

TYPICAL DECK CROSS SECTION

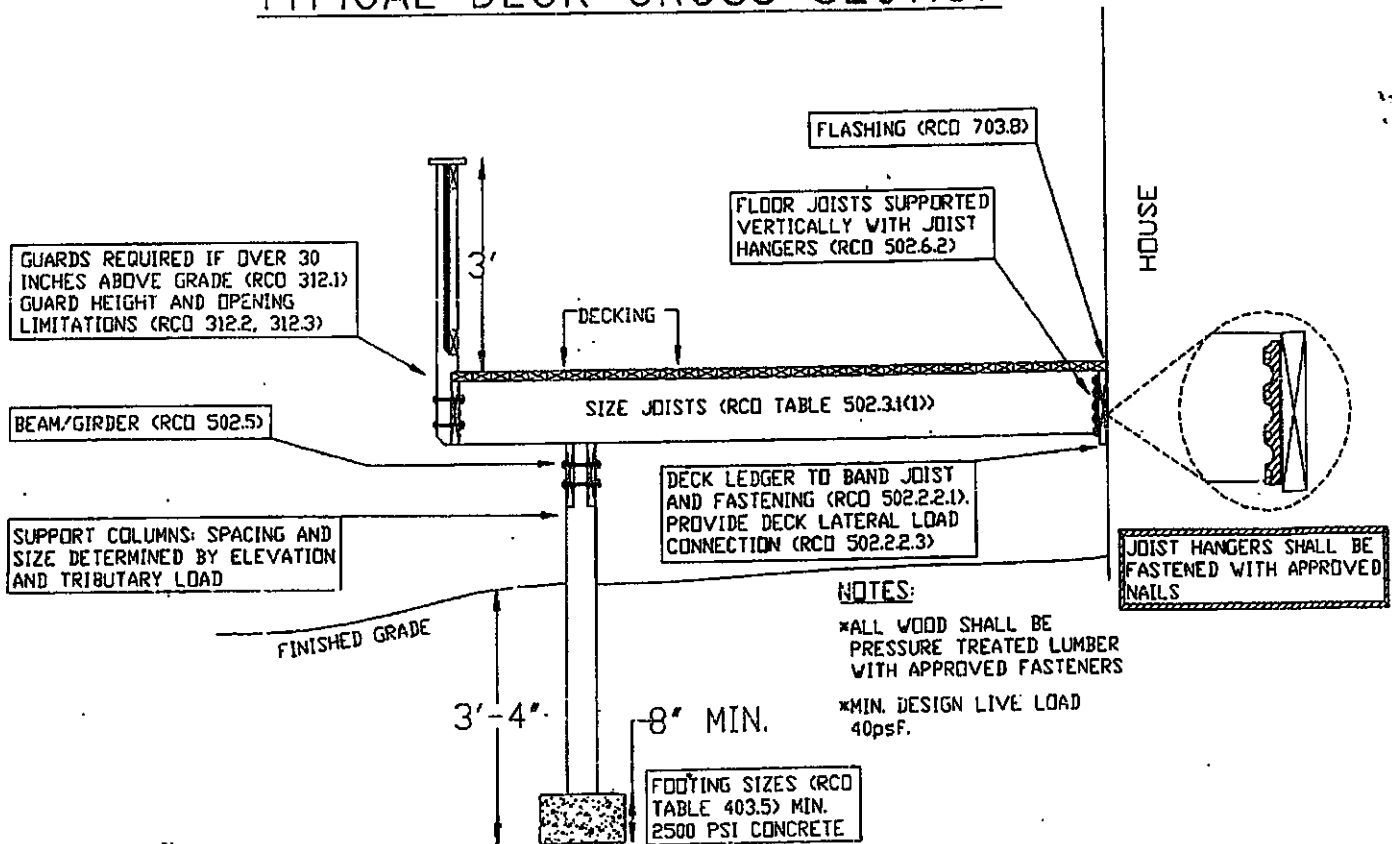
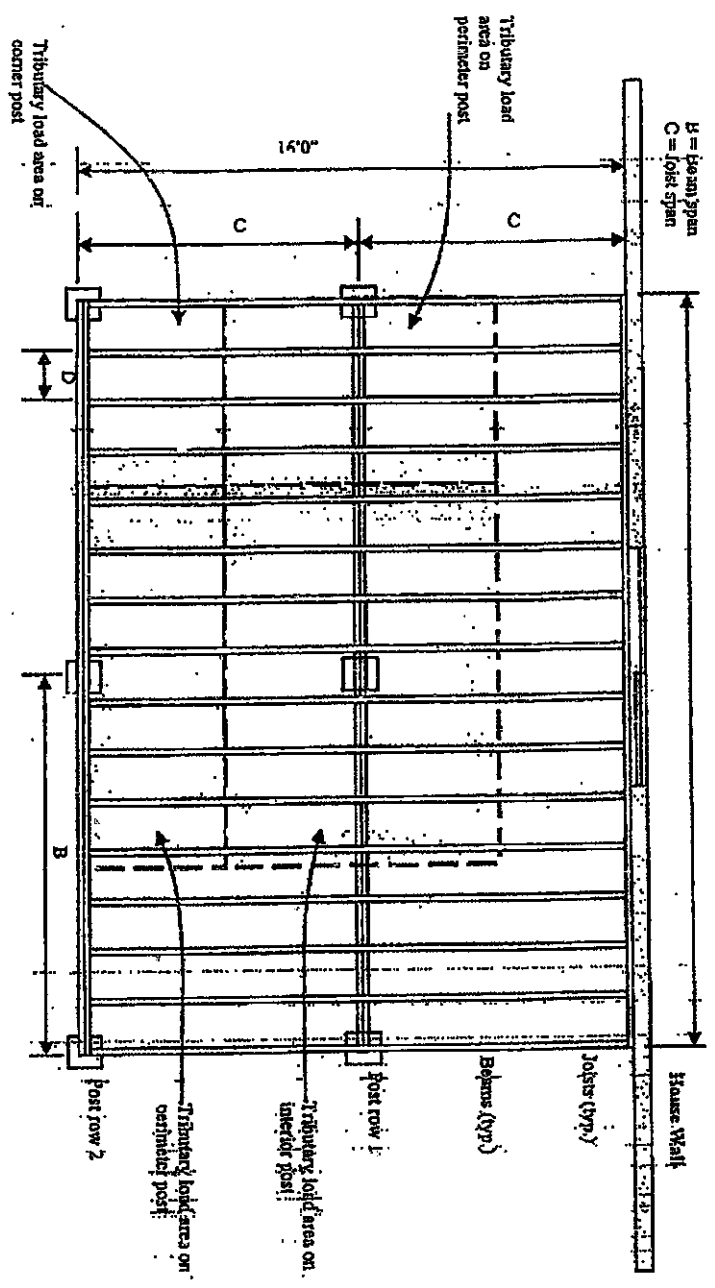


TABLE 403.5
MINIMUM FOOTING SIZE FOR DECK FOOTINGS WITHOUT ROOF LOADS
EXTERIOR DECK AND PORCH FOOTING SIZE IN INCHES^{a,b}

