

City of New Haven



Patio-Decks

Building Permit Information

PATIO DECKS

This guideline is intended to provide the homeowner/contractor with the basic information needed to apply for a building permit to construct most simple patio decks.

The City of New Haven has adopted the following Building Codes as published by the International Code Council: International Building Code, 2015; International Residential Code, 2015; International Plumbing Code, 2015; International Fire Code, 2015; International Mechanical Code, 2015; International Fuel Gas Code, 2015; International Property Maintenance Code, 2015; National Electrical Code, 2014. Amendments to the 2015 International Codes are available online at <https://www.ecode360.com/NE3373>

1. Fill out, sign application, and remit fee for building permit.
2. Submit two (2) separate copies of your plot (site) plan drawn to scale showing existing structures with the new sun deck addition and its perpendicular distances to the lot lines and from other structures on the lot, if any.
3. Submit two (2) separate complete sets of building construction plans drawn to scale containing the following:
 - a. Foundation or pier plan for patio deck @ $\frac{1}{4}" = 1'0"$
 - b. Deck floor/framing plan @ $\frac{1}{4}" = 1'0"$
 - c. Uniformly distributed live loads shall not be less than 40 psf
 - d. Sectional details and/or other details @ min. $\frac{3}{4}" = 1'0"$
 - i. Sectional views through length and width @ min. $\frac{3}{4}" = 1'0"$
 - ii. Section through stairway from deck to ground level @ $\frac{3}{4}" = 1'0"$
 - e. Elevations (views from all three sides of deck) @ $\frac{1}{4}" = 1'0"$
 - i. *(NOTE: If view from opposite side is identical, indicate this by drawing the side with all items such as stairways, and the note that opposite side is the same except for additional items.)*
4. All overhead electrical wires must be at least twelve (12) feet above finished deck (indicate location and height of overhead wires on site plan, if applicable).
5. Minimum Uniformly Distributed Live Loads
 - o Exterior Balconies 60 psf
 - o Decks 40 psf
 - o Stairs 40 psf
 - o Guardrails and Handrails 200 psf
6. Deck Piers: Deck piers shall extend 6 inches beyond all sides of columns. Example: 6-inch columns would require 18-inch diameter pier. All piers to extend a minimum of 30 inches below grade.
7. Deck Post: for single-level wood-framed
 - o 4" x 4" post permitted up to a finished floor height of 48" above finish grade and up to 40sq ft. for a landing.
 - o 6" x 6" post at all other locations with maximum height of 14 - feet
8. All wood in contact with concrete or masonry shall be pressure preservatively treated in accordance with AWPA. CHEMICAL CHANGES IN PRESSURE TREATED WOODS: Pressure treated wood is a building material most commonly used in decks, fences and homes to protect against insects and fungal decay. For a number of years Chromated Copper Arsenate (CCA-C) has been the primary chemical treatment used in pressure treated wood. Recently, the treated

wood industry voluntarily decided to phase out CCA-C due to negative publicity focused on the use of arsenic in CCA-C. New chemicals currently used to pressure treat wood are more corrosive to steel connectors, anchors and fasteners. Pressure treated wood chemical manufactures require that only chemical resistant fasteners be used. Because of the many variables involved we recommend that you consult with the lumber supplier for the type of fasteners which are approved for use with their products.

9. GUARDS REQUIRED: Porches, Balconies or raised floor surfaces located more than 30 inches above the floor or grade below shall have guards not less than 36 inches in height. Open sides of stairs with a total rise of more than 30 inches above the floor or grade below shall have guards not less than 34 inches in height measured vertically from the nosing of the treads.
10. GUARD OPENING LIMITATIONS: Required guards on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures that do not allow passage of a sphere 4 inches in diameter. Required guards shall not be constructed with horizontal rails or other ornamental pattern that results in a ladder effect.
11. STAIR TREADS AND RISERS: The maximum riser height shall be 7 ¾ inches and the minimum tread depth shall be 10 inches. The riser height shall be measured vertically between leading edges of the adjacent treads. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. the walking surface of treads and landings of a stairway shall be sloped no steeper than one unit vertical in 48 units horizontal (2-percent slope) the greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch, the greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch. Open risers are permitted, provided that the opening between treads does not permit the passage of a 4 inch diameter sphere.
12. Strap each stair stringer to header using ½"(inch) solid metal 1/64th"(inch) thick by 18" (eighteen inches) and fastened with 16's @ 3 inches on center nails per stringer. (example-Simpson LST18)
13. HANDRAILS: Handrails having minimum and maximum heights of 34 inches and 36 inches respectively, measured vertically from the nosing of the treads, shall be provided on at least one side of stairways. All required handrails shall be continuous the full length of the stairs with three or more risers from a point directly above the top riser of a flight to a point directly above the lowest riser of the flight. Ends shall be returned or shall terminate in newel posts or safety terminals. The handgrip portion of handrails shall have a circular cross section of 1 1/4 inches minimum to 2 5/8 Maximum.
14. *MINIMUM of 36" (inches) x 36" (inches) hard surface landing required at bottom of all stair landings.

*Refer to the attached drawings for typical information and requirements that need to be indicated on your site plan and building construction plans.

*The preceding requirements apply to most simple patio deck projects; however, the Plan Reviewer may determine that unusual circumstances dictates the need for additional information on any particular project.

TABLE R507.6
DECK BEAM SPAN LENGTHS^{a, b} (ft. - in.)

SPECIES ^c	SIZE ^d	DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet)						
		6	8	10	12	14	16	18
Southern pine	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 ^e , hem-fir ^e , spruce-pine-fir ^e , redwood, western cedars, ponderosa pine ^f , red pine ^f	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.

- Ground snow load, live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever with a 220-pound point load applied at the end.
- Beams supporting deck joists from one side only.
- No. 2 grade, wet service factor.
- Beam depth shall be greater than or equal to depth of joists with a flush beam condition.
- Includes incising factor.
- Northern species. Incising factor not included.

