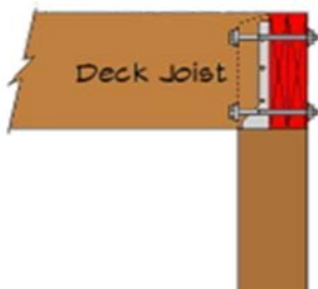Off Set (2) 6" x 1/2" Carriage Bolts With Washers
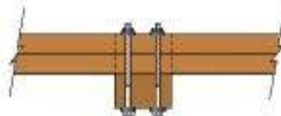
BEAM SECURED WITH POST CAP

BEAM SECURED WITH BOLTS TO NOTCHED COLUMN

JOISTS MAY EITHER FRAME INTO THE SIDE OF A BEAM WITH JOIST HANGERS OR REST ON A DROPPED BEAM
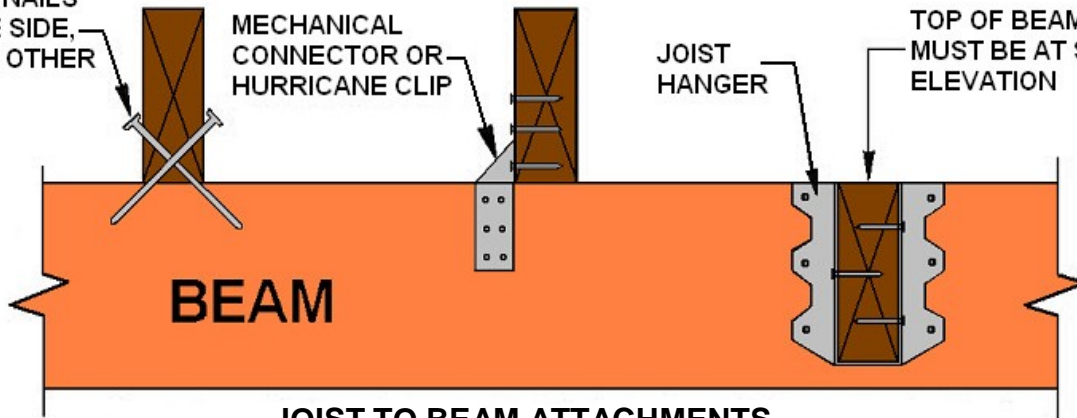
Header beam
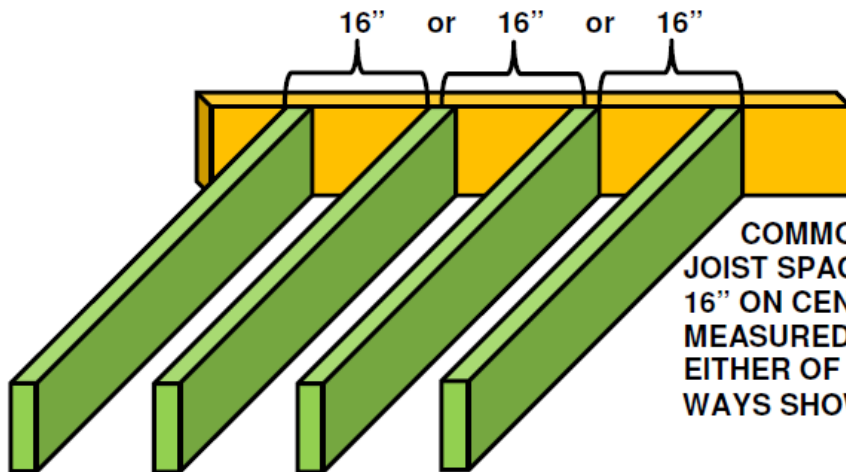
Deck Joist

3-8D TOE NAILS
2 ON ONE SIDE,
1 ON THE OTHER

MECHANICAL
CONNECTOR OR
HURRICANE CLIP

JOIST
HANGER

TOP OF BEAM AND JOIST
MUST BE AT SAME
ELEVATION

BEAM

JOIST TO BEAM ATTACHMENTS

16"   or   16"   or   16"

COMMON
JOIST SPACING IS
16" ON CENTER
MEASURED IN
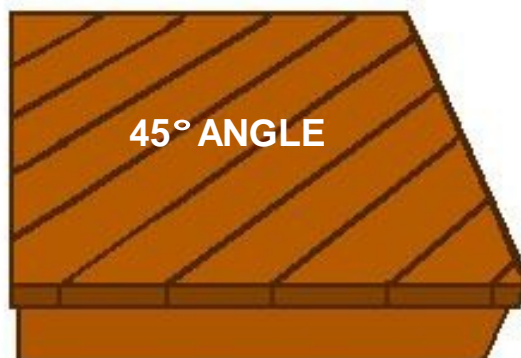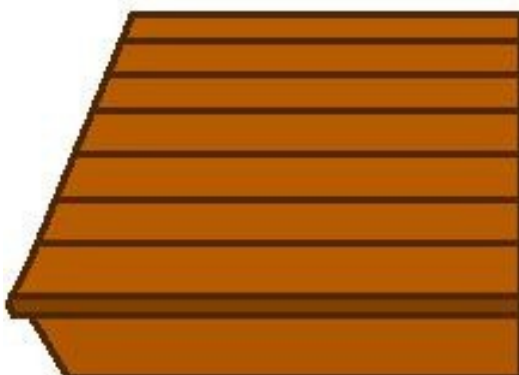EITHER OF THE
WAYS SHOWN

