

# VILLAGE OF LAKE VILLA BUILDING DEPARTMENT

## DECK/PORCH

Needed for permit:

- Two (2) Plats of Survey showing where you propose to build the deck.
- Two (2) sets of detailed plans, showing the beam, post, and joist sizes. The position of the piers must also be noted.
- Please fill out the attached Deck cross-section (Table 3-B) and Deck (Table 3-D), submit them with your application and include a plan view with dimensions.

Regulations:

- Handrails and guardrails
  - Handrails having a minimum and maximum height of 30” and 38”, respectfully, measured vertically from the nosing of the treads shall be provided on at least one side of stairways of three or more rises. Where there are no partitions on either side of the stairway, handrails are required on both sides.
  - Guardrails shall not be less than 36” in height for any decks, porches, balconies or the raised floor surface located more than 30” above the floor or grade below, or have three stair risers.
  - Handrails and guardrails on open sides of the stairway shall have immediate rails, or ornamental closures, which will not allow passage of an object 4” or more in diameter.
- Piers
  - If the deck is attached to the house, the piers must be 42” deep into the ground.

- Live load
  - The deck must meet 40# per live load. (See attached spans table.)
- Architectural Design Standards for Commercial, Retail, and Office Building and Structures in the CR-CB-SB-LI-LI-2 and the RD zoning districts. Applicability: Existing structures prior to ordinance adoption, any future addition/remodeling shall meet the standard in all of 10-3E-4 section (Village Code Zoning Regulations).
- Decks, Porches and Balconies: 10-3E-5 #M (Village Code Zoning Regulations).

