

## **Bill of Materials:**

- 18X 2x2x $\frac{1}{4}$  Angle iron, 20' long
- 5X 1x1x  $\frac{3}{16}$  Angle iron, 20' long
- 4X 2x $\frac{1}{4}$  flat iron, 20' long
- 16X 14-gage sheet steel, 4'x8' sheet
- 14X  $\frac{3}{4}$ " Plywood, 4'x8' sheet
- 2X lighter Plywood, 4'x8' sheet for door
- 6X 2x4's, 8' long
- 16X Pressure Treated 2x6's, 8' long
- ~20 cu. ft. of concrete
- 2X heavy-duty hinges for door
- Fiberglass Insulation for door
- ~3 gal. Rust preventative paint
- Scrap pallets / lumber for back-fill bracing/cushioning.

## **Cut List:**

### ***Foundation:***

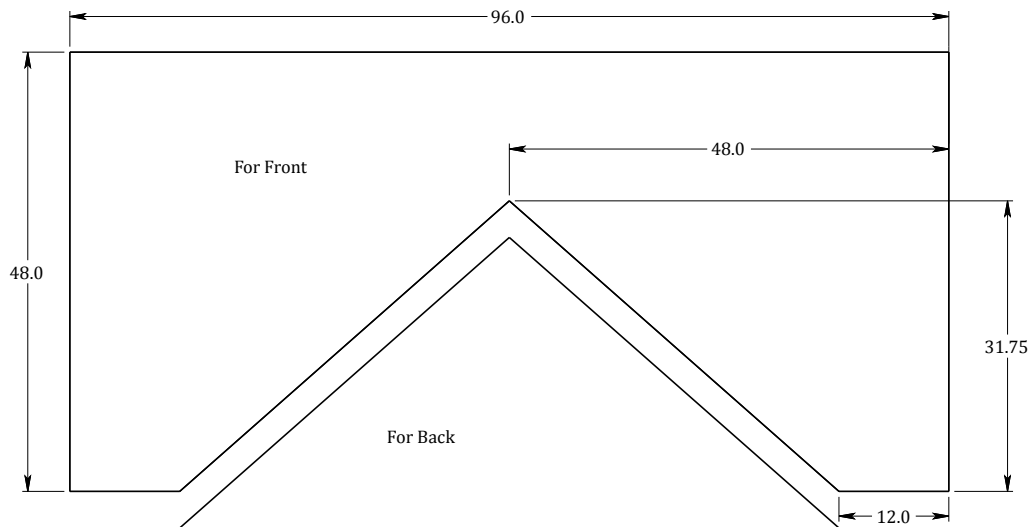
- 6X plywood, 8" x 96"
- 24X plywood, 8" x 22.125"
- 15X PT 2x6, 78" Long
- 48X PT 2x6, 5.5" Long
- 6X plywood, 16" x 96"
- 3X plywood, 48" x 96" (full sheet)
- ~20 cu. ft. of concrete

### ***Truss Sections***

- 24X 2 x 2 x  $\frac{1}{4}$  Angle iron, 48" long
- 24X 2 x 2 x  $\frac{1}{4}$  Angle iron, 48" long, /w one end beveled @ 41.5°
- 24X 2 x 2 x  $\frac{1}{4}$  Angle iron, 68.5" long, /w one end beveled @ 41.5°
- 48X 1 x 1 x  $\frac{3}{16}$  Angle iron, 23" long
- 12X 2 x  $\frac{1}{4}$  flat iron, 72" long

### ***Walls & Roof (front, back, sides)***

- 5X 14-gage sheet steel, 48" x 72" (1 for back, rest for sides)
- 10X 14-gage sheet steel, 48" x 96" (full sheet, 2 for front, rest for sides/roof)
- 1X 14-gage sheet steel, cut as shown below, for front & back:



### ***Shelves***

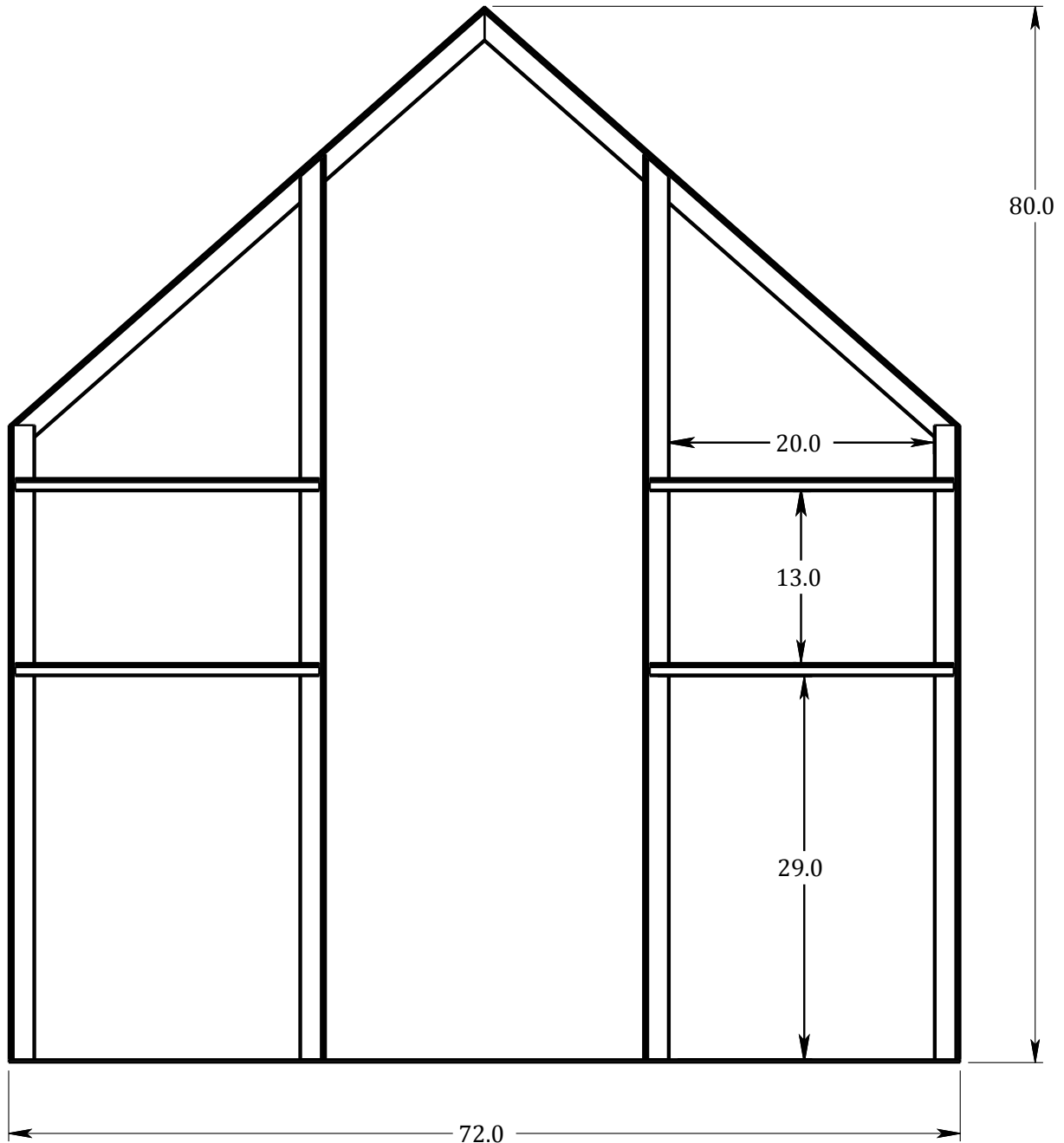
- 8X plywood, 19.5" x 96"
- 4X plywood, 19.5" x 71"

### ***Door***

- 2X heavy-duty hinges
- 2X 2 x 2 x  $\frac{1}{4}$  Angle iron, 4" long (for latch)
- 1X 2 x 2 x  $\frac{1}{4}$  Angle iron, 8" long
- $\frac{1}{2}$ " round bar stock for door handle, as required
- 2X plywood, 36" x 80" (thin plywood is preferable, at least for inside)
- 2X 2x4, 80" Long
- 2X 2x4, 73" Long
- 2X 2x4, 36" Long
- 2X 2x4, 29" Long
- Fiberglass insulation, as required to fill door.
- 1X 2 x 2 x  $\frac{1}{4}$  Angle iron, 48" long (for lintel)
- 1X 14-gage sheet steel, 8" x 48" (for lintel)