JOIST SPACING IS
DETERMINED BY THE
TYPE OF DECKING
USED. 16" O.C.
SPACING MUST BE
USED WITH 5/4 DECKING
OR WHEN 2X6 OR 2X4
DECKING IS USED AT A
45° ANGLE. 12" O.C.
SPACING REQUIRED
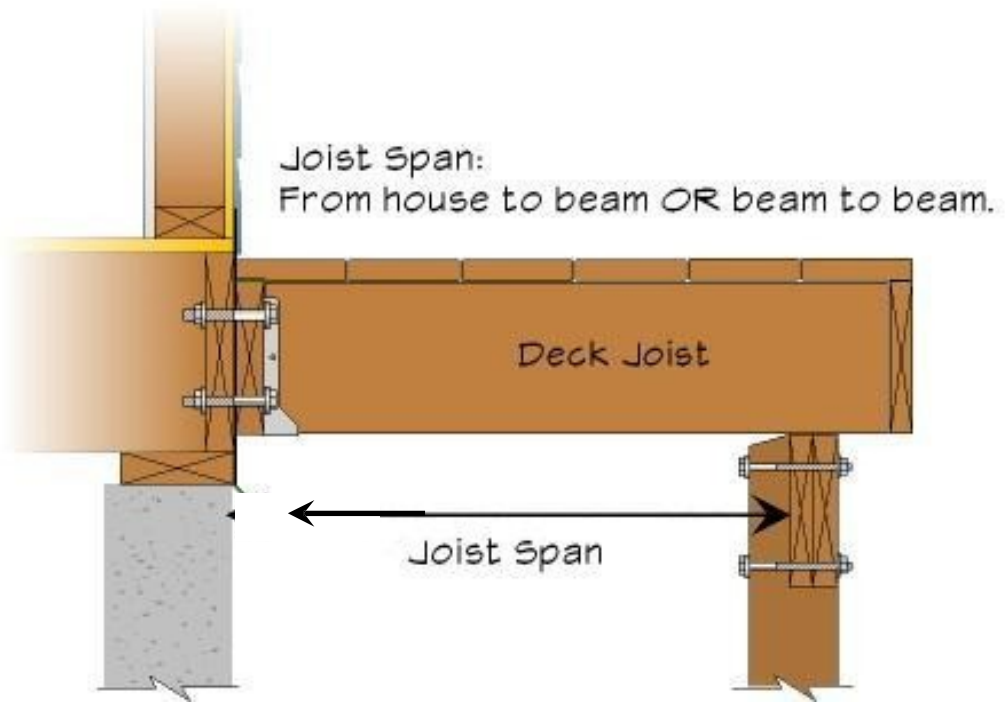WHEN 5/4 DECKING IS
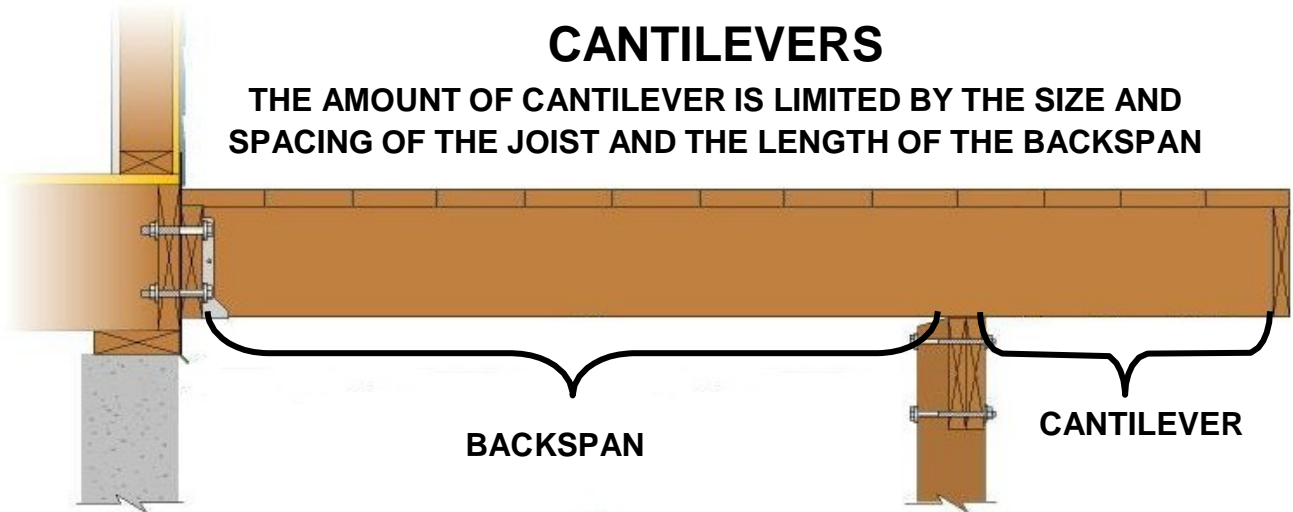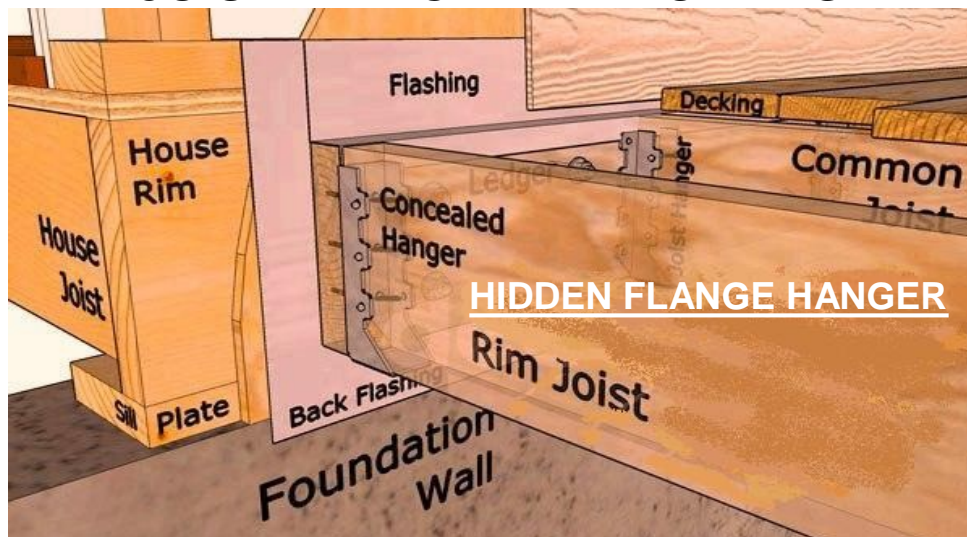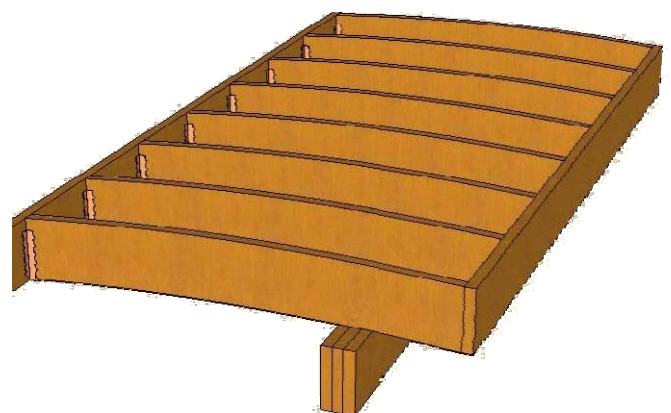USED AT A 45° ANGLE.

