The Sanitary Privy

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FOREWORD

This BULLETIN has been prepared by the Division of Sanitation, Kansas State Board of Health, and the Department of Civil Engineering, University of Kansas, for home owners living in rural and suburban areas not served by public sewers.

Proper waste disposal can be accomplished without sewers, and such filth-borne diseases as typhoid fever, diarrhea and enteritis, which are responsible for much sickness and many deaths each year, can practically be eliminated. The sanitary privy, when properly constructed and maintained, is a safe means of waste disposal. This BULLETIN has been prepared after careful study and is based on the results of many years' experience of numerous investigators in problems of waste disposal, many of the suggestions having been taken from United States Public Health Service material. It is important that installations be made strictly in accordance with the detailed plans, specifications and instructions provided.

Additional copies may be obtained free of charge by addressing the Kansas State Board of Health, Topeka, Kan., or the Division of Sanitation, Kansas State Board of Health, Lawrence, Kan.

THE SANITARY PRIVY

INTRODUCTION

Every home not provided with running water and a water-carriage system of sewage disposal should have a sanitary privy. Experience has shown that unless there is some special condition which requires the installation of a more complicated type of outdoor toilet, the sanitary pit privy is the cheapest satisfactory means of disposing of body wastes.

Typhoid fever, diarrhea, enteritis, hookworm and other filth-borne diseases are responsible for much sickness and many deaths each year. The germs which produce these diseases are present in the wastes of individuals known as carriers. A small percentage of those having had one of the filth-borne diseases continues to discharge virulent organisms, although they themselves are in a normal, healthy condition. The path of infection may be through polluted water supplies, or food which has become infected through some contaminating contact. Flies and other insects and animals are frequently responsible for the infection of food when they have access to body wastes which have not had proper disposal.

The most spectacular reductions in typhoid fever, diarrhea, dysentery and enteritis have been made through purification of public water supplies, protection of water supply sources, and the construction of sewers and sewage-treatment plants. Outbreaks of these diseases have appeared in epidemic form, so that the attention of public health authorities has been directed to the improvement of existing insanitary conditions. Similar progress, however, has not been made in the reduction of disease traceable to contaminated wells and springs in rural sections. Such sources of water supply cannot be protected against contamination through the usage of elaborate purification processes applicable to municipal water supplies. As a result, private wells and springs often are endangered by the proximity of insanitary privies or by the careless practice of depositing excreta upon the ground nearby. The chain by which infection reaches the individual must be broken by providing a safe means for disposing of excreta.

In addition to water, flies are responsible for many cases of filth-borne diseases. The records of the state health department show that the number of cases of typhoid fever, dysentery, and enteritis during the warm months, when flies are prevalent, greatly exceeds the number reported during late fall and winter. Food most commonly becomes infected in the home by flies which have access to exposed human excreta containing the disease-producing germs. They breed and feed in this infectious excreta, carry and deposit it upon the food.

Filth-borne diseases thus transmitted do not appear in epidemic form, but occur in sporadic, unrelated cases. They are most prevalent in the warmer months, when flies are most numerous and active. In communities where sanitary disposal of excreta is not practiced the prevalence of filth-borne dis-

eases is definitely influenced by the density of population. In villages and the portions of towns and cities that are not equipped with sanitary sewers the infectious excreta in a single insanitary privy may endanger hundreds of people, while usually only a single household is endangered by an insanitary privy at an isolated farm home.

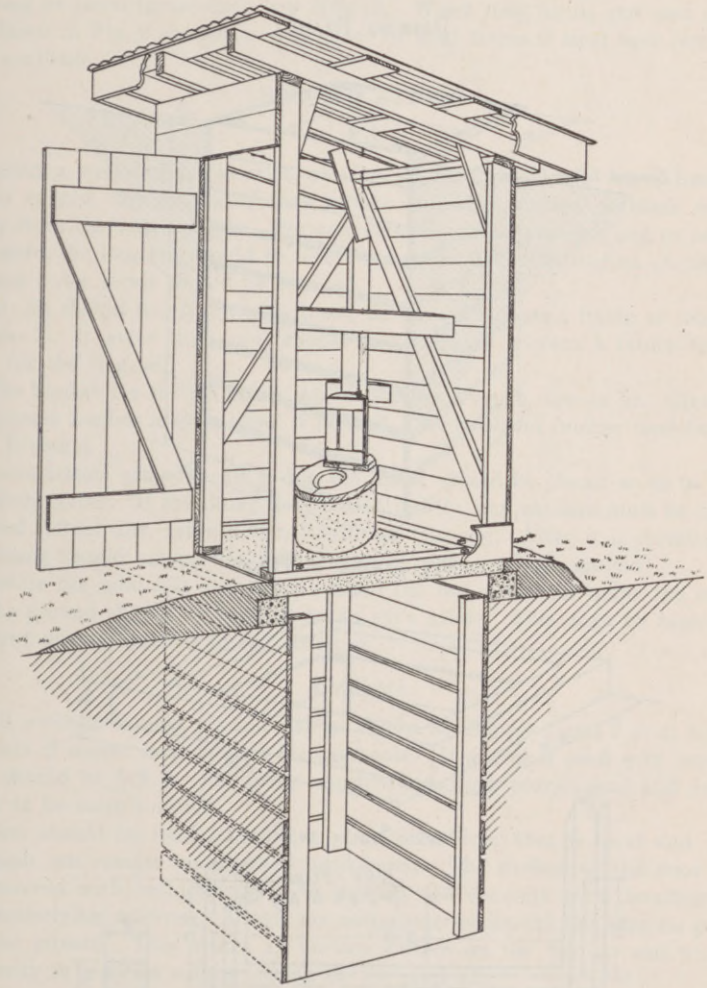
In the prevention of the epidemic occurrence of excreta-borne diseases, therefore, sanitary disposal of excreta in towns and villages is equal in importance to the improvement of public water supplies.

In the past thirty-two years Kansas has succeeded in decreasing its typhoid fever death rate from 25.7 to less than 1 per 100,000 population. This represents a decrease of more than 96 percent. A few years ago diarrhea and enteritis were responsible for nearly 30 percent of all deaths of infants less than one year of age. Better care and feeding of infants, together with improved water supplies and waste disposal in cities, have materially reduced this figure. The fact remains, however, that at the present time many deaths of infants less than one year of age are caused by diarrhea and enteritis. The death and sickness rates are still much too high when one considers that these diseases could be eradicated if everyone did his part. However, before results can be expected, much improvement must be made in the disposal of human wastes.

There is no reason that those who do not have the convenience of sewers should not be provided with sanitary methods of waste disposal. The primary justification of a sewage system is the removal of the health menace of insanitary disposal of excreta. Except in the larger cities, homes that are served by a water-carriage system of sewerage remain in fly range of the surrounding unsewered homes. Therefore, unless the facilities for the removal of excreta or for otherwise preventing the access of flies to exposed excreta are extended to embrace these other homes, the primary object of the water-carriage system of sewerage for the heart of the community has not been reached.