TABLE 3-B

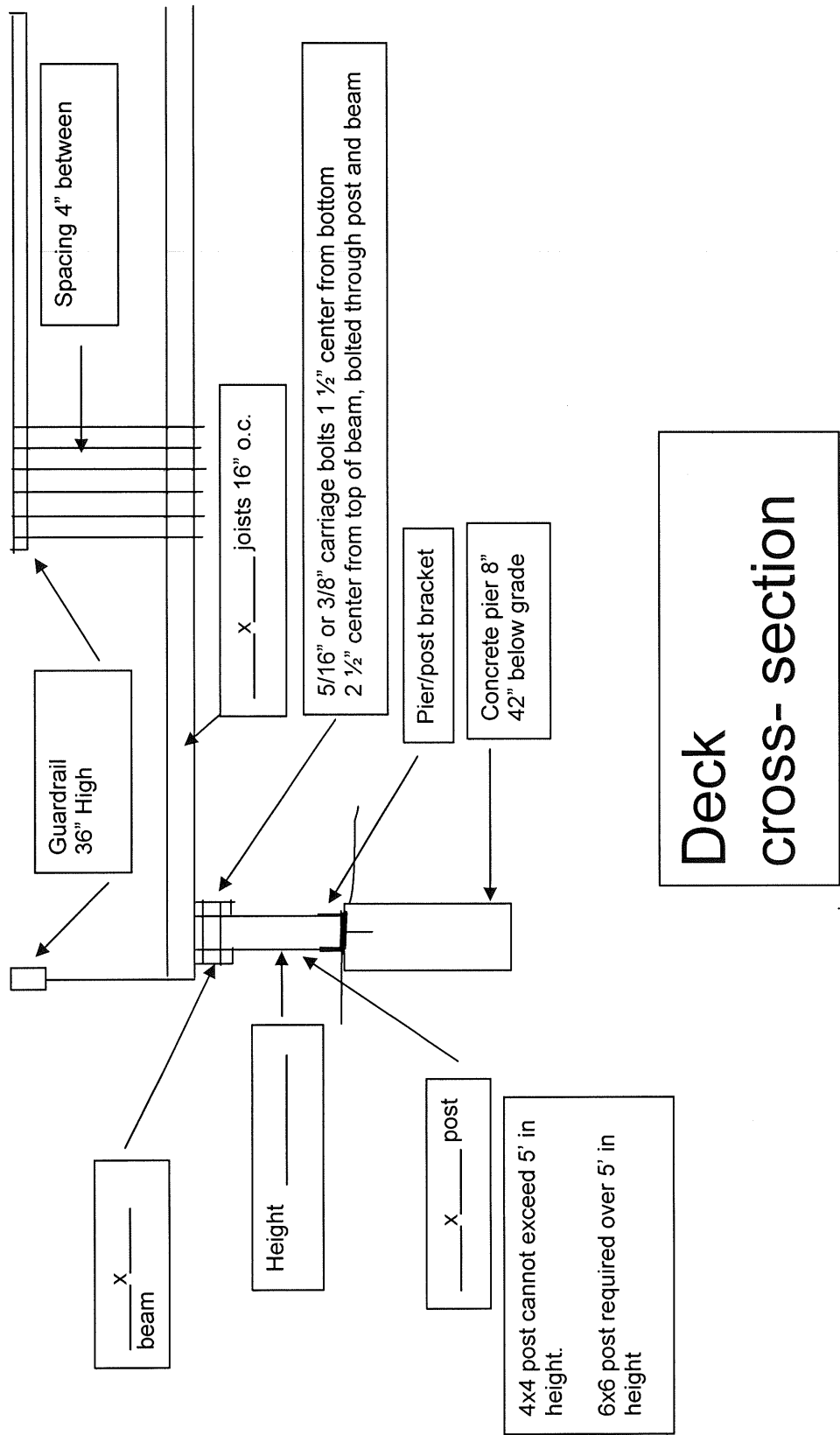


TABLE 3-D

Deck

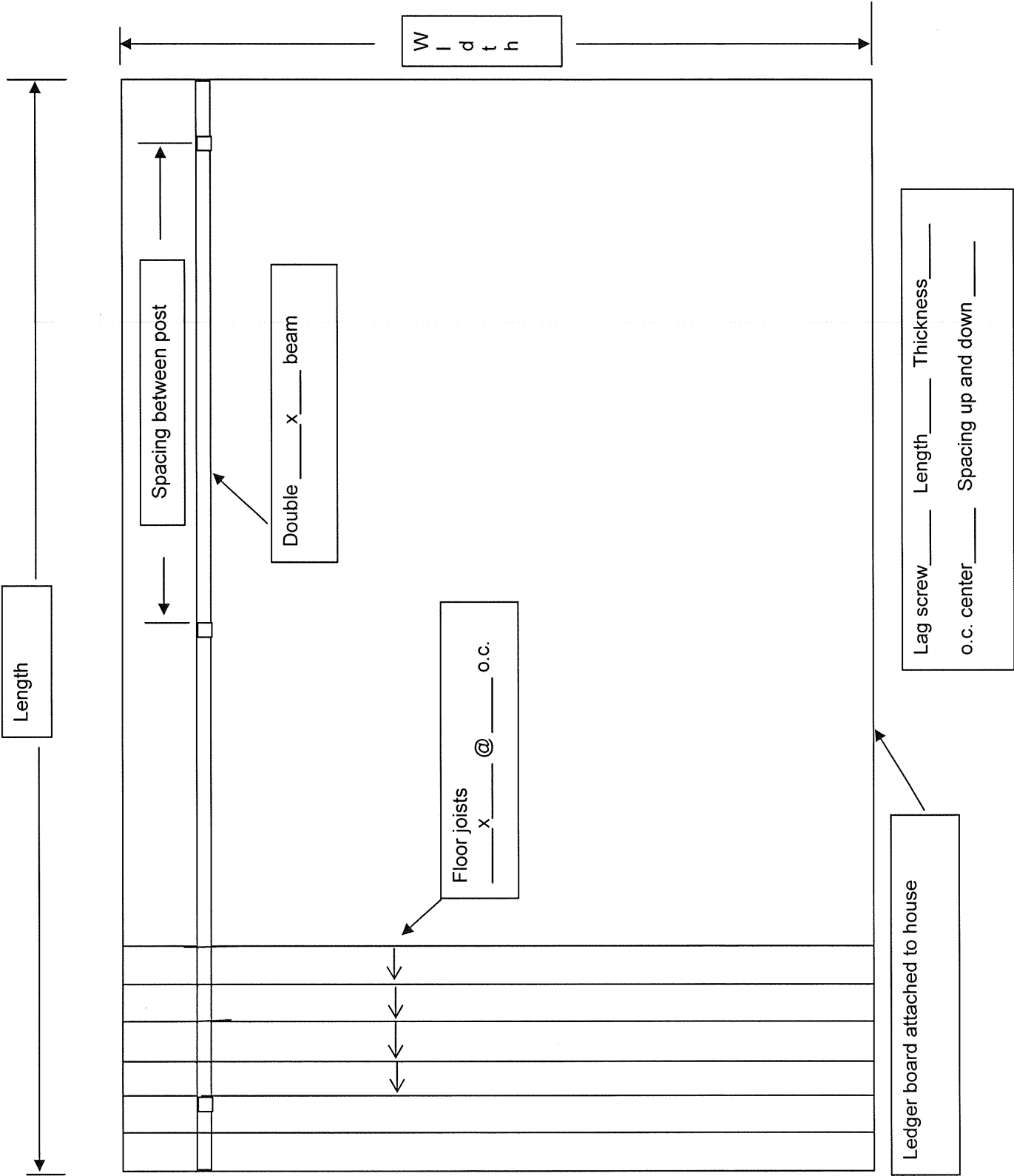
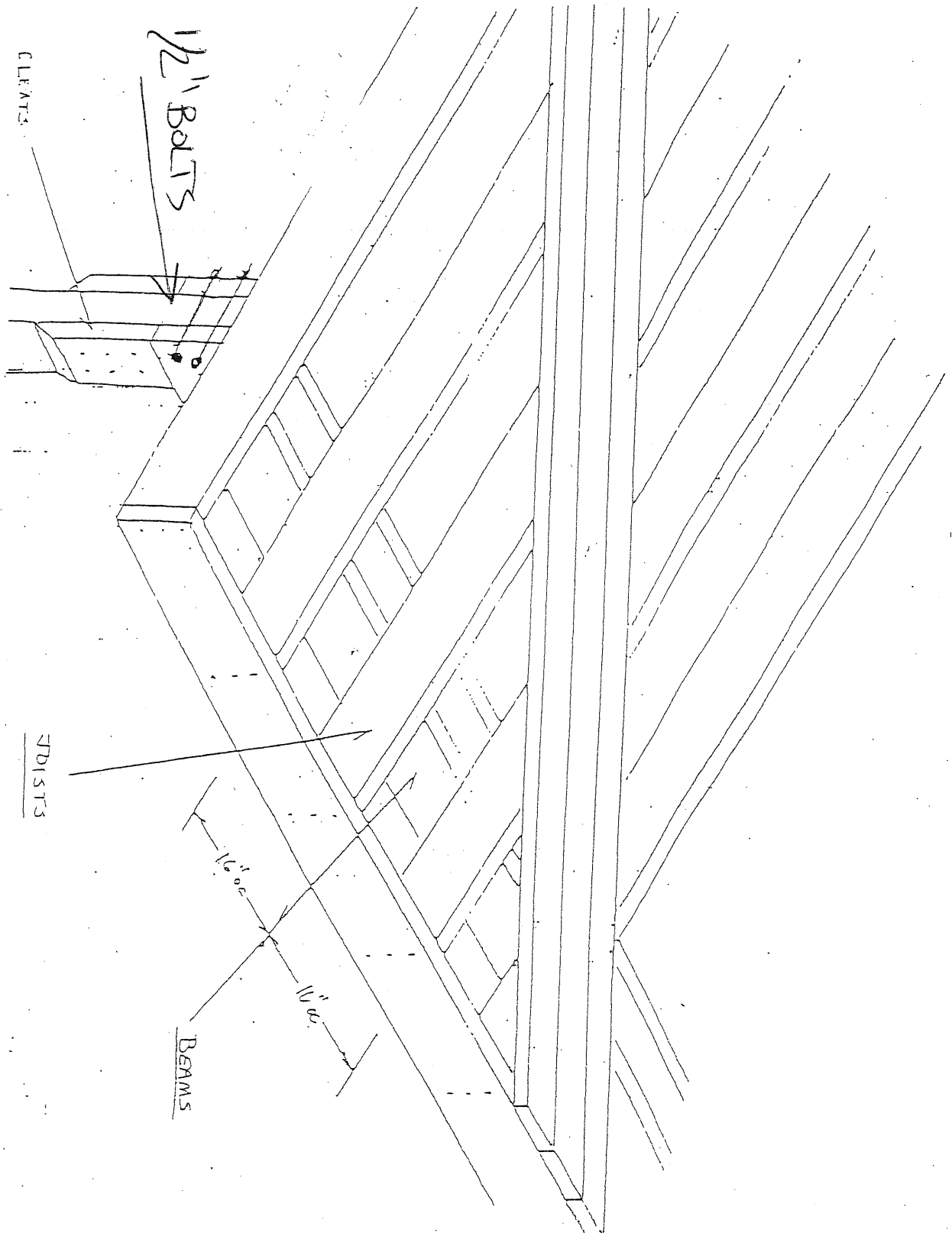


TABLE 3-C



ORT RAIL

TOP RAIL

Residential 36" High  
Commercial 42" High

PICKETS

4"