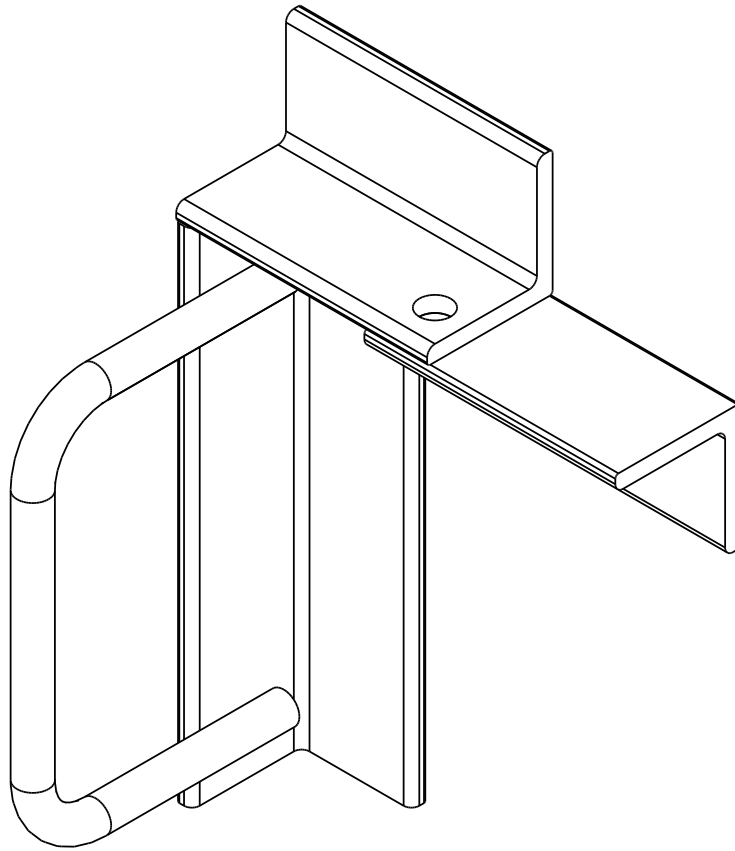
## **Preparations:**

*Build the Truss Sections. 12 Sections are required. These are made of angle iron, with flat iron at the bottom of each truss, and are welded together.*



