



FAMILY SHELTER SERIES

PSD F-61-8

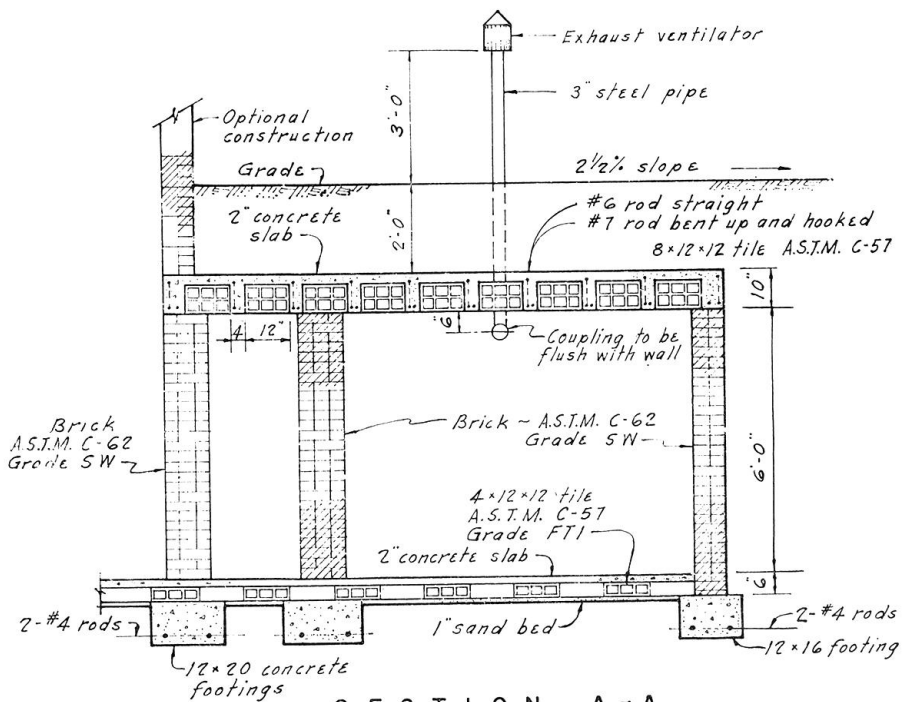
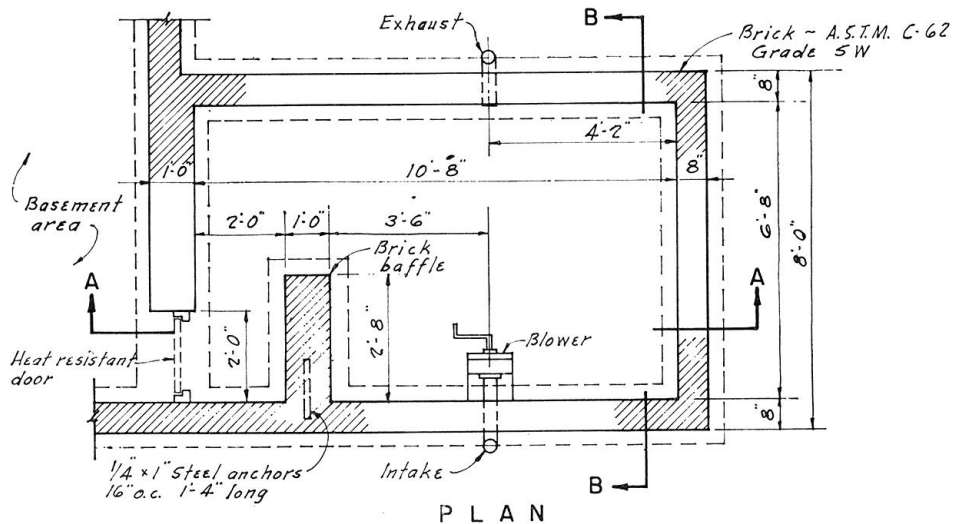
Belowground New Construction Clay Masonry Shelter

