



## WOOD PATIO DECK PERMIT & CONSTRUCTION INFORMATION

### COMMUNITY DEVELOPMENT DEPARTMENT

(847) 506-6030 [www.cityrm.or/rmcd](http://www.cityrm.or/rmcd)

This information is designed to assist an applicant in applying for a permit for a simple attached deck that will meet the codes of the City of Rolling Meadows. Elaborate decks with many angles and levels or shelters may involve more than the information contained herein is intended to cover.

#### Permit Requirements

- TWO (2) Plat of Surveys showing proposed construction.
- THREE (3) sets of construction plans showing compliance with City codes. All plans must be legible and drawn to scale. Plans should be of architectural quality with sufficient detail to demonstrate code compliance and to guide construction.
- All applicable permit applications completed with the following information:
  - Name & address of project
  - Real estate index number
  - Valuation (cost of construction)
  - Owner or Agent for Owner's Name & Signature
  - Contractor Listing complete with license and bond if applicable

#### Specific Drawing Requirements

- Pier location diagram
- Framing detail
- Pier detail
- Cross section diagram
- All lumber sizes noted
- Type of lumber noted
- Type of fasteners noted: new treated lumber has new fastener material minimums, such as stainless steel.

**Note:** Special circumstances or unique designs may require the plan reviewer in the Community Development Department to ask for additional information or detail, or require a registered architects plans.

#### Miscellaneous Requirements

- Ten-inch (10") piers are minimum diameter.
- Support posts are not to be embedded into concrete.
- The ground under the deck must have all vegetation removed and be covered with a vapor barrier (minimum 6-mil plastic) and a stone ballast (generally pea gravel). This is to prevent weed growth and an unsightly appearance.
- Manufacturers of components will prescribe the method of installation and use of their product. The building code requires these items to be used in accordance with the instructions. Joist hangers are such a product and the manufacturer's instructions must be followed (particularly for nailing). Nails and screws should be approved for use with today's treated lumber.
- Overhead electrical services must be a minimum of 10 ft. above deck surface.

Revised February 2011

## *Here is a guide to how the permit process works:*

- ◆ Submit a completed permit application(s) with all the necessary information attached. (i.e. plans, plats, etc.) Refer to the specific application information packet for instructions. Any additional pertinent information should be addressed in a cover letter with your application submittal. If possible, copies of your contractors' bonds and licenses should also be submitted at this time.
- ◆ The plans are then put into the system and reviewed for Zoning and Code compliance. There may be more than one review of your plans (building, mechanical, plumbing, zoning, etc.).
- ◆ If your plans were not approved, you will receive a call to advise you that a written plan review is ready for pick-up. There will be no charge at this time. You should review the questions from the plan reviewer and address the points with revised plans. Any revision to the plans should be clearly marked or highlighted and be accompanied by a cover letter explaining any changes made or answering any questions. Your cover letter should reference owner(s) name, job address and plan review number. Once you resubmit your revised plan the process will continue as explained above until your plans are approved.
- ◆ When the plans are approved, you will get a call advising you that your permit is ready and you will be advised of the permit fees. If any contractors have not yet been licensed or bonded as required, you will be notified at this time. All **required** bonds and licenses must be on file with us prior to permit issuance.
- ◆ Payment is due at the time the permit is issued. In addition to cash or check, the City accepts MasterCard, Visa and Discover credit cards.
- ◆ At permit issuance you will receive your permit, a placard for display on the job site as well as a copy of the approved plans, which must remain on the job site at all times.
- ◆ After the permit has been issued you may begin construction. Call our office for the appropriate inspections as the work progresses.
- ◆ Upon completion of the project and after you pass all the required final inspections, the refundable bond (if any) will be refunded to you.

### **Normal turn-around time for a permit is:**

- 5 days for residential accessory uses (garages, pools, etc.).
- 10 days for new residential and residential additions and commercial alterations.
- 15 days for new commercial and industrial buildings.

**PIERS**

- Piers are the foundation for the deck structure. They must be of sufficient size and depth to support the various loads that will be imposed on the structure. They are also designed to resist the uplift effects of frost, thus the minimum depth of 42".

• SIZE	• AREA OF DECK SUPPORTED
• 10 - inch round	• 37 square ft.
• 12 - inch round	• 53 square ft.