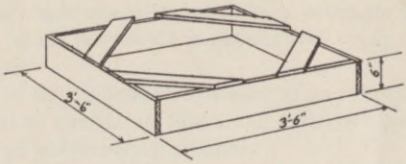
The construction of a privy, though simple, involves certain specific details that must be correct in construction in order that the privy will afford the protection it is designed to provide. Also, like the new car, or the new home, it must receive *proper care* and *maintenance,* if it is to give satisfactory service.

The following sketches and discussion give in detail the approved method for building sanitary-pit-type toilets. Section 1 covers details and specifications where a large number of units is planned; Section 2 covers plans and specifications for the individual contemplating the construction of a single unit.

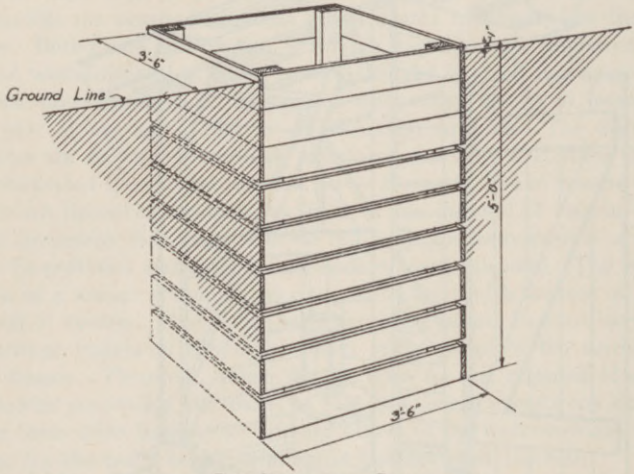


SANITARY PIT PRIVY

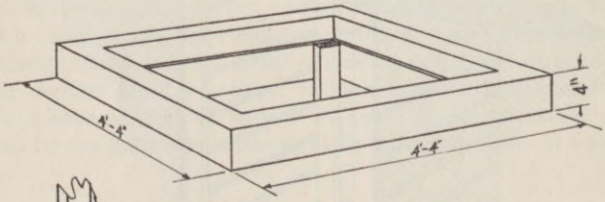
FIGURE I



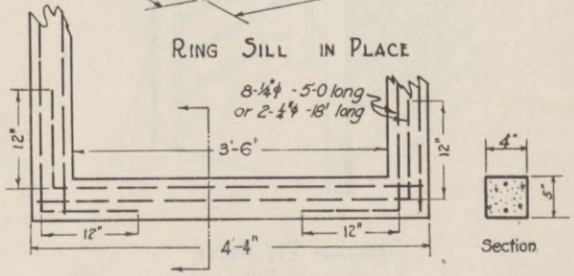
DIGGING FRAME



PIT LINING IN PLACE



RING SILL IN PLACE



RING SILL UNIT

FIGURE 2

SECTION 1

Precast Concrete Slab and Riser

This section illustrates plans for a precast slab and riser. It is also a plan well adapted for the construction of privies on a quantity production basis.

The precast unit is preferred to any other type of installation, even when constructed as a single unit. It costs less and is so constructed as to make moving at some future time less difficult. Wood riser forms and seat details as shown in Fig. 9 can be used in place of steel forms if steel riser forms are not available.

SPECIFICATIONS

Pit

Select a well-drained location at least 50 feet, *preferably more,* from the water supply, and so placed that surface and underground drainage will be away from the water supply. For convenience in bad weather, and to prevent exposure, the location should be near the house. The construction of pits into ground-water levels should be avoided.

No pit should be excavated without the use of a digging frame as shown in Figure 2. It saves time and trouble and helps to prevent a faulty foundation for the ring sill.

The lumber for the pit lining can be number 3 rough pine or fir. Creosoted or cypress lumber may be used if desired. Second-hand lumber may be used if it is sound.

Immediately after the pit is dug the lining should be placed so as to avoid possible caving. If the lining does not fit tightly, any cavities must be tightly packed full of dirt, using a thin board for tamping. After it is installed the pit lining should extend one inch above the surface of the ground.

Before the mud sills are placed around the top of the pit lining the surface of the ground should be brought to an even grade. Fills must be tamped to prevent uneven settling of the structure.

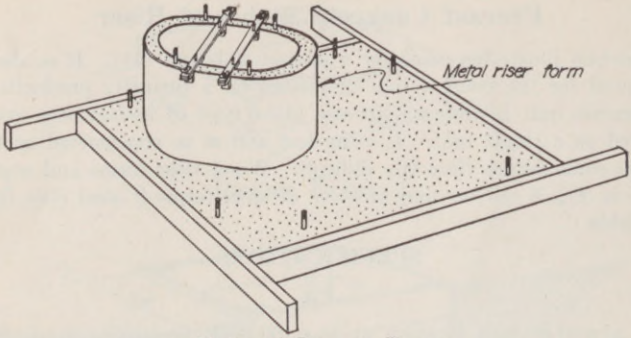
Concrete

All concrete in ring sill and slab as shown in Figures 2 and 3 must be of a 1:3 mix if coarse sand is used for aggregate. If gravel is used with sand the mix should be 1:2:4. For privy construction work coarse sand and cement seem to be more suitable.

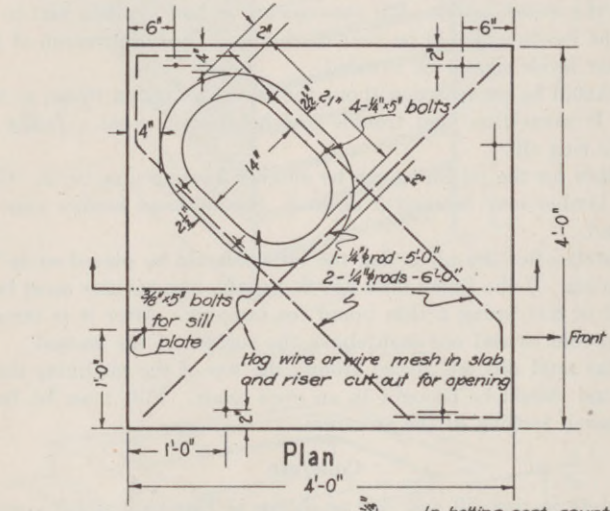
Care should be used to select a place on a floor that is level and where the slab can remain undisturbed until cured. The surface of the floor must be covered with building paper to prevent the concrete from bonding with the underlying material. Under no circumstances should the slab be poured on the ground. This makes an uneven surface on the bottom and leads to difficulty in securing a firm footing on the mud sills.