Diameter	Square	Maximum Tributary Area
		Allowed Per Post (square feet)
8	8 x 8	14
10	9 x 9	22
12	11 x 11	31.6
14	13 x 13	42.8
16	15 x 15	56
18	16 x 16	70.8
20	18 x 18	87.2

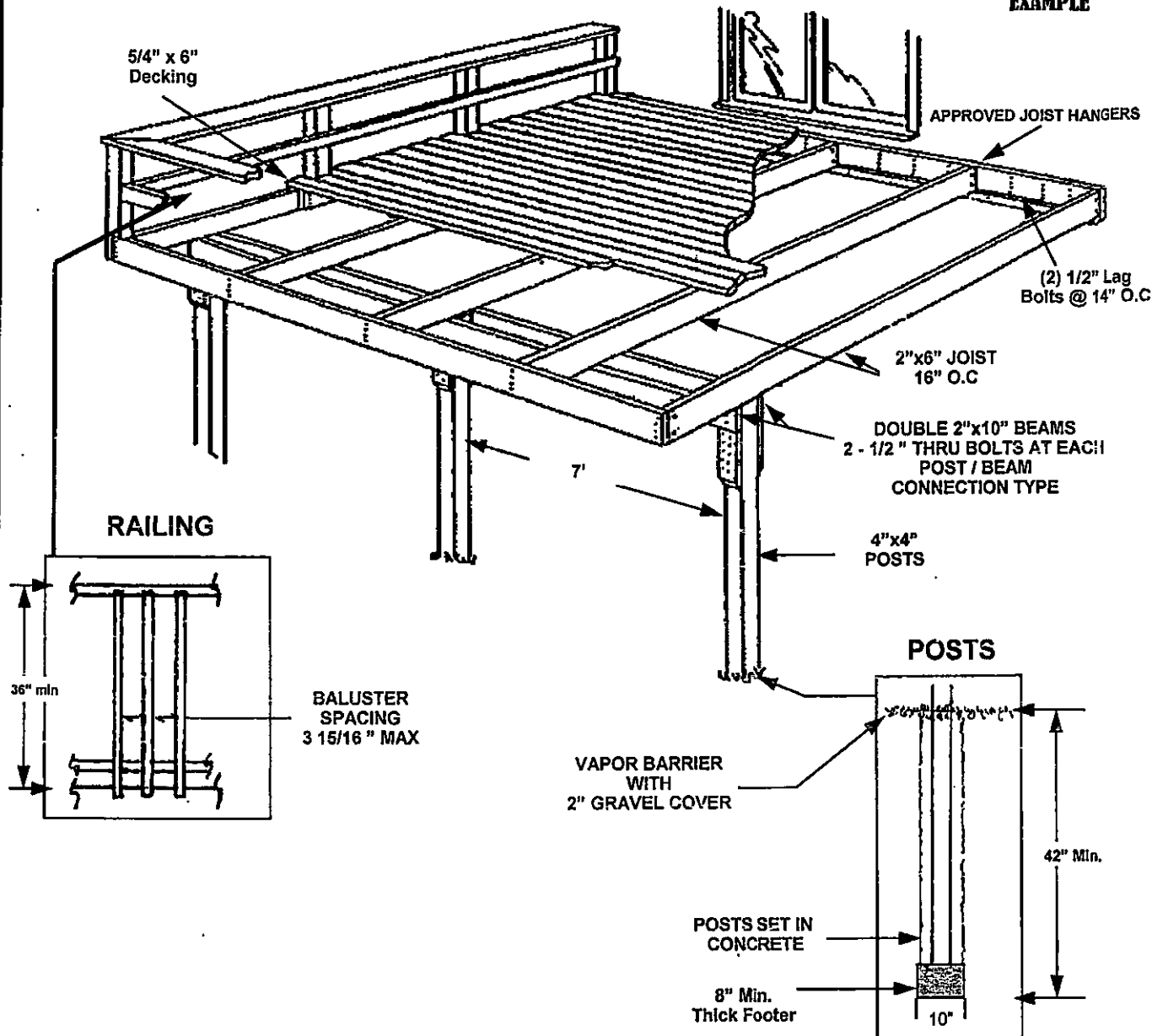
a. Based upon 2000 lbs. per square foot soil bearing capacity.

b. Based upon 40 lbs. per square foot live load and a 10 lbs. per square foot dead load.