- In most cases, a 10" diameter pier will be sufficient. If the Building Department anticipates greater than average loading on the pier or poor soil conditions the size may have to be increased. If a future roof is contemplated then pier diameter should be increased accordingly.
- The wood posts that support the girder may **not** be imbedded in the concrete. A post anchor is to be utilized.
- Piers must be cast in place concrete with the top of the pier at least 4" above surrounding soil grade.

**BEAMS (GIRDERS)**

The girder or beam as it is sometimes called (also called a header), is the structural element that supports the joist. It also must be sized according to the conditions that exist for a particular design of deck.

Use the table below to size the beam that will carry the joist. (The width of 4" for the beam can be accomplished by using a 4x piece or by nailing 2-2x pieces together with nails staggered (top & bottom) at 12" on center).

**An example for using the table:**

A wood deck is to extend 12 ft. out from the house with the girders to be out 10 ft. from the house. Support posts for the girder will be 8 ft. apart.

1. First, we must find the spacing between the girders by adding the length of unsupported joist. In this case, we have 10 ft. out from the house and 2 ft. beyond the girder for a total of 12 ft. 10 ft. is divided by 2 to give a space value of 5 ft. plus the 2 ft. overhang for a total of 7 ft. tributary to the beam.
2. Now we look under the column for 8 ft. and find the number closest to the 8 ft. span for a 40 p.s.f. live load without going below 8 ft. In this case, it is 9'6".
3. Going to the left to the column for the size of the wood girder, we see that the size must be a 4"x10" or a 6"x8". Those are the approximate girder sizes for this deck example.

SIZE OF WOOD GIRDERS 2		FLOOR LIVE LOAD (psf)	SPACING BETWEEN GIRDERS OR BETWEEN GIRDERS AND LOAD-BEARING WALLS 3				
			4 feet	6 feet	8 feet	10 feet	16 feet
4x4	-	40	5'-0"	4'-0"	3'-6"	3'-0"	2'-6"
4x6	-	40	7'-6"	6'-0"	5'-6"	4'-6"	4'-0"
4x8	6x6	40	10'-0"	8'-6"	7'-6"	6'-6"	5'-0"
4x10	6x8	40	13'-0"	10'-6"	9'-6"	8'-6"	5'-6"

For SI: 1 inch=25.4mm, 1foot=304.8mm, 1psf=0.0479 kN/M2

1. Allowable spans may be interpolated between tributary loads shown in table. Spans and girders sizes may be computed independently of the above table in accordance with accepted engineering practice.
2. Spans are based on No. 2 lumber.
3. The spacing is the tributary load to the girder. It is found by adding the unsupported spans of the floor structure on each side, which are supported by the girders and dividing by 2.

## JOISTS

The following are simplified span tables for sizing the joist which will support the decking material and live load. The left column is the nominal lumber size of the joist, the top row is the spacing of the joist and the numbers within the table are the maximum span that corresponds to a specific size lumber at the specified spacing.

**Example:** If treated 2x10 lumber is used as a joist at 16" on center, what is the maximum this joist can span?

**Answer:** Finding 2x10 in the left column and 16" in the top row gives an intersecting box which contains the figure 14'-6". Therefore the maximum span for a 2x10, 16" on center is 14'-6".

### SPAN TABLE

#### No. 2 Redwood

(Modulus of Elasticity of 1,200,000 Used)

Joist Spacing →	12"	16"	24"
Joist Size ↓			
2x6	9'-9"	8'-10"	7'-9"
2x8	12'-10"	11'-8"	10'-2"
2x10	16'-5"	14'-11"	13'-0"
2x12	19'-11"	18'-1"	15'-10"

### SPAN TABLE

#### No. 2 Cedar

(Modulus of Elasticity of 1,000,000 Used)

(Fiber Stress =1050)

Joist Spacing →	12"	16"	24"
Joist Size ↓			
2x6	9'2"	8'4"	7'3"
2x8	12'-1"	11'-10"	9'-7"
2x10	15'5"	14'-0"	12'-3"
2x12	18'-9"	17'0"	14'-11"

### SPAN TABLE

#### No. 2 Preservative Treated Lumber

(Modulus of Elasticity of 1,100,000 Used)

