

How to
construct
saunas,
hot tubs,
and steam
baths



THE
BATH
BUILDER'S
BOOK

GEORGE
FELS
and CHET
NICHOLS

WAS: \$ 5.95
NOW ONLY
\$ 1.99



Digitized by the Internet Archive
in 2012

<http://archive.org/details/bathbuildersbook00fels>

How to
construct
sinks,

**THE
BATH
BUILDER'S
BOOK**

BUILDER'S
BOOK

GEORGE FIS and CHET NICHOLS



**How to
construct
saunas,
hot tubs,
and steam
baths**

**THE
BATH
BUILDER'S
BOOK**

GEORGE FELS and CHET NICHOLS

Library of Congress Cataloging in Publication Data

Nichols, Chet.

The bath builder's book.

Includes index.

1. Baths—Design and construction. I. Fels, George,
joint author. II. Title.

TH4761.N52 1979 690'.8'9 79-50974

ISBN 0-8092-7352-7

ISBN 0-8092-7351-9 pbk.

Copyright © 1979 by Chet Nichols and George Fels

All rights reserved

Published by Contemporary Books, Inc.

180 North Michigan Avenue, Chicago, Illinois 60601

Manufactured in the United States of America

Library of Congress Catalog Card Number: 79-50974

International Standard Book Number: 0-8092-7352-7 (cloth)

0-8092-7351-9 (paper)

Published simultaneously in Canada by

Beaverbooks

953 Dillingham Road

Pickering, Ontario L1W 1Z7

Canada

Contents

1. The saunas: Staying dry and high 1
 2. Hot tubs: Build yourself a friend 31
 3. The steam baths: No sweat 53
 4. Mineral springs and whirlpool baths:
You can't make 'em but you can take 'em 71
 5. One last dip 75
- Index 77

Contents

1. Introduction

2. The first part of the book

3. The second part of the book

4. The third part of the book

5. The fourth part of the book

6. The fifth part of the book

7. The sixth part of the book

8. The seventh part of the book

9. The eighth part of the book

THE BATH BUILDER'S BOOK

THE
BATH
BUILDERS'
BOOK

1

The saunas: Staying dry and high

Legend has it that Gills the Finn did return home on a stormy winter's night after many cold and lonely months of travel. There he did behold his fond wife, Dorsal, who bade him a good winter's eve and allowed as how 'twas good to have him home safe again.

The other replied, in some pique, that if he wanted tundra, he would certainly have stayed in the field; and to please draw him a hot bath at once. But Finland had fallen under severe hot-water rations, for the harshness of the winter; no hot water would be allowed until summer, which fell (and ended) on the 4th of July.

Thus she bade Gills to sit before the oven and recover from the storm. And as she helped him prepare for the star-crossed bath, distractions did arise, for the cold had numbed him in body but not in spirit; thus did he become reluctant to leave Dorsal for the comforts of the tub, thus was scribed history's first sauna bath. For her unliberated practicality, humble

Dorsal was rewarded with the revived Gills' new affinity for birch twigs.

Today's sauna baths include a reverence for fine paneled wood but have maintained the same convivial spirit. Actually, there are two kinds of Saunas: Finnish, naturally, and then the Russians, as always, claim a version too. Finnish and Russian Saunas are identical except that the former permits the use of hot rocks; the Russian Sauna will have no such breach of discipline. You just sit there and turn, ahem, red.

The Finnish variety does have a decided edge in popularity. What you do with those hot rocks is toss a periodic spritz of water on them. It vaporizes instantly, but invisibly, in all that dry heat, and you feel this nifty little flash of heat on your skin. The purer your streak of hedonism, the more likely you are to opt for a Finnish Sauna.

A sauna bath feels so good on your body

that it really qualifies as a kind of indulgence. Many an authoritative source will tell you that, as with all indulgences, you'd do well to make it an occasional thing. (The New York Health Club says once *weekly* is plenty.) That will test your mettle for self-discipline vigorously because saunas are habit-forming. They also produce a high, but one of the very healthiest highs there is.

As any native Arizonan or Minnesotan will tell you, dry air makes extremes in temperature quite bearable. The humidity in a sauna should never exceed 20%; many bathers prefer it down around 6% or 8%. And while a temperature range of 180°F. (82°C.) to 210°F. (99°C.) might pop your eyeballs to read about, that is the typical temperature in a sauna. You notice the dryness long before you notice the heat. It's just a warm wave of comfort that comes over you the way darkness does for the first few seconds after you turn off the lights at night. As with most pleasurable things, your eyes will probably close. You'll begin to perspire soon, perhaps even at once, but it won't have quite the same sensation of wetness that it usually does. That's because the first few layers of perspiration evaporate almost at once in all that dry heat, and you merely feel pleasantly moist. By the end of your bath, naturally, water will be running off you too freely to evaporate that way, and that itself is usually a pretty fair indicator that time's up.

But here's what's been going on besides mere sweating: The temperature of your skin has been raised a few degrees from its customary 92°F. (33°C.), 6.6°F. less than normal *body* temperature. Your body isn't used to that, so it works to maintain equilibrium. If you were in a bathtub of hot water, your heartbeat would increase markedly to cool your system. Because the sauna increases the skin temperature much more slowly than that, the resultant changes in body function are not only gradual but quite pleasant. The perspiration helps open and clean your pores. An increased heartbeat and shifts in several blood chemical levels help flush surface impurities and toxins. It's a glow you feel both on top of your skin and under it, and unlike a steam bath, you

emerge feeling invigorated rather than enervated.

Saunas cleanse your cravings as well as your skin. You're likely to feel hungry, but this is not to be confused with the insidious "munchies" associated with other forms of euphoria. Your sauna will put you in mind of carrots and beef and fish and leafy greens: *clean* stuff.

There are things you can do while actually taking the sauna, but it's best to do as little as possible. Most bathers' favorite and most frenzied activity is casual conversation. We don't recommend calisthenics, not even light ones. In the first place, your temperature will increase more rapidly, defeating the purpose of the gradual bath. Second, your lungs will not thank you for making them gulp down hot dry air, as opposed to breathing it in normally which feels quite wonderful. Some people seem to enjoy reading, but soggy newspapers are generally an affront to those around you. Among the Finns, flatulence is not only acceptable but considered a show of good spirit, a custom distantly related to the Arabs' belching after meals. All in all, though, you can't call that much to do.

Things *not* to do in the sauna include smoking (tobacco is just too gross to even talk about, and anything else will burn too fast). No eating in the sauna, nor immediately after the sauna; your blood has to concern itself with digestion then, and won't be available for the circulatory boost you want. No meditating; the sauna itself induces a light meditative state, and if you go any deeper than that you could well overstay your welcome. (Ten minutes' sauna is ample even for veteran users, and fifteen is the maximum recommended by anyone.) No pets, of course; their venting systems are different from ours. Small children are not a terrific idea for the sauna; their perspiration systems are not fully developed. Finally, it is true that the Finns switched each other lightly with birch leaves to enhance circulation, which invites all kinds of cheap shots (verbal ones, that is). We have nothing for or against that, but if you do it and it leads to other things, leave the sauna first (especially

since you can't accomplish much along those lines in fifteen minutes anyway).

Besides, your first stop after a sauna should be the shower, first warm to rinse you, then cool (cold if you're macho enough) for a final circulatory rush.

Generally speaking, if you're healthy enough to jog or swim, you're healthy enough for a sauna. But authorities do caution against saunas for people with diabetes, heart problems or hypertension, or in combination with tranquilizers, antibiotics or antihistamines. There are only so many adjustments you can ask your system to make at once.

What can you expect, or not expect, from a sauna bath? Well, if your reactions to a sauna are typical, you can expect to feel blasted on happiness for a good several hours afterwards. That's the good news. The bad news, which is probably something of a misnomer, is that we cannot claim any long-term medical benefits arising from the sauna. The Finns do lead long and healthy lives, but that takes so many factors into consideration that the sauna is barely measurable. Your skin looks its best after a sauna, but on a long-term basis saunas are probably not much more beneficial to skin care than are thorough soap-showers. You can't lose any weight (not for more than a few hours, anyway) in a sauna, nor in any other kind of hot tub. Saunas are quite dangerous to use for hangovers, despite what you might have heard, and no cure whatsoever for colds, arthritis, or anything else.

All a sauna bath can do is make you feel good. Incredibly good, in fact, and for many that far outweighs all the miracles a sauna *cannot* perform. Let's talk about how you get one.

Buying one

Saunas are more than a physical indulgence. Good home saunas range from \$1,000 to \$4,000, delivered and installed, with heater, thermostat and other accessories. For a family-size sauna, prices begin around \$1800. You can cut those costs by building one yourself (which we're coming to); but that's no cinch,

so if you're over-inventoried on thumbs, take heart in the fact that sauna financing is easily arranged. Most banks look on the sauna as a genuine home improvement.

Sources for saunas aren't nearly as rare now as they were just a few years ago. Such unesoteric names as Sears and J. C. Penney's head the list. Wherever you choose, it's wise to buy saunas made by companies with a name you recognize and trust, or with dealers nationwide. Your choice of size and style will depend on where you want to put it and how many people will be using it. It's that simple.

If you read sauna catalogs before buying (a good idea), be sure to determine how much of the assembly will be done for you and how much you're expected to do. The term "pre-cut" as it appears in the catalogs of sauna manufacturers generally means you're buying paneling, benches, heater, control unit and thermostat, but no floor or walls. Erection of the frame, paneling the interior walls and ceiling, and insulating are all up to you. A "prefab" or "modular" sauna consists of four walls and ceiling, plus heater and controls and bench, ready for assembly with no framework needed. Precut saunas will run as much as 35% less than their modular cousins.

Woodburning stoves do offer a rustic, romantic charm to the sauna, but we think they're more trouble than they're worth. You have to start and stoke the fire two to three hours before every sauna, clean up the ashes afterward, and pay more for the privilege in the form of stovepipes and flues. Electric heaters dominate the market today; they're the safest and most convenient. But they'll fetch you a handsome electrician's bill, especially if you're putting in a larger sauna with a 220-volt heater. They require considerable new wiring.

It's been reliably reported that sauna prices are haggable; you can do better than list price with most dealers. Generally the manufacturer and dealer you select will, between them, see to it that the model you choose exactly fits both your space and your needs; put a roof on it and set it up in your backyard, for a few dollars extra; assemble a modu-

lar sauna for you free; help you with installation. Any of the leading sauna makers and importers listed here can supply everything you need, and each is reputable with a well-established dealer network which you can pinpoint in the Yellow Pages (or you can write for a nearby dealer's name).

Am-Finn Sauna, Seventh and Washington Streets, Red Hill, Pa. 18076.

Cecil Ellis Sauna Corp., Box 204, Middlefield, Conn. 06455.

Metos Sauna Inc., 13000 Bellevue Redmond Rd., Bellevue, Wash. 98005.

Nippa Sauna Heaters, Bruce Crossing, Michigan 49912.

Sauna Distributors Inc., 92-21 Corona Avenue, Elmhurst, N. Y. 11373.

Toivo Sauna Inc., P.O. Box 192, Red Wing, Minnesota 55066.

Ultra Sauna, 1808 Potrero Avenue, South El Monte, California 91733.

Viking Sauna Co., P.O. Box 6298, San Jose, California 95150.

Or, you can show a true Finn's adventurous spirit and build one yourself.

Building your own sauna . . . for \$250

A couple of qualifiers are necessary before we begin. First of all, the prices are given to suggest a general range in price rather than a specific figure. A breakdown of costs is given at the end of this section, but those prices may vary around the country; and what geography doesn't affect, inflation almost certainly will. So your \$250 sauna may become a \$300 one. (Diagram 1.)

Secondly, on a Mechanical Aptitude scale of one to ten, you probably ought to rate yourself a six or seven before considering the do-it-yourself sauna. Be candid about this; it will only save you frustration later on. If you rate yourself a four or a five, you can still get by if you possess added enthusiasm for the project.

With these forewarnings out of the way, your most important decision concerning the building of your own sauna is selection of site. Aside from ease of access and the other obvious parameters, you will need standing, in-

sulatable walls (at least two, preferably four). Garages, sheds, coach houses all come to mind. Our first self-made sauna was an out-building on a Kansas farm (more precisely, a reborn chicken coop).

The only way to get around locating standing walls is that fortuitous situation of having a contractor for a brother-in-law, or something similar. In that case, you need only build a wooden form for the walls of your sauna. Build a second form a few inches wider than the first on all sides. (Diagram 2.) Enter your brother-in-law, who pours fresh cement between the two forms. Forty-eight hours later, you tear down the wood and your walls are ready. Your \$250-\$300 sauna is now a \$500 sauna; cement costs close to \$200 no matter who you know in the business, but it's still a great start to have.

Without a brother-in-law in the business, though, you'll have to roll up your sleeves. Your chosen site location will require clearing. That means not only cleaning out the contents of the structure you've chosen, but seeing what work must be done on the roof and walls. You may have to rebuild or prop up certain areas. Often only *parts* of the roof or walls require propping-up and re-nailing. You may have to tear out some old lumber; this represents a money-saving opportunity as well as some sweaty work. Old lumber is, in most cases, in good shape and quite salvageable. You can probably use it when reconstruction begins, but be sure to take the nails out. A 2¢ nail is quite a formidable foe for the \$25 carbide-tipped blade in the power saw you'll be using later on.

If you want more head room in your sauna than the site offers as it stands, remember the old vaudeville gag that says, "Don't raise the bridge; lower the water." All we had on that Kansas farm was soil; and we cleared away a good foot-and-a-half of it so that our sauna was eventually semi-underground. Even if you have to break up an existing, constructed floor, cubic space is better added from the bottom than from the top.

Our Kansas sauna was a five-walled affair (see diagram #1). We inherited three of the five walls, and they were 2' rock. We had to build two walls of wood, tie them to the rock walls

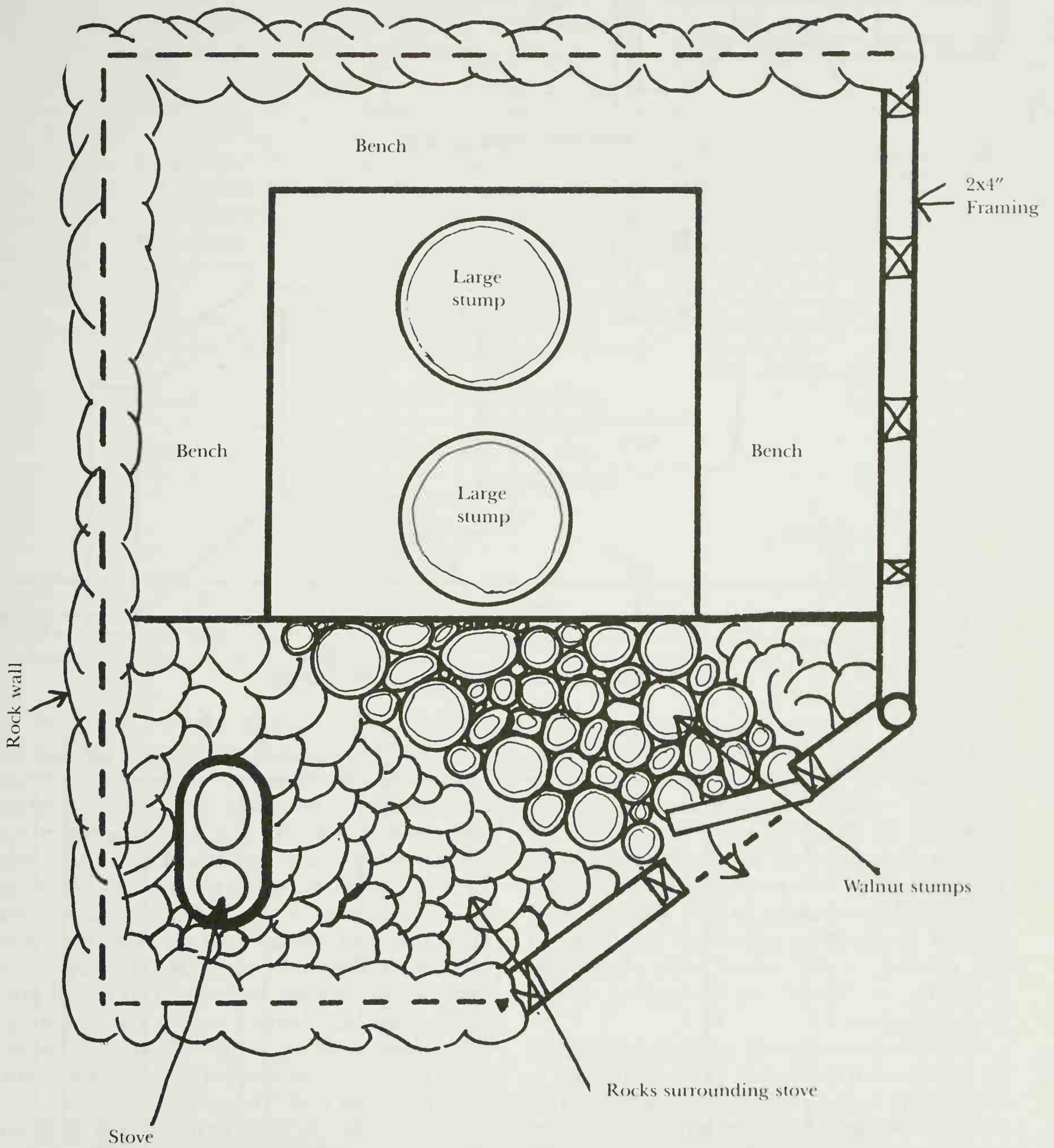


DIAGRAM 1. Floor plan for \$250.00 sauna.

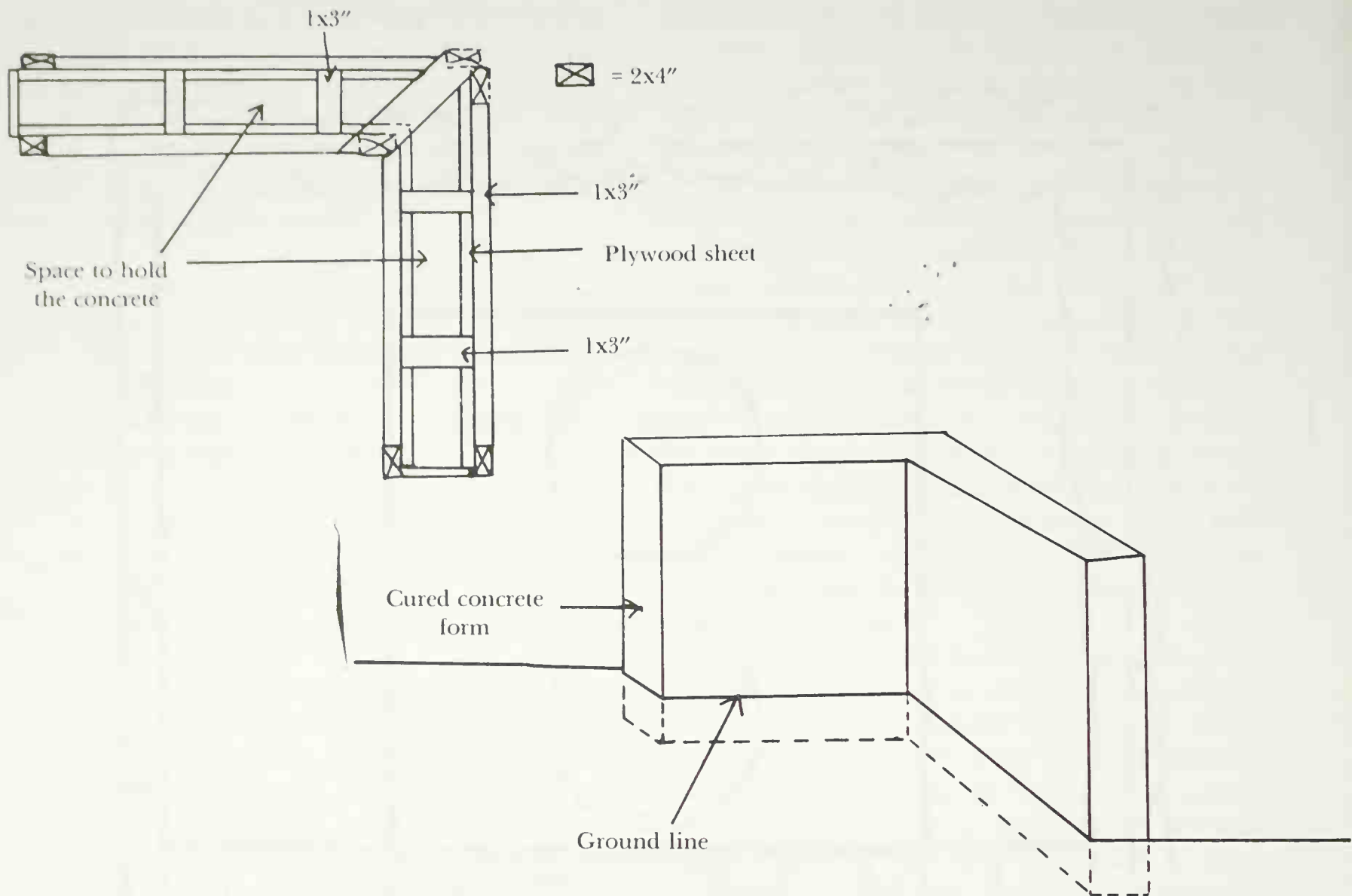


DIAGRAM 2. Constructing concrete forms.

and to the ceiling. We used the common framing pattern of top and bottom plates supported by vertical 2" x 4"s, set at 16" centers. (Diagram 3.) (But we recommend 2" x 6"s for exterior framing in all but the Sunbelt states.) The 16" centers will accommodate the insulation; insulation comes in 16" and 24" sizes. Also, if you're using any 4' x 8' sheathing on the exterior, a 16" center will allow that sheathing to "break" on the vertical 2" x 4" studs. (Diagram 4.)

Of the various types of insulation available, we recommend friction-fit. This insulation is cut slightly larger than the area between two studs. (See Chart #1.) Apply it by merely pressing it into the space; friction keeps it there. Be sure that it fits tight, top and bottom, in between the studs. (If you prefer roll-type insulation, we suggest the foil-covered type, with the foil facing the interior.)

Once the walls and ceiling are correctly,

thoroughly insulated, you're ready for exterior sheathing. We chose to be pragmatic rather than aesthetic here, and used simple exterior plywood, 1/2" x 4' x 8'. It's no competition for Indian rosewood or any other exotic grain, but it does the job and keeps costs down. Whatever wood you choose, remember that any wood that comes in contact with the earth *must* first be Terma-Toxed. Termites care not a fig about your sauna nor the body comforts it will provide; they are hardy, evil, whisky-swilling, stud-poker-playing, cigar-chomping pests, and they hate you and love your wood. Deny them lodging with Terma-Tox.

After ensuring that termites will find no room at the inn, we recommend another coating for the bottom plates of wood walls and part way up the studs. We used Creasote, the coating given to railroad ties to keep the wood from rotting due to excessive moisture in the soil. Apply this coating *before* you

CHART 1. Insulation types—good news and bad news

Type	"R" value (per inch of insulation)	Good news	Bad News
Rock Wool	3.33	Easy to install; cheap	Skin irritant
Cellulose	3.75	Gets into tight spots; effective	Expensive; flammable
Loose Fill: Glass fiber & rock wool	2.2	Easy to install: great for floors and ceilings	Loses its effectiveness when it settles
Glass Fiber (Roll-type)	3.15	Easy to install; cheap and fire- proof	Skin irritant
Urethane (Spray foam)	6.25	Great for walls; comes in different forms	Flammable unless treated; emits fumes when burned
Glass Fiber & Urethane board	6.25	Very efficient for amount used	"
Rigid board: Polystyrene	6.35	Easy to install; moisture-proof	"

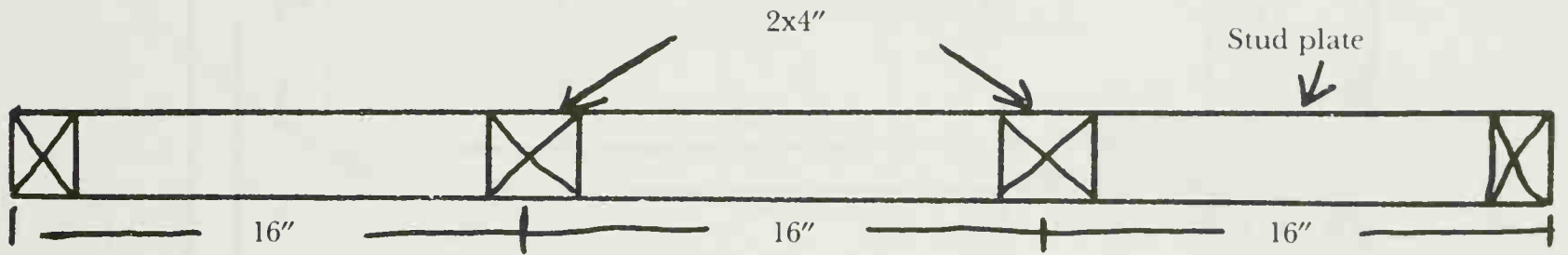


DIAGRAM 3. Guide to setting up framing pattern of 2x4's.

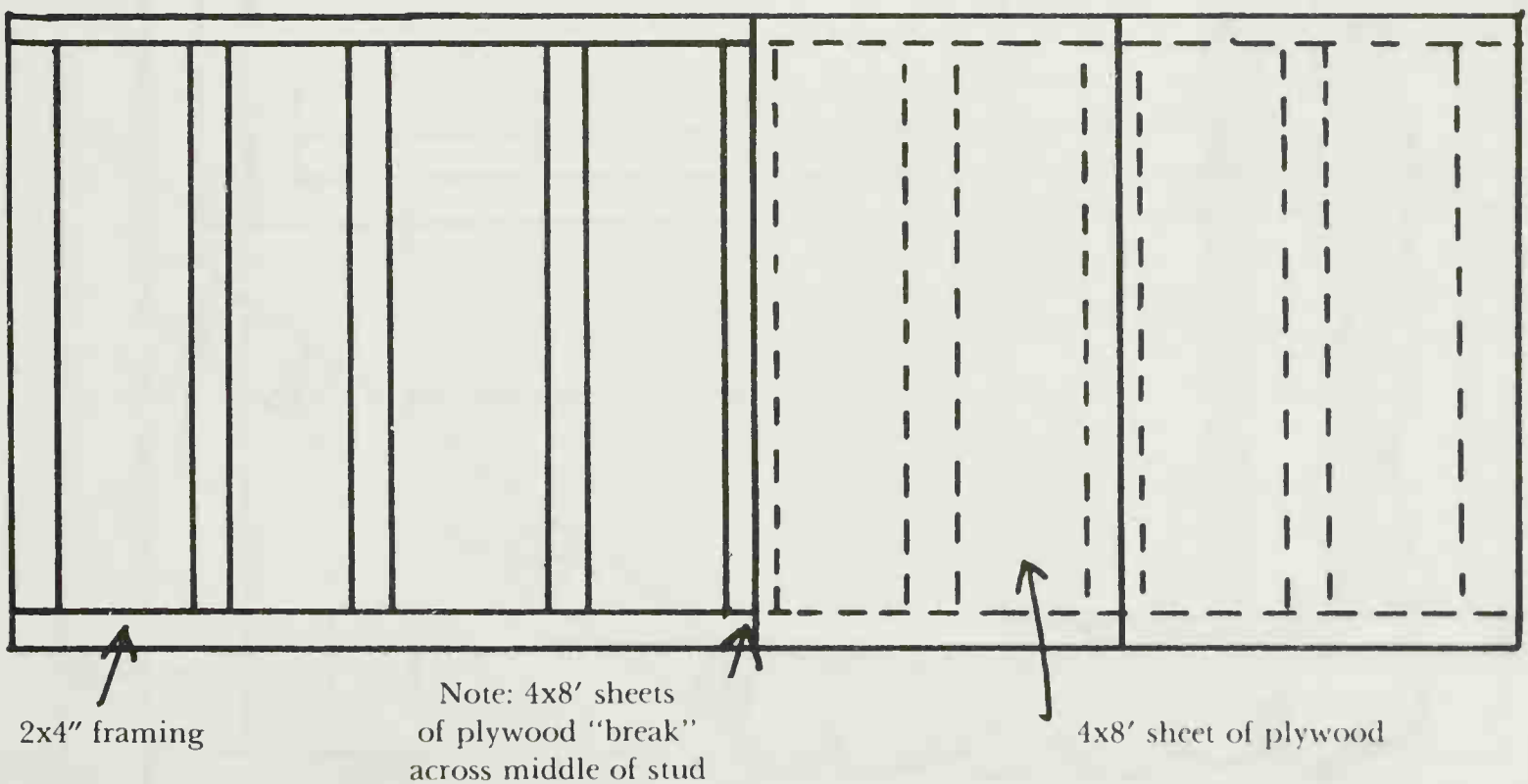


DIAGRAM 4. Spacing guide for 4'x8' sheeting.

apply the insulation. Do not apply Terma-Tox or Creasote to any part of the interior of the sauna.

We built our floor next (although you may well not need to). (Diagram 5.) We sank a dozen concrete building blocks into the dirt so that an inch or two was above ground. Two sheets of 4'x8' plywood served as the floor itself; we had to build a frame of 2x4s to hold them. We then secured the frame to the exposed concrete blocks set in the ground. Nothing fancy, but it covered the dirt and

provided a good strong floor. To complete the floor, we dug a trench from the exit door and ran it up to the plywood floor. We filled this area with black walnut round stumps, lined them up, coaxed them into place and leveled them with sledgehammers. We filled the spaces with fine dirt.

Then, we finished off the interior walls and the ceiling, using railroad-car siding to line the walls. This is a tongue-and-groove wood, usually pine or spruce; the tongue-and-groove feature is important because it seals the walls

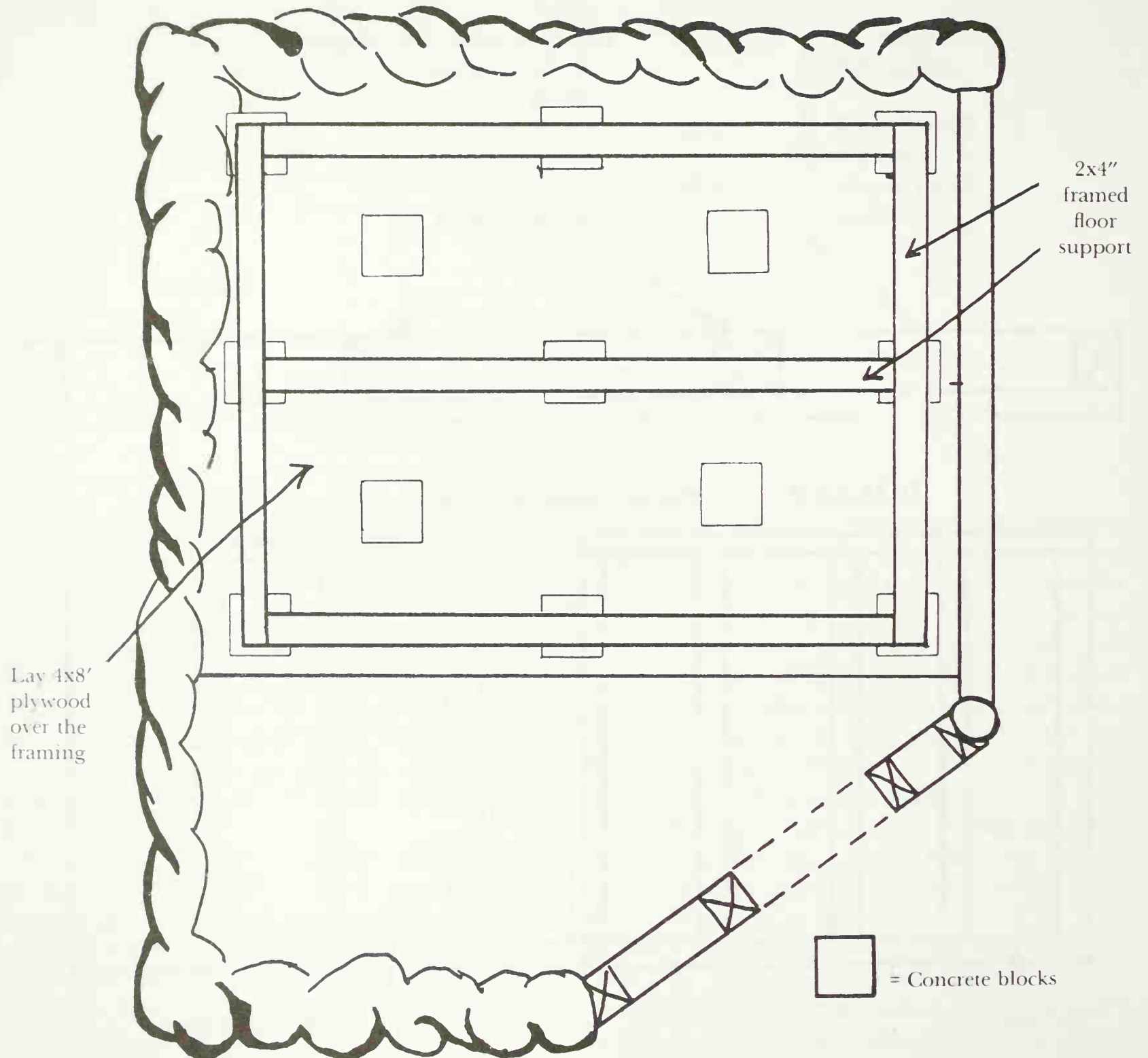


DIAGRAM 5. Layout for flooring of \$250.00 sauna.

fully and will contain the extreme heat of a sauna. It doesn't cost much (ours cost \$33), although the wood does have knots which will eventually weep sap, but that's nothing to worry about. In using tongue-and-groove wood, set the groove side as the bottom of the board. (Diagram 6.) In nailing, you can either top-nail or counter-sink the nail near the base of the tongue. Counter-sinking offers the advantage of an undisturbed look to the wall. Use #8 finishing nails. If you still prefer to top-nail, be sure to use finishing nails and,

almost equally important, be sure to set them into the wood with a nail-set. This will eliminate the possibility of someone's leaning on a row of hot nails—an epic "Owie." (Diagram 7.)

For the ceiling, we used clear, $\frac{3}{4}$ ", 4' x 8' exterior plywood siding. Ours was customized in two ways. First, we wanted a window in the ceiling (yes, in the ceiling; stars are perfectly magical to look at from the comfort of a sauna bath). So we used an old 4-pane window, and doubled it with one sheet of double thickness

DIAGRAM 7. Nailing tongue & groove planks.

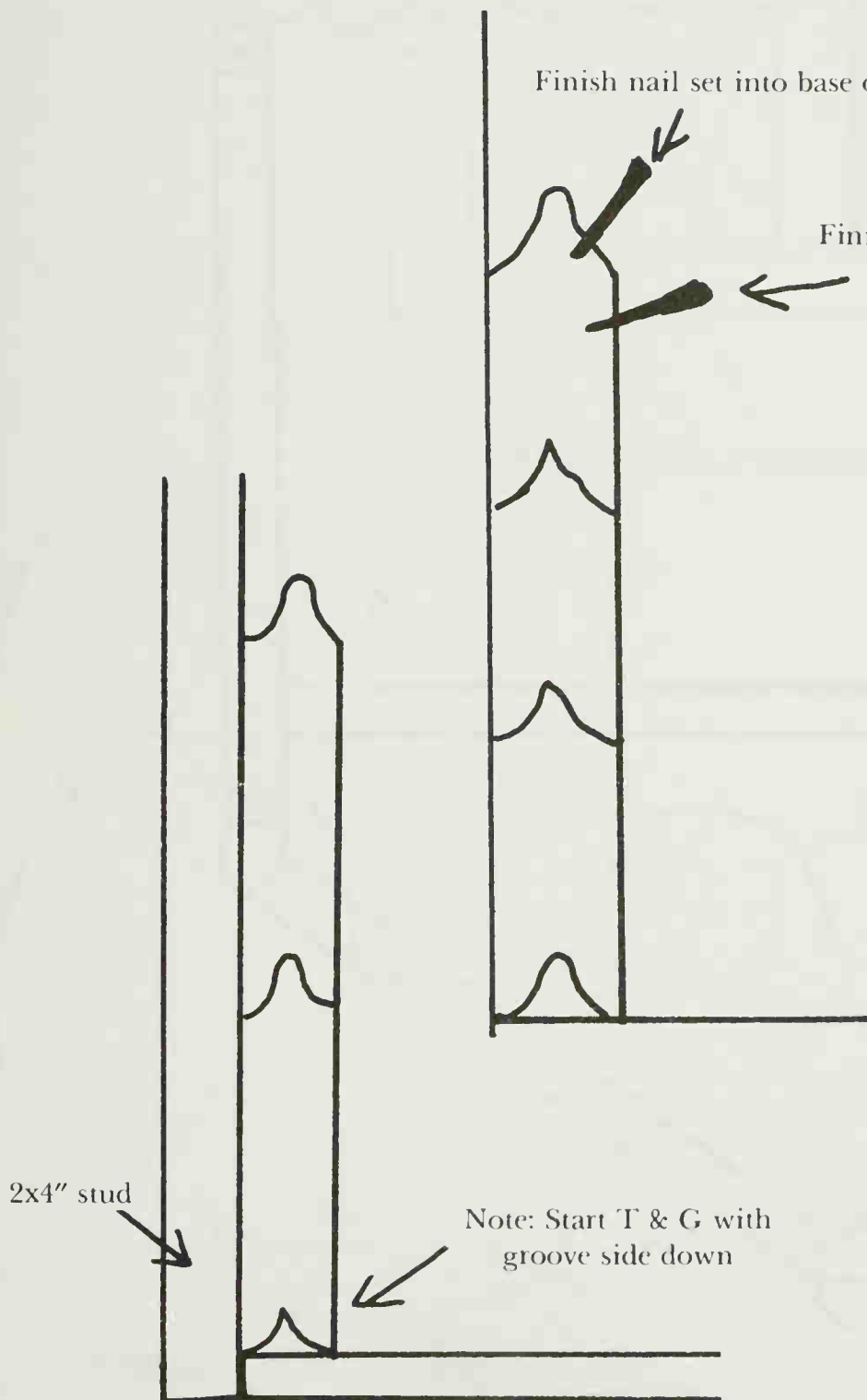


DIAGRAM 6. Setting up T & G runs.

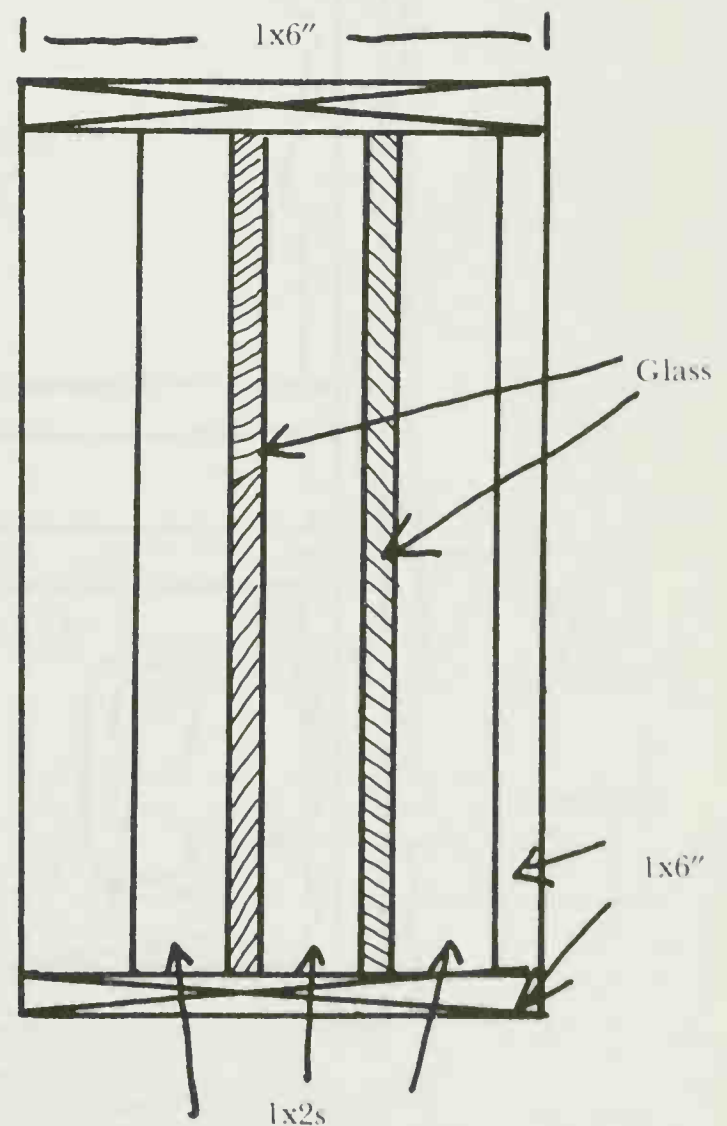


DIAGRAM 8. Setting glass into window space.

glass, separating the two panes with 1" x 2" stock. (Diagram 8.) We also used rubber caulk to seal the glass and the stock. Second, we used a wood-burning stove, both for its rustic charm and its price (a neighbor sold it to us for \$22). To be sure that no part of the ceiling above the stove would catch fire, we set the stove almost against the walls in the corner (see diagram #9). Then we surrounded the rest of the stove (except, naturally, the opening for feeding and stoking) with rocks. This took care of the fire problem arising out of reac-

tions between stove and walls. To solve the same problem in the ceiling, we first broke up the ceiling joist pattern. (Diagram 9.) Then we boxed a 3' square space, covered the interior with heavy sheet metal, and cut a hole the size of the stove pipe in the sheet metal. Later, when the stove pipe was in place and protruded through the roof, we climbed on top and filled the 3' opening with gravel. We also finished this portion of the exterior roof with another sheet of metal.