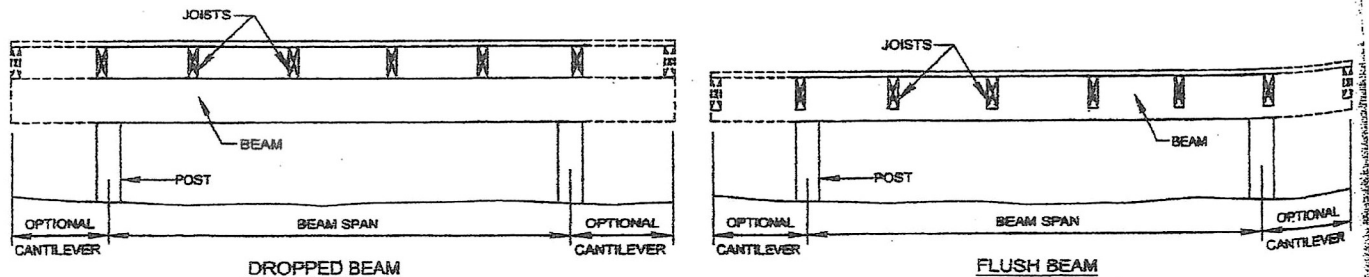


FIGURE R507.6
TYPICAL DECK BEAM SPANS

TABLE R507.4
MAXIMUM JOIST SPACING

MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM ON-CENTER JOIST SPACING	
	Perpendicular to joist	Diagonal to joist ^a
1 1/2-inch-thick wood	16 inches	12 inches
2-inch-thick wood	24 inches	16 inches
Plastic composite	In accordance with Section R507.3	In accordance with Section R507.3

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 R507.5
DECK JOIST SPANS FOR COMMON LUMBER SPECIES^f (ft. - in.)

SPECIES ^a	SIZE	SPACING OF DECK JOISTS WITH NO CANTILEVER ^b (inches)			SPACING OF DECK JOISTS WITH CANTILEVERS ^c (inches)		
		12	16	24	12	16	24
Southern pine	2 x 6	9-11	9-0	7-7	6-8	6-8	6-8
	2 x 8	13-1	11-10	9-8	10-1	10-1	9-8
	2 x 10	16-2	14-0	11-5	14-6	14-0	11-5
	2 x 12	18-0	16-6	13-6	18-0	16-6	13-6
Douglas fir-larch ^d , hem-fir ^d , spruce-pine-fir ^d	2 x 6	9-6	8-8	7-2	6-3	6-3	6-3
	2 x 8	12-6	11-1	9-1	9-5	9-5	9-1
	2 x 10	15-8	13-7	11-1	13-7	13-7	11-1
	2 x 12	18-0	15-9	12-10	18-0	15-9	12-10
Redwood, western cedars, ponderosa pine ^e , red pine ^e	2 x 6	8-10	8-0	7-0	5-7	5-7	5-7
	2 x 8	11-8	10-7	8-8	8-6	8-6	8-6
	2 x 10	14-11	13-0	10-7	12-3	12-3	10-7
	2 x 12	17-5	15-1	12-4	16-5	15-1	12-4

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, $L/\Delta = 360$.

^c Ground snow load, live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ 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.

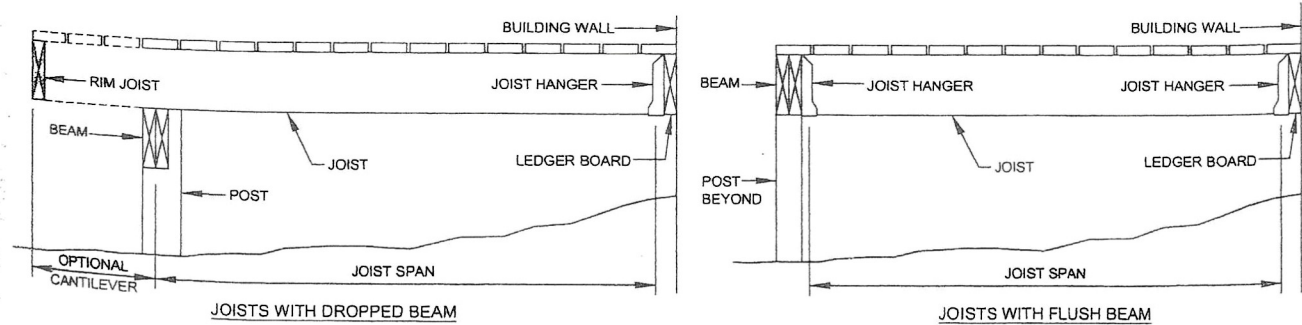
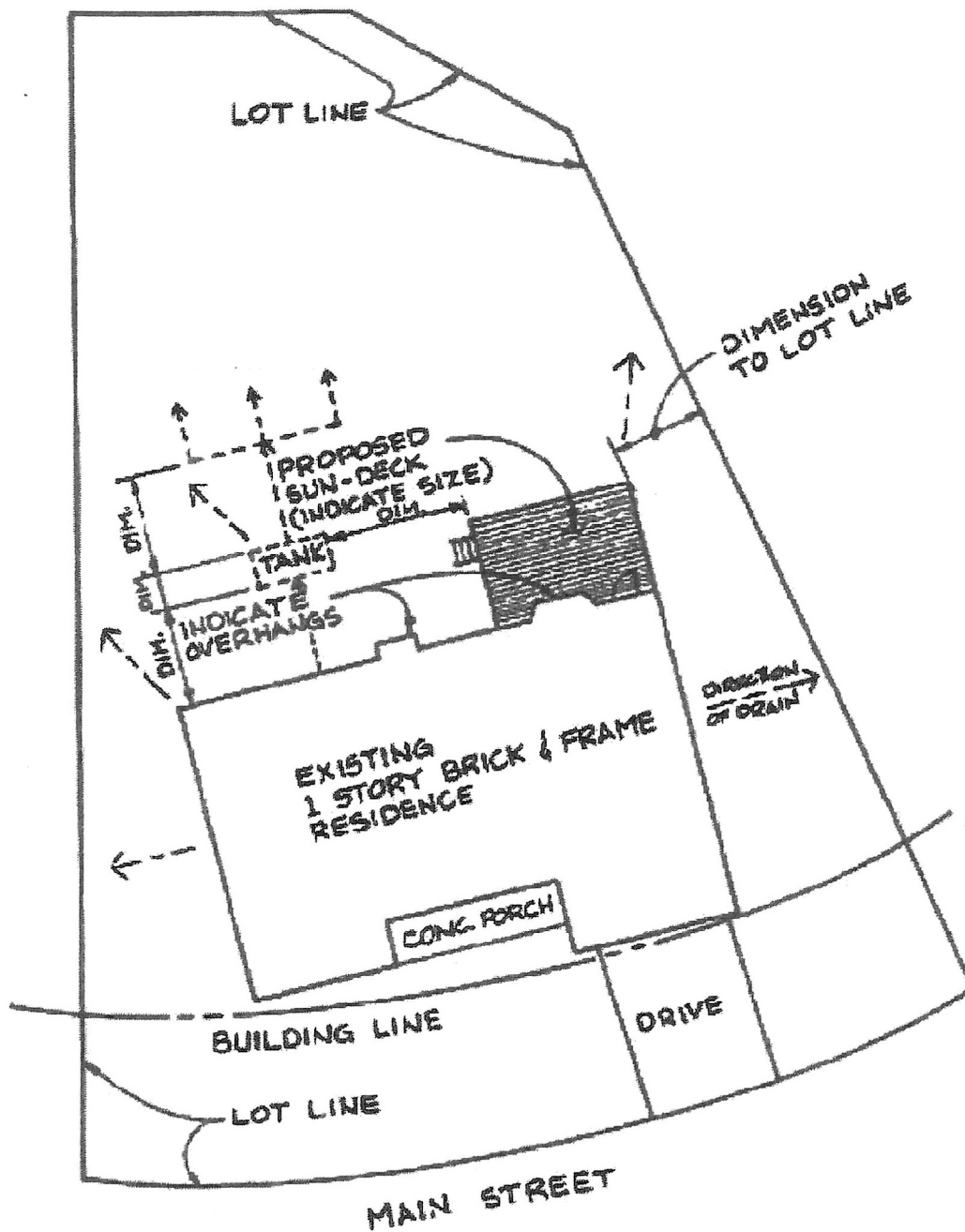