Joist Spacing →	12"	16"	24"
Joist Size ↓			
2x6	9'-6"	8'-7"	7'-6"
2x8	12'-6"	11'-4"	9'-11"
2x10	15'-11"	14'-6"	12'-8"
2x12	19'-4"	17'-7"	15'-4"

## DECKING

Decking is generally done with one of the following lumber dimensions:

2x4

2x6

5/4 decking or radius edge decking

The maximum joist spacing for decking installed perpendicular to the joist is as follows:

2x4 & 2x6      30"

5/4                24"

The maximum joist spacing for decking applied at up to a 45-degree angle to the joist:

2x4 & 2x6      24"

5/4                16"

Note: The spacing of the joist is also a function of joist sizing.

## **GUARD RAILS, STAIR RAILINGS & STAIRS**

- If a deck is served by stairs there must be handrail for the stairs if there are four or more risers. If the stair is wider than 44" then there must be a handrail on each side of the stair. Guards on open sides of stairs must be at least 34" high. Handrails are to be graspable (see Section R311.7.7.3 of the 2009 International Residential Code).
- A guardrail must be installed around the deck if the deck's finished surface is more than 30" from the surface below. The guard must be at least 36" in height. The spacing between balusters or intermediate rails must be a maximum of 4".
- The maximum stair riser height is 7 ¾ inches with the greatest depth not exceeding the smallest by more than 3/8 inch. The minimum stair tread depth is 10 inches measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the treads leading edge.

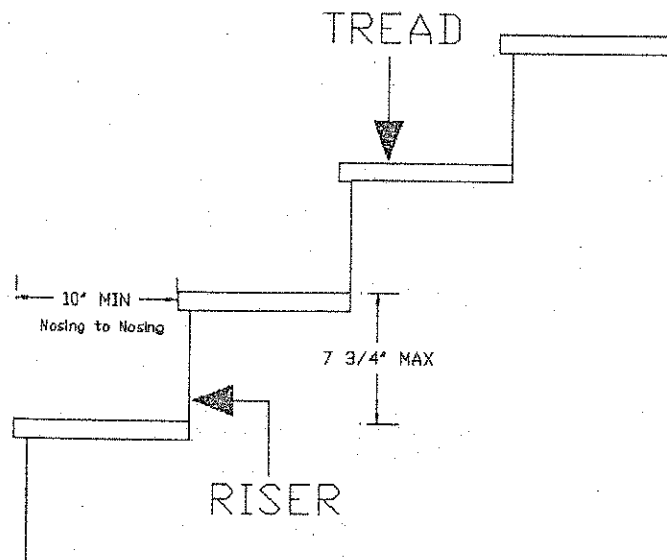
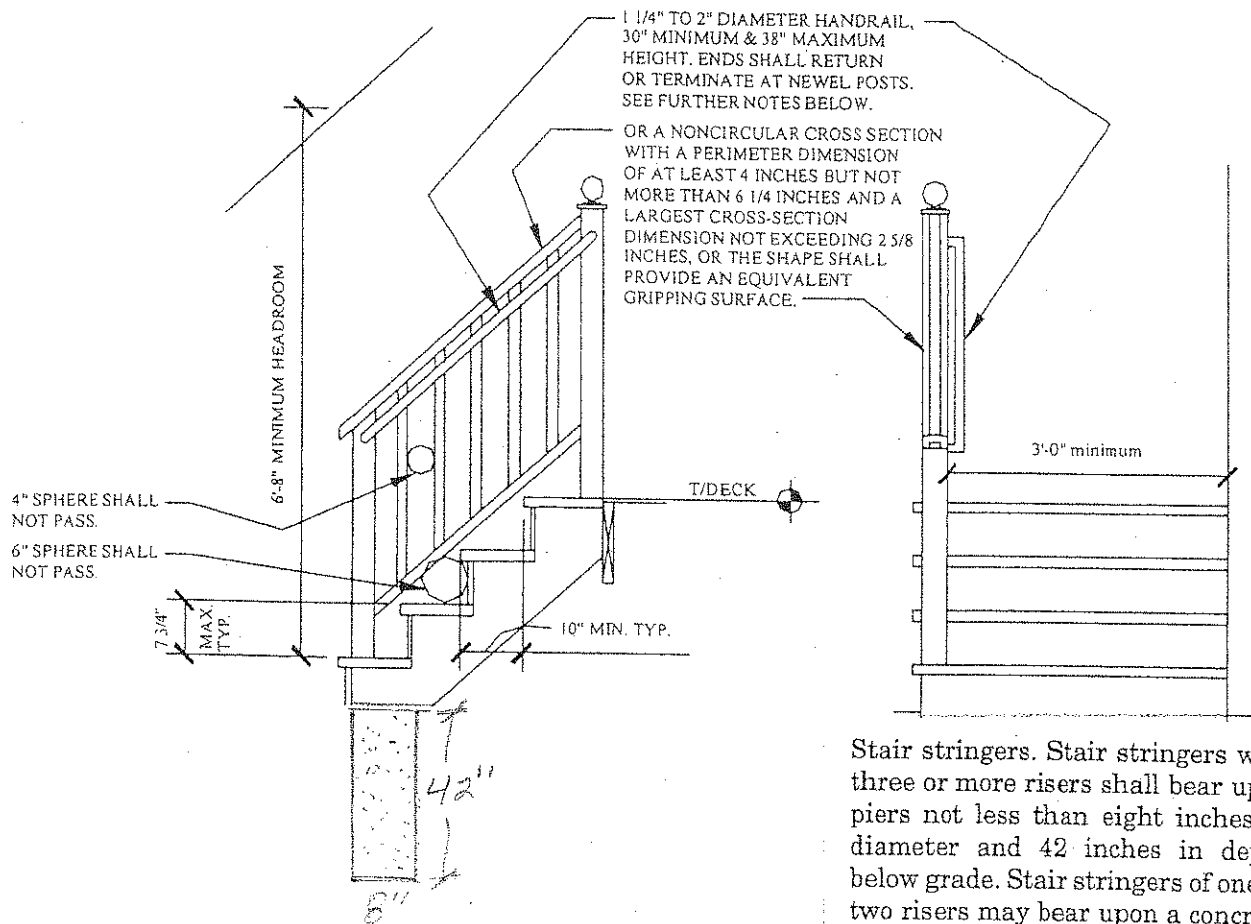