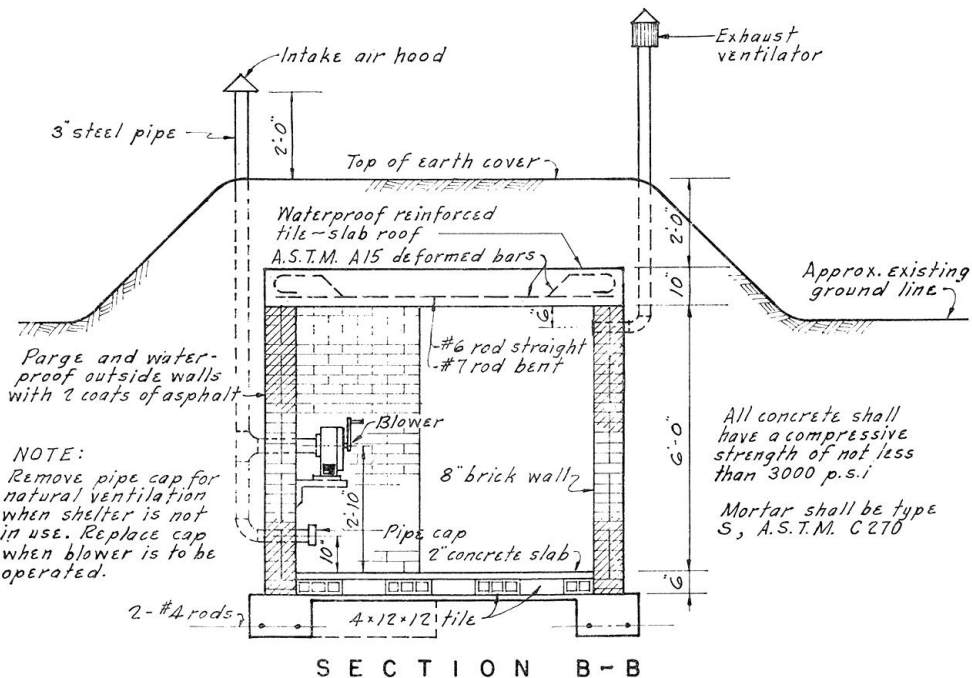


GENERAL INFORMATION

This shelter will provide protection against the effects of radioactive fallout. It can also protect from limited blast overpressures. The shelter is located belowground outside a house but is reached

from the basement. Its principal advantages are in flexibility of shape and design to conform to the house design and in the use of materials that tie in with the new construction of a house. Because of the headroom and interior space the shelter can be used for other purposes.





TECHNICAL SUMMARY

Space and Occupancy.—The shelter in this design has over 70 square feet of area and 420 cubic feet of space. It will provide occupancy for six persons.

Availability and Cost of Materials.—Structural clay masonry units, brick, and structural tile are available in concrete-block plants and lumber-yards. Cost of the materials and equipment for the basic shelter is estimated at \$300 to \$350. Labor cost should run approximately \$250 to \$300 when performed as part of new house construction.

Fallout Protection Factor.—The protection factor for a shelter of this type is over 1000.

Blast Protection.—This shelter has a structural

blast resistance of 5-pounds-per-square-inch over-pressure.

Ventilation.—Ventilation equipment and pipe are required. A hand-operated blower should be specified to furnish at least 20 cubic feet of air per minute. The air is exhausted through a separate vent pipe.

Construction Time.—A home-construction project that includes this shelter will not require additional trades or crafts not already on the project. The time for construction of this shelter could increase normal house construction time by a few days.

Structural Life Expectancy.—Assuming normal construction practices, this structure, with a minimum of maintenance, should last more than 30 years.

CONSTRUCTION SEQUENCE

No construction sequence is given for this shelter

because the work would probably be supervised by a contractor familiar with new construction.

BILL OF MATERIALS

| <i>Item</i> | <i>Quantity</i> |
|--|------------------|
| Roof: | |
| 8" x 12" x 12" structural clay tile ASTM-C57—grade FTL | 72 pieces. |
| Steel reinforcing, No. 6 deformed bars 7'6" length, ASTM-A-15—Straight | 10 pieces. |
| Steel reinforcing, No. 7 deformed bars 10' length, bent up and hooked ASTM-A-15. | 10 pieces. |
| Concrete, minimum 3,000 pounds per square inch | 1.5 cubic yards. |
| Walls: | |
| Brick, standard size (2 $\frac{3}{8}$ " x 4" x 8") ASTM-C62—grade SW. | 3,800 pieces. |
| Anchors (1 $\frac{3}{4}$ " x 1" x 4") steel | 4. |
| Mortar (1- $\frac{1}{4}$ -3 $\frac{3}{4}$ cement-lime-sand) | 65 cubic feet. |
| Floor: | |
| Tile (4" x 12" x 12") structural clay ASTM-C57—grade FTL. | 96 pieces. |
| Concrete, minimum 3,000 pounds per square inch | 0.7 cubic yard. |
| Footings: | |
| Concrete, minimum 3,000 pounds per square inch | 1.0 cubic yard. |
| Steel reinforcing, No. 4 reinforcing bars ASTM-A15 | 68 linear feet. |
| Miscellaneous: | |
| Parge 1- $\frac{1}{4}$ -3 $\frac{3}{4}$ mortar ASTM-C270—Type M | 8 cubic feet. |
| Asphalt | 5 gallons. |
| Blower (at least 20-cubic-feet-per-minute rating) | 1. |
| Mounting bracket, blower | 1. |
| Intake and exhaust ventpipe, 3" steel (sufficient for both intake and vent pipes). | 16 linear feet. |
| Fittings: | |
| Ells 3" steel | 2. |
| Tees 3" steel | 1. |
| Ventpipe cap | 1. |
| Flyscreen 7" x 7" (for vent and intake pipes) | 2. |