



# SurvivalRing

*Study Yesterday.. Prepare Today.. Live Tomorrow*

This digital document created and presented by Richard Fleetwood. He is the founder, author, producer, and webmaster of the **SurvivalRing** (<http://www.survivalring.org>) and **Civil Defense Now!** (<http://www.survivalring.org/cd-main.htm>) websites.

SurvivalRing has as its goal the ideal of being the leading source of survival, preparedness, and self reliance information on the Internet. Linkage, assistance, and creation of digital content in areas that until now have only been hinted at or impossible to find, is being added to everyday via the SurvivalRing website and email lists.

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## Civil Defense Now!

*Part of The SurvivalRing website*

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There are too many situations and incidents that can come to pass in everyday life, that when time is taken to learn and skills obtained, can mean the difference between life and death. Sept. 11, 2001 proved to the world that no matter how safe a person thinks they may be, death and injury can come from the most UN-LIKELY place, at any time. The documents presented in this series of digitized works, can help the average person with the knowledge within, to know how to save those persons closest to them in REAL disaster. Help spread this idea of sharing SURVIVAL INFORMATION.

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## **APPENDIX**

### **EXPEDIENT SHELTER DESIGNS**

#### **BELOW GROUND SHELTERS**

- 1. Tilt-Up Doors and Earth Shelter**
- 2. Log-Covered Trench Shelter**
- 3. Door-Covered Trench Shelter**

#### **ABOVE GROUND SHELTERS**

- 1. Above-Ground Door-Covered Shelter**

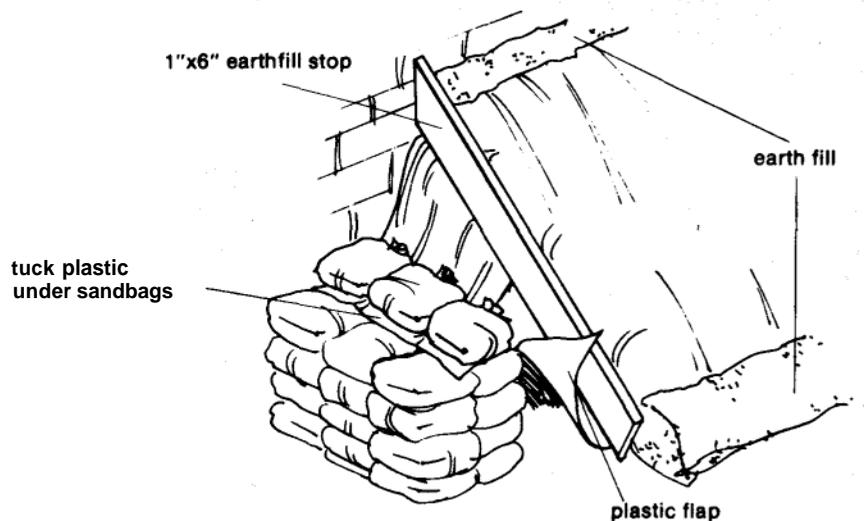
### **EXPEDIENT EQUIPMENT DESIGNS**

- 1. Air Ventilation Pump**
- 2. Emergency Lamp**
- 3. Bucket Stove**
- 4. Expedient Grain Mill**

**SAVE THESE DESIGNS AND INSTRUCTIONS.**

# EXPEDIENT FALLOUT SHELTER

## Tilt-Up Doors and Earth



Entry Detail

### General Information

Read and study all instructions before starting to build. The location selected for this shelter should be level or gently sloping down and away from the masonry wall. A three-person shelter can be constructed by three people working a total of 6 hours each.

#### Step 1

Lay out the trench and earth notch widths, as dimensioned on the section below, adjacent to masonry wall. Determine the length of trench and notch by allowing one door width of length per person to be sheltered.

#### Step 2

Excavate trench and earth notch. Place excavated earth outside shelter limits for later use.

#### Step 3

Remove door knobs from all doors. Place double layer of doors in notch and against wall as shown in sketch. Nail 1" x 8" board to door edges at entrance to serve as earth stop, after attaching plastic entrance cover as shown, or build retaining wall of sandbags in lieu of board. Place one door on edge lengthwise as the end closure.

#### Step 4

Place one end of the rolled up waterproofing material under the top edge of the doors before earth fill is placed.

Begin placement of earth fill on doors. Cover the earth fill with waterproofing material, securing it with earth at top and bottom to prevent it from blowing away.

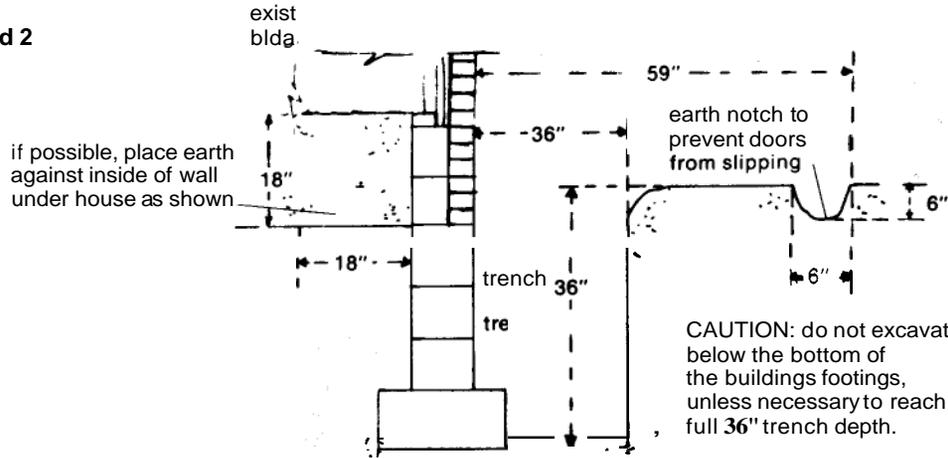
#### Step 5

Construct entrance-fill "sandbag pillowcases" with earth taken from the trench and stack to dimensions shown after doors are in place. Plastic or polyethylene (waterproofing material) entrance cover should be in place before earth fill is put on the doors.

### Tools and Materials

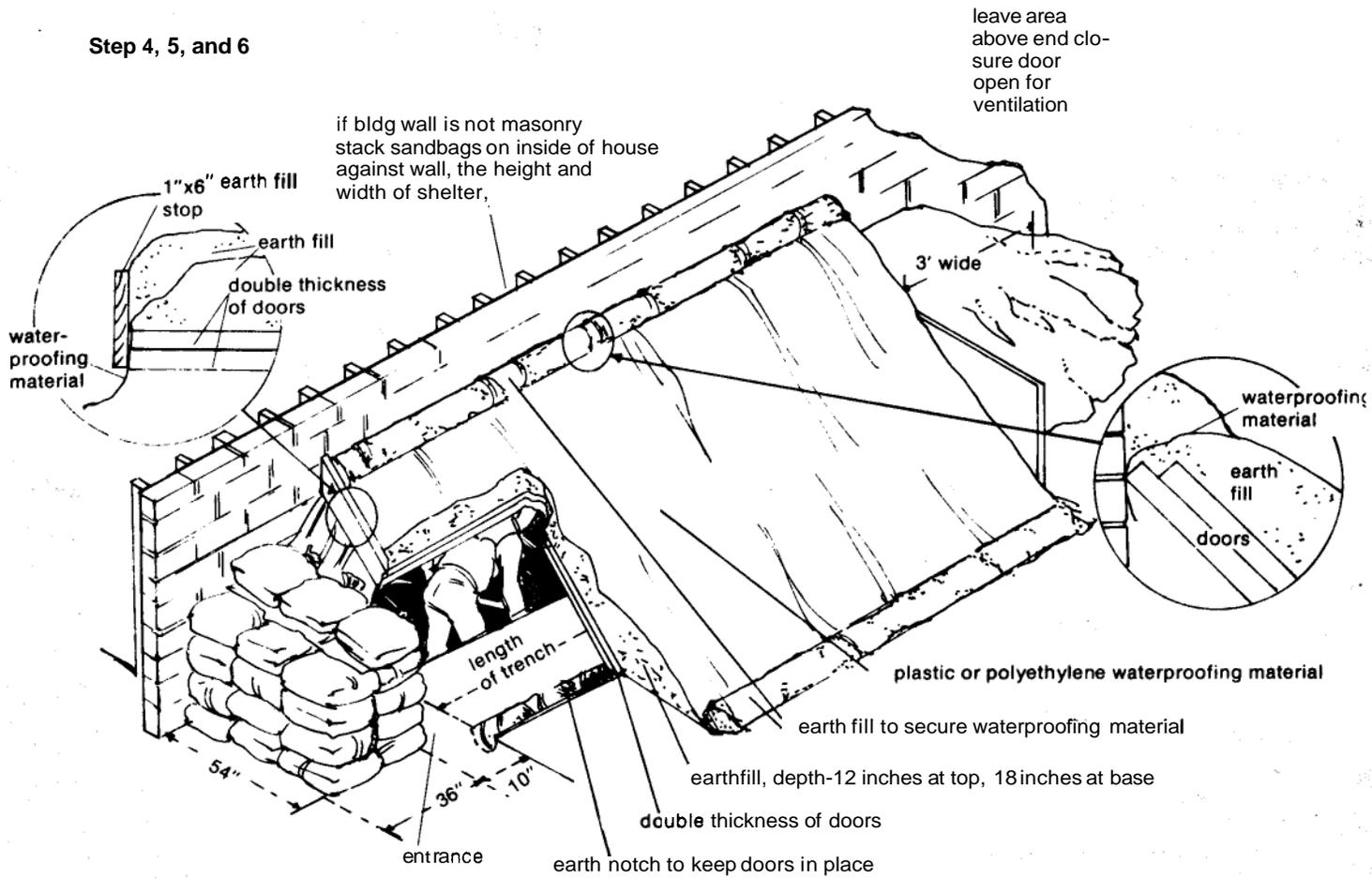
1. Tools: pick, shovel, hammer, saw, screwdriver, knife, yardstick.
2. Sandbags, pillowcases or plastic garbage bags - at least 39.
3. Lumber: 1" x 8" piece 7' long (or 20 more sandbags) for earth-fill stop at entrance edge of doors.
4. Rope or cord to tie sandbags.
5. Doors: two layers for length of shelter plus one for end closure. (Example: 7 doors for 3 person shelter).
6. Nails: 8 penny (2-1/2" long), about 10 to nail earth stop to door edges at entrance.
7. Plastic or polyethylene (waterproofing material) to cover double layer of doors plus entrance.
8. Work gloves for each worker.

