

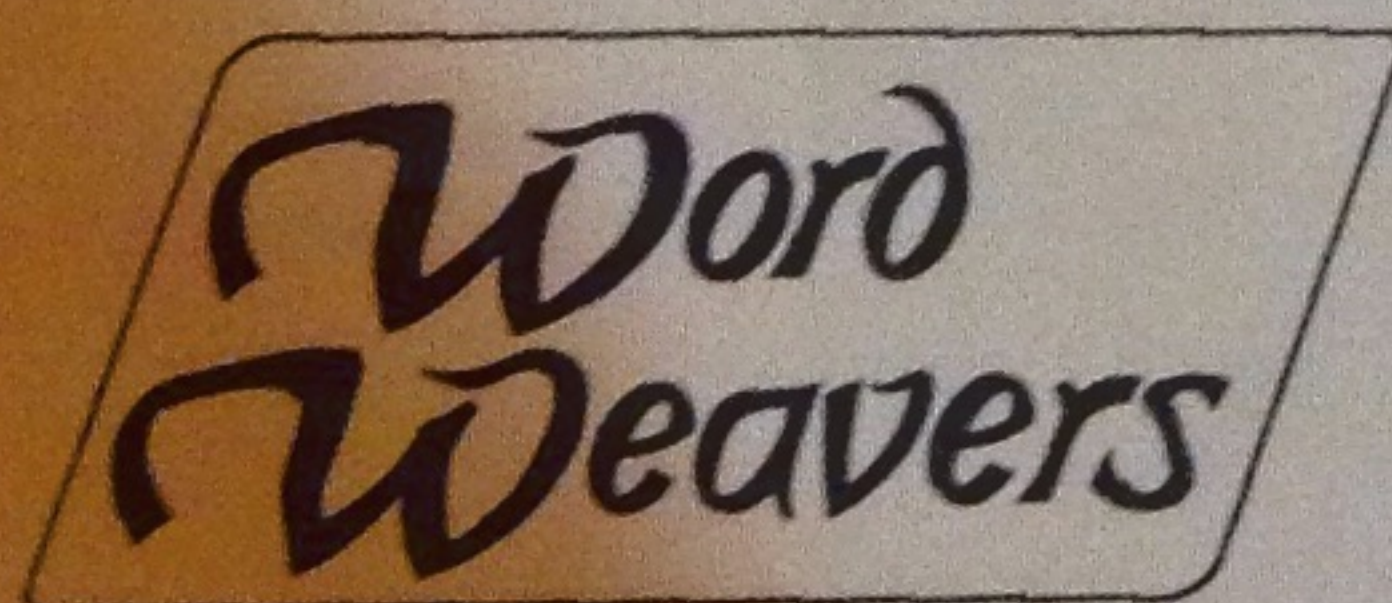
# BUILDING ROUND

Dykes Do It

By Jae Haggard and Other Builders

A SPECIAL ISSUE OF

MAIZE A LESBIAN COUNTRY MAGAZINE



A LESBIAN PUBLISHING COMPANY



A SPECIAL ISSUE

# MAIZE

A LESBIAN COUNTRY MAGAZINE

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*MAIZE IS BY AND FOR LESBIANS*

MAIZE invites Lesbians to contribute articles, graphics, photos, interviews, letters, comments, news of Lesbians on the land. Cassette taped interviews and discussions are accepted for transcription. Transcriptions will be returned for editing. Editing on any piece will be done only in cooperation with the author. If you wish to have your work returned, please enclose a stamped, self-addressed envelope. Please note if the work you send has been submitted or published elsewhere. *Please include a biographical note.*

Letters to the editor may be published in whole or in part, unless specified "not for publication". Names will be used unless you request your name withheld, as well as place of residence.

The contents of MAIZE does not necessarily reflect the viewpoint of the editor. Debate is encouraged. Editor: Lee Lanning

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Cordwood Wall, DOE Farm Doreen Riley



# BUILDING ROUND

By Jae Haggard  
Serafina, New Mexico

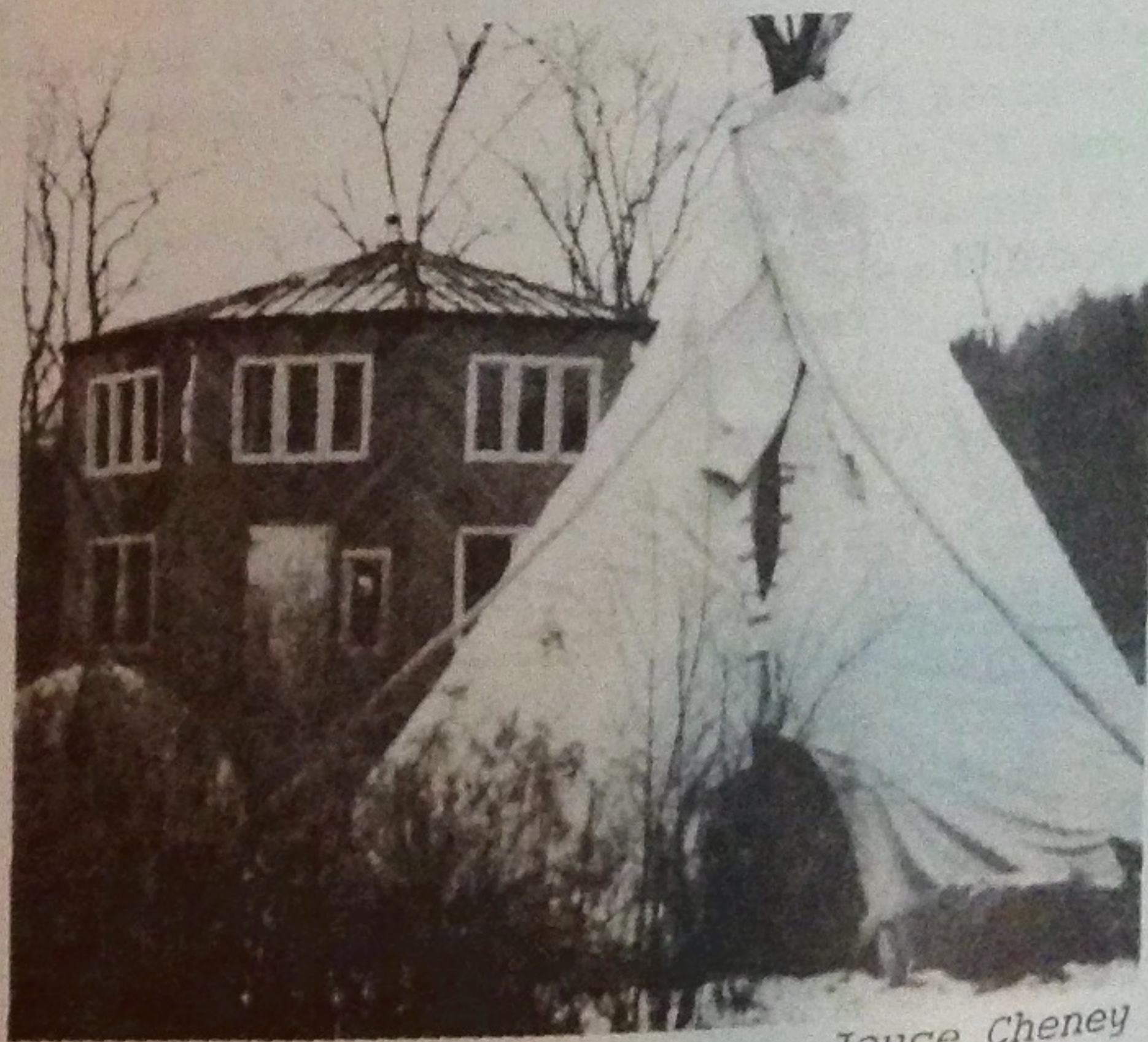
What's closer to a Dyke's heart, body and comfort than soft roundnesses? It shows in our wondrously rounded womanly bodies. In the cunt images we avidly collect. In our passion for breasts and breastly shapes. Lots of Lesbians gravitate to round houses. What's to say, seems downright intuitive. And there's little information "out there" on building round. Seems time to gather information on Dyke rounds--to share ideas, encourage each other, celebrate our creativity, and to show how it really can be and is being done.

What's the best way to build round? There are no rights/wrongs. There are tipis, yurts, domes. Shape can be formed with framing, layered materials or post and beam. Sizes from a 6' hut to a 36' house. Lots of glass for light and openness or dark for a cavey cocoon. Exact or free form. Roof flat, shed, cone, multisided hogan. Walls of adobe, rock, canvas, tin, cordwood, lumber, bamboo or whatever. Floors of earth, stone, adobe, brick, concrete or wood. Our rounds can be sturdily built to last lifetimes or more casual to last a few seasons. What's the best? Whatever meets our needs.

Building does not need to be intimidating. An ex-lover and I bought land in northern Minnesota--what we could afford, meaning no structures, water or electricity. Between us our entire building experience was one bookcase and we had no knowledge of design, materials or any kind of tools. We were both able-bodied and knew if we wanted to live on land we'd have to build. The year it took us to find land we read, asked questions, looked at buildings under construction and started drawing house plans. We really learned a lot. We worked seasonal factory jobs and had little money so we scrounged materials and slowly built our 20'x28' frame house as we could over several years. We enclosed it the first two summers so we could live in it.

Most of the houses in this MAIZE are built with little money by Dykes who figure it out as we go. Kathleen's story invites us to live round, as she has since she was sixteen. Zana's storytelling is so clear as she describes how 4 wim at Adobeland built their houses. Redbird Dykes in Vermont built an amazing 10-sided round, Louise and Ann a bamboo hut, Hannah a wondrous 16' adobe round (see Hannah's article "Mudpie House" in MAIZE #14), Adobe a magic breast-house, Mau a little round sleeping house (drawing p.16). Maryanne and Louise discovered Dyke-built yurts in Washington. Not only can we do it, we are doing it in so many ways.

Diversity. Oh my yes. All the ways to build round from the foundation, to the walls, roof and materials.



Redbird House, Vermont

Joyce Cheney

## Foundations and Walls

Redbird sets heavy posts on rocks below frost level for their post and beam 2 story house. Boards attached to the posts form walls. DOE uses a "floating concrete slab" for their 36' diameter floor with a deeper footing to hold the layered cordwood walls. Adobe uses a 6" concrete stem with posts sheathed with lumber and filled with adobe for her greenhouse. Her amazing



breast house is dug into the ground and the post and beam walls sheathed with lumber. She plasters the entire outside to the shape she wants. Hannah uses post and beam with adobe blocks filling the spaces for walls. She made all the blocks herself. Louise and Ann have a cement floor and bamboo attached to the frame walls. Other houses at Adobeland are layered rock matted together or assorted framing materials covered with adobe plaster. No elaborate foundations. The casitas we built in New Mexico are layered adobe blocks on a solid floating sand footing and concrete stem. Ceilings and Roofs

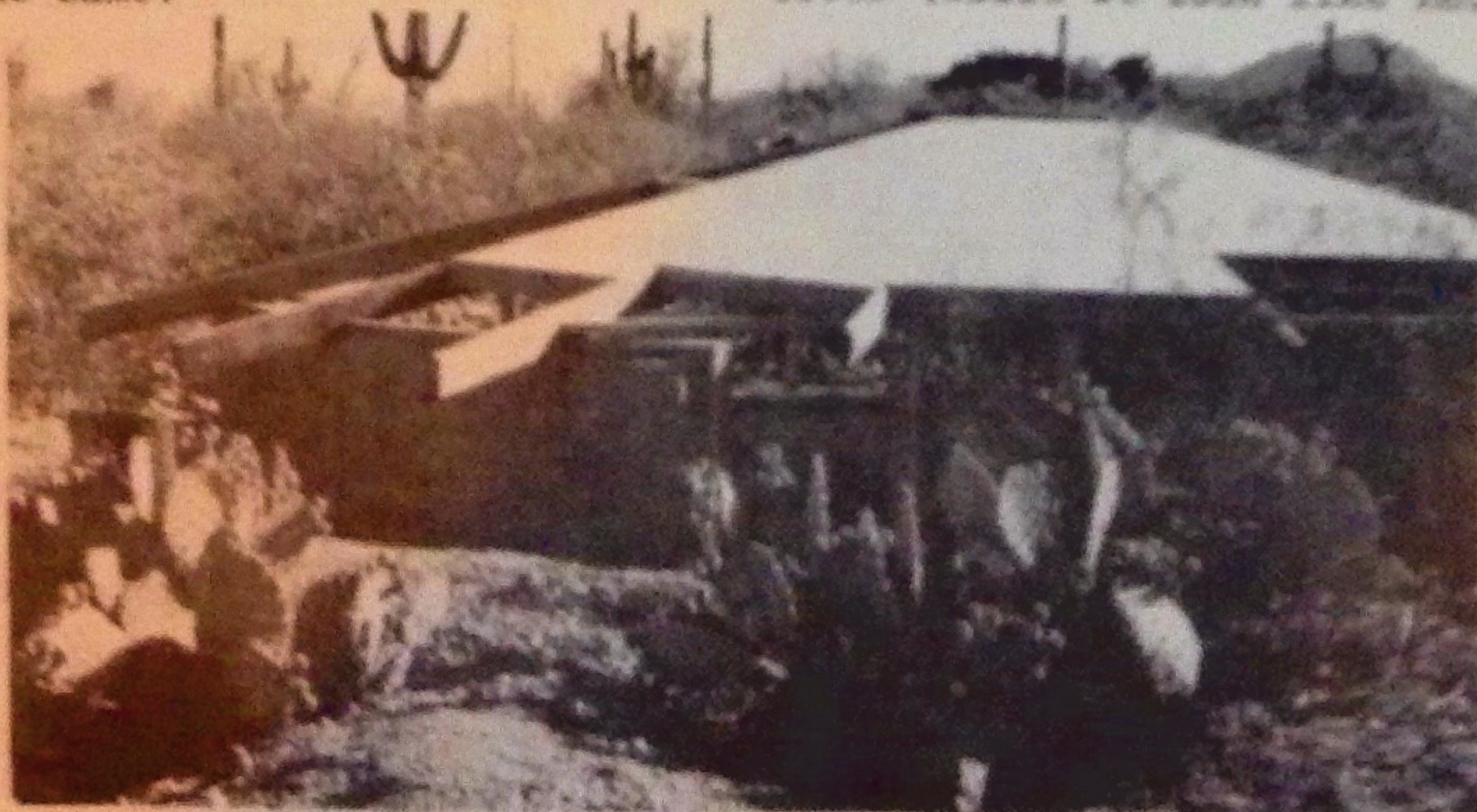
Perhaps the easiest and cheapest way to roof is to use a rafter to hold both ceiling and roofing. Adobe and Hannah do this with rafters slanting from the round wall to a center "key", creating a coned shape. Adobe's how-to on building a key makes a round roof seem downright easy and possible. The rafters can be made of boards, timbers or logs. They can be left exposed or a ceiling nailed to the bottom. Roof sheathing goes on top and insulation in between. Hannah shingled her plywood roof and Adobe used a mud/cement plaster over boards. The shape/slant of the rafters determines how both the ceiling and roof look. The shed roofs planned for the cordwood house at DOE work the same.



Adobe's House, Adobeland

Joe Hayward

Other kinds of round roofs are also used. For the hogan-like roof on our sweat hut (article p.14), Susi Hawk and Miquela used wide overlapping planks spiraled in to enclose the roof (or, larger timbers could be used like an 8 or 10-sided log cabin with each layer moving in until the roof is covered). We'll plaster the entire hut with a traditional mud/straw plaster. Mud plaster also covers the flat roofs of the Adobeland houses (article p.12). Traditional mud is easy and beautiful and takes regular maintenance. Waterproofing a flat roof usually requires tar or other toxic petroleum products. Earth can be used, too. A fun idea-- Nett suggests using a coned metal silo cover (would it look like Redbird's roof?)



Hannah's House, Adobeland

zana





Adobeland

Doreen Riley

additional framing layer. On the casitas (article p.20 ) we are using a low-pitched metal shed roof with level ceilings to hold our winter heat.

Another roof system is to frame so the ceiling is level and the roof pitched (like a "regular"house). It takes an

The choices are infinite. We simply decide what we like and can get materials for and go from there. Whatever we choose, we all just do the best we can. And, you know, it's plenty. In all the houses in this magazine we each do what we can to create and build space for our Lesbian selves or for other Dykes.



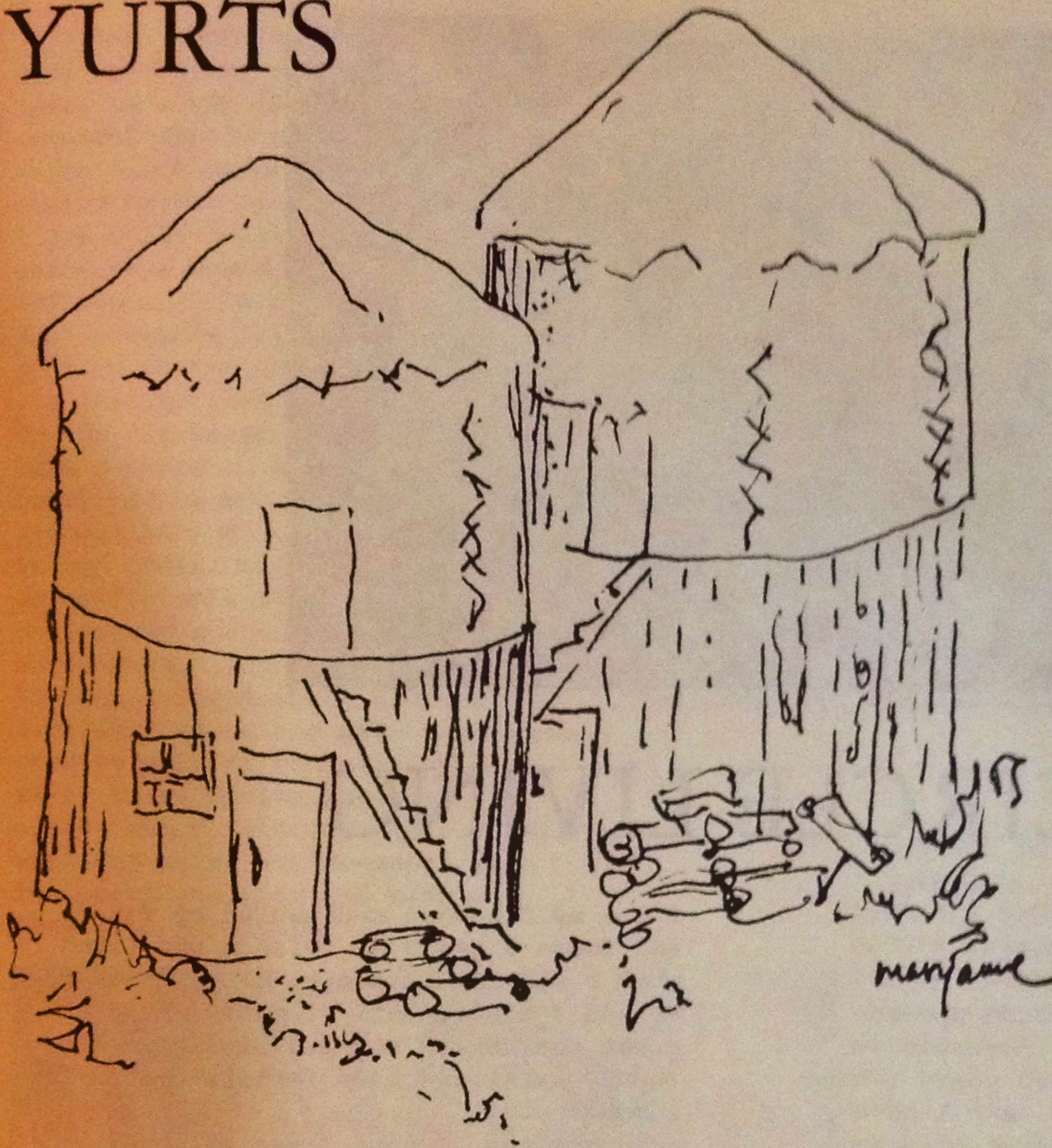
Bamboo Hut, Adobeland

Jae Haggard

We work and be close with the land, forming our homes of the materials of the earth, in harmony. The more our materials are of the land, the more the spirit of the land joins our energy in the house. Our Lesbian spirit and the earth spirit are the mortar of the homes and lives we are building. We tangibly and spiritfully build Lesbian space, home and community with every adobe we lay or board we nail and every time we extend caring or energy to/with/for ourselves and each other. Lesbian nation grows and Lesbian culture flourishes. As we build casitas or cordwood or adobe or domes or yurts, we build lives and connections with each other and the earth. We nourish and expand spirit, increase the options and possibilities for us all. This is the stuff I so want my life made of. I want to help create this self-sufficiency, this simple and basic living. I want to be surrounded by and imbued with the energy of Dykes. I want my energies to be felt by, available to, other Lesbians. I want to build Lesbian space and community, grow in Lesbian spirit. So it's with enormous appreciation I relish each of the Dykes in this MAIZE and all the Dykes who are in these pages in spirit if not actually pictured. We are all building Lesbian life, living Lesbian spirit.



