

# HOW-TO BOOKLET #3127

## DECK COVERS



### TOOL & MATERIAL CHECKLIST

- Hammer
- Hand Saw
- Snap Line
- Level
- Nail Apron
- Safety Goggles
- Framing Square
- Circular Power Saw and Saw Blade
- Tape Measure
- Workbench/Saw Horses
- Tri-square

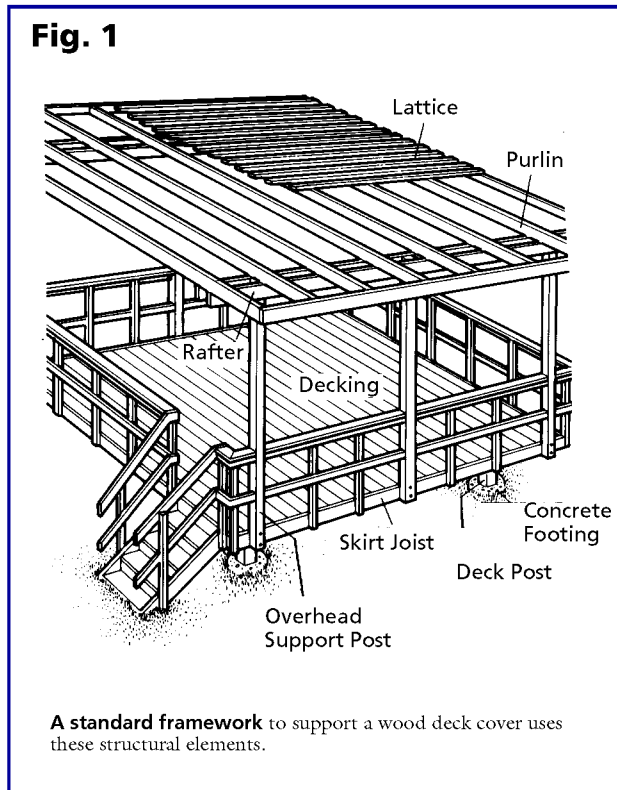
*Read This Entire How-To Booklet for Specific Tools and Materials Not Noted in the Basics Listed Above*

An overhead cover makes a deck more of an outdoor room. The roof structure defines the space but still allows a feeling of openness. This booklet describes how to build wood deck coverings for a variety of purposes. Although the design and structural ideas shown are basic, they can be elaborated to create coverings to fill your own needs.

The basic overhead framework shown in this booklet can be used simply to define the deck area. With the addition of fill-in, such as louvers, lattice-work, or canvas, varying degrees of shade can be created for the deck area. By building a trellis across the framework, support can be provided for vines or other growth that will beautify the deck area (**Fig. 1**).

The framework can serve as a support structure for insectproof screens to enclose the entire deck (see How-To Booklet #3110). In regions where wind and rain are troublesome, the addition of a permanent, rainproof roof will make it possible to use the deck for more months out of the year.

When combined with a wall or fence, a roof structure increases privacy. Separate elements, such as carport and house or garden and deck can be linked with an overhead cover.



There are three basic types of deck covers:

- 🏠 Platform structure
- 🏠 Balloon structure
- 🏠 Free-standing structure

Both balloon and platform structures refer to the construction of an overhead cover during the initial construction of the deck. A balloon cover is one that is supported by the same posts and beams that support the deck and handrails.

A platform structure is the technique of building subsequent structures on top of each other. A post and beam deck where the posts stop at the bottom of the supporting beam is a platform type of structure. This is the most common form of deck construction.

The most popular type of free-standing deck cover is a gazebo. It is usually added sometime after the deck has been built. This structure can be either built around or on top of the existing deck.

### PLATFORM TRELLIS ROOF

Trellis roofs can be attached to the deck or to the bench seats. All roofs are structural and subject to building codes. Enclosed roofs support greater weights than open roofs. These instructions deal with building an open platform roof on top of an existing deck.

Check local codes before proceeding.

- 1 Determine the location for the roof and layout the post footings on the deck surface. Make sure the posts are located over joists, posts, and/or beams for best support. Codes may specify the location and placement of the supports.
- 2 Fasten a post base to the deck surface. Use only galvanized or stainless steel fasteners to prevent rust.