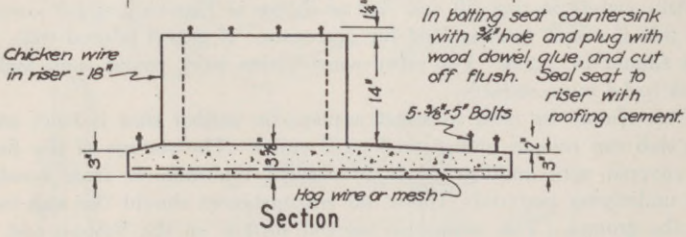
Be sure to set the steel form true, as shown in Figure 3. If form is set too far forward or too much to one side of slab, the vent will fail to fit.

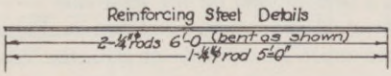
In placing the reinforcing steel and wire mesh in slab and riser care must be used to see that it conforms to the details in Figure 3. Lack of proper care may lead to a cracked slab or sill.



Slab and Riser in Forms







DETAIL OF SLAB AND RISER

FIGURE 3

All concrete insert bolts should be well tamped, as shown in Figure 3, before the concrete sets.

In finishing the surface of the slab, use a wood block float or steel trowel followed lightly with a broom after troweling.

Special care must be used in finishing around the riser to prevent the surface of the slab from leveling off above the bottom of the riser form. If this happens it causes difficulty in removing forms and also causes a disfigurement in the slab.

As soon as possible after the slab is poured the riser forms should be removed and the surface rubbed with the wood block float. This operation consists of dipping the wood block float in a bucket of water with one hand and sprinkling dry cement with the other hand and rubbing until a smooth finish is obtained. If a carborundum stone is available rubbing of the surface with it will give a smoother and finer surface than use of the wood block.

Seats and Vents
(Figure 4)

Seats should be constructed of 1 x 4 fir or yellow pine flooring, or 1 x 10 white pine boards or equal. The vents, lid and blocks must be thoroughly dry No. 2 or better fir or yellow pine. White pine is much preferred if it is available. High-grade glue should be used in the fabrication of the seat. Use glue between each joining edge of flooring and between the surface of the two layers of flooring. Two-ply seats are necessary to prevent warping.

Use 32 No. 10 1¼" flat-head screws on the back side of seat. These to be so placed as to give the most strength. Use No. 7 1¼" screws for fastening the strap hinges to the hinge blocks and for 1" x 1" blocks on vent.

Use 8 No. 7 1¼" flat-head screws for cleats in lid.

Use 6 No. 12 2½" screws for hinge blocks.

Use 3" x 3" galvanized bronze pin strap hinge for seat lid. Ordinary hinges will not do, as such hinges corrode and rust out.

The screen wire shown must be 16-mesh copper. Any other type of screen wire will soon rust out. Tack screen wire on with copper tacks.

Sand seats well and finish with two coats of spar varnish. A stain base may be used if desired. *Do not use paint.* Dampness and pit gas cause most paint to flake off. Finishing should be done after seat has been bolted on.

Vents are shown in the details and may be installed if desired. However, it is questionable as to whether the addition of the vent offers any great advantage. It may be omitted without fear of increasing odors or condensation.

Concrete Seats

Something of a novelty in seat construction, but one which has had full endorsement where used, is the seat made from concrete in place of wood. This seat is formed by using two metal straps across the riser opening and covering with expanded metal lath. The metal lath is cut to form the opening. The seat is plastered with 1:2 portland cement mortar, using a small, fine, sharp sand and finished to a smooth hard finish. The inclusion of red coloring in the cement mortar will give a better appearance. Covering the finished seat with a coat of spar varnish will improve appearance and make it easier to keep clean. The lid may be made from an impervious composition board and anchored to the seat by wood blocks and bolts. Vent construction is omitted.