5/4"x6"   5/4"x4"

2"x6"   2"x4"

45° ANGLE

Joist Span:
From house to beam OR beam to beam.

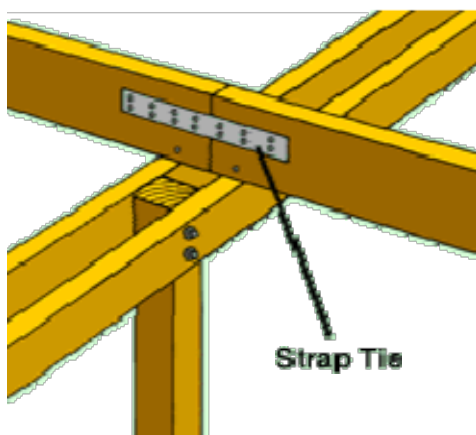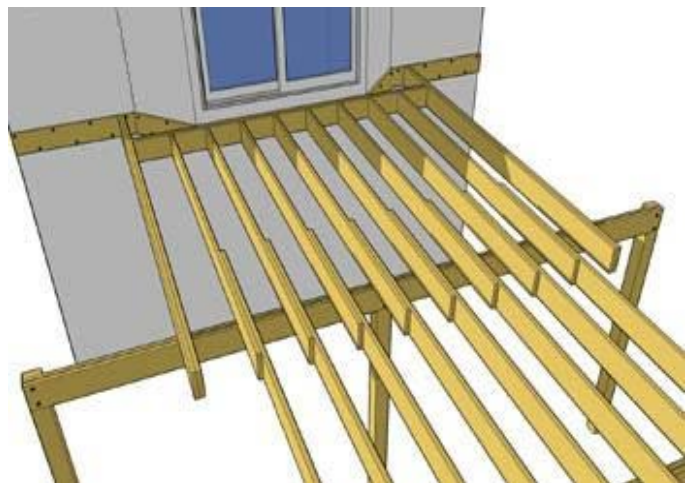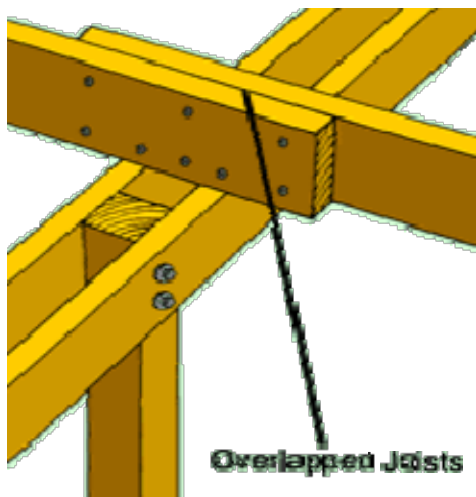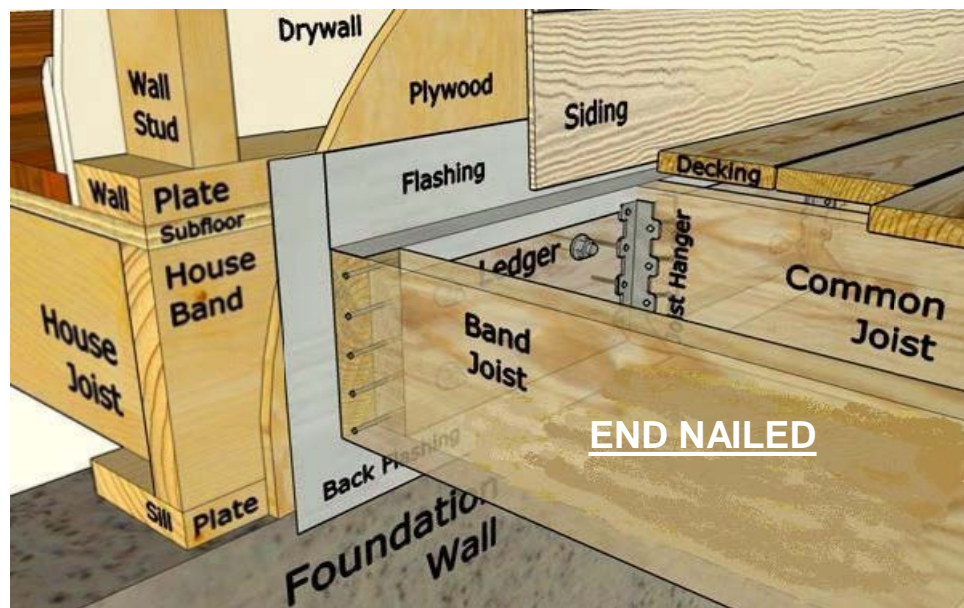Deck Joist

Joist Span

CANTILEVERS
THE AMOUNT OF CANTILEVER IS LIMITED BY THE SIZE AND SPACING OF THE JOIST AND THE LENGTH OF THE BACKSPAN

BACKSPAN

CANTILEVER

RIM JOIST ATTACHMENT TO LEDGER

Flashing

Decking

House Rim

Common Joist

House Joist

Concealed Hanger

HIDDEN FLANGE HANGER

Sill Plate

Back Flashing

Rim Joist

Foundation Wall

Drywall

Wall Stud

Plywood

Siding

Wall | Plate

Flashing

Decking

Subfloor

Ledger

Joist Hanger

House Band

House Joist

Band Joist

Common Joist

END NAILED

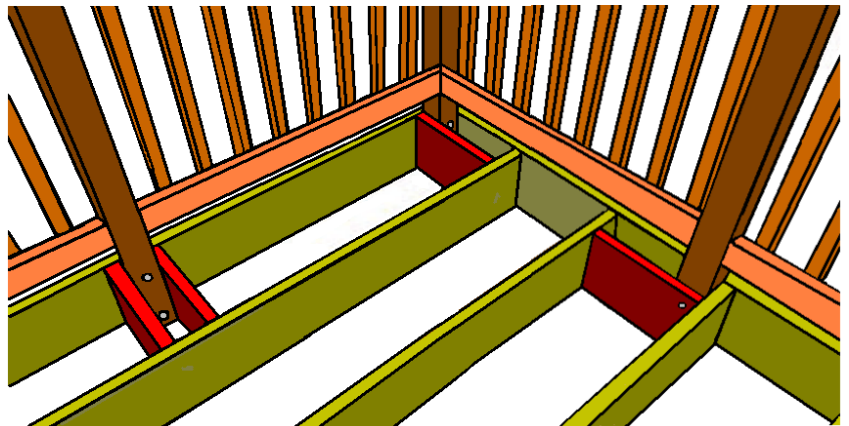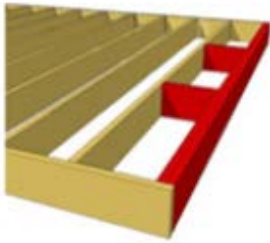Sill | Plate