- 3 Cut a 4x4 wood post to the deckcover height and set in the post base. Brace the post from two angles for temporary support (Fig. 2). If the base is flush with the deck surface, place a section of asphalt shingle between the post and base. This precaution as well as the use of pressure-treated lumber helps prevent water saturation at the post base.
- 4 Install the remaining posts into the bases as in step 3. Brace the posts with the material to be used overhead, such as 2x4 or 2x2 material. Nail the braces only partway so they can be removed without damaging the wood.
- 5 Fasten the front beam to the front posts. This beam carries the weight of the roof structure. Some codes may require a beam on both sides of the post or added strength.

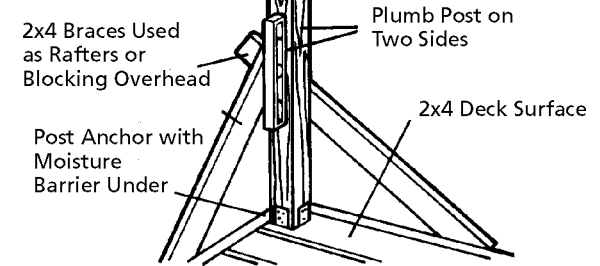
**CAUTION:** Most codes require at least 7' of head clearance between the deck surface and the bottom of the beam or roof structure. Check your local codes.

- 6 Repeat for the back beam and layout the roof joist positions on the beams. Use 16" O.C. (on-center) for standard spacing, or as prescribed by codes. Use more or less spacing to fit shade and cosmetic requirements.
- 7 Fasten the joists to the layout locations on the beams. Use only galvanized or stainless steel fasteners to prevent rust stains on the deck.
- 8 Add one of the fill-in materials described later in this booklet to put the finishing touch on your new, open-trellis roof.

### BALLOON-COVERED ROOF

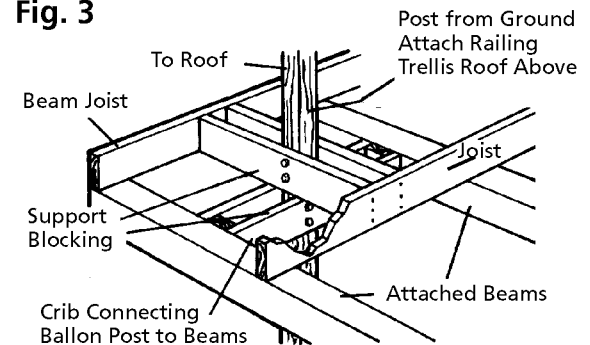
This type of roof is an extension of the deck supports. The primary vertical posts continue up and through the deck surface, up to support the roof (Fig. 3). The deck, handrails, and roof are all attached to the same posts. Codes may require that extra weight be supported by larger posts, such as 6x8 posts.

Fig. 2



If building an open platform trellis roof onto an existing deck, make sure posts are located over joists, posts, or beams for best support. Brace posts from two angles for temporary support.

Fig. 3



**Balloon framing** is when the posts continue up and through a deck to serve as the deck, railing, and roof supports.

This project begins after the deck and handrails are built. The roof support posts stand above the deck.

- 1 Measure the finished height off the deck surface on each post. Remember that 7' is a minimum amount of headroom many codes require between the surface and the roof. Check with codes first.
- 2 Cut the post tops off at the finished height. Treat the cut ends, even if covered, to repel water.

- 3** Attach the beams to the front and back posts in the open roof section. Layout the joists/rafters on the prescribed O.C. spacing determined by codes.

**NOTE:** A roof joist is a horizontal roof support while a roof rafter is sloped. Flat roofs carry greater weight and may require closer spacing and/or larger materials.

- 4** Attach the joists/rafters as before in the open roof section. Use only non-rust fasteners.
- 5** Add blocking between the joists/rafters as required by roofing manufacturers and local codes. Stagger the blocking to ease nailing (**Fig. 4**).