**Step 1 and 2**



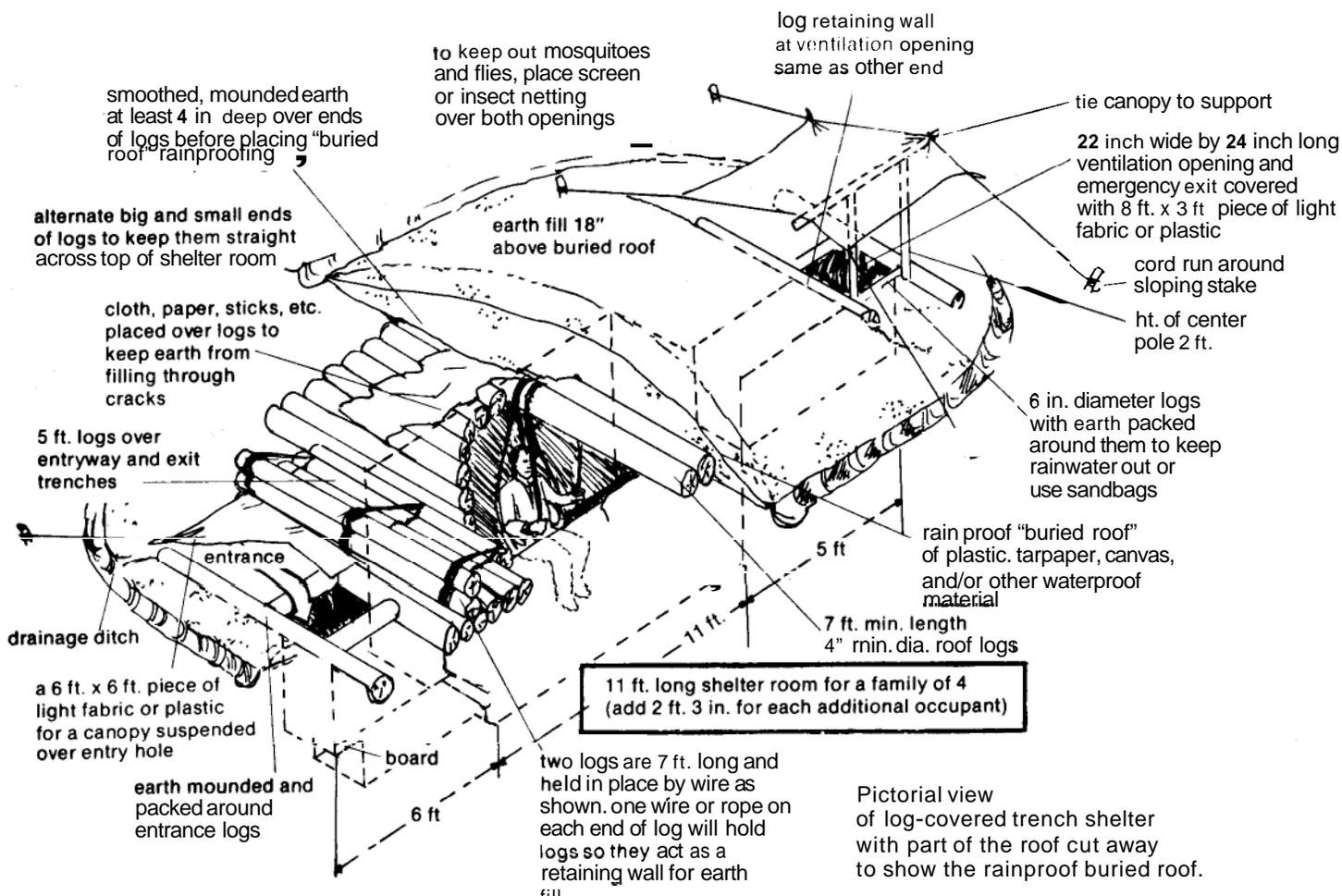
Section  
(Trench-Earth Notch)

**Step 4, 5, and 6**



# EXPEDIENT FALLOUT SHELTER

## Log — Covered Trench Shelter



Pictorial view of log-covered trench shelter with part of the roof cut away to show the rainproof buried roof.

### General Information

This shelter is designed for areas where the depth below the ground surface to hard rock or groundwater is below the bottom of the trench. Also, the earth must be sufficiently firm and stable so that the trench sidewalls will not cave in. In addition, adequate small trees that can be cut for logs must be available in the immediate area. The shelter (4-person capacity) can be built by 4 people working a total of 12 hours each. After initial completion, the shelter can be enlarged to a width of 5 ft. - 6 in. and deepened to 6 ft. However, 9 ft. logs must be used in place of 7 ft. logs and the buried roof must be large enough to cover the widened shelter during the initial construction.

#### Step 1

Clear area of brush and tall grass. Lay out shelter as shown below.

#### Step 2

Begin excavating the trench. Place excavated earth at least 3 feet beyond the edge of trench so that the roof logs can later be placed over the trench.

#### Step 3

As the trench excavation progresses, some workers should begin cutting logs to the length and size as shown on the illustrations.

#### Step 4

Place logs over trench. Position ties for bed sheet chairs or hammocks. Place newspaper or other material as indicated over logs. Place earth fill and buried roof.

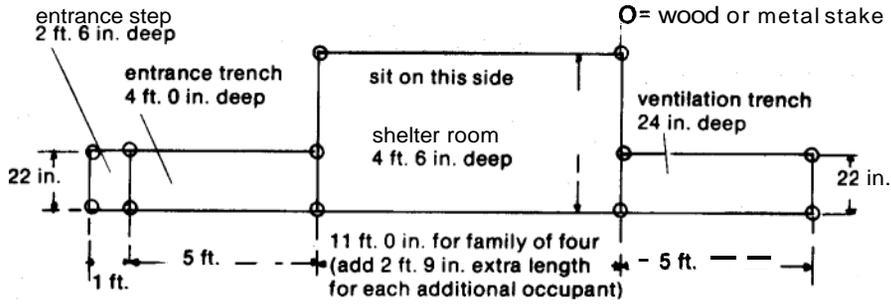
#### Step 5

Construct canopies over the openings.