# YURTS



By maryanne and Louise  
"Something Special"  
Miami, Florida

In 1985, while visiting two wonderful Lesbians in the Methow Valley in central Washington, we were treated to a wondrous sight. While bicycling through the apple orchards of this area, we got off the main highway, up a dirt road and laid our eyes on two magnificent structures. Some local lesbians, who were rangers during the summer and were snowbound in these magnificent glacier mountains in the winter, had constructed yurts. Beautiful circular canvas structures on wooden

platforms with actual "basements" underneath. The interior walls were made of a lattice of wood that expanded into a circle and collapsed, when needed, for moving. The canvas was literally strapped to the floor, walls and roof beams. Everything totally "mobile", yet substantial enough to survive the coldest Washington winter! (Yes, they heated with wood.) One womyn made her own canvas pattern and built from plans/books, the other womyn bought a kit and constructed from that. Everytime I pitch my simple tent I have warm thoughts for those yurts, "Skeeter and Donna" and the Methow Valley.





## CIRCLE LIVING

By Kathleen Blue Corn  
Camptonville, California

I choose to live in round spaces because my peacefulness increases a hundredfold there. For 15 years I have lived in tipis and yurts, and I have watched the layers of mental heaviness lift from my being. The clean edges of the circle heal me, and the wild beauty outside my door inspires me.

It began as a resourceful/instinctual response to the challenge of creating shelter for myself. I cast myself out into the world at a young age and needed a place to get in out of the rain. I was unwilling to don nylons and shave my armpits in order to work for some petty tyrant who would pay me just enough to bind me to the treadmill of monthly rent and scrambling for basics. At 16, I saw no other alternative for me in the straight world so I entered the world of circles.

I made myself a tipi (18') and cut myself a set of 25' poles. I found land owners who admired my pioneer spirit and squatted on their land for the winter.

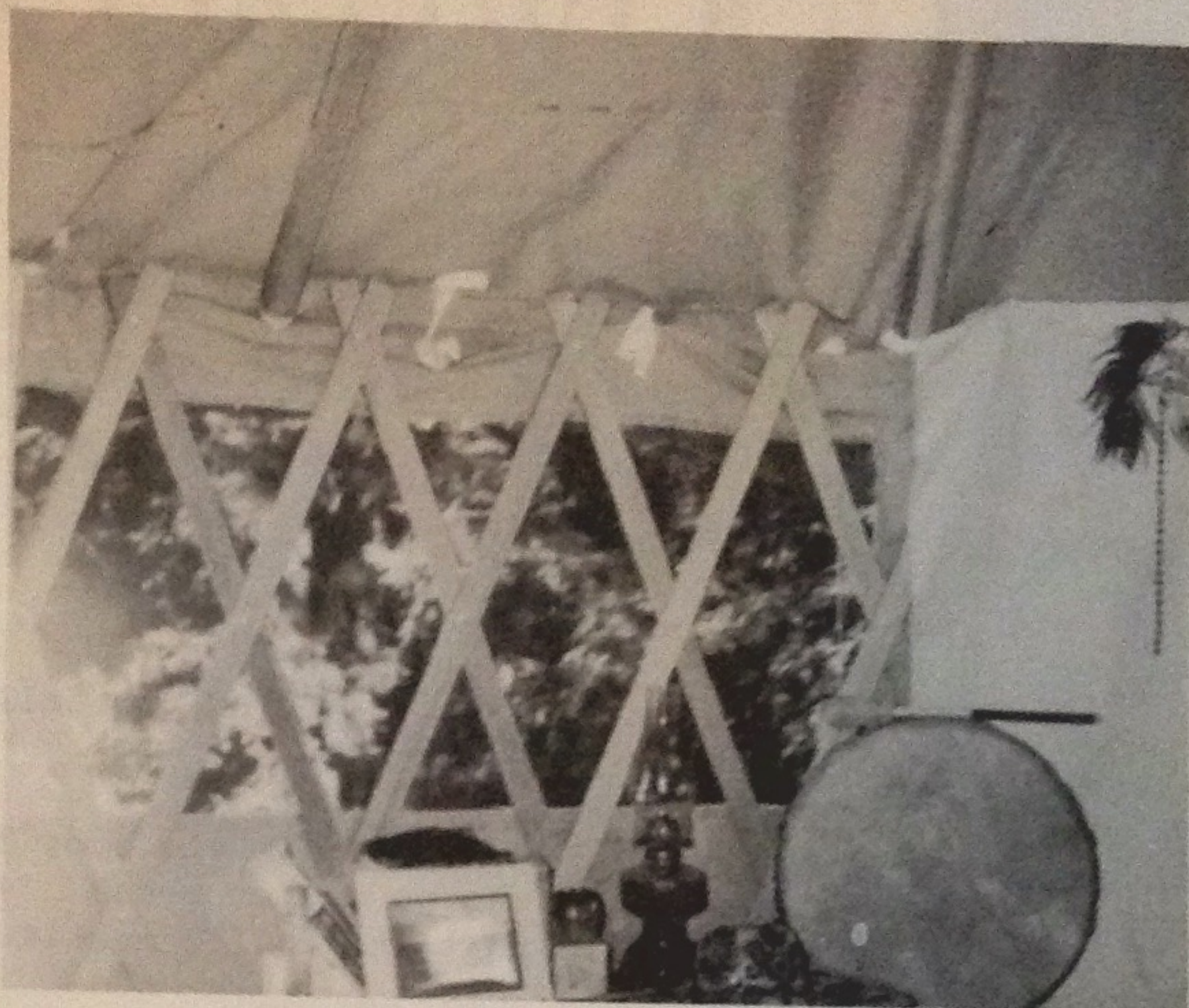
I cut my firewood and hauled my water and found a group of friends who liked what I was doing so much they joined me. We had 4 tipis, lots of music, hugs and great potlucks. For me, living in the round has always been fertile ground for community.

Since then I have lived all over California in my lodges. Eventually bought a piece of land in the sierra nevada foothills where I can set up my camp in different areas according to whim or the season. The land, "Inspiration Sanctuary" is becoming a place where people who want to enter the circle can come and be exposed to a good, healthy dose of Circle Living.

I've been making lodges for other people now for 13 years. I have taught many others how to make tipis and yurts and also teach how to live in them. I have designed a simple yurt that is totally portable and livable, which can be made any diameters between 12' and 30'. They span a price range of \$1400.00 to \$4500.00 or less if one makes the frame herself.



I want womyn to know that we can make our living and build our own homes in a way that flows with the movement at our core. The fragmentation which occurs when we honor Sacred Mother in some areas of our lives while denying her in other areas is a wound which my work addresses. I'm not advocating that everyone quit their jobs and go live in the woods in a tipi; I'm stating that I feel it's important for womyn to know that we have a *choice*. That basic shelter needs can be met in beautiful ways without having to be bound. That we can create within these perfectly comfortable structures from wood and canvas spaces which sustain and nurture us. And that we can live in them on land which becomes available to us and move them whenever we want or need to. What I refer to as Living Shelters are spaces which interface more readily with the outer environment, with the earth energies and with our many wild relatives.



Nature is the most radical teacher I have met. I celebrate my own wildness and joyously welcome my own body's rhythm in the dance of life. I know myself a strong womyn who is rooted yet flowing in the tides of seasons and circles and my own emotions. There is peace in my heart and I trust passion, grief, conflict and chaos as elements rightfully present in the wheel of my life. It is nature that is teaching me this. It is living in circles, steeped in the harmony of the lodges which brings me into relationship with Earth Mother as my intimate.

*Kathleen Blue Corn manages Living Shelter Crafts Tipis and Yurts and teaches Circle Living Workshops. She also teaches classes in the Reiki System of Natural Healing. She can be contacted at: PO Box 335, Camptonville, CA 95922*





# SPIRAL

By Debby Earthdaughter  
Tucson, Arizona

she came to see a spiral  
and it filled up her head  
she started pushing the papers around on her desk  
couldn't take it anymore  
neat little numbers  
in neat little boxes

the spiral grew and grew and the papers fell off her desk  
as she got up to pick them up  
couldn't do it  
grabbed her jacket and walked out the door instead  
everyone thought she was on coffee break  
but she walked right past the coffee machine and out to the  
square  
stopped and ate two croissants in the sunshine  
but that was not enough to be confined within the square  
eating croissants

so she began walking again  
and now she lies in her tent  
which is a circle after all  
but from its edges she has drawn a spiral  
which goes out and out until it disappears into the sand  
but she knows it is there  
as she gazes up at the sky  
ever spiralling out



*Debby: I'm 30, euroheritage, from working/middle class, now living on welfare with environmental illness disability. I got off sugar, moved into my round tent, and then into a four-walled storage shed, my best at affordable EI accessible housing. I'm currently renting on Adobe's land near Tucson and dream of a round EI accessible house on land trust land with other wimin with disabilities and allies.*



# ROUND CORDWOOD

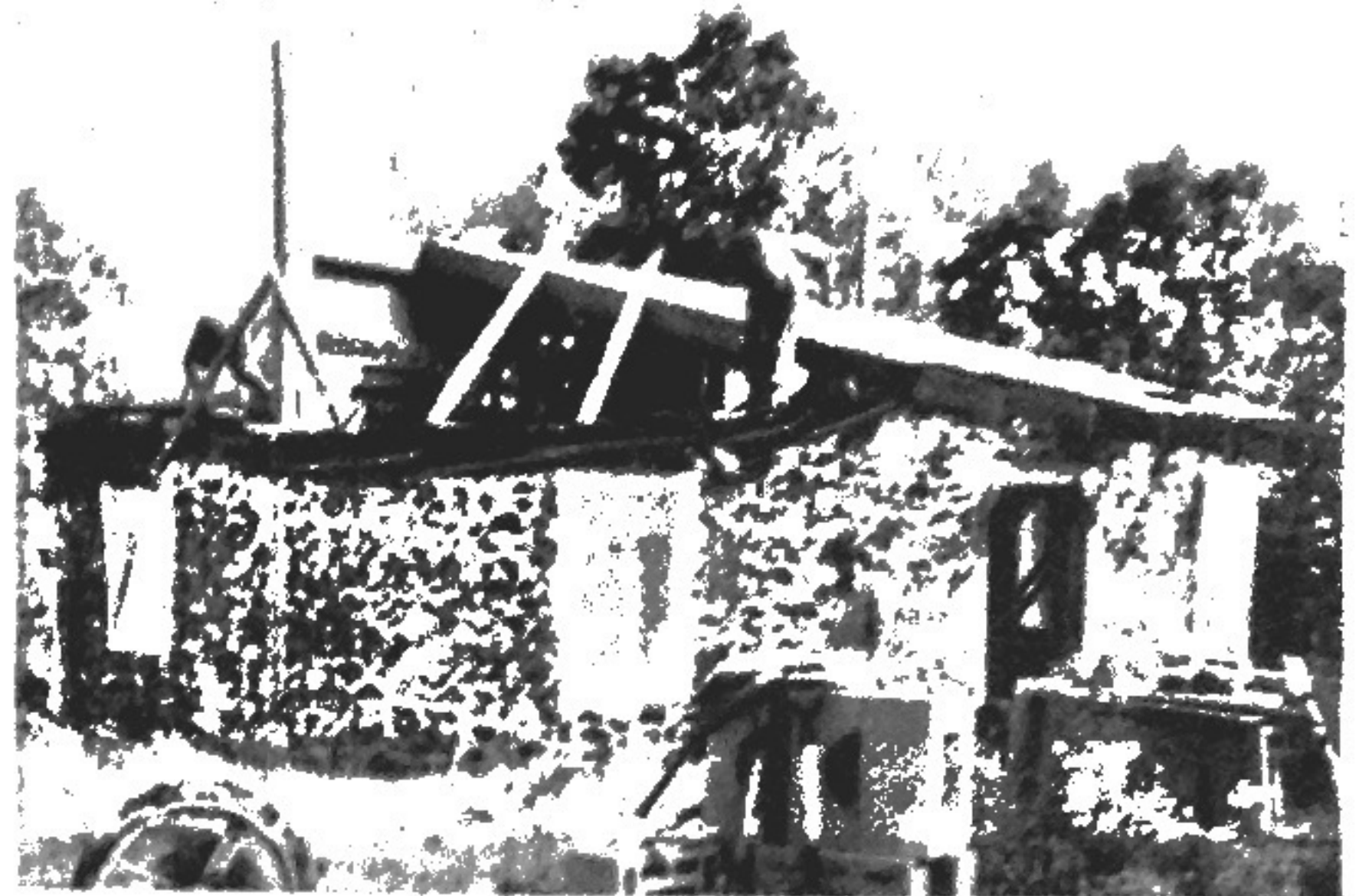
By Jae Haggard  
Serafina, New Mexico

Imagine living in a circle of stacked firewood. How appealing! That's what the Dykes at DOE Farm in Wisconsin are building--an incredible 36' round cordwood house. When it was started five years ago, I got to help design and build for several months. Quite the experience.

Trees are cut and split just like putting up wood for the winter. The length of each piece determines the thickness of the wall--at DOE about 18". Whole rounds are used as well as split halves, quarters and smaller pieces for variety. Needless to say it takes a lot of wood.

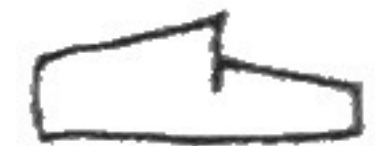
Once split and air-dried the stacked wood is ready to become a wall. It's really heavy so needs a solid foundation. DOE uses a floating slab--a flat concrete circle the size of the entire house about 4" thick, resting on a tamped sand pad. The entire 18" perimeter where the wall rests is dug an extra 4" or more into the sand bed to make an 8" (rebar reinforced) footing under the wall. It only takes a few inches of sand to cushion the slab and sure beats digging below frost line.  $\frac{1}{4}$ " cdx plywood was staked into a circle to make the form for the footing and slab.

Building the walls is just a matter of mortaring all those logs together. Mortar is a sand/cement/lime mixture with some sawdust thrown in to reduce shrinkage. Two parallel lines of mortar are laid with a shovel so they'll be a couple inches in from the inner and outer 18" wall edges. Each log is laid into the mortar so the ends show inside and outside. They make a beautiful wall. When the piece of wood is gently pressed into the mortar it squishes a little to maybe 4" wide on each end of the log and makes a solid wall inside and out. This leaves a space in the center filled with a mixture of sawdust and lime. The sawdust insulates and the lime discourages bugs.



Smoky •

As the wall rises, door and window frames are set into place, nailed and mortared to the cordwood. A wall set on a huge beam that runs across the middle of the circle will hold two shed roofs cut to conform to the round.



Cordwood is really wonderful. All those faces and rounds of wood encircling the room, age rings in the wood showing. Dozens of Dykes put energy into this marvelous house and set treasures in the mortar--rocks, crystals, shells, names. (photo p. 3)

The cordwood house isn't finished yet and plans for it are indefinite. Part of the wall is bulging from the weight of the roof so has to be reinforced and maybe redesigned (wish we'd known more about bond beams!). Yet, it's an incredible place filled with Dyke energy and dreams. DOE is wimmin's land open for campers and house-stayers year round. They have been looking for Dykes to come help work on the cordwood house.

DOE Farm is also known as WWLC, Wisconsin Women's Land Cooperative. It's 80 wonderful acres of pasture, woods, wildflowers, hills, flats and insulation from neighbors in southwestern Wisconsin. Contact them at: DOE Farm/WWLC, Route 2, Box 42, Norwalk WI 54648.



# BUILDING WITH ADOBE

By zana  
tucson, arizona

the ideal building material here in the sonoran desert is adobe. all we have to do is dig up the earth around us, looking for places that appear more clayey (usually hard and packed down) than sandy or loamy. one of the best places is the edge of a wash (dry creek that flows only during summer storms). here the larger sand particles will have settled lower, leaving a fine clay on the banks.

in the past year four of my friends completed adobe shelters. each used her own experimental method, based on information she had gathered (traditional native ways, and modern ways of making the structure last longer) and/or her own instincts. three of the houses are round--about 10' in diameter--and one is slightly larger and rectangular.

three of these houses have now been through one monsoon season, surviving the heavy rains with only a drip or two. it's been really exciting to see livable shelters made from natural, indigenous materials!



Photos by zana

the bottom half of each of these structures is underground. in this way the earth itself acts as an insulator. the houses are cool in summer, at least during the day. they are built in the day's warmth somewhat. the addition of that could be sleeping under the stars or maybe building a simple thatched open-sided sleeping area adjoining the house. one woman who has electricity uses a small electric fan. it helps to keep windows shut (and covered, if sun hits them) during the day, and open them in the evening.

the underground design poses the problem of rattlesnakes, who are delighted to find a cool pre-dug shelter in hot weather. building a regular wooden door seems to keep them out effectively. wimin who prefer a cloth curtain could probably be assured of keeping snakes out by propping a wide board across the entrance if they leave for a while. snakes have not come into inhabited shelters here, but the three wimin without permanent doors have each come home one time to find a snake in their dwelling.

the natural earth of the dug-out foundation makes a fine floor. wimin who want less dust have used an adobe-concrete mixture ("soil cement"--about nine parts mud to one of cement, or more cement if your dirt is less clayey than ours), or simply made a big batch of adobe mud and smoothed it evenly over the floor, allowing it to dry that way.

adobe for the walls can be made into bricks (mixing it with straw for strength) and sun-dried. all four of these builders chose the much easier method of patting mud onto and around framework by hand. One of them didn't even mix straw with her mud, but so far her house is holding up.



the favored framing material was saguaro ribs--sections of wooden "skeleton" from inside giant saguaro cactuses that have died. these were used even when new lumber, scrap lumber, and poles were also used. they are a regional traditional building material and give a very special feeling to the shelter.

one woman used adobe as a mortar to make part of her wall out of stones. another plans to cover her floor with flat stones mortared with adobe.