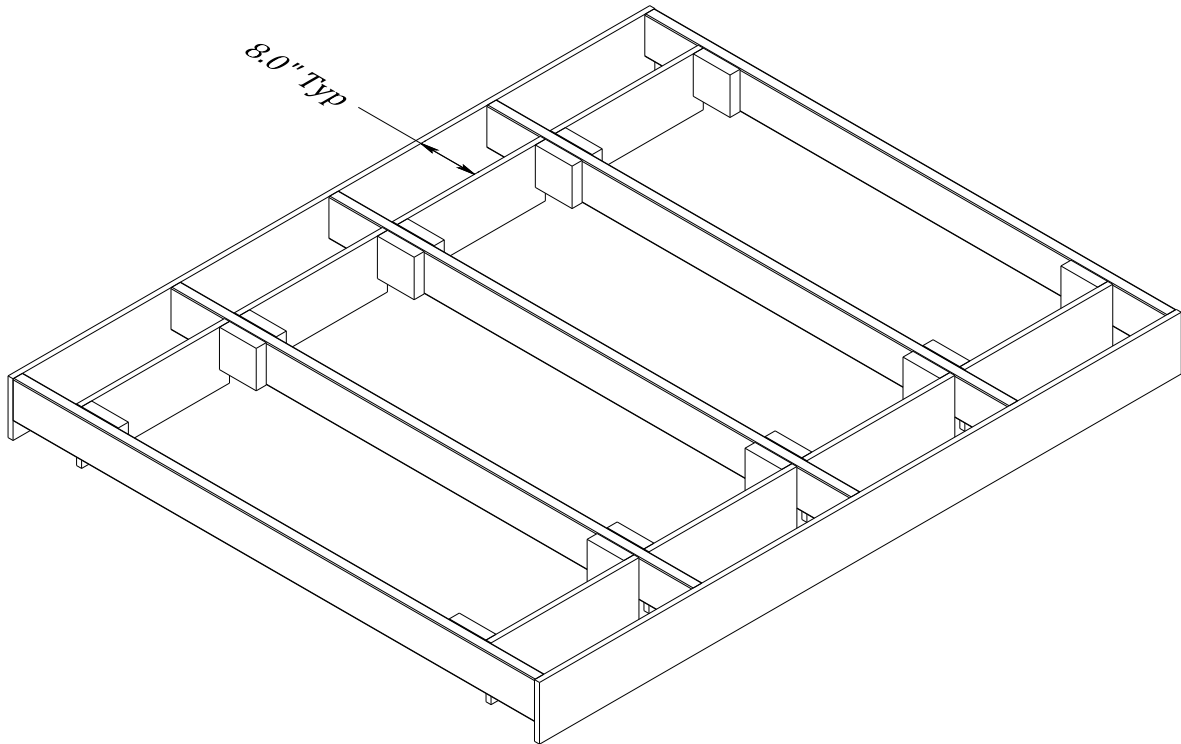
***Make the Door. It is basically a wooden box filled with insulation, with heavy-duty hinges screwed to the left side and a handle and latch screwed to the right side.***

1. Screw the 2x4's together to make the support frame of the door.
2. Screw plywood to one side of the frame.
3. Fill the door with insulation.
4. Enclose the other side with plywood and drive screws or nails through it to prevent the insulation from slipping down.
5. Make the handle and latch weldment:



6. Attach the door handle and hinges.
7. Weld up the lintel unit so it will be ready for installation.

***Build the Foundation Form Sections. 3 Sections are required. These are constructed from plywood and pressure-treated lumber and are held together with screws or nails.***



## **Procedure:**

1. Stage raw materials.
2. Complete preparations.
3. Excavate a hole with a gentle ramp at one end and a basic size at least 8 feet wide by 6 feet deep by 28 feet long. Within reason, bigger is better with regard to all dimensions. There should be enough of a depression in the middle of the hole to form a drainage basin under the floor of the cellar.
4. Lay out the three foundation form sections in the bottom of the hole and screw them together.
5. Mix the concrete and pour it into the forms. Only the outer form sections are filled – the middle should be open.
6. Give the concrete three weeks to set.
7. Cover the foundation with plywood sheets to form the floor.
8. Set up the rear truss section 6" in from the back end of the foundation and screw it down to the plywood.

9. Weld the sheet metal cover pieces to the truss to close in the back of the building.
10. Set up additional trusses at approximately 24" intervals along the foundation, screw them down, and weld the side and roof panels in place until the side and top of the cellar building are fully enclosed.
11. Insert the shelf boards into their places in the steel frame of the cellar, but don't screw them down to the metal structure yet.
12. Weld two full sheets of steel to the front truss, oriented vertically on either side of the doorway, and add the sheet from which the triangular section for the back wall was cut across the top to complete the front wall and retaining structure of the cellar.
13. Hang the door by welding the hinges and latch base to the front wall of the cellar.
14. Weld the lintel to the front of the building to protect the door from runoff.
15. Install weather stripping around the door.
16. Seal any chinks in the building with silicone caulk or "Great Stuff" foam.
17. Paint all exposed metal with a rust sealant/inhibitor.
18. Stage scrap pallets or other lumber against structure to cushion impact of dirt during back-filling of hole.
19. Back-fill the hole with dirt, mounding it up over the peak of the cellar for maximum insulation. Note: there should be enough open space in the front for water to drain into the hole under the foundation.
20. Screw down the shelf boards.
21. Carve steps into the access ramp and install retaining beams to prevent the steps from washing out.
22. Build modular canning shelves or other additional compartments in the cellar as needed for optimal utilization of storage space.