Back Flashing

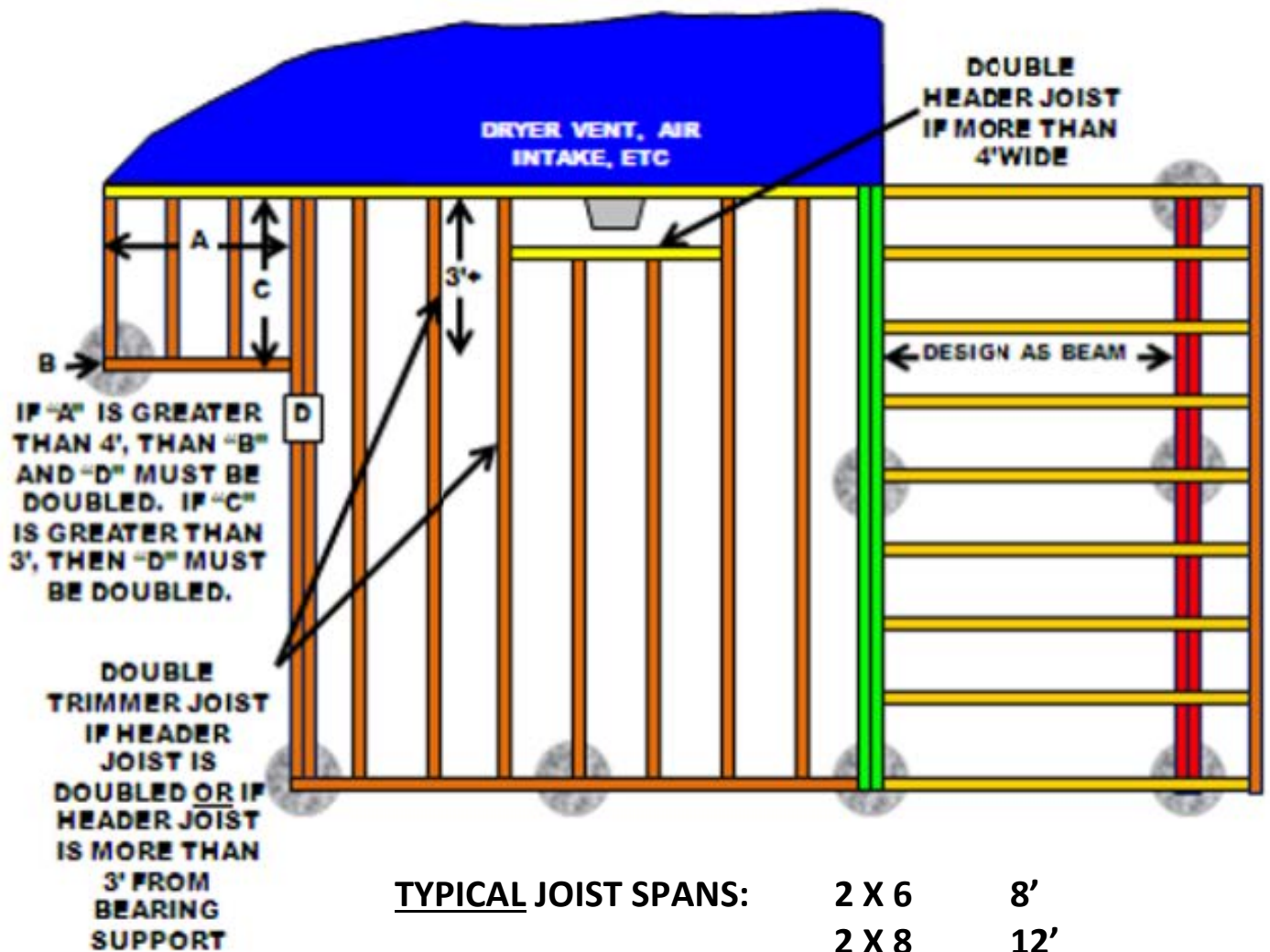Foundation Wall

Overlapped Joists


Strap Tie

JOISTS CROWN UP

AVOID NOTCHING
GUARD POSTS

BLOCKING MAY BE ADDED TO
STRENGTHEN POST ATTACHMENT

DRYER VENT, AIR
INTAKE, ETC

DOUBLE
HEADER JOIST
IF MORE THAN
4'WIDE

DESIGN AS BEAM

A

C

B

IF "A" IS GREATER
THAN 4', THAN "B"
AND "D" MUST BE
DOUBLED. IF "C"
IS GREATER THAN
3', THEN "D" MUST
BE DOUBLED.

3'+

D

DOUBLE
TRIMMER JOIST
IF HEADER
JOIST IS
DOUBLED OR IF
HEADER JOIST
IS MORE THAN
3' FROM
BEARING
SUPPORT

TYPICAL JOIST SPANS:

2 X 6	8'
2 X 8	12'
2 X 10	16'

AT 16" O.C.