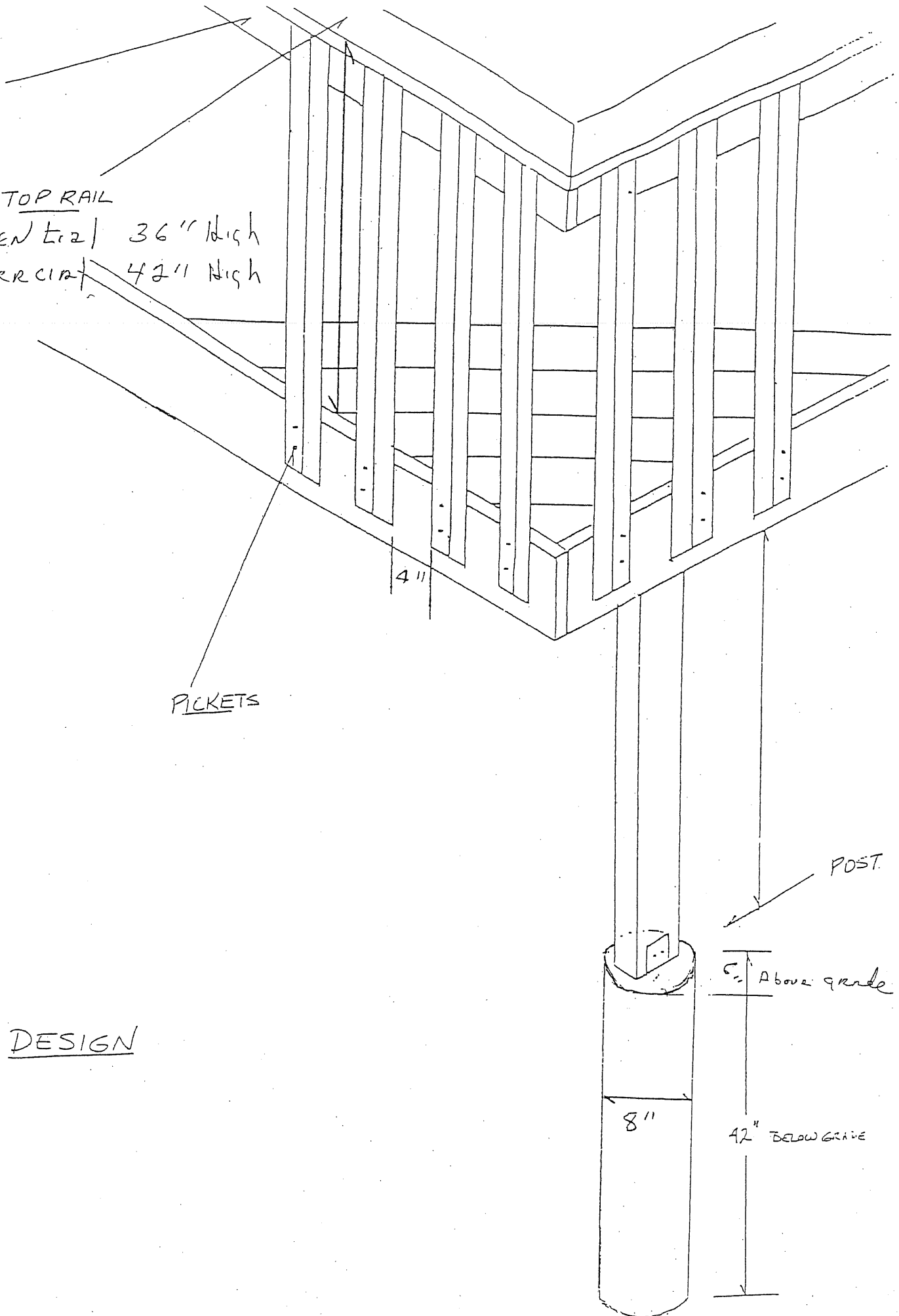
POST.

5" Above grade

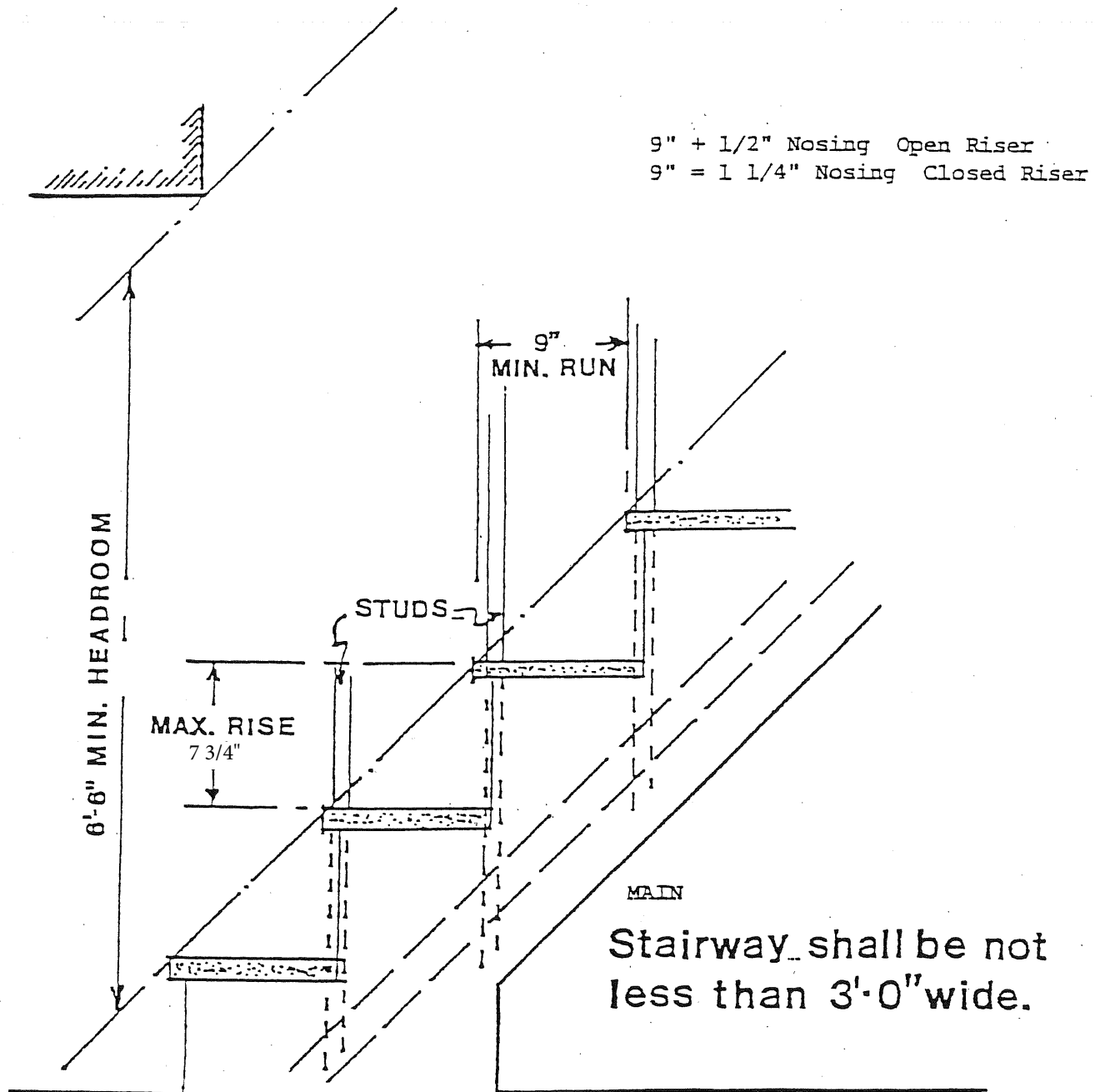
8"