### Tools and Materials

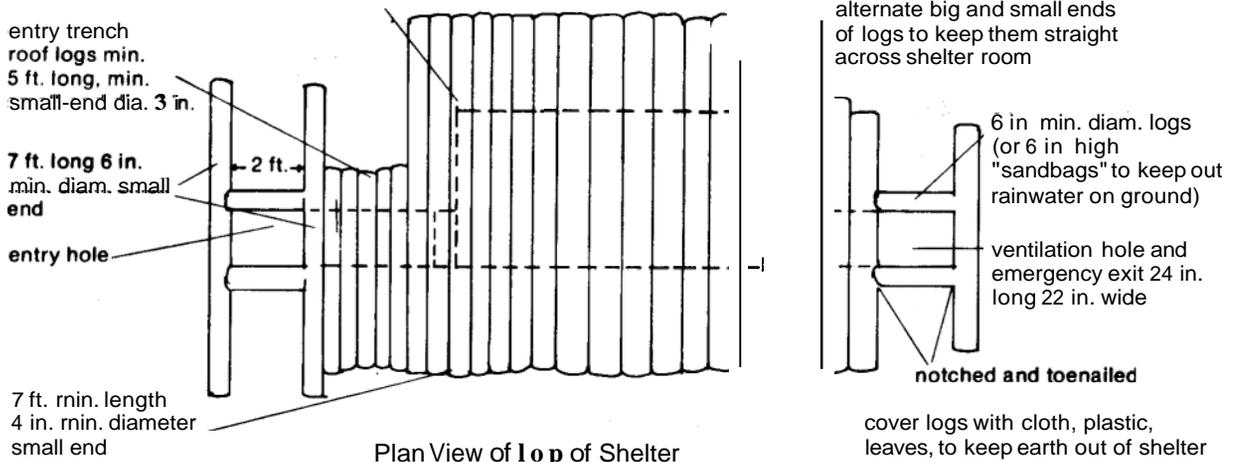
1. Saw and/or axe.
2. Pick or mattock.
3. Long-handled shovels.
4. Rainproofing material (plastic or polyethylene) 25 square yards. For each person above 4, add 2 sq. yds.
5. 50 feet of strong string or cord and a knife.
6. Tape measure or yard stick.
7. At least 8 pillow cases and/or sandbags.
8. Work gloves.
9. Bed sheets for use as "chairs" or "hammocks"- 1 per person plus at least 15 feet of strong rope or cord per bed sheet.
10. 15 pounds of newspapers to place over roof logs to keep earth from falling through cracks between logs.

**Step 1 & 2**



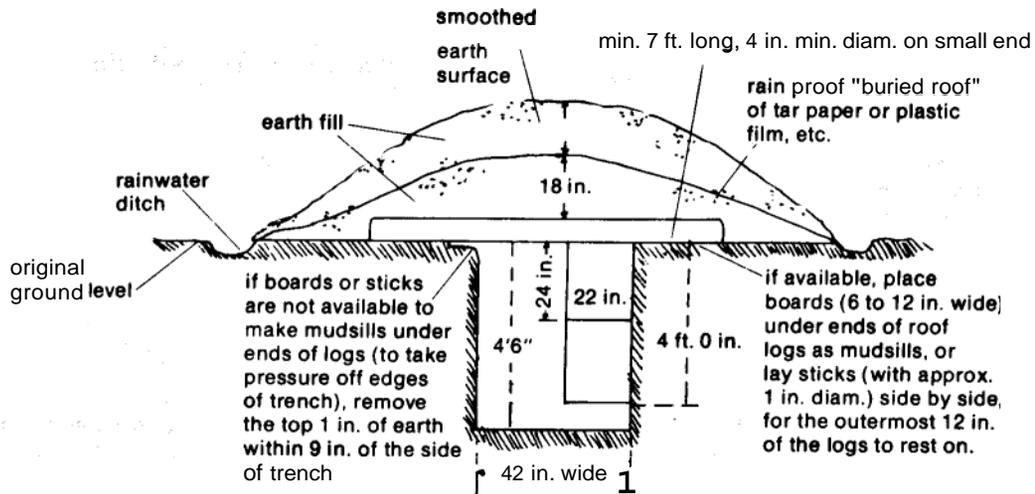
**Step 3**

roof logs minimum 7 ft. long, 4 in. minimum diameter on small end laid about 2 ft. past each end of shelter room.



Plan View of Top of Shelter

**Step 4**

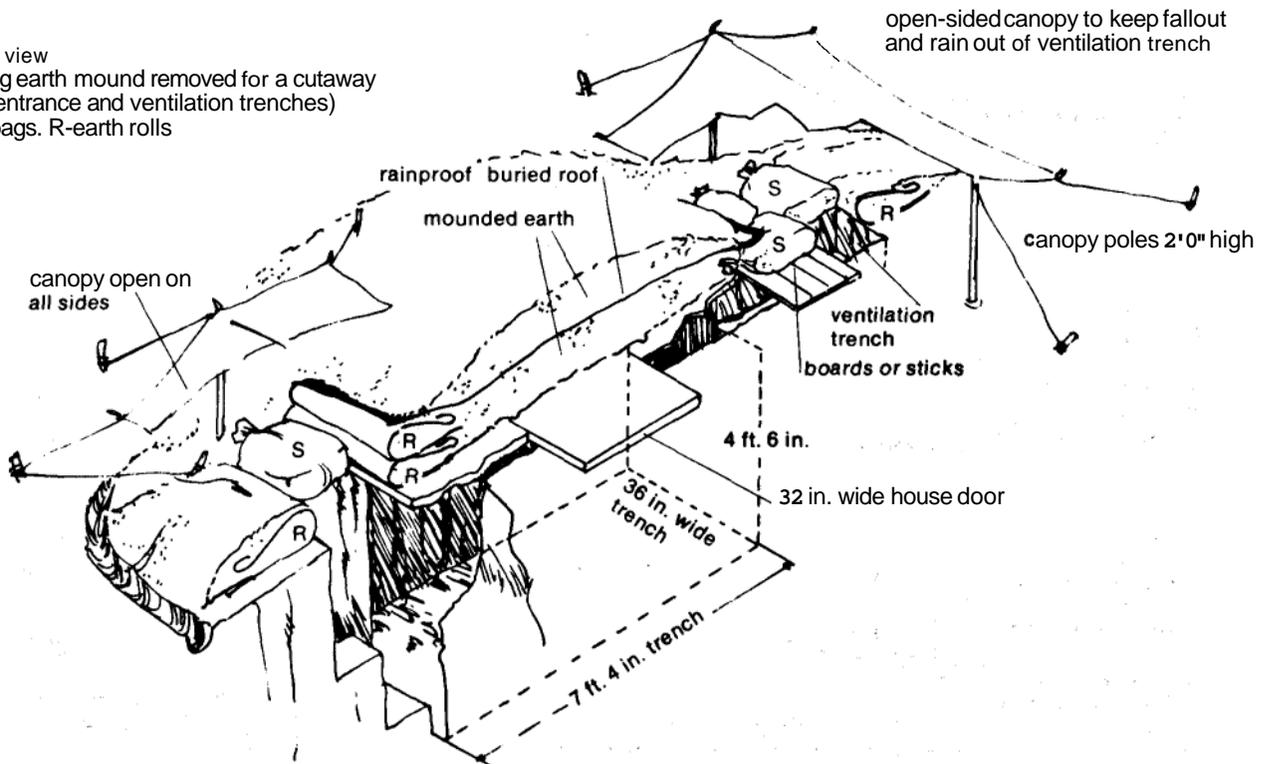


| —Approx. No. of Poles Required— |   |    |      |    |          |
|---------------------------------|---|----|------|----|----------|
| 45                              | — | 7' | Long | 4" | Diameter |
| 10                              | — | 5' | Long | 4" | Diameter |

# EXPEDIENT FALLOUT SHELTER

## Door Covered Trench Shelter

pictorial view  
(showing earth mound removed for a cutaway  
view of entrance and ventilation trenches)  
S-sandbags. R-earth rolls



### General Information

This shelter is designed for areas where there is a shortage of small trees and/or building materials. The depth to ground water and rock must also be below the bottom of the trench. In addition, the earth must be sufficiently firm and stable so that the trench walls will not collapse. The shelter (3-person capacity) can be constructed by 3 people working an approximate total of 12 hours each. Read and study all instructions before beginning to build.

#### Step 1

Select a reasonably level site. Lay out the shelter as illustrated by laying doors side by side to determine the shelter length. Door knobs should be removed.

#### Step 2

Excavate the shelter trench, entryway and ventilation trench as shown. Pile the excavated earth at least 3 feet beyond the trench limits so that it will not interfere with the later placement of doors over the trench.

#### Step 3

If there are adequate sheets or fabric available, line the trench walls with them. Then place doors over the trench.

#### Step 4

In order to hold in place an adequate amount of earth on top of the doors, construct earth "rolls" around the entryway as shown. The "rolls" will keep the earth fill in place. See how to make an earth roll.

#### Step 5

Place earth fill and the waterproofing material over the doors. Place sandbags as shown on the illustrations.

#### Step 6

Construct shallow drainage ditches on all sides and place canopies over the opening.