DECK ATTACHMENTS TO I-JOIST OR TRUSS FLOOR SYSTEMS

deck framing

house framing

2.98"   6"

3.125"
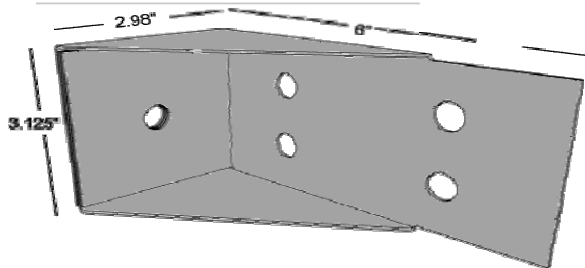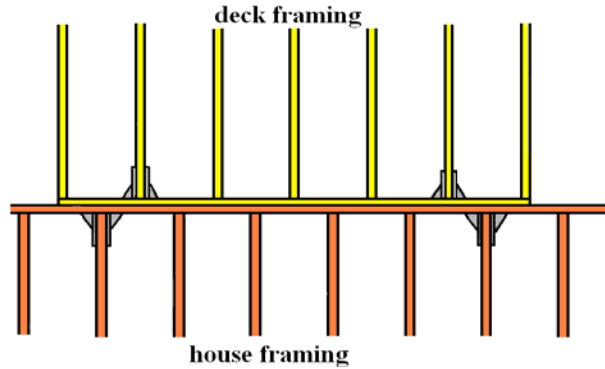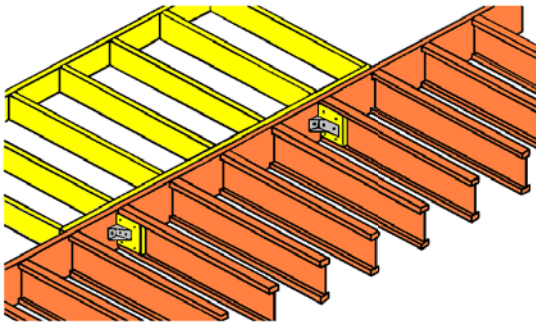
INSTALL CONNECTOR IN ACCORDANCE WITH MANUFACTURERE'S INSTALLATION INSTRUCTIONS

deck framing

house framing
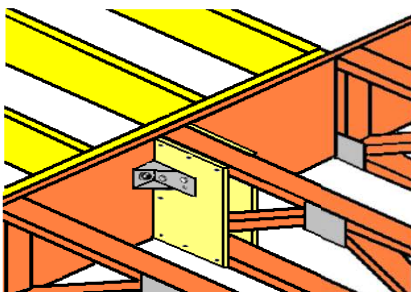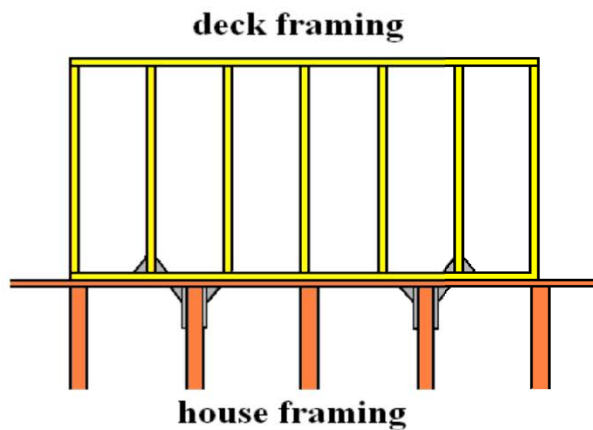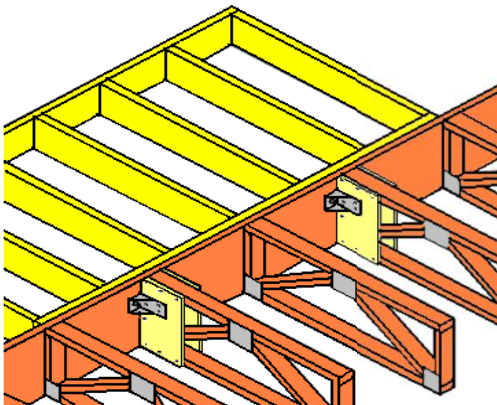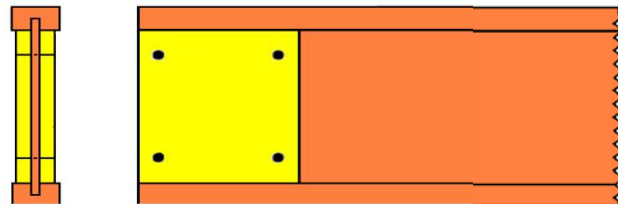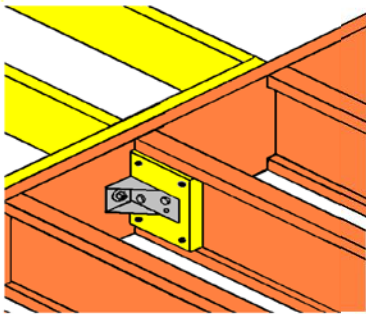
truss joist to rim joist & ledger
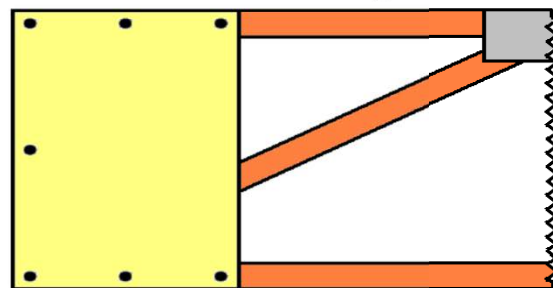
blocking plate nailed to truss joist

