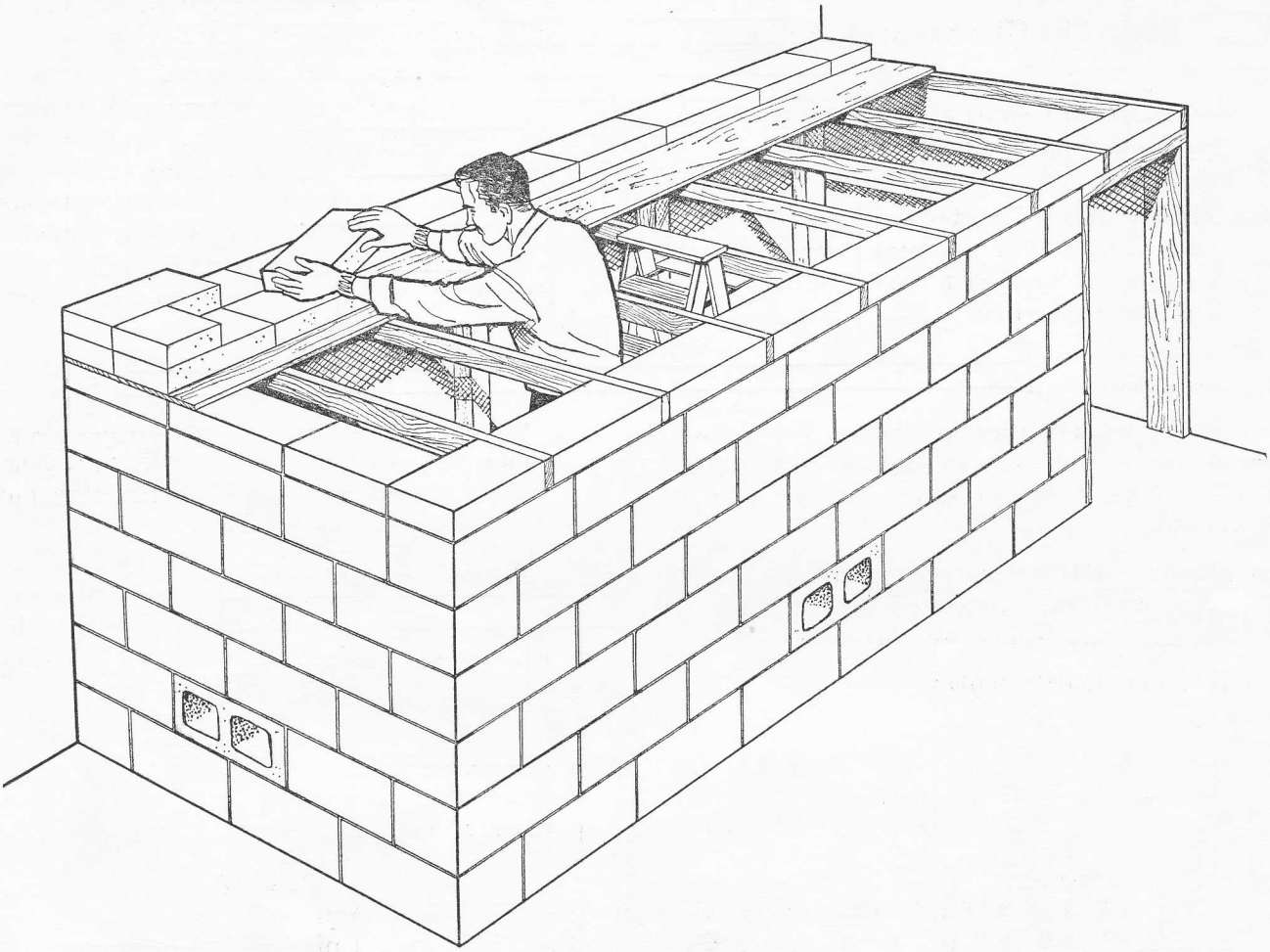
Basement Concrete Block Shelter

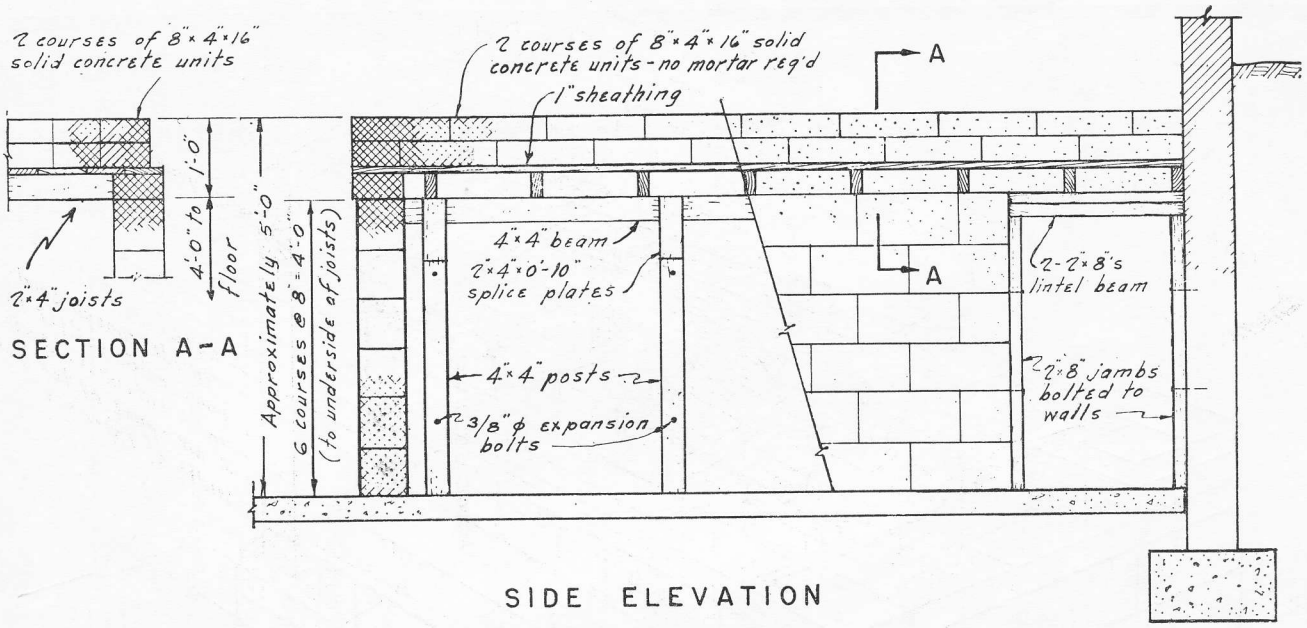


GENERAL INFORMATION

This concrete block basement compact shelter will provide low-cost protection from the effects of radioactive fallout. It is intended to be installed belowgrade in a basement. Its principal advantages are simple design, speed of construction, and ready availability of low-cost materials. By increasing the ceiling height to 6 feet or more, it could also serve as a dual-purpose room.

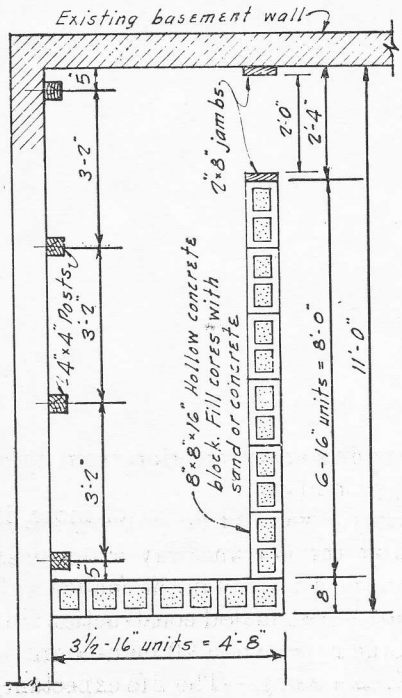
TECHNICAL SUMMARY

Space and Occupancy.—This shelter has about 52 square feet of area and 260 cubic feet of space and will provide shelter for four persons.