42" Below grade

RAIL DESIGN



## TABLE 2-B STAIRWAYS



### STAIR DETAIL

**TABLE 2-E**

**Cantilever Span For  
Exterior Balcony (no roof)**

<b>Joist size</b>	<b>Spacing</b>	<b>Maximum cantilever</b>
2" x 8"	12" o.c.	39"
2" x 8"	16" o.c.	34"
2" x 10"	12" o.c.	57"
2" x 10"	16" o.c.	49"
2" x 10"	24" o.c.	40"
2" x 12"	16" o.c.	67"
2" x 12"	24" o.c.	54"

**Notes:**

1. Spans are based on No. 2 grade lumber of Douglas fir-larch, hemp-fir, southern pine, and spruce-pine fir (3 or more member repetition).
2. 3 to 1 ratio (back span to cantilever).
3. Connections at the back span shall resist any uplift forces.
4. A full depth rim joist shall be installed at the cantilever end of the joists.
5. Solid blocking shall be provided at the cantilever support.



Application # \_\_\_\_\_

Date: \_\_\_\_\_

Applicants Name: \_\_\_\_\_

# Residential Deck Drawings

## General Notes Checklist

- ☐ 1) All lumber shall be pressure-treated for exterior use. All metal fasteners and hangers shall be G1 85 galvanized, stainless steel, or otherwise compatible with the wood treatment. All bolts shall be ½" diameter, minimum.
- ☐ 2) All beams, joists, posts, and decking shall be number 2 southern pine, or better.
- ☐ 3) All beam or top rail splices shall occur at a post or otherwise on adequate bearing.
- ☐ 4) All footings shall be cast in place concrete with a minimum 2500 psi compressive strength.
- ☐ 5) Guards are required at all areas where the deck/porch floor is greater than 30 inches above grade at any point.
- ☐ 6) Required guards shall be a minimum of 36 inches tall and be constructed such that a 4 inch diameter object will not pass through.
- ☐ 7) Required guards and handrails at stairs shall range from 30 inches to 38 inches vertically above the stair nosings.
- ☐ 8) Handrail ends at the top and bottom, shall terminate into a post or be returned to a wall.
- ☐ 9) Maximum stair riser height shall be 7-3/4". The minimum tread depth shall be 10". The greatest riser height or tread depth cannot exceed the smallest riser height or tread depth by more than 3/8".
- ☐ 10) Guards shall be designed for a 200 pound concentrated load placed along the top rail in any direction, at any point.
- ☐ 11) The deck/porch floor shall be within 7 ½ inches of the top of the door threshold.
- ☐ 12) Design loads:
  - Floor live load 40 pounds per square foot (minimum); dead load 10 pounds per square foot (minimum)
  - Windspeed – 90 mph.
  - Soil bearing pressure – 3000 pounds per square foot
- ☐ 13) This deck/porch is **not designed for hot tub or spa loading**.
- ☐ 14) Post size is based on the height of the deck floor above finished grade at the highest point:
  - 0' to 8' high: 4 x 4, 4 x 6, 6 x 6
  - 8' to 10' high: 4 x 6, 6 x 6
  - 10' and higher: 6 x 6 (required for multilevel decks also)
- ☐ 15) Bridging is recommended at the mid span of all joists.
- ☐ 16) The actual field construction shall match the approved plans. All field changes and/or deviations require Building Department approval.
- ☐ 17) Type of Decking \_\_\_\_\_

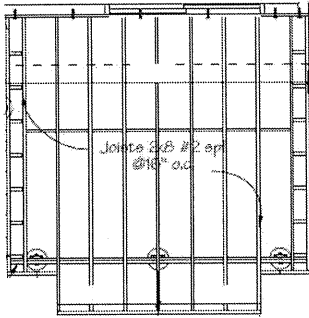
## Framing Table for Single Span Decks

Live load = 40 PSF Dead load = 10 PSF

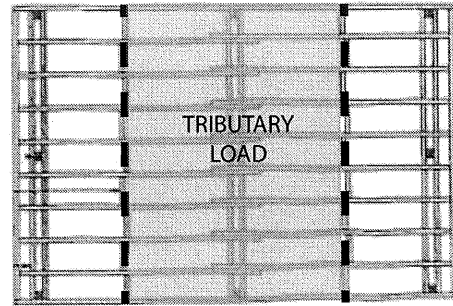
[1] Choose one deck joist size with the associated span, [2] Choose one deck beam size. Entire row applies.

	Joist Length	JOIST SIZE	BEAM TYPE AND PIER SPACING										
			4	5	6	7	8	9	10	11	12	13	14
FLOOR JOIST LENGTH	6 - Feet	1-2 X 6	2-2 X 6	2-2 X 6	2-2 X 6	2-2 X 6	2-2 X 6	2-2 X 6	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 10	
	7 - Feet	1-2 X 6	2-2 X 6	2-2 X 6	2-2 X 6	2-2 X 6	2-2 X 6	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 10	2-2 X 10	
	8 - Feet	1-2 X 6	2-2 X 6	2-2 X 6	2-2 X 6	2-2 X 6	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 10	2-2 X 10	2-2 X 12	2-2 X 12
	9 - Feet	1-2 X 6	2-2 X 6	2-2 X 6	2-2 X 6	2-2 X 6	2-2 X 8	2-2 X 8	2-2 X 10	2-2 X 10	2-2 X 12	2-2 X 12	
	10 - Feet	1-2 X 8	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 10	2-2 X 12	2-2 X 12	3-2 X 10	
	11 - Feet	1-2 X 8	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 10	2-2 X 10	2-2 X 12	2-2 X 12	3-2 X 12	
	12 - Feet	1-2 X 8	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 8	2-2 X 10	2-2 X 10	2-2 X 12	3-2 X 10	3-2 X 12	
	13 - Feet	1-2 X 10	2-2 X 10	2-2 X 10	2-2 X 10	2-2 X 10	2-2 X 10	2-2 X 10	2-2 X 12	2-2 X 12	3-2 X 12	3-2 X 12	
	14 - Feet	1-2 X 10	2-2 X 10	2-2 X 10	2-2 X 10	2-2 X 10	2-2 X 10	2-2 X 10	2-2 X 12	3-2 X 10	3-2 X 12		
	15 - Feet	1-2 X 12	2-2 X 10	2-2 X 10	2-2 X 10	2-2 X 10	2-2 X 10	2-2 X 10	2-2 X 12	3-2 X 10	3-2 X 12		
	16 - Feet	1-2 X 12	2-2 X 12	2-2 X 12	2-2 X 12	2-2 X 12	2-2 X 12	2-2 X 12	3-2 X 12	3-2 X 12	3-2 X 12		
	17 - Feet	1-2 X 12	2-2 X 12	2-2 X 12	2-2 X 12	2-2 X 12	2-2 X 12	2-2 X 12	3-2 X 12	3-2 X 12	3-2 X 12		