GUARDS

4" diameter sphere will not pass through

4 3/8" diameter sphere will not pass through

6" diameter sphere will not pass through

36" Min.
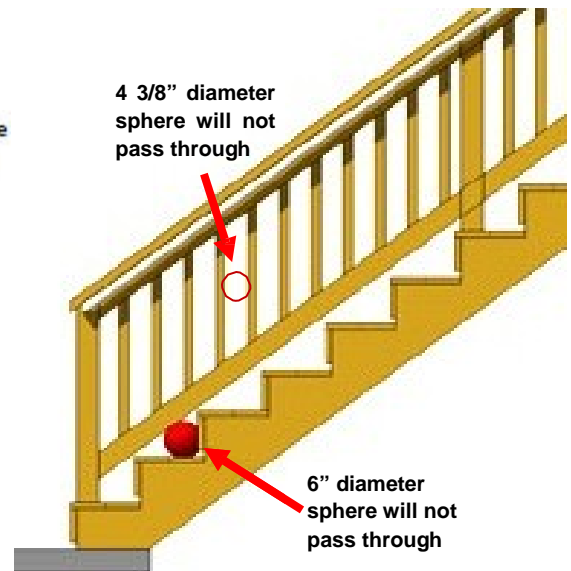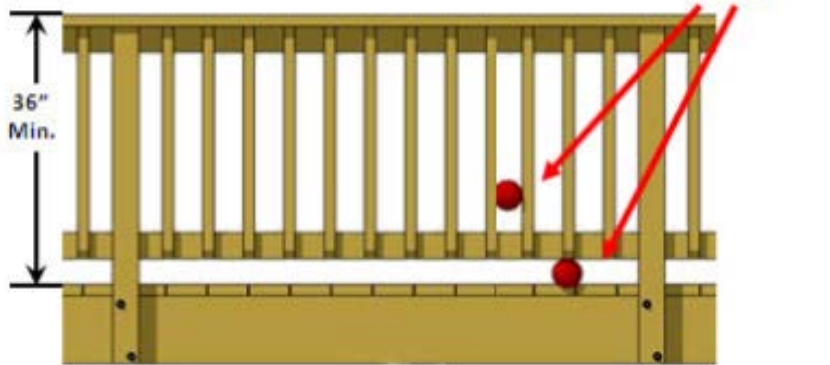
GUARD IS REQUIRED IF DECK IS MORE THAN 30 INCHES ABOVE GRADE

STAIR TERMINOLOGY

Top Of Deck
Total Run
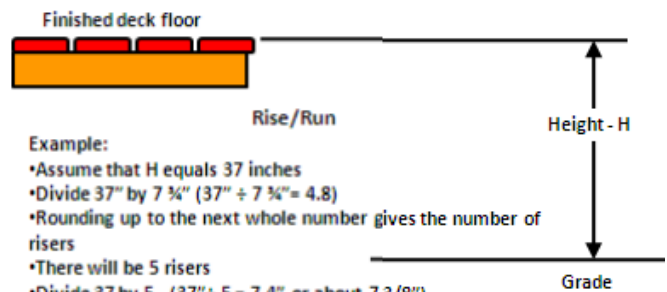Joist
Run
Stringer Length
Beam
Rise
Total Height
Stair Stringer
Grade
Angle
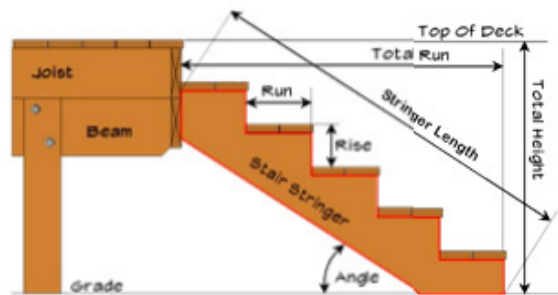
Stair Basics
- The maximum riser height is 8¼ inches
- The minimum tread run is 9 inches
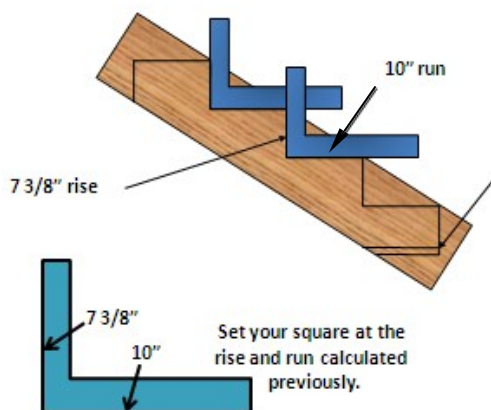- Treads and risers should be approximately equal with the largest not exceeding the smallest by more than ⅜ inch.
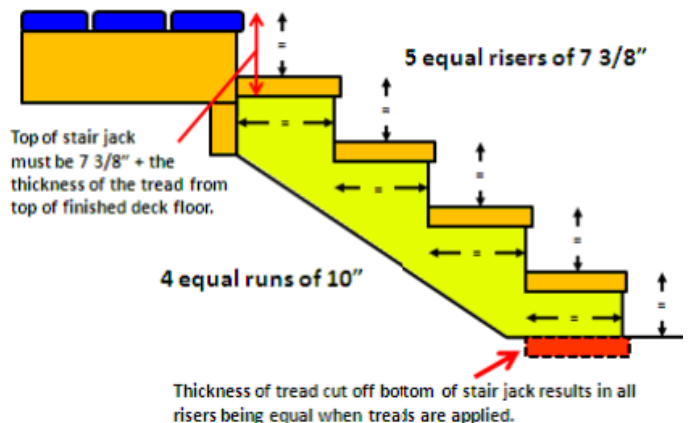
DETERMINING RISE/RUN