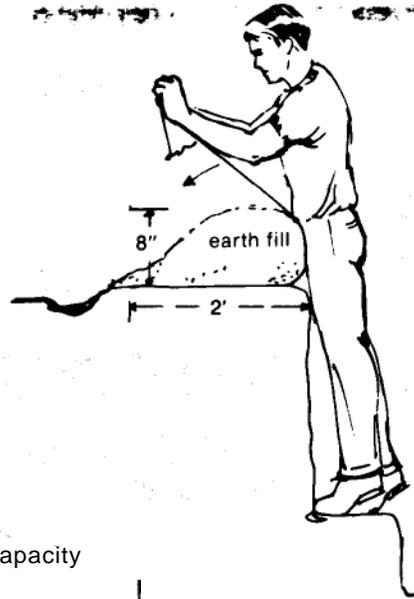
### Tools and Materials

Doors (interior solid or hollow-core) — 1 full size (32" minimum width) for each person. If doors measure less than 32" in width, use a combination of doors to provide the minimum width per person. If **doors are hollow core, use two layers.**

2. Pick and/or mattock.
3. Long-handled shovels and square bladed shovel.
4. Rainproofing material - (e.g., plastic sheeting, canvas, plastic table covers, etc.) at least 25 square feet per person plus 2 pieces about 6 ft. by 6 ft. for use as canopies.
5. One bedsheet or the equivalent of 50 sq ft. of cloth or plastic per person to line trench and make earth-filled rolls.
6. Two pillowcases per person to use as sandbags.
7. String or cord to tie canopies and sandbags.
8. Knife
9. Several boards about 3 feet long.
10. Measuring tape ruler.
11. Work gloves for each worker.
12. Hammer and hand saw.

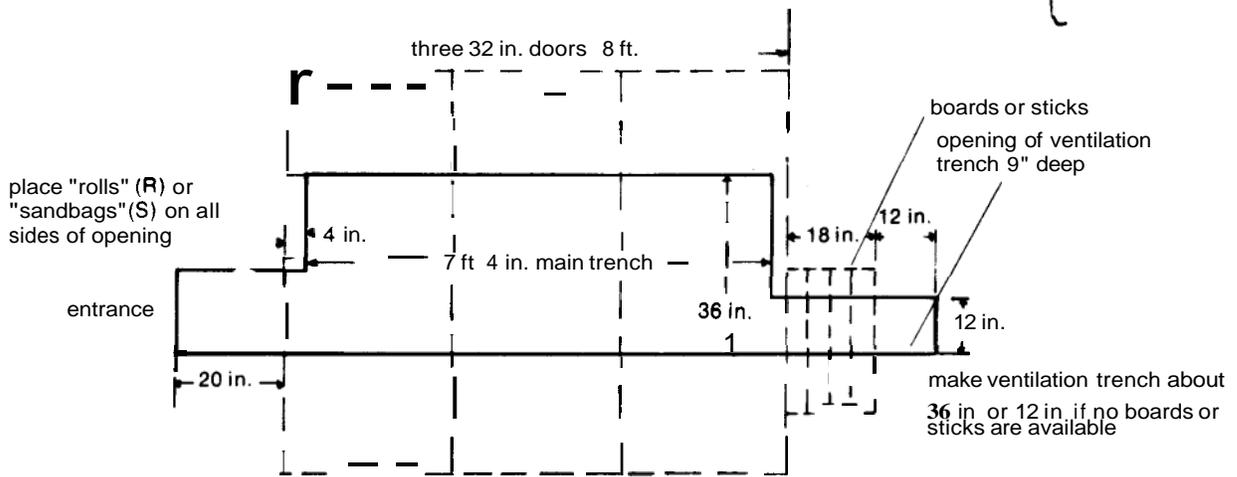
**How to Make an Earth Roll**

1. Select a piece of cloth or plastic at least as strong as a new bed sheet, 2 ft. wider than the side of the opening to be protected, and 5 ft. in length.
2. Place 2 ft. of the length of the cloth on the ground, as illustrated.
3. While using both hands to hold up 3 ft. of the length of the cloth and while pressing against the cloth with your body, have another person shovel earth onto and against the cloth.
4. While still pulling on the cloth, place the upper part over the earth that is on the lower part of the cloth.
5. Cover the upper edge of the cloth, forming an earth-filled "hook" in this edge.

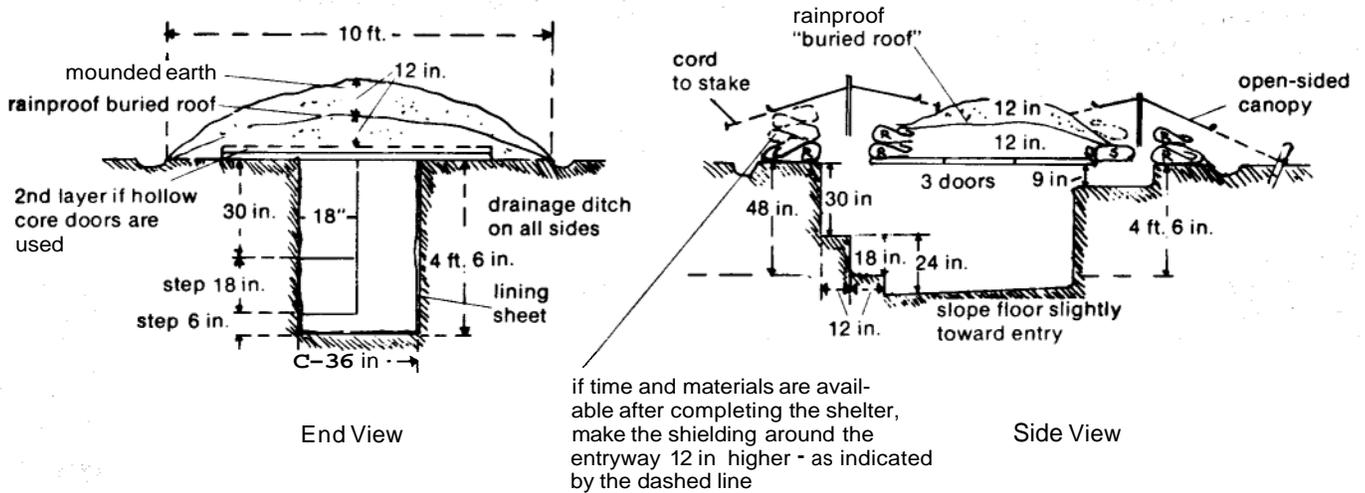


**Step 1 and 2**

Layout for 3-Person Capacity

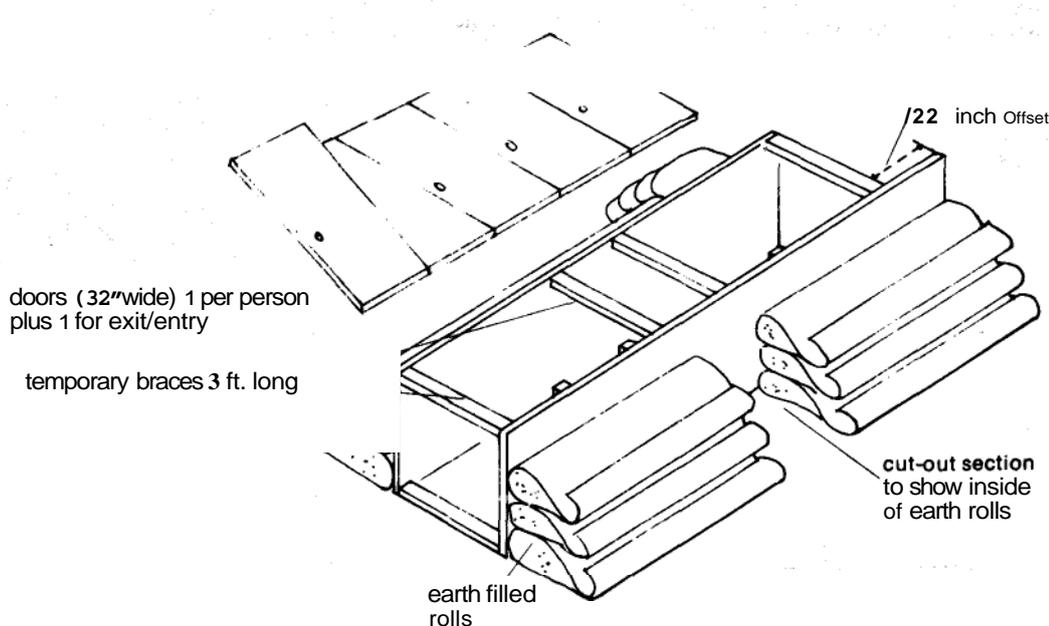


**Step 3**



# EXPEDIENT FALLOUT SHELTER

## Above-Ground Door-Covered Shelter



### General Information

The above-ground door-covered shelter is designed for areas where below-ground shelters are impractical because the groundwater table or bedrock is close to the ground surface. This shelter can be built by four persons working a total of 10 hours each.

Read and study all instructions before starting to build. If door widths measure less than 32 inches, use a combination of doors to provide a minimum of 32 inches of door-width per person.

#### Step 1

Select a shelter location where there is little or no chance of rainwater ponding on the ground surface. Stake out shelter, removed door knobs. Allow 1 door for each person plus 1 door for entry/exit at end. Limit is 8 persons per shelter.