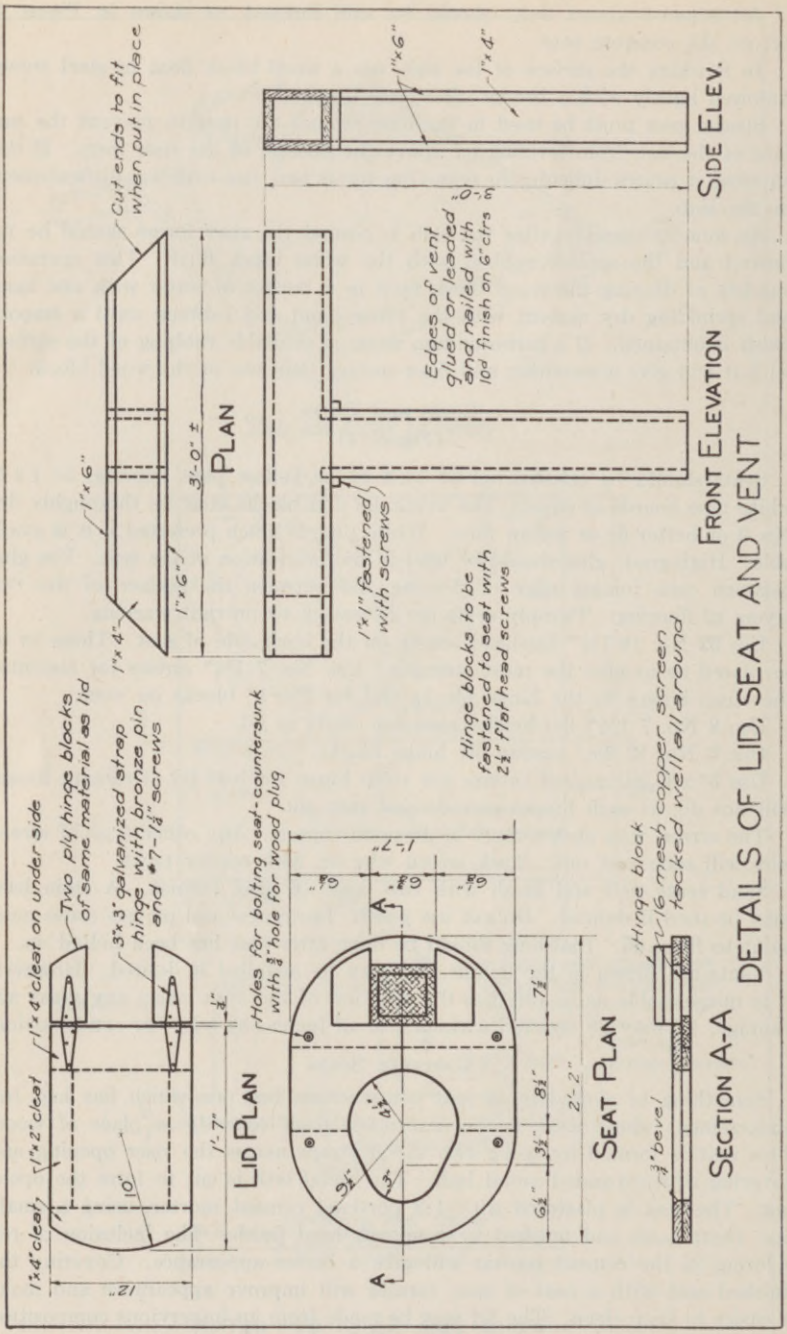

DETAILS OF LID, SEAT AND VENT
LID PLAN
SEAT PLAN
PLAN
FRONT ELEVATION
SIDE ELEV.
SECTION A-A
1"x4" cleat on under side
Two ply hinge blocks of same material as lid
3"x3" galvanized strap hinge with bronze pin and #7-1/2" screws
1"x2" cleat
1"x4" cleat
10"
21"
1'-7"
Holes for bolting seat countersunk with 3/8" hole for wood plug
Cut ends to fit when put in place
1"x6"
1"x4"
3'-0" ±
1"x6"
1"x1" fastened with screws
Hinge blocks to be fastened to seat with 2½" flat head screws
Edges of vent glued or leaded and nailed with 10d finish on 6" ctrs
1"x6"
1"x4"
Hinge block
1/16 mesh copper screen tacked well all around
3/4" bevel

FIGURE 4

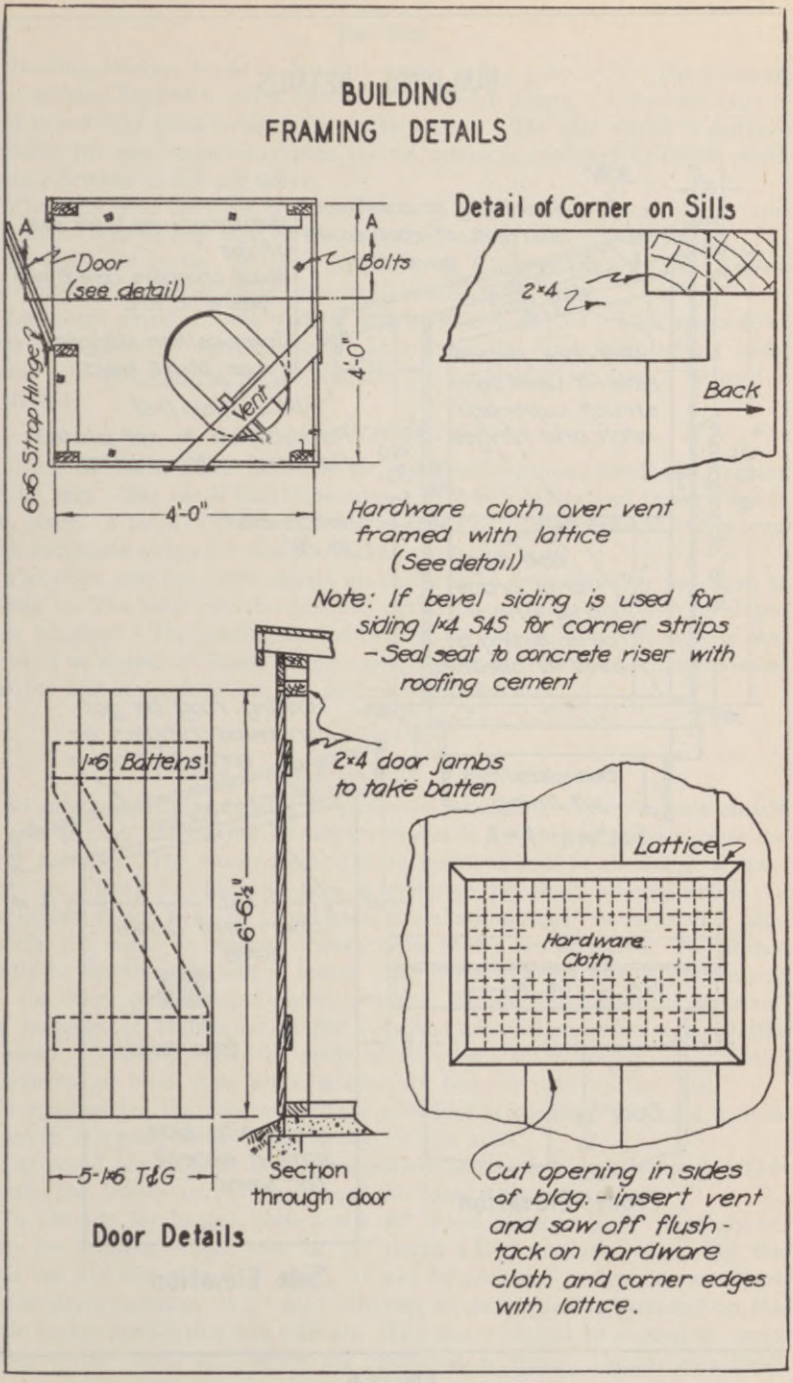

BUILDING
FRAMING DETAILS
A
Door
(see detail)
Bolts
A
6"x6" Strap Hinge
Vent
4'-0"
4'-0"
Detail of Corner on Sills
2"x4"
Back
Hardware cloth over vent framed with lattice (See detail)
Note: If bevel siding is used for siding 1"x4" S4S for corner strips - Seal seat to concrete riser with roofing cement
1"x6" Battens
6'-6½"
2"x4" door jambs to take batten
Lattice
Hardware Cloth
5-1"x6" T&G
Section through door
Door Details
Cut opening in sides of bldg. - insert vent and saw off flush - tack on hardware cloth and corner edges with lattice.