The door to our sauna was 3½' x 4'. (Dia-

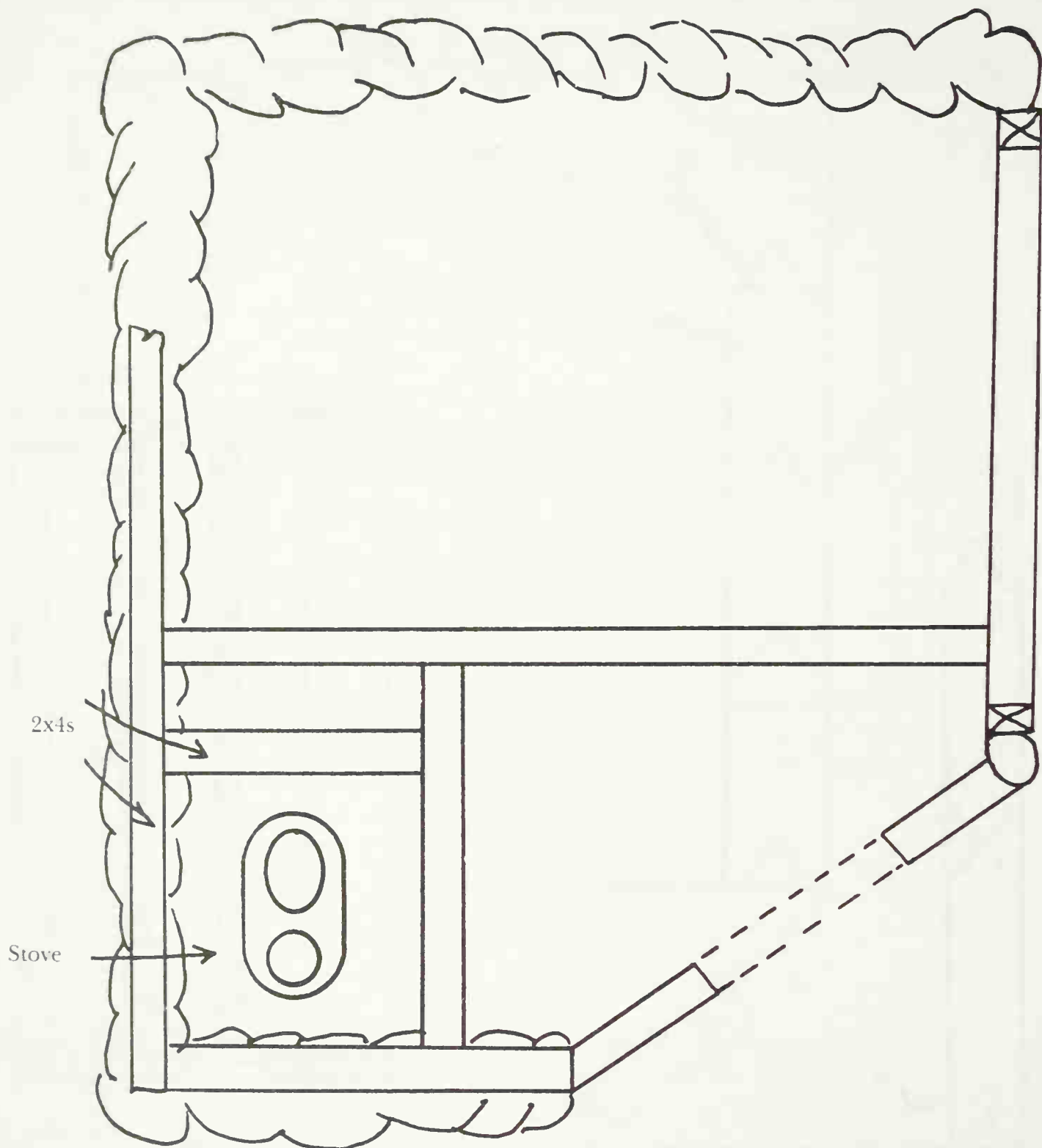


DIAGRAM 9. Stud pattern above wood-burning stove: ceiling.

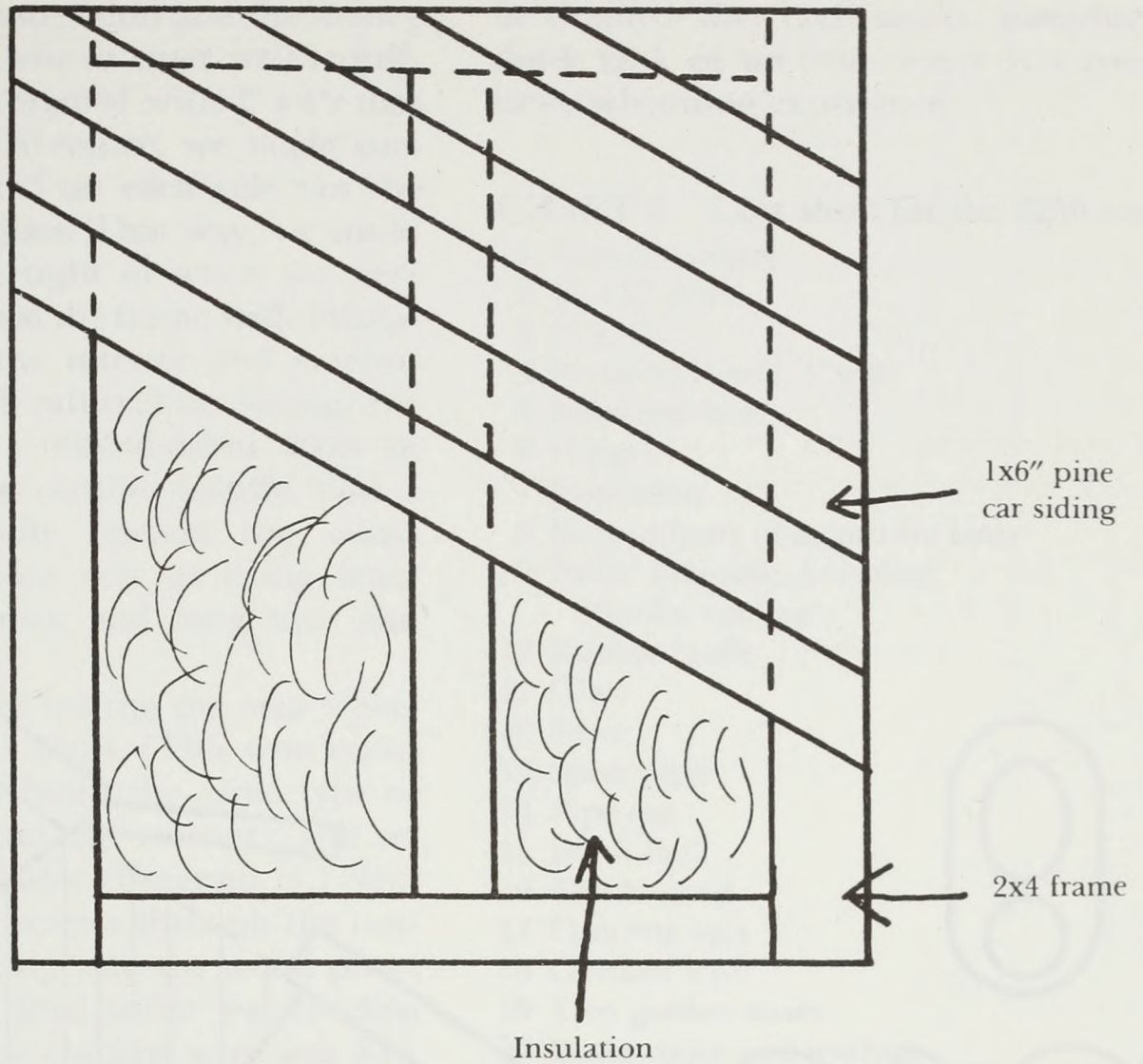


DIAGRAM 10. Construction of sauna door.

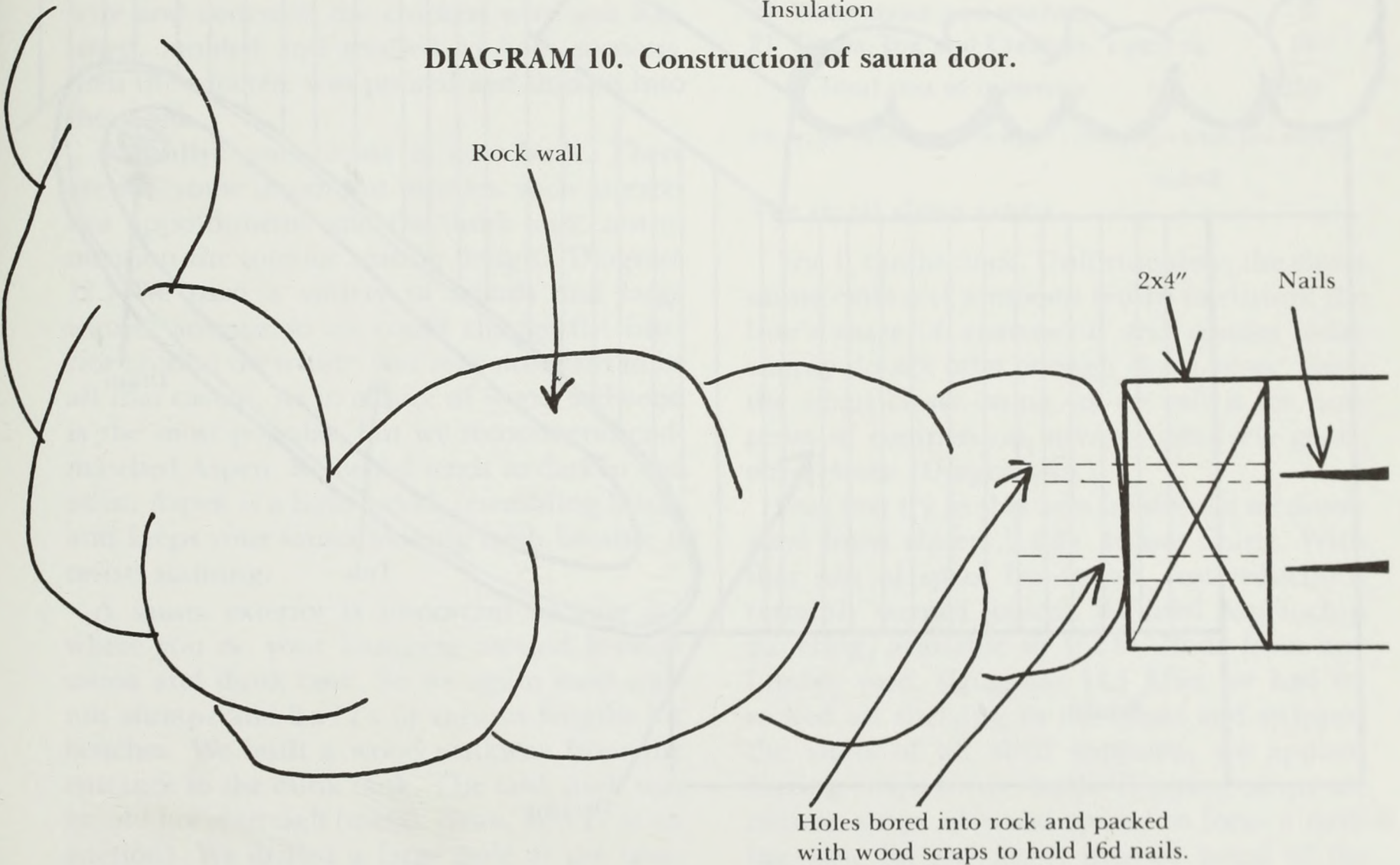


DIAGRAM 11. Setting frame into rock wall.

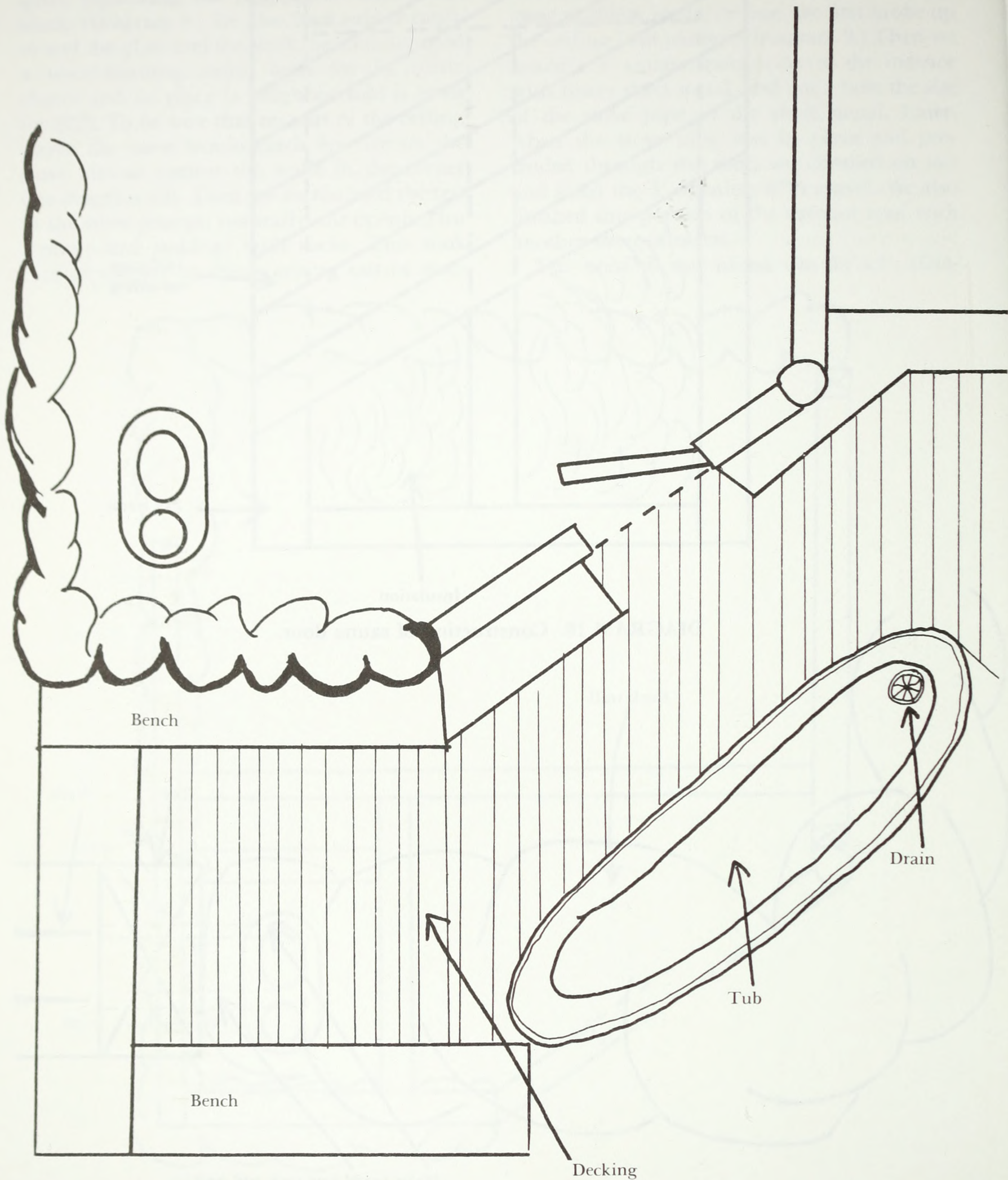


DIAGRAM 12. Exterior layout.

gram 10.) Ease of construction and the money saved made bending low to enter well worthwhile. The door was framed with 2' x 4's that lay on their sides. Of course, we made sure that the vertical 2' x 4' on each side ran the whole length of the door. That way, we could plane the door to a tight fit when we were ready to set it. We lined the frame with insulation, and sheathed the interior and exterior sides of the door with railroad car siding. For no special reason, a nailed-down strip of leather served as the outside handle, and a wood-fashioned handle opened the sauna from within. The door was set using fence hinges, 3" wood screws, and long nuts and bolts.

Final steps involved sealing the area where framed walls met rock walls. (This won't concern you unless you build the same type of sauna.) We drilled into the masonry and set wood plugs in those holes. (Diagram 11.) Next we drove long wood screws through the outside stud of the framing into the wood plugs set in the rock. Our final sealer was chicken wire and concrete; the chicken wire was flattened, molded and secured to both sections, then the concrete was poured and thrown into the mold.

Basically, your sauna is now built. There are still some important niceties, such as exterior appointments and the dunk tank, not to mention the interior seating design. (Diagram 12.) We used a variety of boards and large walnut stumps so we could change the interior around on whim; you may not want to be all that casual. As to choice of wood, redwood is the most popular, but we recommend end-matched Aspen. Redwood tends to darken and stain; Aspen is a light wood, resembling birch, and keeps your sauna looking fresh because it resists staining.

A sauna exterior is important because it's where you do your lounging around betwixt sauna and dunk tank. So we again used walnut stumps and 2 x 12's of various lengths for benches. We built a wood walkway from the entrance to the dunk tank. The tank itself was an old horse trough (metal, clean, and \$7 at an auction). We drilled a large hole at the base, and put in a standard spigot so the tank could

be drained after each sauna. Jumping into a dunk tank of un-fresh water is a completely underwhelming experience.

CHART 2. Cost sheet for the \$250 sauna

1 Pine car siding	\$33
2 1" x 2" stock	6
3 2" x 4"	24
4 Plywood sheets, 4' x 8'	28
5 Bolts and nuts	5
6 Hinges	7
7 Insulation	10
8 Walnut (part of a cord we had)	2
9 Nails: Framing, finishing, shanks, roofing	15
10 Rubber caulk	13
11 Glass	11
12 Stove	22
13 Stove pipe	10
14 Pipe cap	3
15 Dunk tank	7
16 Bench wood	8
17 Concrete mix	8
18 Chicken wire	3
19 Two garden hoses	13
20 Water spout and washers	9
21 Terma-Tox and Creasote, 1 gal. ea.	18
Total cost of materials	\$255

(Okay, the \$255 sauna. You can't always get what you want.)

The small closet sauna

Yes, it can be done. Unfortunately, the closet sauna embraces a modest return to elitism; the lion's share of apartments and condos today simply do not offer enough closet space. Even the small closet sauna, as we call it for purposes of comparison, needs a relatively good-sized closet. (Diagram 13.)

Our first try in this area involved a medium-sized linen closet, 4' x 5½' before lining. With that sort of space limitation, cost reductions certainly seemed logical. We used Aspen-chip paneling, available in 4' x 8' sheets from any lumber yard. (Diagram 14.) After we had removed all shelving in the closet and stripped the walls of all shelf supports, we applied furring strips to the walls. (Furring strips are narrow strips of wood spaced to form a nailing base for the finish interior wood of the sauna. Furring can be used to level, as well as

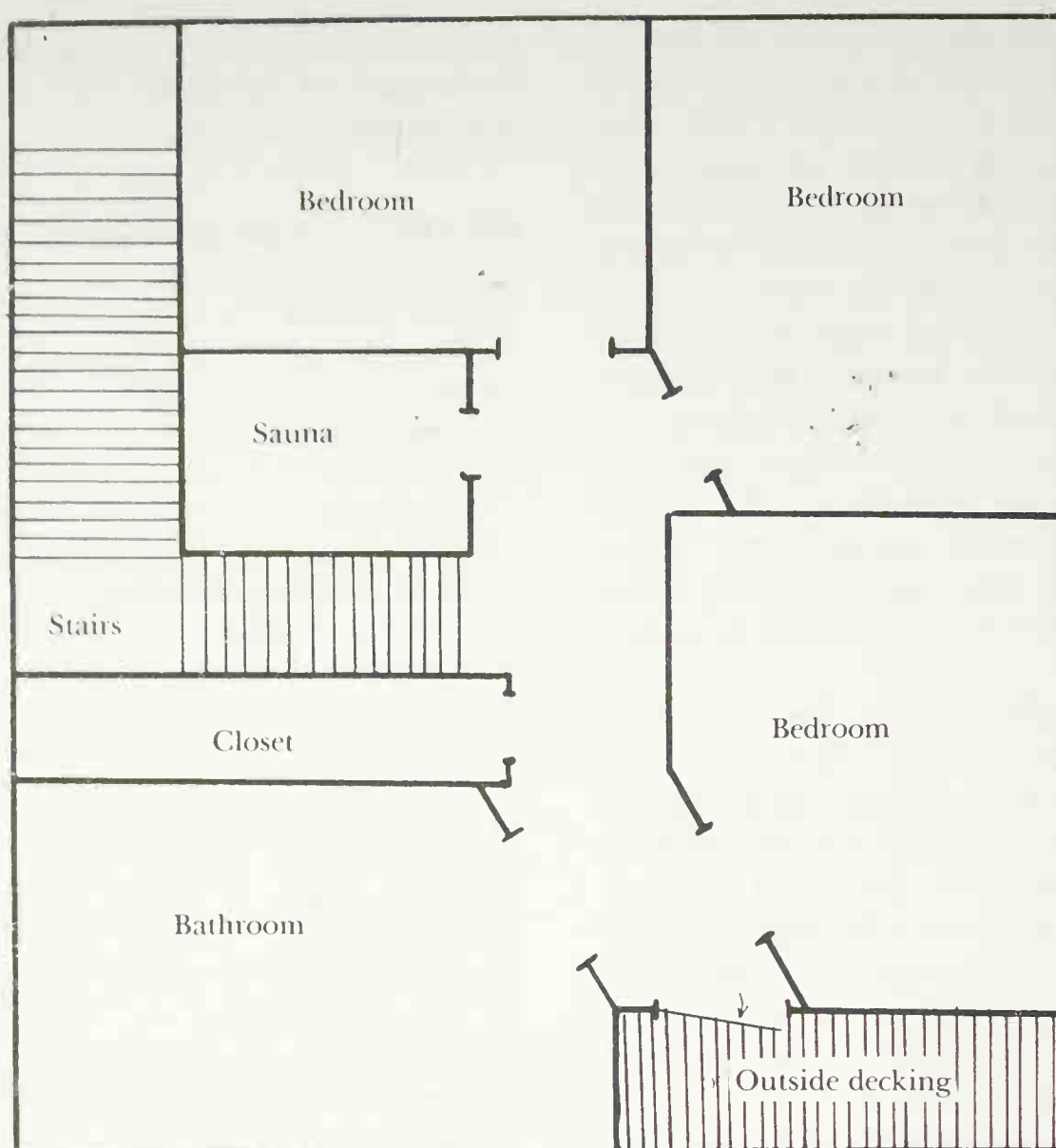


DIAGRAM 13. Floor plan of second floor, small closet sauna.

to form an air space between the actual and finished floors, and allows the use of this space for insulation.) Our furring material was 1" x 3" stock laid flat and nailed to the existing stud pattern. Between the furring strips, we applied ½" rigid foam insulation to the walls and ceiling. (Diagram 15.)

Enter the noble electrician, who brought in a 220V line to hook up the stove (obviously you can't have a wood-burning stove in a closet). He also wired the control box, located outside the sauna, and dropped the light in the ceiling 1" to make up for the height adjustment due to the furring strips.

We were ready to lay the basic flooring for the sauna. This consisted of felt tar paper, overlapped, covered by a single piece of ⅝" exterior plywood (and eventually covered with a single piece of indoor/outdoor carpet).

When the flooring was in place, we affixed heavy aluminum foil to the walls and ceiling with a staple gun; this would help radiate the heat inward.

Next we nailed up the Aspen chip paneling, using 6d nails. The ceiling was completed with one sheet of paneling, and the 6d nails were left exposed. On the walls we were careful to nail the paneling along one furring strip, top to bottom, then cover the nails with ½" x 2" stock. That stock needed to be nailed as well, of course, and we used 6d nails again, but this time we set them slightly into the stock with a nail set. (Remember, exposed metal in a sauna can only lead to tears.)

When the Aspen paneling was secured, we mounted the stove onto the wall. Electric stoves come with mounting brackets; in securing these, make sure the mounts are secured to

DIAGRAM 14. Layout of small closet sauna.

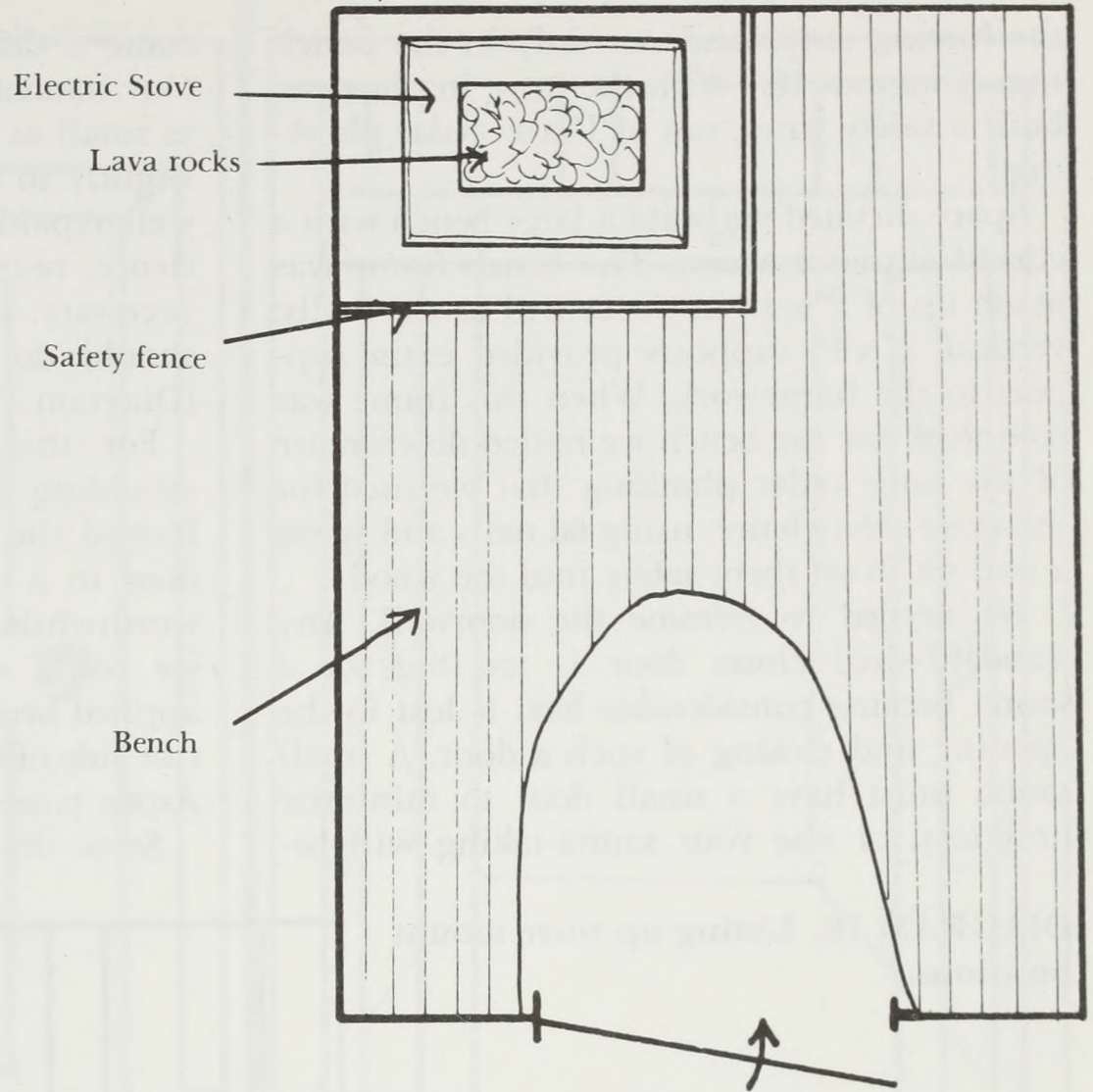
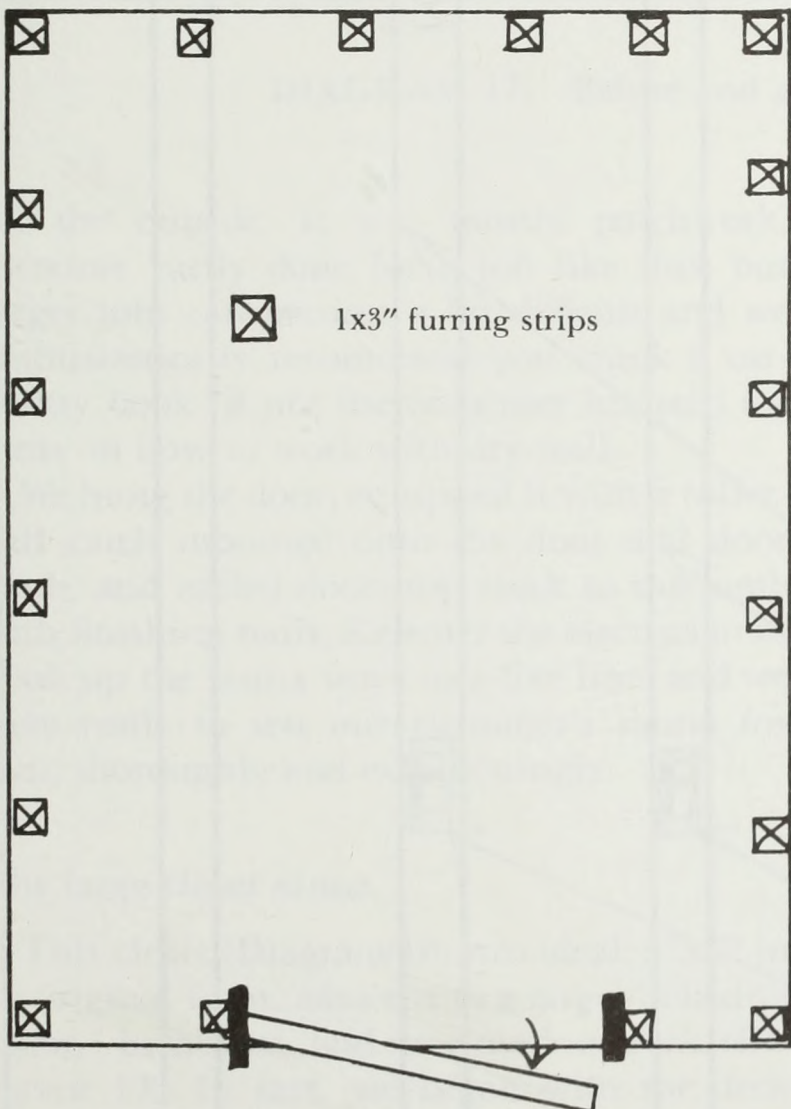


DIAGRAM 15. Furring strip pattern.



the furring strips and not only to the paneling. (Diagram 16.) With the stove in place, we built a safety fence, out of 1" x 4" cedar plank-

ing. Space dictated we build a large bench with a curved entrance access. The bench frame was made up of 2" x 4" stock secured to the walls; vertical 2" x 4" supports provided extra support to the framework. When this frame was complete, for the bench we nailed down more of the same cedar planking that we used for the stove safety fence, using 6d nails and again a nail set to set them safely into the wood.

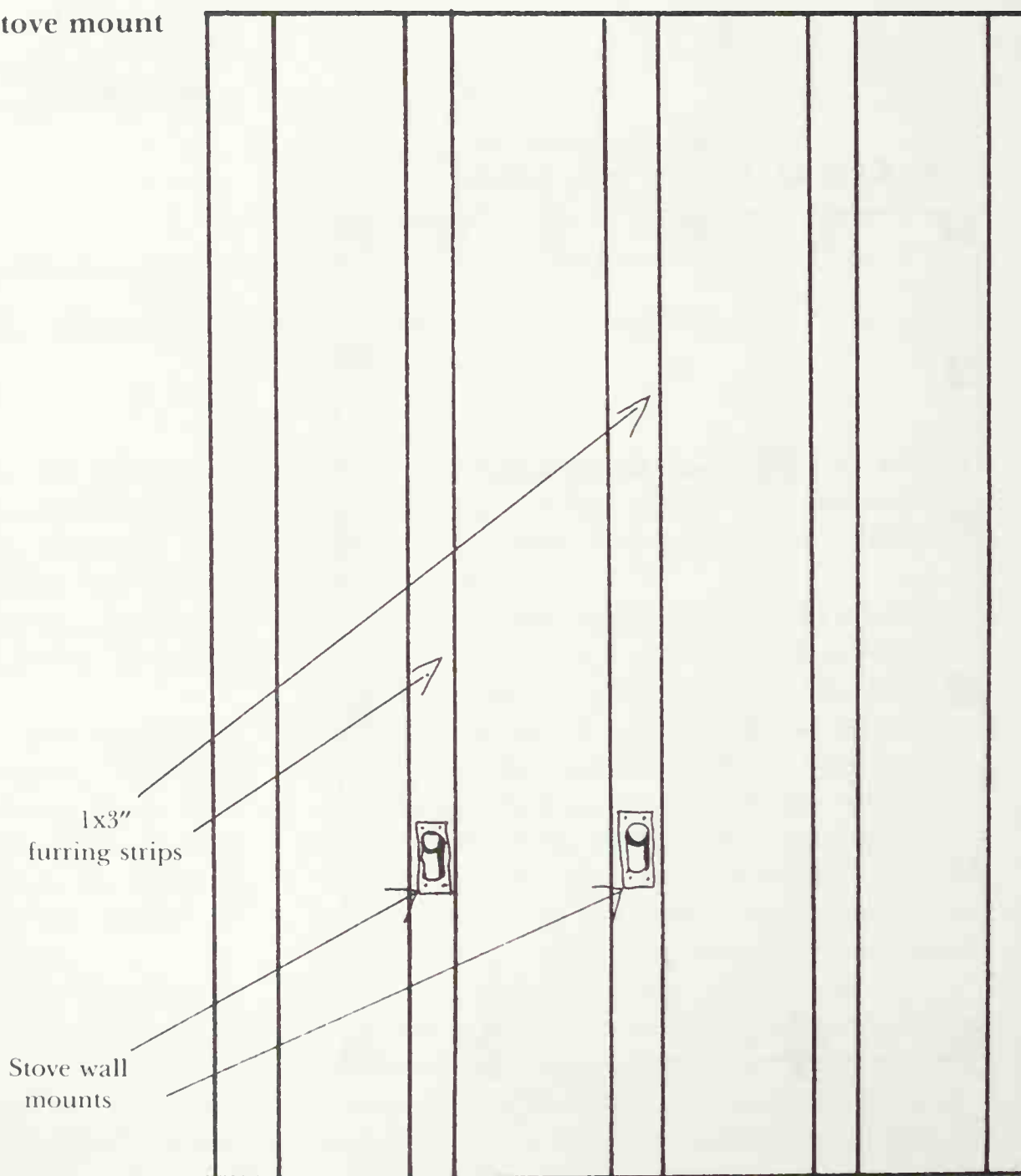
We needed to reframe the doorwell. Any standard-sized closet door is too big for a sauna because considerable heat is lost in the opening and closing of such a door. A small sauna must have a small door to minimize heat loss, or else your sauna-taking will be-

come a dreary, anti-climactic waiting game. Our standard advice is to make the door space as small as possible. If you must bend or twist slightly to enter or leave, these efforts will be well repaid. (And, as we learned from experience, re-framing the doorwell, when that is necessary, is probably the very *first* thing you should do in building this sort of sauna.) (Diagram 17.)

For this specific sauna, we removed all moulding and finished jamb pieces, and re-framed the doorwell to 2' x 6'. We found our door in a used lumber yard (tough but well worthwhile to find); we simply selected a door we could cut and shave down to size. We applied heavy duty aluminum foil to the interior side of the door, then covered the foil with Aspen paneling.

Some dry-wall work was necessary to finish

DIAGRAM 16. Lining up stove mount positions.



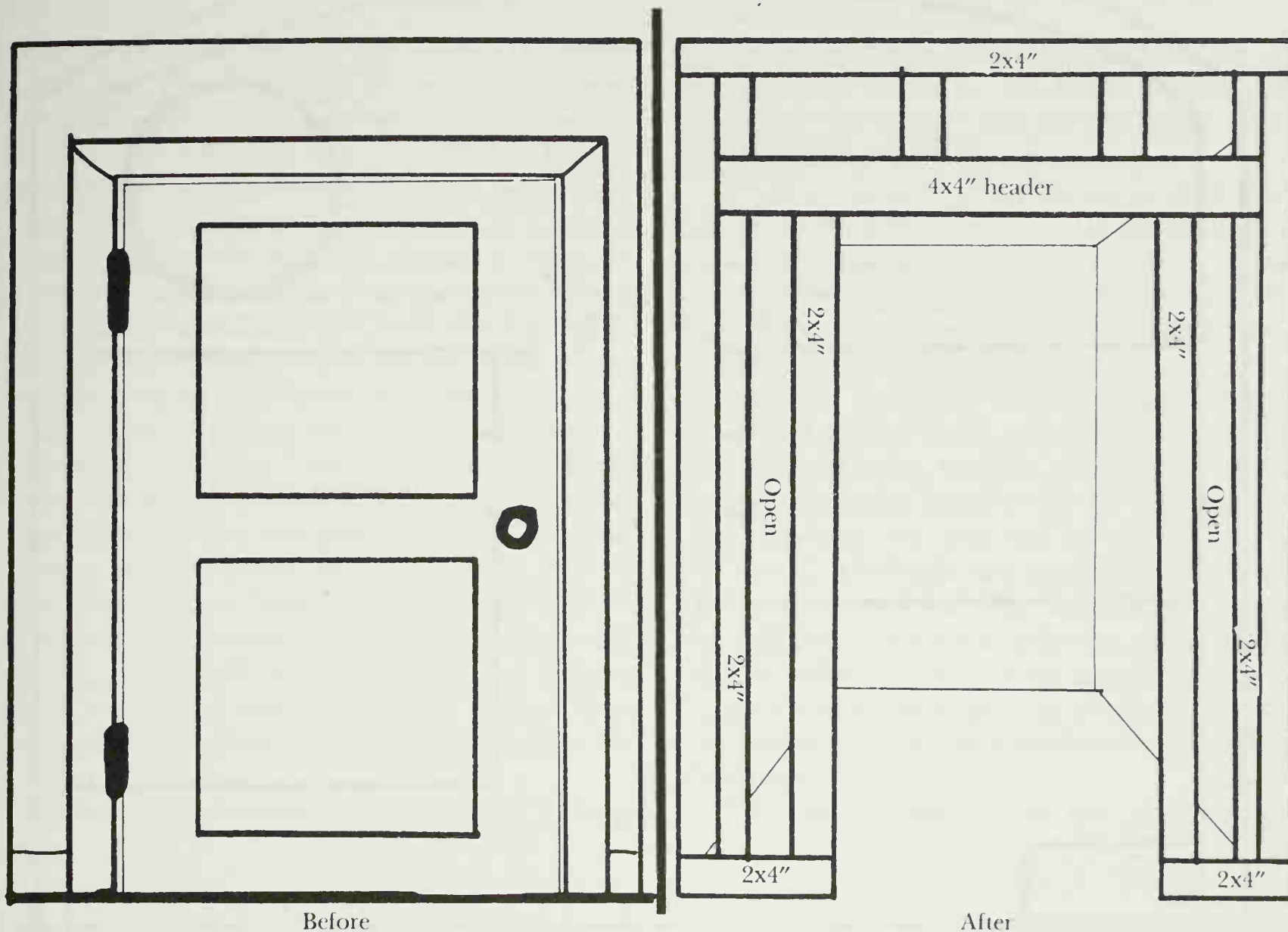


DIAGRAM 17. Before and after pattern for new door to sauna.

off the outside. It was mostly patchwork, therefore easily done for a job like this; but larger jobs can become a bit difficult and we enthusiastically recommend you check a carpentry book (if not the carpenter himself) for ideas on how to work with dry-wall.

We hung the door, equipped it with a roller-ball catch mounted onto the door and door jamb, and nailed door-stop stock to the jamb with finishing nails. Re-enter the electrician to hook up the sauna stove to a live line, and we were ready to test our customer's sauna for him, thoroughly and exhilaratingly.

