

**CITY OF RICHMOND HEIGHTS**  
**DEPARTMENT OF BUILDING ZONING**  
**AND HOUSING**

**GUIDELINES**  
**FOR**  
**DECK CONSTRUCTION**

The following is a guide to deck construction and is intended as a guide only. Design and code information can be obtained from reference manuals, code books or design professionals.

A sample site plan and construction plan are enclosed for your use. The last page is a permit application which must be filled out and returned with your plans.

The Building Department is available to assist you. However, it will not draw, draft, or design a deck for you. If you have any questions or need guidance, please call the Building Department at 216-383-6312 Monday through Friday, 8:00 a.m. until 12:00 noon and 1:00 p.m. until 3:30 p.m.

## **LOCATION AND DESIGN**

First and foremost you must determine where you would like to construct your deck. Commonly the deck is constructed on the rear of the house for privacy. The Zoning Code limits the location with respect to sideyards, however, it is uncommon to construct a deck beyond the limits of the house.

The Zoning Code requires that 20% of the lot width be devoted to sideyard setbacks.

EXAMPLE: Lot width = 75 feet  
75 feet x 20% - sideyard setback 15 feet

In most cases, a minimum sideyard setback of six (6) feet is required on the garage side leaving the balance for the other sideyard setback (on a 75 foot wide lot) nine (9) feet.

The Zoning Code also requires the 20% of the depth of the lot be devoted to rear yard setbacks. Although the Law Department has ruled that such setback requirement will only be applicable if the deck is covered with a roofed structure. You may want to plan your deck location accordingly.

EXAMPLE: Lot depth = 170 feet  
170 feet x 20% = 34 feet  
rear yard setback = 34 feet

If you have any questions, contact the Building Department.

The design may affect the location. Some people prefer a one level deck; others may prefer two or more levels.

Decks can be built in most shapes depending upon the carpentry skills of the builder.

In all cases, the design live load of a deck shall be no less than 40 pounds per square foot.

## **MATERIALS**

All decking lumber must be treated. Ammonical Copper Quat or ACQ is the typical lumber available at wholesale and do-it-yourself establishment. All fasteners and hangers, including screws, nails, or bolts must be properly rated for contact with the ACQ lumber. Nails should be

spiral shanked or similar. Both nails and screws should be of a size that will provide proper depth and penetration when joining wooden members together.

Any and all mechanical fasteners such as joist hangers are permitted.

## **FOUNDATION SYSTEM**

Decks are most frequently constructed of post foundations. 4" x 4" posts are most common. On decks in excess of six (6) foot in height or with large roofed structures located upon the 6" x 6" post should be used.

In all cases the foundation must be constructed to a depth of 36" below finished grade or to solid bearing, whichever is deeper.

Traditional methods of post construction provide that the post be placed upon a flagstone within an eight inch (8") diameter post hole. Cement is then placed around the post for stability.

A more modern technique of foundation construction allows for the post hole to be entirely filled with cement and a galvanized fitting designed to adapt a 4" x 4" or 6" x 6" post placed into the cement before it hardens.

If any foundation systems other than the two described are desired, they must be discussed and approved by the Building Commissioner.

## **FLOOR SYSTEM**

The floor system is comprised the three basic components:

**BEAM:** Fastened to foundation posts; they support and run perpendicular to the floor joists.

**FLOOR JOISTS:** Commonly fastened to the house (if desired) and the beam(s) to support the decking.

**DECKING:** Flooring of the deck

The beam is commonly constructed of two (2) 2" x 8" 's, 2" x 10" 's or 2" x 12" 's and is fastened to the posts with nails or bolts. The Building Department recommends bolting the beams to the post with four (4) bolts per post. The size of the beam is dependent upon the spacing of the posts, the spacing of the beam, as well as the size and spacing of the floor joists.

Floor joists are commonly constructed of 2" x 6" 's, 2" x 8" 's, or 2" x 10" 's, and are generally spaced at 16" intervals upon the beam(s).

Floor joists should be fastened to the beam with two (2) nails per joist, toe nailed at the sides. If floor joist spans exceed 10 feet, blocking or bridging should be added between the joists for added stiffness.

If desired, the floor joists can be fastened to the house with a ledger or joint hangers. A ledger board must be bolted to the house and the floor joists will be constructed on to the ledger board.

The decking is frequently 2" x 6" of 5/4" lumber. The 5/4" has a radius (rounded) edge. The decking should be fastened to the floor joist with two (2) fasteners per each floor joist. At butt ends of the decking, three (3) fasteners should be used.

Decking should be constructed with each decking member placed tightly against other decking materials.

Shrinkage, which is common with wolmanized lumber, will occur providing a 1/8" to 3/8" gap between members for rain run off or snow melt.

Decking is constructed perpendicular with the floor joints, however, on more contemporary designs, it is run on diagonal angles.

