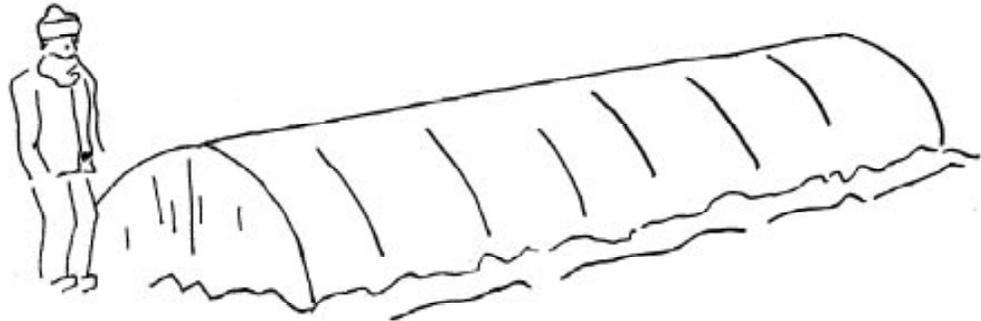




**LOW INVESTMENT PROPAGATION/WINTER PROTECTION STRUCTURE**

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**Basic Structure:**

**Quonset Design**

3' High x 6' Wide x 20' Long

3/4" schedule 40 PVC pipe bows slipped into 3/4" electrical conduit hangers

6 ml white copolymer cover

2" x 8" treated lumber kickboards along sides and ends

**List of Structural Materials and Approximate Costs (1993):**

<u>Quantity</u>	<u>Description</u>	<u>Cost</u>
4	3/4" PVC pipe, 20' lengths	\$10.40
1	12' x 30' white copolymer film, 6 mil	12.60
32	3/4" electrical conduit hangers	6.08
1	2" x 8" x 12' treated lumber	10.96
4	2" x 8" x 10' treated lumber	36.52
1 lb	16 penny common nails	0.87
1	200 ft roll 16 gauge steel wire	4.38
1 lb	roofing nails	0.87
4	metal 4"x5" mending plates @.45 each	<u>1.80</u>
<b>Total:</b>		<b>\$84.48</b>

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**Tools Required for Construction:**

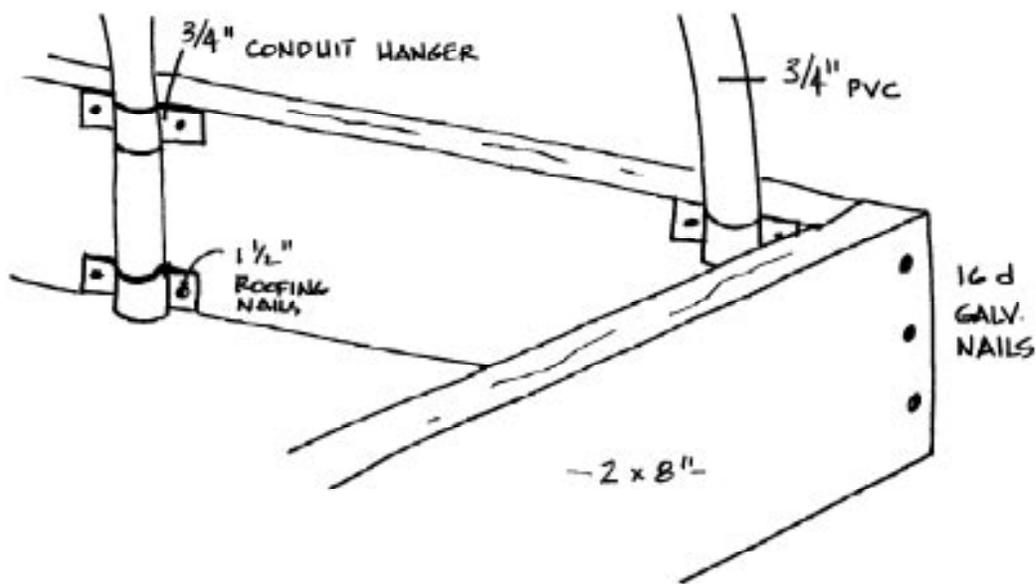
- |                              |                     |
|------------------------------|---------------------|
| Carpenter saw                | Garden rake         |
| Carpenter hammer             | Side cutting pliers |
| Folding rule or tape measure | Sharp pocket knife  |
| Round pointed shovel         | Builder's square    |
| Pencil                       |                     |



**Site Selection:** Choose a site for your structure that is fairly level and preferably has some shade. If the structure is to be used exclusively for propagation, it should be oriented east-west. If its primary use will be in providing winter protection for nursery crops, it should be oriented north-south. There should be a water source nearby since water is needed for both propagation and winter protection.