The large closet sauna

This closet (Diagram 18) was ideal: 5' x 7' in its original form, adjacent to a large "relaxing room," bathroom, and nice outdoor deck. (Diagram 19.) In fact, we began with the deck itself, setting up a purchased rain barrel to act

as an outside dump tank. We bored a hole about 4" from the top of the barrel, and set a garden hose adaptor in that hole. The deck was built on top of a pitched second floor roof; later we'd be able to connect our garden hose to a spout in the basement. (Diagram 20.) Connecting hose to barrel in this way kept the hose from falling down; and by unscrewing the hose in the basement the tank would drain via gravity, in winter or other inclement weather. For draining in good weather, we bored another hole at the base of the barrel, and set in an open/close hose adaptor. We connected a hose at one end, and ran the other end to a gutter attached to the second story roof. When the barrel needed draining, we just opened the spout for it to drain into the gutter. (Remember, no matter how efficient the draining methods, the barrel should always hold *some* water to keep it from shrinking.)

We began work on the sauna itself by nail-

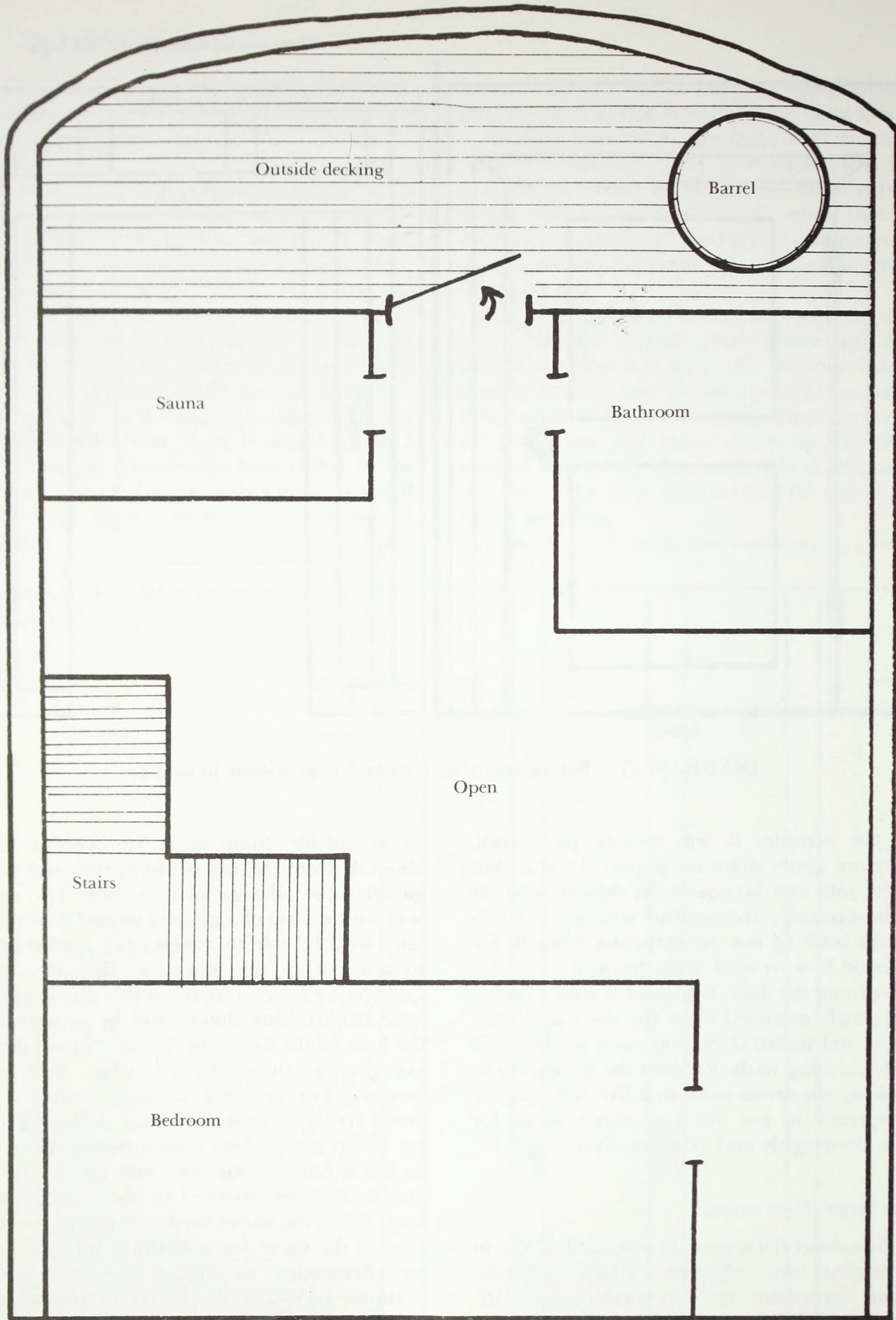


DIAGRAM 18. Layout for large closet sauna.

ing 2" x 4"s flat against the walls. Normally we'd use 1" x 3" furring strips, but we used 2" x 4"s so we could insulate the space in between with 1½" rigid foam insulation. Two of the walls were outside walls, two were interior. The ceiling had two angles in it; it was 8' at the door, but halfway across it dropped with the roof's pitch to 6' in the corner, where electrical controls were set later on. Our 2" x 4" furring strips were nailed to the studs in the existing walls. (We found the studs by using a "stud finder" and by tapping the walls with a hammer to "listen" for them.) We used 16d nails to secure the studs. We wanted to drop the ceiling 9" to cut down on interior cubic space, so we framed the ceiling with 2" x 4"s and insulated in between the studs with 6" of foiled-back insulation. We also dropped the ceiling light box to the new ceiling height, and installed a new sauna light fixture, controlled by an on/off dimmer switch outside the sauna.

With the insulation up and all furring

strips nailed into place, it was time for the electrician's entrance. He ran his lead 220V line into the sauna, and did the prep wiring for the sauna controls.

Then it was time to lay the sauna floor. First we laid a double layer of felt tar paper to act as a water-proofing material. Over this, we laid ¾" exterior plywood and nailed it to the existing floor. At the very end, we put down a single piece of sauna carpeting.

To line the walls and ceiling, we used tongue & groove cedar planking, nailing it to our furring strips with 8d finishing nails and setting the nails into the side of the tongue of the planking. We trimmed off all seams with ¼" round. Although end-matched Aspen is our favorite material for this, that can be a matter of different strokes for different folks. Objectively, cedar is another great sauna wood, with a good knotty look and the flexibility needed to withstand a sauna's extremes of heat and humidity.

The benches were made out of cedar, too.

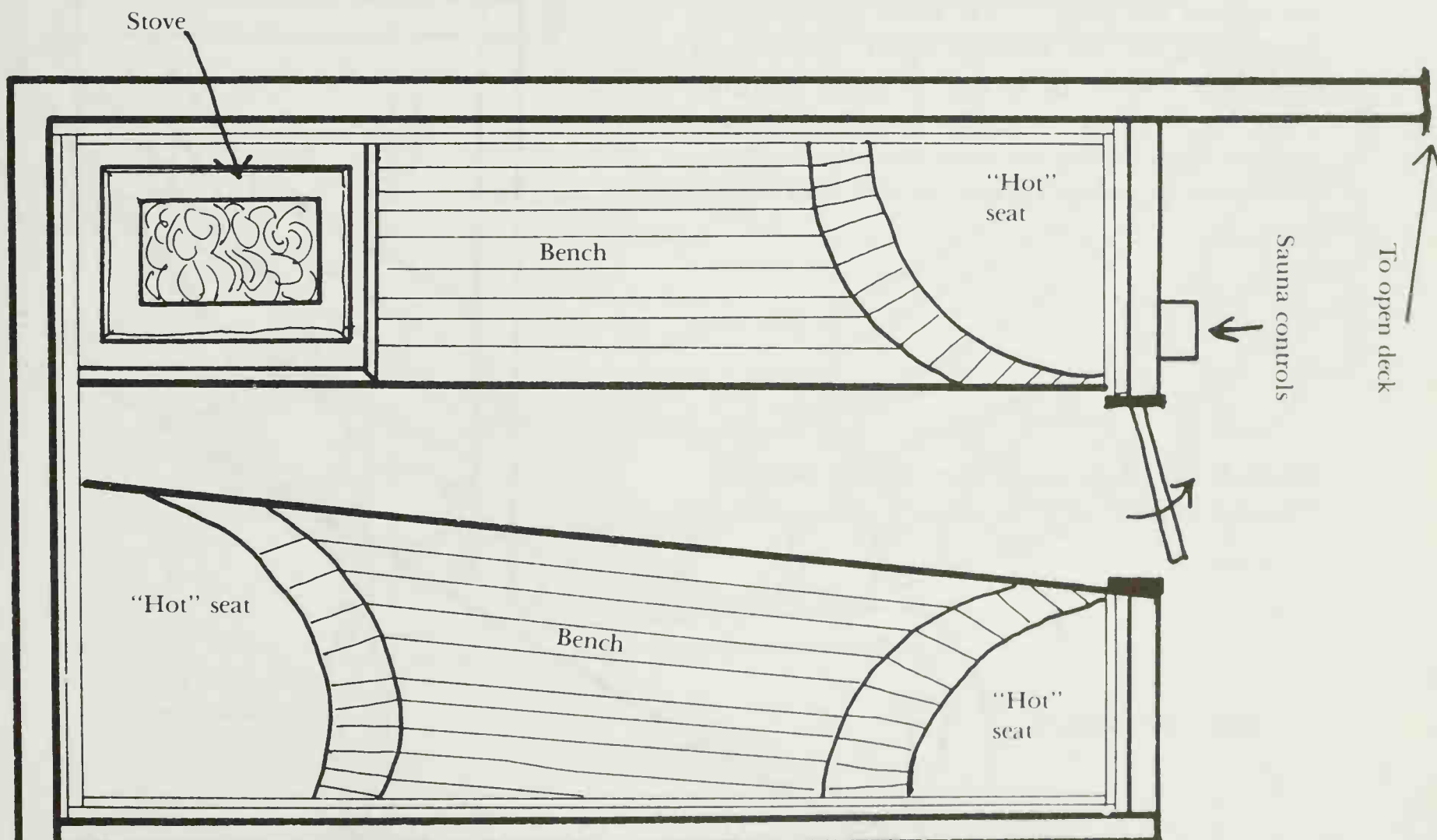


DIAGRAM 19. Floor plan for third floor, large closet sauna.

We built three "hot seats" in three of the corners, consisting of $\frac{1}{4}$ -circles mounted on 2" x 4"s secured to the wall. (Diagram 18.) They were set 2½ feet above the main benches, with 1' x 4' cedar planks that butted up to the edge and angled down to the main bench to serve as a nice back-rest. We all need something we can lean on, now and then.

We installed the stove at this point, mounting it to the wall (the furring, not the paneling), close to one corner. Again, we built a safety fence of 1' x 4' cedar, and secured it around the stove.

Then it was time to build the door. We did not have to re-frame on this particular job; if we had, that would have been the first thing to do. We used the existing door and lined the inside with cedar planking. In the center of the door, we cut a hole 1' square for a window, and boxed the hole in, using 1" x 3" stock. One pane of glass was set in the 1' x 1' space, and capped on both sides with $\frac{1}{4}$ " round to keep it in place. The door was then hung and equipped with a roller-ball catch set into the side of the door. 1" x 3" stock served as our door-stop. We left enough space 'twixt door and stop to put in strips of foam weather-proofing to act as a sealer between the stop and the door. Then we were ready to lay down that piece of sauna carpeting and turn on the stove.

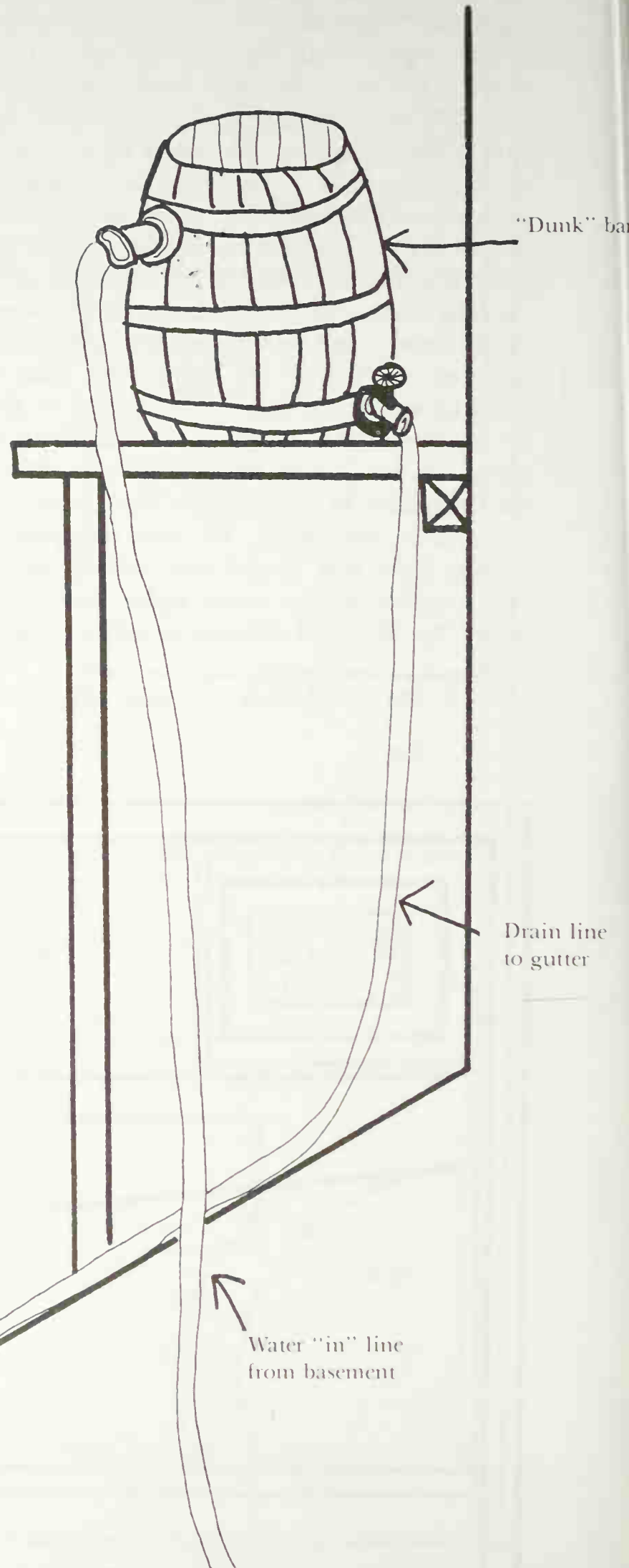


DIAGRAM 20. Connections to and from "dunk" barrel.

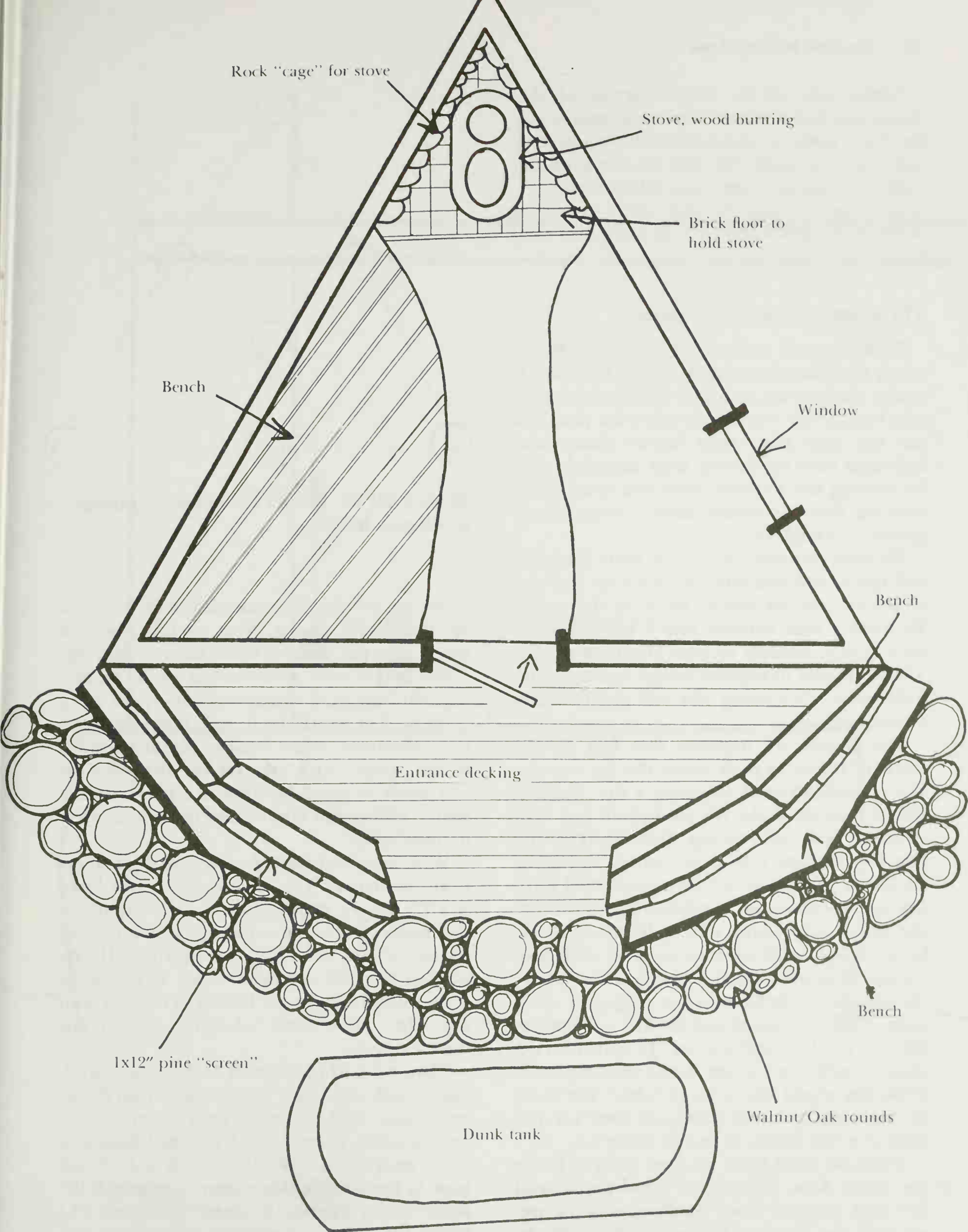


DIAGRAM 21. Layout for \$1,200.00 "free-standing" sauna.

Again, one of the major virtues of this sauna was site location. The bathroom across the hall made a quick-sauna-and-shower as convenient as could be. The outside deck and indoor "relaxing room" gave bathers a choice, depending on weather and insect count, of where to sit down and let it all hang out, so to speak, after their saunas.

The \$1,200 (free-standing) sauna

Building your own sauna from scratch certainly does have that purist appeal to it, and if you're the Spartan sort who climbs the mountain because it's there, then this is for you. You can cut your costs even further than we've indicated here by buying used materials, and by varying the aesthetic frills you want. (Our view on that has always been, "Simplicity is genius.") (Diagram 21.)

We were idealistic when we built this one, and one of the romantic thoughts we had was to see the sun (or moon) while in the sauna. We built a roof window and a lattice for the roof, strong enough to hold climbing plants. That, plus our triangular design, was our only indulgence; everything else was pretty much functional.

The reason we mention this first is that tracking the sun's path across the sky was our first consideration in choosing a site. Romanticism thus set aside, we marked off our construction area with string, then marked and dug the concrete pilings on which the sauna would sit. (Diagram 22.) Next we created waiting forms—plain old cardboard boxes set into the holes. Cardboard will hold the concrete long enough to allow it to set. The cardboard should protrude a good eighteen inches above the ground to facilitate your cutting it away later. Then we mixed and poured our cement (put-ty! put-ty!), and also set "J" bolts into the cement, to be tied to the sauna framing later. Does this sound like a lot of work? You're on the right track. But at this point there's a nice little two-day break, to let the forms set.

When we came back, we were ready to frame the sauna floor, using 2' x 6's and the normal 16" stud pattern. Once the floor was framed, we tied the framing to the "J" bolts in the pilings, with washers and nuts. (Diagram 23.)

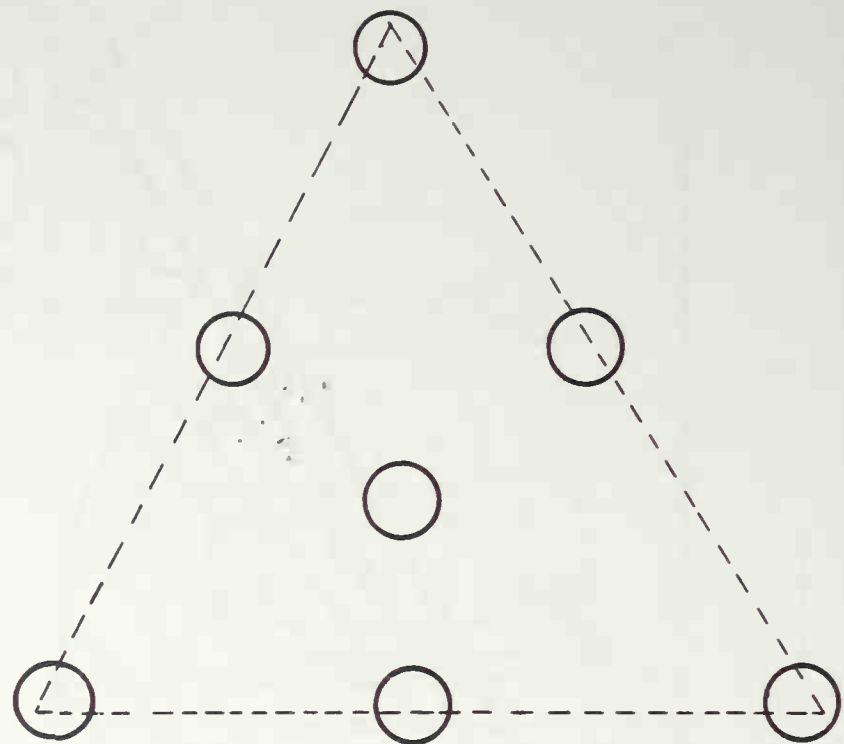


DIAGRAM 22. Proper placement of pilings to support building.

Then we set the floor insulation in between the joists with staples. Next we laid plywood sheets over the joists to finish the sub-flooring.

We used 2" x 4"s to frame the walls, including framing in a rough window space for a window that would be 1' x 3', running parallel to the studs, when finished. We also framed in the "cage" rock area for the stove (which had better be wood-burning in a free-standing sauna, unless you don't mind humongus electricians' fees).

With floor and walls framed, we'd go where next, students? Yes, to the roof. We used 2" x 6"s for the ceiling joists, and roughed in the framing for the window (triangular, of course, 1' on all sides, or equilateral). We pitched the roof, for two reasons: to cut down space; and flat roofs are boring. The door wall was the tallest wall, slanting toward the stove's corner.

Then we laid in the river rocks, in a 4' wall, that served as a "cage" for the stove (but not as an outside wall; these are only interior cover for the stove, to help avoid scorched buns and other gaucheries). We also set in a fresh air pipe in the floor in this corner, over which the stove would eventually stand. (Diagram 24.) We let the stone-wall masonry set and dry, and went on to finishing the roof.

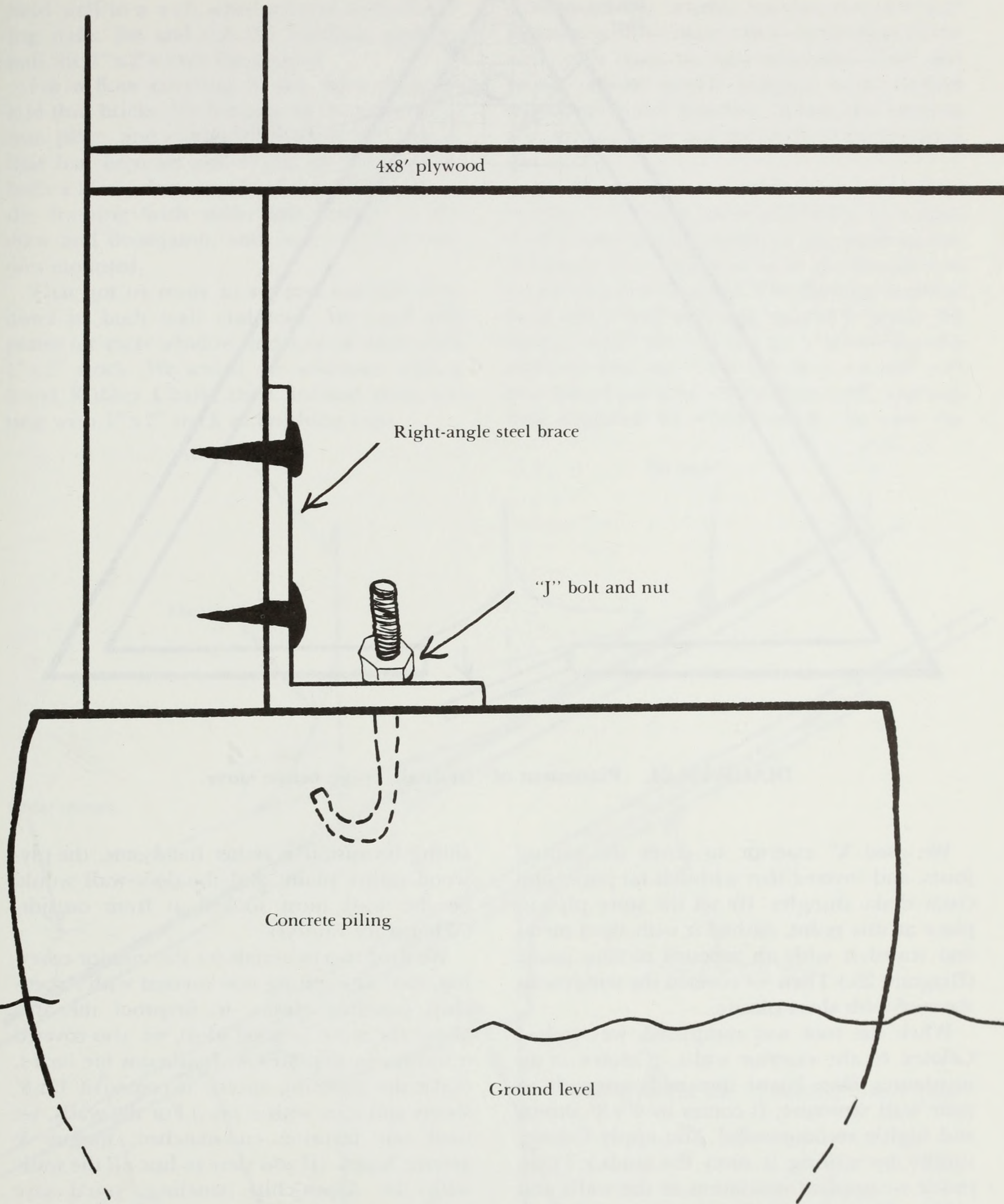


DIAGRAM 23. Use of "J" bolt to tie framing to concrete pilings.

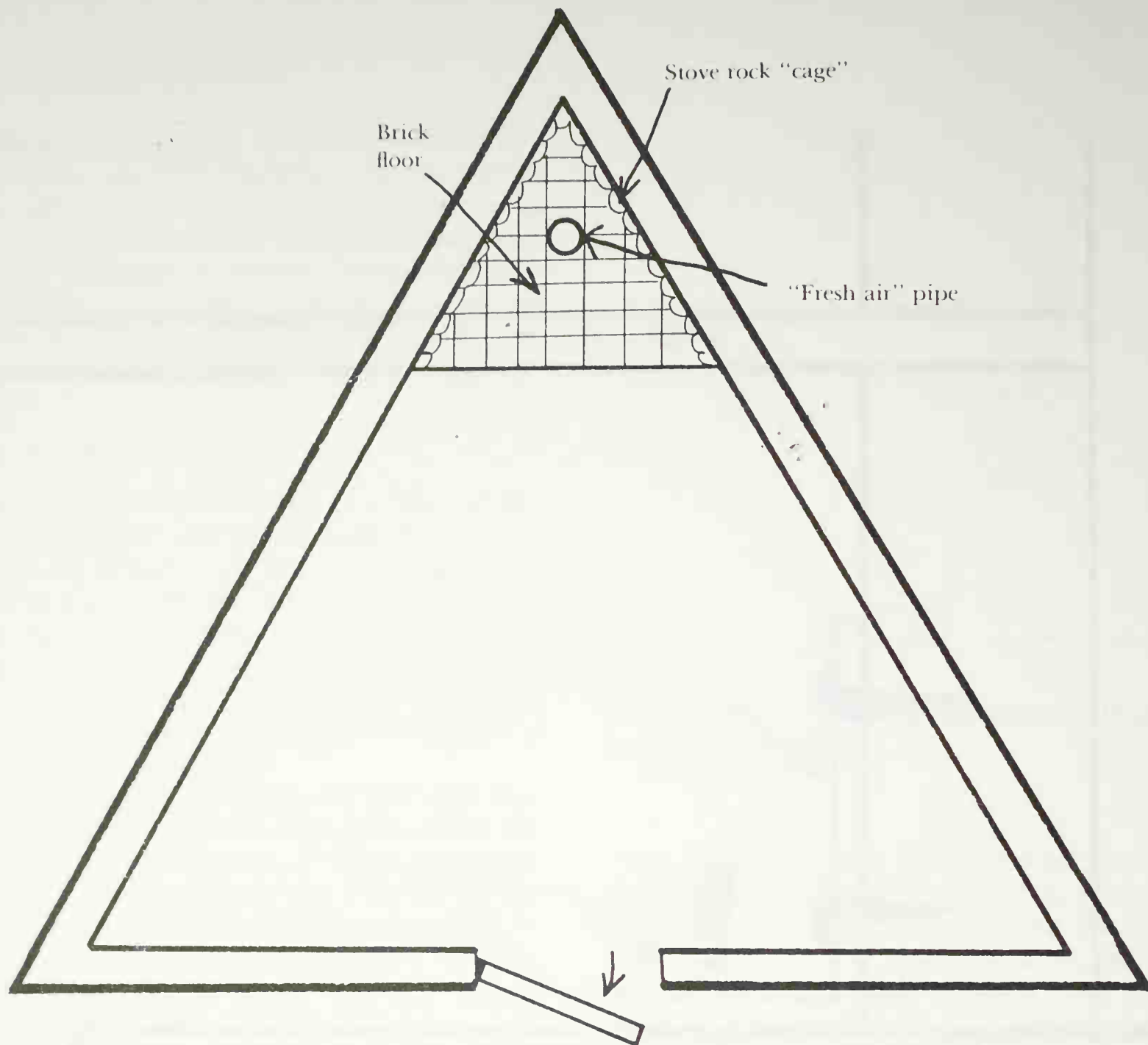


DIAGRAM 24. Placement of "fresh air" pipe below stove.

We used $\frac{3}{4}$ " exterior to cover the ceiling joists, and covered *that* with felt tar paper and cedar shake shingles. We set the stove pipe in place at this point, flashed it with sheet metal and sealed it with an asbestos roofing paste. (Diagram 25.) Then we covered the window in the roof with sheet plastic.

When the roof was completed, we applied Celotex to the exterior walls. (Celotex is an insulating fiber board that adds strength to your wall structure; it comes in 4' x 8' sheets, and highly recommended. You apply Celotex simply by nailing it onto the studs.) Then, inside we applied insulation to the walls and ceiling; then *outside* for the exterior siding. We used two different materials for this, $\frac{1}{2}$ " exterior plywood on the two side walls, 1" x 6" pine car siding for the door-wall; we used pine

siding because it is rather handsome, the plywood rather plain, and the door-wall would be the wall most looked at from outside. (What price vanity?)

We used two materials for the interior covering, too. The ceiling was covered with Aspen-chip paneling sheets; to fireproof the area above the stove (a good idea), we also covered a section in that area with asbestos fire board. (Like the paneling sheets, it comes in 4' x 8' sheets and cuts with a saw.) For the walls, we used our favorite: end-matched, tongue & groove Aspen. (If you were to line *all* the walls with the Aspen-chip paneling, you'd save some money. If you do that, nail the stuff to the studs with #6 commons and cover all seams with 1" x 2"s over the seams. The reason for this is that Aspen-chip paneling does not

hold well to a wall when secured with finishing nails. Set and use the finishing nails to nail the 1" x 2"s over the seams.)

For a floor covering in the stove area, we laid thin bricks. We brought in the stove, set it into place, and connected it to the stove pipe that had been set and sealed in the roof. We built a 2' x 5' door, insulated it and hung it on the framing with roller-ball catches in the door and door-jamb, and inter/exterior handles mounted.

That got us ready to set and seal the windows in both wall and roof. We used two panes for each window and spaced them with 1" x 2" stock. We sealed the windows with a Butyl Rubber Chalk, then finished their setting with 1" x 2" stock as finishing caps.

We built the interior benches out of 1" x 4" cedar, spaced 1/8" apart. We secured them to the wall with studs we had mounted there, and added middle bench support with vertical posts under the benches. When the benches were in place, we cut the curve in them with a jigsaw.

At this point we could finish the sauna exterior. We tied a frame of 2" x 4"s, in a standard chimed joist pattern, to the main sauna. (Diagram 26.) This was to be the foundation for an entrance decking. The decking material itself was 2" x 6" redwood, spaced 1/8" apart. We used 1" x 12" pine to act as a screen for the entrance decking. This ran in a circular pattern from both sides of the door-wall, and was held together by 1" x 2" stock. To give the

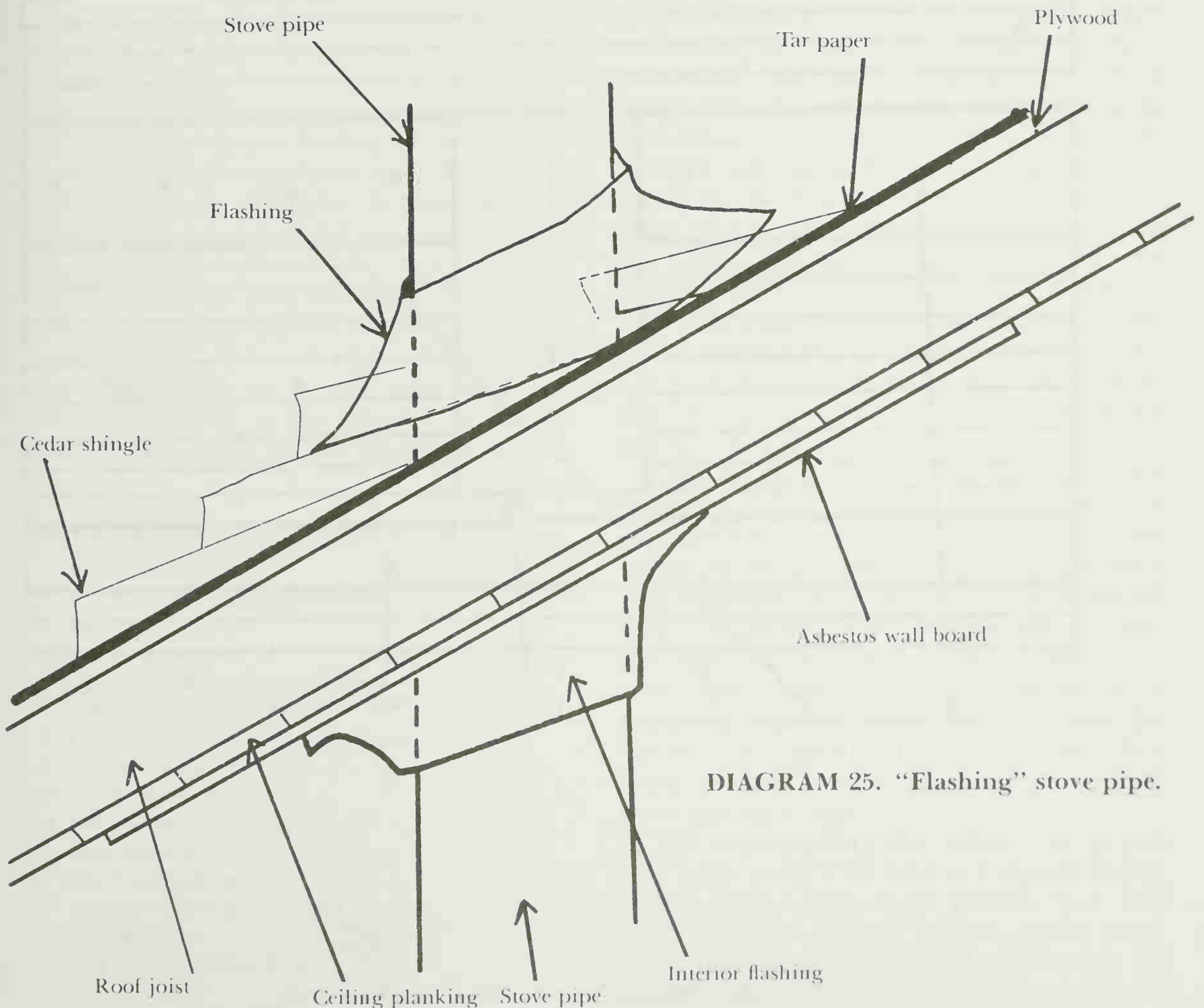


DIAGRAM 25. "Flashing" stove pipe.

entry-way a cozy, open feeling, we attached the overhead-latticed-roof-with-plants that we told you about to the decking.

The way we built that lattice, by the way, was to secure a 2" x 6" ledger to the top of the door wall. It rested on top of the 1" x 12" arched screen. The 1" x 2" lattice stock was nailed to the top of the ledger at one end. The other end of the 1" x 12" lattice was nailed to the top of the 1" x 12" screen. (Diagram 26.)

In this same area, we also built two side benches with 2" x 6" stock. We bored 1/2" holes into the pine car siding on the door wall, and set 1/2" dowels cut at 4" into these, as towel hangers. For a final outside nicety, we leveled a circular area and laid down 2" thick oak rounds in an arched pattern around the sauna. The dump tank sat on the edge of this arched area. We made some exterior benches using oak stumps and 1" x 12" stock pine.

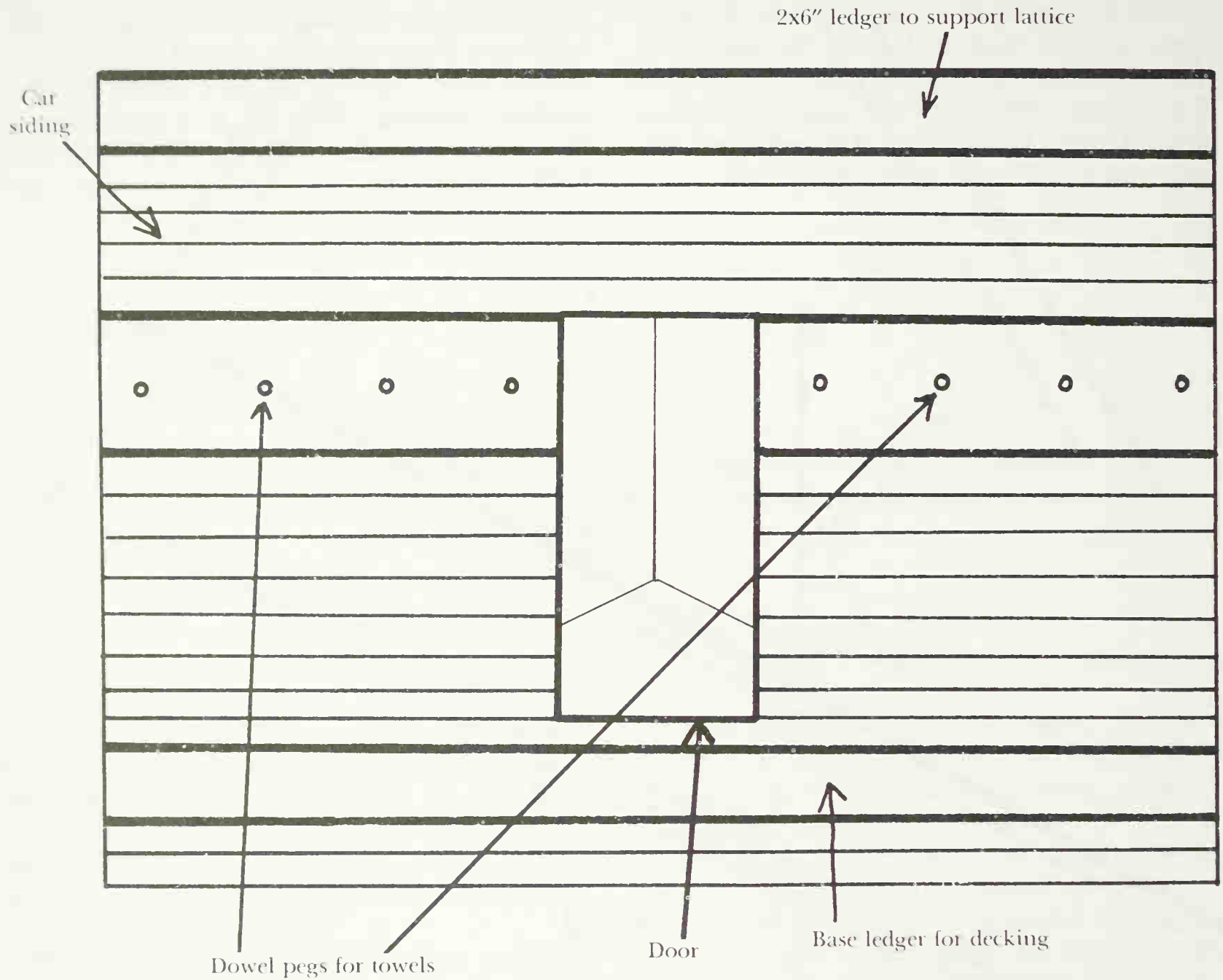


DIAGRAM 26. Frontal layout of free-standing unit.