FIGURE 5

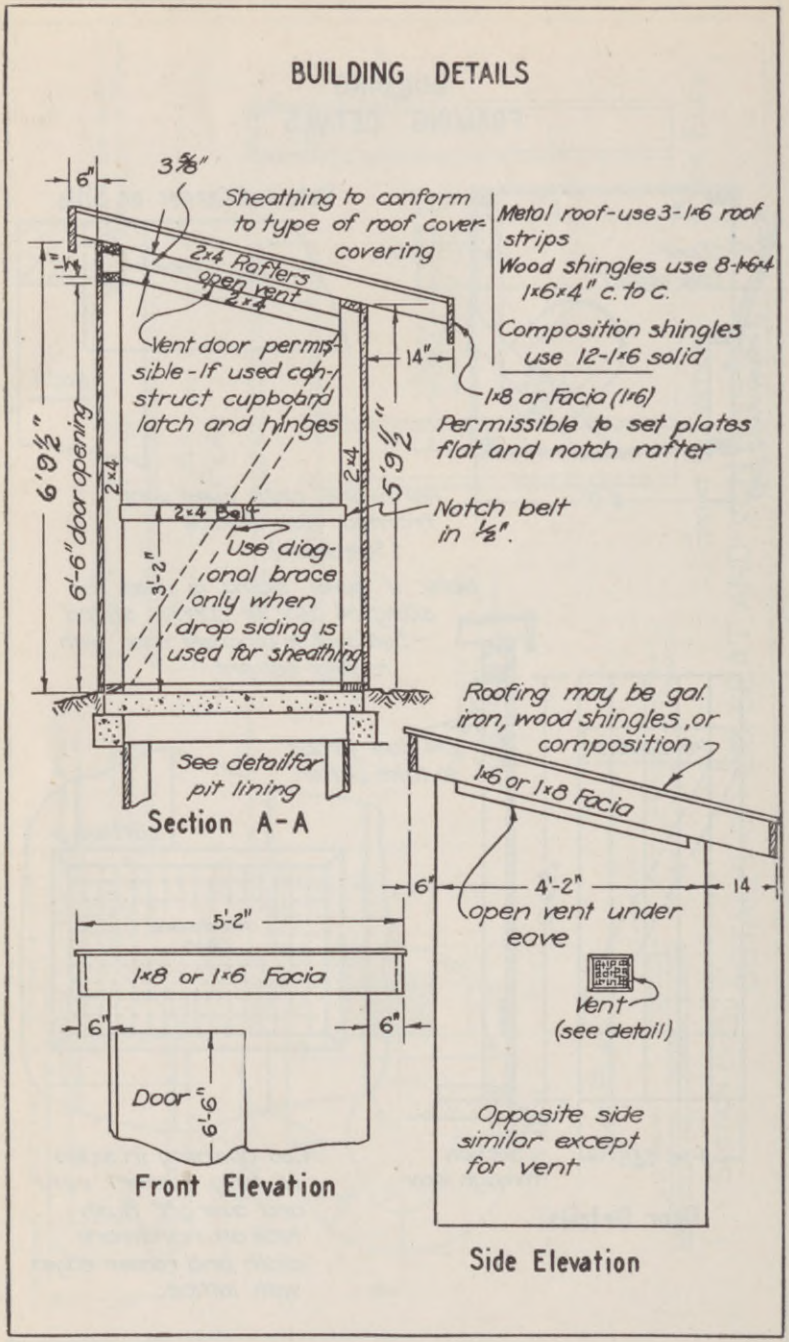

BUILDING DETAILS
6"
3 5/8"
Sheathing to conform to type of roof covering
2×4 Rafters
open vent
2×4
Vent door permissible - If used construct cupboard latch and hinges
14"
Metal roof - use 3-1×6 roof strips
Wood shingles use 8-1×6×4 1×6×4" c. to c.
Composition shingles use 12-1×6 solid
1×8 or Facia (1×6)
Permissible to set plates flat and notch rafter
6'-6 1/2"
6'-6" door opening
2×4
2×4
5'9 1/2"
2×4 Belt
Notch belt in 1/2".
Use diagonal brace only when drop siding is used for sheathing
3'-2"
See detail for pit lining
Section A-A
Roofing may be gal. iron, wood shingles, or composition
1×6 or 1×8 Facia
6"
4'-2"
14
open vent under eave
5'-2"
1×8 or 1×6 Facia
6"
6"
Vent (see detail)
Door
6'-6"
Opposite side similar except for vent
Front Elevation
Side Elevation

FIGURE 6

Building

Building lumber should be No. 2 or better yellow pine or fir. The construction details, Figures 5 and 6, should be followed closely. Any other type of roof is not very satisfactory for a sanitary privy. The roof shown is designed to carry the roof water away from the pit, which is necessary to obtain maximum efficiency in the pit toilet.

For toilet door use 6″ × 6″ barndoor strap hinges. Use a suitable door latch for door. Almost any kind of a standard barndoor latch is satisfactory.

At each end of the "T" vent as shown in Figures 5 and 6, use ¼″-mesh galvanized hardware cloth to prevent the entrance of birds.

Lay three strips of metal roofing and lapping to fit roof. Turn edges down over facia about 2″ and nail well. This keeps the wind from getting under metal roof and blowing it off. Shingle or composition roof may be used if preferred.

Grading

Using the earth taken from the pit, construct a mound level with the top of the slab. The earth should be spread in 2-inch layers and tamped firmly into place. A piece of firewood about 12 inches in diameter and 16 inches long, with two wood strips for handles, makes a suitable tamp.

The front and two sides should gradually slope from building, as shown in Figure 1. The back side should come out about one foot and then be sloped on a 1-2 slope. The grading on the back is very important. When it is constructed as shown in Figure 1, it properly takes care of stormwater drainage. Use top soil in finishing the top surface of the back fill.

Urinals

(Figures 7 and 8 indicate types of urinals.)

All sanitary pit privies built in public or semipublic places for men should include urinals. Experience has shown that it is best to put these outside the privy building. The better method is to install urinals in the blind as indicated on Figure 7. The tile type is preferred for small schools where the enrollment is not over 20. For larger installations, such as parks and large schools, the metal or concrete trough types shown are preferred. No urinals should be less than 2½ feet in length. For schools having over 25 enrollment, add for every 10 additional enrollment over 25 one foot to length of urinal. For example, an enrollment of 100 will need a urinal approximately 10 feet in length. Troughs should be made of stainless steel, porcelain, or concrete. Galvanized or black iron is not satisfactory because they will not last.

In constructing the concrete trough urinal, it is necessary to build a form of wood or metal, using wood blocks for the ends.

The wood blocks must be so constructed as to allow easy removal. This permits the trough to be taken from the form without damage.

To provide for hangar bolts insert ¾″ wood plugs or a ¾″ pipe sleeve. Bolts for hanging urinals may be ½″ round x 3½″ machine bolts. For the drain use not less than a 2″ pipe. It will be necessary to provide an insert for the drain opening. A 2″ pipe coupling or sleeve that is threaded on the inside makes installation less difficult. The sleeve should be welded or wired tightly to the metal lath before the plastering is begun. Copper wire mesh