1: Choose one joist size \_\_\_\_\_ 2: Choose one beam size \_\_\_\_\_



Single Span Deck



Multi-Span Deck

### Framing Table for Multi-Span Span Decks

Live load = 40 PSF Dead load = 10 PSF

Tributary Load	Post Spacing/ Beam Length	Minimum Beam Size Center Span
3 Feet	6 Feet	1 - 2 X 6
3 Feet	7 Feet	2 - 2 X 6 1 - 2 X 8
3 Feet	8 Feet	2 - 2 X 6 1 - 2 X 10
3 Feet	9 Feet	2 - 2 X 6
3 Feet	10 Feet	2 - 2 X 8
4 Feet	6 Feet	2 - 2 X 6 1 - 2 X 8
4 Feet	7 Feet	2 - 2 X 6 1 - 2 X 8
4 Feet	8 Feet	2 - 2 X 8 1 - 2 X 10
4 Feet	9 Feet	2 - 2 X 8
4 Feet	10 Feet	2 - 2 X 8
5 Feet	6 Feet	2 - 2 X 8 1 - 2 X 10
5 Feet	7 Feet	2 - 2 X 8 1 - 2 X 10
5 Feet	8 Feet	2 - 2 X 8
5 Feet	9 Feet	2 - 2 X 8
5 Feet	10 Feet	2 - 2 X 10
6 Feet	6 Feet	2 - 2 X 8 1 - 2 X 10
6 Feet	7 Feet	2 - 2 X 8 1 - 2 X 10

Tributary Load	Post Spacing/ Beam Length	Minimum Beam Size Center Span
6 Feet	8 Feet	2 - 2 X 8 1 - 2 X 12
6 Feet	9 Feet	1 - 2 X 10
6 Feet	10 Feet	2 - 2 X 10
7 Feet	6 Feet	2 - 2 X 8 1 - 2 X 10
7 Feet	7 Feet	2 - 2 X 8 1 - 2 X 12
7 Feet	8 Feet	2 - 2 X 10
7 Feet	9 Feet	2 - 2 X 10
7 Feet	10 Feet	2 - 2 X 12
8 Feet	6 Feet	2 - 2 X 8 1 - 2 X 10
8 Feet	7 Feet	2 - 2 X 8 1 - 2 X 12
8 Feet	8 Feet	2 - 2 X 10
8 Feet	9 Feet	2 - 2 X 12
8 Feet	10 Feet	2 - 2 X 12
9 Feet	6 Feet	2 - 2 X 8
9 Feet	7 Feet	2 - 2 X 10
9 Feet	8 Feet	2 - 2 X 10
9 Feet	9 Feet	2 - 2 X 12
9 Feet	10 Feet	3 - 2 X 10
10 Feet	6 Feet	2 - 2 X 8

Tributary Load	Post Spacing/ Beam Length	Minimum Beam Size Center Span
10 Feet	7 Feet	2 - 2 X 10
10 Feet	8 Feet	2 - 2 X 12
10 Feet	9 Feet	2 - 2 X 12
10 Feet	10 Feet	3 - 2 X 12
11 Feet	6 Feet	2 - 2 X 8
11 Feet	7 Feet	2 - 2 X 10
11 Feet	8 Feet	2 - 2 X 12
11 Feet	9 Feet	3 - 2 X 10
11 Feet	10 Feet	3 - 2 X 12
12 Feet	6 Feet	2 - 2 X 8
12 Feet	7 Feet	2 - 2 X 10
12 Feet	8 Feet	2 - 2 X 12
12 Feet	9 Feet	3 - 2 X 12
13 Feet	6 Feet	2 - 2 X 10
13 Feet	7 Feet	2 - 2 X 12
13 Feet	8 Feet	3 - 2 X 10
13 Feet	9 Feet	3 - 2 X 12
14 Feet	6 Feet	2 - 2 X 10
14 Feet	7 Feet	2 - 2 X 12
14 Feet	8 Feet	3 - 2 X 10
14 Feet	9 Feet	3 - 2 X 12

### Beam to Post Connection Options

[3] Choose one beam to post connection option. [4] Choose one post size based on the height of the deck.

Option A

Min. 3/4" notch each side

Option B

Min. 1-1/2" notch in post

Option C

2x \_\_\_ each side

Option D

Post cap connector

Option E

Post cap connector

☐ 4x4 posts (up to 8')

☐ 4x4 or 4x6 posts (8'-10')