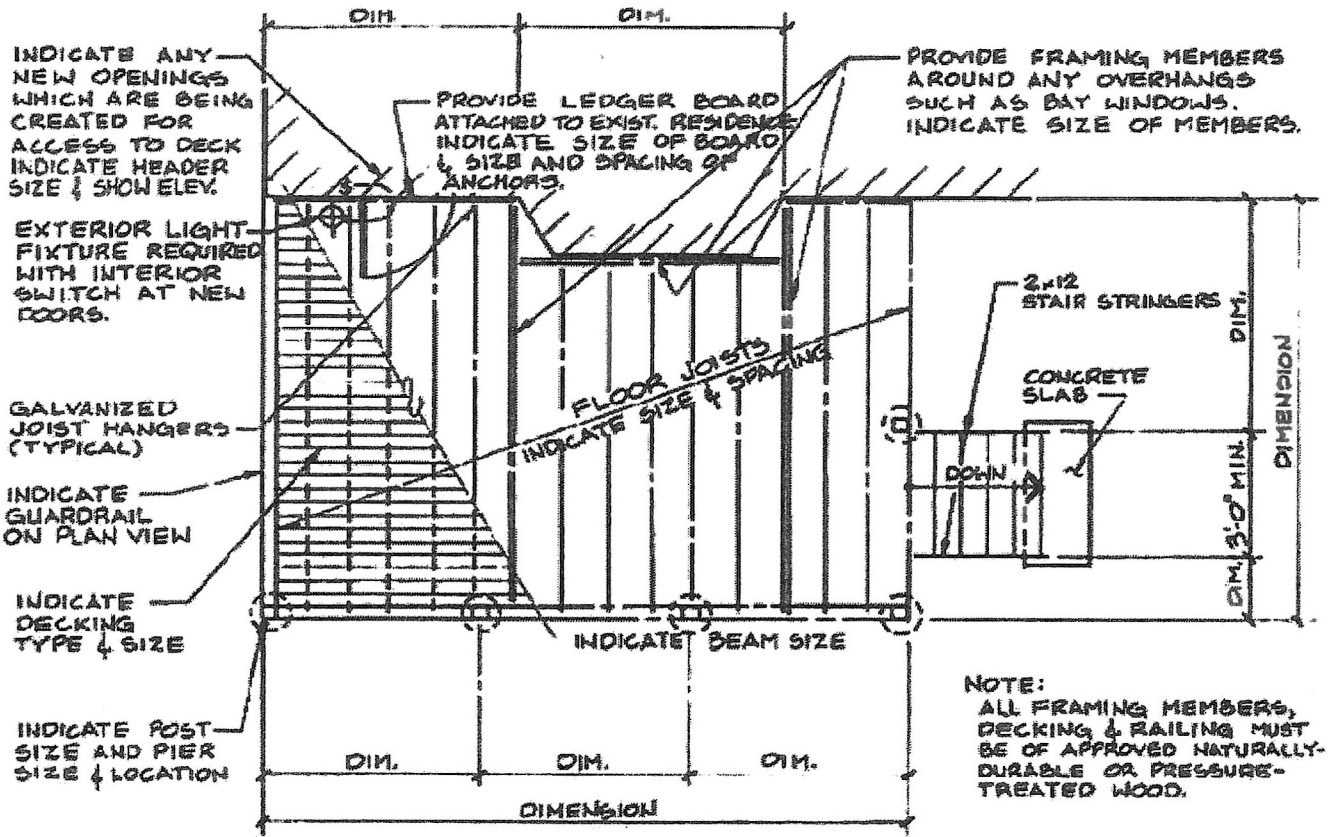
FIGURE R507.5
TYPICAL DECK JOIST SPANS

OWNER _____
ADDRESS _____
SUBDIVISION _____ LOT NO. _____



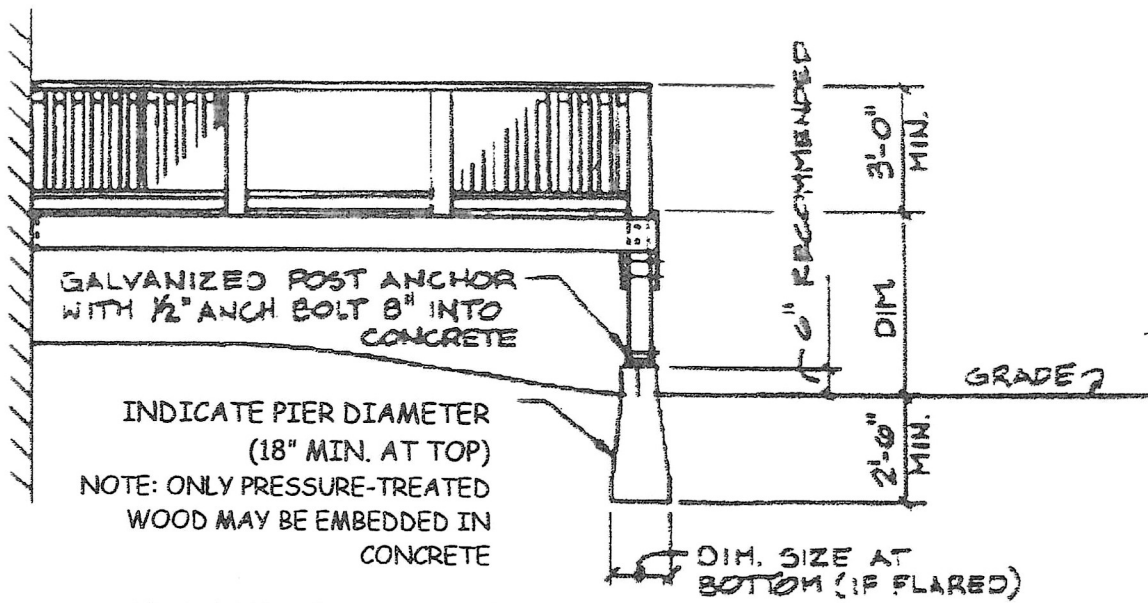
TYPICAL PLOT PLAN FOR PATIO - DECK

SCALE: 1" = 20'-0"



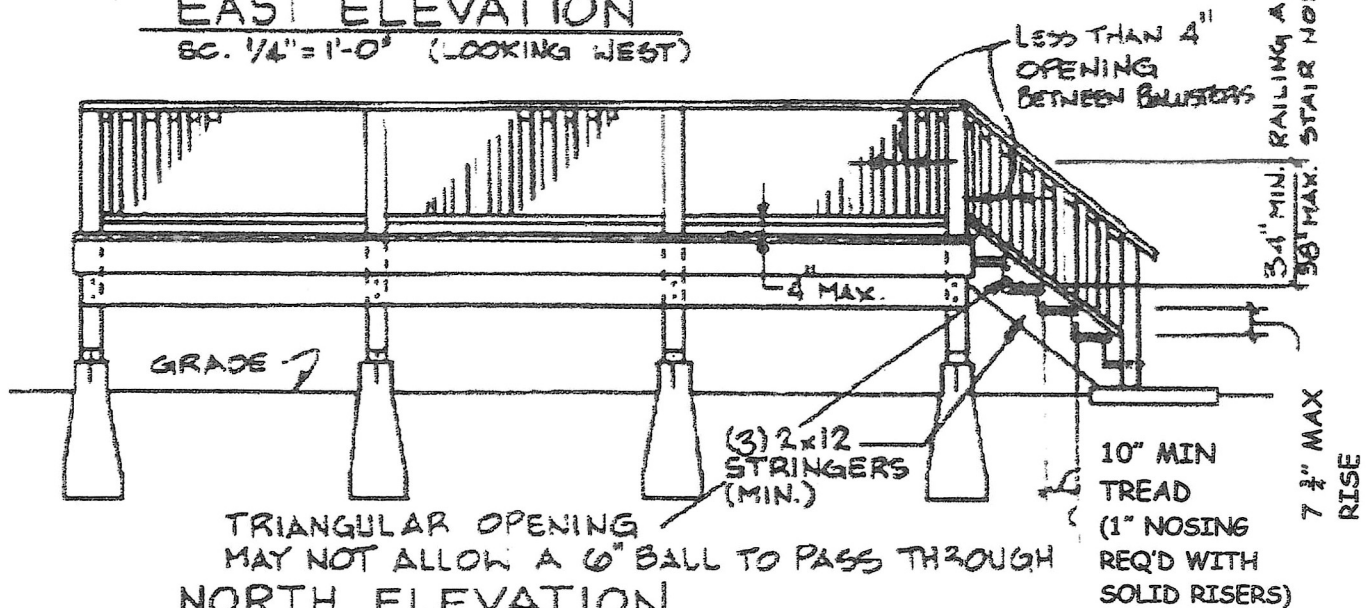
FOUNDATION AND FRAMING PLAN FOR PATIO - DECK

SCALE: 1/4" = 1'-0"



EAST ELEVATION