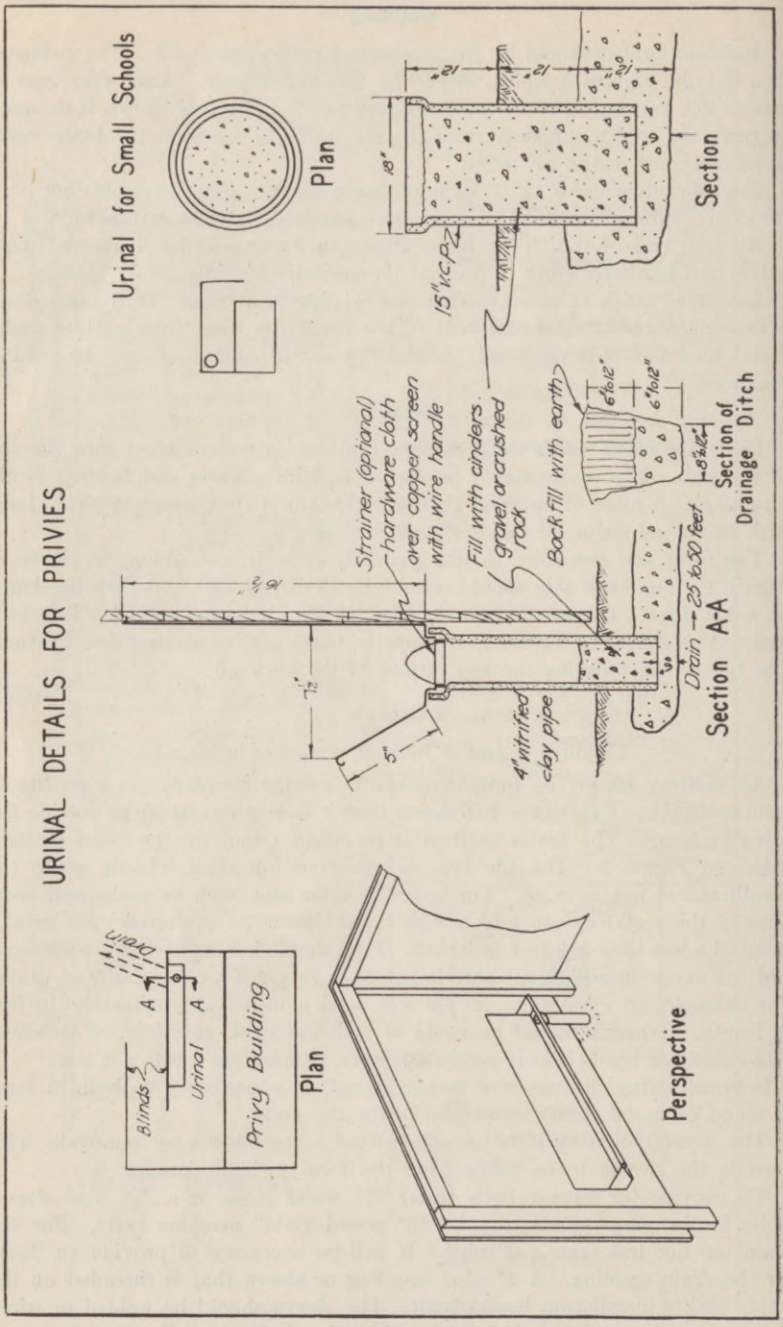

URINAL DETAILS FOR PRIVIES
Urinal for Small Schools
Plan
Section
15" R.C.P.
18"
21"
Strainer (optional) hardware cloth over copper screen with wire handle
Fill with cinders gravel or crushed rock
Back fill with earth
4" vitrified clay pipe
Drain — 25 to 50 feet
Section A-A
Section of Drainage Ditch
Plan
Privy Building
Urinal
Blinds
Drain
Perspective

FIGURE 7

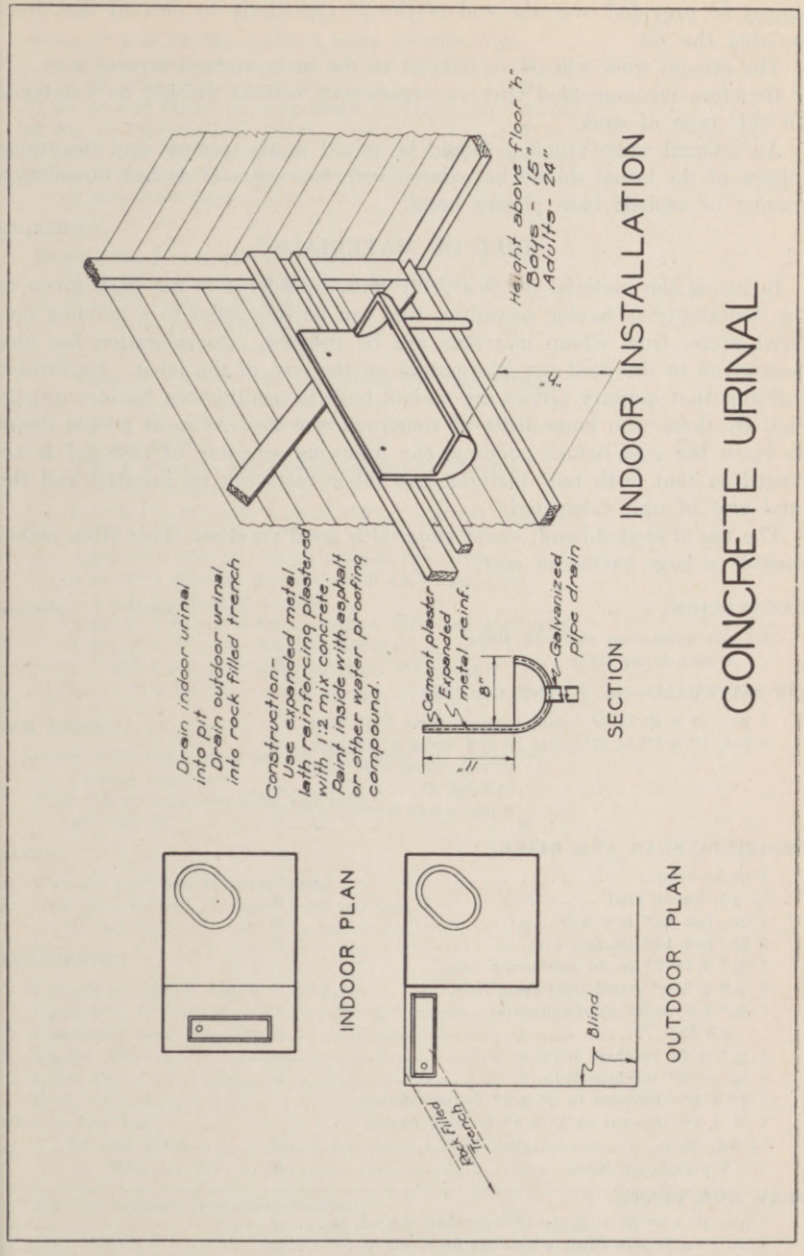

CONCRETE URINAL
INDOOR INSTALLATION
Drain indoor urinal into pit
Drain outdoor urinal into rock filled trench
Construction-
Use expanded metal lath reinforcing plastered with 1:2 mix concrete. Paint inside with asphalt or other water proofing compound.
Height above floor "h"
Boys - 15"
Adults - 24"
Cement plaster
Expanded metal reinf.
8"
Galvanized pipe drain
SECTION
INDOOR PLAN
OUTDOOR PLAN
Blind
Path

FIGURE 8

should be provided over the end of the 2" pipe drain to prevent flies from entering the pit.

The cement work will prove difficult to the inexperienced cement man. It is therefore recommended that an experienced cement finisher be employed for this type of work.