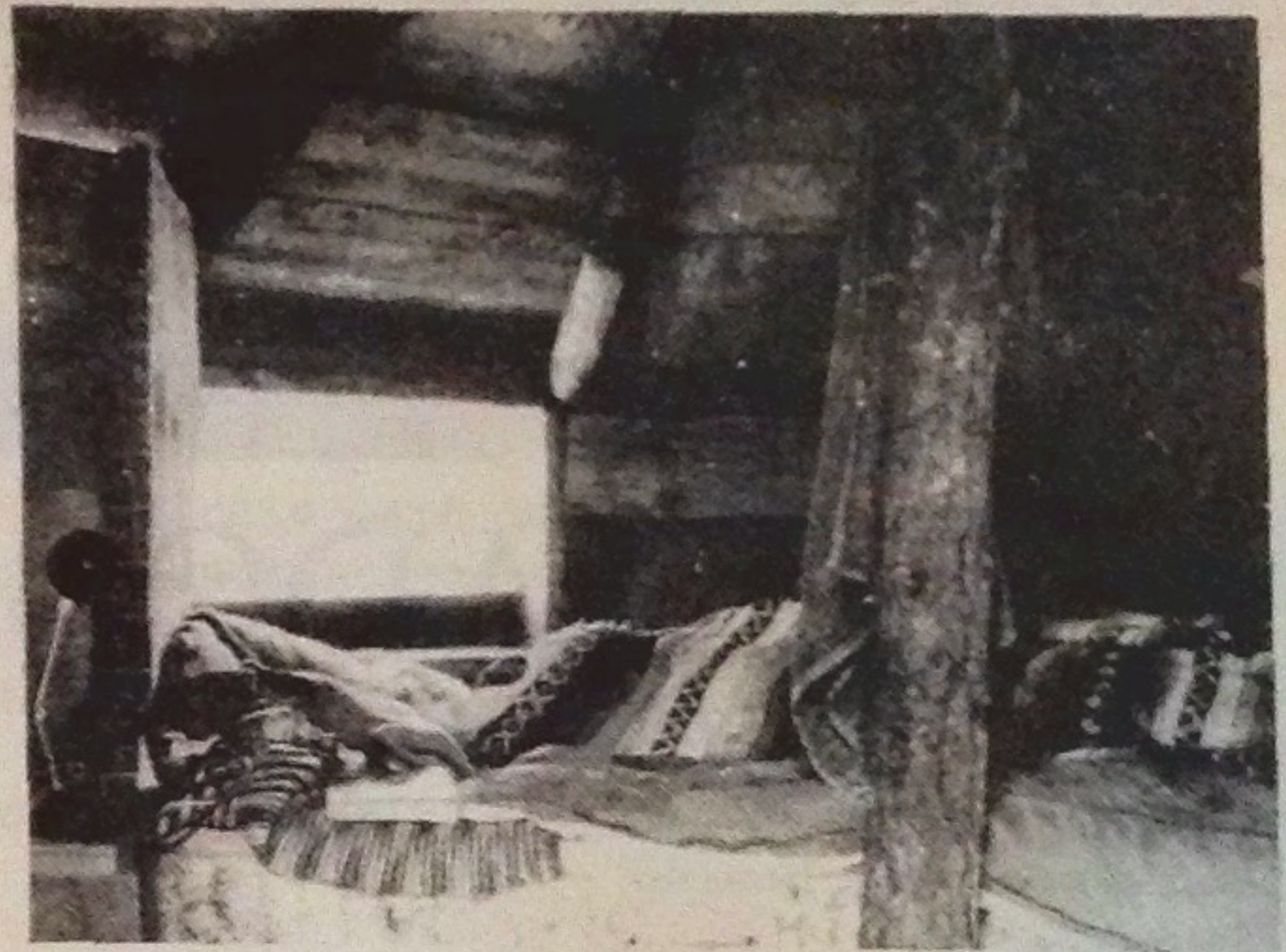
walls must be at least 10-12" thick for good insulation. one builder says, "the thicker you make them, the better the r-value" (insulating property). If she had it to do over, she would now make her walls even thicker, sandwiching empty bottles inside. this, she learned, would create dead air space and thereby add much to the r-value. and, the bottles would displace a certain amount of adobe, making it possible to build a thick wall without digging so much clay. for would-be bottle users, she points out that a four-inch bottle diameter is ideal--larger bottles will not be any more effective.

windows, if used, were set in during the mudding process. one woman used scrap windows of wood-framed glass, one built shuttered, unglazed windows; another has unglazed windows with built-in screens and shutters. one house's "windows" are wall sections made of unmudded saguaro ribs standing vertically. these allow in some light and can be covered with a blanket in case of rain. living with adobe walls is a dusty proposition. Blankets can help here, too, as wall coverings.

none of these houses has plumbing and only one has electricity (via an extension cord). one woman has rigged up a sink which drains to the outside, but has no water coming in. two of the shelters have no heating. one has a tiny "tin lizzie" stove; the fourth has a homemade cooking and heating stove made of scrap metal and adobe. these earth houses hold heat in well. on winter mornings they also hold in the night's chill, but in this climate it's often possible to simply spend the morning outdoors in the sun.

roofing was accomplished in various ways. all the houses have adobe roofs; one is soil cement. since adobe mud contracts when it dries, a second application is useful to seal any cracks.

under the adobe layer are such materials as plywood, bundles of dried desert broom and other weeds, old sheets, tarpaper, carpet underpadding (from a dumpster), styrofoam sheets (from a construction site), plastic sheeting, and even corrugated cardboard and egg cartons. these serve as insulators, help keep moisture out, or both.



*Adobe's House*

supporting the roof are rafters of some sort. one woman used 11 poles, each nailed to one of her wall-framework poles. they come together in the center, where she overlapped them tipi-style, beginning with a first beam resting in a forked pole. however, she was afraid that the poles were not at a steep enough angle to be secure this way. she wove heavy cable in and out between the pole tips for added strength, and put in a center pole. if she builds again, she says she'll make a wooden "key" for the center of the roof, with as many sides as beams. the beams would then be cut at a precise angle to rest flush against the key.

time will tell how durable these structures are. they seem to be good for at least a few years, they cost practically nothing, and their builders got much satisfaction and experience from building them.

*Reprinted from MAIZE #10, 9986*





## ADOBE HUT

By Jae Haggard  
Serafina, New Mexico

There she rests, tucked into a nook surrounded by pinon, juniper, cholla, prickly pear, desert grasses, wild flowers. Perched a few feet from a red clay and sand arroyo strewn with the rocks and boulders moved there by rushing waters over the centuries.

Small, six feet across inside, yet plenty roomy for six of us to sit easily with space for more. Short, dug about a foot into the ground with the walls rising some three feet above, tall enough for comfortable sitting. Enclosed, with the adobe and wood surrounding us, a cave, a womb. Moonlight, stars, or sun peek through the door and roof vent hole. Or, a plank over the vent and a blanket over the door enclose us in the depths of darkness.

This magic sweat/meditation/menstrual hut is built with and from the earth-- she is rock, mud, sand, straw, wood. And she is spirit, initiated by Miguela as a gift to the land in the spirit of traditions she follows as well as the huts and sweats traditional to wimmin from

many cultures. And the hut is the spirit of the ancient Earth that forms her, the spirit of the seven Dykes who work to shape her.

How long does it take? Probably two long days for four Dykes. And ever so pleasant days they are. There's such a deep satisfaction building together and with earth this way. Building her is such fitting simplicity, an extension of the land. We place a stake in the center of our hut-to-be. We tie a string to the stake and to a stick which we use to scratch the outer edge of the hut. And we dig, oh about a foot deep or a little more the entire six foot round. Boulders are levered out.

We set a layer of flat rocks all around the circle outside of and flush with the hole. These rocks keep rain waters from washing away the bottom adobes. A mortar mix of mud--two shovels clay, one sand--bed the adobe blocks set on the rock. Each layer of adobe is inset a couple of inches to start forming the breast shape, with enough layers for a comfortable sitting height inside. A door hole is left to the east.



Sun Hawk and Miguela figure out the roof, hogan-like with 2x10 rough planks nailed spiraling one on another around and around til there's only a small hole left in the top. A smoke hole, an opening to let air in and let out the things we release. A loose plank covers the hole. We pat mud into and around all gaps in the wood and adobe block, sealing it. Soon we will plaster the entire hut, lovingly pat on the mud/sand/straw til she does indeed become a soft and rounded breast.

The firepit is dug in the center, the heart of the hut, and lined with stones. Outside, a big firepit to heat volcanic rocks for the sweat.

She is wondrous, this little hut. Now I can hardly wait to build one big enough for wheelchairs. To create another cocoon for those times any of us needs to be alone, encircled in the arms of the earth. Where we can meditate or sweat. Where we can join others during our menstrual hut-days. She's a special place, a healing and releasing space. A space of earth and Earth Spirit. Of Dykes and Dyke Spirit.



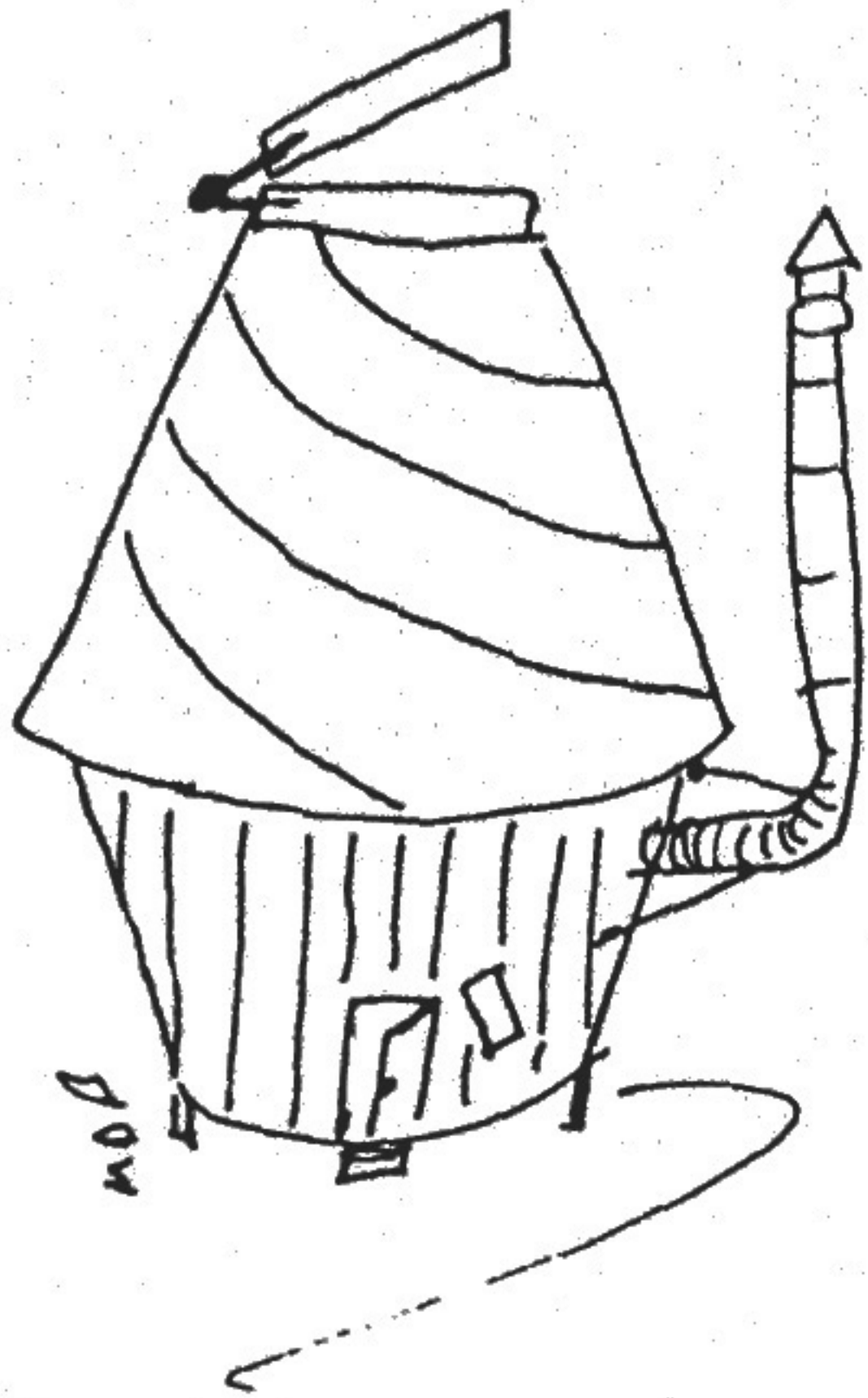
Sun Hawk and Lua

Photos by Jae Haggard

Facing page: Sun Hawk and Miguela







Mau Blossom

## DREAMING HOME

By Raven  
Santa Fe, New Mexico

It was a dream  
It danced its elf self  
to a circular space  
it spun  
like a web  
a round me  
round  
Like a mushroom  
it rose from  
the earth  
sudden round life  
a hut, a home  
my dream state knows  
my deep longings  
Within this majic creation  
I didn't forget  
hot water flowing  
into the tub  
bed lamp glowing  
from the flick of a switch

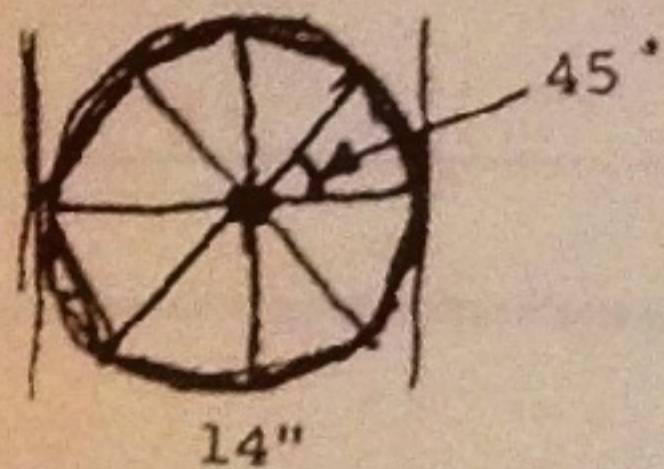


# KEY TO A ROUND ROOF

By Adobe  
Tucson, Arizona

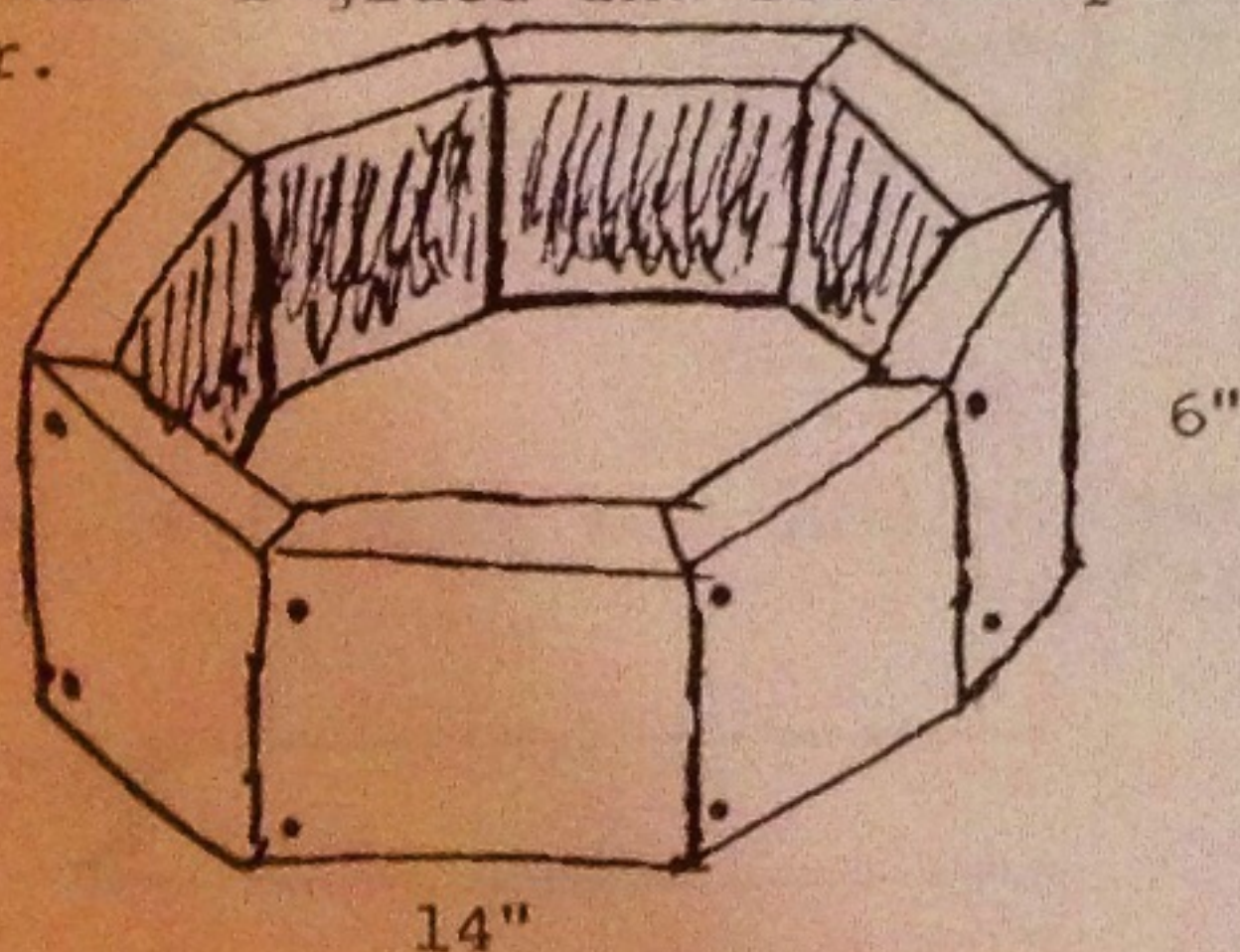
I'm building a 16' round "greenhouse" that'll house lots of hanging plants and my newly acquired 1910 Wigman upright piano. To build a round structure with a coned roof the rafters need to rise from the wall to the center of the circle. They can either rest on a center pole (like in my house, see photos p. 5&13) or attach to a key so the roof is free-standing. This is how I make a key.

First, on paper, I divided  $360^\circ$  by 8 (for an octagonal building) and got a  $45^\circ$  angle. Then I used a protractor to mark off the angles on my drawing, so that the length of the 8 sides of the perimeter could be ascertained. This I used to build a key for the "greenhouse".



The key I built for Hannah's house was 17 sided (17 rafters) so of course the angle was a lot smaller. The diameter for Hannah's key was approximately 36", large because she wanted a skylite in the center. Mine is only about 14". This is a lot easier than the larger key because it doesn't require additional bracing.

I didn't have a solid 14" piece of wood, which you could use to cut out a key, so I used a 2x6 to match my 2x6 rafters and cut angles with a circular saw so the pieces would all "fit up" with each other. I glued and screwed pieces together.



Key for Hannah's House

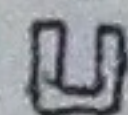
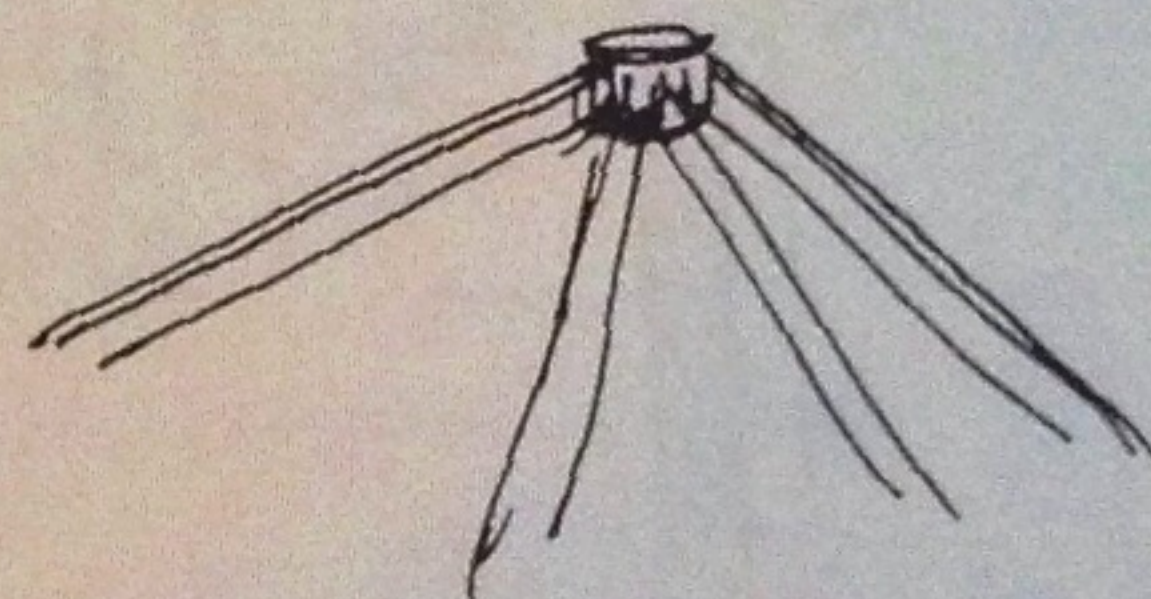
Photo by zana

Then I cut 2 pieces of  $3/4$ " plywood for a solid collar or plate for the top and bottom and nailed them on.



To build the foundation and wall framing for 12" thick walls, I plumbed two 8' posts in the ground at each of the 8 "corners". One post is flush with the interior wall and the other flush with the exterior. Boards connect the two posts. To make a 6" high concrete stem wall around the whole circle, I nailed the forms right to the posts inside and out and poured the concrete right around the posts, embedding them.