Another sauna built. But—and this is an absolute *must*—we saved enough time and strength to build a fire and de-florate the sauna we had built, immediately upon completion. Do not rob yourself of this incredible satisfaction, for any reason whatsoever. It is truly one of life's great highs.

The \$1500 sauna

First, the figure of \$1500 does not designate a specific model of sauna, but rather represents the practical upper limit of the do-it-yourself world. If you have more than that to spend on your sauna, by all means give yourself a break and buy one instead. We'll make specific supplier recommendations later on.

Second, at this level of spending, the lion's share of your added expenses will be electrical (another terrific reason to avoid do-it-yourself if you want anything really complex. (Chart #3.) You can't enjoy baking in a sauna if you've first fried yourself en route). This sauna and others like it all involve an electrical stove instead of a wood-burning one; you sacrifice the latter's purist charms, but you gain greater efficiency and the elimination of stoking beforehand and cleaning-out afterwards.

Our deluxe handmade sauna (Diagram 27) was built at the same time other additions were being made to the house. The sauna-building advantage in this situation, or in a

CHART 3. Cost sheet for the \$1500 sauna

1 Stove and controls	\$700
2 End-matched Aspen planking	185
3 Permit	25
4 Nails and screws	35
5 Cedar planking (for benches)	70
6 Foil-backed insulation	65
7 4' x 8' Plywood sheets (for floor)	35
8 Tar paper for floor	6
9 Electricians' fee	35
10 Lights and dimmer	75
11 Vent (base of interior door)	7
12 Door (outside access)	115
13 Hardware (hinges, catches, locks)	79
14 2" x 4" Studs	42
15 1" x 2" Lathe (for floor)	<u>37</u>
	\$1511

situation where the entire house is being built, is that the construction people can then frame the sauna area for you. We began by selecting a location for the stove and sauna—between a bathroom and an outdoor pool. The electricians pulled our 220V cable (nothing less will do) to our stove spot. At the same time we had them set the central box, as well as the rough-in lighting fixtures. Then we were ready to roll up our sleeves.

With the rough electrical work done, our first steps were to insulate the walls, the floor and the ceiling. We used roll-type, foil-backed insulation. (We suggest the use of respirators any time you work with insulation. They're little mini-masks that help filter out little airborne pieces of insulation, and they last for years.) We secured our insulation to the space in between the studs with a hammer tacker; a heavy-duty staple gun is capable of the same chore. Since heat rises, we gave the ceiling an extra layer; because of the moisture that can be sloshed around underfoot in a sauna, we beefed up the floor with two criss-crossed layers of tar-and-paper. We secured the paper in a few places with galvanized roofing nails, but allowed the paper to run "wild" above the wall stud plate. This gave the sauna a saucer-like waterproofing. Then we laid down two sheets of 3/4" exterior grade plywood, making sure of a good tight fit so as to minimize the number of nails needed to secure the floor.

Next we were ready to line the walls with sauna planking. This was our first building experience with end-matched tongue & groove Aspen planking, and we enjoyed a few pleasant surprises. Since Aspen is a long-fibered wood, we never picked up a single splinter; the planking has knots, which neither turn into "hot spots" nor weep sap; the end-matching cuts the waste factor greatly. We bought our planking in eight-foot boxes filled with random lengths, far more economical than cutting to order.

The end-matching also allowed us to run two walls at 45°. We used a T-square as our guide to make the angle precise. Your first piece of planking must be a triangular shape to fit in an angled wall approach like this. We used 6' and 8' planks nailed to the studs at a

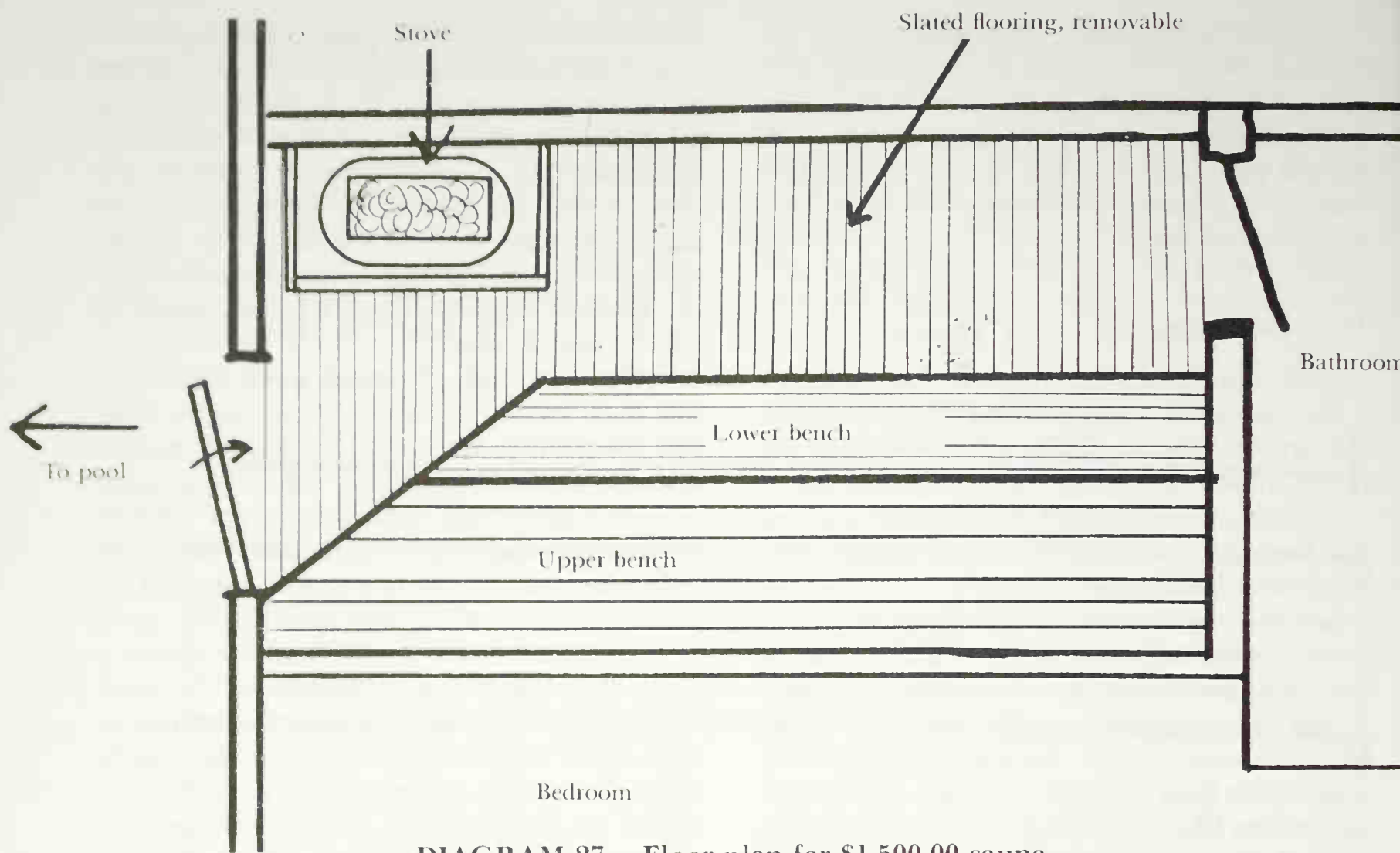


DIAGRAM 27. Floor plan for \$1,500.00 sauna.

spot just beneath the base of the tongue. The nails were driven in so that $\frac{1}{4}$ " or so was left; then set the rest of the way with a nail set. That way, hammer misses wouldn't break up the tongue or leave "smiles."

We ran the ends of the planking "wild" into the rough door frame and trimmed the ends later. It's imperative that each piece fits as tightly as possible. We recommend placing a piece of 2" x 4" on top of the tongue to receive the hammer blows needed to set the grooved bottom into place. This will keep the tongue unmarred by the hammer, and also greatly facilitates the fitting of the tongue & groove.

After the angled walls, we went on to the horizontal walls. As before, we started at the bottom and worked our way up. Since we were working with random-length boards, the end of a given board might not "break" over a stud. (Diagram 28.) But the next end will butt into it anyway, so it's not a problem. Just be sure that the piece that goes on the row above caps off the seams in the row below.

Then it's on to the ceiling paneling. Be

careful to ensure a tight fit for the lighting fixture holes you cut. We even covered the inside of the door with Aspen; the wood has a bright, almost ivory-like finish, and we wanted an unbroken look.

Next we put the door jambs into place, prior to fitting the doors themselves. The building code for that community specified a standard-sized door leading outside from the sauna (codes vary widely). The side that was to be planked with Aspen was coated with heavy duty aluminum foil, stapled into place. Then we laid the door on two secure saw horses, each wrapped with strips of old carpet to avoid marring the other side of the door. We ran our planking "wild" at 45°, and "rough-cut" them off after a few runs. Later we completed our finished cuts at one time, when trimming our rough cuts. We *think* we saved some time that way, but whatever your techniques, setting a door is one tricky business. Especially the first time. (Diagram 29.)

We had a second door leading to the bathroom, a cut-down passage door. We covered

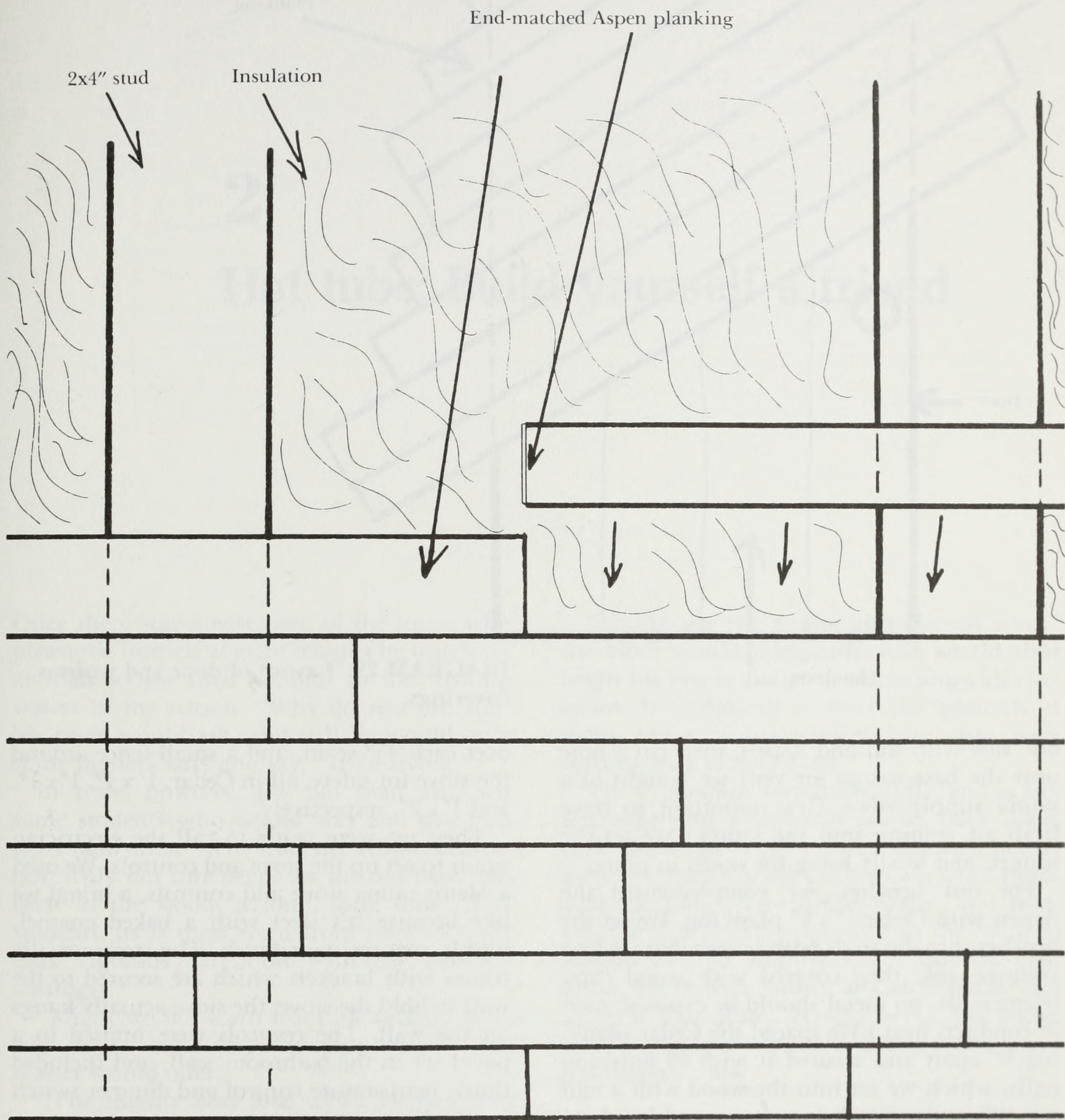


DIAGRAM 28. Guide to working with "end-matched" Aspen planking.

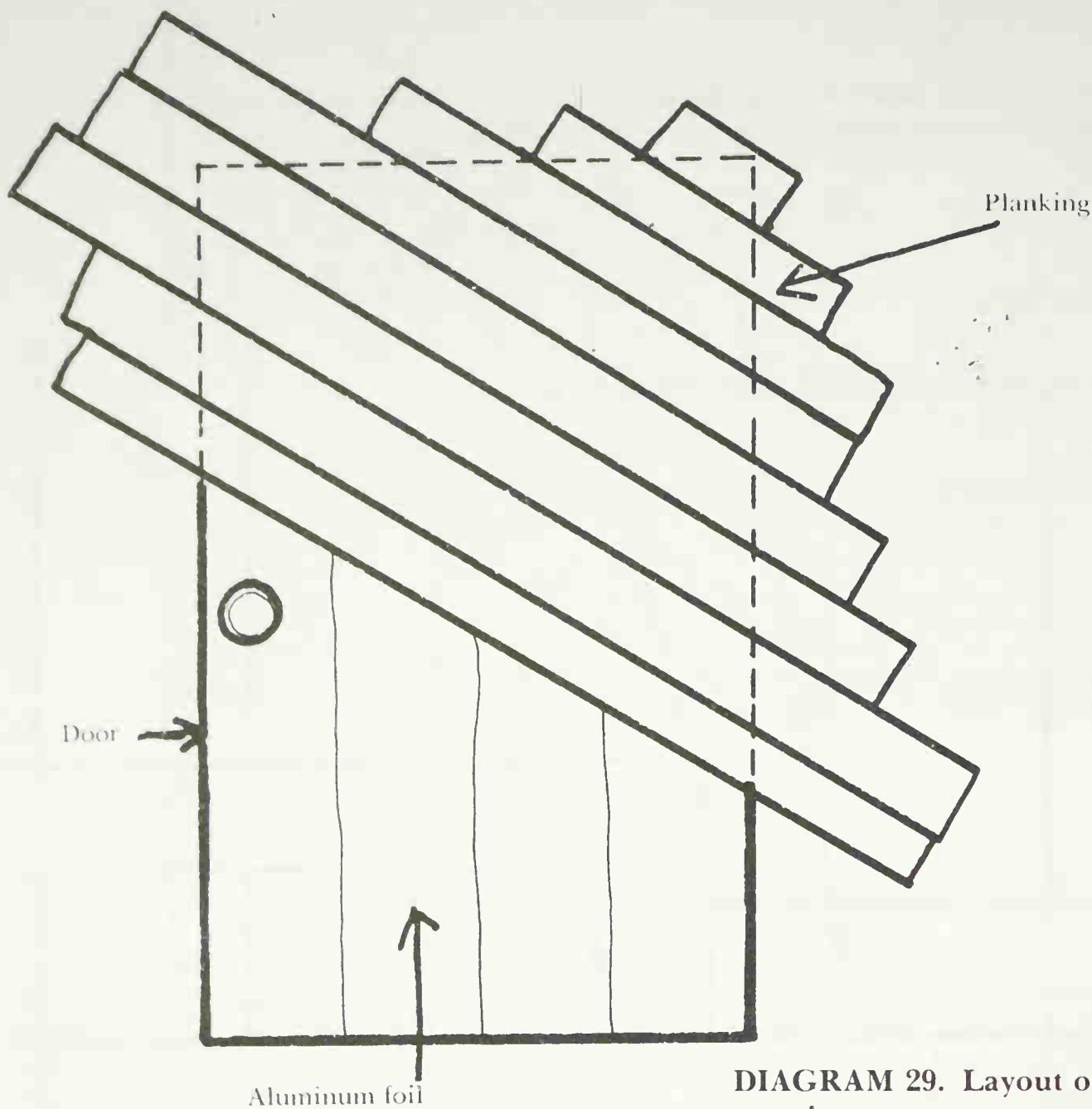


DIAGRAM 29. Layout of door and various coverings.

one side with foil and Aspen, then cut a hole near the base for an air vent we bought at a sauna supply store. (It's important to have fresh air coming into the sauna.) We set the hinges, and finally hung the doors in place.

For our benches, we complemented the Aspen with Cedar 1" x 4" planking. We set the benches into the studs with screws that we first counter-sank, then covered with wood caps. (Remember, no metal should be exposed; metal conducts heat.) We spaced the Cedar planking $\frac{1}{8}$ " apart and secured it with #6 finishing nails, which we set into the wood with a nail set. When the benches were secured in place, we beveled all outside edges, then sanded and rounded them down. We built a slat-and-space floor, with removable slats so we could pop out floor sections for washing down. Last, the finishing trim work: around the door interiors,

over each 45° seam, and a small fence around the stove for safety, all in Cedar, 1' x 4", 1' x 1", and 1' x 2", respectively.

Then we were ready to call the electrician again to set up the stove and controls. We used a Metos sauna stove and controls, a brand we like because it's steel with a baked enamel, highly rust-resistant finish. The stove usually comes with brackets which are secured to the wall to hold the stove; the stove actually hangs on the wall. The controls were housed in a panel set in the bathroom wall, and included timer, temperature control and dimmer switch for the light.

Our room was usable at once, of course, but required more time to become cured and ripe. At first, it took 90 minutes to pre-heat our sauna to 200°F. (93°C.); a year later, just 60 minutes to reach 220°F. (104°C.).

2

Hot tubs: Build yourself a friend

Once there was a wise man of the forest who pleased himself at great lengths by watching animals soothe their wounds in the rushing waters of the stream. "Why do you toil so?" his peers would ask, and still he would only smile mysteriously and say, "It's a living."

In time, however, the old man attracted some students who would stay and pay him heed (and these were students whose dedication truly ran sore deep, for the old man had been in the woods a long, long time). The students, as is their wont from time to time, took vigorous exception with the master's findings.

"Might we not learn from the mighty bear, who finds a balm in the surging waters?" the master would offer.

"The mighty bear also sticks his face into active beehives," retorted Audiophilus the Pragmatist, "and what should we learn from that, O Master, except that the bear be wondrous dumb?"

"You've got the wrong attitude, my sons," the elder would admonish, and would thus begin his gentle and patient teachings all over again. It is difficult to trace the rebuttals of many other of his students, for they were turning over almost daily.

The Pragmatist stayed faithfully, and as any self-respecting pragmatist would have done, stole the master's pet idea for his own betterment. He constructed a tub which would provide soothing, fast-rushing water, and marketed it cautiously, appealing in the main to groups ever so slightly more rational than bears. These were known as Californians; and as with blue jeans, certain herbs, pet rocks, and the *jalapeño*-flavored lollipop, their joy has become ours.

There is no reason for you to be any less content than the average hot-tub owning Californian. Fast-running water *does* feel good on your bodkin, be you bear or bull, and bathing

this way is not restricted to warm-weather climes or even to the outdoors.

If a sauna is something you own, a hot tub is a lot more like a friend. Every bona fide tubber thinks his tub is sensual, *and* every one has a different reason why. Purists like the feel of the wood. Hedonists like the tingle of the massage. No two people describe what it is they like in quite the same terms.

You'll find that you save your tubbing occasions to coincide with at least one other of your sheerest indulgences: wine and that entire genre; social intercourse; that heavenly interlude right after it rains; literally whatever turns you on. It's intimate and magical and, as Californians are fond of saying, especially in the film business. "You're gonna love it."

What is this new-found friend going to do for you in terms of health? Like the sauna, the hot tub can't really offer you any bona-fide long-term benefits. Basically, it makes you feel good, which is still a considerable contribution. It's actually an excellent short-term therapy for a variety of conditions, and if your doctor should agree that your tub would be beneficial therapeutically, its expense becomes tax-deductible.

Specifically, hot-tubbing dilates your blood vessels, which helps to quicken circulation. Thus it's valuable therapy for people with heart or high blood pressure problems (although those people should surely check with their doctors before acquiring a tub). Tubbing also gives the skin a glow that no other device can, drawing blood up towards the surface as a coolant. The water then goes to work on tired and sore muscles, flushing them with blood and quickening the loss of lactic acid (if you've ever sawed wood, lactic acid is the baddie that makes your forearm burn). Hot-tubbing also works on muscles that have tightened from being immobile yet contracted, such as during a long drive. Go from the car into a hot tub and you'll swear you could be carried to bed in a pail.

Last and maybe best, the hot tub works on your psyche in a manner not quite describable here. The grouch who doesn't revitalize after a good soak is indeed a grouch for life and

should probably be avoided, especially on Halloween. Water at 105°F. puts cares and problems into a new perspective. You may actually sit back and laugh at the uptightness itself, the best Rx known to man. Psychiatrists have actually likened the tub to the womb, if you're into that sort of thing.

What is a hot tub anyway? It's something of an undersized swimming pool and oversized bathtub in one. (Diagram 30.) The most common sizes are 4' x 4', 4' x 5', 4' x 6', and 4' x 8', but size can vary directly with your own creativity if you decide to build one. The most common material is wood, but rock and tile lend themselves well, too.

For social soaking, 100°F. (38°C.) to 105°F. (41°C.) is a nice range of water temperature; about 110°F. (43°C.) is good for therapeutic purposes. The Japanese like it hotter, about 120°F. (49°C.), and if you're that hardy we suggest baths of no more than 15 minutes at a time, at least to start.

A hot tub's therapy value, of course, is in the water movement. Various types of hydro-jets set up the whirlpool/massage action, which most tubs are equipped with. Typically, there are 3 to 6 jets in a tub.

The most common tubs—whether assembled, in kit form, or just raw materials—are made from clear, all-heart redwood staves. Knots usually found in wood will leak, and clear redwood is knot-free. Heart redwood is milled only from the straight vertical grain. The staves are usually 2' x 6's that run from 3½' to 4'. These staves are set up in a circular pattern, held in place by steel hoops which are later tightened to form the type of pressure seal that coopers have used for centuries in making barrels, wine vats, and large water tanks.

The staves are dado-cut at the bottom to be fit into the floor unit during assembly. The tub is then connected to the "support system," the true lifeblood of a hot tub, which supplies the water circulation, heat, and filtering of the assembled tub. This system includes a pump, a heater, a filtering unit, and possibly a timer to turn on the tub an hour or so before bathing, or to keep the system on so your tub is

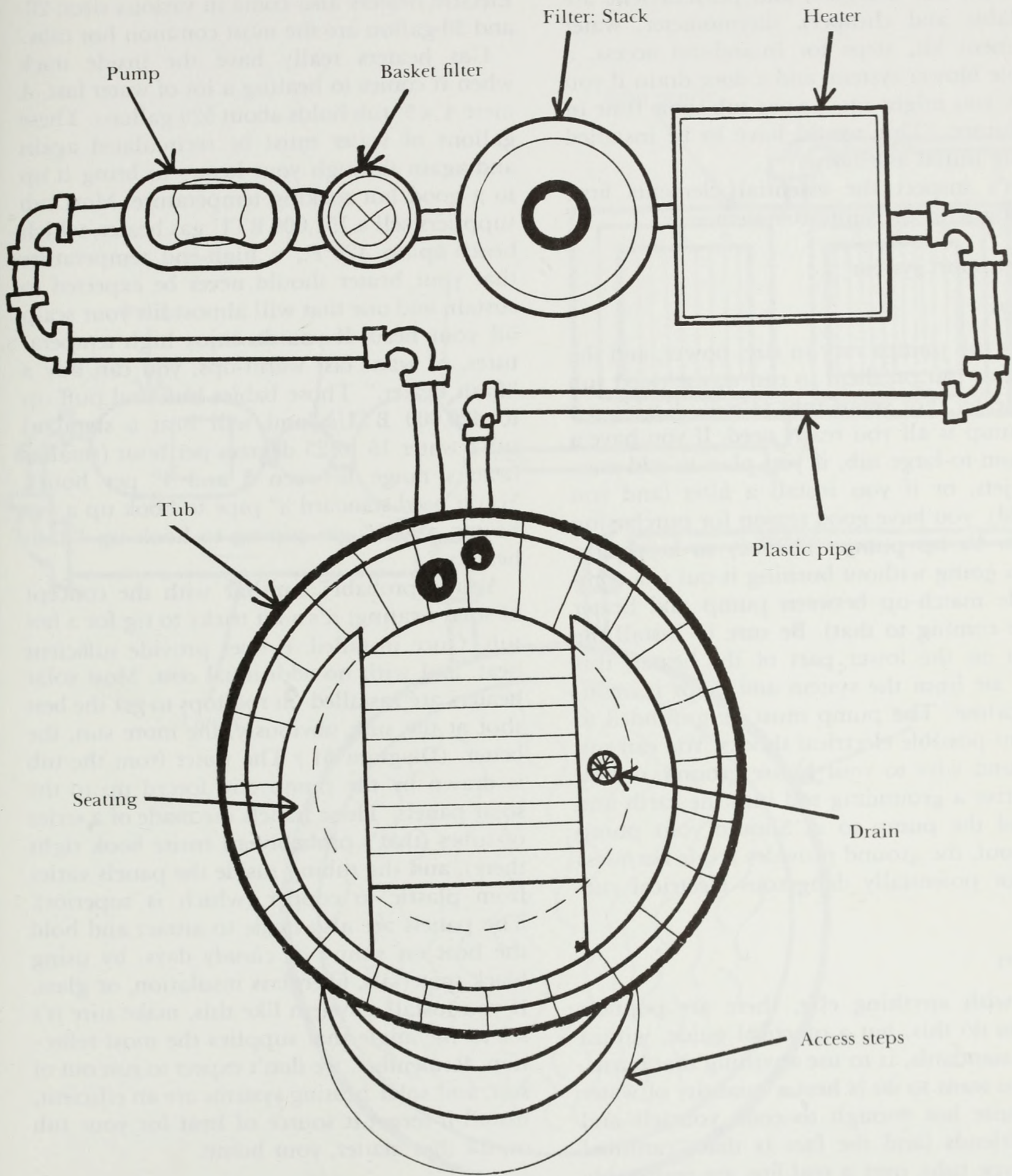


DIAGRAM 30. Anatomy of a hot tub.

warm all the time (very important if you live somewhere cold and you want to tub year-round).

Some of the various accessories available for you to consider include a tub cover (usually redwood, but fiberglass and polyethylene are available and cheaper), thermometer, water treatment kit, steps for in-and-out access, a bubble blower system, and a floor drain if you think you might move your tub some time in the future. (This would have to be installed during initial assembly.)

Let's inspect the essential elements first, starting with the support system.

The support system

Pumps

Hot tub pumps vary in size, power, and the demands put on them to run water 'twixt tub and heater. For small tubs (4' x 4', 4' x 5'), a ½ hp pump is all you really need. If you have a medium-to-large tub, if you plan to add massage jets, or if you install a filter (and you should), you have good reason for purchasing a 1 to 1¼ hp pump. The key to keeping a pump going without burning it out is a compatible match-up between pump and heater (we're coming to that). Be sure to install the pump on the lower part of the heater; this keeps air from the system and helps it maintain prime. The pump must be grounded to prevent possible electrical shocks. You can run a ground wire to your house ground, or you can drive a grounding rod into the earth and ground the pump to it. Should your pump short-out, the ground provides a safe harmless exit for potentially dangerous electrical current.

Heaters

As with anything else, there are popular ways to do this, but a practical guide, within safety standards, is to use anything that burns. All you want to do is heat a quantity of water not quite hot enough to cook yourself and your friends (and the fact is that "cannibal pot" type tubs, over a real fire, are reasonably popular; you line them inside and out, of course, to avoid scorching your bottom bits).

Electric and gas are still the most common

types of heaters. If you select electric, you'll need a 220V line to the site of the support system. We don't recommend electric heaters for large tubs because they don't heat them fast enough, but they're fine in a 4' x 4' tub. Electric heaters also come in various sizes; 20- and 30-gallon are the most common hot tubs.

Gas heaters really have the inside track when it comes to heating a lot of water fast. A mere 4' x 5' tub holds about 520 gallons. These gallons of water must be recirculated again and again through your heater to bring it up to a good hot soaking temperature. Most tub suppliers sell a 151,000 BTU gas heater, which heats up to 120°F., a high-end temperature that your heater should never be expected to sustain and one that will almost lift your scalp off your head. If you do enjoy high temperatures, or want fast warm-ups, you can buy a "flash heater." Those babies huff and puff up to 420,000 BTUs, and will heat a standard tub's water 15 to 25 degrees per hour (smaller heaters range between 3 and 4° per hour). You'll need standard ½" pipe to hook up a gas heater; and 1" gas piping to hook up "flash heaters."

You're probably familiar with the concept of solar heating; it's a bit tricky to rig for a hot tub. Once installed, it does provide sufficient heat, and with no additional cost. Most solar heaters are installed on rooftops to get the best shot at the sun; obviously, the more sun, the better. (Diagram 31.) The water from the tub is drawn by the pump and forced up to the solar panels. These panels are made of a series of tubes (that's probably an entire book right there), and the tubing inside the panels varies from plastic to copper (which is superior). The panels are also made to attract and hold the heat on sunny *or cloudy* days, by using black materials, fiberglass insulation, or glass. If you install a system like this, make sure it's set to the angle that supplies the most reflection. Remember, we don't expect to run out of sun, and solar heating systems are an efficient, install-it-forget-it source of heat for your tub or, for that matter, your home.

Filters

There are four different types of filters. By not installing a filter you invite problems with

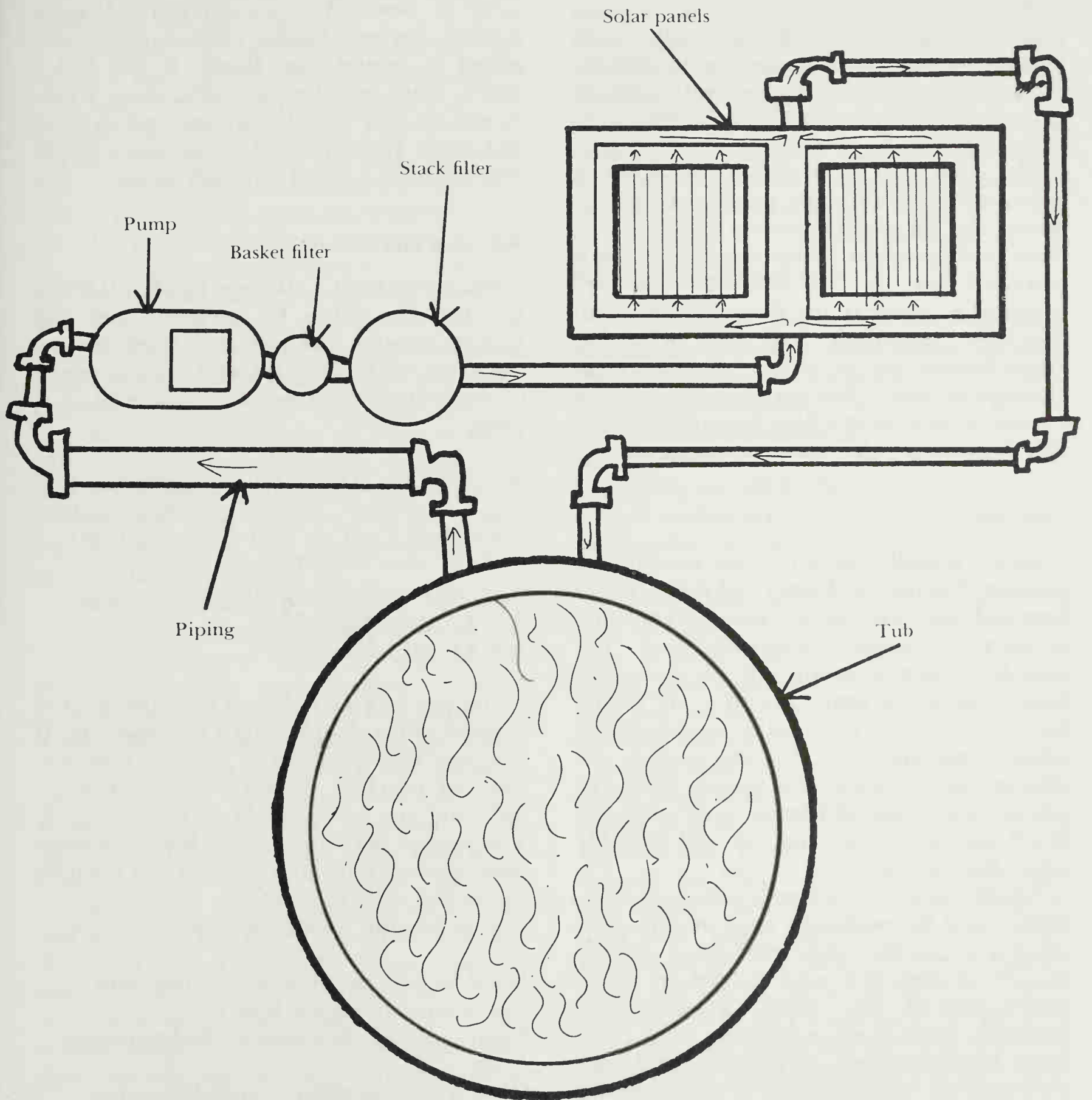


DIAGRAM 31. Flow progression for a solar heated hot tub.

your pump and your heater. The most common filter is the basket filter, which traps leaves and other debris that will clog the pump and heater, returning to pollute the tub.

Different suppliers offer various stack filters, too. They help keep the tub extremely clean because they absorb oils and other foreign floating material in the water. An added advantage to stack filters is that you can clean them yourself with a garden hose and a scrub mixture of water and tri-sodium phosphate. Most models are also equipped with pressure gauges, to tell you when they need to be cleaned.

The third type is the paper cone filter. A system of these is usually integrated into the pump, and the paper cones are replaced every three to four weeks. These filters absorb oils and catch hair.

And then there is the diatomaceous earth disc filter, commonly used with swimming pools because of its ability to filter large amounts of water. You may be able to find a smaller version of this filter for your hot tub. The discs are usually replaced twice a year.

Tub care

Before actually building this new friend, consider that the job doesn't end there. (If you have one built for you, the builder frequently assumes maintenance responsibilities). You must keep the water clean, and that means you need to acquaint yourself with a pH testing kit. These kits test the alkaline content of the water. If the test reads that the water is too alkaline, use a cyanic acid mix to bring the tub to an even keel. Chlorine is the chemical you'll principally use, and you will probably add it fairly often.

Another treatment for your tub, most commonly used by swimming pool owners, is to "shock" it. Do this when your tub is exposed to a lot of rain; rain water is hard on a controlled pool or tub. "Shock" treatments are available from pool suppliers, Sears, and larger hardware stores (or you can use a high concentration of chlorine). Your tub should be "shocked" every one to three months, depending on how often it's used.

Make a rule to shower before you tub; that will make it considerably easier to slip into really clean hot water. If you tub alone or with one other person, you can get by without showering. With 3, 4, 5, or more bodies, the water can get a wee bit funky, and a shower is the great equalizer.

Once or twice a year, drain your tub and scrub it down. Use wooden-gripped scrub brushes, a water/chlorine mixture and rubber gloves to protect your hands. If you had a center drain installed initially, these scrub-downs are very easy. In any case, get in there and scrub! These maintenance routines should lend your tub a life of a century or so.

Selection and site

Okay, you want a tub; how much is it going to cost? The prices for pre-built tubs and support systems will vary from coast to coast (there are tub builders on both coasts) because of the fluctuation of wood costs from place to place.

A 4' x 4' tub—\$1400-\$1850. (Includes wood for tub, hardware, complete support system; accessories and gas heater are usually extra.)

A 4' x 5' tub—\$1600-\$2000

A 4' x 6' tub—\$1800-\$2250

A 4' x 7' tub—\$2100-\$2600

A 4' x 8' tub—\$2500-\$3100

You can save a few dollars by building a tub yourself rather than buying a pre-made one. If you can arrange a terrific deal on redwood, you can purchase the support system separately and save considerably on the whole job. The pre-cut tub dealers will sell you the complete systems separately, or you can compile the system piece by piece.

A pre-cut tub usually includes:

- Wood for tub, steel hoops, flooring, seats
- Gas, electric or butane heater
- Pump, piping, filter systems, hydro-massage jets
- Often a 24-hour timer is included, as is a safety ground switch for the pump and heater

Now that you know pretty much about what's involved, the next question is which size will meet your needs. The 4' x 4' tub will accommodate you and your wife and a kid or two (or 2-3 adults), but not many more. A 4' x 8' tub, while it doesn't sound much larger, is really better suited to a club situation than a familial one. Obviously, you must select size before you buy *anything*.

Be equally selective about the site for your tub. If a mountain or ocean view is available (you lucky devil), by all means make that view accessible for tubbing. If not, some landscaping may well be in order. You may also decide that you want your tub surrounded by privacy fences, a gazebo, or a custom-designed structure that defines your lifestyle/tubstyle. (There are good books available on how to build that sort of structure; we'll just concern ourselves with the tub.) Whatever your choice, your site should be level, and *never* back-fill dirt around your tub once it's in place. If you live in the country you'll probably want your tub outside; even city dwellers set up a tub in many places. Some people have tubs in high-rises, and others hot-tub in the basement. Plan the environment when you plan your site. It may require more time, but that investment will pay you lavish dividends.

Select your materials carefully. We've already expounded on redwood and its virtues; options include teak, long revered as the best wood for holding water because of its oil content. Teak is a dense wood, frequently with a gorgeous grain and a high price, but a well-cared-for teak tub should last till Armageddon. Cedar has some popularity too. Like redwood, it's a soft wood, impervious to rot and decay. Clear, all-heart cedar costs more than redwood, but its pleasant fragrance unquestionably adds something to tubbing and lasts past tub time. The other most-used tub material is ceramic tile, which is usually used in a permanently positioned tub. A tile tub can be drained after bathing without the fear of shrinking you'd have with wood. Similarly, tile need not swell and seal itself against leaks, as wood does.

By far, the most popular hot tub form is the kit. Most kit sellers will let you buy with or

without their support system; the kits usually have matched systems especially designed for tubbing, because they really are a specialty item. But if you have access to the individual components you need and the aptitude, don't be afraid to customize your own system. You can often find perfectly good components for sale, or "haul-it-and-it's-yours." Many times, you find heaters and pumps which need just a little work, but their former owners didn't have the time or patience. You ought to know something about pumps or heaters, or have someone handy who does, before you hook up such a unit to your tub. If you do it right the first time, you should have no problems. So take your time. It's worth it.

Building a tub from a kit

One last word of caution before beginning: as with the saunas, if you're multi-thumbed, the dealer selling the kit frequently will build, install and maintain it as well, or he can recommend a contractor who will. Make sure any kit you buy comes with a manufacturer's guarantee; not all do. It's always a good idea to have a plumber and electrician check your set-up before bathing, no matter how talented you are.

All kits come with instructions, generally easy to follow. Try not to do too much at once. If Rome had been built in one day, it would have leaked all over Europe, and so will your tub if you force things. Relax. You'll get there. Here's how.

1. Start with the flooring. (Diagram 32.) It makes a circle, and the pieces are usually pre-drilled to hold dowel pegs. Piece the flooring together and, if you want, apply mastic in between the floor boards. (Do this sparingly and quickly, because it dries very fast.) To hold these pieces together, tack-lath to the floorboards in a crossing pattern. (Diagram 33.) If you have a big bar clamp, you can use that too, but be sure to put a piece of plywood in between the clamp and redwood. Redwood, remember, is a soft wood and will dent readily.