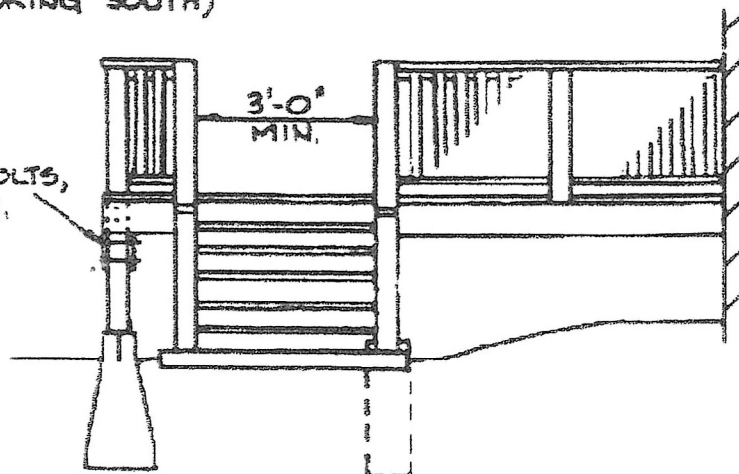
SC. $\frac{1}{4}$ " = 1'-0" (LOOKING WEST)



NORTH ELEVATION

SC. $\frac{1}{4}$ " = 1'-0" (LOOKING SOUTH)

BEAM TO POST CONNECTION
INDICATE: NUMBER OF BOLTS, BOLT TYPE, DIAMETER, AND LENGTH.
INDICATE IF POST IS NOTCHED FOR BEAM (6x6 OR LARGER POST)



WEST ELEVATION

SC. $\frac{1}{8}$ " = 1'-0" (LOOKING EAST)