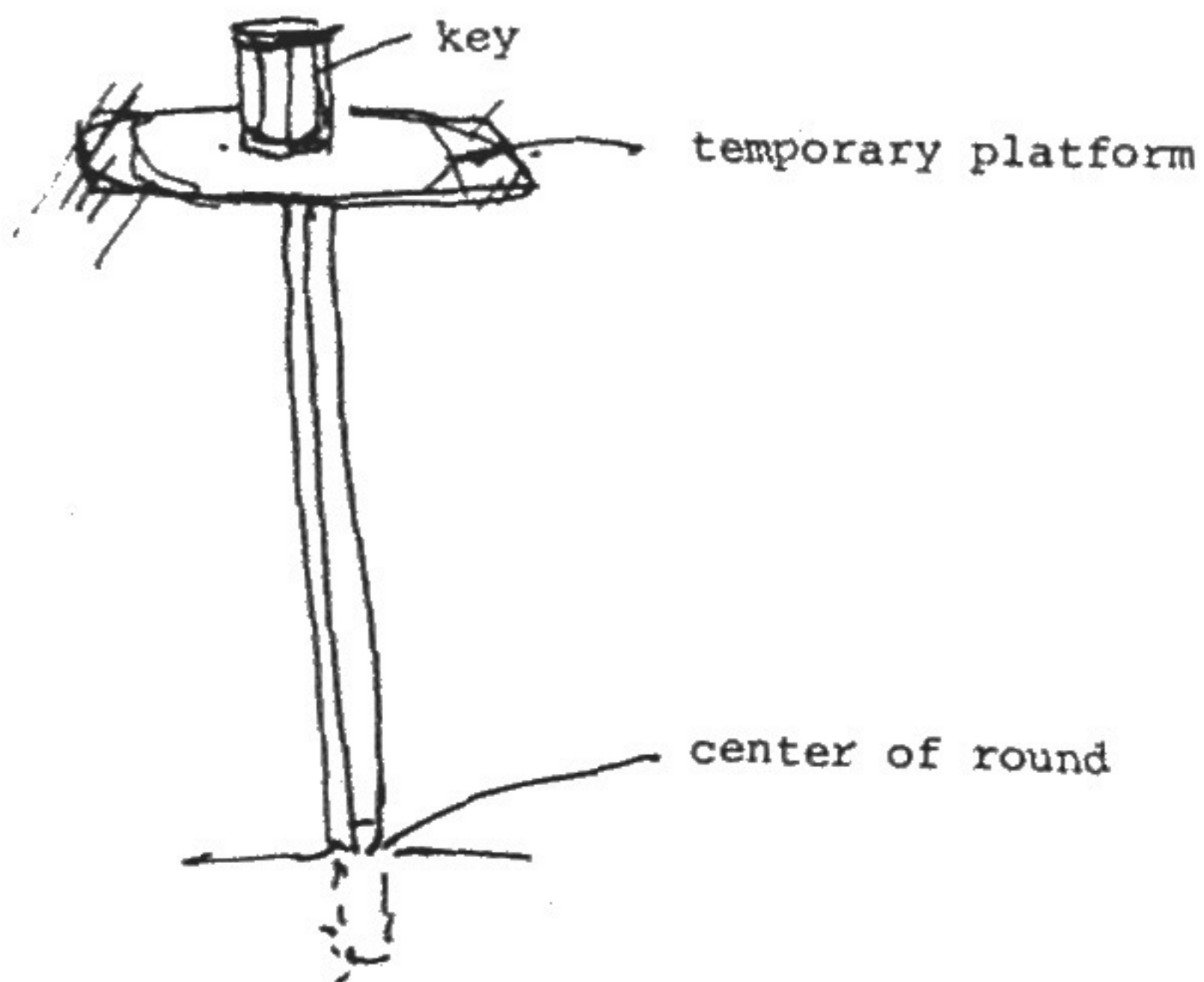
I used joist hangers to attach roof rafters to the key. I put them on the key first, before I put rafters on.



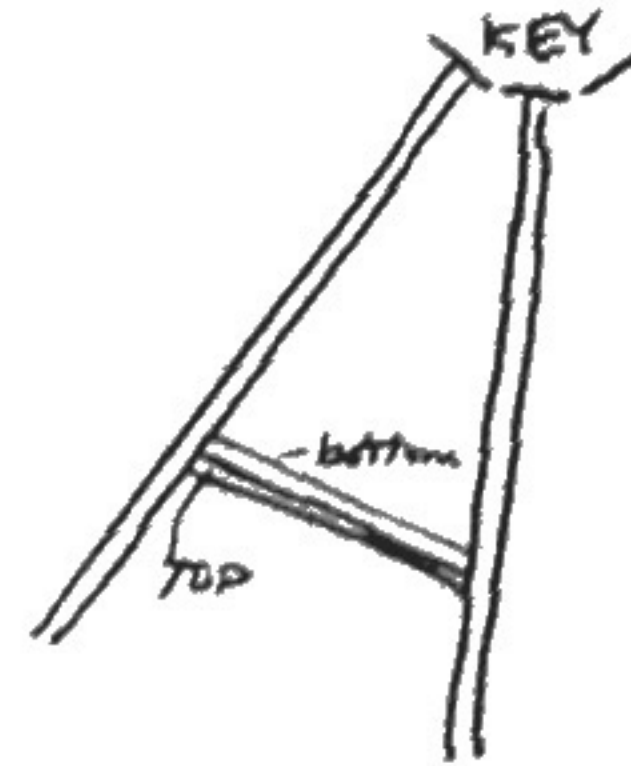
joist hanger



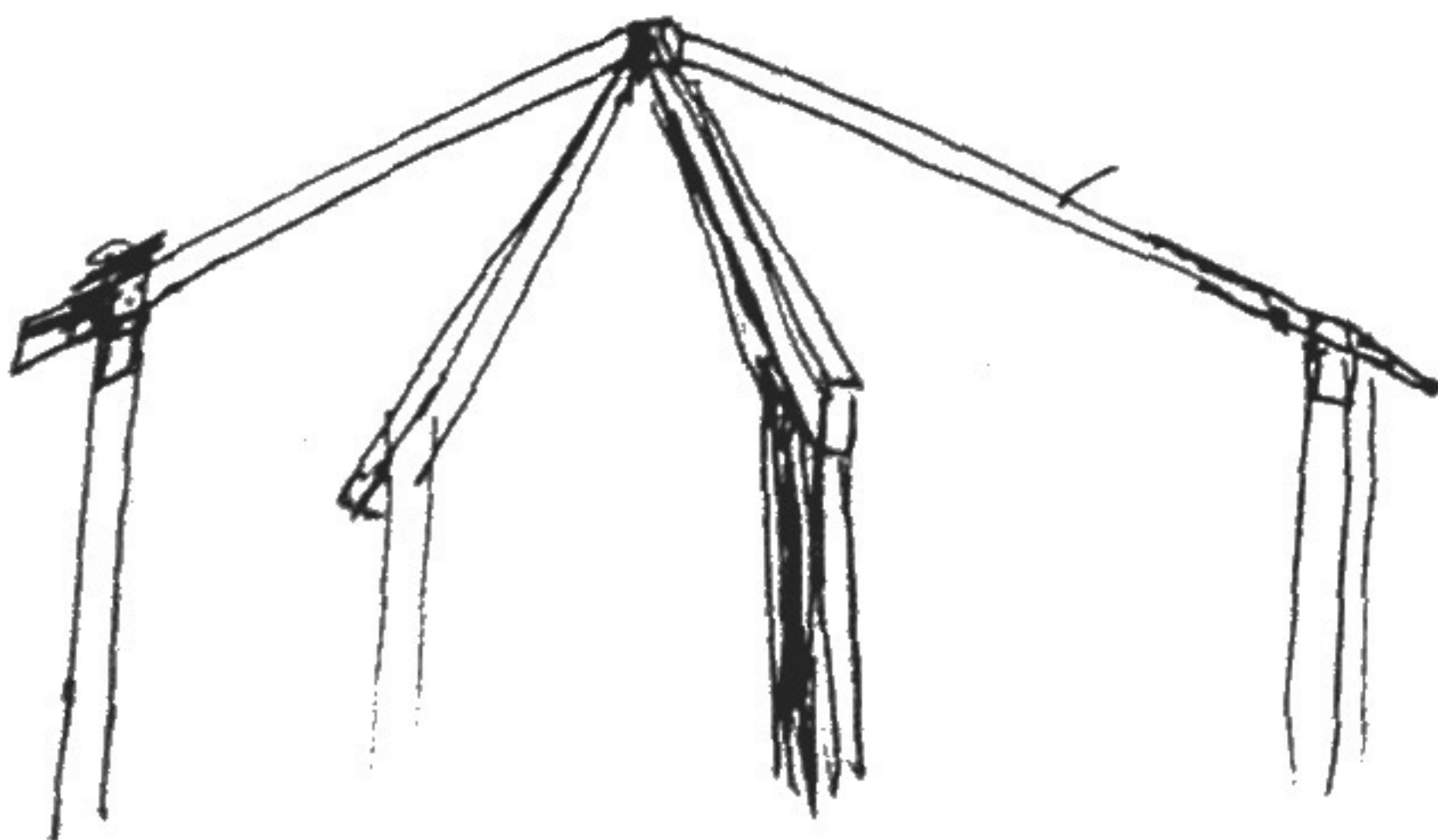
A temporary platform holds the key while attaching rafters



Support is also needed between rafters. When I put my first "bracing" on between rafters, I found out I had to slant it so the top edge would be flush (perpendicular) with the rafters. If not slanted, the edge would stick up and make it difficult to put on the plywood or boards covering the roof. So when I slanted it, this put the top of the brace further away from the center than the bottom.



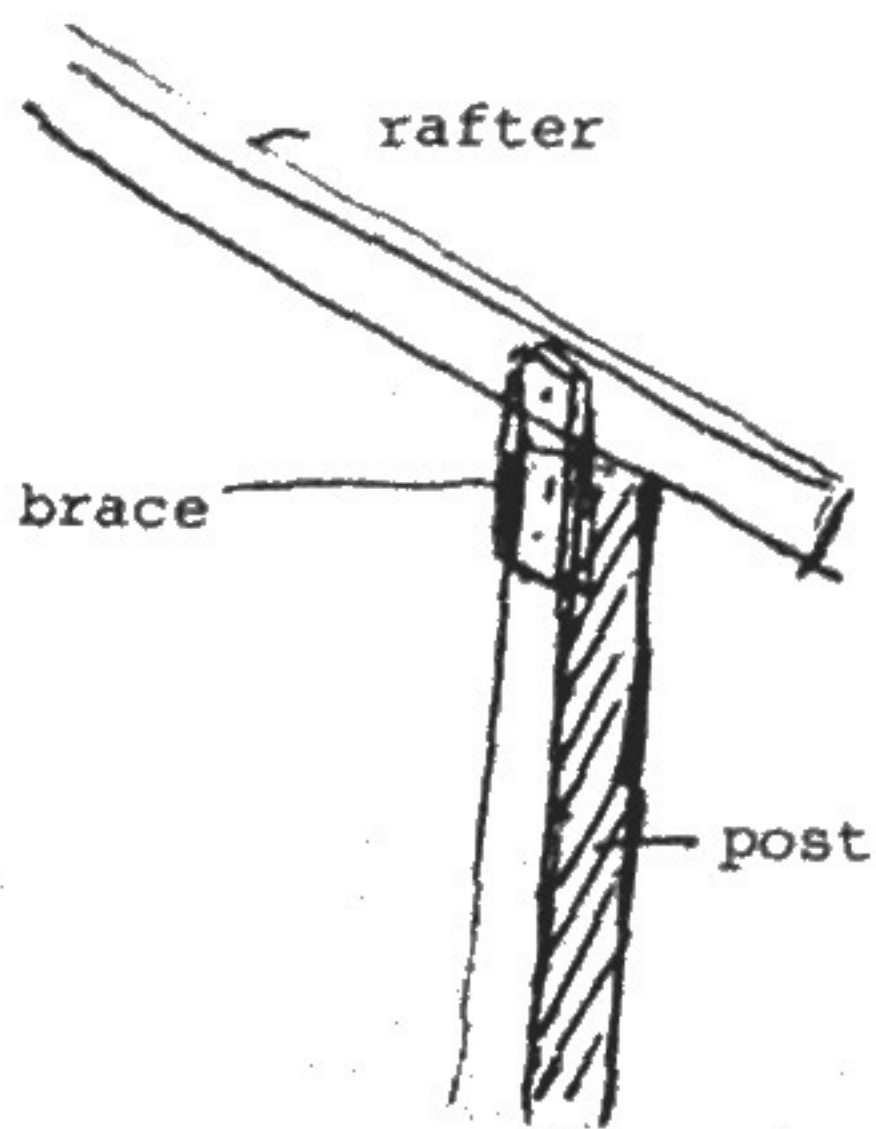
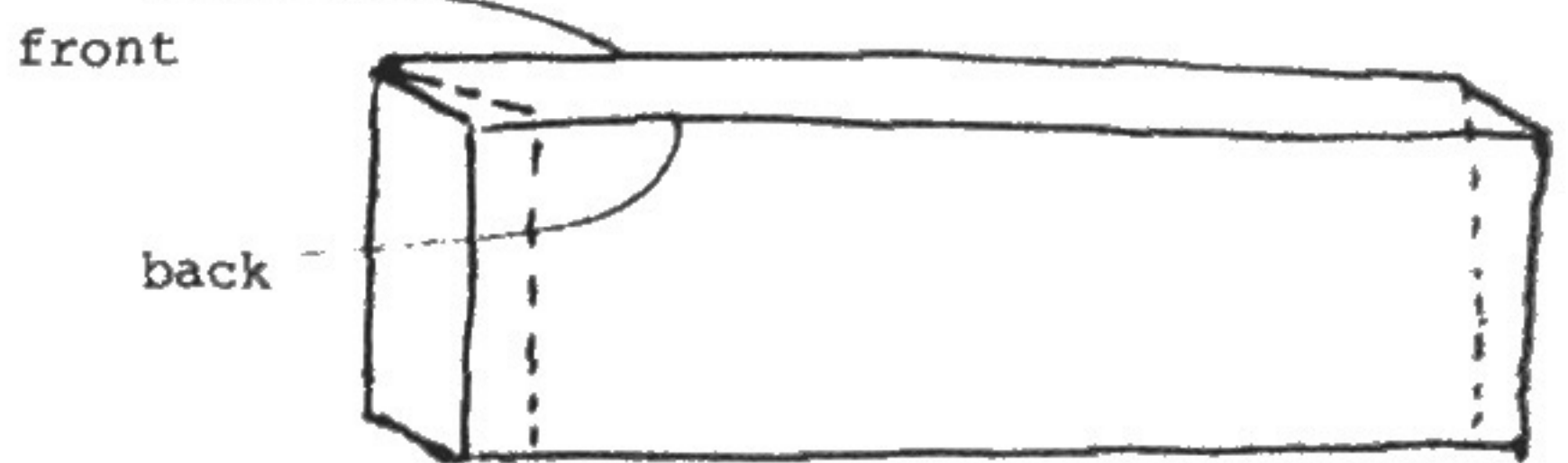
A rafter rests on each outside post, a wooden brace securing it in place. Of course it could be a metal brace as well.



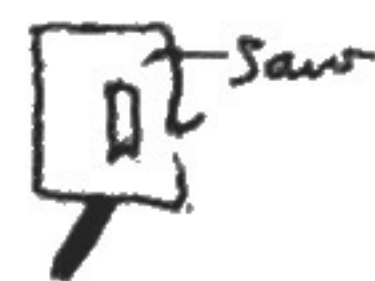
To fit, the brace board needs to be cut at an angle instead of straight up and down.



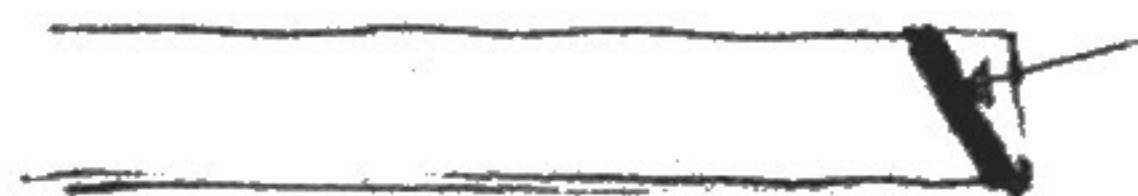
The same reason necessitates another angle cut. Since the space between the rafters is triangular, the back of the board has a slightly wider space between rafters than the front.



To saw a *double* angle cut with a circular saw, you have to adjust your *blade* at the second bevel angle



and cut the board at your first (wedge) angle. FUN!



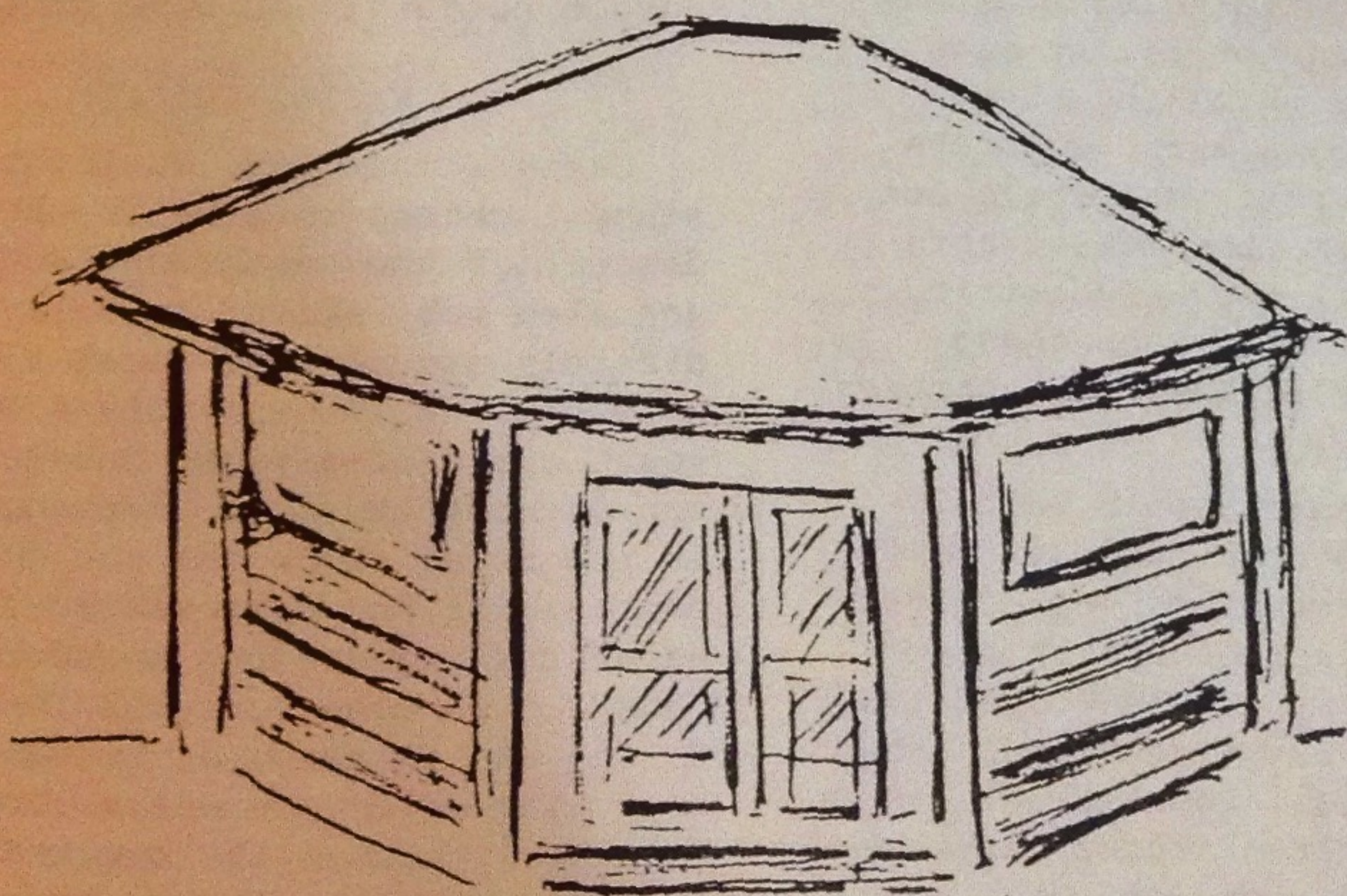




Boards (scrap lumber) are nailed both inside and out from rafter to rafter and post to post the first 3 feet above the stem. The 12" spacing between boards is filled with adobe.

Large windows that open to the inside will fill the rest of the wall space with screen run all around the outside. Two sections were left completely open for big double doors. Lots of light and air. Tarpaper and plastic covered with stucco seal the exterior. We slanted the stucco at the bottom and worked up to prevent "slumping". The stucco set up real fast and worked well. When I first built my house I used adobe mud to plaster the outside. It washed away so I put stucco over the whole outside. It cracked a little so I patched it and it is real waterproof now.

Being in a "round" space is wonderful; I've been in my partially underground sleeping room for about 5 years now and I truly love it! How does it make me feel? Calm, serene, secure. I've noticed it over and over. It's a great place to take an afternoon nap; it's a great place to meditate. It's a warm, lovely, esthetic space. There's definitely an influence caused by the geometry of the space. I'm not sure what the relationship is, but sometimes I feel like I'm in a comfy "womb".



*Illustrations by Adobe*



# CASITAS

By Jae Haggard  
Serafina, New Mexico

What an incredible year. Working with other Lesbians to build wondrous round adobe houses for Dykes. The stuff of dreams. And I love adobe--the warm red hues, earthiness, versatility, and that it's really no-mistake. We're using adobe for everything from casual 6' huts to simple 20' rounds on rock foundations to last-Dyke-generations 60' double rounds.