#### Step 2

Set up doors as forms around which earth-filled rolls will be placed. Nail only top braces. Nails must be removed later. Brace all corners, center, top and bottom of each door.

#### Step 3

Begin to place earth-filled rolls against door forms. To form earth rolls, see earth-filled roll detail bottom of page.

#### Step 4

Dig 14" deep, 36" wide trench inside shelter. Earth can be used to form side earth filled rolls. Trench can be made up to 3 feet deep if conditions permit.

#### Step 5

Mound earth against the earth-filled rolls as shown. Continue placing earth and sheets to form earth-filled rolls.

#### Step 6

Keep height of earth about equal on both sidewalls as rolls are formed. After sidewalls have reached planned height, remove braces and door forms, use same door forms to construct endwalls with earth filled rolls. Provide exit/entry at end as shown.

#### Step 7

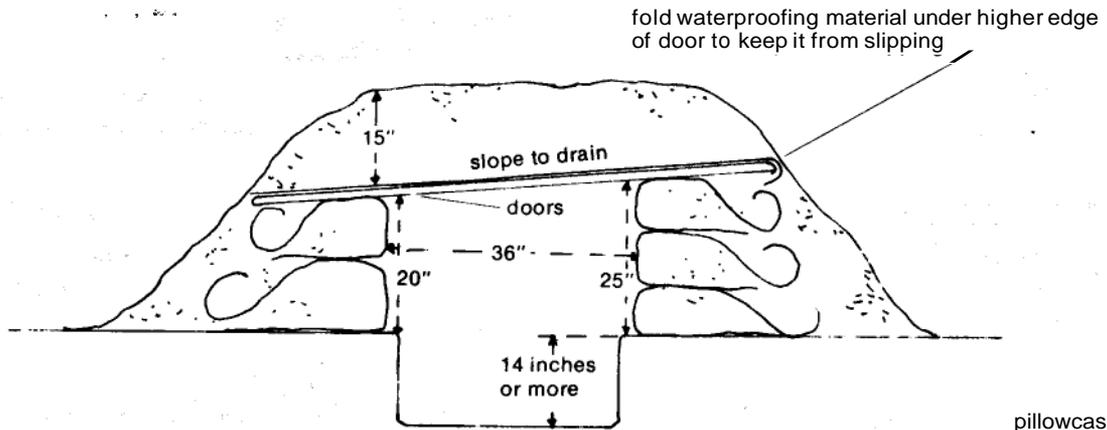
Remove door forms from endwalls. Position roof doors in their final position. Place entry frame for door over entry/exit. Place waterproofing material on doors.

#### Step 8

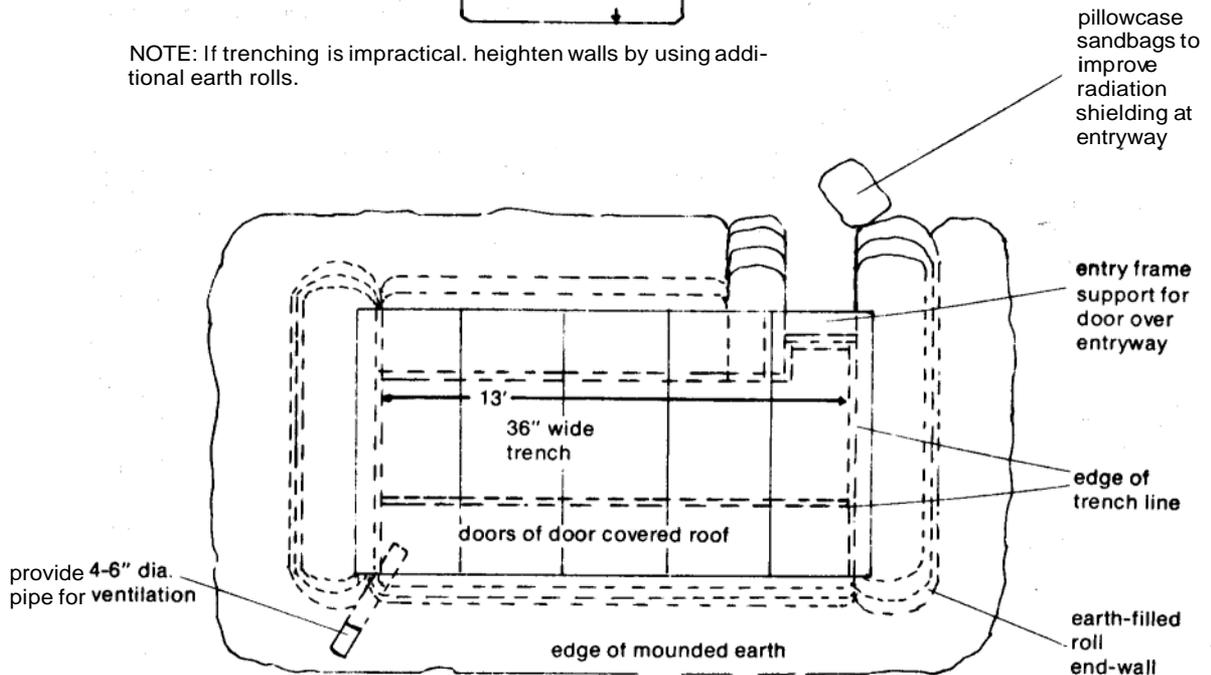
Place 15 inches of earth on top of shelter. In hot weather construct a shelter ventilation air pump. See air pump details on page 143.

### Tools and Materials

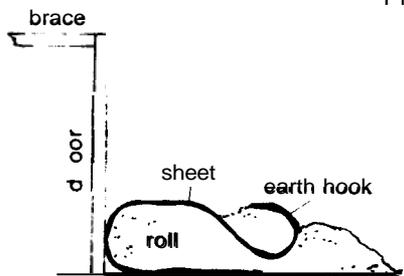
1. Doors as indicated.
2. Pick or mattock and shovel.
3. Two buckets or large cans to carry earth.
4. Tape measure, yardstick or ruler.
5. Saw, axe or hatchet.
6. Hammer and at least 20 nails - 2½" long.
7. At least 4 double bed sheets for each person to be sheltered.
8. Pillowcases and rainproofing materials such as plastic or polyethylene.
9. Work gloves for each worker.
10. Lumber for use as temporary braces and for entry/exit frame.



NOTE: If trenching is impractical, heighten walls by using additional earth rolls.



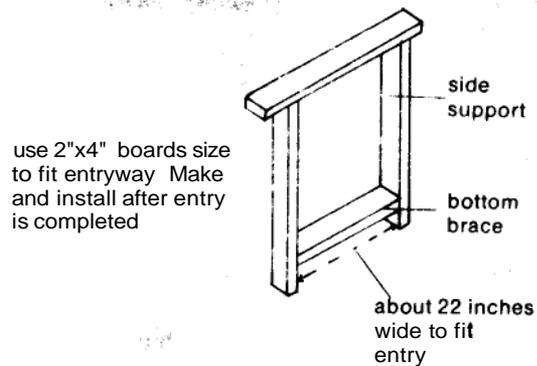
Plan View of Shelter - 4 Person  
(Looking Down)