DECK CONSTRUCTION

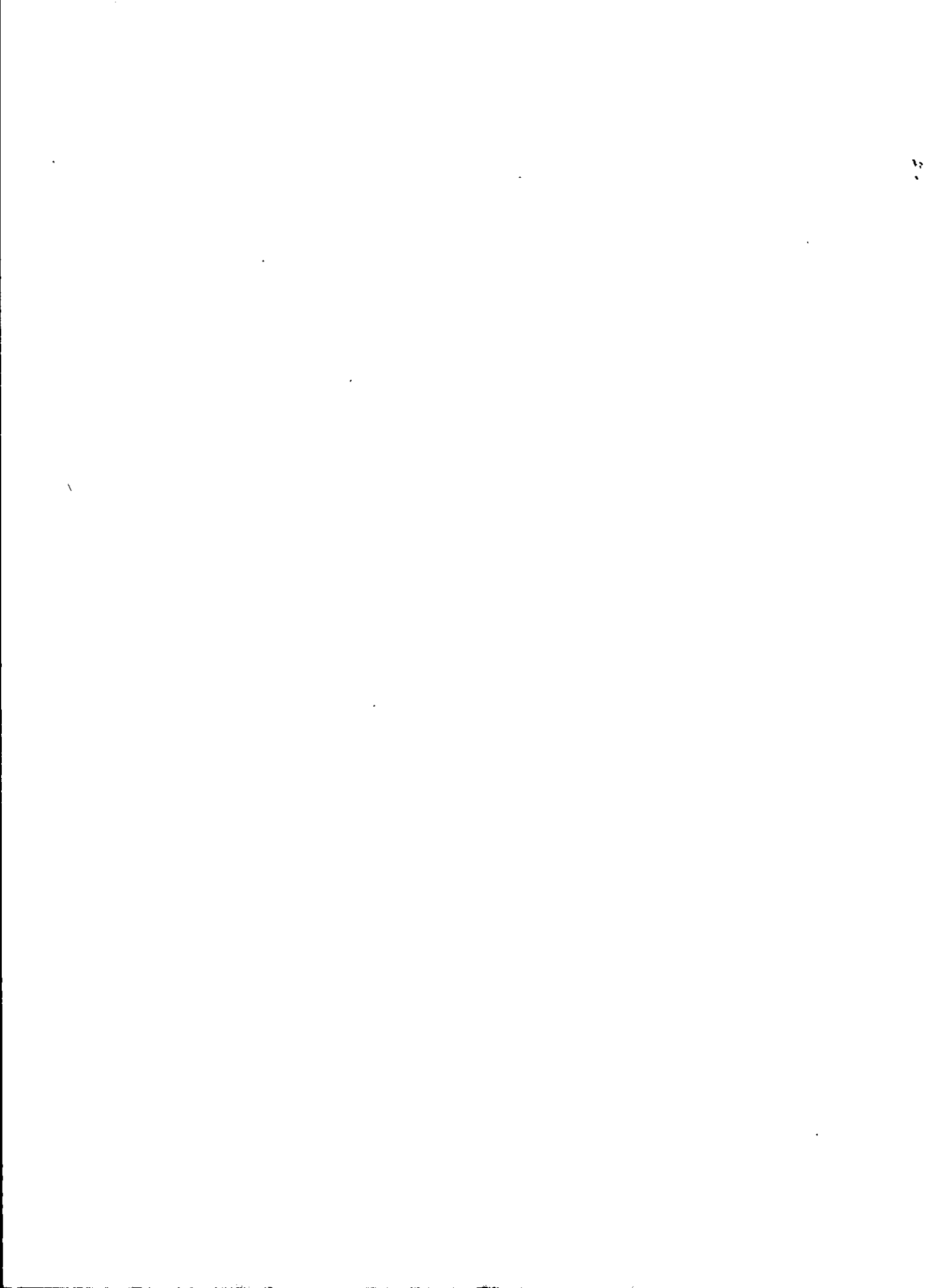
EXAMPLE



DECK CONSTRUCTION REQUIREMENTS

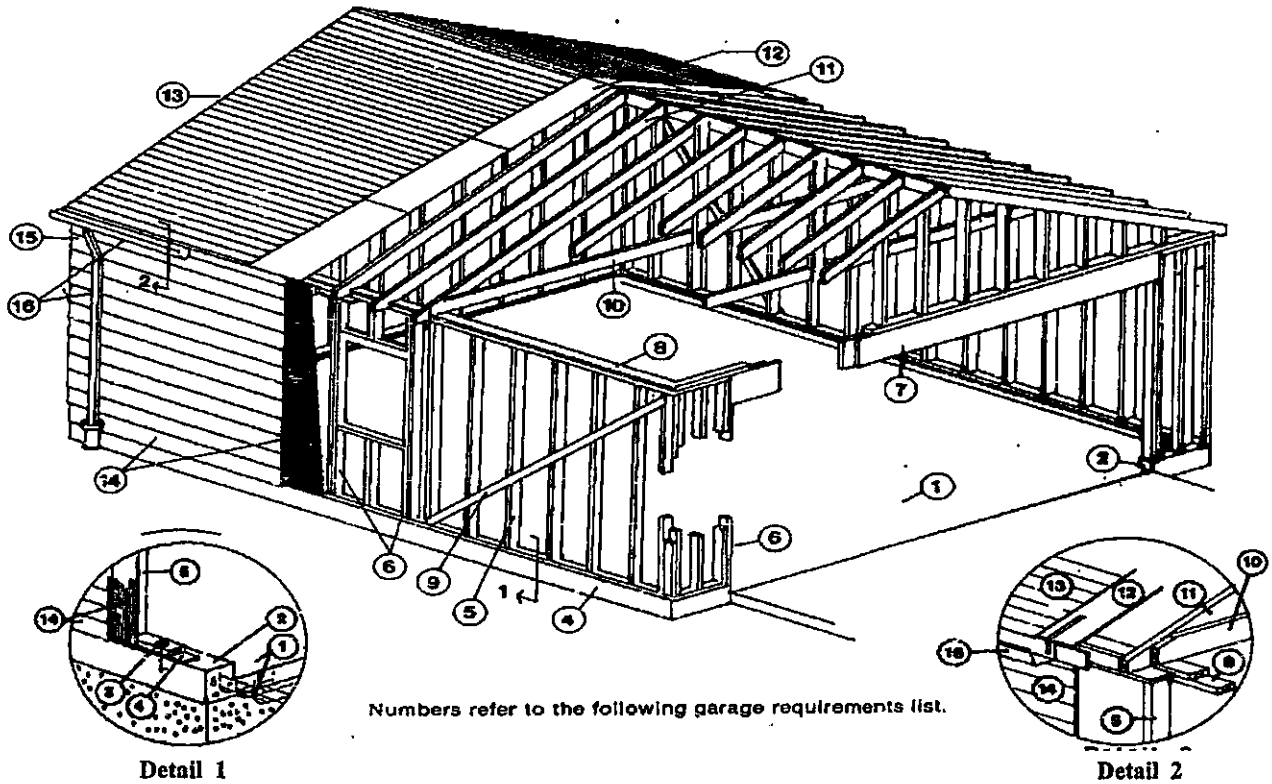
Patio decks are becoming the most common improvement that the property owners themselves are attempting to encounter. Decks should be designed to accommodate the family's needs and be constructed of lasting materials and be safe and sound.

1. Before constructing a deck, a building permit must first be obtained from the Building Department. At the time of application for the permit a plot plan (bird's eye view drawing), showing lot measurements, length and width of house and the size of deck, must be submitted. Also needed is two complete sets of construction drawings.
2. Lumber to be used may be pressure treated or untreated structural lumber which then must be painted or stained to withstand the weather. Untreated post shall be treated with a preservative on the portion that will be below grade.

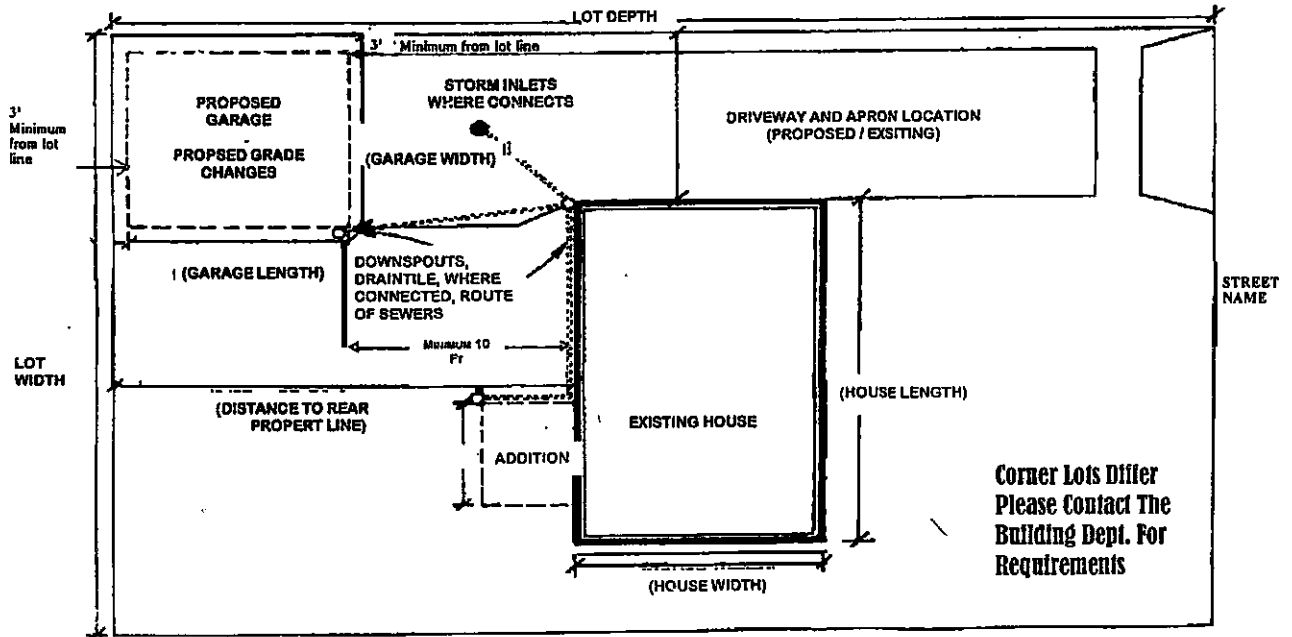


SECTION 2

GARAGE CONSTRUCTION



PLOT PLAN FOR GARAGE CONSTRUCTION (this diagram is just an example)