2. (Diagram 34.) Secure the floorboards to the "chime joist" with adhesive. This chime

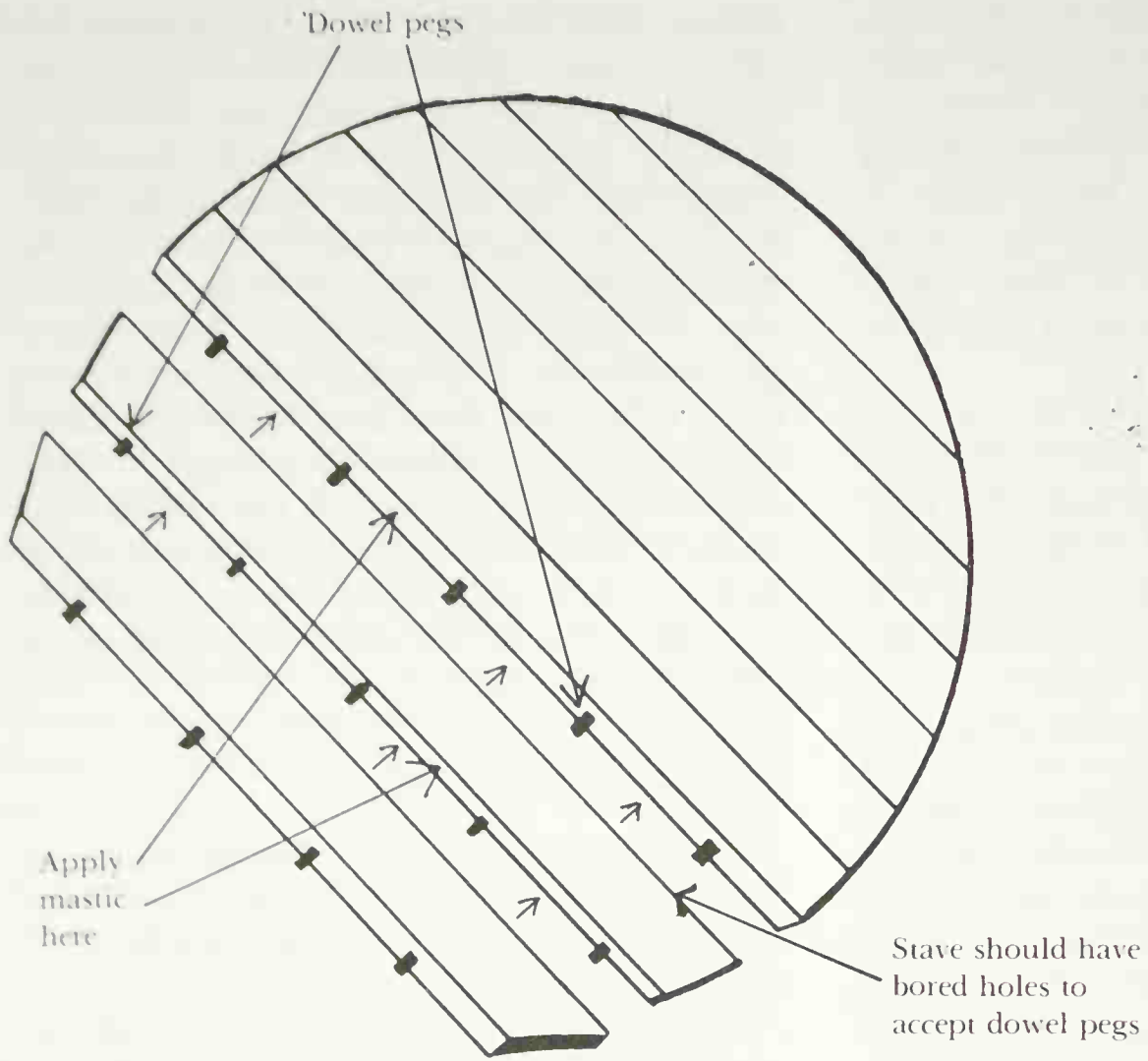


DIAGRAM 32. Step 1: The flooring unit.

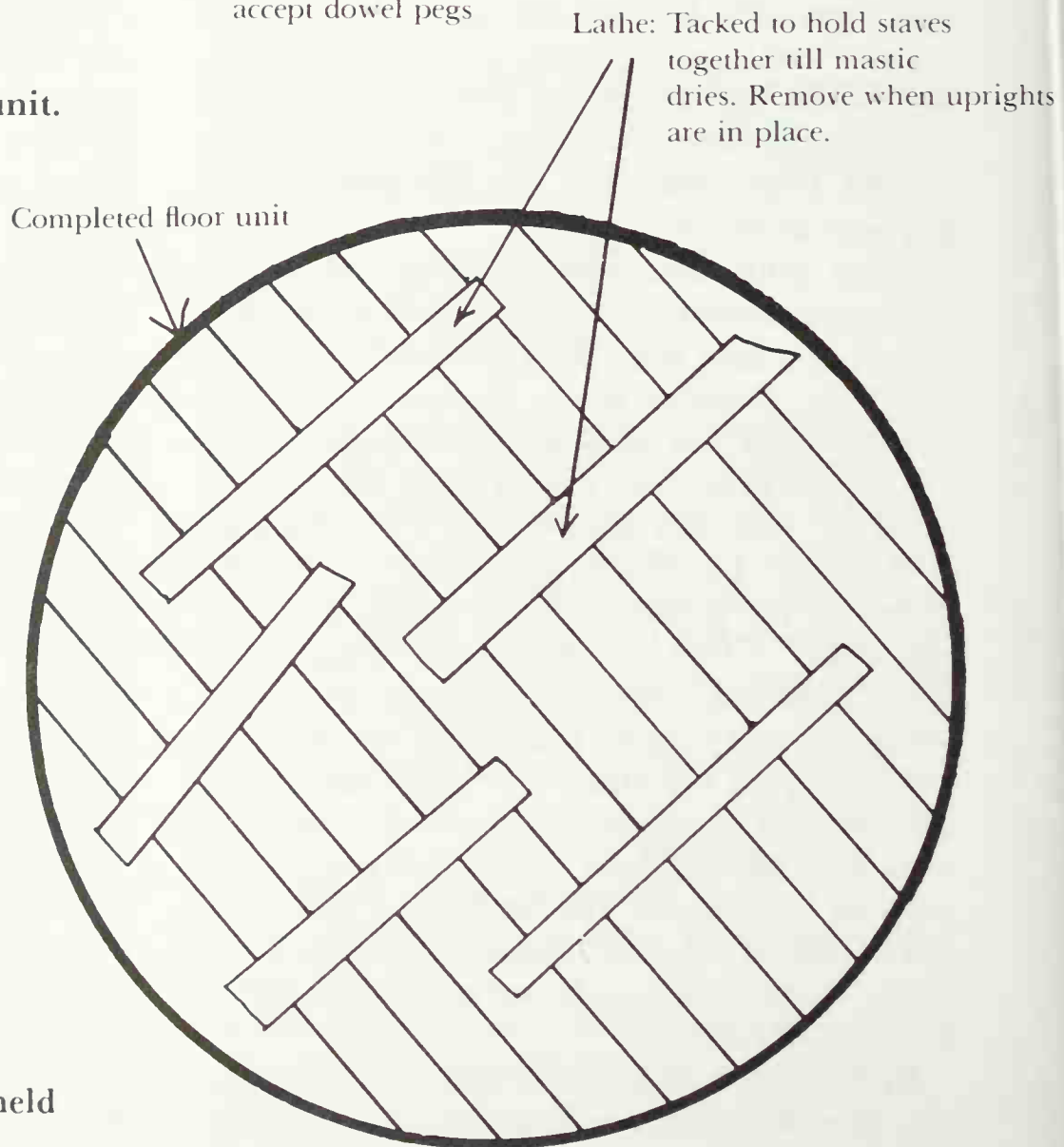


DIAGRAM 33. Step 1: The flooring held together by lathe.

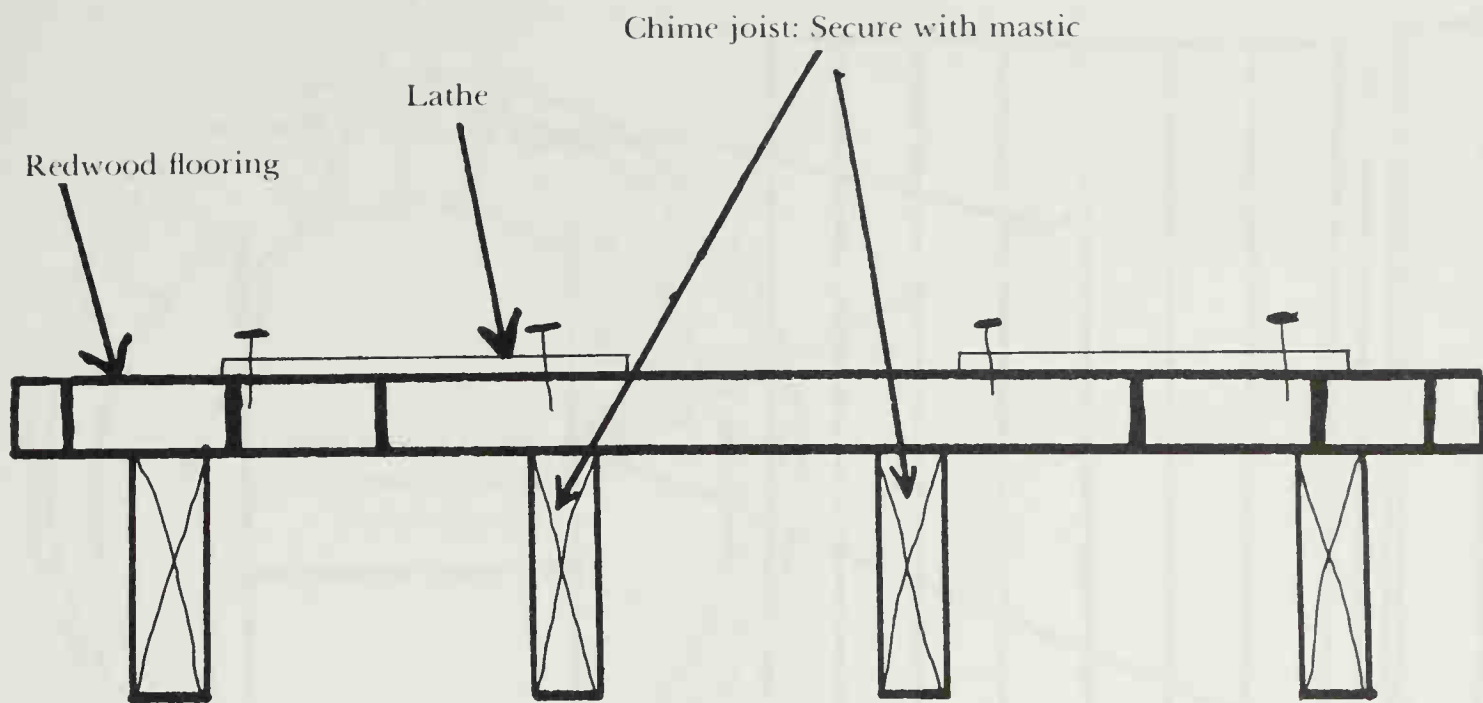


DIAGRAM 34. Step 2: Secure chime joist to floor unit.

joist supports the whole tub. Do *not* nail the flooring to the chime joist; those holes would leak.

3. (Diagram 35.) Now you can begin putting the pre-dadoed staves around the perimeter of the flooring piece. If you use a carpeted block and mallet to bump the staves into place, you won't mar the redwood. Work in a circle until all the staves are in place. You may need to trim a bit off the last stave. Don't do it with a hand saw; use a radial arm or a table saw. It may be the only time you cut with one of them, but it could be the most important cut the tub has. Be sure to measure to the nearest $\frac{1}{16}$ " and leave room on the opposite side of your mark for the saw blade. The last piece should fit snugly into place.

4. (Diagram 36.) The hoops are next and you should have three of them. The first one is placed at the point where the upright staves and the floorboards meet. The second hoop should be placed exactly in the middle of the upright staves. The third hoop should be placed at a point 4" to 6" from the top of the staves. You can tack (but *only* tack; don't pound) nails into the sides of the tub to secure the hoops at the correct level. Some companies have hoops that can be tightened at only one place. Other companies offer hoops that will tighten in both directions. Count the turns, and try to turn each nut an equal number of

turns. You may want to tighten the hoop nuts in a week or so. In any case, be sure to check the tightness of these nuts periodically. Before you tighten the hoops with your final turns on the hoop nuts, tap all staves into an even matchup. Then give the hoop nuts a final tightening.

5. (Diagram 37.) Usually everything is pre-cut in kits. This is the time to put a drain in the floor, and we suggest you *don't* put it in the center. Place the hole for the drain under a seat. The seats are generally pre-cut and can be secured to the inside of the tub at this point.

6. (Diagram 38.) Build the top for the tub now. You can choose from among several pre-made tops when you order a tub; but if you make it yourself, a nice feature is to hinge the top so it folds in two. It's also a good idea to make the top out of two layers of 1" x 6" redwood that cross each other. The bottom should fit *into* the opening of the tub. The top layer of 1" x 6"s should fit so as to rest on top of the tub's staves.

7. (Diagram 39.) For all practical purposes, your tub is built. It's time to get to the support system hookups. First, fit the plastic connectors into the tub's pre-cut holes. You'll have connectors for the hydrotherapy outlets, water supply from the heater, and drain outlet that is hooked to the pump line (this connector draws the water out of the tub and sends it to

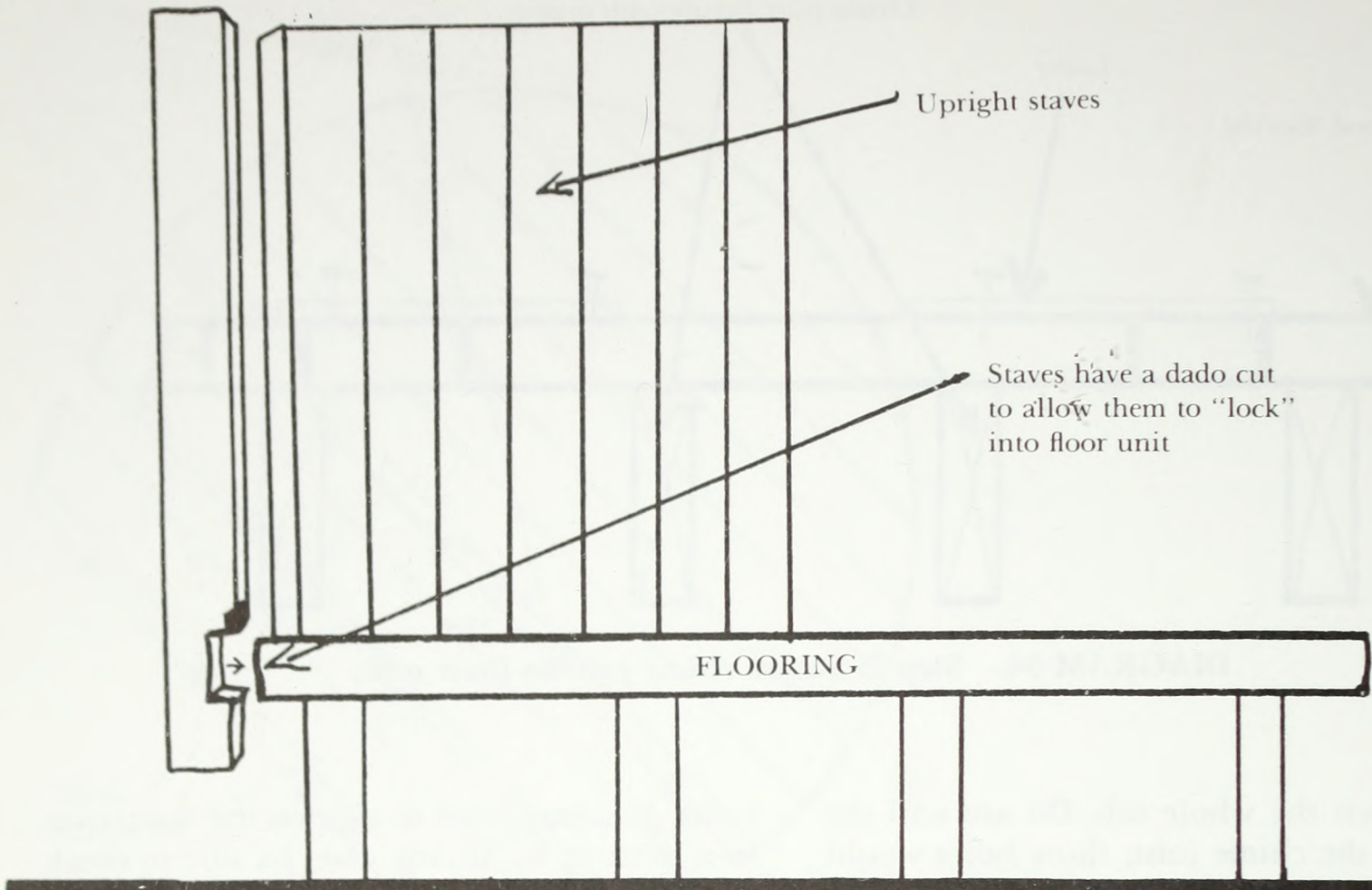


DIAGRAM 35. Step 3: Secure upright staves to floor unit.



DIAGRAM 36. Step 4: Placement of steel hoops.

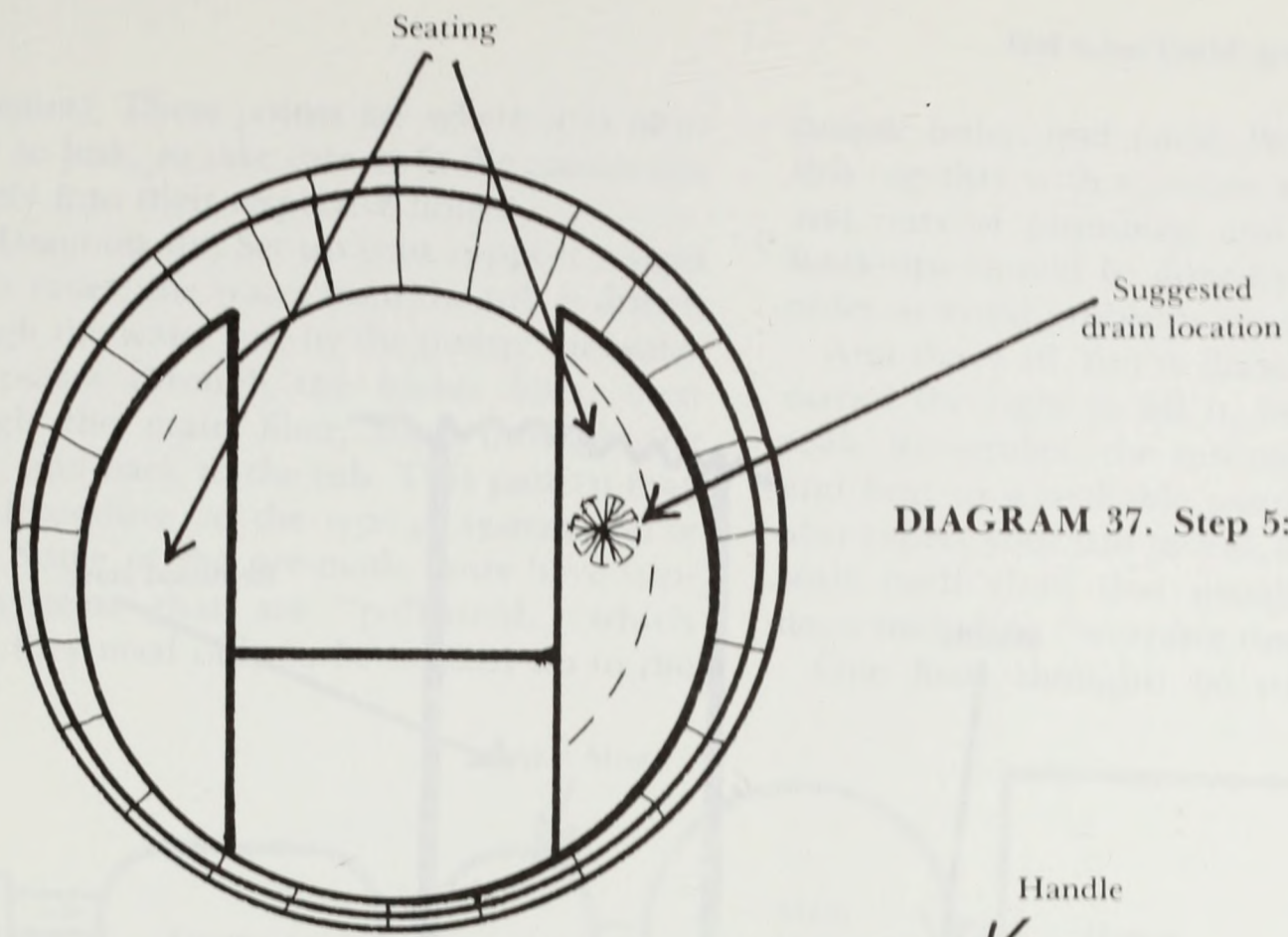
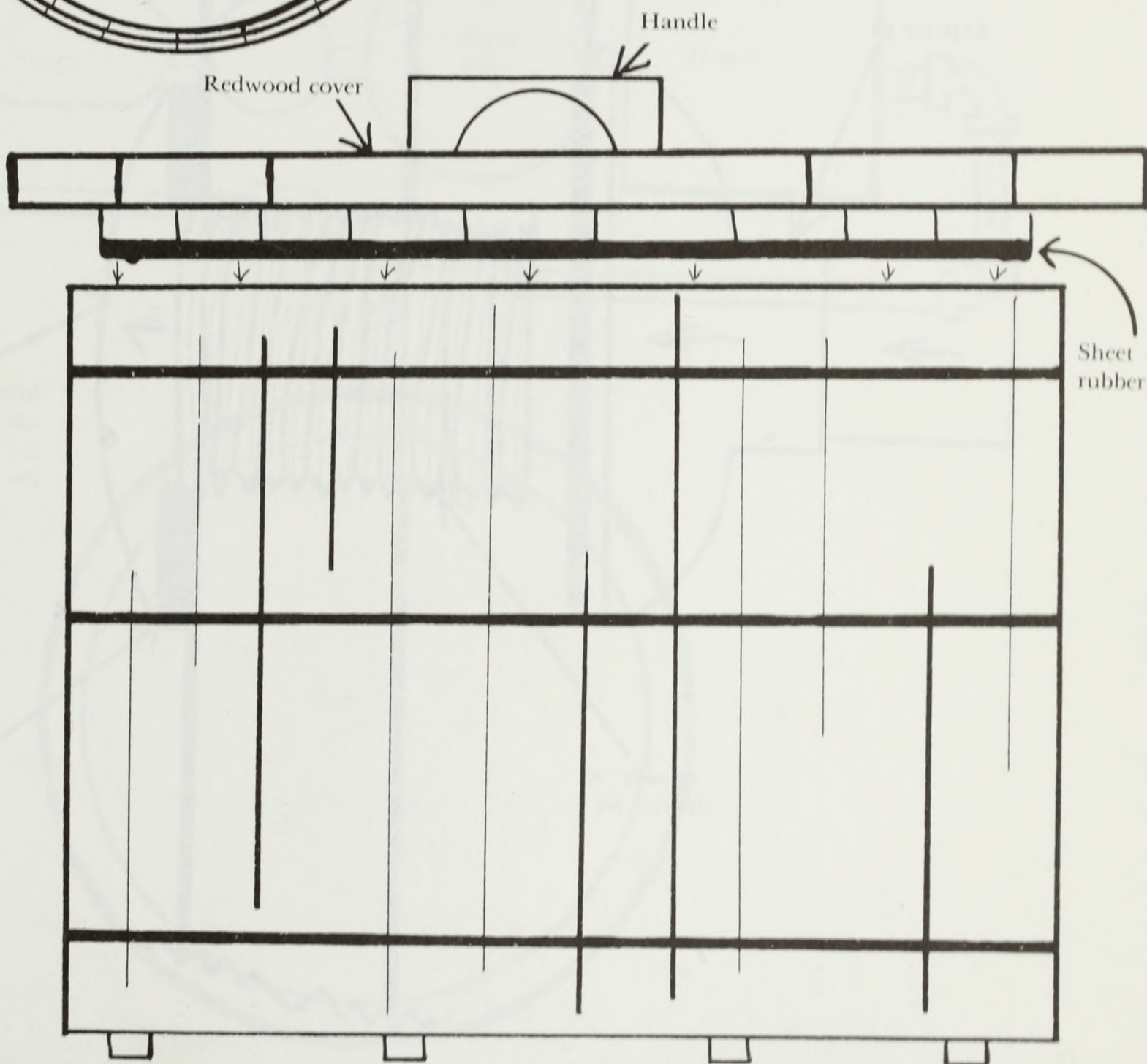


DIAGRAM 37. Step 5: Placement of drain.



Note: Double layered top should fit snugly into place.

DIAGRAM 38. Step 6: Construction of hot tub cover.

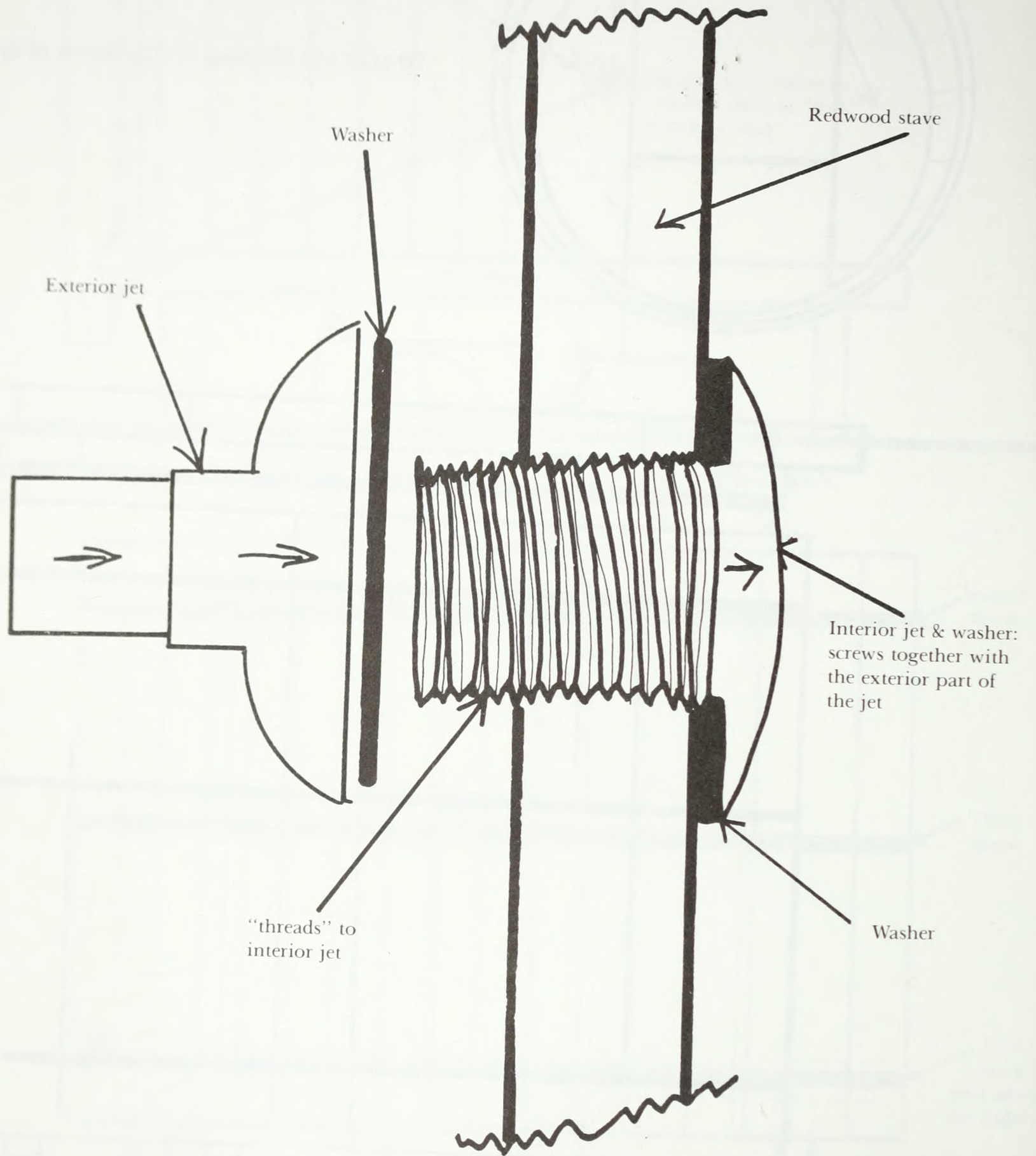


DIAGRAM 39. Step 7: Anatomy of a hydro jet.

the heater). These points are where it is most likely to leak, so take care to fit the connectors securely into their respective holes.

8. (Diagram 40.) Set up your support system in this order: the water from the tub is drawn through the water line by the pump; the water then passes through the basket filter, then through the main filter, then through the heater, and back to the tub. This pattern may vary, depending on the type of system you're using. Some of the pre-made units have support systems that are "palletized," which means they need only to be hooked up in the

proper order, and *voilà*. We suggest you put this together with someone who knows the ins and outs of plumbing and electricity. Final hook-ups should be done by a professional in order to avoid problems later.

And that's it! You're done now, and you've earned the right to fill it, heat the water and soak. Remember, the tub requires time to fill and heat to a soakable temperature. You can also expect your tub to leak until it swells and seals itself shut; that usually takes about 4 days, including "weeping time."

One final thought: be sure to drain the

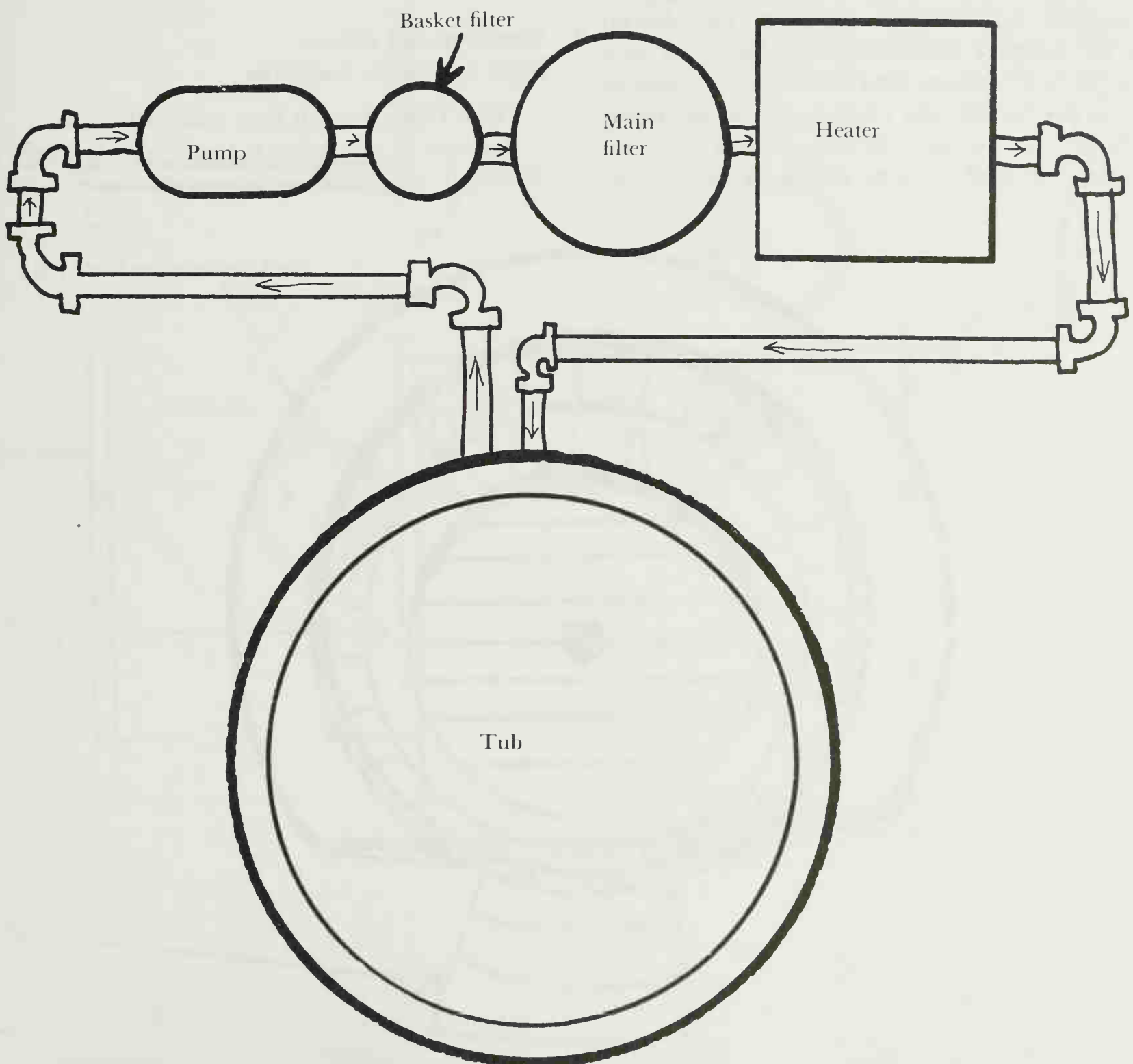


DIAGRAM 40. Step 8: Setup of support system.

whole support system if you don't intend to use it for any extended period, *especially if you live where it gets cold*. If the support system freezes—which it most likely will if you leave it wet—it's happy trails to your hot tub.

There are some niceties you can add. We've already mentioned the privacy elements: landscaping, fences, even a building built around the tub. Blossoming flowers, trees and shrubs are natural additions to a tub area. It's a convivial thought to set up a pleasant relaxing area for after-bathing. Outdoor benches fill this need nicely, but you may want to build benches into the tub area. You should have a dressing area in the immediate vicinity too; thick dowels set into wood are very simple hooks for towels and clothes. If you are planning a tub that sits on the ground with no decking around it, you might fashion some

shelving to the tub exterior for eyeglasses, cups, brushes, and the like. (Diagram 41.) (By the way, you *never* allow drinking glasses or glass bottles near the tub. Glass gets lost under water, and *broken* glass down there is just too gruesome to think about.) Apply this shelving after the tub has cured about 72 hours.

We have a particular liking for hammocks, the deluxe "lazy lounger" for after-tubbing. Mock train-conductor lanterns are a nice purist way to light a tub at night. Generally, they won't blow out on windy nights and candles will.

Northern hot tubs or high mountain locations

"Can I build a tub *here* and still use it?"

You can if you plan it right; and it doesn't matter if the "here" is Colorado, Kansas, Illi-

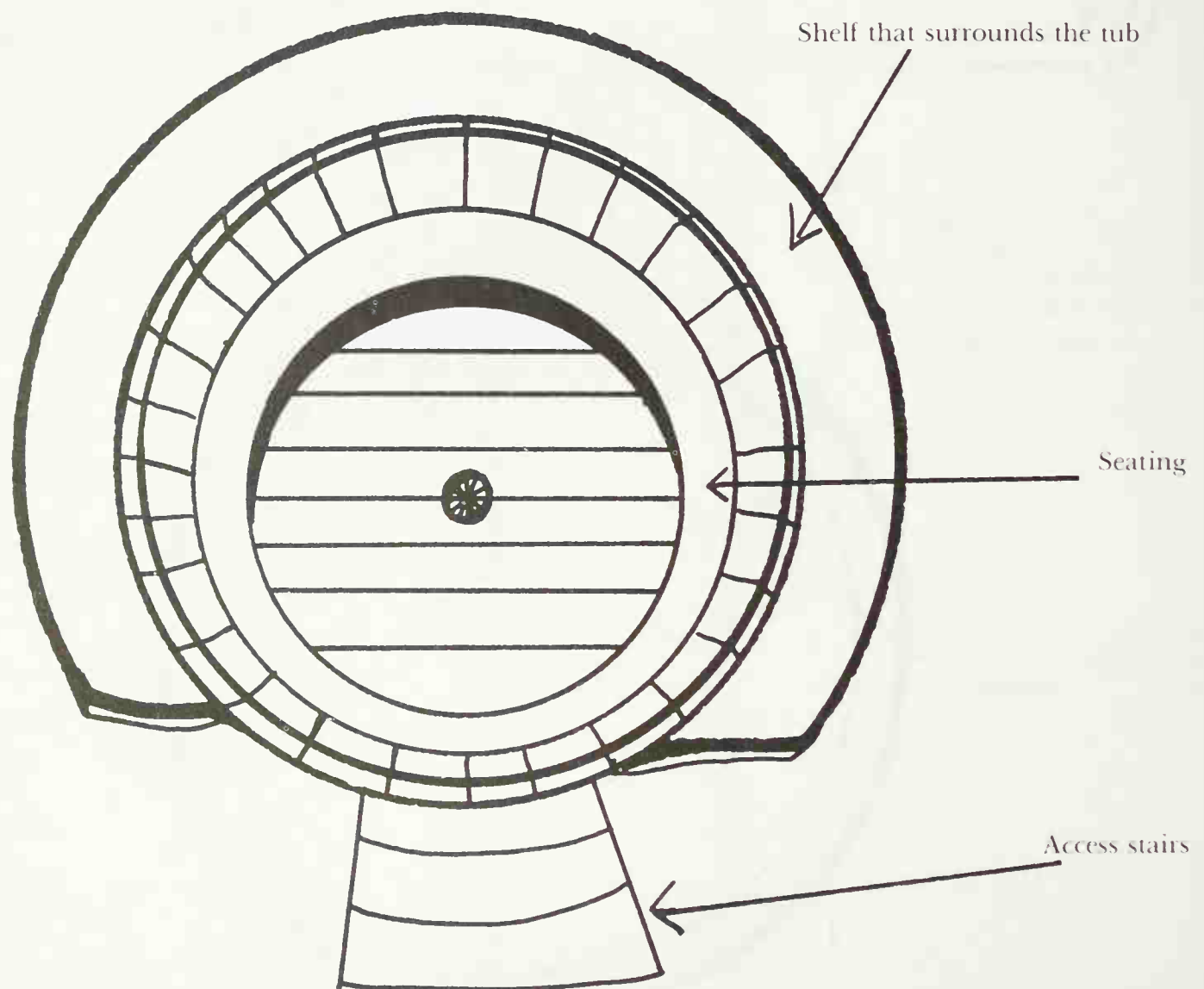


DIAGRAM 41. Adding a shelf to the hot tub.

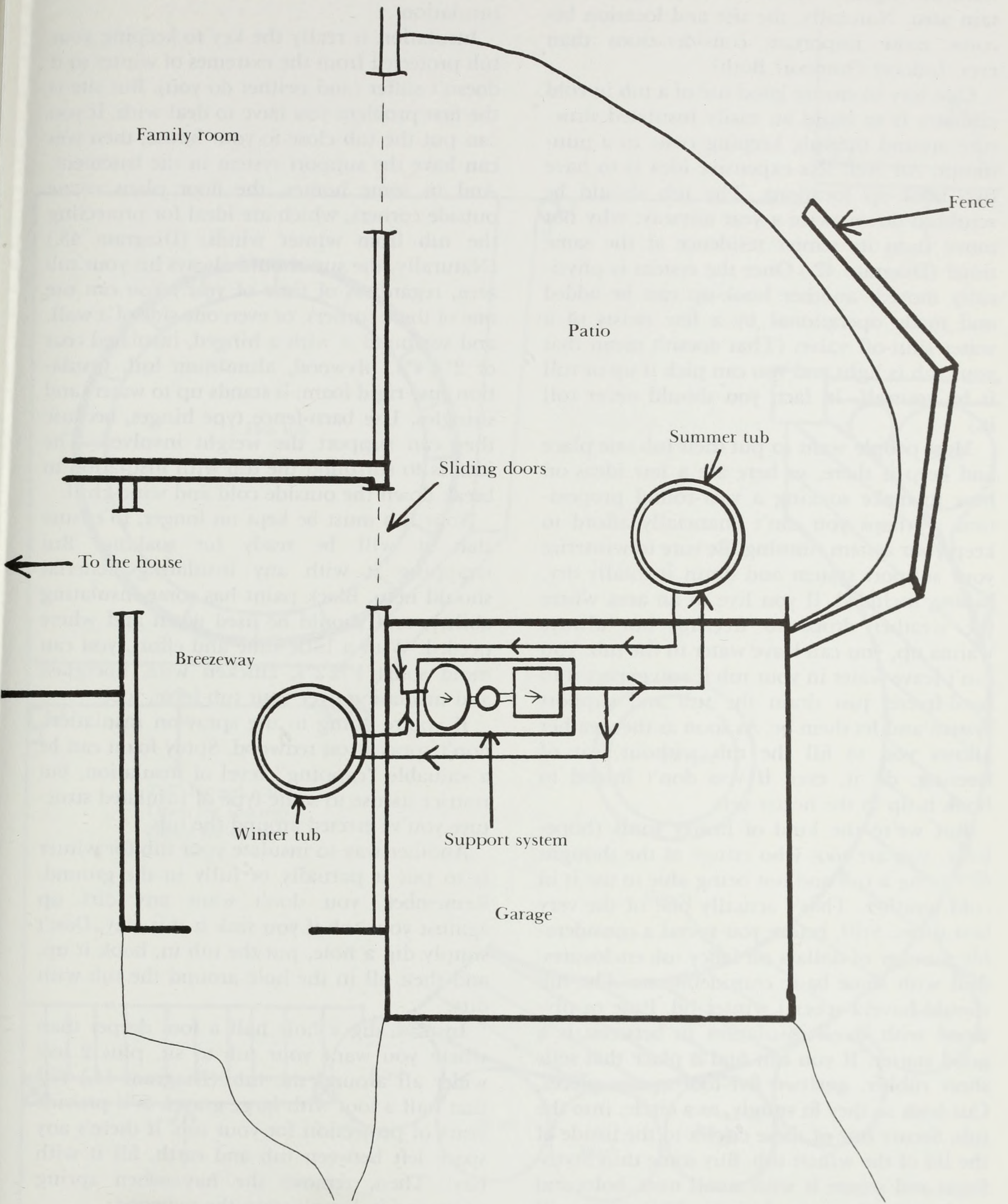


DIAGRAM 42. Multiple hook-up sites, winter/summer.

nois, Michigan, Vermont, or any high mountain area. Naturally, the site and location become more important considerations than ever. Indoor? Outdoor? Both?