**Earth-Filled Roll Detail**

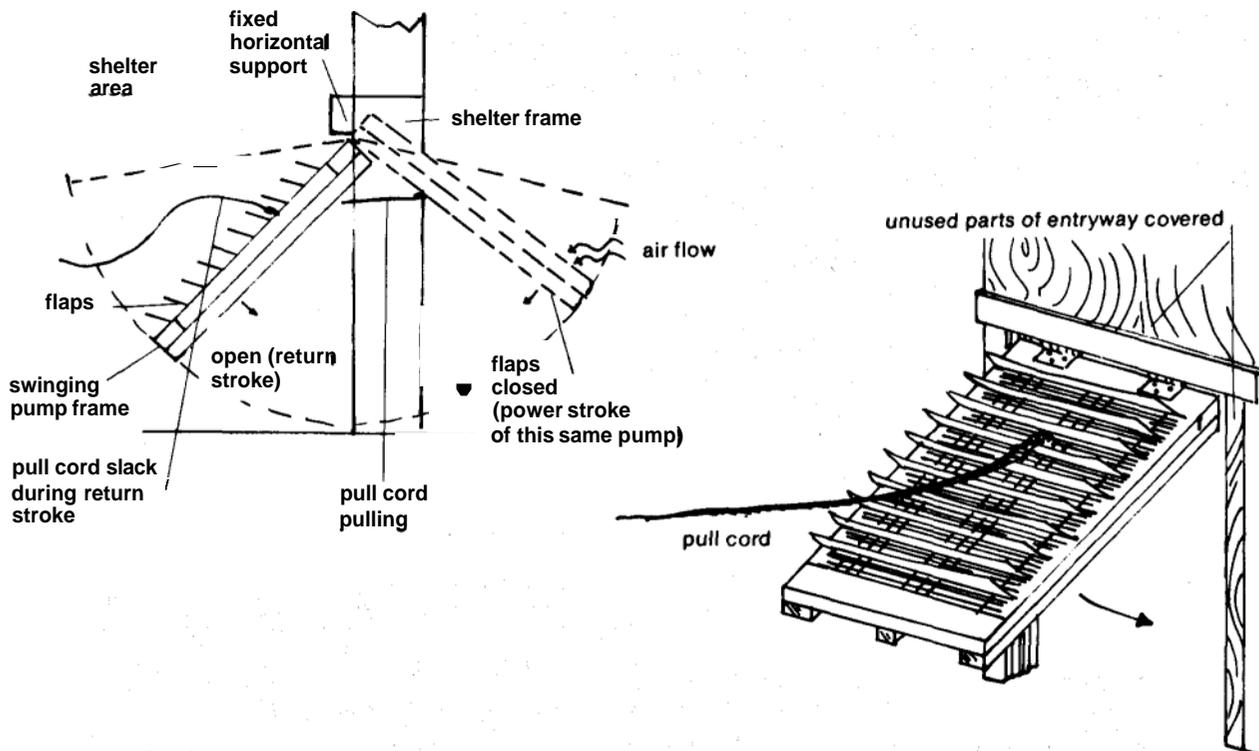
1. Place 2 ft. of sheet on ground and temporarily drape remainder of sheet on door
2. Place earth on sheet - shape as shown.
3. Fold sheet over shaped earth.
4. Place earth onto a sheet at narrow trench
5. Fold sheet to form earth hook. Hook will anchor sheet.
6. Repeat to form next earth-filled roll.

Entry/exit Frame



# EXPEDIENT FALLOUT SHELTER

## Air Ventilation Pump



All expedient shelters are designed to provide for some natural ventilation. In very hot weather, additional ventilation may be required to provide a livable temperature. Construction of an air pump that can provide additional ventilation is illustrated below.

Study all instructions before starting construction.

### Step 1 Air Pump

The air pump operates by being swung like a pendulum. It is hinged at the top of its swinging frame. It is swung by pulling an attached cord. The flaps are free to also swing and when they are in the closed position, air is pushed through the opening that the pump is attached to.

To obtain maximum efficiency and move the largest amount of air, the unused portions of the entryway should be covered with wood, plastic, cloth, stiff paper or similar materials.

### Step 2 Materials and tools needed to construct an air Pump

(Materials sized for a 36-inch by 29-inch pump)  
Lumber sizes can be altered, depending on availability.

#### • A. Lumber

| Size          | Quantity | Size          | Quantity |
|---------------|----------|---------------|----------|
| 1" x 2" x 36" | 2        | 1" x 2" x 32" | 2        |
| 1" x 1" x 36" | 1        | 1" x 1" x 32" | 1        |
| 1" x 2" x 29" | 2        | 1" x 4" x 36" | 1        |

6. One pair ordinary door or cabinet butt hinges, or metal strap hinges, or improvised hinges made of leather, woven straps, cords or four hook & eye screws which can be joined to form two hinges.

C. 24 nails about 2" long, plus screws for hinges.

• D. Polyethylene film. 3 to 4 mils thick, or plastic drop-cloth, or raincoat-type fabric, or strong heavy paper - 10 rectangular-shaped pieces, 30" x 5½".

• E. 30' of smooth, straight wire for use as flap pivot wires (about as thick as coat-hanger wire) or cut from 10 wire coat hangers, or 35' of nylon string (coat-hanger wire thickness).

• F. 30 small staples, or small nails. or 60 tacks to attach flap pivot wires to wood frame.

• G. 30' of ¾" to 1" wide pressure sensitive waterproof tape that does not stretch, or use needle and thread to sew hem tunnels to the flaps.

• H. For flap stops, 150ft. of light string, strong thread, or thin smooth wire. 90 tacks or small nails to attach flap stops to the wood frame, or flap stops can be tied to the frame.

I. 10 feet of cord for the pull cord.

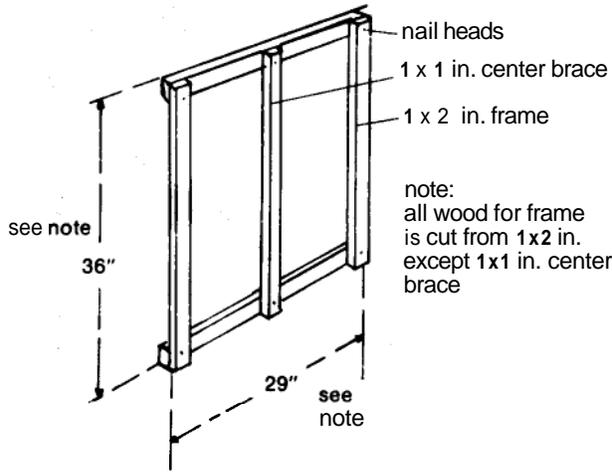
J. Desirable tools: hammer, saw, wirecutter-pliers, screw-driver, small drill, scissors, knife, yardstick, and pencil.

• Items must be sized or adjusted to fit opening into which air pump is to be placed

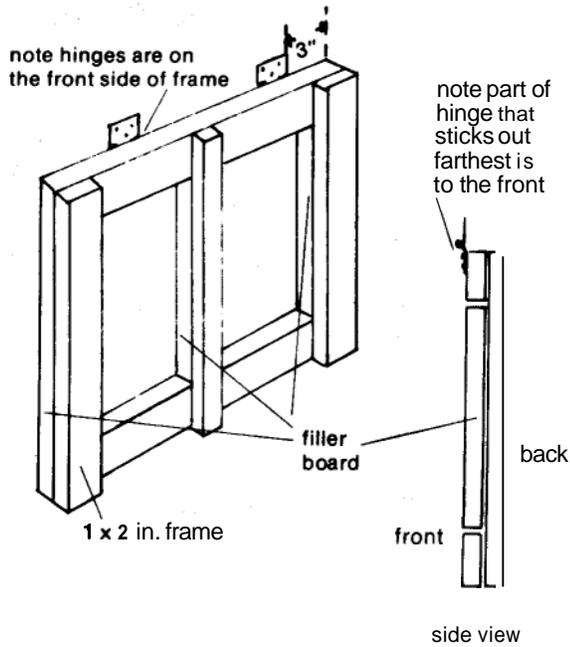
**Step 3 How to construct the air pump**

**A** Cut lumber and assemble frame as shown.

NOTE: Dimensions shown for frame may have to be adjusted to fit openings in a shelter.

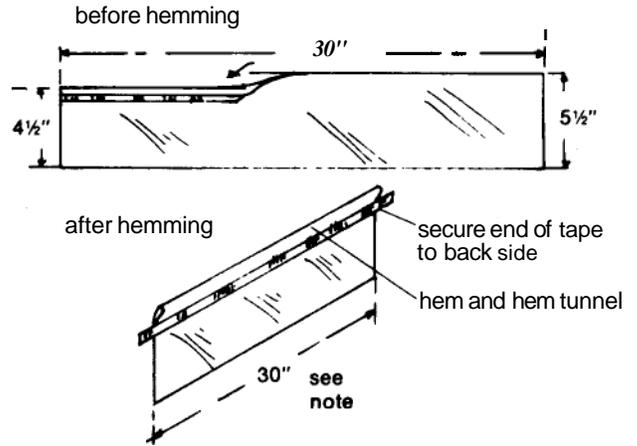


**B.** Complete frame and attach hinges. If drill is not available to drill screw holes to attach hinges, use a nail to make the holes.

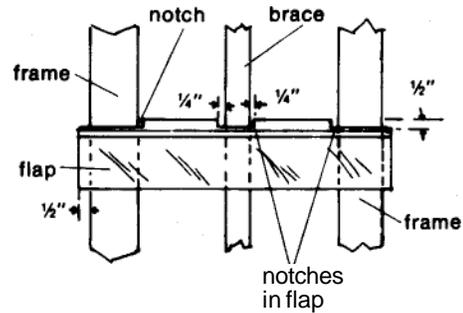


**C.** Cut 10 rectangular strips of polyethylene film, 30" long by 5 1/2" wide for use as flaps. Hem flaps as shown. Use pressure-sensitive tape or sew hem shut to form hem tunnel.

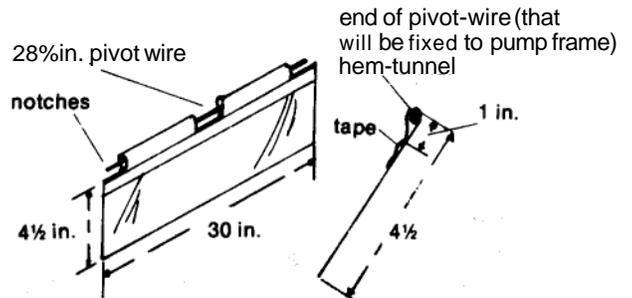
NOTE: width of frame plus 1 inch.