Even though we've been intensively building for 10 months, I'm already looking forward to building again in the spring--getting these hands back to laying adobe blocks, feeling the mud, touching the essence of this land, watching with great satisfaction as the walls rise around me, feeling the earthiness and spirit of these homes we build for Dykes.

We're currently building two pairs of round houses. Each pair has two 20' rounds connected by a square 20' greenhouse/bath. We call them casitas, little houses, and they're amazing to see, feel, build and live in. Since we want them long-lasting we're building to code unless there's a reason not to. At each step we're attentive to making them accessible. Level, grab bars, counters for wheelchairs. Nontoxic materials for allergy-sensitivities. Low-maintenance interiors. Hot water, tub, electricity for comfort and ease. And when these casitas are done, we'll build the simpler single rounds.

Building with adobe takes a lot of time and building to code takes extra energy and costs more. Plus, we're buying adobe blocks and using mostly all new materials. Just the materials--foundation, adobe blocks, sand, large doors and windows, lumber, vigas, insulation, roofing, bricks, interior water and electricity, chimney and stove--for one round (1/3 of the building) cost just under \$7000. We figure the simpler single rounds will cost significantly less, especially finding more used materials.

Everywhere in our design and building we have several basic considerations:

- \* What is nontoxic, safe, accessible?
- \* What is easiest and safest for inexperienced wim to build?
- \* What is structurally soundest?
- \* Is it affordable?
- \* Is it simple, in harmony with the earth and land, nondisruptive?
- \* Does it maintain the roundness?

No project just happens. Some 25 Dykes have joined us adding their ideas, experience and energy to these casitas. The casitas are built entirely by Dykes who are here because they want to build houses for Dykes to live in. The energy is amazing and every wom joins her energy/spirit to the Earth energy/spirit in the casitas. Decades will find these structures here with the Lesbian energy expanding as more Dykes stay or live in them. Pretty heady stuff.

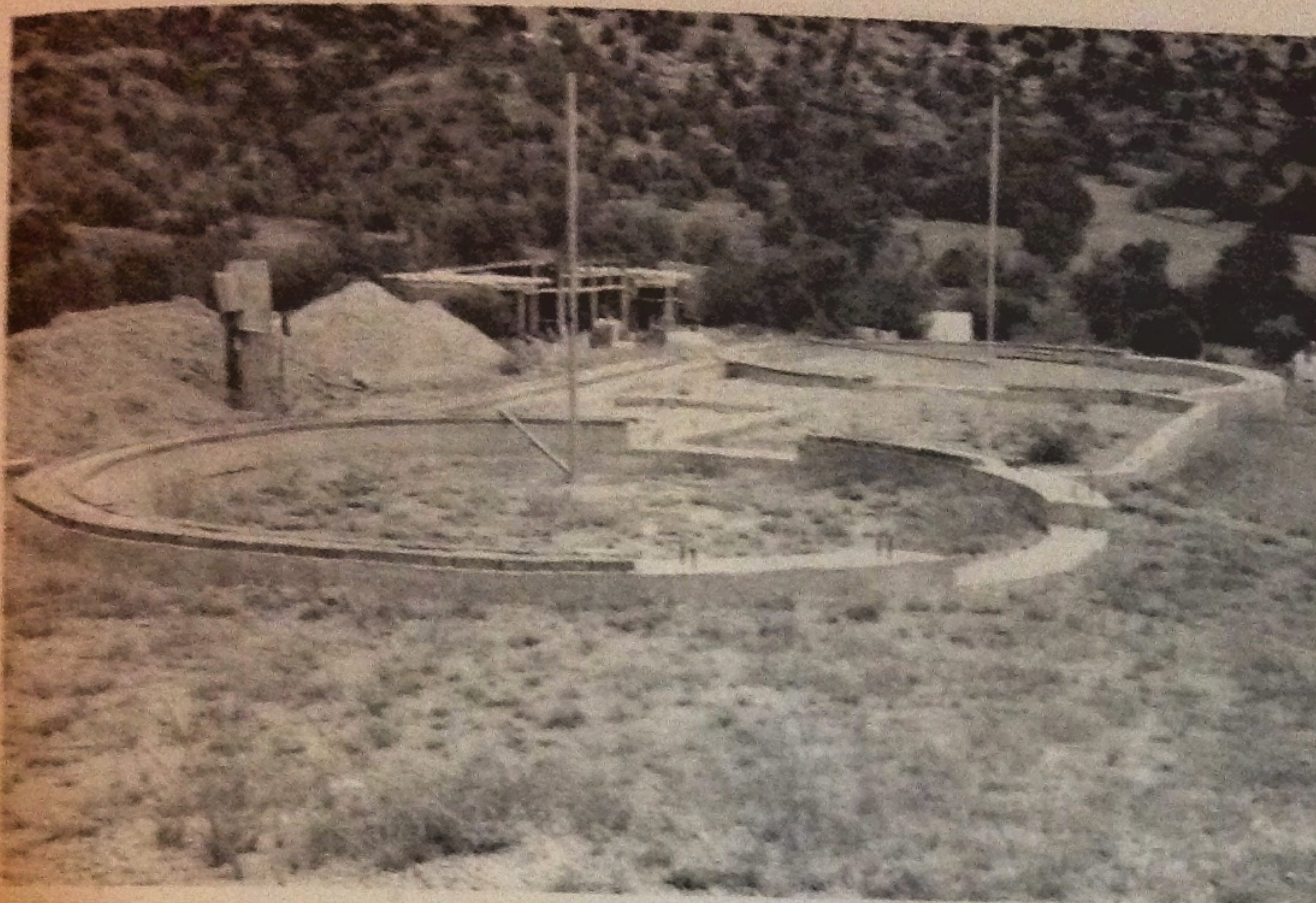
This article is about how to build round, including particular areas from foundation through roof where rounds take extra figuring. These areas may not be concerns for you or you may find more fitting solutions. I include quite a lot of detail that may be helpful if you're actually designing or building. Otherwise, it can be pretty dull so the most detailed sections are separated from the text. General construction how-to is mostly left out. Write me if you have questions, need more detail or have other ideas.

## FACING THE SUN

Guess I must love sunlight and warmth since I choose to live in the high dessert of the southwest. Round houses are also well-suited to solar. The more directly any surface faces the sun, the more heat it absorbs. Glass covering the south curve of a round house catches the sun much of the day. Overhangs conforming to the round shade the sun during hot months. For the most winter sun, it's helpful to square the house to true south. This can be done casually by sighting to the sun at noon. Or, since we want to heat with solar, we use a compass to accurately square the casitas south.

True south is a few degrees off magnetic south shown on the compass. Here in Serafina it's 13° west. True south is best for solar but a few degrees either side is fine.





*A finished foundation is a joy indeed--concrete stem with bricks, anchor bolts. The two 20' round casitas are connected by a 20' greenhouse/bathroom. And, down the hill we're ready to roof.*

*Photographs by Jae Haggard*

#### FOUNDATION

It's almost clichéd but the foundation really is the base of any building and incredible energy goes into it. It holds and spreads the weight and girth of everything built above. It stabilizes the entire structure from frost heave, earthquakes, or other sinking, shearing, dipping movements of some part of the building from where it is to somewhere you'd rather not have it. In addition we get to make a bunch of decisions about what comes above so we know how to build the foundation.

The foundation consists of 2 parts--the footing and the stem. Extending from ground or grade level to down below frost level, the footing is at least 4" (2 inside and 2 out) wider than the walls above that it supports. On top of the footing at grade level is the stem which is wall width and raises the wall at least 8" above the outside grade to protect from water damage. The stem actually holds the walls.

#### Marking the Foundation Trench

Now the fun part, marking the foundation. To mark a simple round all we need is a stake in the center. Attach a length of string and tie the other end taut to a pointy stick. Adjust the string length to mark outside of footing and walk around the circle scratching a line. (We are using 1" underground insulation board on the casitas so add 5" rather than 2" outside the wall because insulation fits irregularly in the trench.)

We use a center pole to mark, level (even across) and plumb (not tipping) the footing, stem, wall and bond beam.

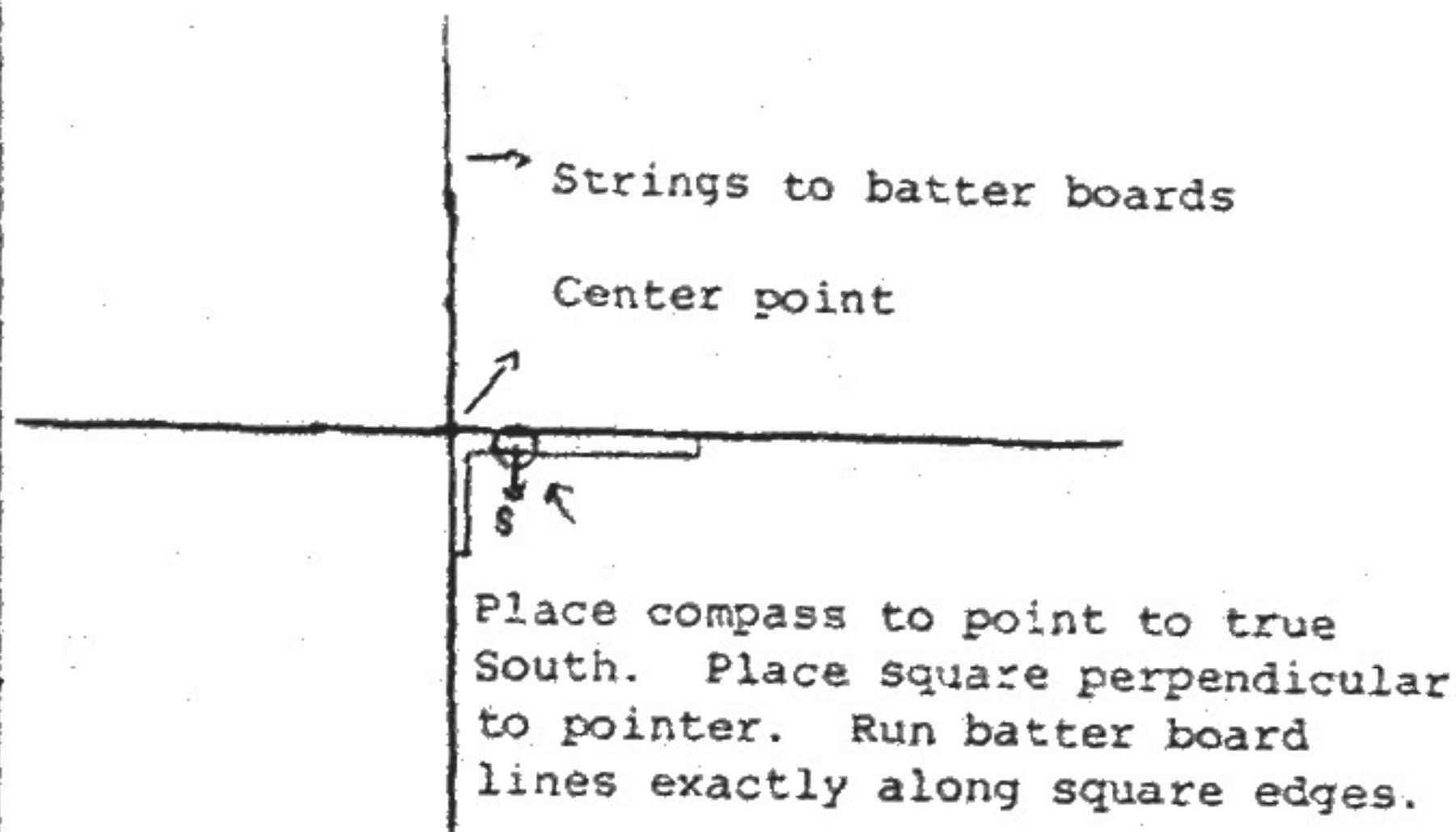
We more permanently mark these lines with lime. Pound a few holes close together in the bottom of a coffee can, tape it to a long stick and fill with lime or flour. Walk along shaking the can a couple inches above the scratch. Presto, beautiful line. (Covers top and bottom hold lime when shaker is not being used.) There it is, a house-to-be. Pretty special.



## SQUARING FOR SOLAR

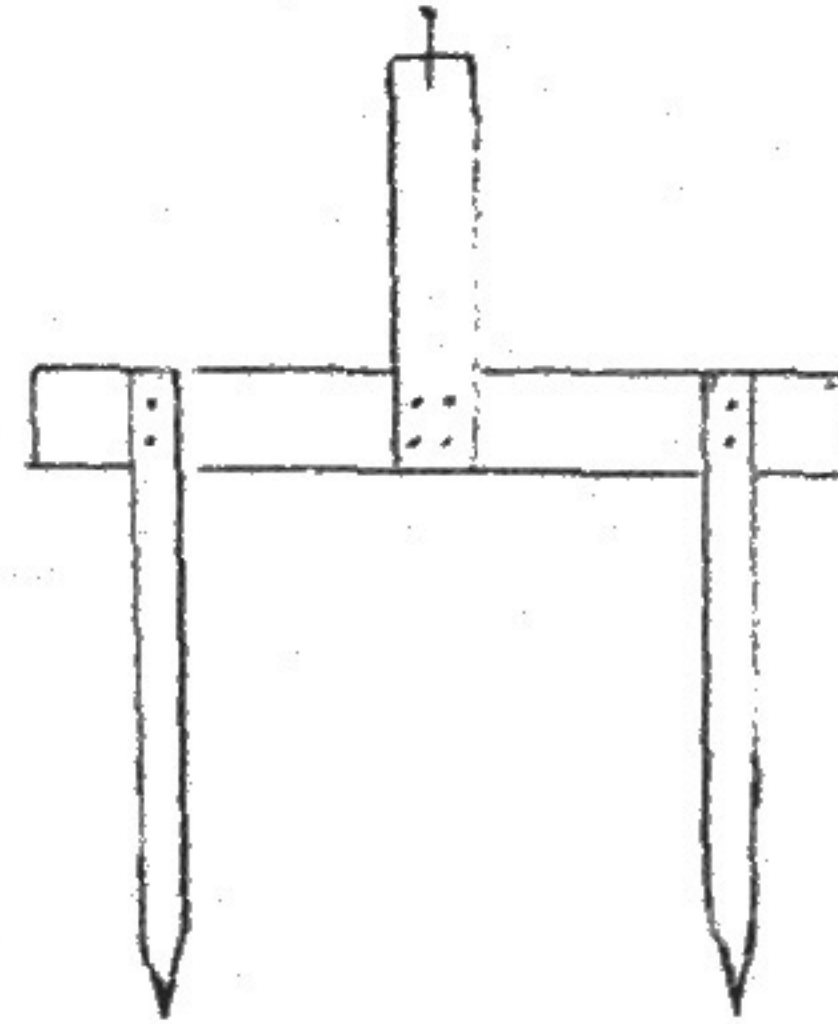
Squaring a round to south is helpful if you want to place windows for solar. To square we use: compass, 2' square, batter boards, mason's string, medium nails, tape measure, level and hand sledge. A batter board is simply a 1x6 or other board nailed along the top of 2 long stakes tall enough to rise above the finished stem. To prevent nasty scratches, pound protruding nails down against the board (we do this everywhere while building).

You need to know how big you want your circle (diameter is distance across, radius half that). Pound a stake at the center of your round-to-be, adding a nail to the top. Beside the stake set the compass pointing to true south and adjust if needed for view. Line the 2' square perpendicular to the compass pointer.

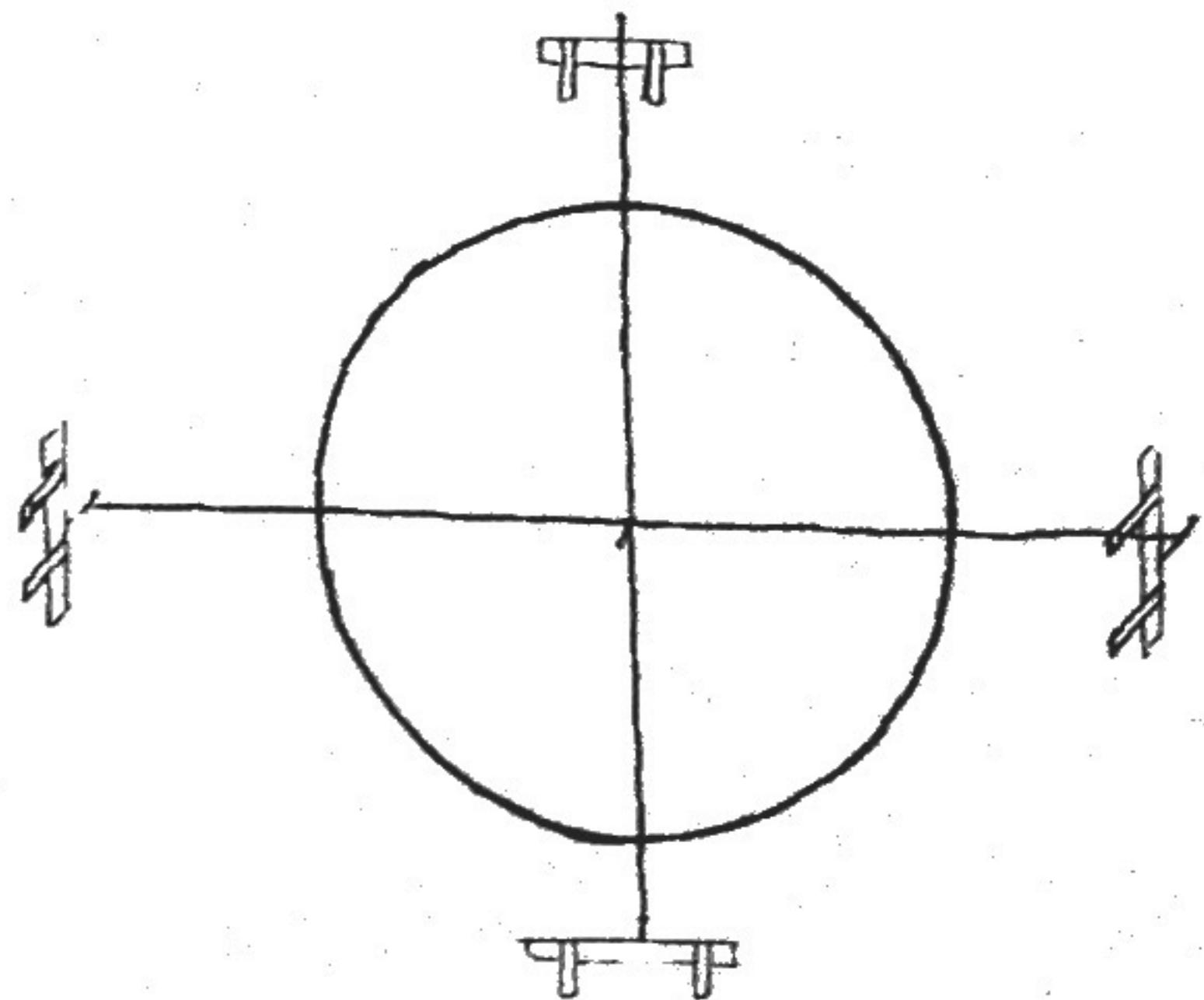


Stretch a string paralleling the square, crossing the center stake nail and extending beyond the work area. Center batter boards over the string equal distances from the center stake and pound in securely. Holding the string tight on top of the batter boards, adjust til string is again parallel. A small plumb bob or other weight may help placement. Mark this spot on each batter board, place nails and tie string taut.

If the batter board is too short (string should be above finished stem height), attach a vertical 1x6 to the center. Place a level vertically at the mark, level bubble, and place nail in extension. This string is the east/west square. Bright flagging tape helps save board plumb and Dykes from tripping.



Repeat for the north/south line, running the string along the other side of the 2' square. Tape the tightened strings together exactly at the center point over the nail.



Leave at least 8 feet working room between walls and batter boards.



## CENTER POLE

A stroke of genius. Probably more than any other innovation, the center pole with attached arm simplifies building round. With it we can mark and check the footing trench all around. We use it constantly in placing and leveling the stem forms and all the way up the walls to keep each adobe layer both plumb and level. It also places and levels the bond beam forms, and supports the pulley to raise buckets of bond beam concrete.