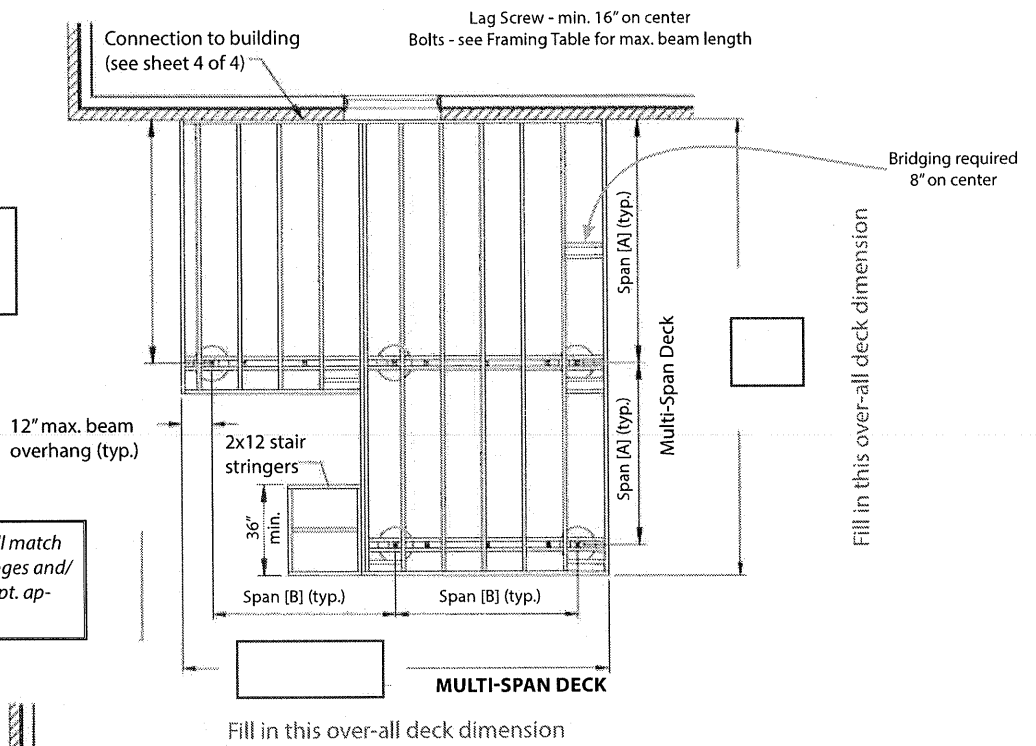
☐ 6x6 posts req'd over 10'

## Foundation & Framing Plan

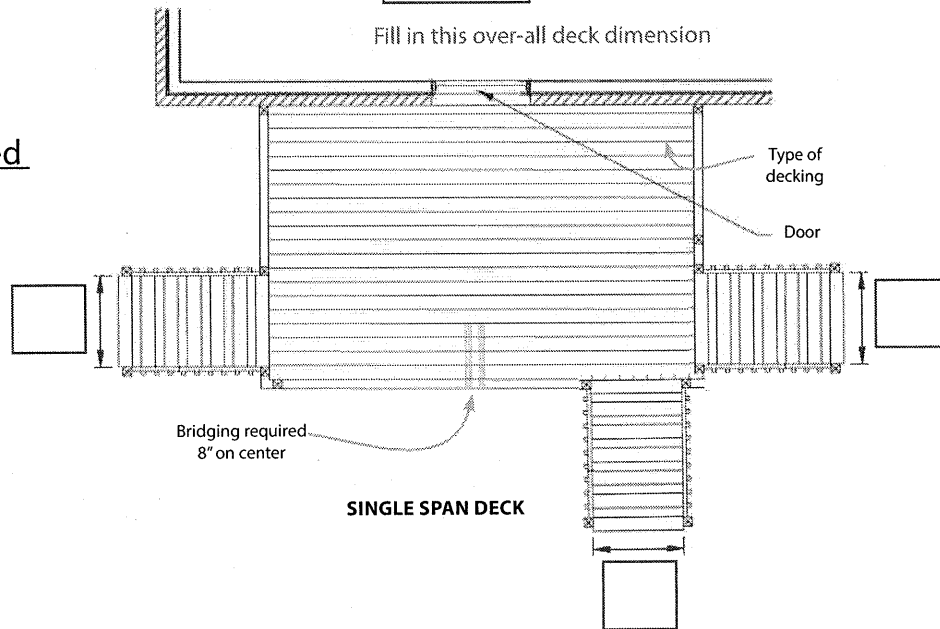
Choose one span configuration:

- ☐ Single-Span  
☐ Multi-Span

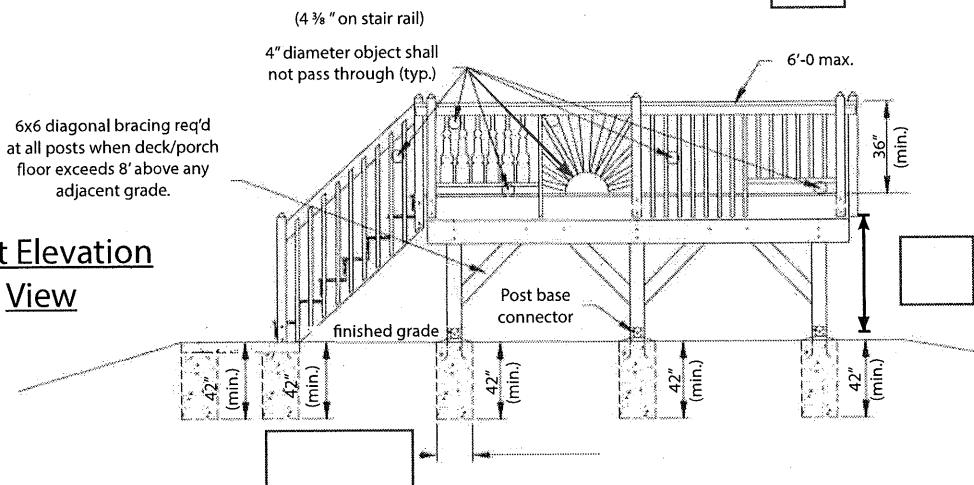
*The actual field construction shall match the approved plans. All field changes and/or deviations require Building Dept. approval. (And as built plans)*