One way to ensure good use of a tub in cold climates is to build an easily insulated structure around the tub, keeping costs to a minimum. An even less expensive idea is to have two hook-up locations. The tub should be scrubbed down twice a year anyway; why not move it to its winter residence at the same time? (Diagram 42.) Once the system is physically moved, another hook-up can be added and made operational by a few twists of a water shut-off valve. (That doesn't mean that your tub is light and you can pick it up or roll it by yourself. In fact, you should *never* roll it.)

Most people want to put their tub one place and keep it there, so here are a few ideas on how to make soaking a year-round proposition. Perhaps you can't financially afford to keep your system running. Be sure to winterize your support system and drain it totally dry, piping included. If you live in an area where the weather drops to freezing but always warms up, you can leave water in the tub. You can't leave water in your tub if you expect it to hard-freeze; just drain the tub and support system and let them be. As soon as the weather allows you to fill the tub without fear of freezing, do it, even if you don't intend to hook it up to the heater yet.

But we're the kind of hearty souls (hopefully, you are too) who cringe at the thought of having a tub and not being able to use it in cold weather. That's actually one of the very best times. Still, before you spend a considerable number of dollars on fancy tub enclosures, deal with some basic considerations. The tub should have a special winter lid. Pine or plywood with thick insulation in between is a good starter. If you can find a place that sells sheet rubber, get two five-foot-square pieces. Cut both so they fit snugly, as a circle, into the tub. Secure one of these circles to the inside of the lid of the winter tub. Buy some thin Styrofoam and secure it with small nuts, bolts and washers to the second circle. This piece will

float on the top of the water and add extra insulation.

Insulation is really the key to keeping your tub protected from the extremes of winter so it doesn't suffer (and neither do you). But site is the first problem you have to deal with. If you can put the tub close to your house, then you can have the support system in the basement. And in some homes, the floor plans create outside corners, which are ideal for protecting the tub from winter winds. (Diagram 43.) (Naturally, the sun should always hit your tub area, regardless of time of year.) You can use one of these corners, or even one side of a wall, and surround it with a hinged, insulated coat of 2" x 4"s, plywood, aluminum foil, insulation (use rigid foam; it stands up to water) and shingles. Use barn-fence type hinges, because they can support the weight involved. The idea is to surround the tub with insulation to break down the outside cold and wind-chill.

Your tub must be kept on longer, to ensure that it will be ready for soaking. But wrapping it with any insulating material should help. Black paint has some insulating ability, and should be used when and where needed. With a little time and effort, you can mold some 1" x 2"s, chicken wire, fiberglass and insulation over your tub form, too.

If you're going to use spray-on insulation, don't spray it on redwood. Spray foam can be a valuable "capping" level of insulation, but restrict its use to some type of insulated structure you've erected around the tub.

Another way to insulate your tub for winter is to put it partially or fully in the ground. Remember, you don't want any dirt up against your tub if you sink it this way. *Don't* simply dig a hole, put the tub in, hook it up, and then fill in the hole around the tub with dirt.

Instead, dig a hole half a foot deeper than where you want your tub to sit, plus 2 feet wider all around the tub. (Diagram 44.) Fill that half a foot with large gravel. It'll provide years of protection for your tub. If there's any space left between tub and earth, fill it with hay. Then, remove the hay when spring comes, so it doesn't stain the redwood.

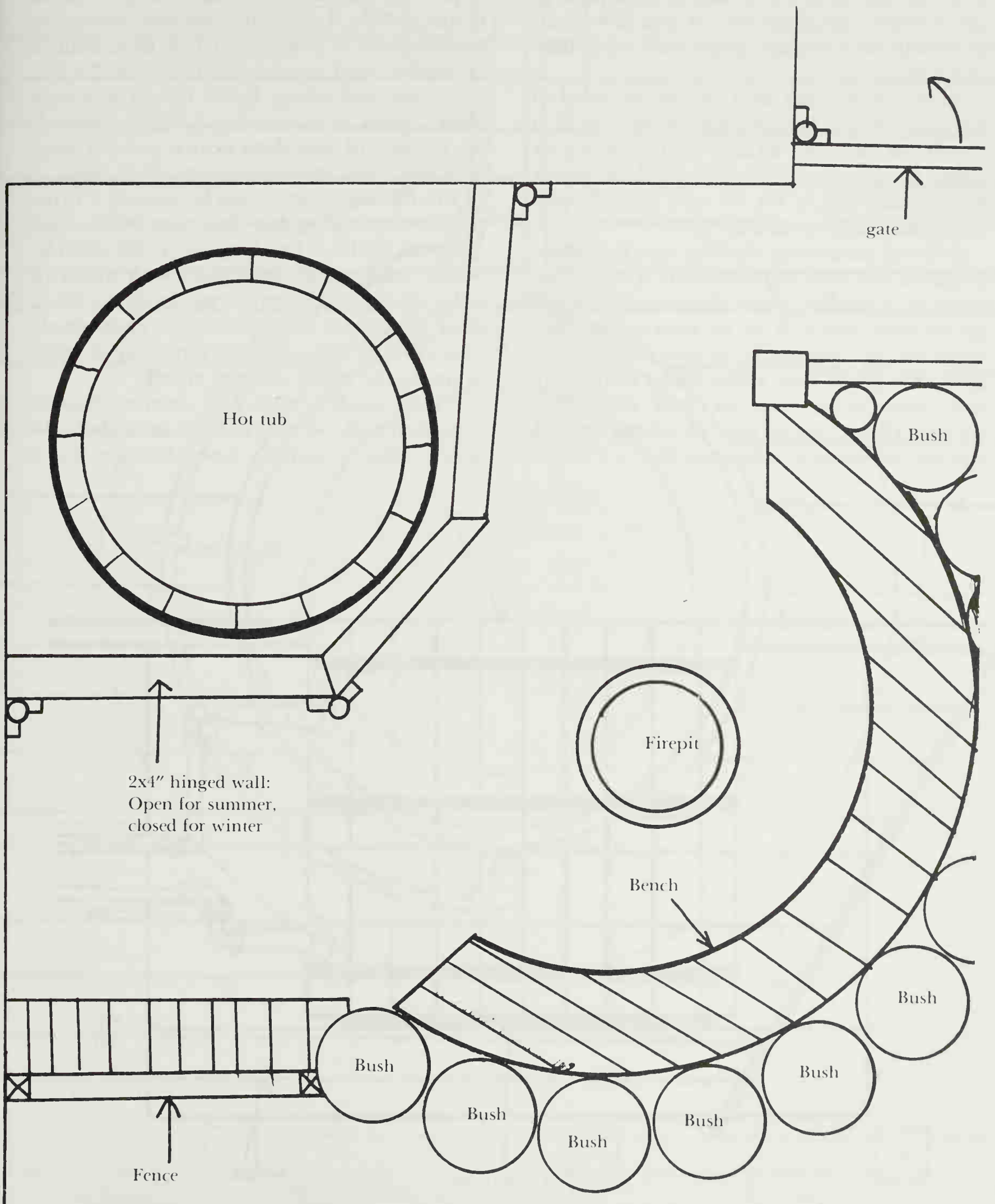


DIAGRAM 43. Outside corner location for winter protection.

Piping can be laid underground. If it is three feet down, you'll be safe in most parts of the country. (Diagram 45.) If you live in an extremely cold climate, check with a plumber about this.

Snow can actually be a very good friend to the tub owner. Accumulated snow acts as a blanket to the earth, so the frost line only goes down a few inches. It's the kind of winter which combines a lot of cold with a little snow that freezes your pipe lines.

A lot of interesting decking can be created around a tub sunk into the earth. The tub can be set in a tub-like arena. Or it can be located on its own level, off in its own corner. But when you put decking in, be sure to rig it with moveable pieces that allow access to the piping connections. Circular and multi-level decking effects can be used to protect the tub and its components. (Diagram 46.)

Above all, show your support system some respect; it does all the work. Protect it from winter winds. Locate the support system in the basement if possible. If not, then build a protective shell around the tub with 2" x 4"s, insulation and siding. If you have a flash-type heater, check to be sure that it can be enclosed; the amount of heat these heaters put out often does not allow any obstruction above them.

You can use concrete blocks to build a structure around your tub. But don't leave that structure without finishing it on the outside. Secure firing strips, and finish with siding or cedar shingles. However you decide to do it, do it thoroughly and make sure it's adequately protected. Be sure you have some way of easily draining the whole support system.

It'll be tough to hook up a cleaning drain to a sunken tub, so you'll have to siphon the water. This is nothing more than creating a

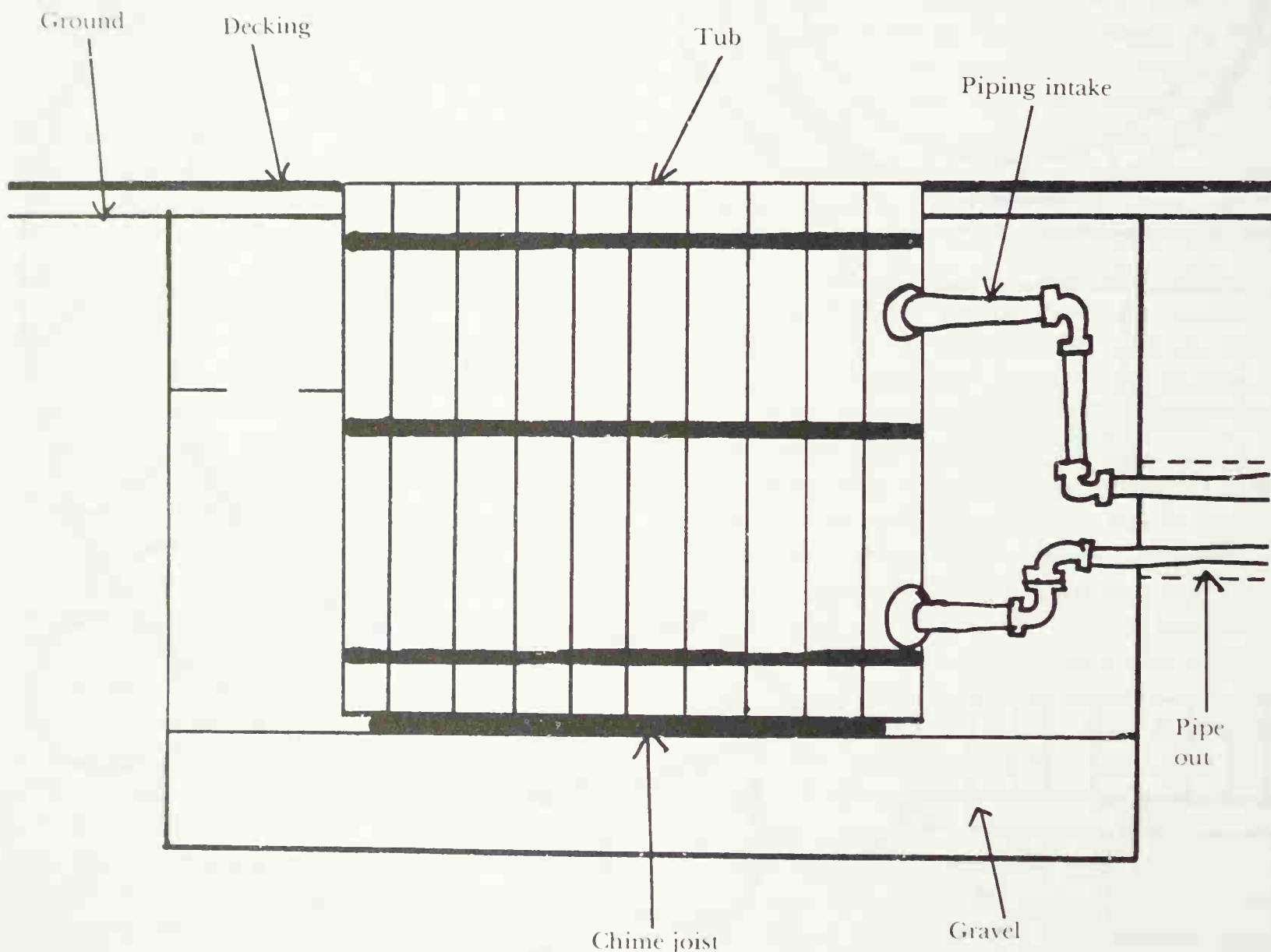


DIAGRAM 44. Cross section of underground hot tub.

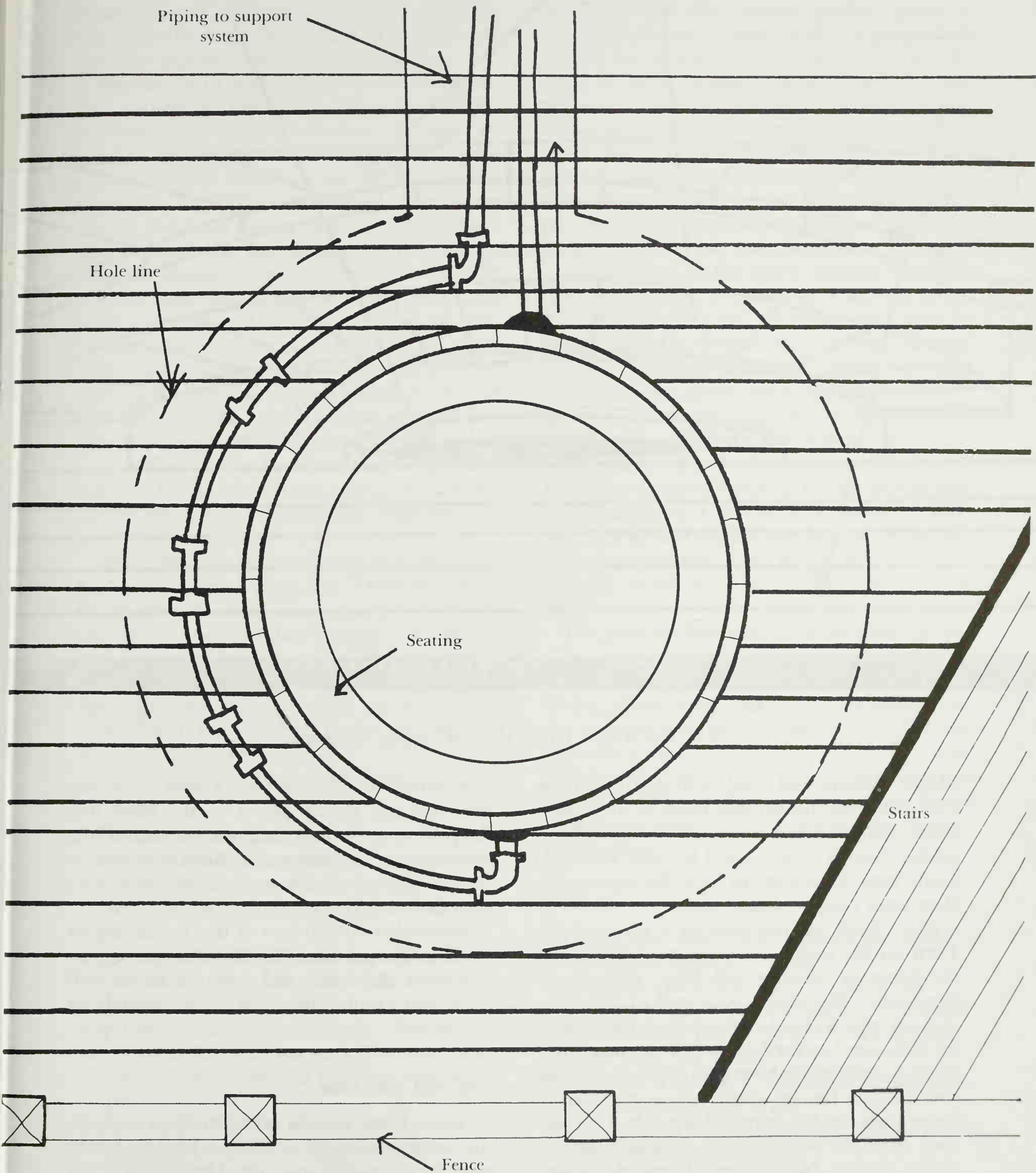


DIAGRAM 45. Top view of underground tub.

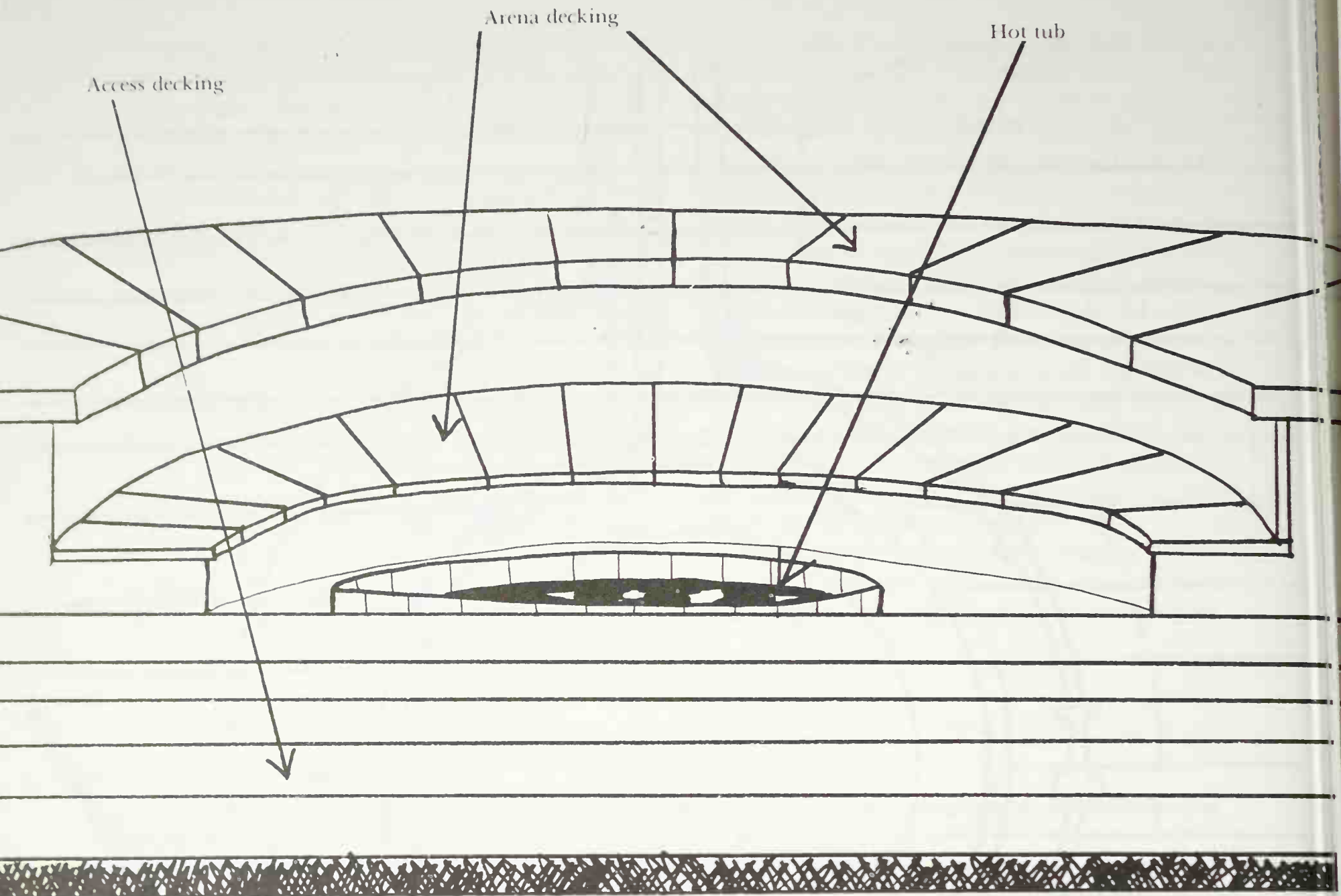


DIAGRAM 46. Cross view of "arena" decking.

simple vacuum and using it to drain the tank. The outlet off the siphon must be at a point lower than the lowest point of the tub. A garden hose is almost ideal for this, once you know how to prime the hose for siphoning. Here are a couple of easy ways.

First, hook up the hose to a water spout. Turn on the water and let it run freely. Once the water is running full blast, turn it off. Disconnect the water-spout end of the hose, making sure to hold both ends of the hose at the same level so the hose is full of water. Now take one end of the hose and put it in the tub, and *quickly* lay the other end at some point lower than the low point of the tub. This will then drain off all the water. Towards the end of this project, be sure the tub end of the hose reaches the tub's low point, and that will let you drain it almost dry.

Another way to "prime" a hose is to take one end and slowly put it in the filled tub. Keep feeding the hose into the water until the whole thing is submerged. Keep one end in the tub and run to the nearest low point with the other end.

Remember, insulation is the key to winter tub use. Proper precautions to protecting the tub from the wind and other elements will keep you comfortable and your pocketbook untouched.

Tile and rock tubs

A new breed of tubs is beginning to capture the imagination of soakers who are handy with rocks, mortar and tile. The Japanese hot spring resorts come to mind. You can even enclose a rock-type grotto for year-round

soaks. Tile is another very usable material, probably the most familiar, and an absolute *must* for our next chapter, Steam Baths.

We once built and installed a tub in a fabulous mountain home. We can't recommend our procedure to just anybody, because we filled a four-wheel drive pickup truck with cement at 3550' elevation, and drove it up the mountain to 8000+'. It worked, but if the timing had been wrong, we'd have been up a cement creek. We had to hop-to with the cement the instant we got it there. Forms for the tub had to be already in place; these were built from plywood and 2x4s. A ribbing of reinforcing concrete rods was formed in the space where the concrete would be poured. Once poured, the tub was allowed almost 3 weeks to cure and dry. We used the time to order our tiles and prepare the support system.

If you're going to build a tub like this indoors, be sure to include a drain *outside* the tub for water splashed around. Outdoors, you won't need one.

Once the tub is cured, you'll need a few tools to do a good tiling job. These include: a tile cutter (rent one), tile nippers, a glass cutter, trowel and a rubber squeegee. Secure the tiles to the inside of the tub with tile mastic, a gallon of which covers about 50 square feet. Space the tiles 1/16" apart (you can buy spacers to help with this), and fill in the area between tiles with powdered grout.

Here's a list of standard tile types:

Field tiles—4¼" square

Ceramic Mosaic—1' square sheets; space between tiles is pre-spaced. Don't remove facing protection sheet until you're ready to grout.

Cap Strip Tile—2" x 6"; caps top row of field tiles, or can run through middle of tile pattern.

Cap tile—2" x 6"; turns a corner.

Cover base tile—Various sizes; has an outward concave curve that will meet up with floor tiles.

Corner cove tile—Has a rounded edge for left and right corners.

Here's how you apply those tiles. First, set

up horizontal and vertical guides, using a level. Apply the mastic with your notched trowel, but be sure to keep mastic off the tile faces; it dries quickly and is a real bitch to remove. (A rag dipped in mineral spirits can help you here.) The mastic should be applied evenly so it doesn't ooze when the tiles are pressed into place, and you do press—not slide—the tiles into place. When placing ceramic mosaic tiles, use a cushioned 2x4 and hammer to fix them into the mastic.

When filling in the spaces between the tiles, your grout must be mixed with water to form a paste. Mix a little bit at a time, because grout begins to thicken at once, and hardens in 20 to 30 minutes. Use the rubber squeegee to wipe excess grout away. Grout usually requires 5 to 7 days to cure itself properly.

Design possibilities are almost unlimited with concrete and tile; so are shapes and sizes. It's a very individualistic, totally permanent way of building a tub. Be sure that all in-and-out piping and outlets are double (if not triple) water-proofed. They're the only areas susceptible to leaks, so do them right the first time.

Hot tubs available through suppliers generally come in popular shapes. That doesn't mean you can't vary a tub to your personal liking, if you're willing to take the extra time. An extra day or two can mean the difference between success and failure. Work out your design, "sit" on it for a while, then check it out again. The time to determine how joints will be cut and secured is *before* you build—not during.

Sources

AQUATHONICS, 22135 Ventura Boulevard,
Woodland Hills, CA 91364

CALIFORNIA COOPERAGE, Railroad
Square Box E, San Luis Obispo, CA 93401

CALIFORNIA HOTUB, 600 Third Avenue,
New York, NY 10016

GORDON & GRANT, 423 North Quarantina,
Santa Barbara, CA 93103

HOT TUB STORE, 1080 Coast Village Road,
Santa Barbara, CA 93108

HOT TUBS USA, 1071 Lincoln Avenue, San
Jose, CA 95125

PEREGRINE INDUSTRIES, San Rafael,
California. (By general consensus, the most
expensive and best of the suppliers. They
specialize in teak tubs.)

SANTA BARBARA HOT TUB CO., 41
Mountain Drive, Santa Barbara, CA 93103

SIERRA HOT TUBS, P.O. Box 1024,
Tuolumne, CA 95379

SUNDOWN SAUNAS & HOT TUBS, 696
North Ohioville Road, New Paltz, NY
12561

THINK TANK WORKS, 1170 Blue Gum
Street, Anaheim, CA 92806

THE TUBMAKERS, 2500 Market Street,
Oakland, CA 94607

This list isn't meant to be all-inclusive and
comprehensive, but these sources are all
highly reputable. Of course, you can check
your local Yellow Pages for sources closer to
you who handle the sale of tubs.

3

The steam baths: No sweat

The steam bath knew its earliest origins in Rome, where hot air was already in overabundance. And therein lies—what else?—a tale.

The messenger Nauseous reached Rome after a very long, very hot run. After dispatching his duties, delivery of 12 new G-strings for Nero and his fiddle, Nauseous inquired where he might relax at the end of his tiring day.

“We do more carrying-on than relaxing around here,” he was told by an aging reveler, “But you might try the Pillars of Perspiration.”

“Is that free?”

“Twelve finsters, including towels.”

“No *good*, sir!” cried Nauseous. “I journey to Rome already well-lathered with perspiration, you suggest a house of still *more* perspiration, and now, what ho, but *cover charge*, say you!”

“You have a wicked syntax problem,” chided the elderly Roman, “and besides, let me tell you something about the very rich.

They sweat differently from you and me.”

“How so?”

“Their manner of perspiring does not bring to mind, say, matters of hygiene. Theirs is a sweet water that somehow does not offend. You’d never mistake them for basketball players.

“You’re saying, then, that the Perspiration Pillars patrons sweat sweetly?”

“Yes,” said the other, and paid Nauseous further tribute for his gifts of alliteration.

“Well,” said Nauseous, “I’m not even sure I’d *want* to sweat that way.”

“Yes,” said the elder. “I could tell.”

Actually, today’s health club boom has sparked a scintillating comeback for the steam bath. This is the only form of hot bath where, if things are functioning as they should, you can’t *see* your company in the bath. Thus they’re somewhat less convivial (and fashionable) than saunas or hot tubs. (You do occa-

sionally run across a steam bath with no visible steam present; avoid these as you would a BLT sandwich with no bacon.) These are also the most enervating of the hot baths, so your after-steam bath plans should be along the lines of relaxation.

Another factor in the steam bath's return to prominence is that it's really great for your skin. If you'll forgive an inevitable pun, people are deeply into skin these days, with young fortunes being spent on cremes, tanners, oils. People are toning up, and a steam bath really fills the bill.

The steam bath is an environment with about 120°F. temperature and 98% humidity. You sweat because, in effect, the environment itself is sweating. (If you were to step into a giant Bismarck and all that sinful filling,

you'd soon be covered with filling yourself, right? Well, that's the principle of the steam bath.) The steam opens up your pores, allowing oils and dirt to be flushed from deep beneath the skin surface. It's also a fine muscle relaxant, and there is a strong temptation to nap in one of these (but don't; it's dangerous). And remember, you *can't* lose any weight this way.

How a steam bath works

A steam bath is an enclosed, tightly sealed area that is fed hot steam from a steam generator outside the area itself. (Diagram 47.) Many dealers in this country supply steam generators that will transform almost any space, from your bathtub/shower to an entire room,

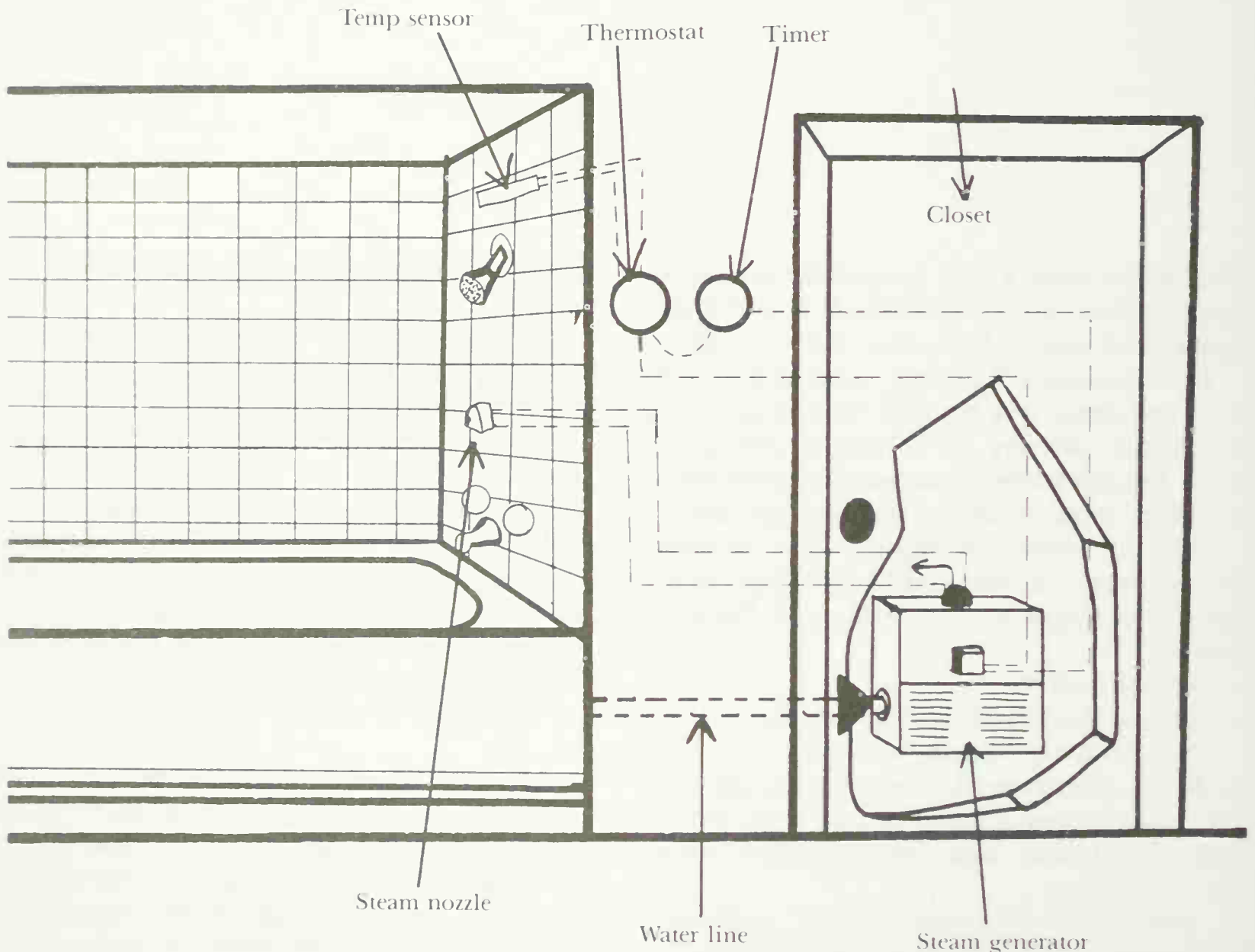


DIAGRAM 47. Anatomy of a steam bath/shower.

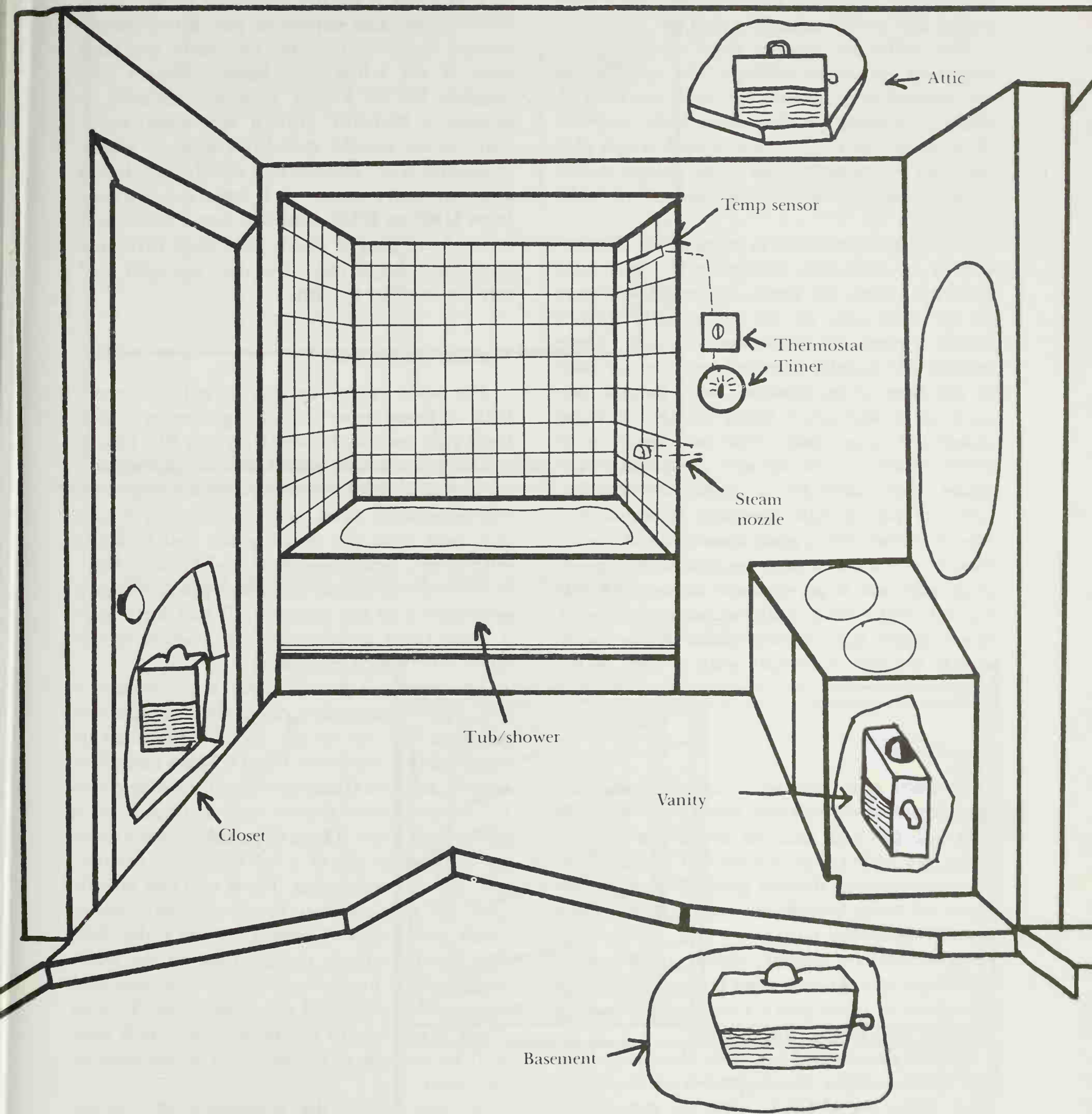


DIAGRAM 48. Alternate locations for steam generator.

into a spa. (You can build such a space *very* easily, and we're coming to that.)

The walls are usually lined with ceramic field tiles, as are the ceilings. The bench areas are covered with mosaic tile, as is the floor. A drain is a must for the steam bath, and the floor should be constructed in such a way that the floor slants toward the drain, which can be in the middle, in any corner, to any one side, anyplace.

The steam generator is rigged to a thermostat in the bath area. (Diagram 48.) When it's time for steam, the generator sends the steam to the bath area. In the steam bath itself, a nozzle spreads the steam into the bath. These nozzles are usually directed towards the floor at the time of installation. Some people buy scent bars and place them in tins of water inside the steam bath. Pine and peppermint really clean out the sinuses. And a first-class steam bath includes a cold-water shower, either of pull-handle operation or adjustable, which allows you a good quick "dunk" experience. Steam baths have become very popular as an addition to an enclosed shower; the cold dunk is right there, with no hook-up needed. Many hotels have shower stalls in the rooms which become mini-spas with a turn of the wrist.

Generators

A steam generator will heat water to boiling. Steam is then drawn from the boiler and sent into the bath area. As we said, generators come in a wide range of sizes; but whatever the size, if your unit doesn't produce an environment of thick clouds of steam, then there's something wrong with it.

Most units are electric, which cuts down on hook-up costs. All you need is a water line and electricity to make you a candidate for having a steam bath in your own home.

Unlike saunas and hot tubs, the steam bath has little outdoor mystique (except for those aged Polar Bear Clubs you see every New Year's Day). That's too bad, because it is indeed a joyous experience to set up a steam bath as you would a sauna so bathers can jump into oversized snow banks if they want to. You can achieve a setup like this, as long as

each element is readily accessible to the other. You should also expect to pay for a remote control timer to turn on the steam unit and keep it on while you bathe. Timers cost roughly \$50 to \$75. A generator capable of heating a bath-size unit or very small room with steam should run from \$600 to \$1000; industrial-type generators, which are larger and can easily steam up a large room, range from \$1000 to \$2500, and will cost a little more to hook up. But if you own a club, principal applicants for a unit this size, the unit will pay for itself in no time.

The tub/steam bath

The least expensive way to enjoy a steam bath at home is to install a generator which feeds your own bath tub. (Diagram 49.) This is a small generator, which can be placed in a variety of locations near the actual steam bath. All generators need special electrical hook-ups, and these are nothing for you to fiddle with unless you know how and know it well. If you own a house, the ideal place to put a generator is in the basement. If you don't have a house (thus no basement), a closet or crawl-space will hold a generator.

The ideal tub for this type of steam bath is one with sliding glass doors that seal the tub off from the rest of the room. These can be installed in a weekend. Ward's, Sears and other sources sell kits (Diagram 50) which allow you to enclose a bath/shower area to prep it for a steam bath inlet. These days, tub/shower areas are finished in tile or a less expensive alternative, like sheet formica. These two can also be used in combination to do a small steam room, using sheet Formica for the walls, field tiles for the ceiling, mosaic tiles for the floor, and redwood for the bench area. (Specifics will follow.) A really ideal setup has a small, extra closet accessible to the bathroom which may well be enough to become your steam generator closet.