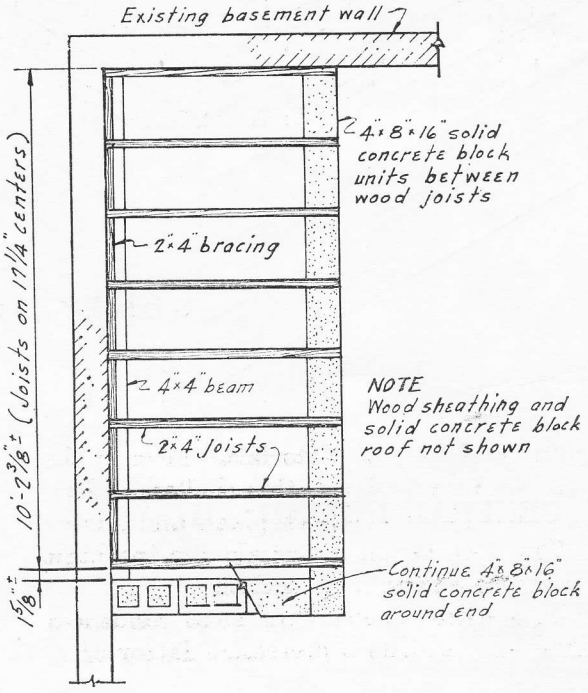


SECTION A-A

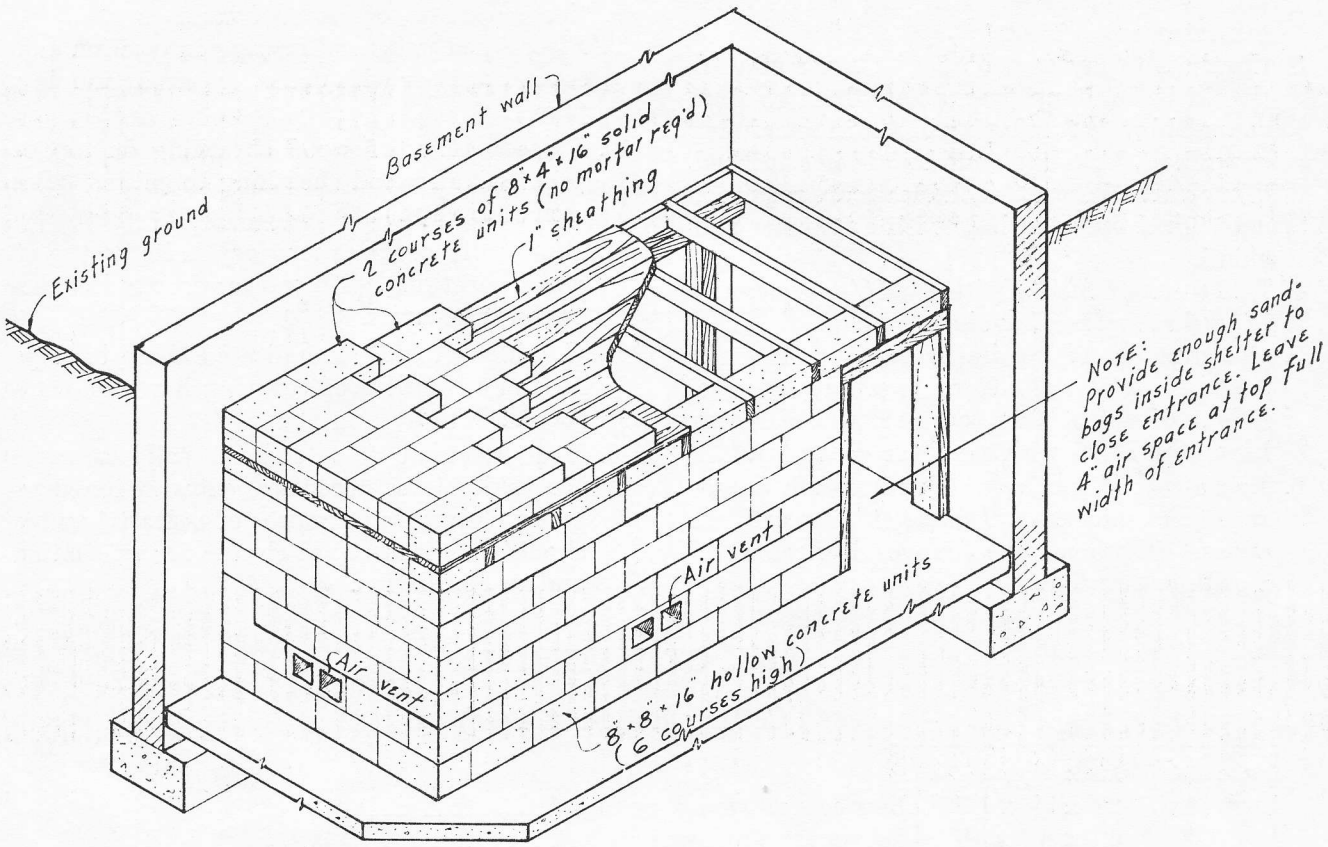
SIDE ELEVATION



FLOOR PLAN



ROOF FRAMING PLAN



ISOMETRIC VIEW

Availability and Cost of Materials.—Most of the materials required to build this shelter are obtainable at local concrete-block plants and lumber yards. The cost of the materials for the basic shelter is estimated at $75 per shelter.

Fallout Protection Factor.—In most residences, the shelter will provide a protection factor of at least 100.

Blast Protection.—Although this shelter was designed primarily to provide fallout protection, it would also provide some protection from flying debris associated with blast.

Ventilation.—Natural ventilation is provided by the airspace left at the entranceway after emergency closure, and the air vents in the shelter wall.

Construction Time.—Estimated construction time for the basic shelter is less than 20 man-hours.

Structural Life Expectancy.—The life expectancy of the shelter would be about the same as most types of residences.

CONSTRUCTION SEQUENCE

1. Lay out guidelines with chalk on basement floor for shelter walls. (See floor plan.)
2. Lay first course of block in a full bed of mortar. Vary thickness of mortar bed if basement floor is not level.
3. Continue to lay wall blocks. Corner of wall should be built up first, about three or four courses high, before laying blocks in remainder of wall. All blocks should be laid in a full bed of mortar. Where 8-inch blocks are required, cut 16-inch units in half with a hammer and chisel.
4. Fill cores of blocks with sand (or concrete) after three courses have been laid up.
5. Continue procedures indicated above in steps 3 and 4 until walls have been laid up to a height of 4 feet (six courses), and all cores have been filled with sand (or concrete).