CONSTRUCTION CONFORMANCE REQUIREMENTS FOR GARAGES

1. Before construction can begin, a building permit must be obtained from the Building Department. When applying for a permit, plot plans (2) (a birds eye view drawing) specifying the property lines (width and length of lot), the size of house, the measurement from rear of the house to property lines and where the proposed garage is to be built is required. The plot plan must include size of new garage, distances from property lines and from other structures, and where the existing driveway is located. (See example of plot plan)
2. Two complete sets of construction drawings are needed.
3. A demolition permit is required if an old garage is to be torn down.

GARAGE CONSTRUCTION REQUIREMENTS

1. Garage floors shall be concrete with a minimum thickness of 4 inches and shall be placed on compacted granular fill. Garage footing shall be 12 inches by 12 inches. 12 inches by 42 inches for attached garage or garages larger than 600 sq. ft. Reinforcement in the form of one # 5 or Two #4 bars in the middle third of footing depth. The garage cannot be larger than 24 feet X 24 feet and no higher than 15 feet.
2. A curb 8 inches above finished grade and 6 inches wide, shall be formed and poured integrally with the floor slab.
3. Anchor bolts (which secure the garage framing to the concrete pad) shall be placed 12 inches from each corner and a maximum of 6 feet apart. Minimum 2 bolts per plate.
4. Before anchoring the bottom treated plate, a 1/2 inch bedding sill seal shall be applied to the curb top to assure a level condition.
5. Garage framing studs shall be spaced 16 inches on-center. Corners shall be constructed with double studs.
6. All openings shall have double studding (one full length and one jack stud).
7. Garage door headers shall be a minimum of two 2 x 12's nailed together with a 1/2 inch plywood flitch plate between.
8. Top plates shall be doubled and shall lap each other at corners to tie walls together.
9. Wind bracing shall be installed at all corners. Bracing must extend into the top and bottom plates.
10. Ceiling ties, sized according to the length of span, may be 2 x 6 or 2 x 8 nominal lumber. Maximum spacing of ceiling ties shall be 48 inches on center.
11. Roof rafters shall be spaced 16 inches on center with 1/2" sheathing. Trusses may be placed 24 inches on center with 5/8" sheathing with clips.
12. Roof sheathing shall be a minimum 1/2". Clips must be used with 5/8" sheathing.
13. Roof covering may be asphalt shingles, minimum 235 pounds in weight and must be installed over 15 pounds in weight felt paper. **NOTE:** Most common roof pitch for gable roofs is a 4/12 and 5/12.
14. Primed hardboard siding, cedar lap siding, redwood siding, aluminum or vinyl siding may be installed over sheathing. Plywood on corners with cellotex center walls or O.S.B are both acceptable wall sheathing.
15. Garages of all types shall have gutters and downspouts.
16. Downspouts are required to connect into a storm sewer.

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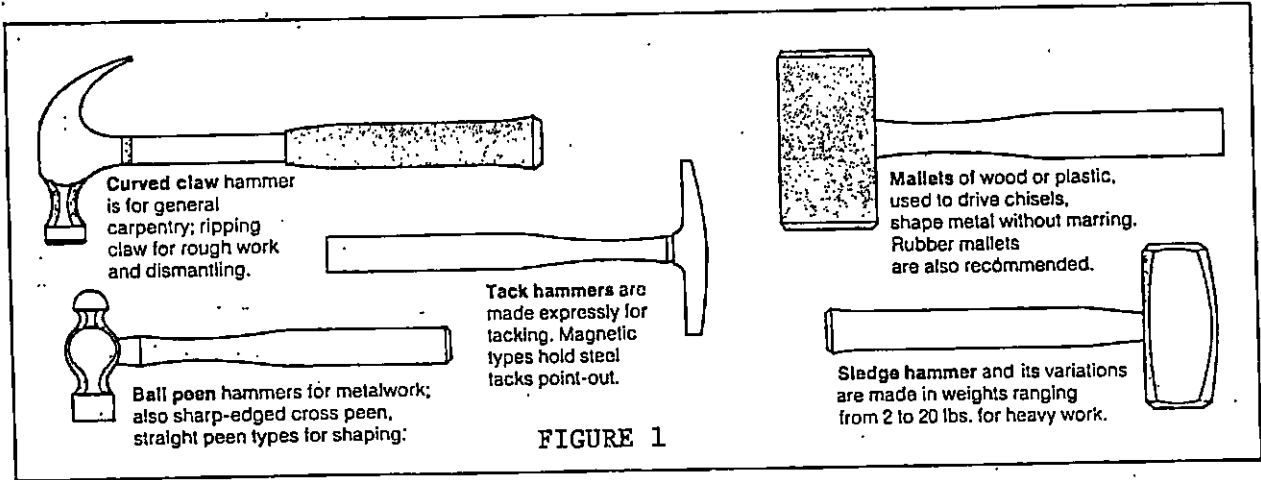
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SECTION 1

GENERAL INFORMATION

A. HAMMERS

There are several types of hammers designed to do specific jobs. Several are pictured here. (See Fig. 1)



The most commonly used hammers in the ASP are the curved claw hammer and the straight claw hammer.

1. Curved claw hammers are the most commonly used type of hammer in the ASP. It is used for nailing and pulling small nails. The claw hammer should never be used to pull large nails due to the possibility of breaking the handle. Claw hammers range in weight from 7 ounces up to 16 or 20 ounces. Usually the heavier the hammer, the easier it is to drive a nail. The head of the hammer is slightly convex to minimize marring the wood when a nail is driven flush. However, a hammer which has been abused can have too much rounding to the head, making it easy for the head to deflect off a nail when struck. Never use a claw hammer on any surface harder than the head itself; such as steel, or concrete, or two hammers against each other.
2. Straight claw (or ripping hammer) is like the curved claw hammer in nailing. The straight claw is used for rough work such as dismantling wood work. The straight claw is usually easier to insert between two boards to wedge them apart.

USE OF A HAMMER

1. Hold the hammer near the end of the handle for maximum leverage and nail driving force.
2. When pulling a smaller nail with a claw hammer, a block can be placed under the hammer to increase leverage and minimize marring of wood, especially on finish surfaces such as window and door moldings. (Se Fig. 2)



B. NAILS AND NAILING

NAILING HINTS

start a larger nail, hold it between the thumb and forefinger of the left hand and tap the nail lightly until it will stand in the wood on its own. Then remove your fingers and tap a little harder until the nail is at least 1" into the wood. Heavy blows before the nail is secure in the wood can result in a glancing blow which will send the nail flying and cause injury to yourself, or more likely to those working near you.