The center pole must be:

- perfectly plumb til done building
- strong to hold arm weight without warping
- tall to rise above bond beam
- smooth so arm can lift
- removable

The arm must:

- remain straight holding a level
- swivel freely around the pole at any height
- pivot vertically to go over frames
- be made to be secured at specified intervals without slipping
- consistently measure/locate inside and outside perimeters
- be easily disassembled and reassembled

Materials for one center pole:

- 1 heavy gauge straight top rail for chain link fence (goes 3-4' in ground and extends a few inches above)
- 2 U-bolts (app.4") with wing nuts and washers that slip around pole and attach the holding bar
- 1 short plumbing collar to set on lower U-bolt so arm can rotate smoothly
- 1 length of 1" square steel tubing to be the arm (whatever the radius is)
- 1 bolt  $\frac{1}{4}$ "x3" with wing nut and washer to secure arm to holding bar
- 1 app. 5" length of 1" square steel tubing to be holding bar that connects arm to pole
- 2 bolts  $\frac{1}{4}$ "x6" for marker points at end of arm
- enough clay concrete mix to set center pole
- 1 48" level and duct tape to attach to center of arm

All metal is cut by hacksaw or sawzall. We remove the center stake, double-checking the taped joint of the north/south and east/west batter board strings. Pole is set into a 3-4' deep narrow hole in some weak, clayey concrete so it can be chipped out later to remove the pole (4 clay, 4 sand/gravel, 1 cement; thanks Adobe). We wiggle the pole into place and use a good level to plumb the pole. As we fill the hole, it's important to continually check all sides of the pole to maintain plumb.

How to make and attach the arm is pretty clear in the photo. The lower U-bolt is firmly tightened to the pole so it can't slip while the upper U-bolt is loose enough to rotate freely. (One plumbing collar is enough between U-bolts-the photo shows 2.) To raise arm, simply loosen lower U-bolt and lift to desired height. The arm is bolted square and tight to the holding bar, short of flush with the poleside edge (so when loosened the arm can pivot freely to lift over frames).

Final touches. From the center of the pole, measure out your radius to inside and outside of wall. Drill holes to hold a  $\frac{1}{4}$ "x6" bolt. Repeat to mark interior and exterior of footing trench. The 48" level (cheap is fine) is duct taped to the middle of the arm or a tad to the outside for easier reading. The longer the level and the closer to centered the more accurate.





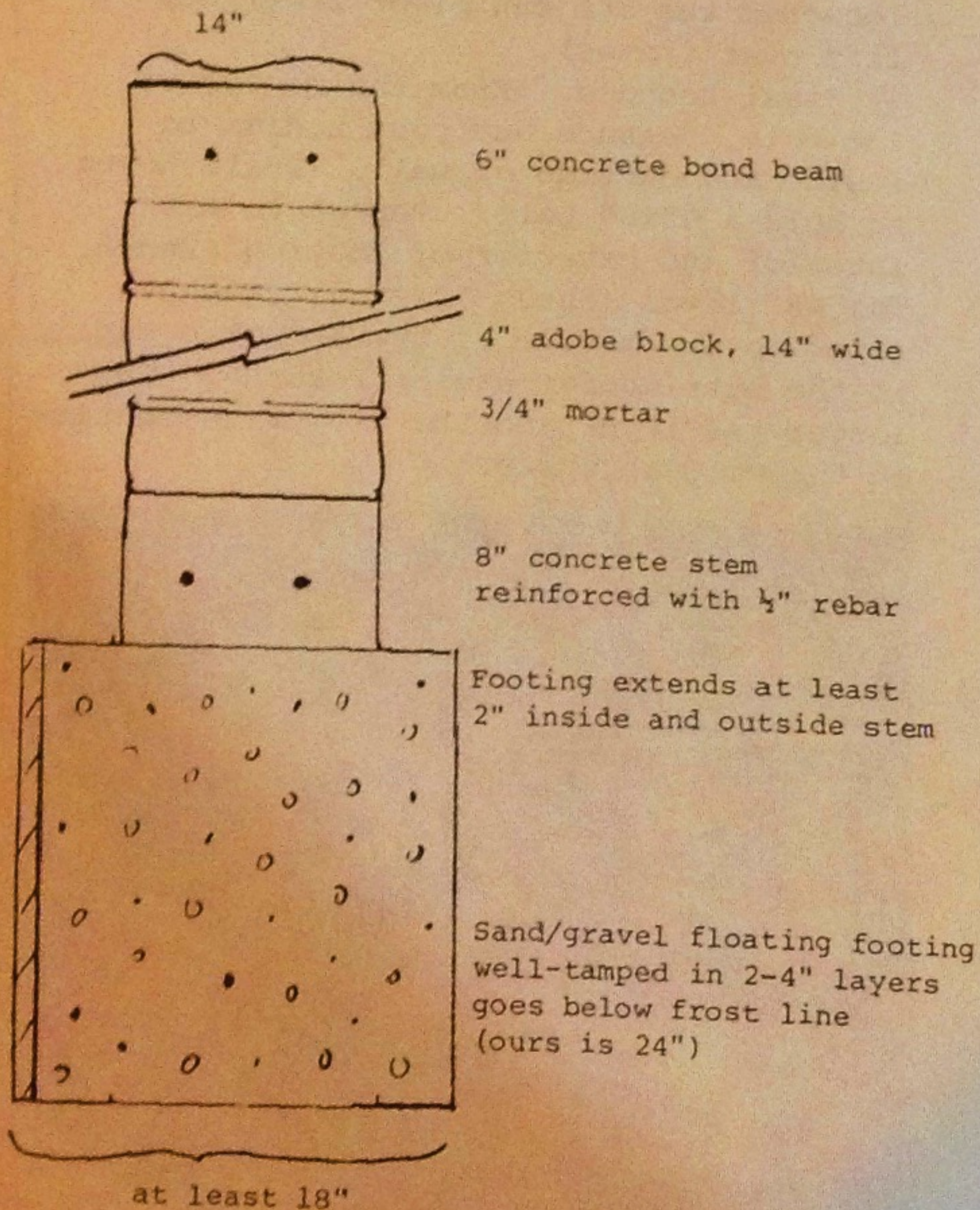
## Footings

Options. Footings are often cement blocks, solid concrete or concrete around big rocks. Footing/stem can be one pour. A footing/stem won't be necessary if you use post-and-beam construction with posts dug deep into the ground supporting the weight of the wood or metal walls. A footing/stem is necessary with adobe, stone or cord-wood which rest on the ground.

For the casitas we choose a reinforced concrete stem on a floating footing, which is simply firmly tamped layers of sand/gravel aggregate--the same mix used to make concrete. For our casitas, it goes 24" from ground level to below frost line. I've used floating slabs for 3 other buildings over the years and they



Lee, Jonetta, Ame, Karen and JC filling and tamping the sand/gravel floating footing. White line on outside of footing trench is underground insulation.



work/last great. In the round, sand fills in the irregularities of the round trench nicely. All foundations are a lot of work and the floating footing is labor intensive because there is so much aggregate to move and tamp. Yet, it lets us move at our own pace, and is much more pleasant, easier and cheaper than concrete. It's best to go below frost level for assured long life. But, the theory of a floating slab is that since no part of the foundation touches the earth, the sand bed absorbs any ground movement, buffering the structure so one section cannot crack away from another. For our simpler rounds next year we'll probably use a shallow uninsulated footing.

Digging the footing, we follow the limed lines and the bolts on the arm of the center pole to maintain the round. The outside edge is carefully scraped vertically to our 24" depth so the rigid underground insulation fits better. It does bend some and can be easily snapped for a tighter fit. Or it can be taped together too.

Pour about 4" sand/gravel into the trench, wet thoroughly and tamp well. We made tampers with 2x4's with a 2x6 foot. Repeat 4" layers until ground level is reached--this is really tiring work! And important.

1" underground insulation board on exterior perimeter of footing



## Stem

Once the footing is done there's the question of how to form and make a round stem to hold those appealing round walls. Depending on the footing and wall materials, stems are usually made from cement blocks, brick, rock or concrete. Footing and stem can also be a single concrete pour. Any of these can be used on a solid footing or with frame walls. For our small hut (p. 14) we set uneven rocks directly on the ground and set adobe blocks in mortar on them. Really simple and fine for a tiny structure that carries minimal weight and is easily patched. Layered block wall materials like adobe, stone or cement blocks are likely to stair-step crack if the stem shifts or settles. For a long-lasting house like the casitas, we choose a concrete stem that is solid, continuous and reinforced.



JC ties rebar to wire twists that hold plywood stem forms 14" apart, the width of the adobe wall. Concrete stem is at least 8" high.

## STEM FORMS

Forms to shape the rounded concrete stem are made from 3/8" cdx plywood scored 1/8" deep vertically every 6" with a circular saw so it'll bend to the round (thanks Rose). A larger diameter circle could not require scoring, like the cordwood house at DOE where we used unscored 1/2" plywood. A smaller diameter is easier with 1/4" tempered hardboard or plywood, but they probably won't withstand repeated use. We use the thicker plywood to get 4 pours from the same forms. The plywood is wet and weighted down between two sawhorses to bow it before we start (thanks Vida and Suzanne). Our forms vary from 8-15" depending on the height of the stem above grade.

To build the form, the arm of the center pole is leveled to, and the first piece of plywood is set so the top is 8" above the highest grade point. We use sharpened stakes every 2 feet, screwed to the plywood with sheet rock

screws (which we use for just about everything--thanks to Vida and to the screw driver bits in our drills!). Each end has its own stake rather than sharing, to make placement easier. A plywood gusset can be used later to connect the two stakes. We tried plywood clips but they just get in the way. Stakes need to be below top of form so concrete can be screed (leveled).

Each piece is leveled into place with the arm, and a 2' level double checks pieces next to and across from each other. It's by far easier to level the entire piece before sand/gravel is in the way even if it means tamping in the last footing layer after the forms are up. The inner and outer plywood forms butt up to the bolts in the arm so a uniform distance is readily maintained. At high stress points on the outside, especially where two pieces join, we place diagonal support stakes from the form stake to a stake in the ground. (see photo p.7)



## TIE WIRE

Since the forms want to spring out of their round shape, we use flexible tie wire to maintain a 14" span. 4 1/4" below the top of the form (half our 8" stem) we drill a pair of 1/8" holes 1" apart every two feet. The ends of a 40" length of wire are poked through each pair of holes and twisted together outside the form. Blunt-nosed lines-dyke pliers work well and are also wire cutters. Then we stick a nail between the two parallel wires in the form and rotate, winding the wire together until the forms are 14" apart. Back the nail up and it comes right out. With these tie wire twists, the forms maintain their distance even with the pressure of the poured concrete. It is also a base to attach the 1/2" reinforcing rod (rebar).

## REBAR

1/2" rebar comes in 20' lengths and is pretty easily shaped to the round. Rebar provides shear strength and helps prevent cracking separations in any beam, including stem and bond beam. It's important. We curve it with crimps every couple of feet. Using a length of pipe held down by a boulder (thanks JC) we run the rebar all the way through til about 2' are left sticking out. Pulling up on it bends it. Pull out a couple more feet and bend again. After a few crimps we set it in the form to check the crimp angles. A length that fits well is the pattern for the rest. If crimps face different directions, a surprising rebar sculpture results. We cut rebar with a hacksaw or sawzall and use gloves to avoid metal spurs. Tie wire secures the rebar onto the wire twists and at the 18" overlaps where lengths join. The wire twists center the rebar in the 8" stem. Any place that supports extra weight--like the upright posts of door/window frames--is further reinforced with a third length and/or 12" pieces attached at right angles.



*What satisfaction when the stem form is done--staked, leveled and reinforced. 12" rebars add extra support under frame up-rights. Rebar is tied to wire twists.*

## RECIPES

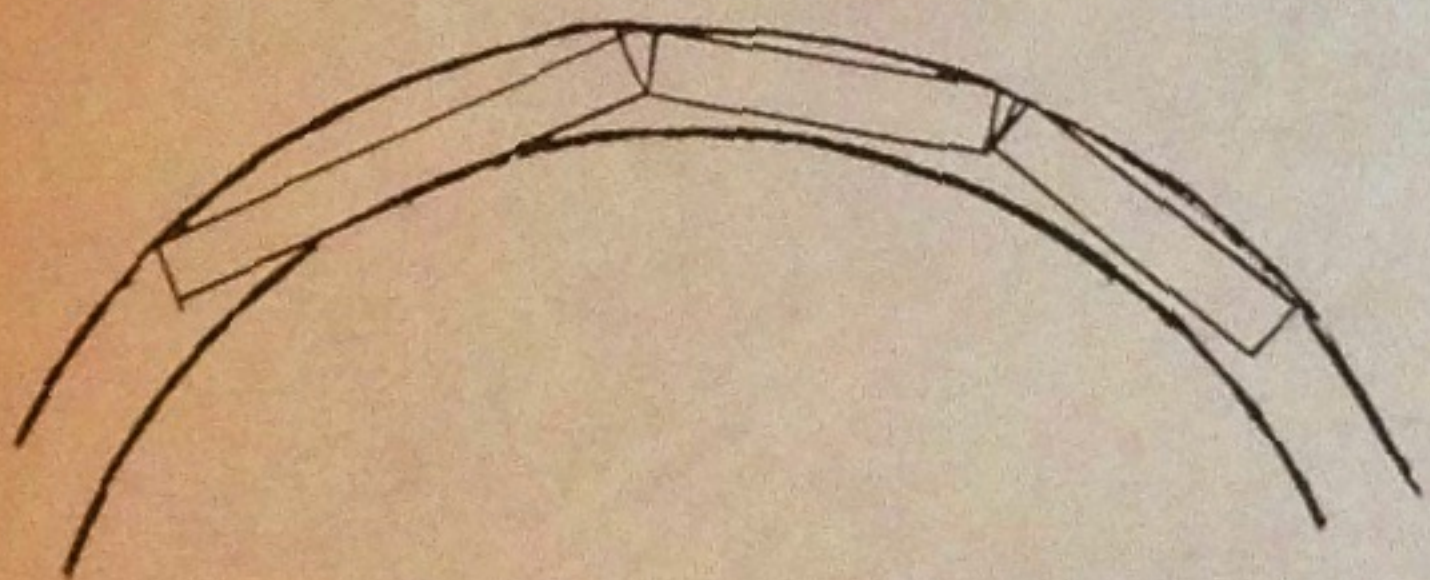
- Soil cement  
1 cement/9 clay (clay/sand for more strength)
- Floating footing  
2 sand/3 gravel, small rock (or can be sand)
- Concrete  
1 cement/5 aggregate (2 sand/3 gravel)
- Traditional clay mortar  
app. 2 clay/1 sand (sift through metal lathe if needed)
- Traditional plaster, 1st coat  
4 clay/1 sand/1 straw
- Traditional plaster, 2nd coat  
1 fine clay/1 fine sand (sift through screen)



## MARKING FORMS

Anything that needs to be considered when the concrete is poured is marked on the stem form before the pour--doors, floor-level windows, anchor bolts, joining walls, etc. Marking these forms is a little tricky. The door/window frames are square but don't look it on the round. They look like they go off at weird angles. Adjoining frames butt on the interior but are separated due to the round by a 3" vee on the exterior. It's this vee we want to mark to position anchor bolts.

We make boards the length and depth of each frame and set them in the form for both visual perspective and an edge line to work from. (Our doors are 1x10x82 and 1x10x53.) We determine that all frame corners need to flush with the exterior of the stem. We place the frame-sized boards with corners touching the outside form and adjust until we like the locations.



We mark all corners on the exterior form. Taking a ruler (or anything short and straight), we run it flush with the edge of the frame-sized board til it touches the interior form, and we mark these projected corners. We use a square set on top of the form lined down to these marks to draw vertical lines in and out on interior and exterior forms. Now we can find the frame edges. We transfer these marks to the concrete when it's set.

Finally, we measure in a few inches and mark on the form the placement of anchor bolts which will secure the frame to the stem. We use a big "X" to mark the locations of our frame uprights and a large red spot to mark anchor bolts. Bolt distance from the stem edge is also noted.

## Concrete

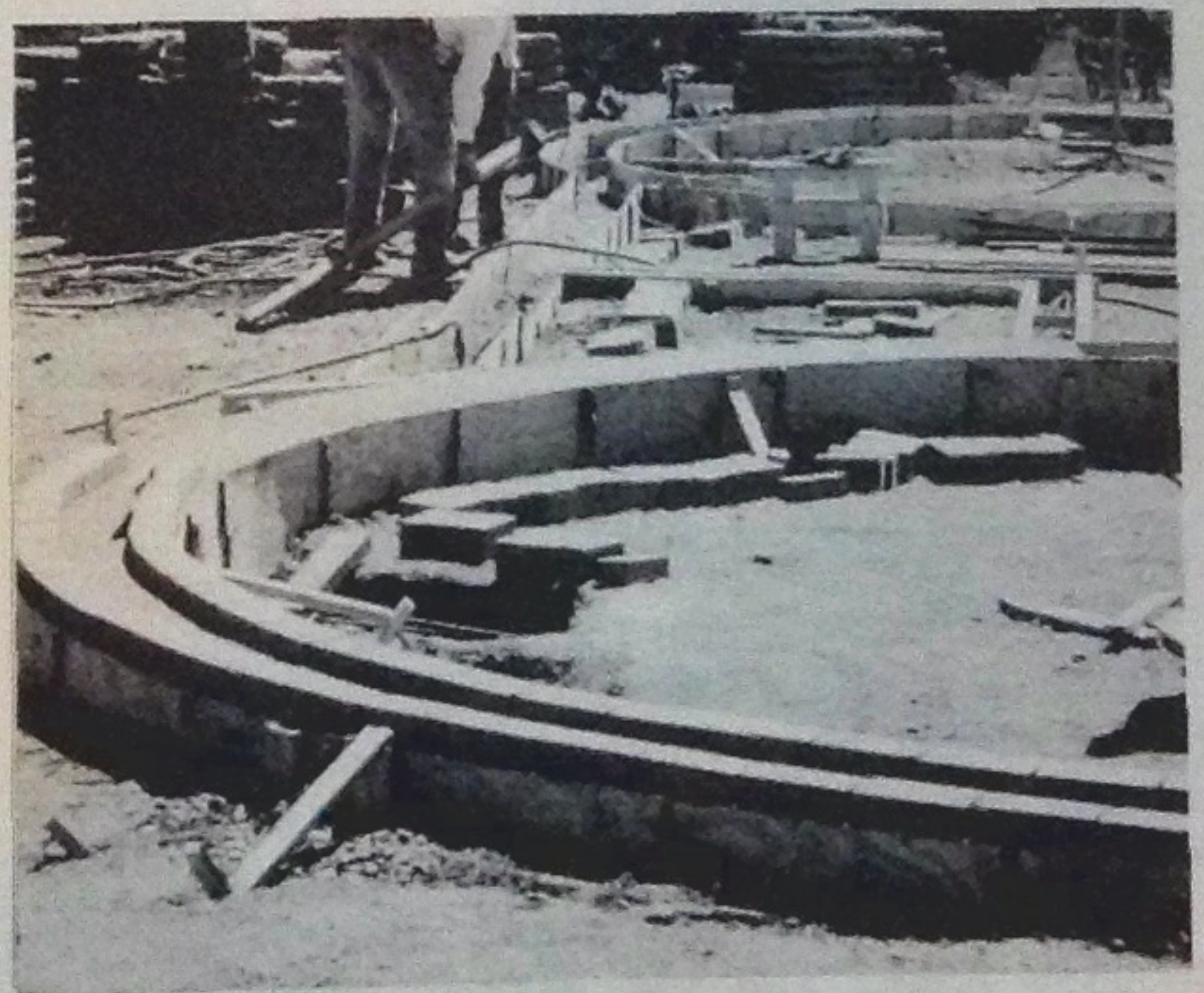
There's little difference in the actual pour between square and round. Just need to carefully tamp concrete under all rebar and against the round of the form. The round is one consideration in deciding to make our own concrete rather than having it delivered so we can determine our pace and the intensity of the flow.

Anchor bolts are placed when the concrete just begins to set, at the spots marked on the form. Setting a board across the top from spot to spot simplifies. Wrapping the length of the thread end that sticks out with tape preserves threads and shows exactly how deep to set the bolts.

Before we pour we run lengths of 2" pipe for water lines, drains and electrical lines under the stem, which we stake and flag.

Concrete is nasty stuff and we're careful to use rubber gloves, dust masks, ear protectors and long pants and shirts.

We use batter board strings to mark N/S/E/W (square) on the stem sides after concrete sets. This will be used to square the roof later.



Hooray. Here comes the concrete. We set bricks in it to prevent concrete from wicking moisture into our traditional unstabilized--no asphalt emulsion--adobe blocks (thanks Abi). Angle stakes brace form where it wants to give.



## DOORS AND WINDOWS

We're some of those Dykes who really like windows--the airiness, openness, lots of light, warmth of solar in winter, feeling closer to outdoors. So, it's pretty important to figure out how to get windows in the round wall. Two things to consider: a sheet of glass in a round wall becomes a facet, a side, rather than round; and, the entire frame needs to fit inside the edges of the stem/wall, or it really does become a multi-sided house. Even if they do fit, how do we maintain the feeling of round with big straight flat frames/glass?