## Deck Finished Floor Plan

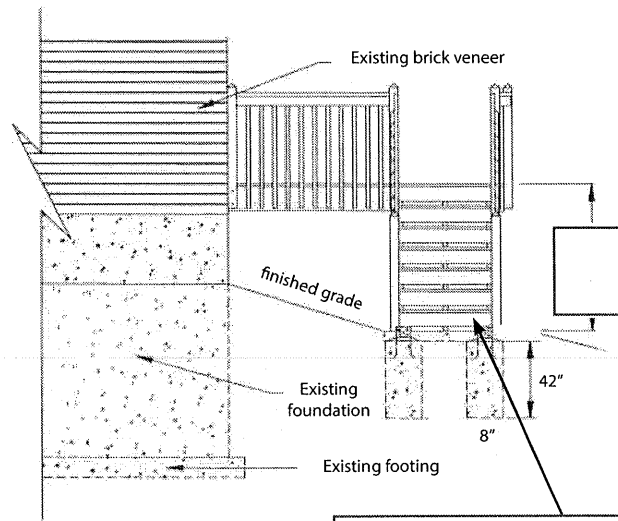


## Front Elevation View



## Left Side Elevation View

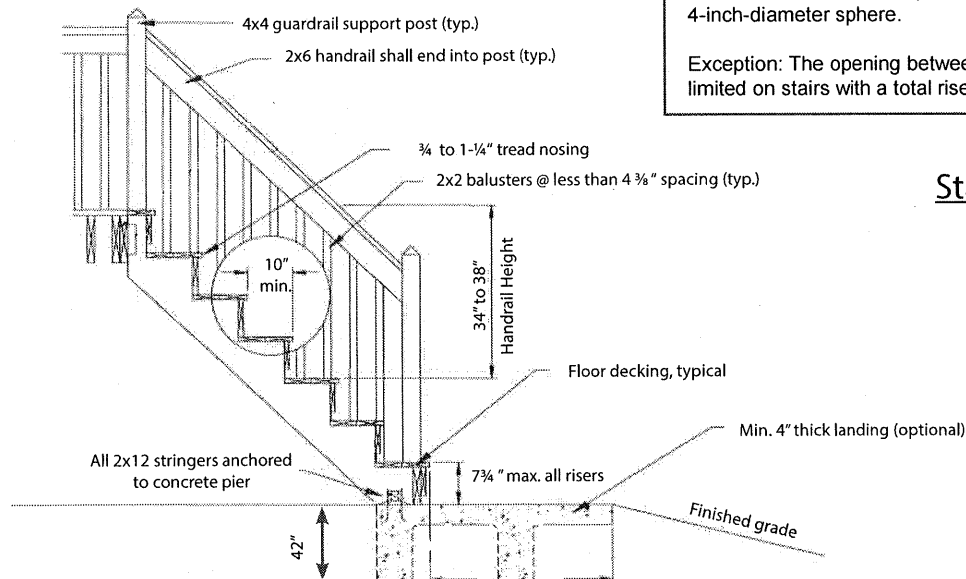
The actual field construction shall match the approved plans. All field changes and/or deviations require Building Dept. approval.



Fill in the highest point  
above grade in inches

Open risers are permitted provided that the opening between treads does not permit the passage of a 4-inch-diameter sphere.

Exception: The opening between adjacent treads is not limited on stairs with a total rise of 30 inches or less.

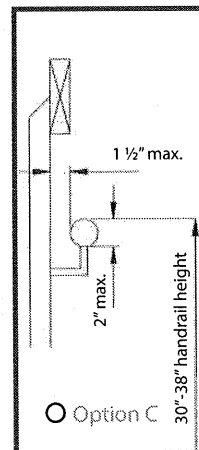
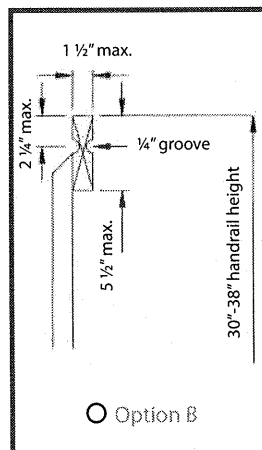
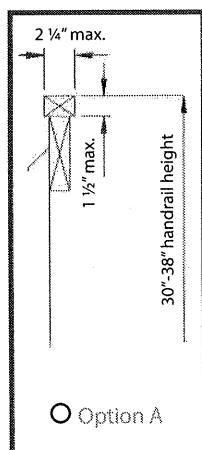


## Stair Section View

## Option 2

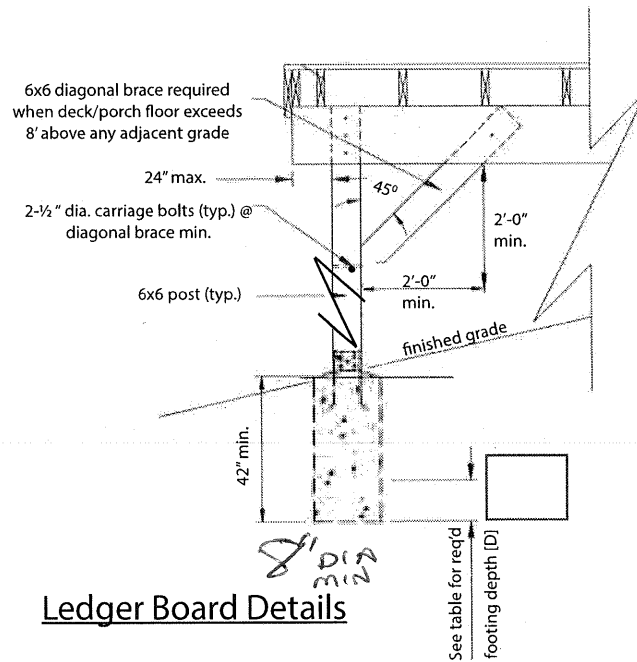
## Handrail Sections

Choose a handrail  
grip style:

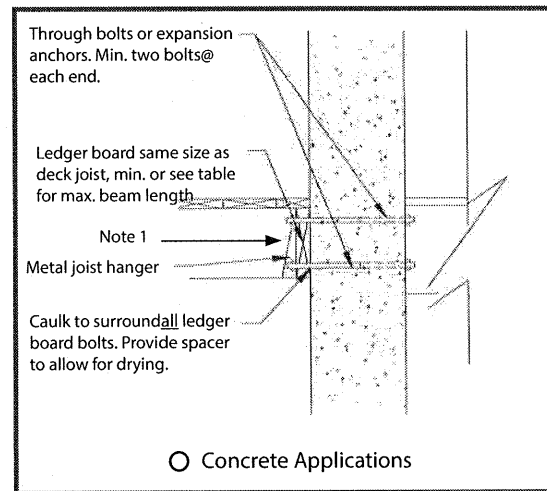
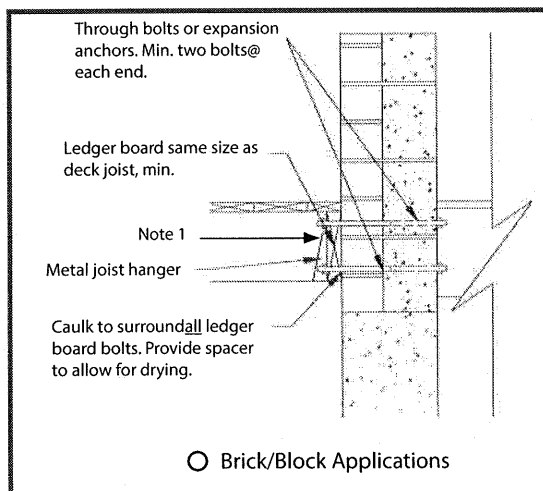
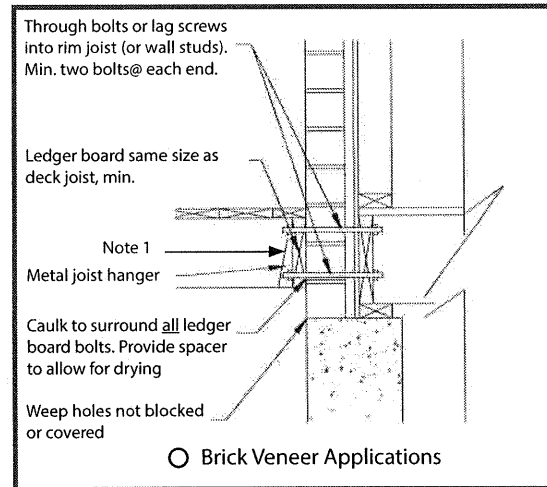
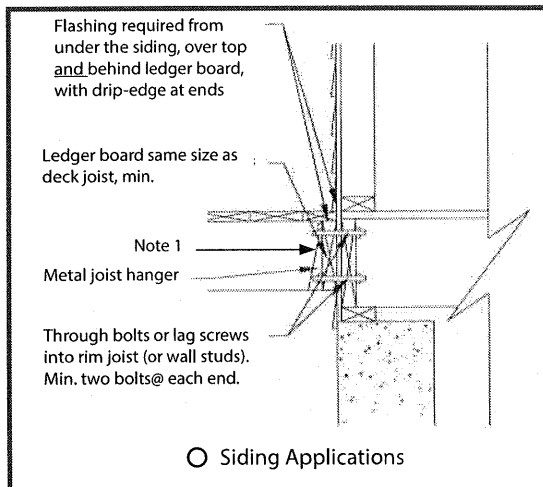