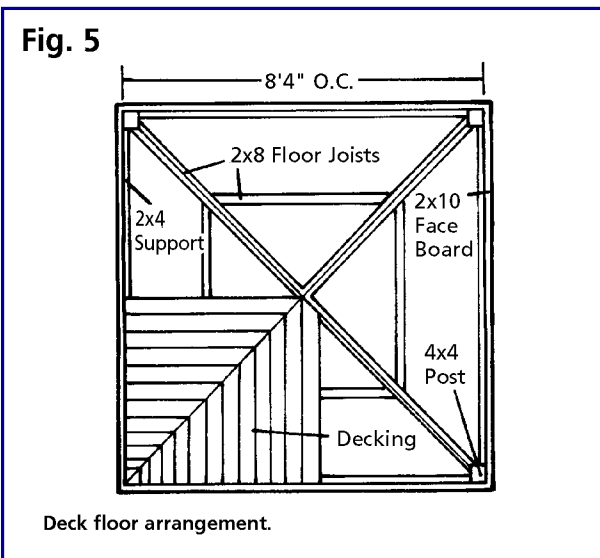
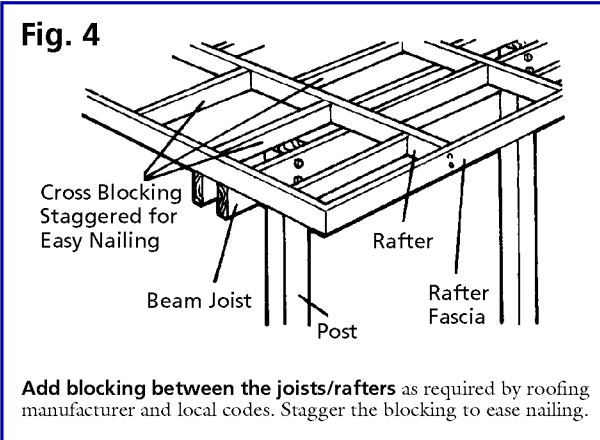
**NOTE:** Many trellis roofs use semi-transparent covers such as corrugated plastic or fiberglass. This material requires blocking so that it is supported every 2' or less in any direction. Living in heavy snow areas can increase the structural requirements for the joists and blocking. A rule of thumb is to order 50 percent more joist/rafter material just for blocking.

- 6** Install the roof covering. Be sure that the factory edges “break” or land on the center of a joist/rafter. If not, nail a piece of wood alongside the joist/rafter to support the roof panel (also known as a “scab”).
- 7** Install the roofing material if different from the covering installed in step 6.
- 8** Add gutters and downspouts to the front edge of the roof to channel rainwater to selected drainage areas.
- 9** Place angled flashing over the roof where the roof is attached or adjoined to the house. Freestanding roofs may skip this step.

### FREE-STANDING GAZEBO

A gazebo offers a shady outdoor room for leisurely dining or just relaxing. As already stated, it can be built as part of the deck or as a free-standing structure.

- 1** The procedure for building the concrete footings and installing the posts are the same as for any basic deck (see How-To Booklet #3110). The deck framing for the four-sided gazebo consists of 2 sets of doubled 2x8 joists laid diagonally between corner posts. The ends of each board in the doubled set are beveled at a 45-degree angle to fit against the posts.



- 2** Set the first pair across the diagonal and nail the ends securely to the posts. Cut the second set in half, so that each half fits between its corner post and the center doubled set, which runs through the decking area. Fasten the center edge of each half joist to the posts.
- 3** Install a set of braces that run between adjacent diagonals; this forms a triangle parallel to the sides of the gazebo. These braces fall halfway between the corner posts and the center cross. Bevel the ends of the braces at a 45-degree angle to form a secure joint. Nail securely.
- 4** Nail 2x10 face boards along the outside faces of the four posts. The top of the face board should be 1 1/2" above the level of the diagonal 2x8s to allow for the thickness of the deck floor. Along the inside faces of the face boards, nail a 2x4 deck support. The tops of these supports fall 1 1/2" below the top edge of the face boards, on the same level as the diagonal supports.
- 5** Cut and nail the 2x4 decking. In this design, the interior ends of the decking are cut at 45-degree angles, and the boards create a perpendicular design to the face boards, as shown in **Fig. 5**. Place the 2x4s about 1/8" apart so that air and water can pass through. Use galvanized box nails, even if the material is pressure-treated wood.
- 6** Install the 2x10 fascia boards at the tops of the corner posts. The top edges of each board should be 5" higher than the tops of the posts. Temporarily nail the boards in position. Then, using a wood bit, drill a 7/8" hole in each end of each fascia board and secure with 3/4 x 8" bolts.
- 7** Build a center lightbox of 2x10s. This forms the roof peak to which the gable rafters connect. Create rafters from doubled 2x6s and bevel-cut at the upper and lower ends. Bolt the double rafters together with 1/2" bolts

every 24" O.C.; stagger these bolts along the length of the rafter. Notch the rafters into the seat formed by the post and the fascia piece. Joints must be snug and well nailed. You need to support the rafters while you nail them into position.

**8** The design of the finial is a personal one—try to have it reflect the spirit as well as the materials of the gazebo. Use the lightbox as the finial support base.