Always hold the hammer near the end to get maximum power and leverage. For roofing nails or smaller tacks, one method to avoid smashed fingers is to hold the nail between the index finger and second finger with palm up (as shown in Fig. 3). While this doesn't prevent smashed fingers, it does minimize the pain by avoiding a strike to the finger and thumb nail, thus cutting into your fingers.

A second method is to push the nail or tack into a thin piece of cardboard, then hold the cardboard away from the nail. When the nail is halfway in and snug, rip the cardboard out and finish driving nail. (see Fig. 4)

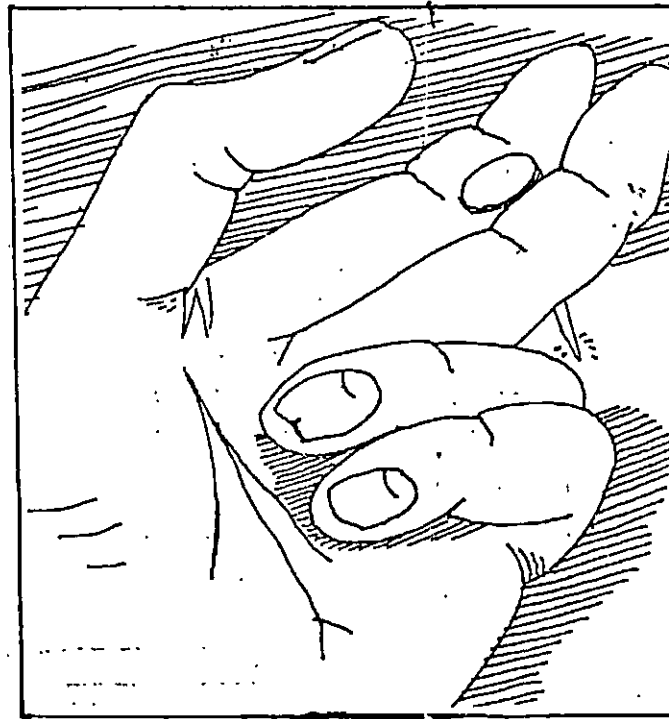
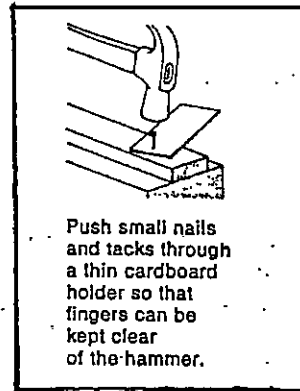
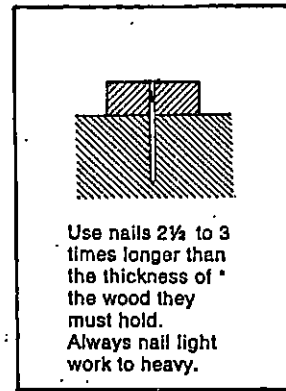


FIGURE 3



Push small nails and tacks through a thin cardboard holder so that fingers can be kept clear of the hammer.

FIGURE 4

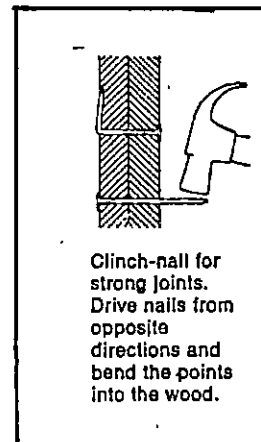


Use nails 2 1/4 to 3 times longer than the thickness of the wood they must hold. Always nail light work to heavy.

FIGURE 5

METHODS OF NAILING WOOD TO WOOD:

1. When nailing two different size pieces of wood together, nail through the smaller piece first and use a nail 2 to 3 times the thickness of the smaller wood. (see Fig. 5)
2. When connecting two equal size pieces of wood (especially 1x lumber), longer nails can be driven through both boards and clinched over to provide a stronger joint. (see Fig. 6)
3. When joining two pieces of wood where clinched nails are not desirable, avoid using nails which will go through the second piece of wood, even slightly. The suction created by the sealed hole actually creates a stronger hold. (see Fig. 7)
4. When nailing two boards together (especially 2 - 2 x 4's), nail 16d nails in at an angle for a stronger hold. To pull two diagonally driven nails out, the nails would actually have to be bent when the vertical nail would pull straight out. (see Fig. 7)



Clinch-nail for strong joints. Drive nails from opposite directions and bend the points into the wood.

FIGURE 6

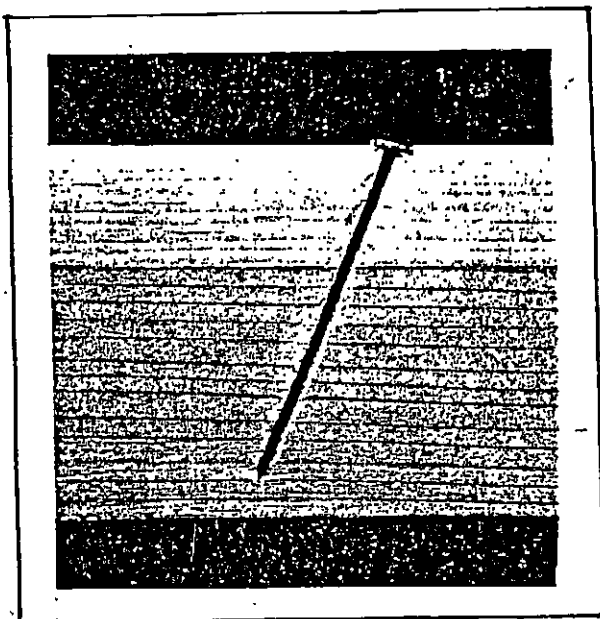
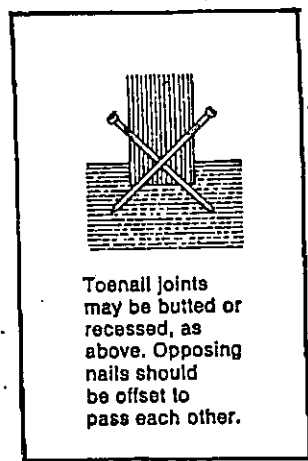


FIGURE 7



Toenail joints may be butted or recessed, as above. Opposing nails should be offset to pass each other.

FIGURE 8

5. Toe nailing is used when one end is butted against another board. Opposite nails should be offset to avoid hitting each other or splitting the wood. When driving the first nail, the stud will tend to move before the nail enters the second piece of wood. One way to counter this is to place your foot against the opposite side of the board. Another way is to make marks at the desired position of board and then offset the board to compensate for the movement when the first nail is hammered into place. (see Figs. 8 and 9)
6. Tongue and groove flooring can be nailed in such a way as to have no nail heads showing. Drive the new piece of wood tightly into place by using a scrap piece of tongue and groove board directly with a hammer. Nail through the tongue so the groove of the next board will cover the head. Avoid marring the floor surface by striking the top side of shoulder. Drive nail in at an angle as shown. (see Fig. 10)
7. In most of our work, a basic rule to follow is to use 16-20d common nails to nail 2x to 2x lumber, and to use 8-10d common nails to nail 1x to 2x.