After hem is made, cut notches in flaps as shown. Avoid cutting tape that holds hem.



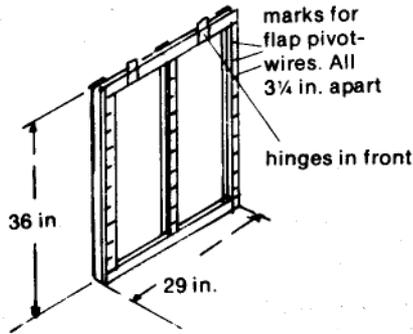
Insert 10 pieces of straight wire (pivot wires) into flap hem as shown. Flaps should swing freely. String can be used if wire not available (wire coat-hanger thickness).



D. Mark pump frame for pivot wire and flap stop locations.

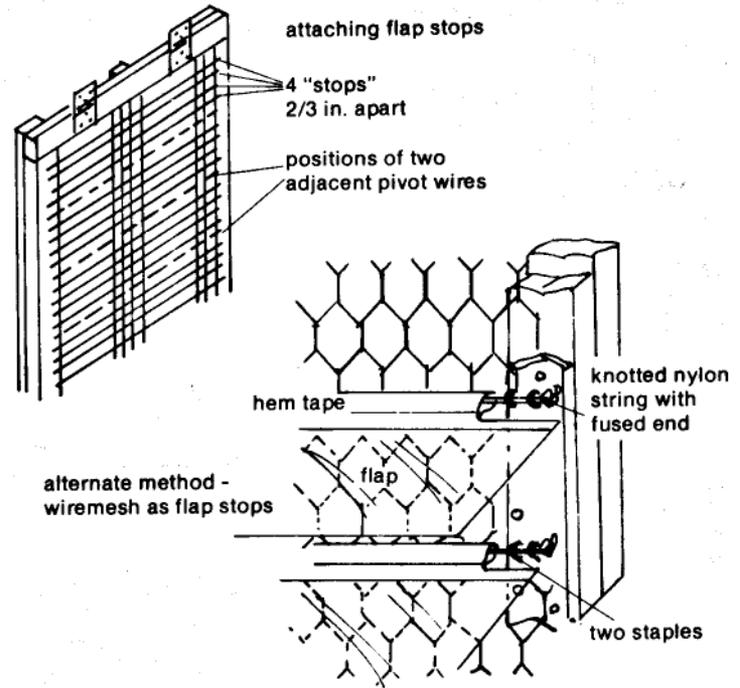
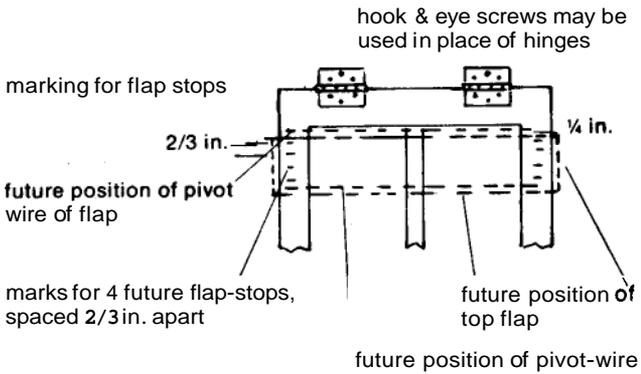
NOTE: frame dimensions may have to be adjusted to fit opening in shelter.

marking for pivot wires

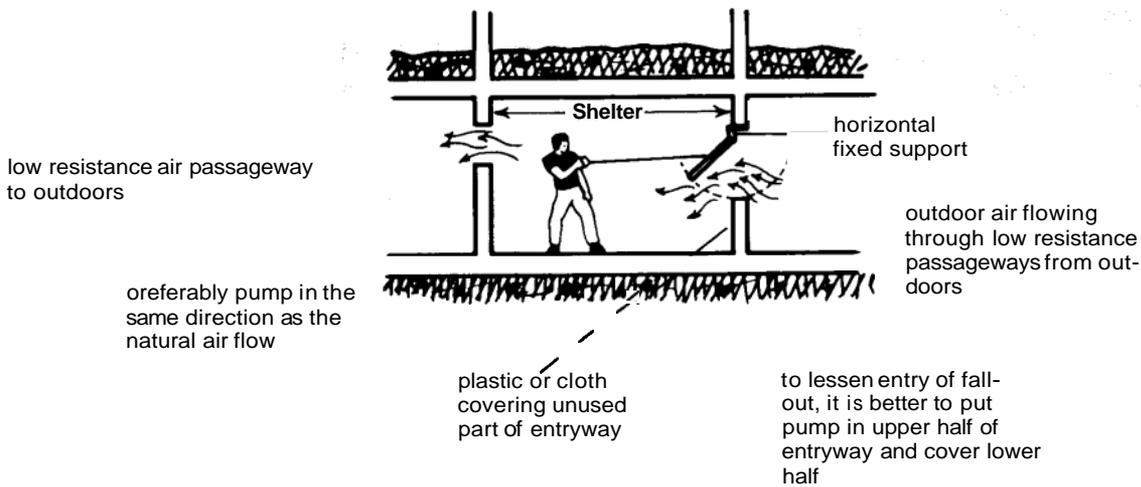


E. Attach flap stops (strings or wires) to the pump frame at the marked locations. 4 flap stops are needed between adjacent pivot wires.

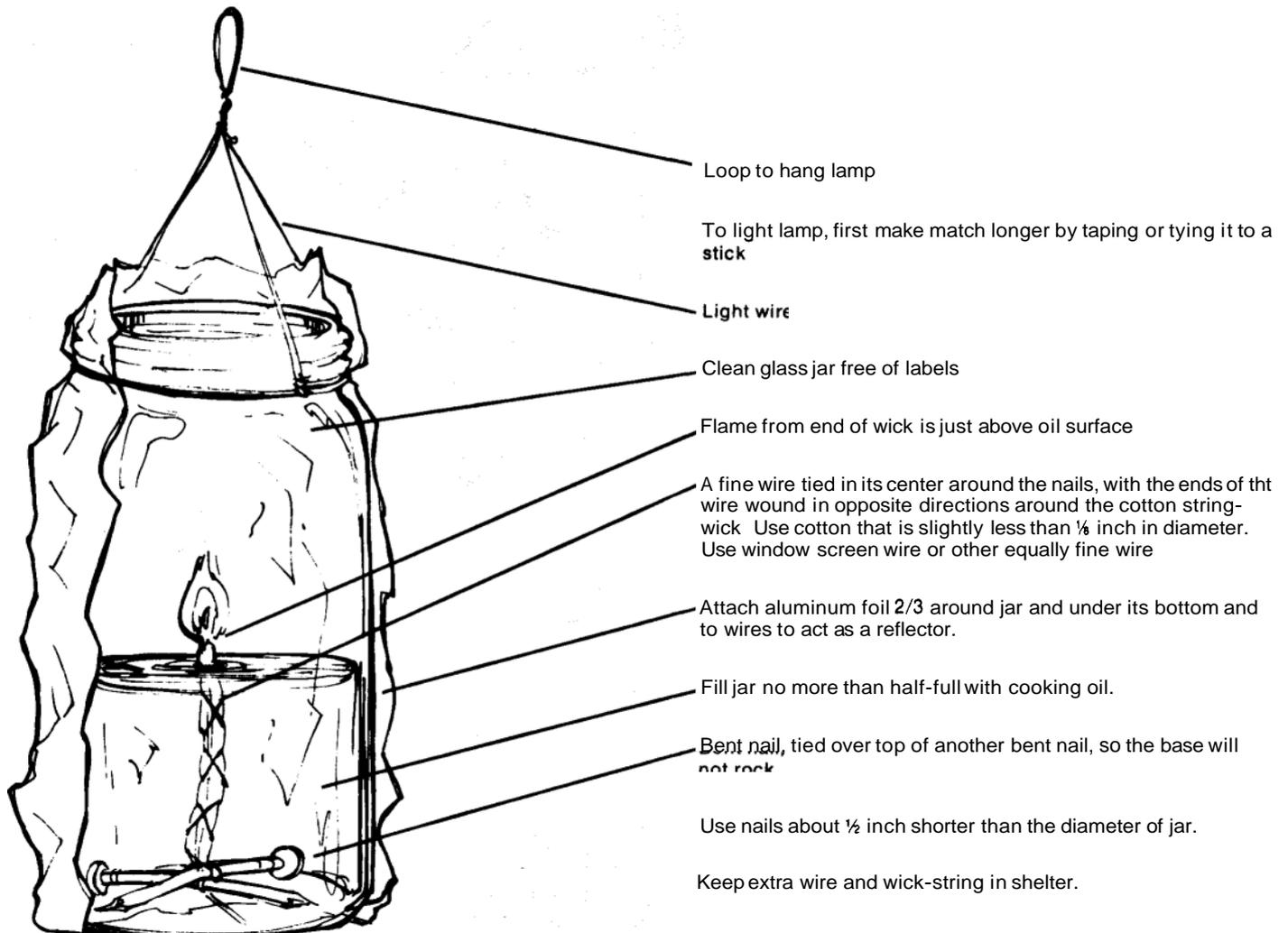
F. Starting from the bottom — staple, nail, tack or tie the flap pivot wires with flaps in their marked positions. Attach hinges to horizontal support board. Attach pullcord to center brace.