**Construction:**

1. Level an area (properly oriented depending upon whether your structure will be used for propagation or winter protection) 8' wide x 24' long.
2. Square ends of lumber.
3. Cut the 2" x 8" x 12' in half so that you have two (2) pieces 2" x 8" x 6'. These 6' sections will be used for the ends of the bed.
4. Butt the ends of two (2) of the 2" x 8" x 10's together and nail securely so that you have a 2" x 8" x 20' using mending plates on each side of the splice.
5. Repeat Step 4 using the remaining two (2) 2" x 8" x 10's. The two (2) bed sides (kickboards) are now assembled.
6. Lay kickboard sides on edge 6' apart on the levelled area and place 2" x 8" x 6' section outside each end. Be certain that corners are square, then nail together securely. You now have a rectangular box with open top and bottom that has inside dimensions of 5'8 3/4" x 20'.
7. At each of the four (4) corners along the length of the structure (on the inside edge) nail in a conduit connector so that the top of the connector is flush with the top edge of the 2" x 8" (see Figure 1). Any nails which come through should be bent over so that they will not tear the copolymer cover.
8. Repeat Step 7 but with the bottom of the connector flush with the bottom of the 2" x 8".
9. Starting from the center of either of the top end conduit hangers mark off the kickboards along the length of the structure at 33 13/16 inch intervals.
10. At each of the marked intervals nail in two (2) conduit hangers as in Steps 7 and 8.
11. Cut the four (4) 20' lengths of PVC pipe in half so that you have eight (8) 10' pieces.



**Figure 1**

12. For each section of PVC pipe, slip one end down through a set of conduit hangers, bend the pipe in a bow across the width of the structure and slip the other end of the pipe down through the opposite set of conduit hangers.
13. Install remaining 3/4" PVC bows as in Step 12 (see Figure 2).

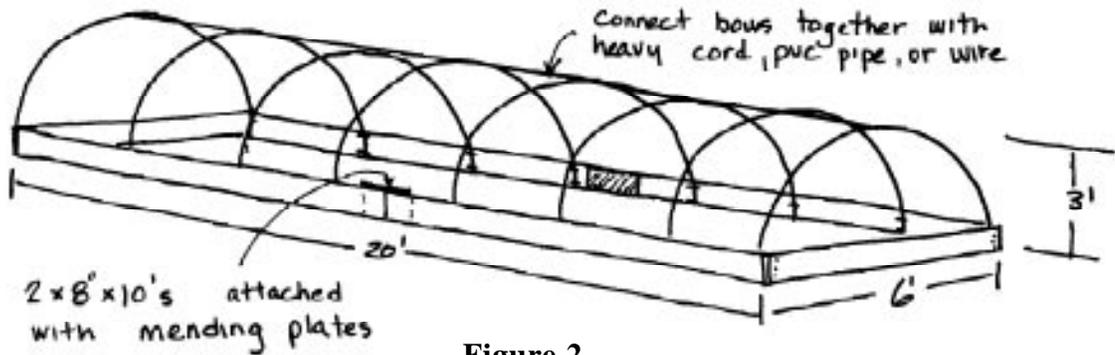


Figure 2

- 14a. If the structure is going to be used for winter protection of containerized plants follow Steps 15 and 16, then Steps 19-22.
- 14b. If the structure is going to be used for propagation of cuttings follow Steps 17 and 18, then Steps 19-22.
15. Place containerized materials inside the structure. More cold tolerant plants such as creeping junipers should be placed around the perimeter.
16. Water all containers thoroughly, then follow Steps 19-22. Preemergent herbicides should have been applied 1 month earlier. Apply fungicides after irrigation. Rodent bait should be applied just before covering.
17. Fill the structure to a depth of 6" or 7" with clean, moist propagating medium. Be certain that medium is level. An alternative to filling the frame is use of cellular trays.
18. Insert cuttings and water in thoroughly; then follow Steps 19-22.
19. Using flexible wire or heavy cord tie the bows together so that they cannot flex to either side. Another alternative is to use a single PVC 20' length centered at the top and attached to each bow to add greater rigidity to the frame.
20. Center the 12' x 30' sheet of white copolymer film over the hoop frame.
21. The cover can be secured by covering the 1' of surplus film along one of the long sides with soil. To allow easy access to the plants or cuttings the other three sides of the film can be held down with boards, rocks or pieces of wood. Winter protection structures should have kickboards braced with soil or gravel during snow season to provide extra support.
22. On warm days your structure may require venting. This can be done by opening the ends and then closing them down again later in the day.

If properly constructed the framework of your quonset should last for years. With a minimum amount of care the white copolymer cover should last for two (2) years. Precautions should be taken to insure that nails and wire used in construction of the framework are properly bent and do not tear the cover. Also, if the structure is not going to be used for prolonged periods, it is best to remove the white copolymer cover, carefully roll it up and store it out of direct sunlight. Do not fold the cover as the creases will cause weak areas which will tear easily when the cover is replaced on the quonset! Storage of the cover, when not in use, will extend the life of the white copolymer.

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