An integral water-proofing should be mixed in the cement and the inside surface of the urinal should be painted with two coats of asphalt foundation coating or asphalt base plaster bond.

BILL OF MATERIALS

In listing the material for this privy unit, consideration has been given to the desirability of having quantities that can be submitted to a building material dealer from whom materials can be ordered. Consideration has also been given to the need for information on the cost of the labor. Experience indicates that sanitary privies are seldom built by contractors, but are usually built by those who know little of construction costs. As most people desire to know the cost before building, the following schedule of material is arranged so that both unit material and labor costs can be inserted and the total cost of unit calculated.

The use of second-hand, sound material is good practice. This often makes possible a large saving in cost.

	Labor	*Material*
EXCAVATION:		
2.3 yds. excavation and rock filling.		
8 man-hours labor ..... @.....	.....	.....
PIT MATERIAL—No. 3 PINE OR FIR:		
2 pcs. 2" x 4" 10' 0"—cuts 4 corner posts 5' 0" long.		
9 pcs. 1" x 6" 14' 0"—cuts 18 pcs. lining 3' 6" long.		
18 pcs. lining 3' 4" long.		
76.3 bd. ft. ..... @.....		.....
4 man-hours labor..... @.....	.....	
CONCRETE SLAB AND RISER:		
2 sacks cement ..... @.....		.....
½ yd. coarse sand..... @.....		.....
8 lin. feet 29" hog wire..... @.....		.....
5 lin. feet 18" chicken wire..... @.....		.....
2 ¼" x 18' 0" round reinforcing rods.		
2 ¼" x 6' 0" round reinforcing rods.		
1 ¼" x 5' round reinforcing rod.		
9.3 lbs. ..... @.....		.....
6 ⅜" x 5" machine bolts..... @.....		.....
4 ¼" x 5" machine bolts..... @.....		.....
1 2" x 4"—10'—cut to 2" x 3" for slab forms.		
1 2" x 4"—8'—cut to 2" x 3" for slab forms.		
12 bd. ft. ..... @.....		.....
8 man-hours labor ..... @.....	.....	
SEAT AND VENT:		
2 pcs. 1" x 4" flooring, 14' 0"—for seat, 9.3 bd. ft.....@.....		.....
1 pc. 1" x 6" S4S clear, 4' 2"—for lid, 2 bd. ft.....@.....		.....
1 pc. 1" x 4" S4S No. 2 pine or better, 14' 0"—for vents and lid cleats.		
1 pc. 1" x 6" S4S No. 2 pine or better, 12' 0"—for vents.		
*1 pc. 2" x 4" S4S No. 2 pine or better, 1' 0"—hinge blocks.		

* May be obtained from scrap material.

	Labor	Material
*2 pcs. 1″ x 2″ S4S No. 2 pine or better, lid fillers, 1 ft. 10.7 bd. ft. @		
1 pc. 6″ x 12″ copper screen wire @		
1 pc. 3″ x 3″ bronze pin strap hinges @		
32 No. 10 1¼″ flat-head screws @		
24 No. 7 1¼″ flat-head screws @		
6 No. 12 2½″ flat-head screws for hinge blocks @		
4 man-hours labor @		

BUILDING:

Framing No. 2 or better, fir or pine.

1 pc. 2″ x 4″—16; for sills and door header.
Cut 3 pcs. 4′ 0″ long.
Cut 1 pc. 1′ 4⅜″.
Cut 1 door header 2′ 6″.

4 pcs. 2″ x 4″—14′, for front studs, side vent framing, belts, top plates and one rafter.

1 2″ x 4″—14″—cuts 1 front stud 6′ 5¾″, 2 side vent pcs. 3′ 5″.

1 2″ x 4″—14′—cuts 1 front stud 6′ 5¾″, 1 rafter 5′ 8″, 1 belt pc. 1′ 1⅛″.

1 2″ x 4″—14′—cuts 2 plates 4′ 0″, 1 side belt 3′ 8¾″, 2 blocks for lid 0′ 6″ long.

2 pcs. 2″ x 4″—12′—back studs and two rafters.

1 pc. 2″ x 4″—cuts 2 rear studs 5′ 5¾″ long, 1 pc. cuts 2 rafters 5′ 8″ long.

1 pc. 1″ x 6″—16′—for roof strips, cut 3 pcs. 5′ 0″ long.

1 pc. 1″ x 6″—10′—for door battens:
Cut 2 pcs. 2′ 4″ long; cut 1 pc. 5′ 0″ long.
77.0 bd. ft. @

CAR SIDING: 1″ x 6″.

14 pcs. 8′ 0″ long—use 6 pcs. for 6′ 6″ door, use scraps for framing over door.
9 pcs. 14′ 0″ long—for sides and rear.
119 bd. ft. @

FACIA:

1 pc. 1″ x 6″ S4S 12′ long—sides.
1 pc. 1″ x 6″ S4S 10′ long—front and rear.
11 bd. ft. @

HARDWARE:

3 sheets corrugated roofing 6′ long @		
1 pair 6″ x 6″ barn strap hinges with ¾″ screens @		
1 barndoor latch complete @		
3½ lbs. 16d @		
4 lbs. 8d @		
½ lb. 4d Box @		
Labor on building:		
24 man-hours @		
Total		

* May be obtained from scrap material.

SUMMARY OF QUANTITIES

Items to Purchase

	Board feet
2 pcs. 2″ x 4″ No. 3 pine or fir, 10′ 0″	13.3
9 pcs. 1″ x 6″ No. 3 pine or fir, 14′ 0″	63.0
2 pcs. 1″ x 4″ pine or fir flooring, 14′ 0″	9.3
1 pc. 1″ x 4″ S4S No. 2 pine or better, 14′ 0″	4.7
2 pcs. 1″ x 6″ S4S No. 2 pine or better, 12′ 0″	12.0
1 pc. 1″ x 6″ S4S No. 2 pine or better, 14′ 0″	7.0
1 pc. 2″ x 4″—16′ No. 2 pine or better	10.7
4 pcs. 2″ x 4″—14′ No. 2 pine or better	37.3
2 pcs. 2″ x 4″—12′ No. 2 pine or better	16.0
1 pc. 1″x 6″—16′ No. 2 pine or better	8.0
1 pc. 1″ x 6″—10′ No. 2 pine or better	5.0
14 pcs. 1″ x 6″ car siding 8′ 0″	56.0
9 pcs. 1″ x 6″ car siding 14′ 0″	63.0
Totol bd. ft.	305.3

2 sacks cement.
½ yard coarse sand.
8 lin. feet 29″ hog wire.
5 lin. feet 18″ chicken wire.
2 ¼″ x 18′ 0″ round reinforcing steel rods.
2 ¼″ x 6′ 0″ round reinforcing steel rods.
1 ¼″ x 5′ 0″ round reinforcing steel rods.
6 ⅜″ x 5″ machine bolts.
4 ¼″ x 5″ machine bolts.
1 pc. 6″ x 12″ No. 6 mesh copper screen wire.
1 pr. 3″ x 3″ bronze pin strap hinges.
1 pr. 6″ x 6″ barn strap hinges with screws.
1 barndoor latch complete.
1 lid-closing device complete.
24 No. 7 1¼″ flat-head screws.
32 No. 10 1¼″ flat-head screws.
6 No. 12 2½″ flat-head screws for hinge blocks.
3 sheets corrugated metal roofing 6′ long.
3½ lbs. 16d. nails.
4 lbs. 8d. nails.
½ lb. 4d. box nails.