Finished deck floor

Rise/Run

Height - H

Grade

Example:
- Assume that H equals 37 inches
- Divide 37" by 7 ¾" (37" ÷ 7 ¾"= 4.8)
- Rounding up to the next whole number gives the number of risers
- There will be 5 risers
- Divide 37 by 5. (37"÷ 5 = 7.4" or about 7 3/8")
- Each riser will be 7 3/8"
- For 5 risers there will be 4 treads
- Since each tread must be at least 10", the length of the stair from the face of the deck to the face of the bottom riser will be at least 40" (10" X 4 treads = 40")

LAYING OUT STAIR JACKS

10" run

7 3/8" rise

7 3/8"

10"

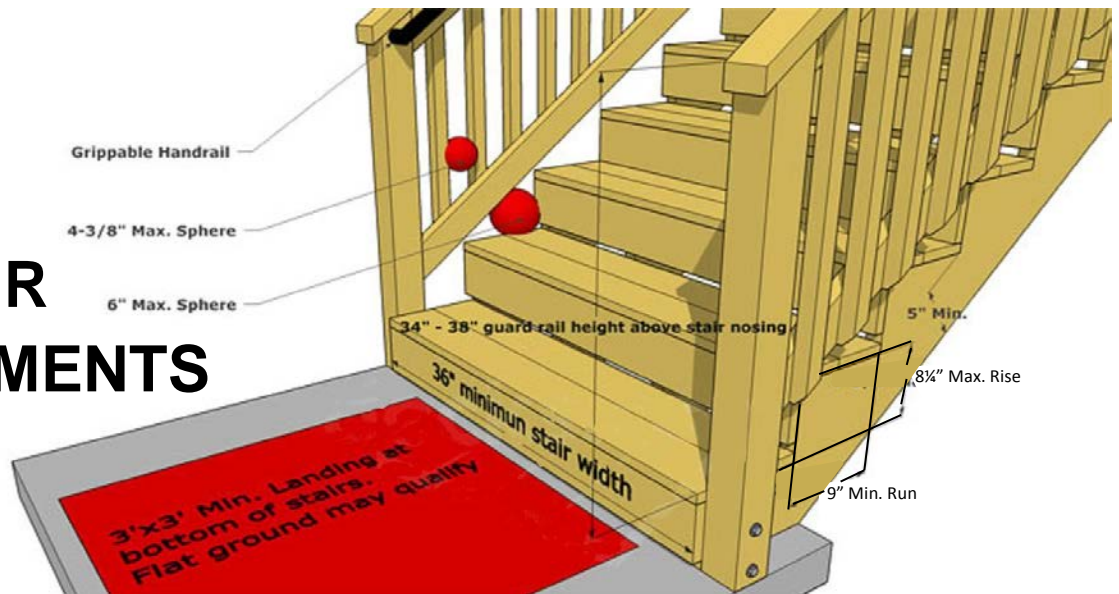Set your square at the rise and run calculated previously.

Cut an amount equal to the thickness of the tread from the bottom of the stair jack

THE COMPLETED STAIR

5 equal risers of 7 3/8"

Top of stair jack must be 7 3/8" + the thickness of the tread from top of finished deck floor.

4 equal runs of 10"

Thickness of tread cut off bottom of stair jack results in all risers being equal when treads are applied.

STAIR REQUIREMENTS

Grippable Handrail

4-3/8" Max. Sphere

6" Max. Sphere

34" - 38" guard rail height above stair nosing

36" minimun stair width

3'x3' Min. Landing at bottom of stairs. Flat ground may qualify

5" Min.

8¼" Max. Rise

9" Min. Run

STAIR ATTACHMENTS

SLOPE UP OR DOWN TO 45°

HANDRAILS

HANDRAILS MUST RETURN TO A NEWEL POST AND BE CONTINUOUS WITHOUT INTERUPTION FOR THE LENGTH OF THE FLIGHT

COMPOSITES AND OTHER DECK/RAILING PRODUCTS

THIS HANDOUT <u>DOES NOT</u> COVER DECK OR RAILING PRODUCTS MADE OF COMPSITES, ALUMINUM, STEEL, GLASS, OR ANY OTHER MAN MADE PRODUCT. THOSE PRODUCTS MAY BE USED IF THE MANUFACTURER HAS A <u>RESEARCH REPORT</u> FROM THE INTERNATIONAL CODE COUNCIL AND THE PRODUCT IS INSTALLED IN STRICT ACCORDANCE WITH THAT REPORT.