**9** After the rafters and finial are in place, install the 1/4 x 2" roof lattice. A 2x2 supports the lattice. Nail the support all the way around the inner faces of the fascia board, rafters, and lightbox. The top edge of the support board should fall 1/2" below the top of the fascia and the rafters. Place the lattice in a 6 x 6" pattern (Fig. 6).

**10** The railing encloses only three sides of the gazebo. The fourth side is for the entryway. Cut the railing to fit flush to the face of the corner posts. Fasten two 4x4 intermediate

supports, evenly spaced, to each railing with 3/8" lag screws.

**↑** To complete the project, install a step between the finished grade and the deck level. The step, which can be made of stone, concrete, or wood, must be well seated for safe use.

### FILL-IN COVERS

The basic overhead structure described in this booklet can support many different kinds of covering materials, including wood, plastic, and canvas.

**Wood Fill-in.** Latticework fill-in can be made from 2x2 strips of wood placed at right angles to or diagonally across the purlins. A second layer of 2x2s can be nailed to the first layer from underneath. A denser fill-in can be made from 1x4s nailed close together across the purlins; this creates a louvered cover (Fig. 7).

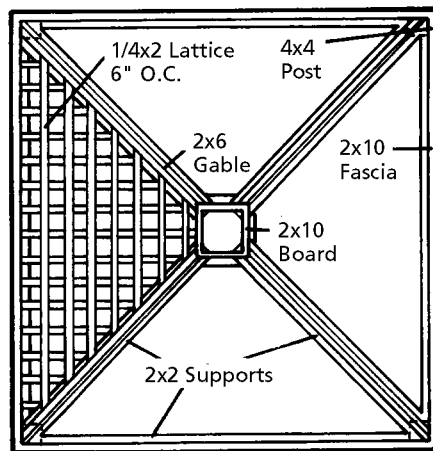
**Lath Fill-in.** Lathing is thin, narrow strips of flexible, lightweight wood. To make a deck covering, nail laths to the purlins with 1/2" spacing. This lets sun and rain filter through the cracks. This design can save tax dollars, since some communities do not categorize lath structures as permanent buildings and therefore impose no tax on them. If you use cedar or redwood lath, let the structure weather naturally. Otherwise, apply a coat of weather-resistant latex stain or paint.

**Fiberglass Panels.** Set the purlins 24" O.C. to accommodate the standard 26" fiberglass panels, which will overlap one corrugation on each side. Also, give the purlins a good pitch; that is, let the roof rise about 3" for every 12" of span. This provides adequate drainage of rain and snow. To prevent sagging, add cross bracing every 5' between the purlins. Use aluminum nails and neoprene washers to attach the panels to the purlins. Pre-drill the nail holes.

**Canvas Covering.** In dry climates, a canvas overhead cover will last a long time and provide shade and rain protection at a relatively low cost (Fig. 8). The easiest installation method is to tie the

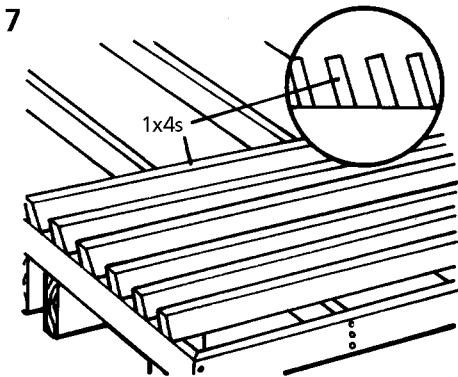
stretched fabric to a wood frame or to a pipe frame. The canvas can be hemmed at an awning shop, or you can sew up to No. 10 weight canvas yourself, using a No. 13 sailmaker's needle and Dacron thread. The awning shop can also put in grommets, or you can do it yourself, using a grommet die and die block. A tied-on canvas cover requires grommets placed every 8" and at each corner. Use 1/4" diameter cored or rope to lash the canvas to a framework.

Fig. 6



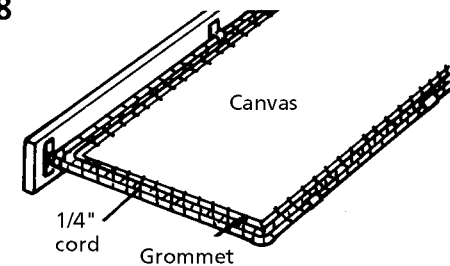
Lattice roof arrangement.

Fig. 7



Nail 1x4s with beveled edges at right angles to the purlins to make a louvered cover.

Fig. 8



A framework made of pipe or wood can be filled in with stretched canvas to provide low-cost shade and protection from rain.