Round houses often have tall narrow windows to fit in the round and for easier construction. They don't work for us because we lose too much wall space to frames; we need big expanses of glass to make best use of our limited wall space. Our size structure at this latitude/elevation needs some 108 sq.ft. of glass for maximum solar--a lot of glass.

The largest feasible frame for our diameter and wall thickness is 6', so this determines our entry swing patio door. A 4' window fits nicely in the stem and we can easily get 4' patio doors to install as stationary windows. Two of these and the swing door get us 88 sq.ft. of actual glass. It'll have to do. And it does--there's a lot of flexibility in a small structure. There's just so little space to heat. And, the adobe walls along with the sand/brick floor store a lot of warmth. We seldom need the woodstove, lighting a small fire when we're up before the January sunrise, or to take the chill off cloudy days. It's pretty amazing how comfortable they are.

Another consideration is how to support all the adobe and bond beam weight above the windows or doors. By butting adjoining frames made of 4x10's we have in effect 8x10 weightbearing posts. It's real important to have adequate posts and top sills. When we build the frames we attach the 4x10's with 8" lag screws and hold the square corners with attached 2x4's.

Our object, then, is to fit 3 large frames into the southern wall and still maintain a sense of the round. We offset the facets by keeping the round clearly round below and above each frame and keeping the frames within the stem/wall. The stem is already delightfully round. Above the frames, a concrete bond beam encircles the top of the wall, just like the stem maintains the round at the bottom.

Smaller window frames in a layered wall are set in place, leveled and plumbed, as the wall goes up. The frames are usually 2x4's with a big timber, called a lintel, stretched across the top. The lintel bears and spreads the weight above it. It extends at least 12" beyond each side of the frame to prevent cracking and shearing from above. It's bedded in 1" of mortar on top of the frame. The length of the lintel needs to be considered when choosing window width that'll fit the round.

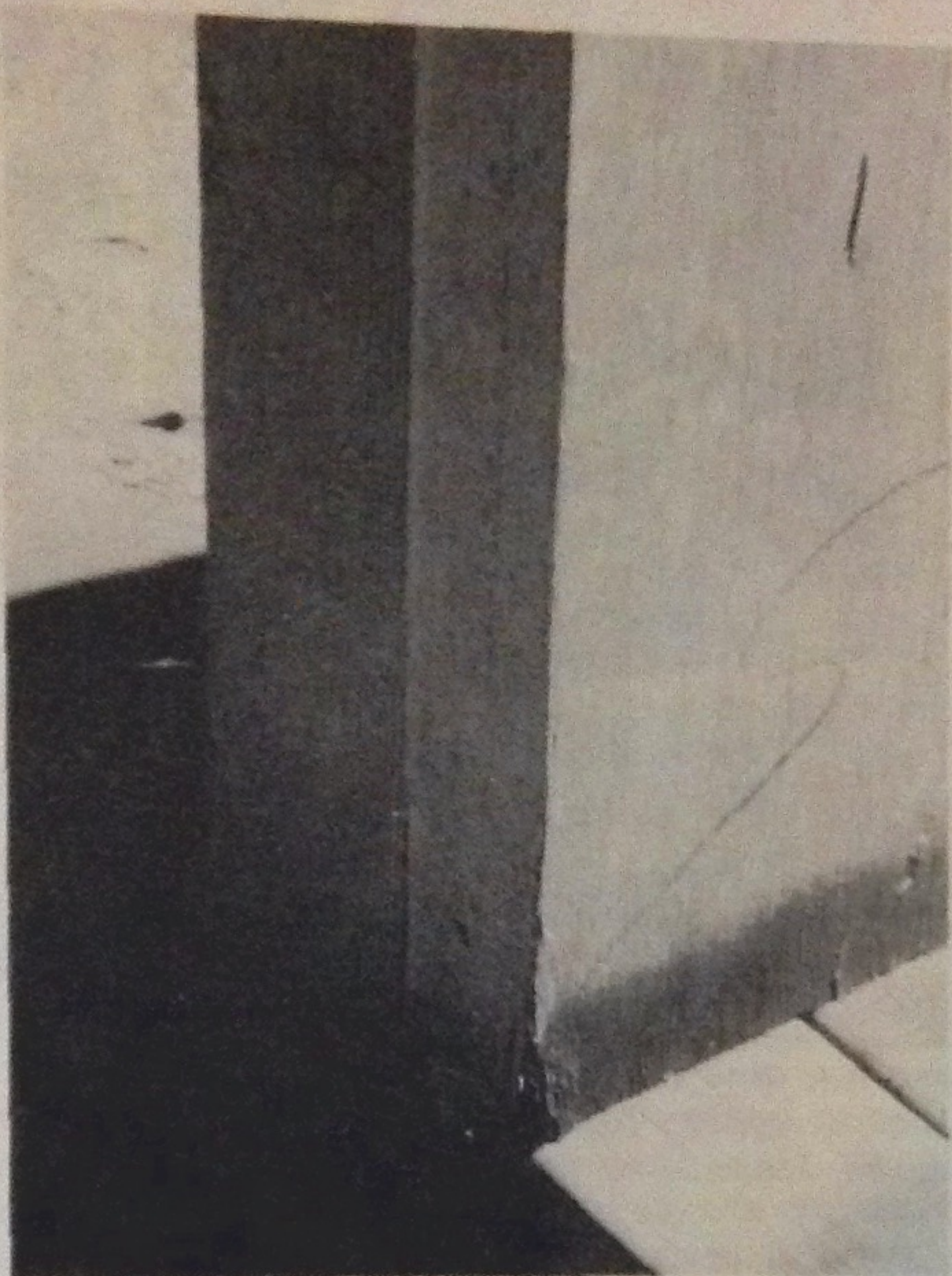


Squared and plumbed door and window frames. Vee on outside where frames join. Wood plate on top helps secure frames together. Braces are tagged with flagging tape to save Dyke heads. We're starting to lay the adobe blocks between frames.



## FRAMING

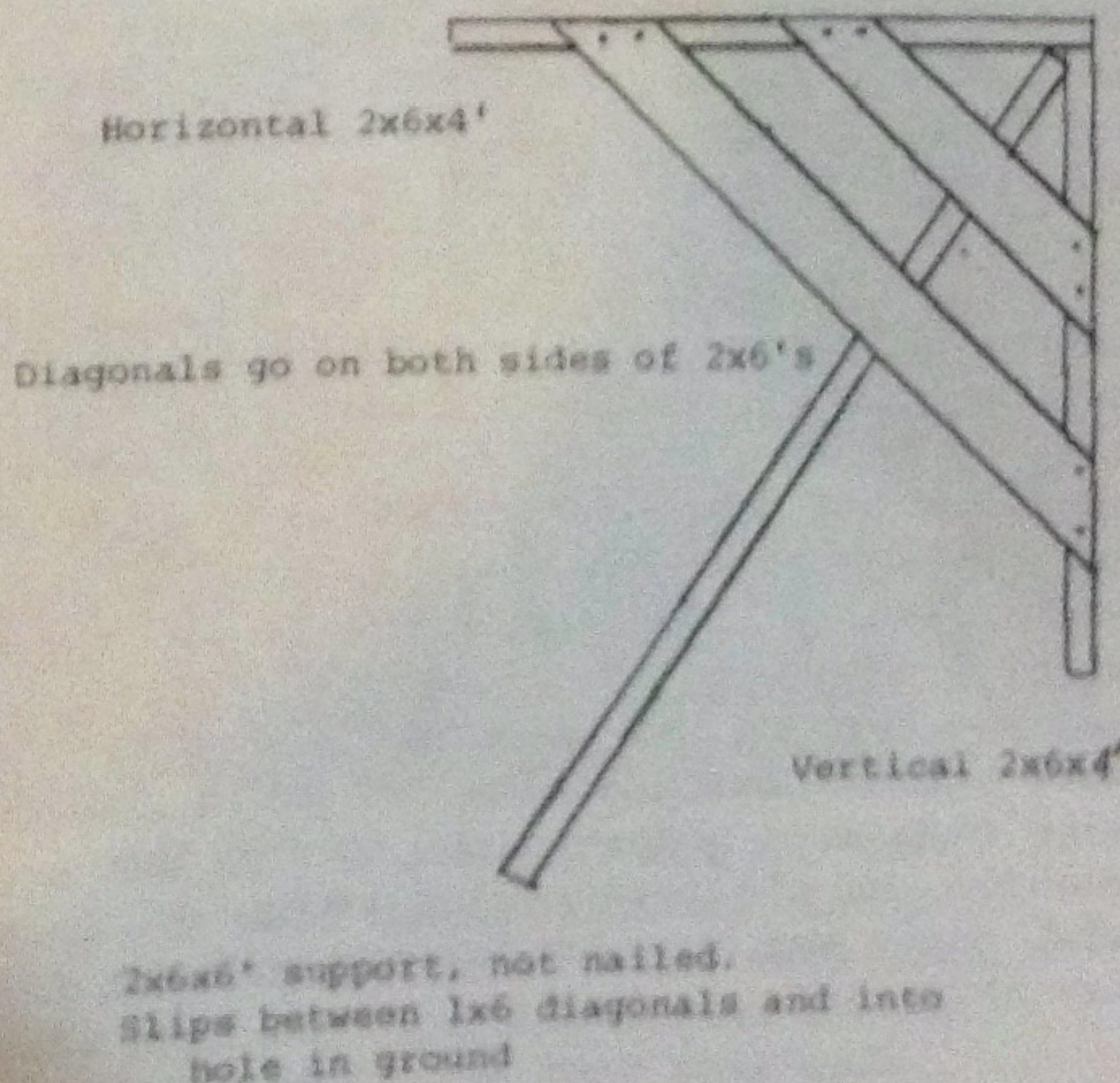
Connecting the big door and window frames is like putting together a large bay window with 3 sides. We in effect have an adobe round house with a 15' frame wall set into it. When we attach the frames to the stem the interior edges are butted to each other while the exterior edges have a 3" vee separation--the bay window look. It actually holds together and plumbs pretty easily. Each sill (the bottom board of the frame) is anchor bolted to the stem so they're secure. We put our good level to each frame and stake the long braces in place to plumb. We attached squaring boards while building the frames. To bring the frames to where the top of the wall will be, we add 1x10 and 2x10 boards as needed. We hold the adjoining frames together with boards, metal plates, angle braces or anything else that'll work--on top and on front or back. Large spikes or 10" lag screws from side to side work good, too. Some care is necessary to not mar wood that'll show when building is done. We also added wedges cut to fit the vee between frames for greater security (thanks Sun Hawk and Ame).



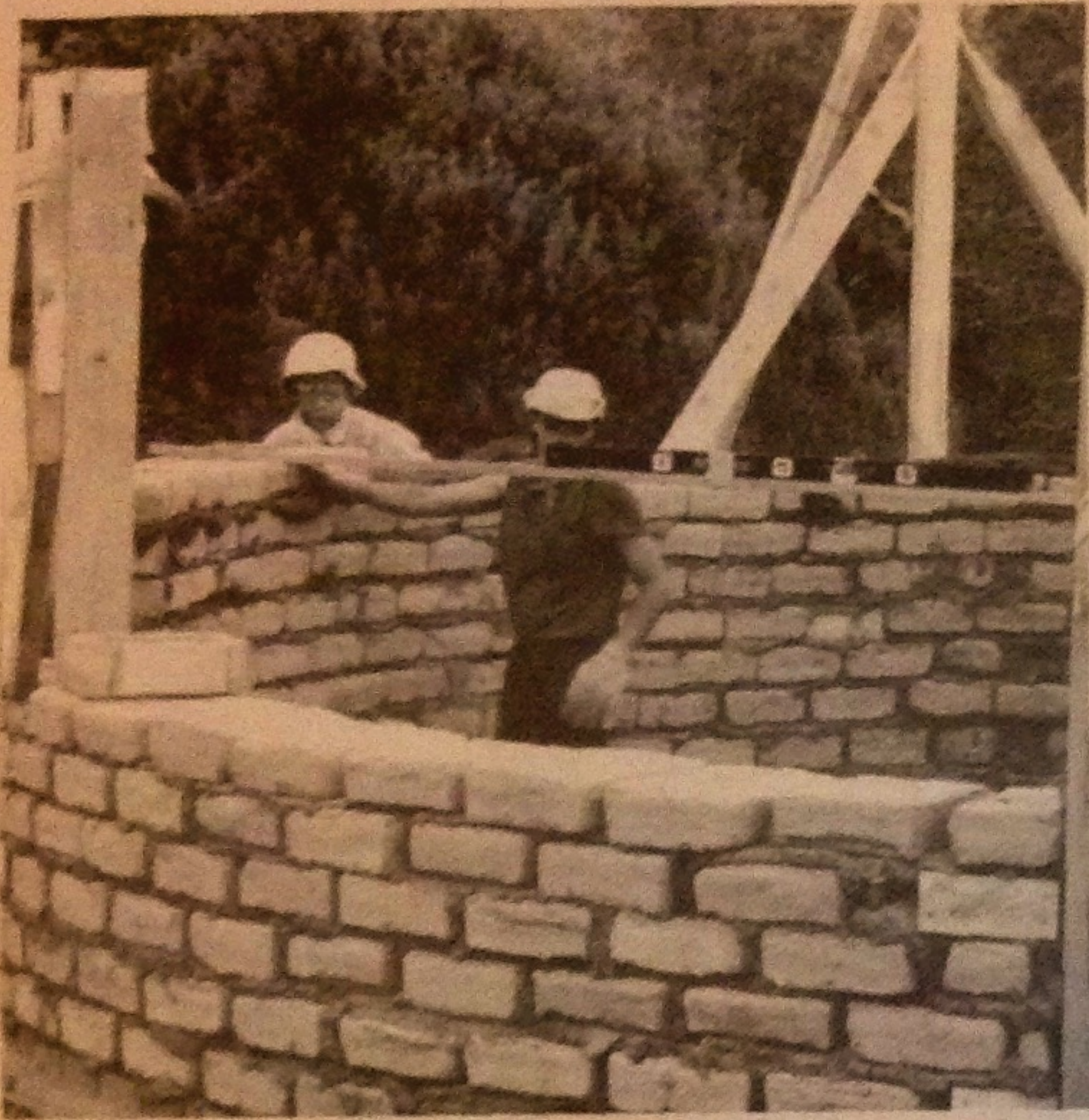
*Adjoining frames butt together on the interior and because of the round, form a 3" vee on the exterior.*

## SCAFFOLD

All our building is essentially done standing at 3 different heights--ground level, on planks set on really solid sawhorses, and about 5' above ground on scaffolds. (thanks Rose) This scaffold works great on the round. Each scaffold is a big triangle held to the wall by a long diagonal board placed securely in the ground and held with stakes or weights. Don't ask me how it works and stays there, it just does. But we also check daily to make sure they have not loosened. (Rose explains that if a scaffold ever lets go, ride it to the ground and then jump off). We set them maybe 5' apart on the wall and use overlapping 2x10's or 12's as planking. We nail our planks down for extra stability.







Rose and Ame use arm to level adobe blocks. Gringo block is in place beside frame.

#### ADOBE WALLS

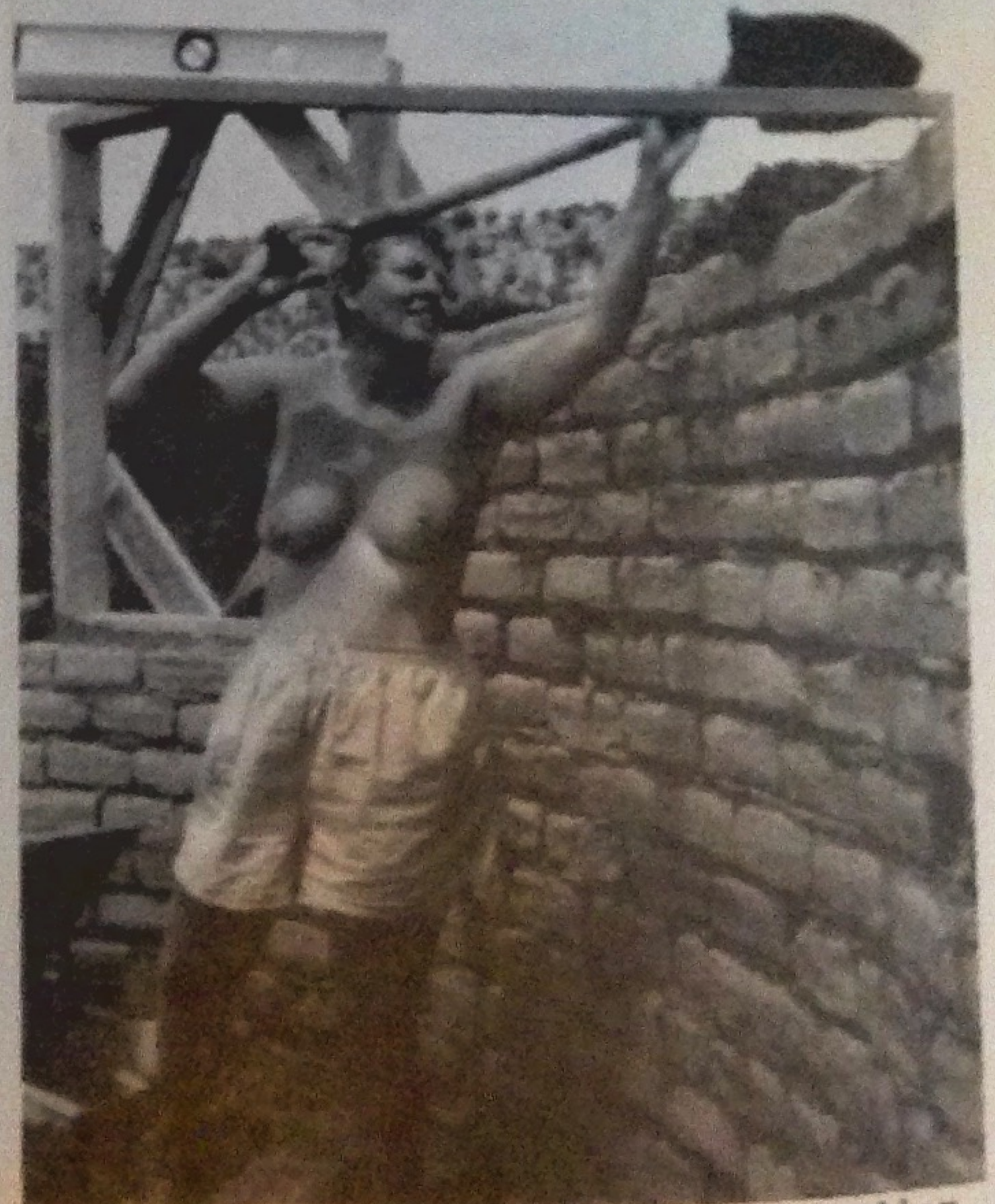
Round walls. Sounds nice. And, when building with adobe, cordwood or stone it's pretty basic and great fun. Building with adobe is purely a joy--the feel of the earth, groundedness, incredible reds of the clay, all majik. This section is short. Adobe readily conforms to the round. In fact it's ideal to free-form any kind of shape.

Using the level and bolts on the center pole arm, keeping the round layers of adobe level and plumb almost takes care of itself. We just move the arm up the 4 3/4" that a 4" block with 3/4" mortar take each layer. To lay the square adobe blocks into a round, we snug up adjoining blocks on the inside and vee them on the outside. (If we make our own adobe blocks, we could make them more wedge-shaped to fit the round!) We all love laying adobe, so wish there was more to lay and more to say about it!

When building with stone or adobe it's real helpful to put wood blocks in the wall as nailers. Door and window frames are nailed into these wood "gringo" blocks securing the frames and walls together. (Another way to do this is to attach strips of metal lathe to the frame and extend them out between wall layers. We'll do this on the next casitas.) These blocks are 2x4 frames the same size as the 4x10x14" adobe block. Beside frames in the round, a half block sometimes fits better.

We also figured out placement for everything we might want to attach to the curved adobe wall--cabinets, counters, grab bars. We placed gringo blocks where needed in the adobe layers so we can screw into them.

Wood blocks are also used to hold the bond beam forms (thanks Rose, a most helpful idea). It's just a matter of placing them in the top layer of adobe (more under bond beam...).



Jae. As the walls get higher, the taller wim shovel the mortar up!