FLASHING

WOOD DECKING

3/8" X 3" LAGS W/
WASHERS & 4-16d
NAILS @ 16" O.C

2 X JOISTS
@ " O.C

GALVANIZED
JOIST HANGARS

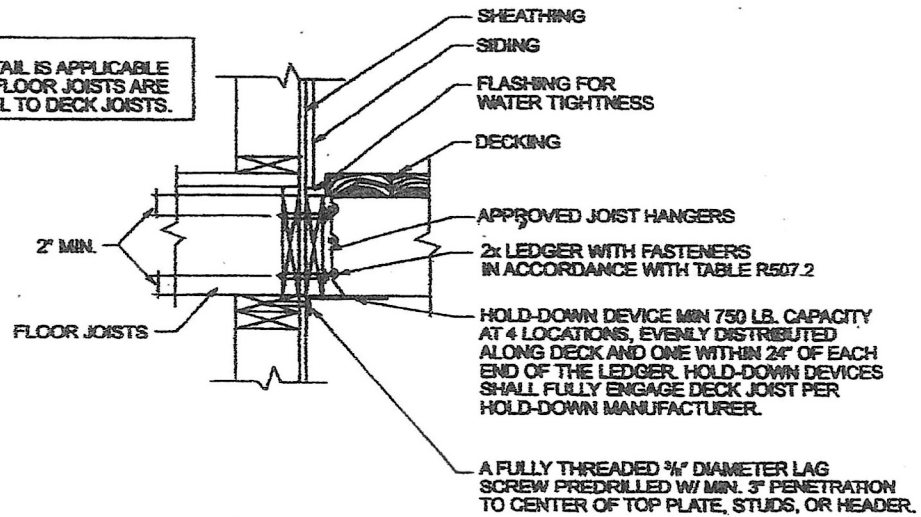
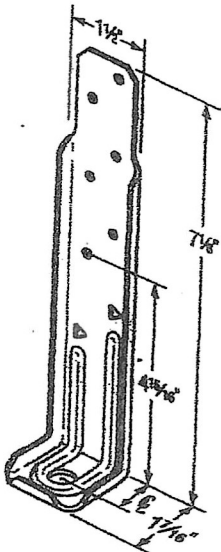
WOOD DECKING

(2) 2 X JOISTS

(2) 2 X HEADERS

1/4" SPACE

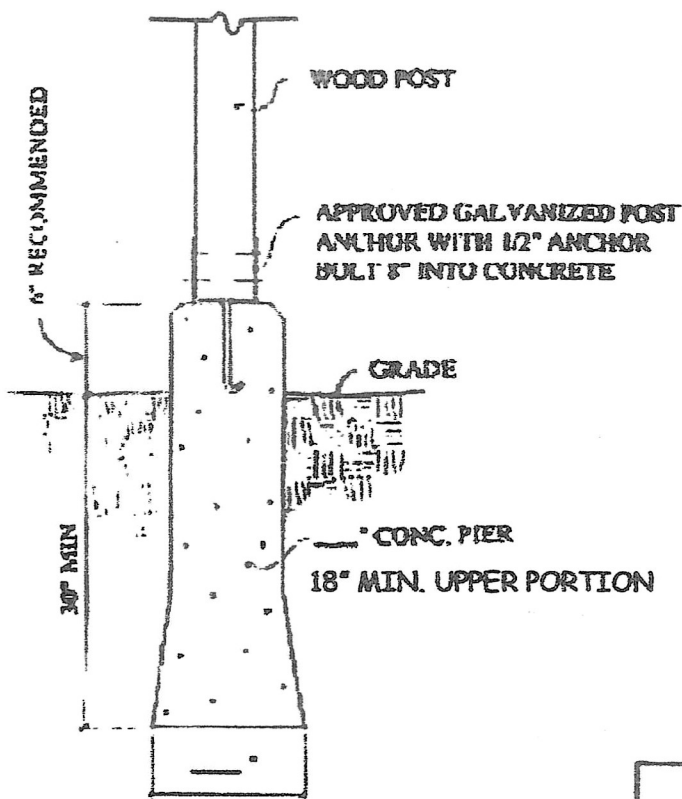
NOTE:
THIS DETAIL IS APPLICABLE
WHERE FLOOR JOISTS ARE
PARALLEL TO DECK JOISTS.



Example: Simpson DTT1Z

DECK-HOUSE CONNECTIONS

Patio-Deck Handout

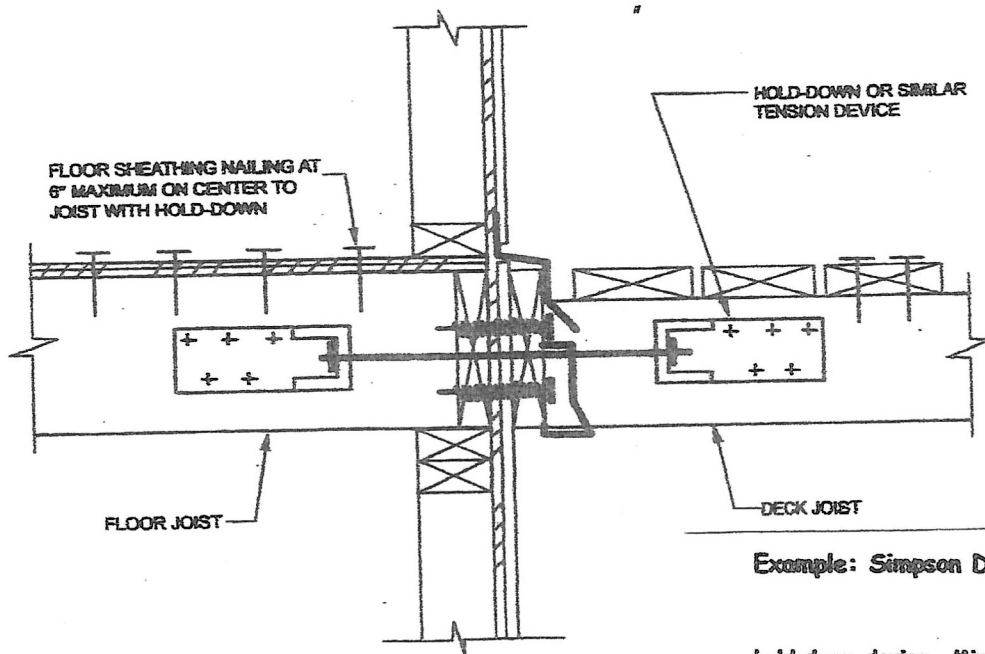


Example: Simpson ABA/ABU/ABW

SPECIFICATIONS

1. Pier spacing and size must be noted on foundation/framing plan.
2. Post type and size must be noted on foundation/framing plan.
3. Pier must be 30" min. below grade, min. 18" diameter.
4. Only pressure treated lumber in embedded post connection.