In fact, one of the advantages of a steam bath over a sauna is that the heating unit itself need not be in the bathing area. The sauna just *has* to have its stove in the room. It takes up space, and so do the safety artifacts around the stove. A steam bath wastes no such space;

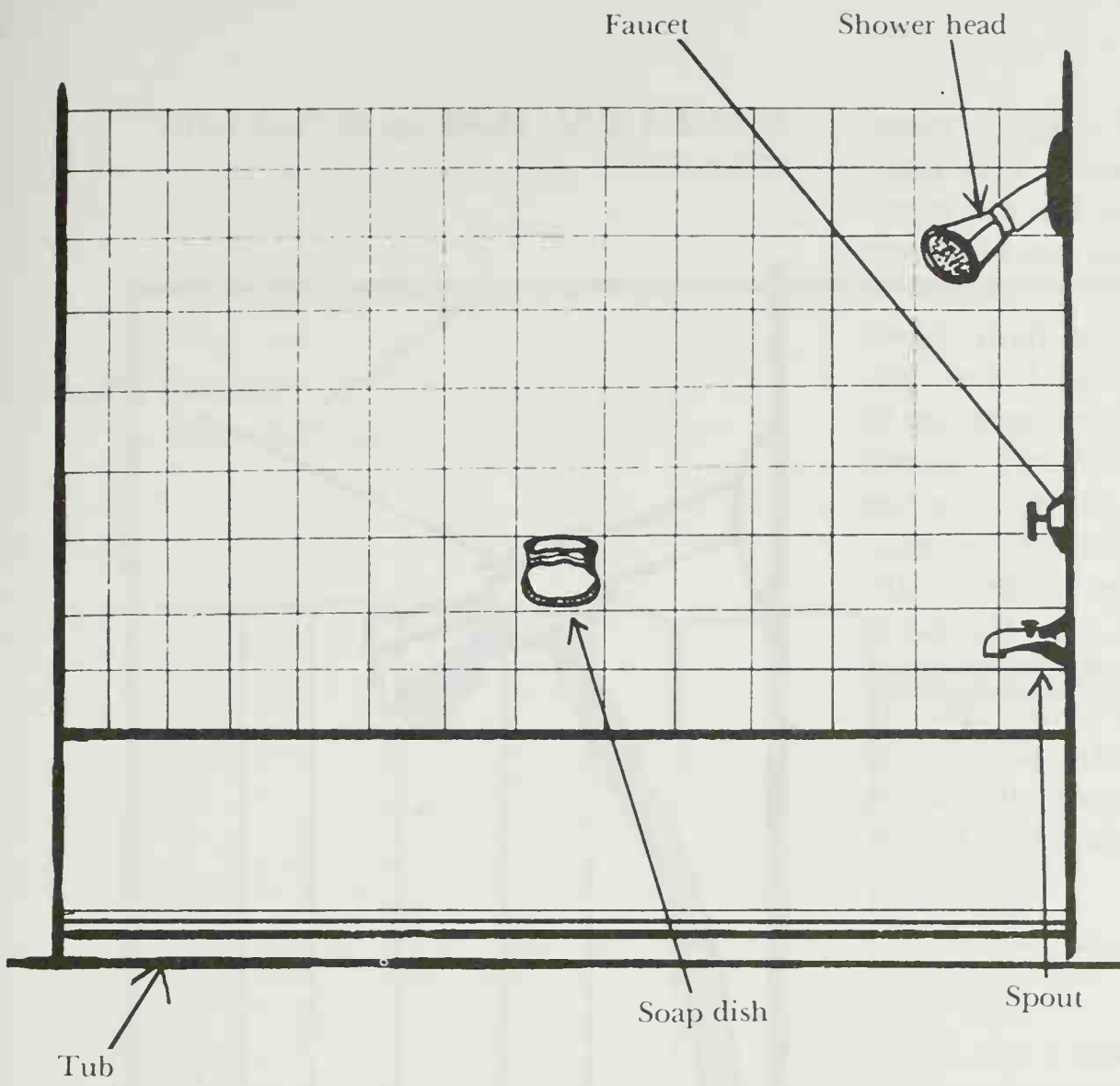


DIAGRAM 49. Basic layout of standard tub/shower.

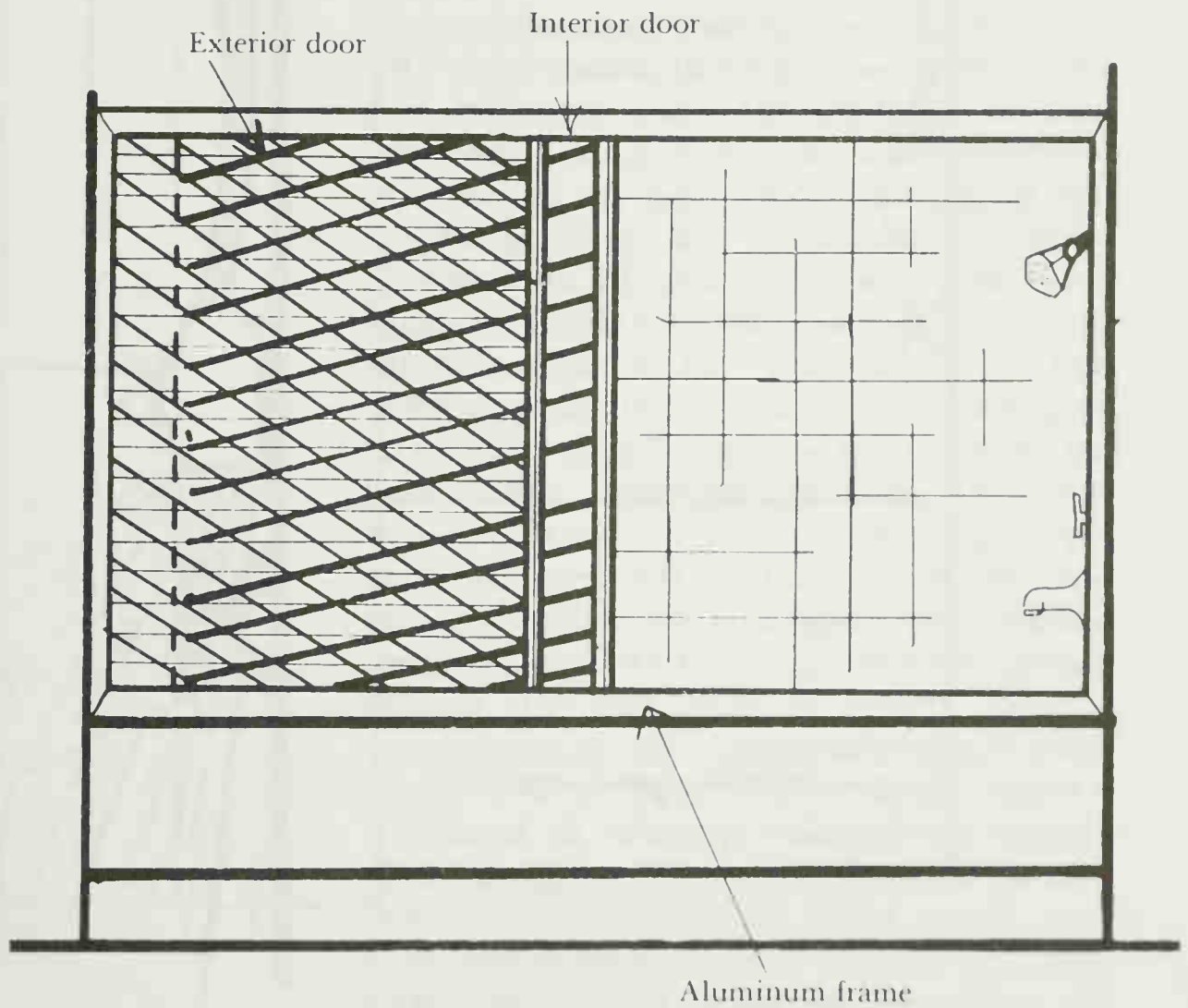


DIAGRAM 50. Standard tub/shower with sliding glass enclosure.

tile allows you to mold and shape a steam bath area to your liking and make that space 100% functional. All you need for the steam bath is a drain, and a contractor can hook one up for you effortlessly.

Naturally, when your steam bath plans coincide with an add-on to your home, you gain a lot of flexibility. Your generator can fit neatly into just about any currently unused space. If you're building a *new* home, you can easily incorporate a steam bath (or steam-sauna combination) into the master bathroom plans. Not only do you reap the benefits yourself, but if you do it right, your steam bath really pays off when the time comes to sell your house. A well-built unit adds to your selling price; and, like the sauna, the steam bath just about doubles in value once it's installed.

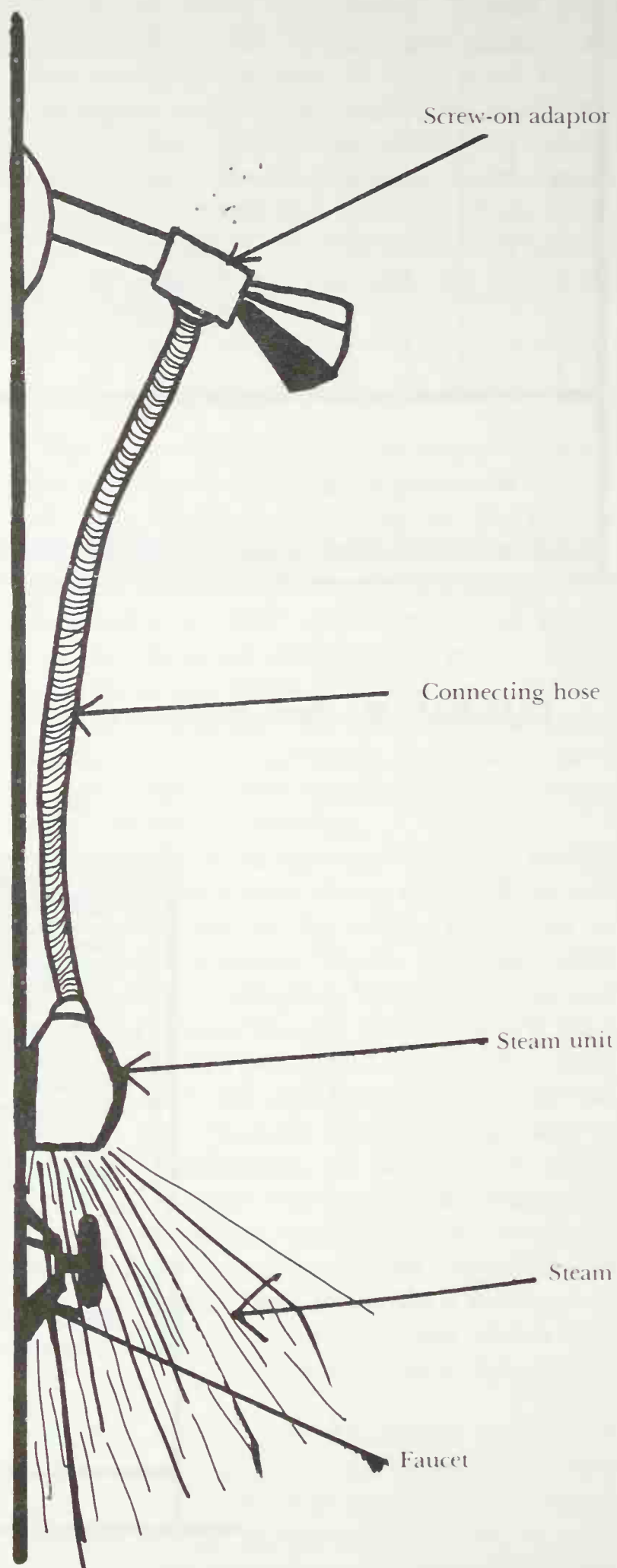
How to do it

There are several ways to turn a tub into a steam bath, and they all amount to the cheapest way to go, because the bath area—the tub/stall—is already there.

You can add one of the commercial generators to the shower stall you already have. This involves installing the steam generator in a convenient location, running the steam inlet line to the stall, hooking up the generator to water and electricity, and finishing off the hardware in the stall itself. (By all means do yourself a favor and install a shower-massage unit, hopefully one that is adjustable for temperature and available with several different shower head settings.) These commercial generators are fairly expensive and usually require professional hook-up, but they are the best buy. When you have the steam inlet line installed, we suggest it be soldered copper piping and nothing else. It's the most efficient material known to man, and will provide years of primo bathing.

Once again, you'll need a better-than-average handyman quotient to hook this unit up by yourself. Even then, it takes a little time. If you locate the generator in the basement, you should have no problem getting to the water and electricity. If you can't place

DIAGRAM 51. Hook-up of "hot water" steam unit.



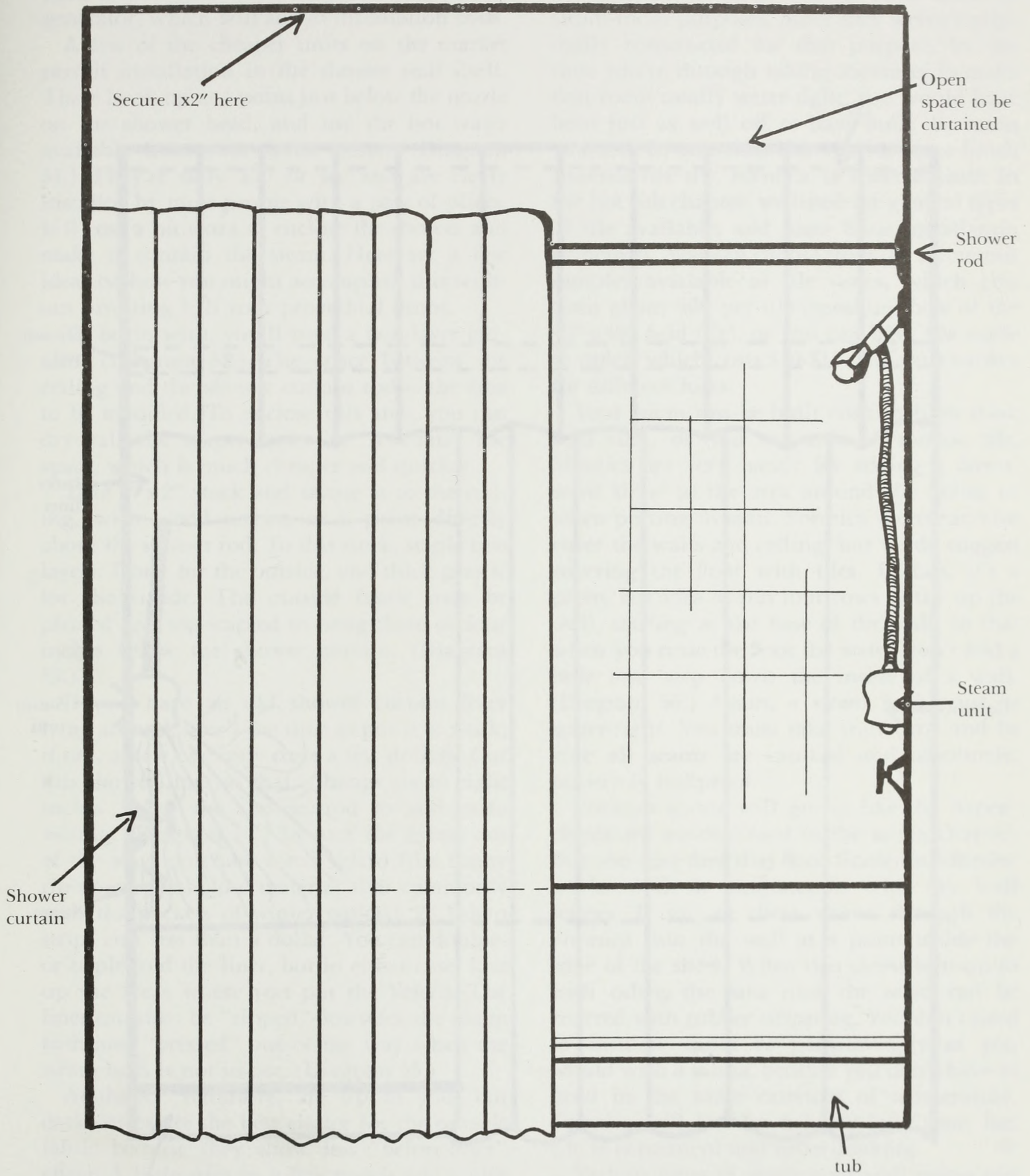


DIAGRAM 52. Initial set-up and prep for "curtaining" shower stall.

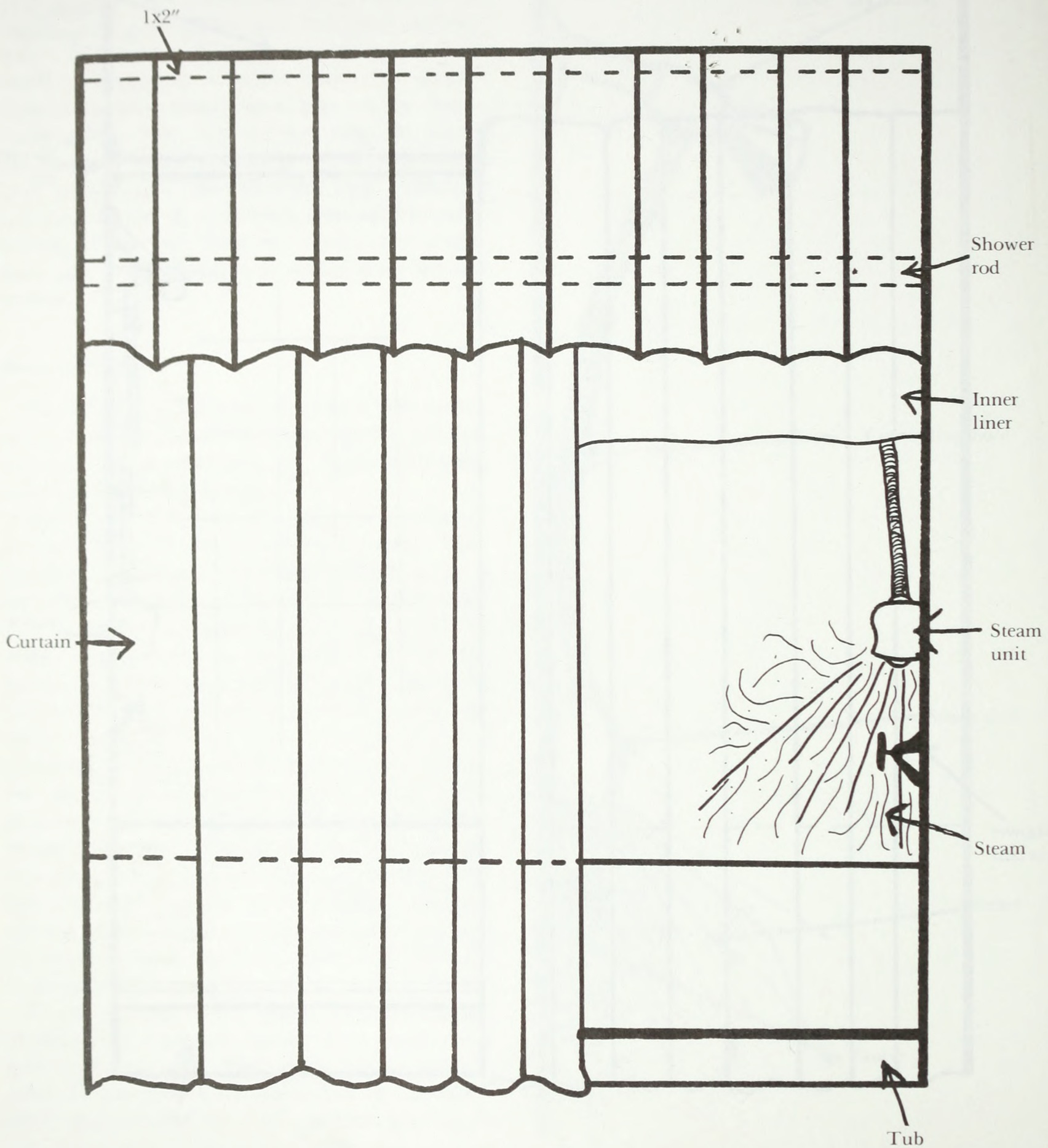


DIAGRAM 53. Completed alteration of standard shower/tub.

your unit in the basement, a closet, bathroom or attic all provide alternatives for smaller units used in tub/stall adaptation. But you'll need to run your water and electricity to the generator, which will add to installation costs.

A few of the cheaper units on the market permit installation in the shower stall itself. These hook up at a point just below the nozzle on the shower head, and use the hot water available from your water heater. (Diagram 51.) They're only \$50 or so, and are easily installed by most people with a pair of pliers. It'll cost a bit extra to enclose the shower and make it contain the steam. Here are a few ideas on how you might accomplish this without investing half your proverbial limbs.

To begin with, you'll need a two-layer curtain. (Diagram 52.) The space between the ceiling and the shower curtain rod is the area to be modified. To enclose this area, you can dry-wall the empty space or "curtain" the space, which is much cheaper and quicker.

Take 1" x 2" stock and secure it to the ceiling, with wood screws, at a point directly above the shower rod. To this stock, staple two layers: fabric for the outside, and thick plastic for the inside. The outside fabric may be pleated and top-stapled to hang three or four inches below the shower curtain. (Diagram 53.)

If you have an old shower curtain liner lying around, now's the time to put it to work; if not, a new one only costs a few dollars. Cut this shower liner so that it hangs six to eight inches *below* the shower rod to add extra sealing. (Diagram 54.) To tuck the excess out of the way, purchase some Velcro (the funny rip-open, press-close material that commonly seals the pockets of winter parkas); 2" Velcro strips cost less than a dollar. You can double- or triple-fold the liner, but in either case, line up the areas where you put the Velcro. The liner can then be "ripped" down for the steam bath and "pressed" out of the way when the steam bath is not in use. (Diagram 55.)

Aesthetics, naturally, are up to you, but dark colors are the best choice for the outside fabric because they show less "before-after" effect. A little trim or a few tassels add a nice effect, too.

Your own steam room

Generally speaking, we advise against adapting an existing room of your home to steam-room purposes. Since they weren't originally constructed for that purpose, by the time you're through taking measures to make that room totally water-tight, you would have been just as well off to have built the room yourself. In any case, line it with some finish material like tile, Formica, or concrete paste. In the hot tub chapter, we listed the general types of tile available, and some basic installation principles. You can choose from the numerous samples available at tile stores, which cost from about 40¢ per tile (speaking here of the 4½" x 4½" field tile), or you can have tile made to order, which costs \$10-\$15. Different strokes for different folks.

Your room can be built entirely from these field tiles, or you can mix in mosaic tile. Mosaics are very handy for adding a downward slope to the area around the drain, or when putting in seats. Formica sheets can also cover the walls and ceiling, but we do suggest covering the floor with tiles. In fact, it's a pretty fair idea to run four rows of tile up the wall, starting at the base of the wall, so that when you rinse the floor the water won't find a hole and seep down the inside of a wall. (Diagram 56.) Again, *a steam bath must be water-tight*. You must take your time and be sure all seams are caulked and absolutely, positively leakproof.

Formica sheets will go up like the Aspen-chipboard we discussed in the sauna chapter. But you may find that floor linoleum adhesive works well in conjunction with dry wall screws. If so, set these screws through the Formica into the wall at a point inside the edge of the sheet. When two sheets butt up to each other, the area near the seam can be covered with rubber stripping. You don't need to insulate quite as painstakingly as you would with a sauna, because you don't have to hold in the same extremes of temperature. Formica will last for a fairly long time, but tile is permanent and better-looking.

Various types of waterproof wall pastes can be used to finish the walls. The concrete-type

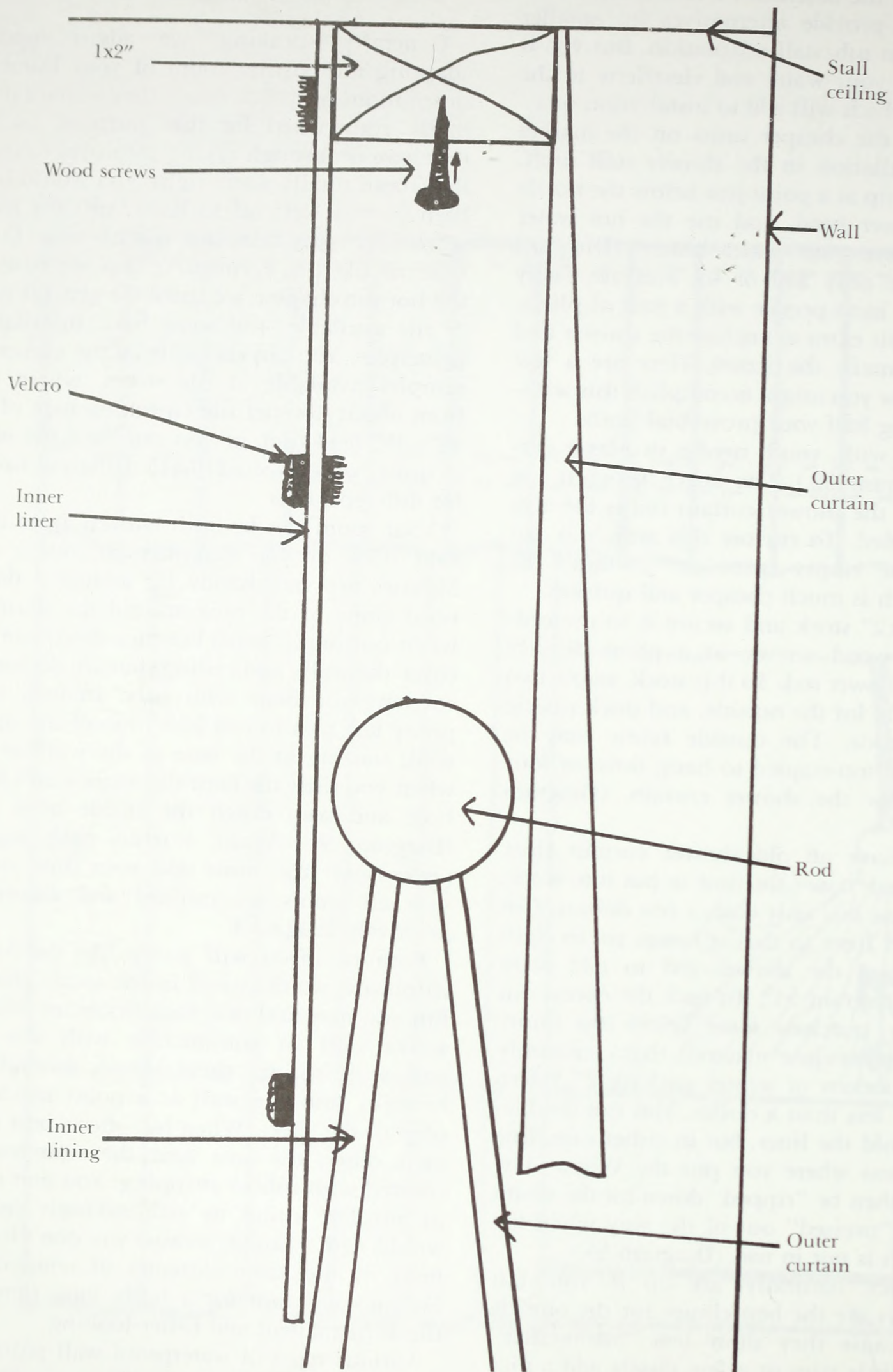


DIAGRAM 54. Cross section of adapted area.

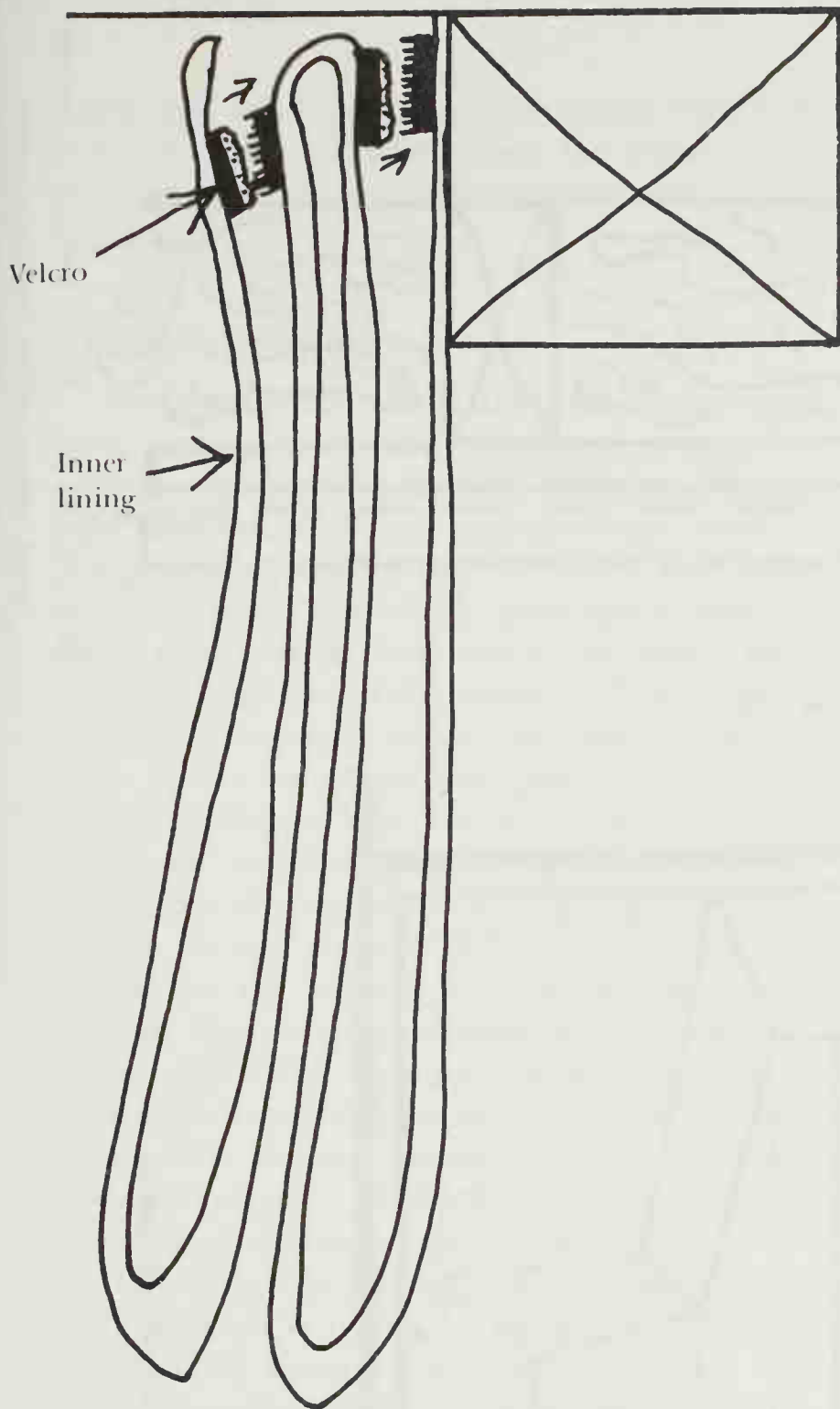


DIAGRAM 55. Use of Velcro to fold inner liner out of the way when not in use.

pastes are the most durable, boasting credentials like the same compounds used for breakwaters and bridge pylons which constantly rest in water. If you do opt for concrete paste, we recommend running the field tiles up a few rows from the floor.

The ideal material to prep the walls for concrete paste is a tarred-vapour barrier sheet lath. Line the first layer with thick plastic stapled to the wall. The lath will follow. Stucco lath seems to work well, but we suggest you set wood screws, reinforced with washers, through the lath to aid in supporting the finished wall when the concrete paste has been applied. And to give extra support to the

walls, nail dry-wall corner support strips into the corners. (Diagram 57.)

As we've pointed out, you'll need a drain somewhere in the floor. And it's important to have some kind of spray/water outlet so you can rinse with cold water during the steam bath. Thus both hot and cold water lines need to be hooked into the bath, so you can take a pleasurable soap bath after steaming and join the ranks of the aristocrats from the Pillars of Perspiration. (Perspiration itself has a peculiar but not unpleasant odor; it's the *bacteria* which forms on perspiration that leads to Nauseous' problem, and that's why you'd want to soap-bathe afterwards.)

Don't forget holes for the water lines and the interior temperature element; you'll have painted yourself into a corner without them. In fact, it's easiest if the steam generator and all leads have been "roughed in" *before* you finish the inside of a steam bath. You don't want to rip out finished work (although it is easy to put back into place if you take good care of the materials during transition). When the steam inlet is "roughed in," it's a good idea to locate it 8 to 12 inches from the floor in some out-of-the-way place. Most steam nozzle heads spray a fine mist at the outlet, and that mist can burn you. Stay away from direct physical contact with the steam from the spray head.

The concrete paste may be spread over the lath with a smooth or notched trowel. You can do some simple texturing here, if you do it quickly. We suggest applying two layers, the first flat and smooth, the second textured. It really is a nice alternative material to use in odd places or in conjunction with other materials, and it makes the ceiling less of a nightmare. Tiling a ceiling is very tricky. If you do want to tile your ceiling, *be sure to do it first*. Your waterproof concrete paste goes on easily but sloppily; wear a hat. Apply two layers to have a really long-time friend. The paste does not need to be lined up and kept perfectly aligned, as with a tile job. It's the perfect material for places with all kinds of angles meeting somewhere in space, such as when you adapt a closet space. Don't forget to use the dry wall corners. They secure the lath and

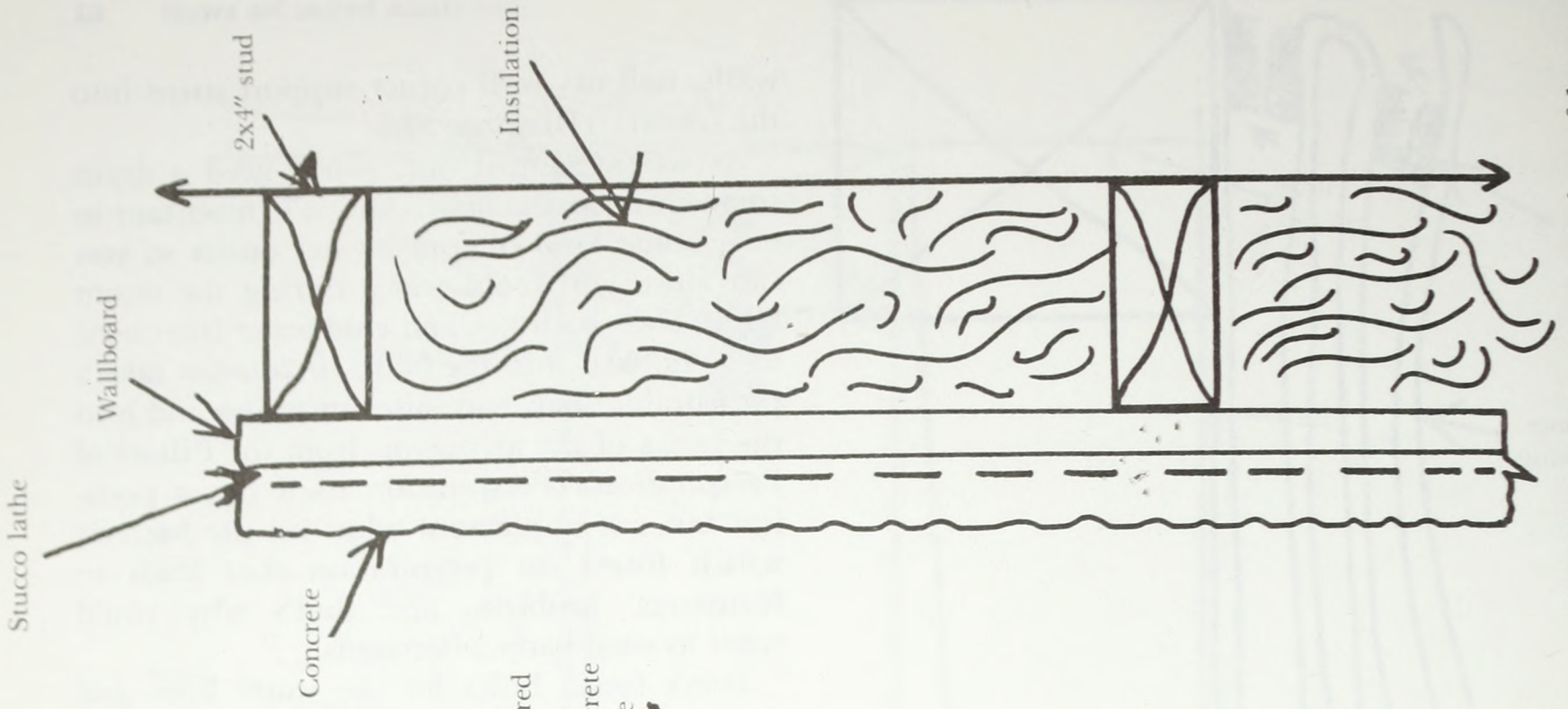
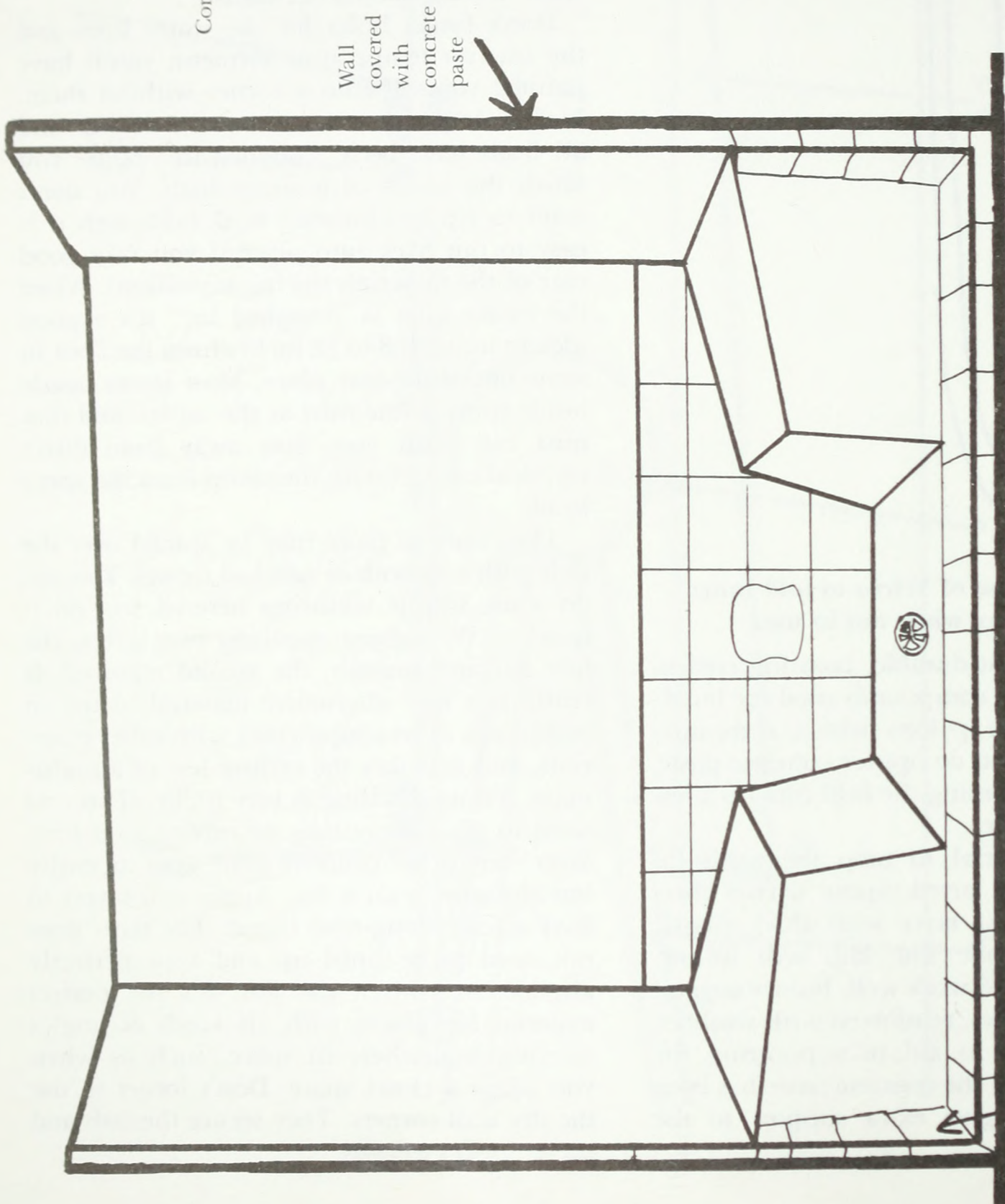


DIAGRAM 56. Use of tiles and concrete paste.

DIAGRAM 57. Cross section of layers used when using concrete paste.

help add direction for the room's natural line shapes. And of course, allow the material the proper time to cure (several days) before you steam.

Tiling a steam room

It's a bit tricky, but if time and perseverance are among your tools, you're a natural for tiling your own steam room. First, you'll need the dimensions. If you are building a small or large space yourself, haul out your calculator and compute tile width plus space between tiles to determine how much tile you'll need for the final size of the room. A 7' x 7' space, for instance, needs about 400 tiles. If you pay 75¢ apiece, a reasonable price, you'll have spent \$300; so look for sales. With a little legwork, checking and re-checking, you can probably cut that cost in half. On the other hand, if you intend to spend more or less freely on the interior and can afford custom tiling, often local craftsmen know young artists who need that sort of commission to support their lifestyles. In turning the customizing over to such an artist, you'll both save money and get a good job done well. Another cut-rate alternative is plastic tiles.

The key to installing tiles is to guide yourself through it carefully. (Diagram 58.) Draw thick bold lines to help you keep the tiles lined up properly; they'll be covered as soon as the tile is laid over them. The best way to set up plumb angles is to use a level and a plumb bob, or chalk line and bob. The level will set up the cross-webbing of your tile pattern. Set it up to the wall until the air bubble in the level gauge centers itself. Take a pencil and draw a guide line the length of the level. Do this at several different levels so the line crosses the whole wall. This will be the horizontal guide.