6. Brush-coat all surfaces of lumber with water-repellent solution. Double brush-coat all edges. (Optional procedures. Desirable for wood preservation.)
7. Fasten wood posts and doorjambs to existing basement walls and shelter walls with expansion bolts. Use two bolts per post. (See side elevation.)
8. Place wall beam and door lintel beam in position and secure to posts with nails.
9. Place wood joists and bracing in position and secure together with nails. (See roof framing plan.)
10. Place portion of wood sheathing on top of joists. Nail wood sheathing to joists. (See isometric view.)
11. Place solid concrete masonry units on top of wood sheathing. No mortar is required between these units.
12. Continue procedures indicated above in steps 10 and 11 until roof covering has been completed.
13. Bags of sand or additional solid concrete blocks should be stored near entrance for emergency closure, but airspace of at least 4 inches should be left at top of closure for ventilation and air circulation.

BILL OF MATERIALS

(Ceiling height 4 feet)

Item	*Quantity*
8″ x 8″ x 16″ hollow concrete masonry units*	65.
8″ x 4″ x 16″ solid concrete masonry units*	135.
Mortar (prepared dry mix)	5 cubic feet.
Sand or concrete (for filling cores)	1 ton.
Sandbags	30.
4″ x 4″ x 3′8″ wood posts (structural grade)	4.
2″ x 8″ x 3′8″ wood posts (structural grade)	2.
2″ x 8″ x 2′4″ wood beam (structural grade)	2.
4″ x 4″ x 10′3″ wood beam (structural grade)	1.
1″ wood sheathing	52 board feet.
2″ x 4″ x 4′8″ wood joists (structural grade)	8.
4″ x 4″ x 10′3″ wood beam (structural grade)	8.
2″ x 4″ wood bracing (structural grade)	10 linear feet.
⅜″ x 7″ expansion bolts	12.
Sixteenpenny nails	2 pounds.
Sixpenny nails	2 pounds.
Water repellent (5 percent pentachlorophenol or equal), toxic to wood-destroying fungi and insects.**	1 quart.

*Units should be made with concrete having a density not less than 130 pounds/cubic feet.

**Optional.