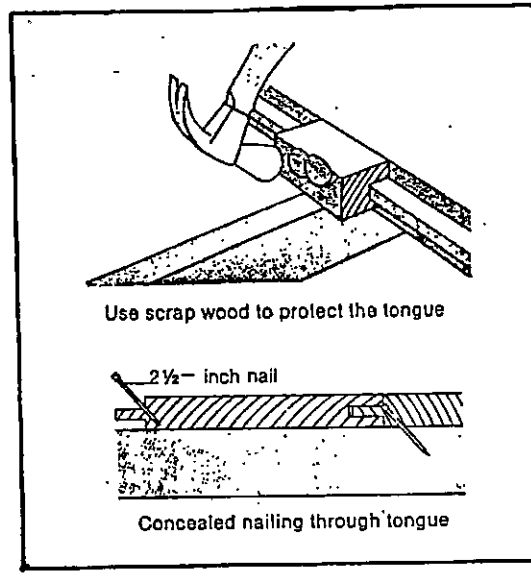
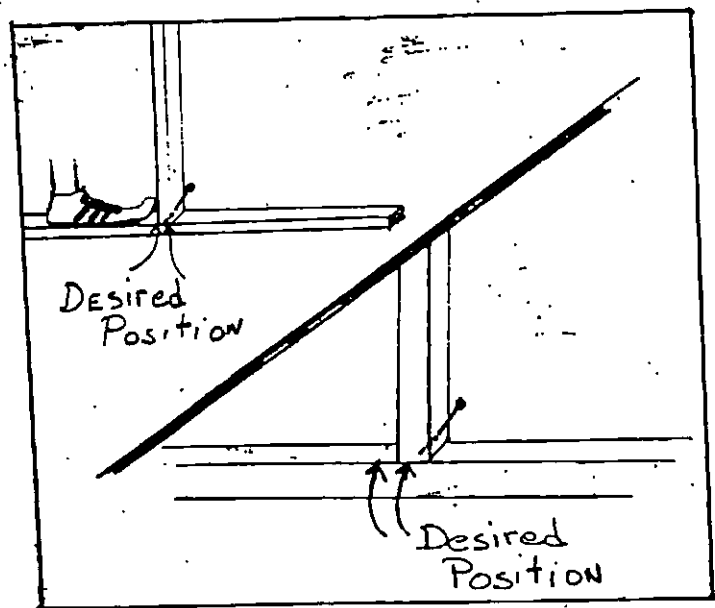


FIGURE 10

Nail types and uses

General-purpose and woodworking nails

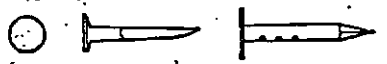
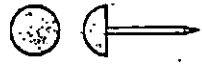
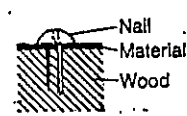
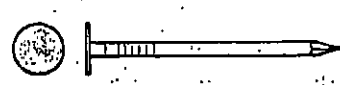
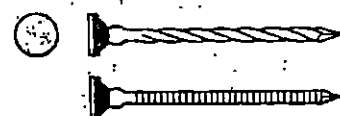
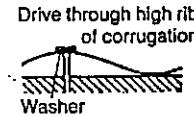
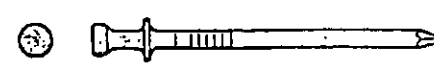


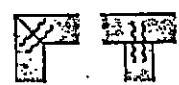
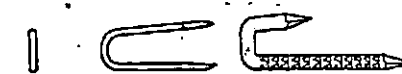
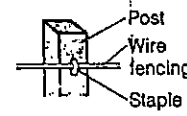
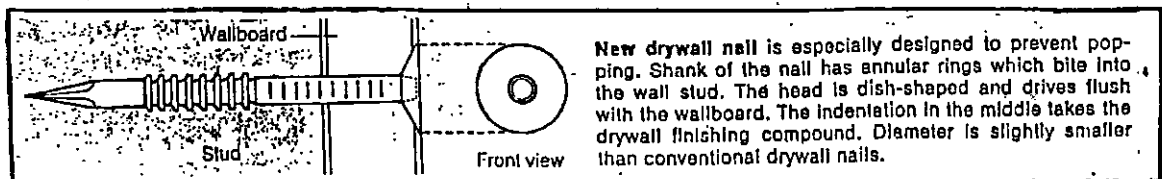
	<p>Tacks: Made in cut or round form; used to fasten carpet or fabric to wood, and for similar light fastening jobs:</p>
	<p>Upholstery nails: Made with both ornamental and colored heads; used to fasten upholstery where fastenings will show.</p> 
	<p>Roofing nail: Has large head, is usually galvanized. Used to hold composition roofings; design resists pull-through.</p>
	<p>Sealing roofing nails: Have lead or plastic washer under head to provide watertight seal; used on metal roofing.</p> 
	<p>Duplex head nail: Can be driven tight against lower head, with upper head projecting for removal; for temporary work.</p>
	<p>Barbed dowel pin: Has many purposes, such as aligning parts, serving as pivot, permitting disassembly or separation.</p>
	<p>Corrugated fastener: Used in making light-duty miter joints, such as in screens and large picture frames. Drive it across joint.</p> 
	<p>Staples: Made in many forms to hold wire fencing, bell wire, electric cable, screening; available with insulated shoulders.</p> 

FIGURE 11



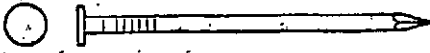

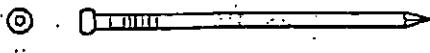
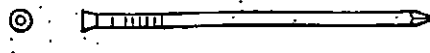