For your vertical guide, use a chalk box/plumb bob. Hold the string end of the chalk/plumb bob against the wall at the highest point of the room. Let the plumb bob end dangle one inch above the floor until it centers. Holding the string-end on top and the bob-end at the bottom (use a friend or a nail for help), "snap" the chalk line. You can

repeat this procedure all over the room to set up tile lines.

Apply tile adhesive to the walls a little at a time, otherwise you'll lose your visible guides for the tiles. (Diagram 59.) Apply the mastic with a notched trowel, and press—don't slide—the tiles into place. Sliding them spreads adhesive all over the tile faces. Use a 3-foot-long piece of 2" x 4" wood, wrap carpet around it, and use it to press field tiles and tap mosaic tiles into place; do this throughout your entire tile installation. Different sized blocks will prove invaluable for tricky corners. Remember to down-slope the bench areas, so that most of the accumulating moisture runs easily to the drain. (Diagram 60.) Be very careful not to get mastic adhesive on the tile faces, but if you do, clean the face immediately with a rag soaked in mineral spirits. The mosaic sheets usually come with a facing protective sheet attached, to be removed when the mastic has dried and you're ready to grout. Leave $\frac{1}{16}$ " in between the tiles. Some people leave $\frac{1}{8}$ ", to save on tiles, but $\frac{1}{16}$ " is the first-class way to go. If your eye isn't keen enough to be consistent, use spacers.

There are various materials to use as a base for your tiles that work quite well. Tiles and adhesive work well on most surfaces; mastic adhesive usually hardens overnight and needs a few more days to cure before filling the space between tiles with grout. Cheap masonite provides a solid base for tiles when nailed into the surrounding stud pattern. Indoor/outdoor plywood works well too. And the *crème de la crème* of bases for ceramic tiles is waterproof dry-wall.

Grouting tile

Grout is a powder you mix with water to form a paste, and it's what you use for the spaces between tiles. It hardens quickly, so mix only a little at a time. Use a trowel to force the grout into the tile spaces. (Diagram 61.) It hardens very quickly, but it takes 3 to 5 days to cure. Use a squeegee to wipe away excess grout, and whatever you do, wipe it away while it's still wet; it's brutal to remove once it's dry.

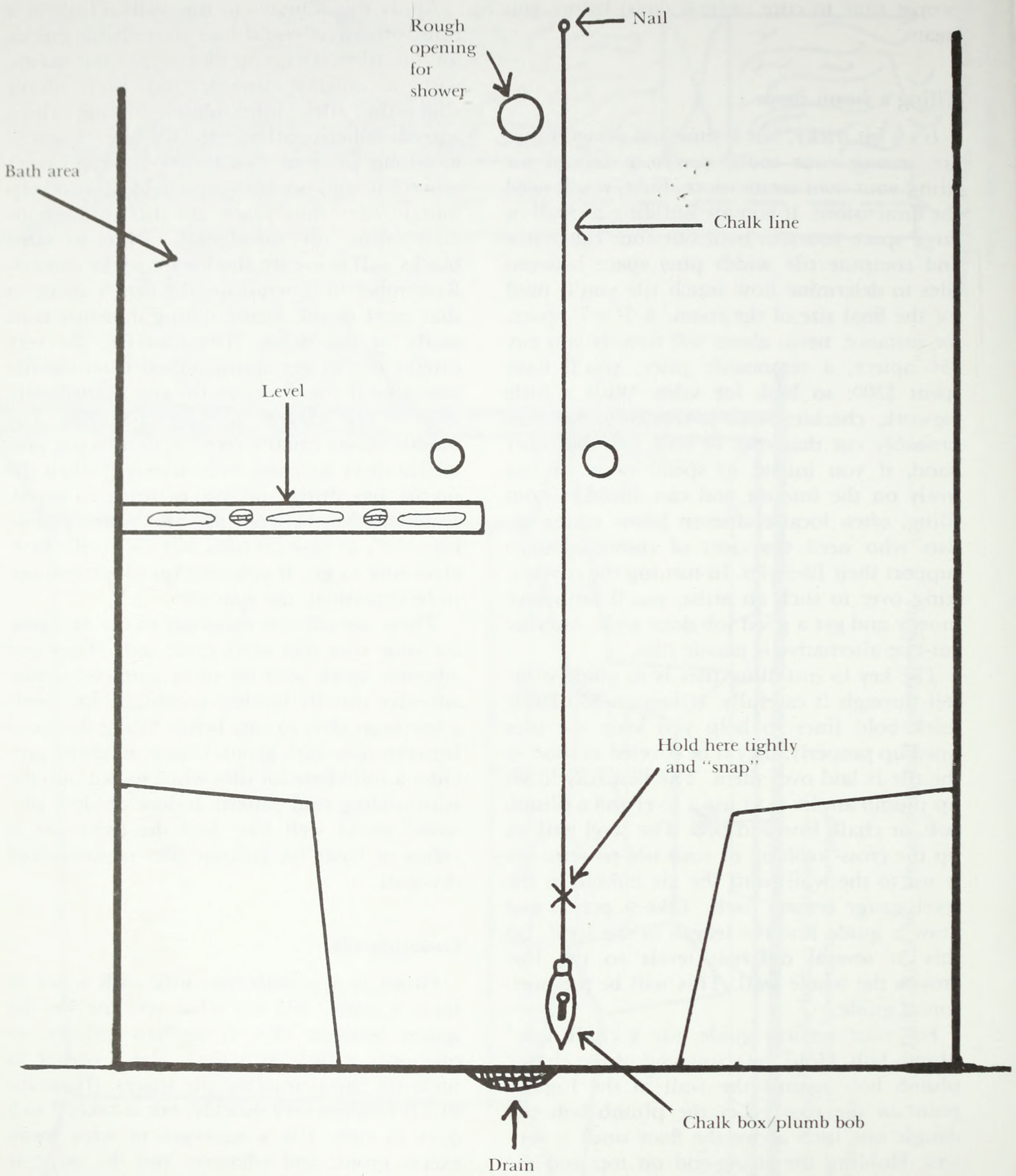


DIAGRAM 58. How to set up guide lines for tiling steam room.

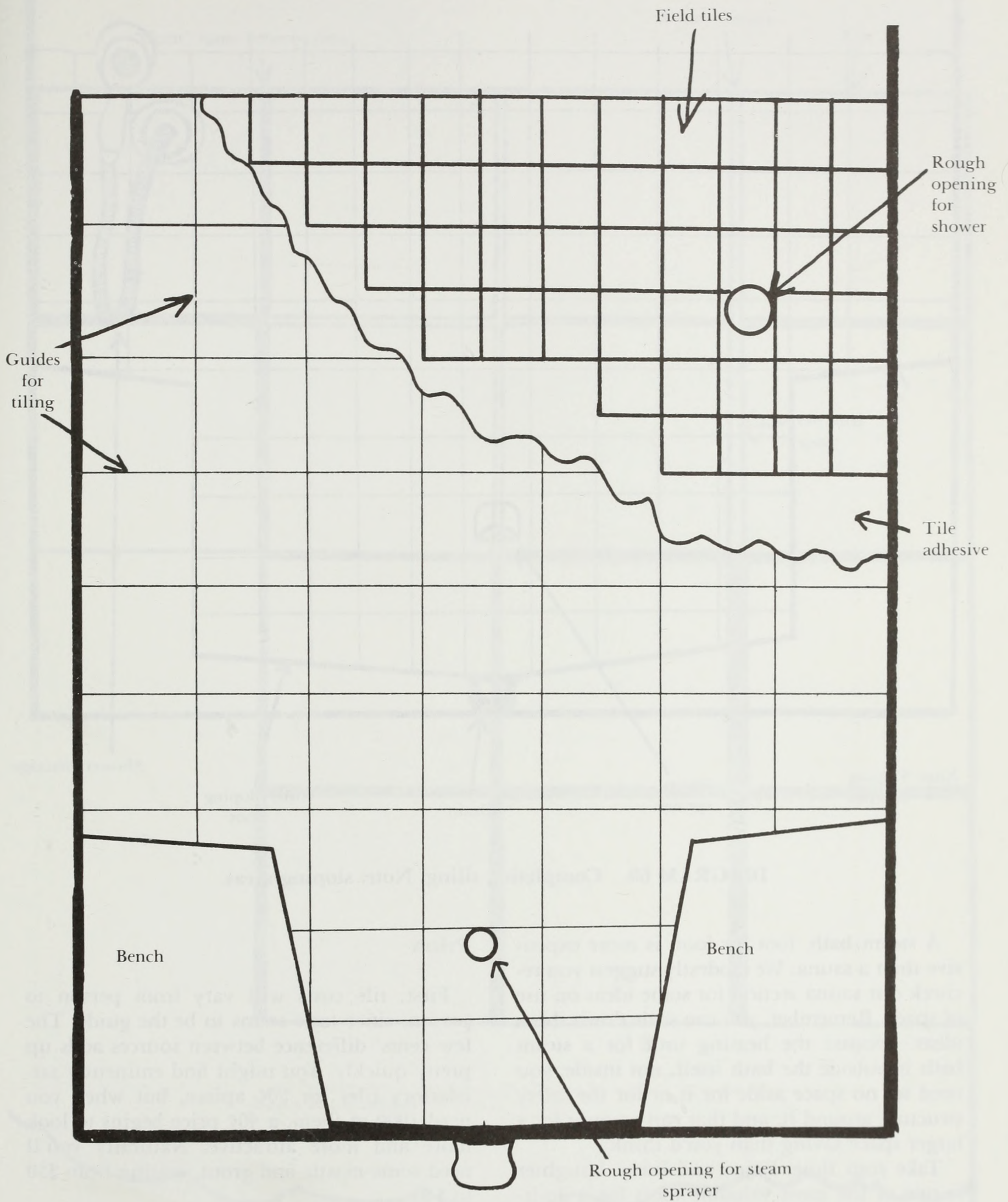


DIAGRAM 59. Procedure for tiling steam room.

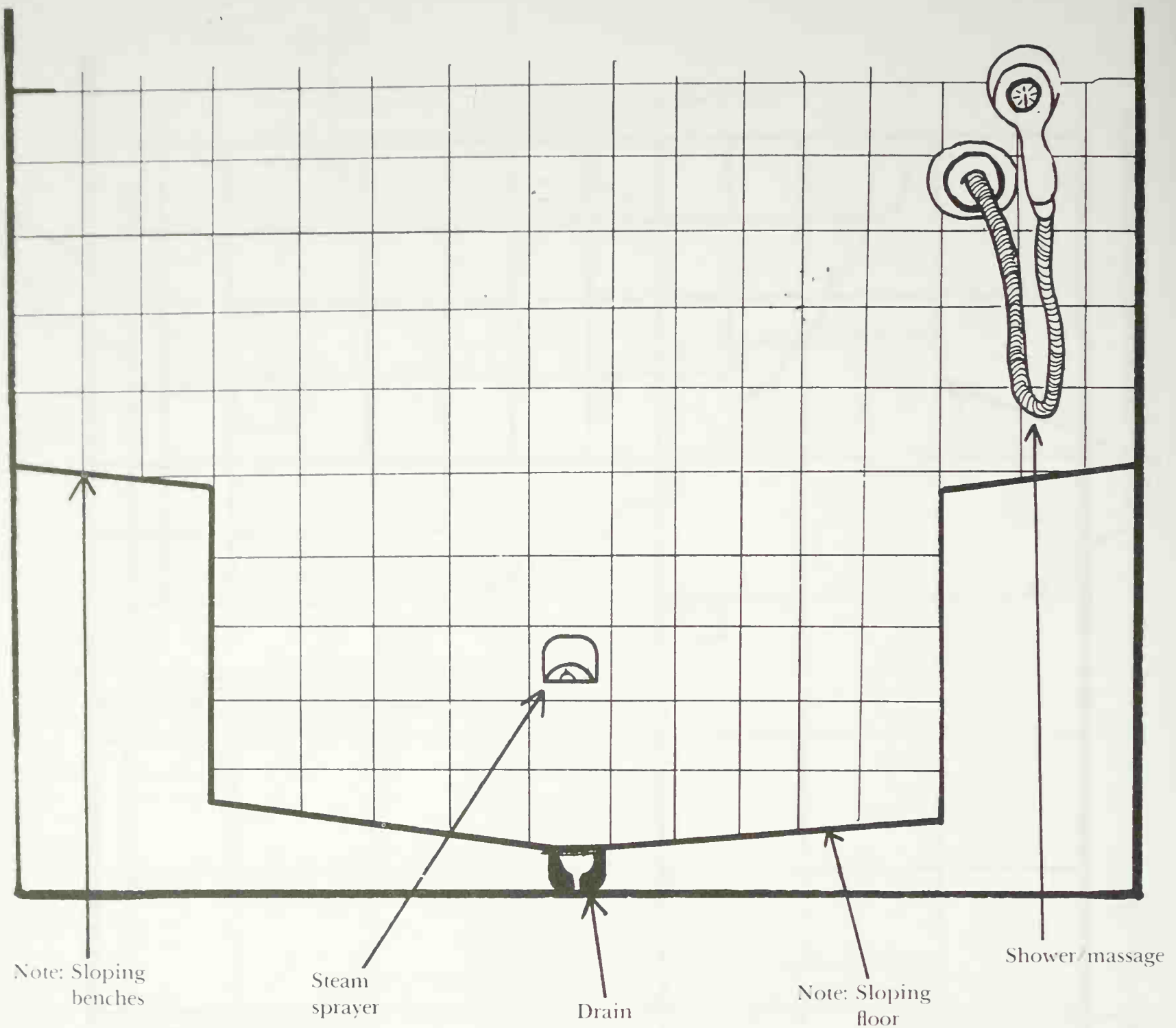


DIAGRAM 60. Completing tiling. Note: sloping areas.

A steam bath, foot for foot, is more expensive than a sauna. We modestly suggest you recheck our sauna section for some ideas on use of space. Remember, you can scale down those ideas, because the heating unit for a steam bath is outside the bath itself, not inside; you need set no space aside for it or for the safety structure around it, and that can account for a larger space saving than you'd think.

Take your time. Enjoy and learn. Laughter is one of the most valuable tools for a do-it-yourself project. Think (if you need a break) of Nauseous.

Prices

First, tile costs will vary from person to person, since taste seems to be the guide. The few cents' difference between sources adds up pretty quickly. You might find eminently satisfactory tiles for 50¢ apiece, but when you need 1000 of them, a 40¢ price begins to look more and more attractive. Naturally you'll need some mastic and grout, costing from \$30 to \$40.

The most expensive single item is the steam/boiler generator. These vary in size ac-

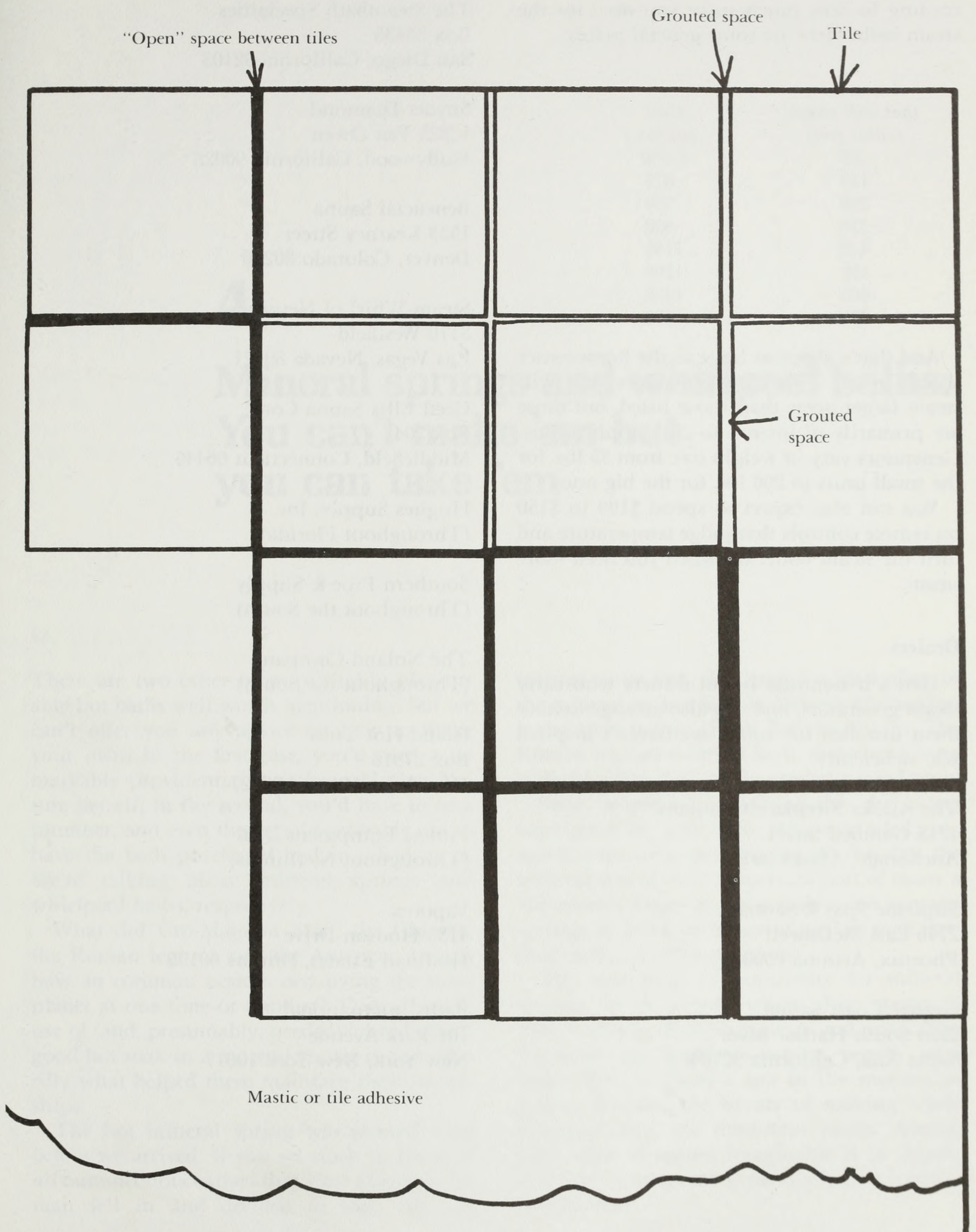


DIAGRAM 61. Procedure for grouting tiles.

ording to how much space you need for the steam bath. Here are some general prices:

<i>A generator that will steam (cubic feet)</i>	<i>Cost (approx.)</i>
85	\$ 550
150	675
240	750
330	850
440	1150
550	1200
660	1400
770	1500

And that's about as large as the homeowner should need. There are generators that will steam larger areas than those listed, but those are primarily of interest to club applications. Generators vary in weight too, from 35 lbs. for the small units to 200 lbs. for the big ones.

You can also expect to spend \$100 to \$150 on remote controls that judge temperature and turn the steam boiler on when you need more steam.

Dealers

Here's a nominal list of dealers who carry steam generators, and can also arrange to have them installed for you if we haven't inspired you sufficiently.

The Alaska Fireplace Company
1248 Gambell Street
Anchorage, Alaska 99742

Supreme Spas & Sauna
2746 East McDowell
Phoenix, Arizona 85008

Orange Coast Sauna
2525 South Harbor Blvd.
Santa Ana, California 92704

The Steambath Specialties
Box 33435
San Diego, California 92103

Snyder-Diamond
12825 Van Owen
Hollywood, California 90028

Beneficial Sauna
1533 Kearney Street
Denver, Colorado 80220

Steam-Whirl of Nevada
3170 Westfield
Las Vegas, Nevada 89121

Cecil Ellis Sauna Corp.
Box 204
Middlefield, Connecticut 06445

Hughes Supply, Inc.
(Throughout Florida)

Southern Pipe & Supply
(Throughout the South)

The Noland Company
(Throughout the South)

Island Hot Tubs
Box 27916
Honolulu, Hawaii 96827

Fitness Equipment Dist.
(Throughout N. Illinois)

Vaporex
4135 Hudson Drive
Hoffman Estates, Illinois 60195

Baths International
101 Park Avenue
New York, New York 10017

4

Mineral springs and whirlpool baths: You can't make 'em but you can take 'em

There are two other types of highly pleasurable hot baths well worth mentioning, but we can't offer you any advice on how to make your own. In the first case, you'd need a remarkably providential visit from Mother Nature herself; in the second, you'd have to be a plumber, and even then you'd probably opt to have the bath purchased and installed as is. We're talking about mineral springs and whirlpool baths, respectively.

What did Cro-Magnon Man, the Chinese, the Roman legions and the American Indian have in common besides occupying the same planet at one time or another? They all made use of (and, presumably, needed) a free bath. A good hot soak in a mineral spring is undoubtedly what helped them maintain their friendships.

The hot mineral spring was around long before we arrived. If you set stock in Darwin, *all* our ancestors bathed that way. One fine day man fell in and decided to stay, but the

springs came first. The popular birthplace of the mineral spring bath in Western civilization is the aptly named city of Bath in Britain. The Roman legions came to Bath, and after a long walk like that they surely needed a good soak.

Soon people were claiming that the waters were good for just about whatever ailed you, and Europe went spring-crazy. To this day, the mineral spring is an important part of many a European's lifestyle; and people come to many springs to *drink* the water as well as soak in it (hopefully, at different times).

The true peak of popularity for mineral springs is in Japan, where they approach near-worship of their springs and spas. The Japanese are highly sensitive people who know how to build a spa in the mountains and understand the beauty of soaking while contemplating the mountain peaks. Almost every type of spring imaginable is in Japan, and these springs are generally higher in mineral content.

Mineral springs, for all intents and purposes, will very likely make your body feel better, and put you in good spirits. After all, they're only Nature's version of the hot tub, and as with the tubs, that immersion in hot water is very soothing no matter where you're coming from. Sore or even arthritic muscles benefit greatly from a mineral spring's three elements: temperature, water pressure and minerals.

Obviously, there is no installation required, no hook-ups, nor technical aptitude. You can find a mineral spring to break up your routine and refresh you during almost any traveling in the United States.

Types of mineral springs

Springs run (an apt metaphor) in three categories: warm, HOT, and EXTRA HOT!! 120°F. (49°C.) is just about all your body can stand. So any spring between 70°F. (21°C.) and 95°F. (35°C.) is considered warm. A HOT spring ranges between 95°F. (35°C.) and 107°F. (42°C.). Anything over that is the EXTRA HOT spring. Bring vegetables with you for soaking, and ask to be coated with butter and parsley upon emerging from the extra hot mineral spring.

The most popular mineral contents, in classifying the various springs, are mineral salt, sulfur, ammonia, chalybeate and radium emanation. Most springs fall roughly into these classifications, and each type claims to cure different specific ailments.

A full-service spa centered around a bona fide mineral spring will also offer you a wide range of diversions, such as a soaking in hot mud and fresh spring water after your dip in the mineral spring. Many spas also cool the water, if the spring provides unusable temperatures. Minerals are often added to the springs, either to compensate for natural imbalances or to make the claim of a "specialty" spring. And although most springs effervesce from pressure deep in the ground, spas frequently add hydro-jets to increase the spring's "massage" action.

There is nothing about mineral springs for a novice bather to fear. Most spas offer perti-

nent information about their springs. Often medical personnel are on hand to guide you through the springs and tell you what to expect in benefits, how long to soak and what soaking positions are the most advantageous.

Although Hot Springs, Arkansas, is as aptly named as Bath, Britain, the majority of America's mineral springs are located in mountainous areas. Hawaii, Alaska and Puerto Rico have some excellent springs, too. You usually have to research and dig them out, so to speak, but once found, they're well worth the effort. The Department of the Interior supplies a listing of mineral springs reasonably near to you upon your request.

Mineral springs are a delightful indulgence, assuming 1) you can find them and 2) you like water. If you don't like water, well, we began this book by talking about saunas.

Whirlpool baths

Your first experience in a whirlpool may seem more like a fun ride than a bath, but stay with it. You'll get hooked to whirlpool baths very soon, and you won't be the first who has. (Diagram 62.)

Whether it's a home whirlpool, a Jacuzzi, or some other version offered by various spa equipment companies, the whirlpool bath is basically equipped with 6 to 8 hydro-massage jets, a hydro-water pump, water intake line and maybe an in-line heater. The tubs are usually molded from plastic, fiberglass or rubber. Quality tubs are equipped with all-copper plumbing, and enjoy added superiority in that they've been soldered against leaks. Pre-made units come in all sizes and most of them can be set up outside. A timer, usually 30 or 45 minutes, is generally added to the deal at no extra cost.

As you'd expect, costs on these units will vary. The standard bathtub size, 5' x 3' x 18", runs about \$1000. The scale seems to top out at \$2300 for a huge spa-sized tub, 7' x 5' x 2'. Fringes, such as a special color, gold-plated fixtures, or an extra jet here or there, are all at additional cost.

The tubs themselves can replace the family

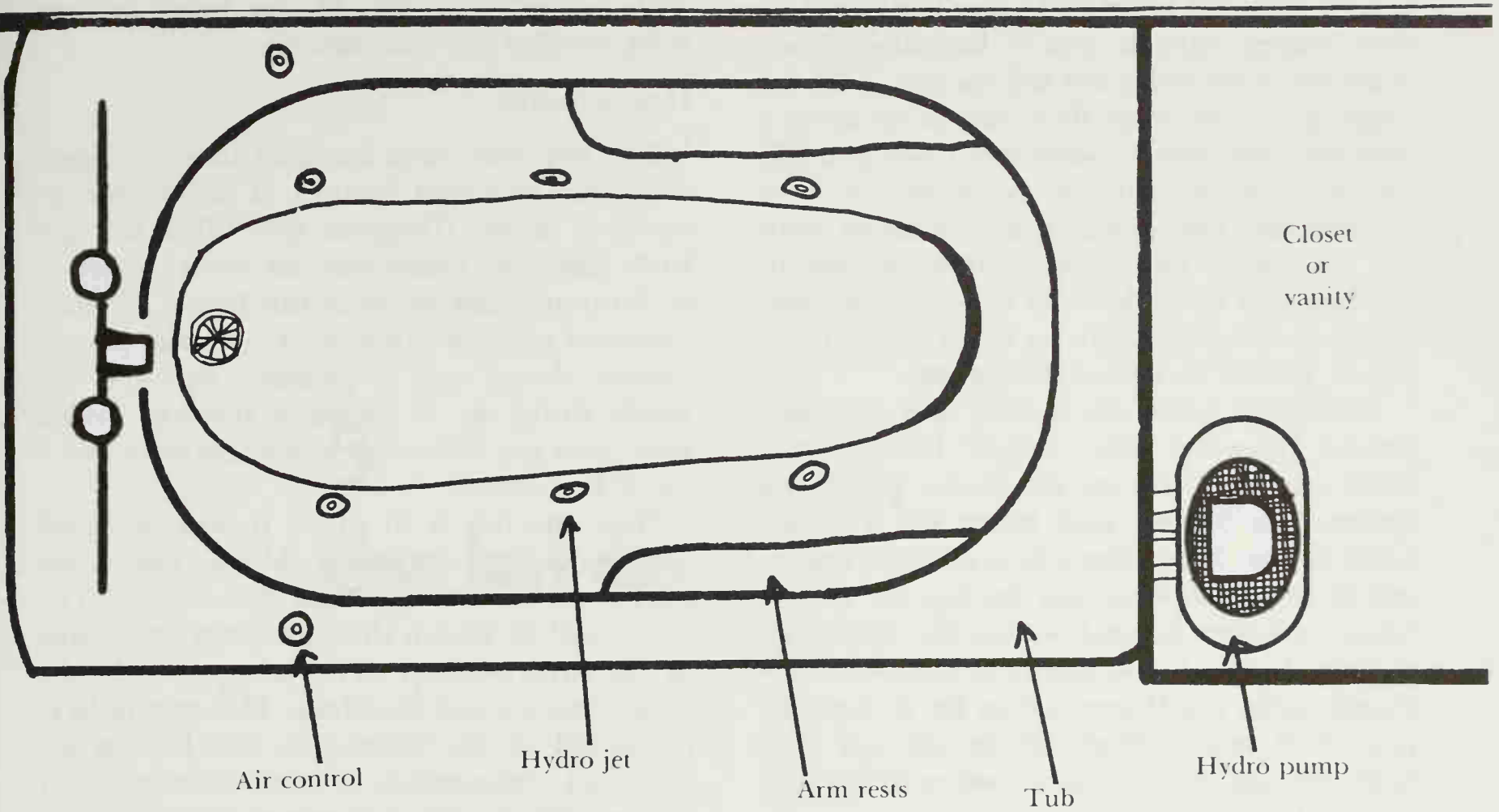


DIAGRAM 62. Anatomy of a whirlpool bath.

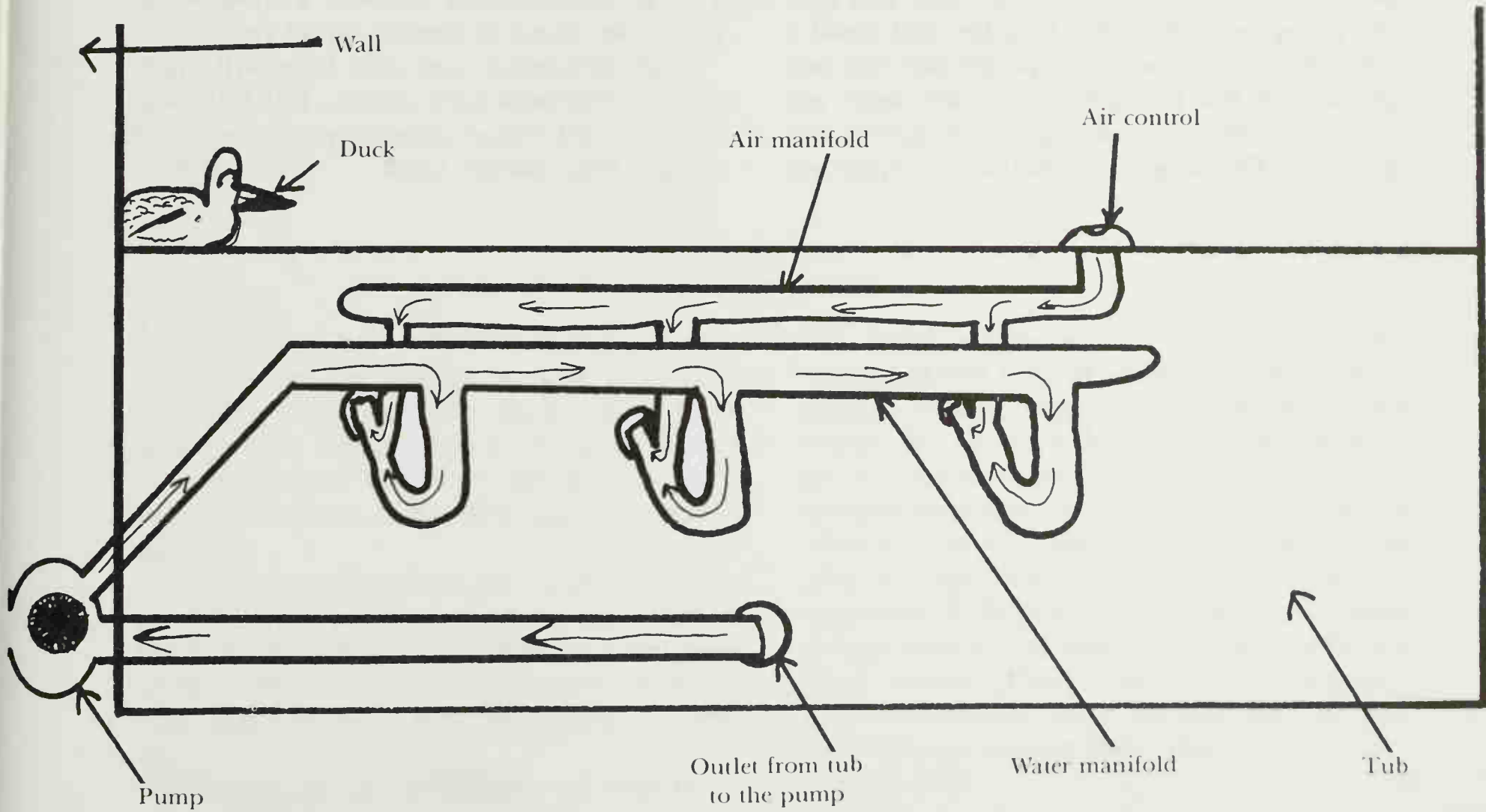


DIAGRAM 63. Layout or piping in a whirlpool unit.

tub, or they can be an extra-nice addition to a new master bath if you're building. Some units are more like a hot tub for two. Like the larger pre-made units, these can be set up in a nice location outside. Since they drain and fill, they're quite trouble-free assuming you take the necessary precautions before hooking them up. It's a good idea to locate them as close to the house as possible, with the pump located where there's absolutely no worry about freezing. It should be well-insulated, too.

Whirlpool baths are a little less temperamental than hot tubs, largely because they hook up so easily to the home plumbing system. But be sure your house has a terrific water heater. If you don't have a bigger heater, you'll probably wind up buying an in-line heater, a heater located within the water line of the tub. Also if you intend to buy one of the bigger units, you'll need a filter for it. A whirlpool bath really "digs" at the dirt on your body and with three or four bodies in the tub, that's a lot of dirt.

Spa baths like these come in various sizes for home and commercial use. You can buy the pump, jets and other supplies and build a tile tub to suit your own preference (see our chapter on hot tubs), but pre-made units are easily installed and can replace the family tub as well. The larger spa baths are equipped

with molded seats, should you decide to treat elder members of your family.

How it works

The tub, like most standard tubs, is rigged with hot and cold fixtures, a drain and an overflow drain. (Diagram 63.) What the spa bath adds are hydro-jets, an intake inlet, a hydro-pump, maybe an in-line heater, air controls and necessary piping. As we said, people almost always call a plumber to hook the whole thing up. A fortunate few can install their own spa bath with a little patience and a lot of know-how.

Once the tub is in place, it must be filled with water from the faucet. All you have to do next is set the timer to turn the unit on. The water will be drawn through the water intake to the hydro-pump. The pump whirls the water into a water manifold. This manifold is connected to the hydro-jets, and has an *air* manifold connected to it. Just before the water is shot into the tub, it is mixed with air. Once this happens, the water is in constant motion. The air control adds bubbles, without which you'd just about be blasted out of the tub.

Your circulation and skin tone will appreciate a whirlpool bath deeply. But folks with heart or high blood pressure problems should consult their doctors first.

5

One last dip

In this age of self-help, the world abounds with volumes on how-to exercise your body and relax your head. Hot baths of all types actually offer you a pleasant chance to do vice versa: relax your body and, concurrently, prod your head into some flowing, rejuvenated state.

Once again, there are no bona fide, long-term medical benefits attending any kind of hot bath. Principally, they make you feel good while in them and for a short while afterward. Now that's no mean feat, hence their popularity.

But even though the masses are coming to

hot baths today, we think you'll find that owners of any kind of hot bath usually have a special quality about them (besides hedonism). Not only are they expert students of the art of relaxation, but they frequently can demonstrate that they are at peace with themselves. That's an elusive state, and we're not saying that the hot bath in question is directly responsible. Still, you can't help but notice these things once you've been around hot baths and their owners. They're nice things to notice, and we certainly hope the hot bath of your choice helps you get there, too.

Soak well.

Index

A

- Accessories for hot tubs, 34
- Antibiotics and sauna bathing, 3
- Antihistamines and sauna bathing, 3
- "Arena" decking for hot tubs, 48, *illus.* 50
- Aspen planking, guide for working with, *illus.* 29

B

- Basket filters for hot tubs, 36
- Benefits of hot-tubbing, 32
- Benefits of sauna bathing, 3

C

- Care of the hot tub, 36
- Cedar hot tubs, 37
- Ceiling for a sauna, 9
- Ceramic tile hot tubs, 37
- Concrete form construction for a sauna, 4, *illus.* 6
- Concrete paste application in the steam bath, 63, *illus.* 64
- Cost
 - hot tubs, 36
 - saunas, 3
 - steam baths, 68
 - whirlpool baths, 72

- Cost sheet for a \$250 sauna, 13
- Creosote, 5-8

D

- Diabetes and sauna bathing, 3
- Diatomaceous earth hot tub filters, 36
- Door construction for a sauna, *illus.* 30
- Door layout for a \$1500 sauna, 28-30
- Door mounting for a small closet sauna, 16-17, *illus.* 17
- Dunk tanks, 13

E

- Electric hot tub heaters, 34
- Exterior finishing for a free-standing sauna, 25-26, *illus.* 26
- Exterior layout for a sauna, 12

F

- Filters for hot tubs, 34-36
- Finnish saunas, 1
- Fireproofing around a woodburning sauna stove, 10
- "Flash" hot tub heaters, 34

Floor assembly of a hot tub, 37-39, *illus.* 38-39

Floor plan for

\$1500 sauna, *illus.* 28

large closet sauna, *illus.* 19

Free-standing saunas, 22-27

Frequency and length of sauna bathing, 2

Fresh-air pipe placement in the sauna, 22-24,
illus. 24

G

Gas hot tub heaters, 34

Generators for steam baths, 55-56

Grouting tile, 65, *illus.* 69

Guide to

setting up a sauna framing pattern, 6, *illus.* 6

working with "end-matched" aspen planking,
illus. 29

H

Hangovers and sauna bathing, 3

Heart problems and sauna bathing, 3

Heaters for hot tubs, 34

Hook-up of

hot tub support system, 39-43, *illus.* 41-43

"hot water" steam unit, 58, *illus.* 58

Hot tub accessories, 34

Hot tub cover construction, 39, *illus.* 41

Hot tub kits, 37-43

Hot tub sizes, 32

Humidity of the sauna, 2

Hypertension and sauna bathing, 3

I

Insulation of

hot tubs, 46

saunas, 6-7

Installation of hot tub staves and hoops, 39, *illus.*
40

L

Large closet saunas, 17-22

Layout for

free-standing sauna, *illus.* 21

large closet sauna, *illus.* 18

sauna floor, 8, *illus.* 8

Locating a hot tub, 45-46, *illus.* 45, 47

M-N

Mineral springs, 71-72

New York Health Club, 2

P

Paper cone hot tub filters, 36

pH testing of hot tub water, 36

Placement of pilings for a free-standing sauna, 22,
illus. 22

Precut saunas, 3

"Prefab" or "modular" saunas, 3

Pumps for hot tubs, 34

R

Redwood hot tubs, 32

Russian saunas, 1

S

Sauna sources, 3

Sauna supplies, 4

Selecting a hot tub, 36

Setting a hot tub in the ground, 46-48, *illus.* 48-49

Shelf addition for a hot tub, 44, *illus.* 44

"Shock" treatment for hot tubs, 36

Site selection for a hot tub, 37

Skylight installation in a sauna, 9-10, *illus.* 9

Small closet saunas, 13-17, *illus.* 15

Solar hot tub heaters, 34

Steam bath/shower, *illus.* 54

Steam generator dealers, 70

Steam generators, cost of, 56

Steam room construction, 61-68

Stove mounting in a small closet sauna, 14-16,
illus. 16

Stove pipe flashing, 24, *illus.* 25

Sunken hot tub drainage, 48-50

Support system for a hot tub, 34-36

T

Teak hot tubs, 37

Temperature of the sauna, 2

Terma-Tox, 6-8

Tile and rock hot tubs, 50-51

Tiling a steam room, 65, *illus.* 66-68

Tongue-and-groove wood sauna walls, 8-9, *illus.* 9

Tranquilizers and sauna bathing, 3

Tub/shower adaptation for a steam bath, 61, *illus.*
59-60

Tub/steam bath construction, 58-61

Tub/steam baths, 56, *illus.* 57

Types of wood for hot tubs, 37

W

Water temperature of the hot tub, 46

Whirlpool baths, 72-73, *illus.* 73

Winterizing a hot tub, 46

Woodburning sauna stoves, 3

Wood for sauna benches, 13

THE BATH BUILDER'S BOOK: HOW TO CONSTRUCT SAUNAS, HOT TUBS, AND STEAM BATHS

George Fels and Chet Nichols

The legacy that the decade of the '70s seems destined to leave behind consists of the spiraling drive to simply *feel* better. Self-help courses and books continue to proliferate; and, at the same time, the national mania for fitness indicates that people are learning to feel better with their bodies as well as with their heads.

The hot-tub phenomenon is a good example of both kinds of improvement. *The Bath Builder's Book* takes an in-depth look at all the popular forms—saunas, steam baths, hot tubs, and others—and points out what might and might not logically be expected from each. It includes the methods of proper use; pointers on buying; and an unambiguous, easily followed how-to-build section for each one. Illustrated by black and white photos as well as clear easy-to-read line drawings, *The Bath Builder's Book* is written for the person with modest mechanical aptitude and high expectations for a more relaxed lifestyle.

George Fels is the author of four other books in the fields of health and recreation, including *Winning Bodybuilding* with Dr. Franco Columbu.

Chet Nichols has built saunas professionally all over the country.

Contemporary Books, Inc.
Chicago

Cover photo by Chet Nichols
Cover design by Howard Solotroff
ISBN: 0-8092-7351-9