Figure 1 - Stair Riser Height Detail

## DECK STAIR CONSTRUCTION CHECK SHEET



Stair stringers. Stair stringers with three or more risers shall bear upon piers not less than eight inches in diameter and 42 inches in depth below grade. Stair stringers of one or two risers may bear upon a concrete pad ten inches minimum in diameter and to a depth of 12 inches minimum, but to at least 2,500 lb./sq. ft. bearing soil.

### HANDRAILS AND GUARDRAILS

**HANDRAILS:** HANDRAILS HAVING MINIMUM AND MAXIMUM HEIGHTS OF 30 INCHES AND 38 INCHES RESPECTIVELY, MEASURED VERTICALLY FROM THE NOSING OF THE TREADS, SHALL BE PROVIDED ON AT LEAST ONE SIDE OF STAIRWAYS OF THREE OR MORE RISERS.

ALL REQUIRED HANDRAILS SHALL BE CONTINUOUS THE FULL LENGTH OF THE STAIRS. ENDS SHALL BE RETURNED OR SHALL TERMINATE IN NEWEL POSTS OR SAFETY TERMINALS.

HANDRAILS ADJACENT TO A WALL SHALL HAVE A SPACE OF NOT LESS THAN 1 1/2 INCHES BETWEEN THE WALL AND THE HANDRAIL.

HANDRAILS SHALL HAVE EITHER A CIRCULAR CROSS SECTION WITH A DIAMETER OF 1 1/4 INCHES TO 2 INCHES, OR A NONCIRCULAR CROSS SECTION WITH A PERIMETER DIMENSION OF AT LEAST 4 INCHES BUT NOT MORE THAN 6 1/4 INCHES AND A LARGEST CROSS-SECTION DIMENSION NOT EXCEEDING 2 5/8 INCHES, OR THE SHAPE SHALL PROVIDE AN EQUIVALENT GRIPPING SURFACE. EDGES SHALL HAVE A MINIMUM RADIUS OF 1/8 INCH.