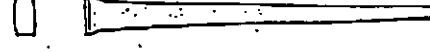

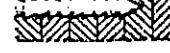

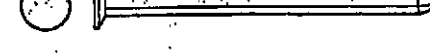

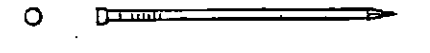
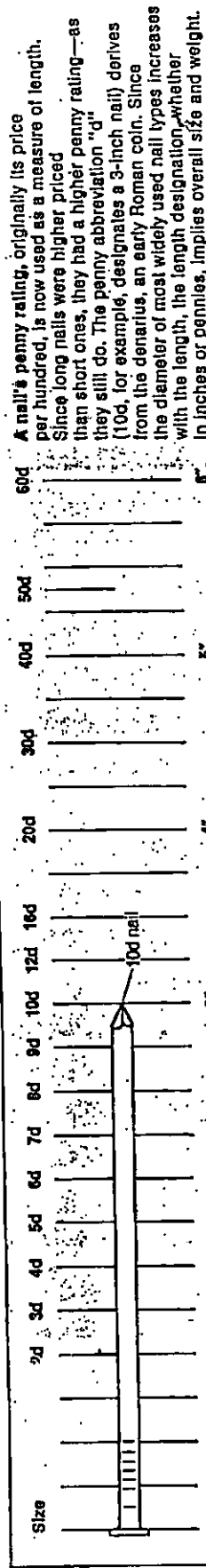
	<p>Common nail: General-purpose heavy-duty type used in construction and rough work. Large head won't pull through (see detail, right).</p>	
	<p>Finishing nail: Used on trim and cabinetwork where nailheads must be concealed. Head is sunk and then filled over.</p>	
	<p>Casing nail: Similar to finishing nail but heavier. Used for trim where strength and concealment (see detail) are required.</p>	 <p>Putty or wood filler Nail</p>
	<p>Cut flooring nail: Has rectangular cross section and a blunt tip. Used to blind-nail flooring through edges without splitting.</p>	
	<p>Annular ring nail: Has sharp-edged ridges that lock into wood fibers and greatly increase holding power.</p>	
	<p>Spiral nails: Used in flooring to assure a tight and squeak-proof joining. Nail tends to turn into the wood like a screw as it is driven home.</p>	
	<p>Square-shank concrete nail: Similar to round types used to fasten furring strips and brackets to concrete walls and floors.</p>	 <p>Wood Concrete</p>
	<p>Common brads: Used for nailing parquet flooring to subfloor, attaching molding to walls and furniture. Brads are usually sunk and filled.</p>	

FIGURE 12

Penny nail gauge



NAIL SETS:

Nail sets are used to drive a finishing nail below the surface of the wood without marring the wood. The nail head can then be covered with wood putty. Nail sets come with various size ends, from 1/32" diameter to 5/32" diameter.

- Step 1. Drive nail with hammer until the hammer is within 1/8" of the wood, but does not make contact.
- Step 2. Place the set on the head of the nail and drive nail in to a depth equal to the diameter of the nail head.
- Step 3. Fill the hole with wood putty. (See Fig. 13)

Nail sets can come in very handy with window and door installation or repair, as well as, nailing in tongue and groove flooring.

When returning nails to the supply shed at your center, please do not mix nails. A job takes so much more time if you continuously have to stop and sort through your nails. When coming in from a work day, empty your nail aprons and sort your nails into the appropriate boxes. This will make it easier for the next day.

Nail sets

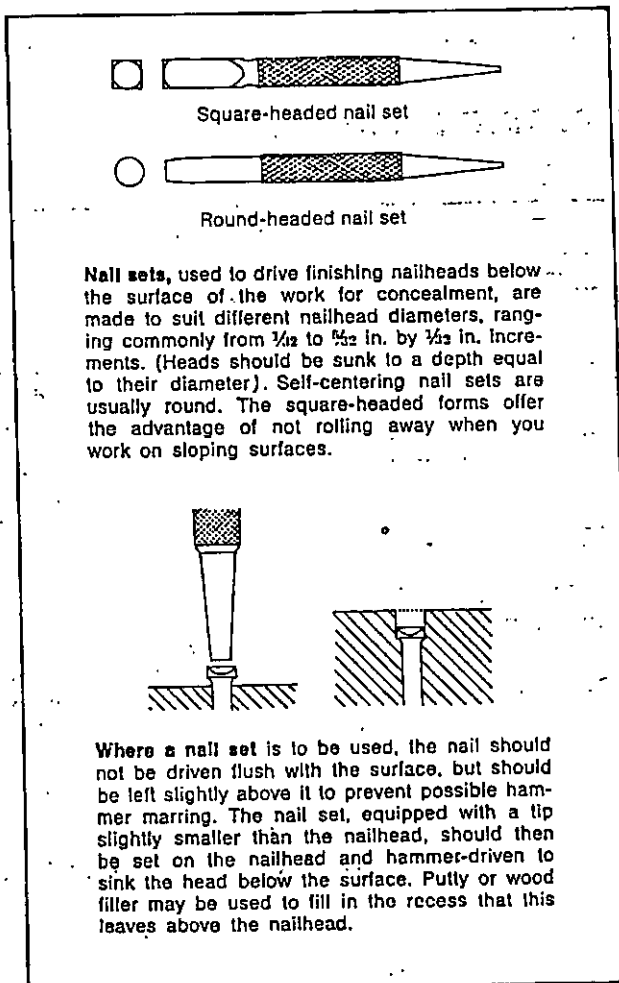


FIGURE 13

TIPS ON SAWING:

When starting a saw groove, place the saw on the wood and using your thumb as a guide draw the saw toward you several times until the groove is deep enough to prevent the saw from sliding out of the groove. (See Fig. 16)

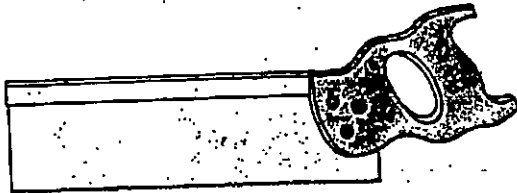
The easiest way to saw with a crosscut or rip saw is to not force the saw too hard, but to let the weight of the saw do most of the cutting. Use only a slight amount of downward pressure on the saw. This prevents binding and bowing the saw.

If the saw is binding up quite a bit, you might try running some motor oil or soap over the side of the saw blade to make the cutting easier. If it keeps on binding, chances are your strokes aren't even or you have a bow in your saw blade (which isn't uncommon with ASP saws).

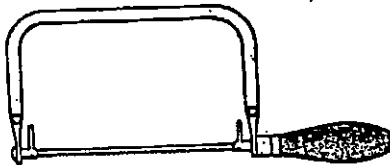
Types of saws



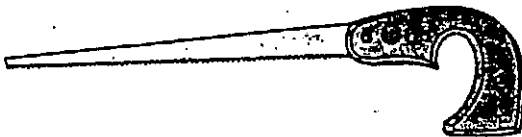
Hand saws for crosscutting or ripping come in two blade patterns. Upper edge of straight back pattern, above, can serve as line marker. Skew-backed type, not suited for marking, is preferred by some because saw seems more flexible.



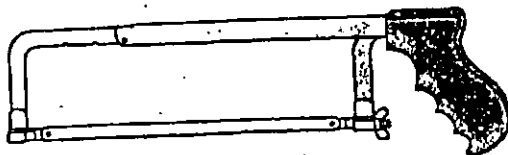
The backsaw, used for joint cutting, has reinforced back edge to keep blade rigid. Typical lengths are 10 to 16 in. A longer version called a miter box saw runs from 22 to 28 in. To cut smoothly, teeth are finer than on crosscut or rip saws.



Coping saws, for cutting small-diameter curves, have spring steel frames with tension adjustment to hold blades taut. Blades are 1/8 to 1/2 in. wide, and from 6 to 6 1/2 in. long. The blades mount to face in any direction.



Compass saw has narrow, tapered blade for cutting curves or starting from bored hole. It is similar to the keyhole saw, which was once used to cut keyholes in wooden doors.



The hacksaw, for metal cutting, has a rigid frame that fits blades 8 to 12 in. long. High-speed steel blade mounts with teeth slanted away from handle and is drawn taut by wingnut.