PIER-POST DETAILS

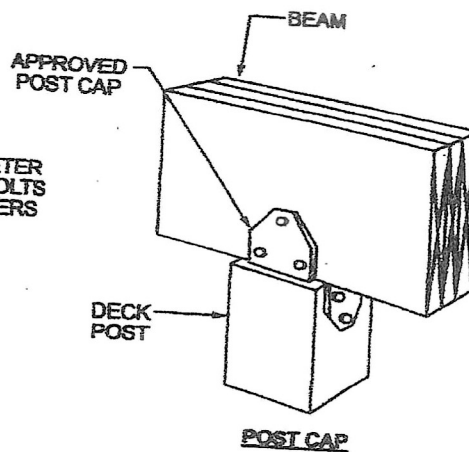
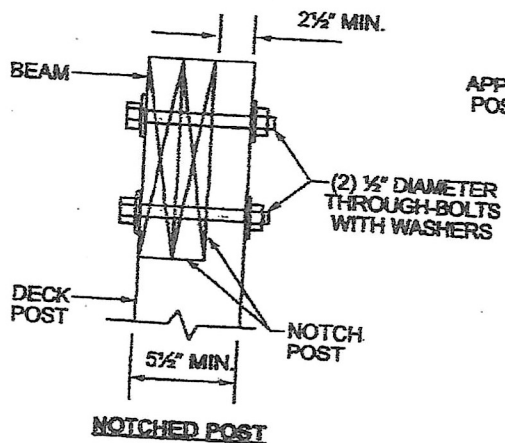
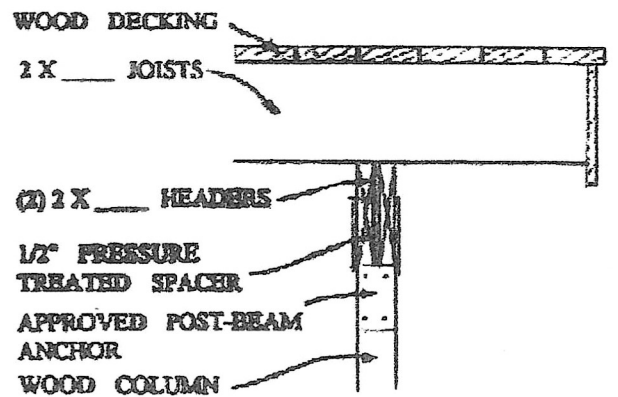
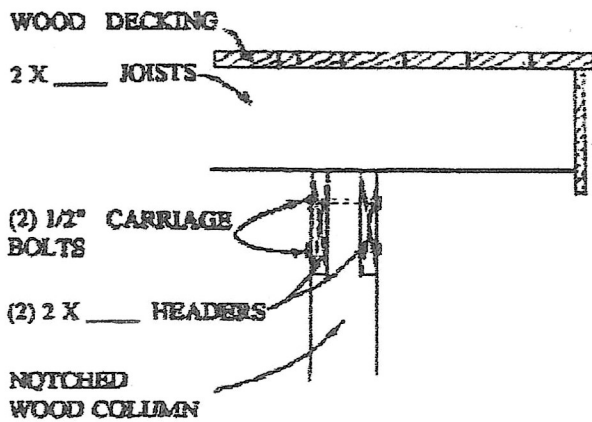
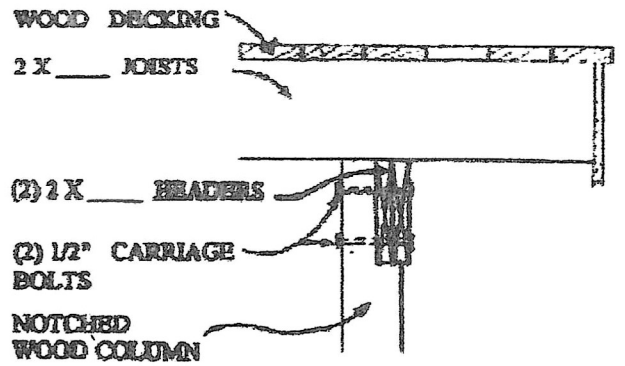
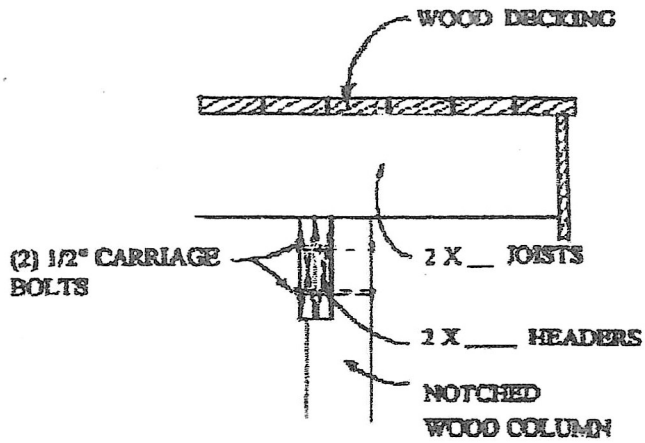


Example: Simpson DTT2Z

hold down device- Minimum of two per deck.