#### Step 4. Typical Installation of air pump



# Emergency Lamp



Wire-Stiffened-Wick Lamp

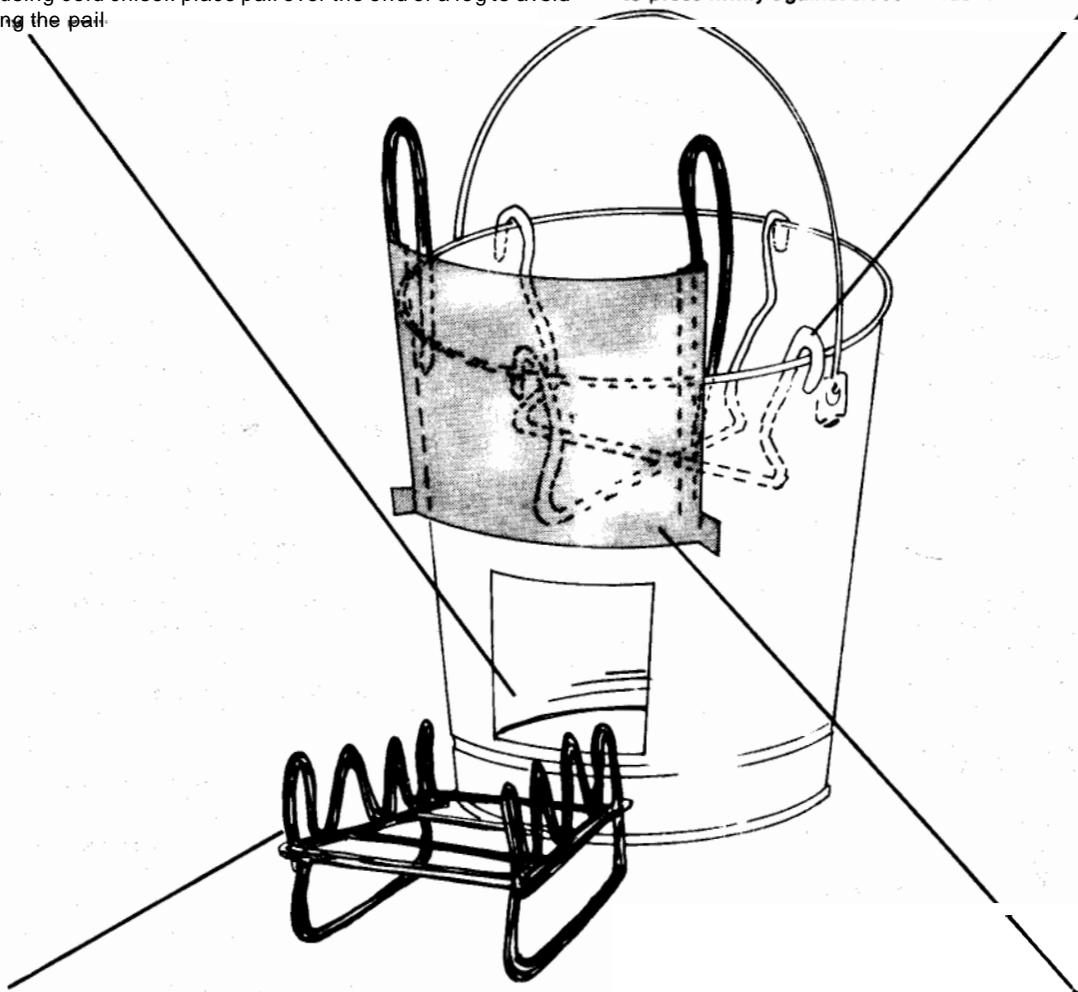
This type of lamp will provide light for use in expedient shelters - the lamp will burn slowly consuming about 3 ounces of cooking oil in 24 hours.

**WARNING** Do not use kerosene, diesel fuel, or gasoline - use only oils of the kind found in the kitchen.

# Bucket Stove

Using a cold chisel and tin snips, cut a 5x5 square hole in the pail. When using cold chisel, place pail over the end of a log to avoid crushing the pail.

Two coat hangers used to form cook-pot support! Bend as shown to press firmly against sides of bucket.



Use 4 or 5 metal coat hangers to fashion a grate as shown.

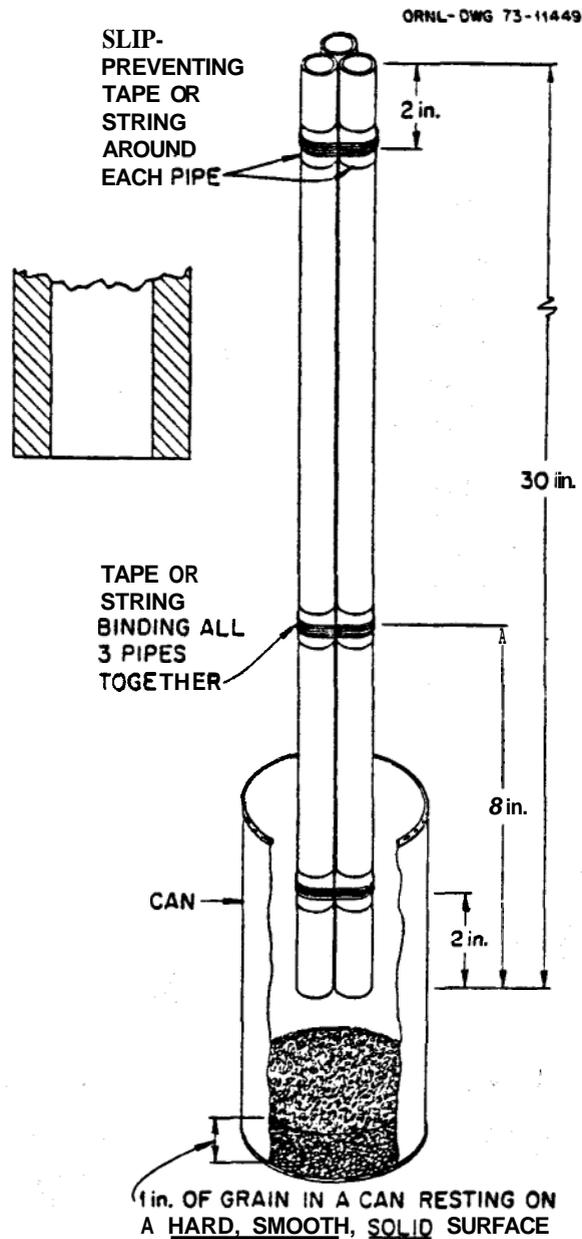
Cut the damper from a juice can. Bend the sides with pliers around coat-hanger wire used to attach damper to pail. This allows it to move up and down.

This combination cook-stove/space heater is made using a 10 to 16 qt. metal pail, some coat-hanger wire, and metal cut from a large juice or vegetable can. When assembled as shown, the stove will bring 3 qts. of water to a boil using as fuel about 1/2 lb. of dry, twisted paper or dry wood. Pieces of wood about 1/2 x 3/4 x 6 inches are best.

Aluminum foil placed in bottom of pail and wrapped halfway around it reflects heat both toward cook-pot and toward shelter area when device is used as a space heater.

NOTE: Locate cook-stove only where either natural or forced ventilation is causing air to leave the shelter - DO NOT OPERATE IN A SEALED SHELTER.

# Expedient Grain Mill



## EXPEDIENT GRAIN MILL

1. Cut three lengths of pipe, each 30 inches long;  $\frac{3}{4}$ -inch-diameter steel pipe, such as ordinary water pipe, is best.
2. Cut the working ends of the pipe off squarely. Remove all roughness, leaving the full-wall thickness. Each working end should have the full diameter of the pipe.
3. In preparation for binding the three pieces of pipe together into a firm bundle, encircle each piece of pipe with cushioning, slip-preventing tape, string or cloth in the areas indicated on the diagram.
4. Tape or otherwise bind the three pipes into a secure bundle so that their working ends are as even as possible and are in the same plane and rest evenly on a flat surface.
5. Cut the top smoothly out of a large can. A 4-inch diameter, 7-inch high fruit juice can is ideal.