**GUARDRAILS:** PORCHES, BALCONIES OR RAISED FLOOR SURFACES LOCATED MORE THAN 30 INCHES ABOVE THE FLOOR OR GRADE BELOW SHALL HAVE GUARDRAILS 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 GUARDRAILS NOT LESS THAN 34 INCHES IN HEIGHT MEASURED VERTICALLY FROM THE NOSING OF THE TREADS.

REQUIRED GUARDRAILS ON OPEN SIDES OF STAIRWAYS, RAISED FLOOR AREAS, BALCONIES AND PORCHES SHALL HAVE INTERMEDIATE RAILS OR ORNAMENTAL CLOSURES WHICH DO NOT ALLOW PASSAGE OF AN OBJECT 4 INCHES OR MORE IN DIAMETER.

Figure 2 -- Deck Stair Checklist Details

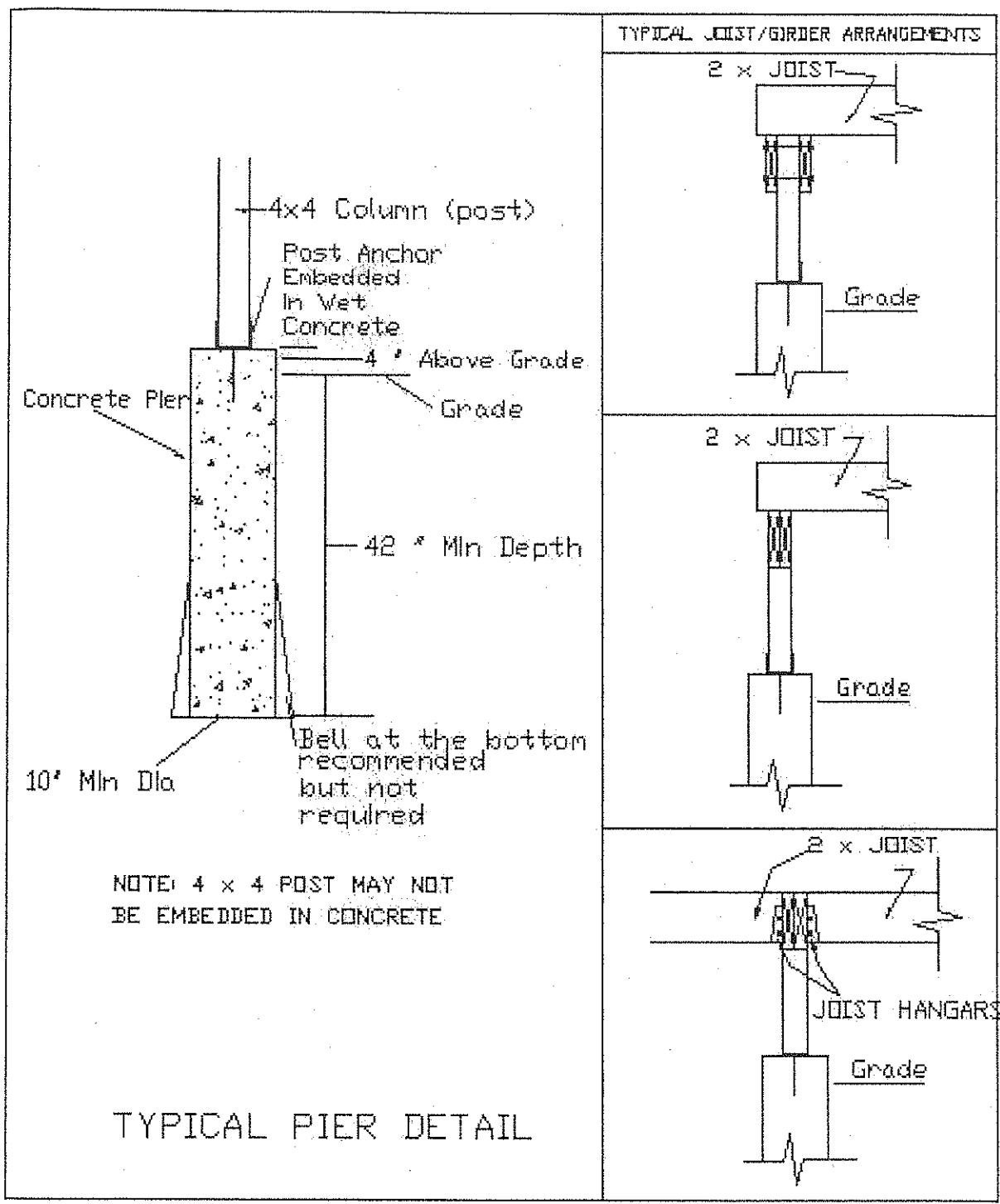


Figure 3 Typical Pier Detail

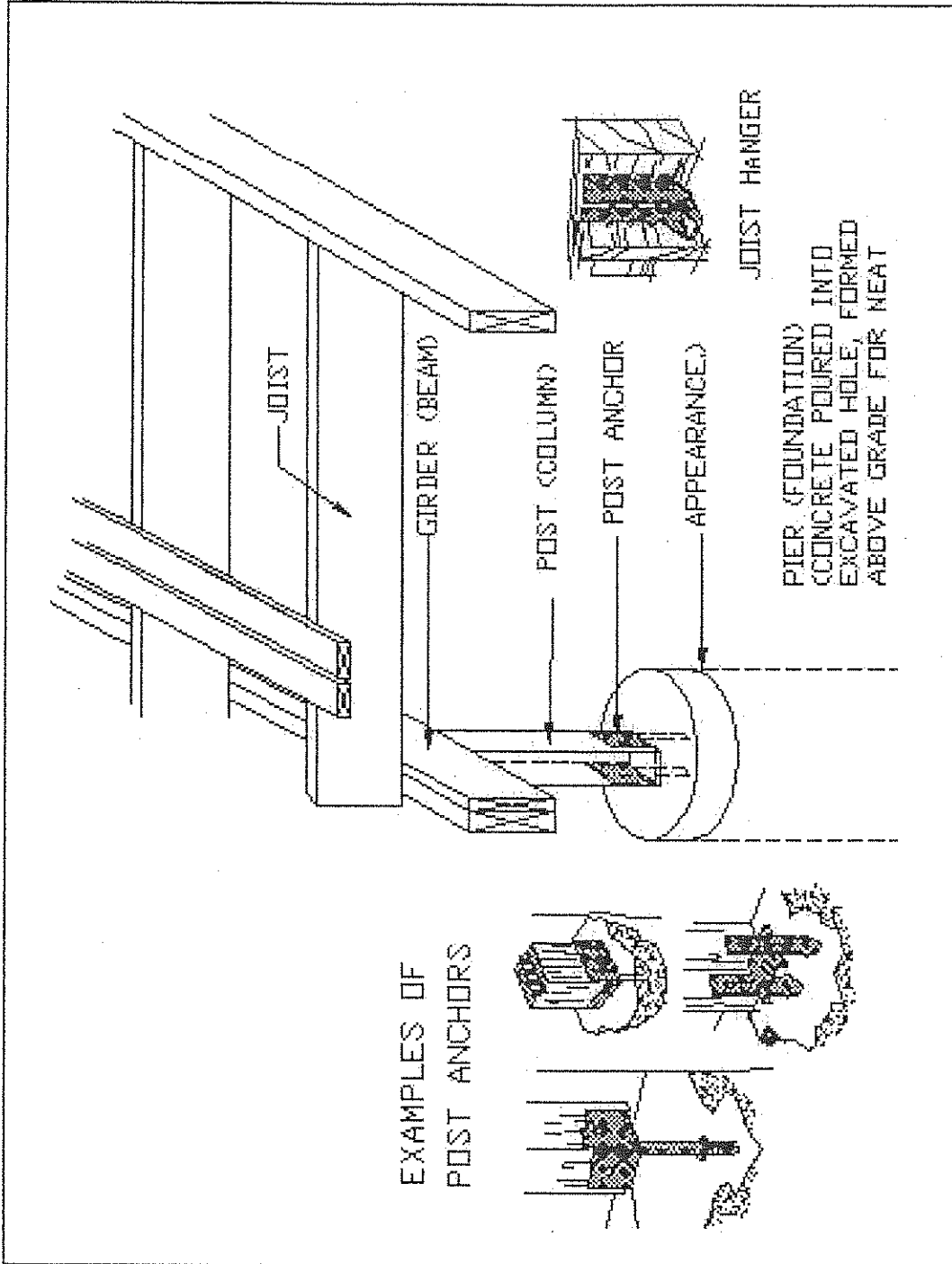


Figure 4 - Post and Girder Detail



SAMPLE DRAWING

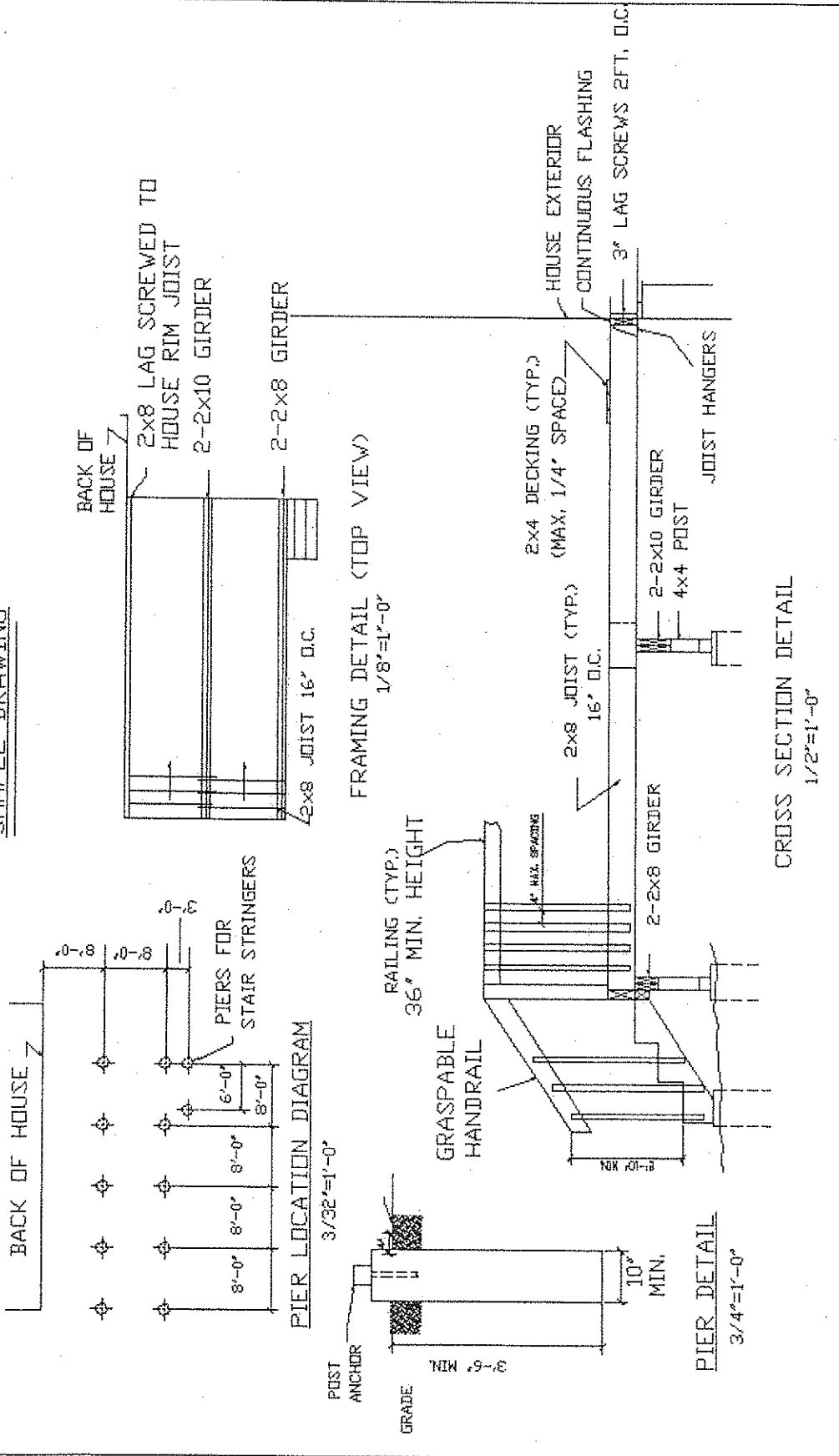


Figure 5 - Sample Deck Plan Drawing