PIER-POST DETAILS

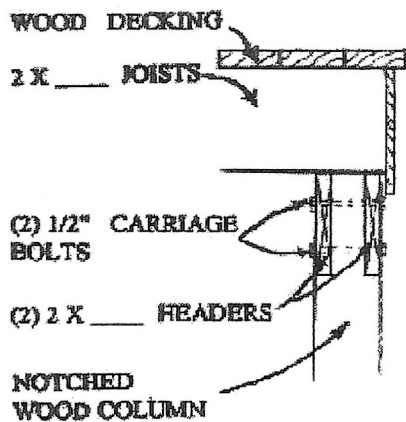
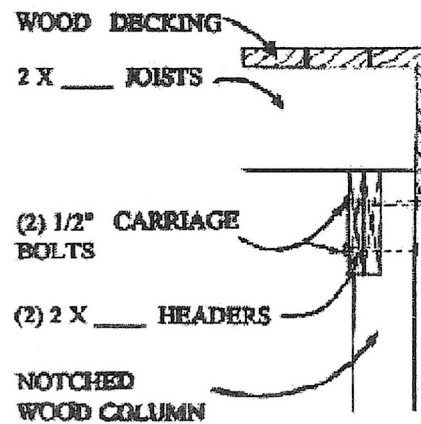
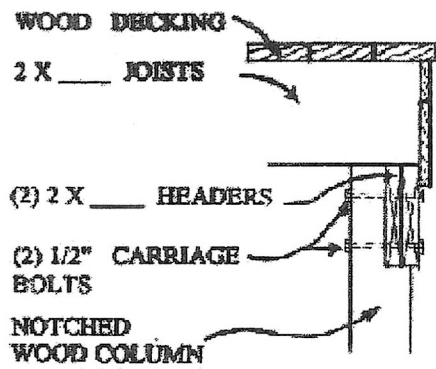
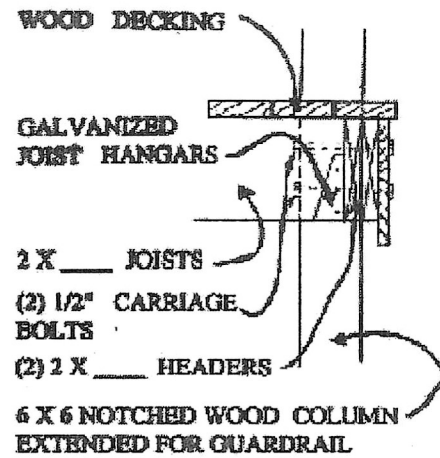
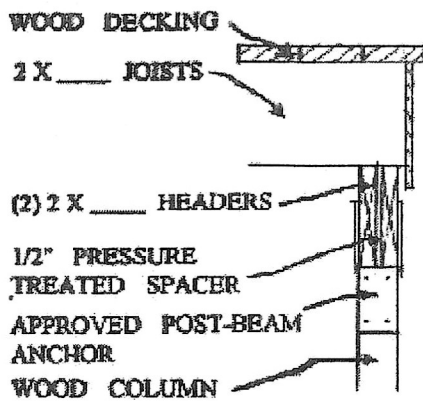
Patio-Deck Handout



Example: Simpson KB21Z

CANTILEVER POST-BEAM CONNECTIONS

Patio-Deck Handout



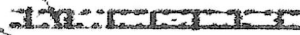
SPECIFICATIONS

1. $\frac{1}{2}$ " carriage bolts recommended for connection.
2. Min 6"x6" columns.