FIGURE 14

BOWSAW - used for limbs, and logs. coarse cut.

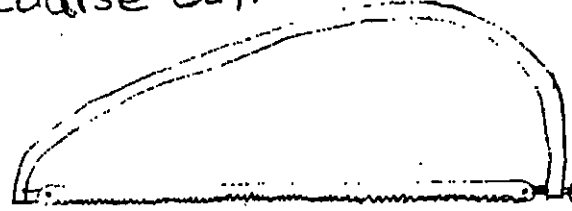


FIGURE 15

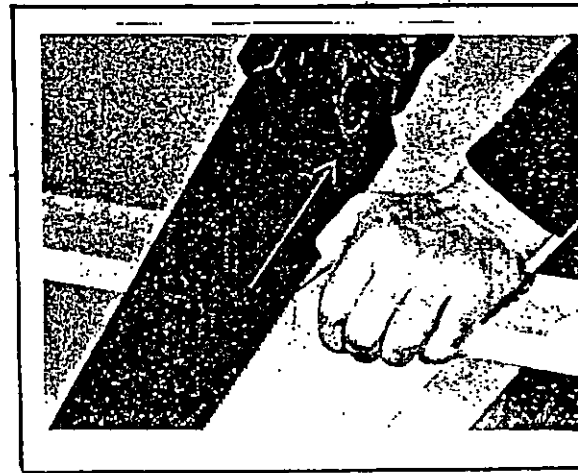


FIGURE 16

D. POWER TOOLS

When using any kind of power tools, the most important thing to remember is safety. Power tools are not toys to be played with. They should always be considered potentially dangerous, used only by those who know how to operate them properly and safely.

POWER SAWS -- CIRCULAR SAWS

Safe Operation of a Power Saw

1. Use safety glasses to avoid saw dust or splinters in your eyes.
2. A sharp blade makes the sawing easier and safer.
3. Use a grounded extension cord where possible.
4. Always be sure the wood to be sawed is properly supported and stable. Often a second person is needed to hold wood securely.
5. Always look under the cutting surface to be sure that there are no other items in the path of the blade.
6. Make sure the base plate is always flush with the wood and that the blade stays straight in the saw groove. Don't try to cut a curved line with a circular saw.
7. Start the saw before the blade enters the wood to avoid binding.
8. Let the saw move forward slowly, pushing it forward with a slight, easy pressure.
9. When not in use, unplug the saw to avoid accidents by children who might pick up the saw.

NOTE: BEFORE STARTING UP THE SAW, CHECK TO MAKE SURE THE ELECTRICAL SYSTEM CAN CARRY THE ADDITIONAL VOLTAGE.

OTHER POWER TOOLS AND THEIR USES WITH ASP

ELECTRIC DRILL--Sometimes when you've tried everything and you just can't get unbent nails into that confounded rough-cut oak board, try beginning the nail holes with a drill. Electric drills are also handy in beginning holes for screws.

SABER SAW--Useful in drilling holes in sheetrock for electrical outlets, etc.



BELT SANDER--Useful when sanding down wood.

FINISHING SANDER--Good for sanding down sheetrock.

CHAIN SAW--Useful to us in cutting down trees, or cutting out a window and doorway through a wall (careful not to hit nails, though, or you can ruin an expensive blade). Also can be used sometimes on the job when electricity isn't available.

TYPES OF POWER SAW BLADES

COMBINATION crosscut/rip blade is suitable for most work. CROSSCUT blades have fine teeth and cut a smooth groove. They are suitable for plywood or framing lumber such as 2 x 4 studs. They are not suitable for ripping. RIP BLADE has larger teeth and is designed to cut with the grain of the wood. HOLLOW GROUND BLADE is another good all purpose blade and makes sharp cuts with little sanding required. (See Fig. 17)

<p>Combination crosscut and rip blade is suitable for most purposes. Does a good job of cutting thick or thin hardwoods and softwoods with or across the grain, as well as plywood and hardboard.</p>	<p>Crosscut blade's fine teeth cut smoothly across grain of hardwood and softwood. Suitable for cutting plywood, hardboard, veneers, also framing lumber such as 2 x 4s. Blade is not suitable for ripping.</p>	<p>Rip blade has larger teeth than combination blade. Recommended when you want to do a large amount of cutting with grain. Best used with rip fence or guide batten for easier, more accurate cutting.</p>
		
<p>Hollow ground blade makes smoothest cut, cuts thick or thin materials with little or no sanding required. Keep blades sharp to minimize the fiber fraying and wood scorching possible with dull blades.</p>	<p>Abrasive blades are made for masonry, metal, plastic, and other hard-to-cut materials. Excellent for scoring bricks or blocks for easy breaking. Buy the blade to suit the type of material to be cut.</p>	<p>FIGURE 17</p>
		

NOTE: The Appalachia Service Project must have good, dependable, clean tools with which to work, so taking care of tools is very important to our work. Well cared for tools last longer and they are easier to work with. They also make a more attractive end product.

E. ELECTRICAL HAZARDS

Safety of the families and the work groups is a priority concern of the A.S.P. Therefore, potential accidents related to electrical problems should be called to the attention of the staff. Be overly cautious when working around old, faulty, or exposed wiring or electrical equipment.

Potential dangers to look for:

- Wiring behind a ceiling or wall you're tearing out.
- Fuse boxes, receptacles, or range receptacles without a cover.
- Frayed wiring with copper showing, or damaged insulation.
- Frequently blown fuses (that means the circuits are being overloaded somewhere).
- Any blue flame or fire around electrical equipment.
- Excessive use of extension cords as branch feeder circuits (to lights, receptacles, etc.)
- Anything reported to be giving electrical shock.
- A fuse holder without a fuse and a penny inserted where the fuse should be.

If unsure about the electrical equipment you are working near, you might consider disconnecting the main circuit if it's not a big inconvenience to the family while you're working there. Anyone who does electrical work must know and have the skills to provide such services. Nobody should work on electrical equipment without the proper skills and then only after being instructed to do so by the center staff.

F. WORKING WITH LUMBER ON THE PROJECT

LUMBER - Rough cut and finished

With A.S.P., often times rough cut lumber purchased from a local sawmill is used in repair and construction. The advantages to using rough-cut lumber is that it is much cheaper (in most cases) than finished lumber, and because of its thickness it is sturdier and stronger. For example, when tearing off bad decking on a porch, you might find 2' centers between the runners. Finished lx would not be strong enough as decking with centers that wide, but rough-cut oak lx would be because of the full 1" thickness (finished lx is only 3/4" thick).

Shrinkage is the biggest disadvantage to using rough-cut, and needs to be considered in some situations.

Creosote

Creosote is a wood preservative the Project uses frequently when working with wood that is or will be in contact or close contact with the ground. Painted on with a regular paint brush (though don't expect to be able to use the paint brush for anything else afterwards), creosote will preserve the wood from rotting for quite some time. But beware, creosote will burn your skin if you get some on you. Don't get creosote around your eyes, especially. Anyone with sensitive skin shouldn't work with it. Those who do work with it should wear gloves (and a long sleeve shirt would be good, too). If you