FORM LUMBER:

1 pc. 2″ x 4″—8′.
1 pc. 2″ x 4″—10′.
12 bd. ft.

Alternate A

If bevel siding is used in place of car siding for covering of building, substitute for standard building.

FRAMING, No. 2 OR BETTER, PINE OR FIR: *Labor* *Materia*

1 pc. 2″ x 4″—16′—for sills and door header.
3 pcs. cut 4′ 0″ long.
1 pc. cut 1′ 4⅜″ long.
1 pc. cut 2′ 6″ long.
4 pcs. 2″ x 4″—14′ 0″—for front studs, side vent framing, top plates, one rafter, and two diagonals.
1 pc. cuts 1 front stud, 6′ 5¾″; 2 side vents 3′ 5″.
1 pc. cuts 2 front stud, 6′ 5¾″.

	Labor	Material
1 pc. cuts 1 diagonal, 6′ 0″; 2 top plates 4′ 0″.		
1 pc. cuts 1 diagonal, 6′ 0″; 1 rear diagonal 8′ 0″.		
1 pc. 2″ x 4″—6′ 0″—1 side diagonal.		
2 pc. 2″ x 4″—12′ 0″—2 rear studs, 5′ 5¾″.		
2 rafters 5′ 8″.		
1 pc. 1″ x 6″—16′—for roof strips, cut 3 pcs. 5′ 0″ long.		
1 pc. 1″ x 6″—10′—for door battens—		
Cut 2 pcs. 2′ 4″ long.		
Cut 1 pc. 5′ 0″ long.		
2 pcs. 1″ x 6″ T and G for door, 14′ 0″ long.		
1 pc. 1″ x 6″ T and G for door, 8′ 0″ long.		
2 pcs. 1″ x 4″ corner strip, 14′ 0″ long.		
2 pcs. 1″ x 4″ corner strip, 16′ 0″ long.		
119 bd. ft. .....@.....		.....
DROP SIDING:		
27 pcs. 6″—8′ 0″ long—108 bd. ft. .....@.....		.....
FACIA:		
1 pc. 1″ x 6″ S4S—12′ long—sides.		
1 pc. 1″ x 6″ S4S—10′ long—front and rear.		
11 bd. ft. .....@.....		.....
3 sheets corrugated metal roofing, 6′ long.....@.....		.....
1 pr. 6″ x 6″ barn strap hinges with ¾″ screws.....@.....		.....
1 barndoor latch, complete .....@.....		.....
1 lid-closer device (Figure 7) .....@.....		.....
10 man-hours labor .....@.....	.....	
ROUGH HARDWARE:		
3½ lbs. 16d. nails .....@.....		.....
4 lbs. 8d. nails .....@.....		.....
½ lb. 4d. box nails .....@.....		.....
Total	.....	.....

Alternate B

If wood shingles are used in place of corrugated roofing add:

1 pc. 1″ x 6″ No. 2 yellow fir or pine, 16′ 0″—		
cut 3 pcs. 5′ 0″ long.		
1 pc. 1″ x 6″ No. 2 yellow fir or pine, 10′ 0″—		
cut 3 pcs. 5′ 0″ long.		
13 bd. ft. .....@.....		.....
300 wood shingles (in place of corrugated iron).....@.....		.....
2 man-hours labor .....@.....	.....	

Alternate C

If composition shingles are used in place of corrugated roofing add:

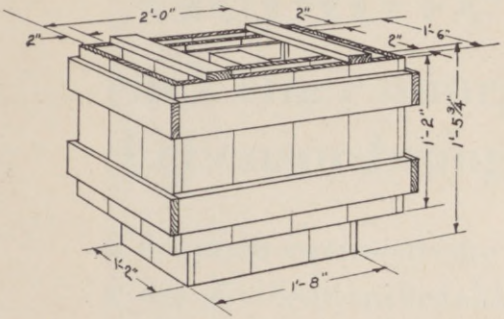
3 pcs. 1″ x 6″—10′ 0″—cut 6 pcs. 5′ 0″ long.		
1 pc. 1″ x 6″—16′ 0″ long—cut 3 pcs. 5′ 0″ long.		
23 bd. ft. .....@.....		.....
30 sq. ft. comp. shingles (in place of corrug. metal)....@.....		.....
2 man-hours labor .....@.....	.....	

SECTION 2

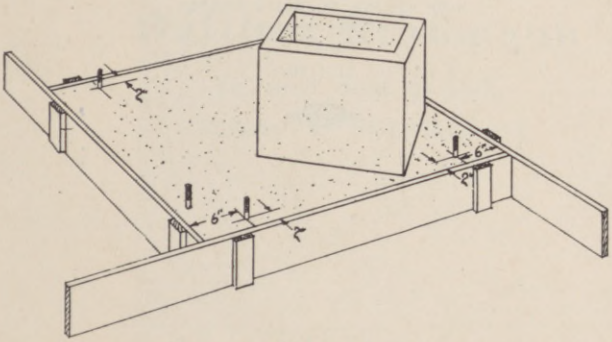
Rectangle Concrete Riser

The detail of a rectangle riser (Fig. 9) is given because frequently an individual desires to build a unit without the added cost of a steel or circular wood riser form. In every other respect the construction and installation remain the same.

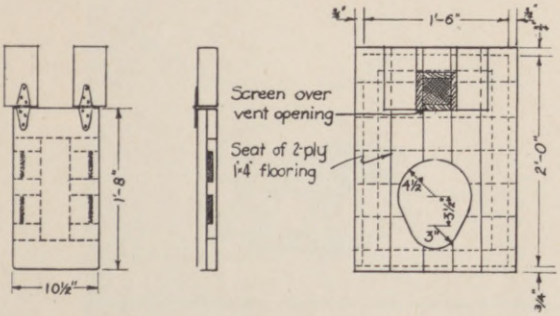
There may be a desire on the part of the individual undertaking the construction work to cast the unit in place. This is not a satisfactory method because such a section is not movable to a new location when the pit becomes full. The cost of scavenger service will not justify the cast-in-place slab. It is far more economical to construct a new pit and fill up the old pit.



FORMS FOR RISER



SLAB AND RISER COMPLETED



LID AND SEAT

FIGURE 9

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