POST-BEAM CONNECTIONS

WOOD DECKING

(2) 2 X ____ JOISTS



(2) 2 X ____ HEADERS

1/2" PRESSURE TREATED
SPACERS

APPROVED POST-BEAM
ANCHOR

WOOD COLUMN



WOOD DECKING

(2) 2 X ____ JOISTS



(2) 2 X ____ HEADERS

1/2" PRESSURE TREATED
SPACER

APPROVED POST-BEAM
ANCHOR

WOOD COLUMN



WOOD DECKING

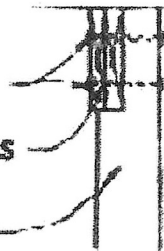
2 X ____ JOISTS



(2) 1/2" CARRIAGE
BOLTS

(2) 2 X ____ HEADERS

NOTCHED
WOOD COLUMN



WOOD DECKING

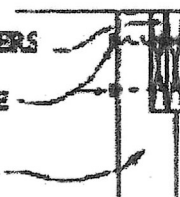
2 X ____ JOISTS



(2) 2 X ____ HEADERS

(2) 1/2" CARRIAGE
BOLTS

NOTCHED
WOOD COLUMN



WOOD DECKING

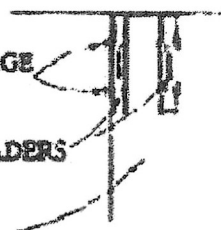
2 X ____ JOISTS



(2) 1/2" CARRIAGE
BOLTS

(2) 2 X ____ HEADERS

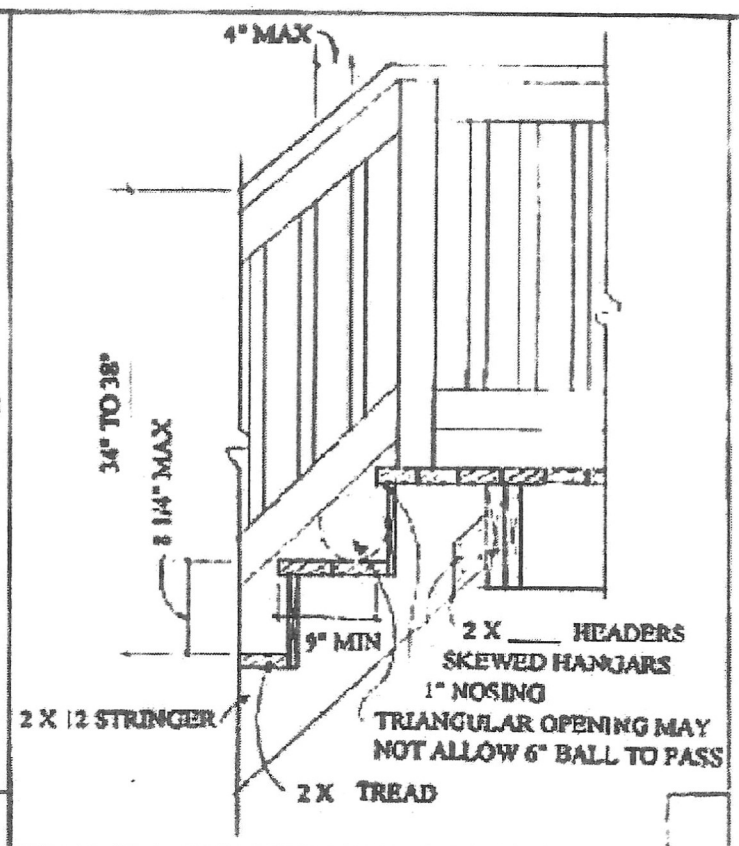
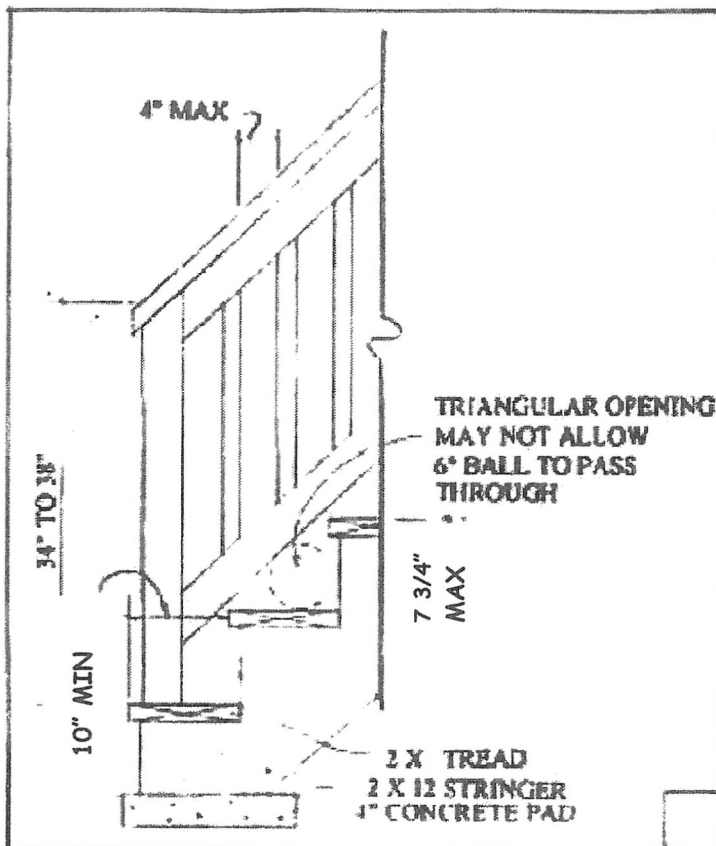
NOTCHED
WOOD COLUMN



SPECIFICATIONS

1. 1/2" carriage bolts recommended for connection

CENTER BEAM CONNECTIONS



SPECIFICATIONS

1. Deck floors less than 29 1/2" above grade having stairs with 3 or more risers need a continuous handrail on only one side of stair 34" to 36" in vertical height.
2. Combination hand and guardrail (with vertical balusters) 36" residential to 42" commercial vertical from tread nosing is required on sides of stairs where the vertical drop from any tread exceeds 29 1/2".
3. 4" max opening between vertical balusters.
4. 7 3/4" max riser height.
5. 10" min tread depth.
6. Triangular opening between stairs and guardrail may not allow 6" ball to pass through (as drawn).
7. Min of ~~two~~ (3) 2x12 stringers required for stairs.

STAIR DETAILS

BALUSTERS @ 4"
MAX SPACING

6X6 NOTCHED
WOOD COLUMN

3'-0" MIN

WOOD POST
EXTENDING THROUGH

BALUSTERS @ 4"
MAX SPACING

3'-0" MIN

4" MAX

OPTIONAL DECORATIVE
CAP

WOOD POST

BALUSTERS @ 4"
MAX SPACING

1/2" BOLTS THROUGH
POST & JOIST

3'-0" MIN

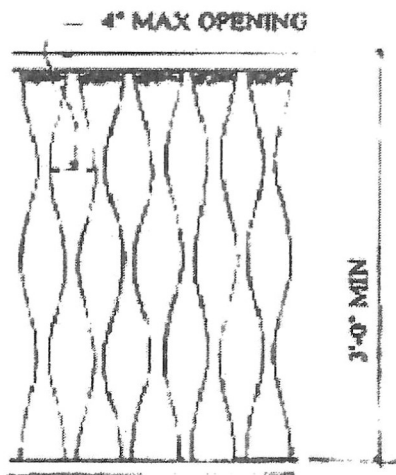
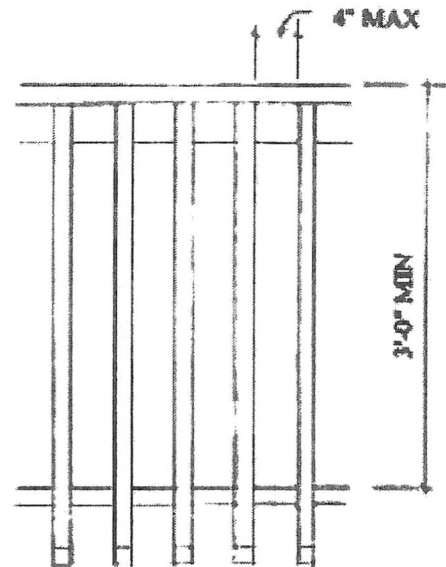
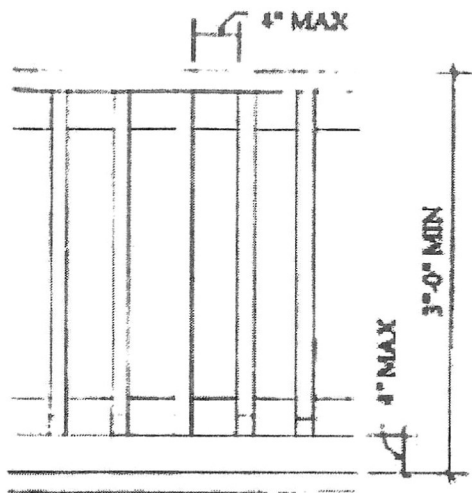
4" MAX

SPECIFICATIONS

1. Deck floors 29 1/2 " or more above grade or lower deck levels, guardrails must be provided around perimeter 36" residential to 42" commercial in height.
2. 4" maximum opening between vertical balusters and also between docking and bottom rod.

GUARDRAIL SECTIONAL DETAILS

Patio-Deck Handout



SPECIFICATIONS

1. Deck floors 29 1/2 " or more above grade or lower deck levels, guardrails must be provided around perimeter 36" residential to 42" commercial in height.
2. 4" maximum opening between vertical balusters and also between docking and bottom rod.

GUARDRAIL ELEVATIONS