## Post & Beam Detail

The actual field construction shall match the approved plans. All field changes and/or deviations require Building Dept. approval.



## Ledger Board Details



Ledger boards to be bolted with minimum 1/2" bolts 16" O. C. staggered top and bottom. Two bolts are required at each end.  
Note 1: Ledger boards that are parallel to the joists are not required to be bolted to the structure.

### Property Owner:

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

### Contractor:

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

## RECOMMENDED NAILING SCHEDULE

Building element	Nail size and type	Number and location
Stud to sole plate.....	8d common	4 toe-nail
Stud to cap plate.....	16d common	2 toe-nail
Double studs.....	10d common	12" o.c. direct
Corner studs.....	16d common	24" o.c. direct
Sole plate to joist or blocking.....	16d common	16" o.c.
Double cap plate.....	16d common	16" o.c. direct
Cap plate laps.....	16d common	2 Direct
Ribbon strip--6" or less.....	10d common	2 each Direct bearing
Ribbon strip--6" or more.....	10d common	3 each Direct bearing
Roof rafter to plate.....	8d common	3 Toe-nail
Roof rafter to ridge.....	16d common	2 Toe-nail
Jack rafter to hip.....	10d common	3 Toe-nail
Floor joists to studs.....	10d common	5 Direct or
(No ceiling joists).....	10d common	3 Direct
Floor joists to studs.....	10d common	2 Direct
(With ceiling joists).....		
Floor joists to sill or girder.....	8d common	3 Toe-nail
Ledger strip.....	16d common	3 each Direct joist
Ceiling joists to plate.....	16d common	3 Toe-nail
Ceiling joists to parallel rafters.....	16d common	3 Direct
Ceiling joists (laps over partition).....	16d common	3 Direct
Collar beam.....	10d common	3 Direct
Bridging to joists.....	8d common	2 each Direct end
Diagonal brace (to stud and plate).....	8d common	2 each Direct bearing
Tail beams to headers.....	20d common	1 each End
(when nailing permitted).....		4 sq. ft. floor area
Header beams to trimmers.....	20d common	1 each End
(when nailing permitted).....		8 sq. ft. floor area
1" roof decking.....	8d common	2 each Direct rafter
(6" or less in width).....		
1" roof decking.....	8d common	3 each Direct rafter
(over 6" in width).....		
1" sub-flooring (6" or less).....	8d common	2 each Direct joist
1" sub-flooring (8" or more).....	8d common	3 each Direct joist
2" sub-flooring.....	16d common	2 each Direct joist
1" wall sheathing (8" or less in width).....	8d common	2 each Direct stud

# RECOMMENDED NAILING SCHEDULE

Building element	Nail size and type	Number and location
1" wall sheathing (over 8" in width).....	8d common	3 each Direct stud
Plywood roof and wall sheathing..... (1/2" or less)	6d common	6" o.c. Direct edges and 12" o.c. intermediate
Plywood roof and wall sheathing..... (5/8" or greater)	8d common	6" o.c. Direct edges and 12" o.c. intermediate
(5/16", 3/8", or 1/2").....	16 ga. galvanized wire staples, 3/8" minimum crown; length of 1" plus plywood thickness	4" o.c. edges and 8" o.c. intermediate
(5/8").....	Same as immediately above	2 1/2" o.c. edges and 5" o.c. intermediate
Plywood subflooring (1/2").....	6d common or 6d annular or spiral thread	6" o.c. Direct edges and 10" o.c. intermediate
(5/8" or 3/4").....	8d common or 6d annular or spiral thread	6" o.c. Direct edges and 10" o.c. intermediate
(1", 1 1/8").....	10d common or 8d ring shank or 8d annular or spiral thread	6" o.c. Direct edges and 6" o.c. intermediate
(1/2").....	16 ga. galvanized wire staples	4" o.c. edges and 7" o.c. intermediate
(5/8").....	3/8" minimum crown, 1 5/8" length	2 1/2" o.c. edges and 4" o.c. intermediate
Built up girders and beams.....	20d common	32" o.c. Direct
Continuous header to stud.....	8d common	4 Toenail
Continuous header--two places.....	16d common	16" o.c. Direct
1/2" Fiberboard sheathing.....	1 1/2" galvanized roofing nail or 16 gauge staple, 1 1/8" long with minimum crown of 7/16"	3" o.c. exterior edge, 6" o.c. intermediate

## RECOMMENDED NAILING SCHEDULE

Building element	Nail size and type	Number and location
25/32" Fiberboard sheathing.....	1 3/4" gal- vanized roof- ing nail or 8d common nail or 16 gauge staple, 1 1/2" long with minimum crown of 7/16"	3" o.c. exterior edge, 6" o.c. intermediate
Gypsum sheathing.....	12 gauge 1 1/4" large head corrosion-re- sistive	4" o.c. on edge, 8" o.c. inter- mediate
Particleboard.....	6d common	6" o.c. direct edges and 8"
(3/8"-1/2")		o.c. intermediate
(5/8"-3/4").....	8d common	6" o.c. direct edges and 8"
		o.c. intermediate
(3/8"-1/2").....	6d common	6" o.c. direct edges and 12"
		o.c. intermediate
(5/8"-3/4").....	8d common	6" o.c. direct edges and 12"
		o.c. intermediate
Shingles, Wood*.....	No. 14 B&S corrosion- resistive	2 each bearing
Weather boarding.....	8d corrosion- resistive	2 each bearing

\*Shingle nails shall penetrate not less than 3/4 inch into nailing strips, sheathing or supporting construction except as otherwise provided.