### **STEPS**

Typically a deck will require a transition from the ground to the deck or from the house to the deck. Step(s) or ramps are used for this purpose and shall be a minimum of 36" in width. A step should have a minimum tread of 10" and a maximum rise of 7-3/4". Steps should not vary in rise and run by more than 3/8". If a ramp is used for the transition, it should not exceed a 1 in 12 change in grade.

### **GUARDRAILS AND HANDRAILS**

If the deck is more than 30" above grade, a 36" high guardrail is required. In all cases, spindles or balusters shall be spaced vertically or horizontally to allow the passage of a sphere with a maximum diameter of four inches (4"). Handrails are required for all ramp and step transitions when there are more than three steps.

### **VAPOR BARRIER**

To keep grass or other vegetation from growing below the deck, the Building Department has established a standard requiring a vapor barrier below the deck.

The vapor barrier is usually a four (4) to six (6) mil plastic sheet sold at "Do it Yourself" Centers.

Gravel is generally used to keep the vapor barrier in place.

## **SHRINKAGE**

All treated or wolmanized lumber is subject to shrinkage, primarily due to the treatment process and lack of drying time. Factors such as sun, wind and heat will affect the shrinkage process. It is important to plan accordingly and be certain to use adequate and proper fastening techniques.

## **PLANS AND PERMITS**

Your permit application for a deck shall consist of two (2) sets of plans including:

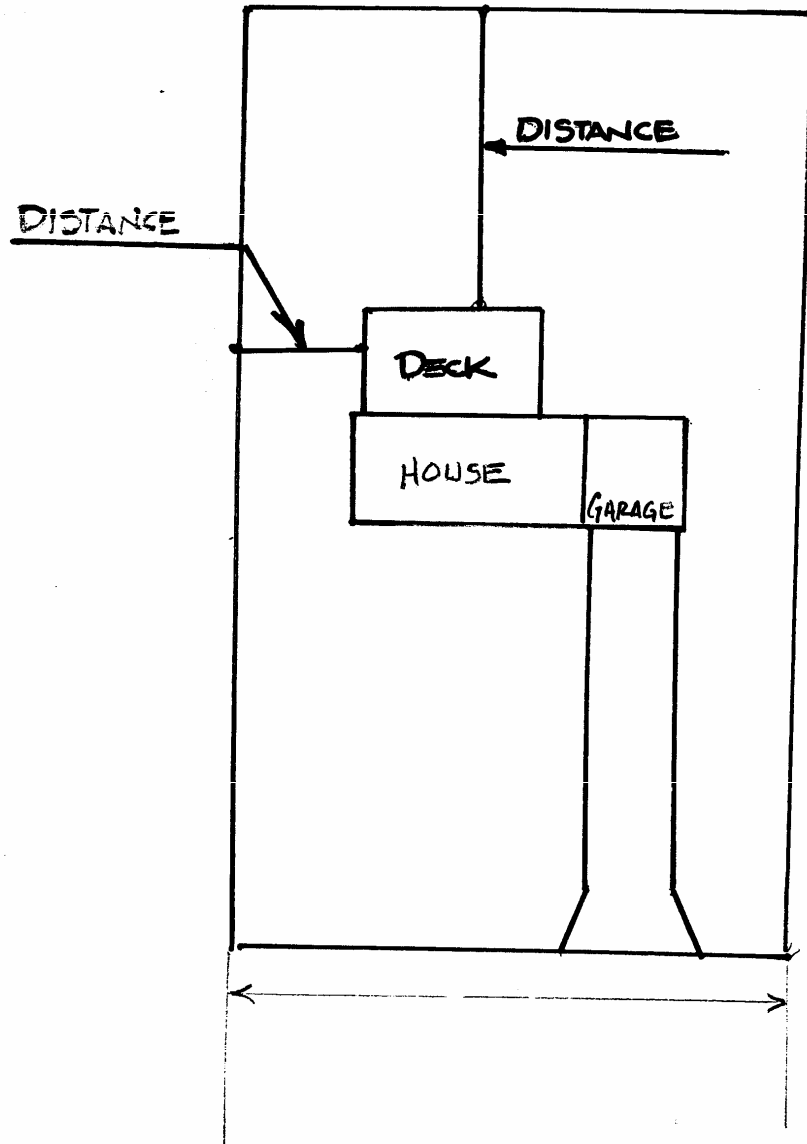
1. Site plan (similar to sample copy)
2. Construction detail with:
  - a) Foundation Systems
  - b) Floor Systems
  - c) Railings and Steps
3. Application (included in packet)
4. Fee of \$50.00

Review time is generally one to two days if an inspector is not immediately available.

A permit is necessary to insure proper plan review for compliance with codes and standards and to provide for inspection of foundation systems and rough carpentry.

# SAMPLE

## SITE PLAN FOR DECK CONSTRUCTION



# SAMPLE

## DECK CONSTRUCTION PLAN

(ILLUSTRATIVE PURPOSES ONLY)