Photo by Lee



## BOND BEAM

Especially in the round it's important to have something around the entire top on the wall to hold it all together. (Ends of square walls overlap and attach to each other.) That's the purpose of the bond beam, a big solid collar on top of the walls. It secures the roof rafters,



*Miguela, JC, Karen and Ame using center pole to level bond beam forms. Form is screwed into gringo blocks in the top row of adobe.*

spreads roof weight and holds the roof to the walls preventing wind shear from lifting the roof (a definite consideration in a place with high winds or long overhangs). The bond beam also prevents roof stress or erosion bowing the walls or collapsing the roof, a problem for layered walls like adobe, stone, cordwood (a bond beam would probably prevent the bulging walls of the incredible cordwood house at DOE).

Round houses made with posts and beams like Hannah's do not have this problem. The boards nailed on top of the wall posts (securely in the ground) tie everything together like a

bond beam would. The posts bear all the weight from above and become part of the walls, like in Hannah's wondrous house where adobe block fills the space between the posts. The adobe bears no structural weight or stress. The board collar secures the posts plumb into the round frame and controls the down and outward pressure the coned roof exerts.

Bond beams are often made of wood timbers, easy on straight walls or post/beam rounds, but hard to secure together and shape on a layered round wall. Concrete is yucky and heavy but does conform nicely to the round and is incredibly sturdy for a big, long-lasting structure. For the casitas we choose concrete.

Shaping and pouring the bond beam is just like making the concrete stem. In fact, we use the same already cut and bowed forms. They are readily attached to the gringo blocks already set in the top wall layer. Setting the center pole arm 6" above the wall (the height of the bond beam), we use it to level the forms all around. If there's no gringo block where forms join, we screw a plywood gusset over the joint. Tie wire, rebar, and pour are like the stem.



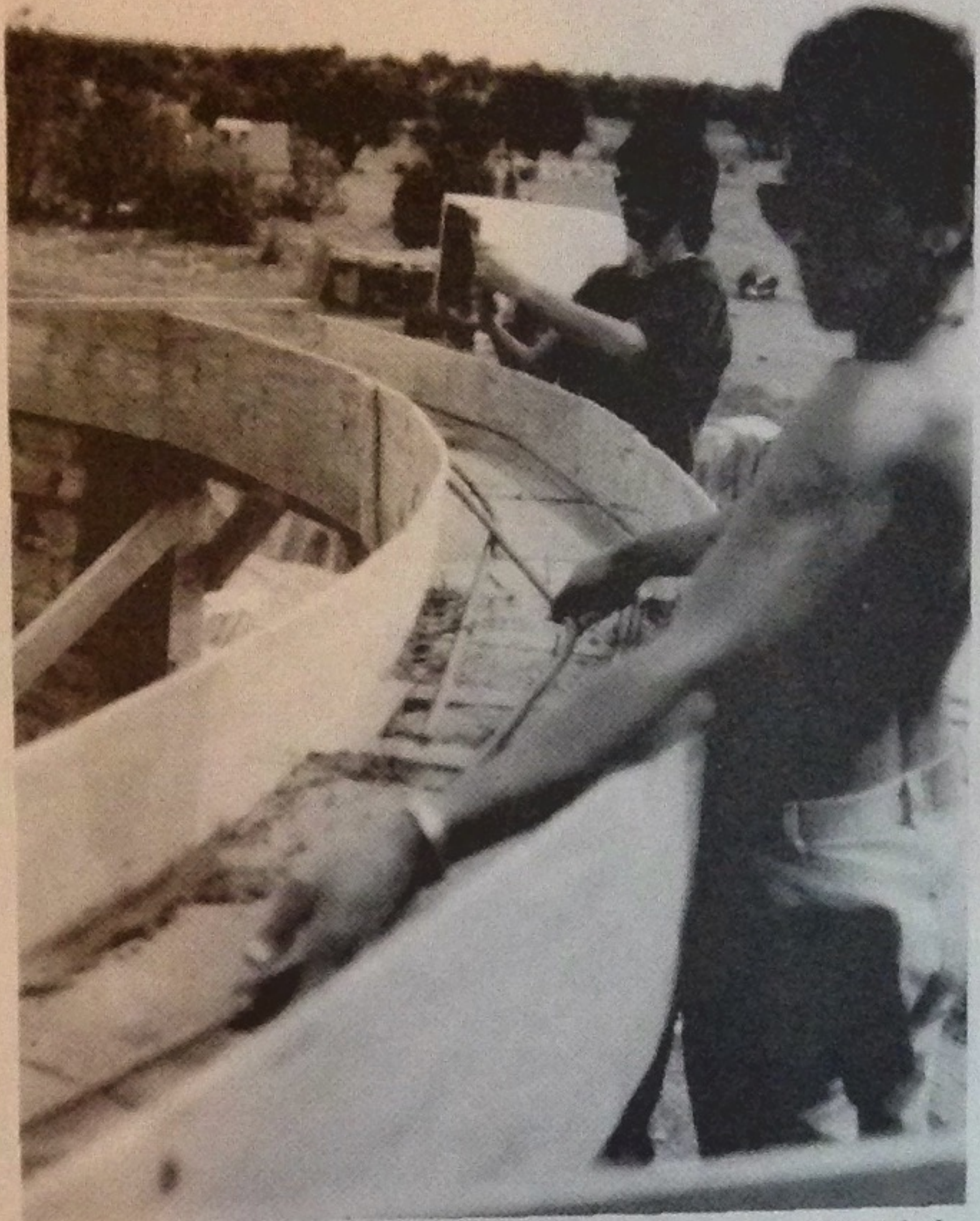
*Lua and Lee fill holes with mud and start rounding out wall around window. Lintel extends over window frame 1' on each side. Concrete bond beam and the gringo blocks that held the bond beam form show well.*



## BOND BEAM FORMS

The biggest detail in making the bond beam round is filling in the space where frames facet the round. Fortunately we already have ready-made patterns for these gaps. The stem sticks out making a big arc outside the bottom sill of the frame and little wedges at the edges on the inside. Placing a 2x6 board on each side of the stem flush to the frame, we follow the stem with a pencil and mark the underside of the 2x6. When the big arc and the little wedges are cut out, we attach them with long screws and corner braces flush to the top of the frame interior and exterior. They now serve as the "floor" for the bond beam above and the forms attach to them.

To reinforce the concrete where it cantilevers out past the frame and to prevent it running out any gaps, we lay strips of metal lathe over every wedge and arc. In addition we place strips in the middle of the 6" concrete when we pour the bond beam. Stuffed newspaper fills any gaps if concrete starts to run out during the pour. Pounding 16d nails into the top of frames sets concrete firmly onto them.



*Shelby and Miguela place rebar. 6" high bond beam is made just like the stem.*

### Marking Bond Beam Form

Since we want our roof line facing South, we set batter boards, mark square on the stem and now on the bond beam. We use these marks to square the roof. We extend strings between marks to show the square and we mark on the forms where each viga (beam) will be. This point is reinforced with extra rebar and a piece of metal strapping (salvaged when we cut them loose from the brick bundles) is run under the rebar with ends sticking out about 18". Using a big nail we've already placed 3 holes on each end. When the concrete sets, these are firmly embedded and will wrap around the viga and hold it securely preventing wind shear lifting the roof.

Marks are transferred to the finished bond beam. Again using string we draw lines on the bond beam cement just where each viga will rest. Lines sometimes look a tad strange because of the round!



*Arcs made from 2x6's are secured to the top of the frames to shape the round of the bond beam. Extra boards are placed on top of shorter frames (right) to flush them to wall height.*



## LIFTING THE CONCRETE

Concrete is heavy--really heavy. So lifting it from the ground to the 9½ foot high bond beam is a big deal. We use a tall ladder-like support to hold a pulley to lift the concrete buckets (thanks Ame--a really great idea). Made of tall 2x4's with a 2x12 foot, we ground-stake the brace in the middle. A long 2x4 is nailed to the top of the support. A 2" hole in the other end slides over the center pole and is held there with the U-bolts. The pulley is wired to this 2x4. This whole unit pivots around the casita. It's ingenious and works well, saving a lot of back work.

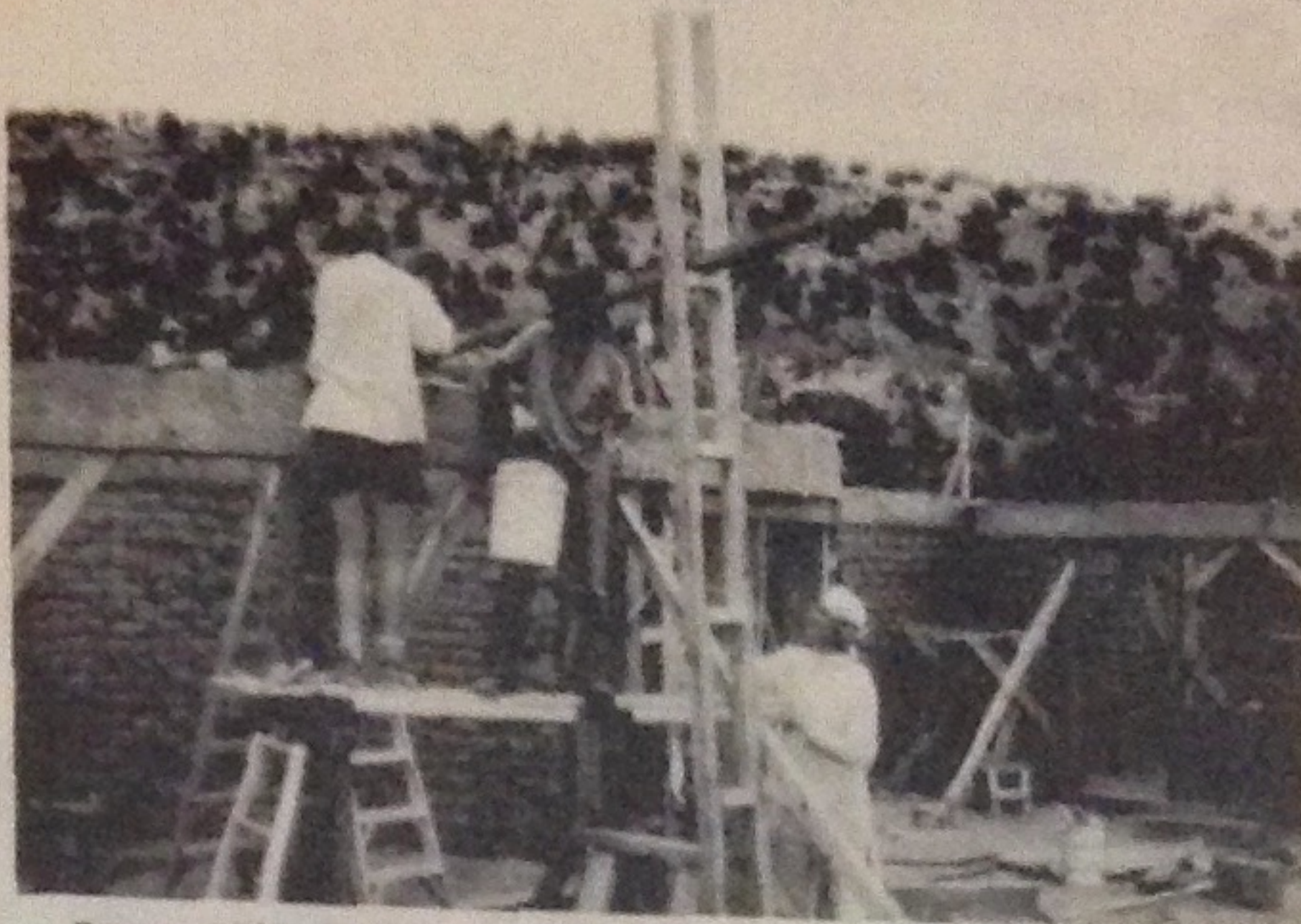


Photo by Karen

Jae, Miguela and JC use the pulley to lift bond beam concrete.

## ROOF

Deciding on and figuring out how to build the roof(s) was perhaps our biggest construction question. When we build our single rounds we'll probably go for one of the breasts--a key like Adobe's or a hogan octagon. For connecting the two casita rounds with the greenhouse, trying to figure breast roofs was just too hard. So we chose the large low-pitched shed roof to cover the entire 60'. It works real well for our purposes. Rafters support the roof. Vigas, peeled logs, stretch over the bond beam and hold the ceiling. Insulation lays

on top of the ceiling boards.

Vigas are lifted, placed, squared to South and leveled to each other. The metal straps embedded in the bond beam are wrapped around each end of each viga and nailed into place. Short lengths of planed 1x6 are nailed to the top of the viga, so the vigas show inside the room. The peeled logs and planed wood with the clay walls has a wonderful feel. Conforming the ceiling to the round is one of the easier steps. No need to cut curves; just cut the outside boards in a few inches from the outer adobe edge, mortar, and lay another row of adobe in place over the boards.



Vents are placed between vigas on the south wall. When vent opening is 4 times larger than an opening in the opposite wall, a natural air flow is created for summer cooling. Spacer boards form a neat edge between rafters. Metal roofing overhangs wood 3".

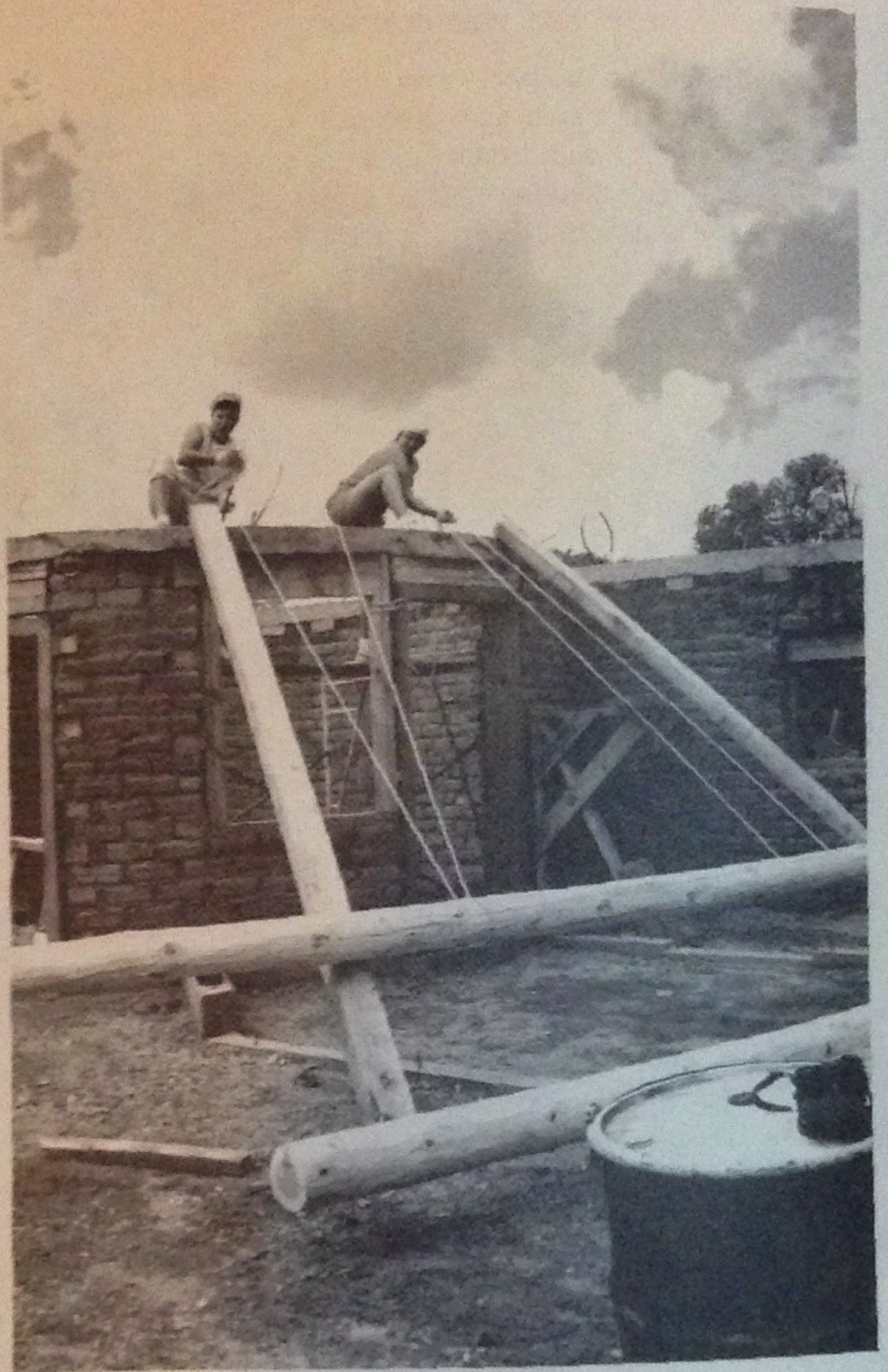


## LIFTING THE VIGAS

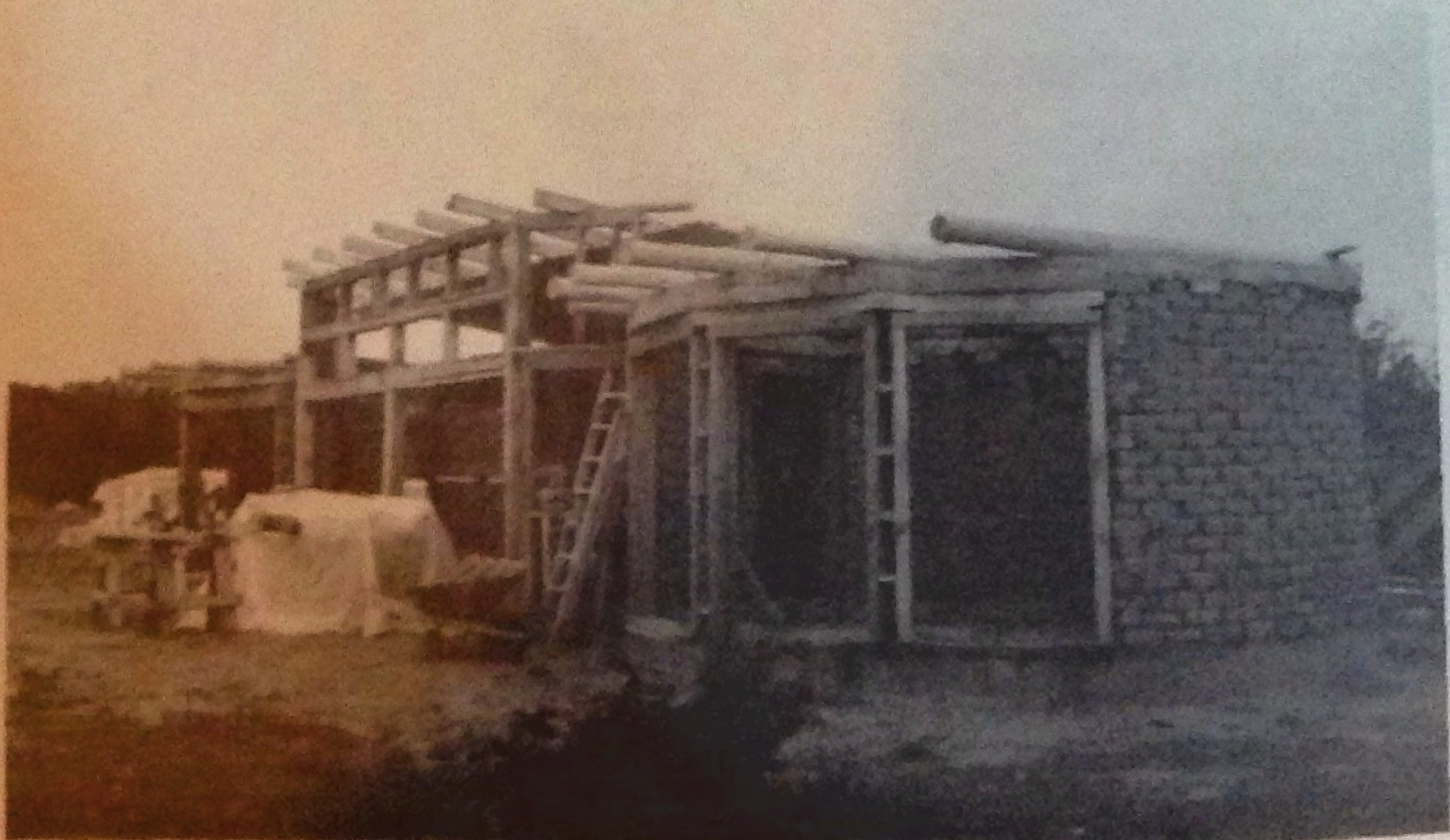
It's so much easier to cut the vigas to length before we lift them. We want them to extend 3' beyond the south walls to support summer shading, yet still conform to the round. The location of the vigas is already grease-penciled onto the bond beam so all we have to do is measure for each viga, outside edge to outside edge and add the 3' for the overhang. Proportionally it would look better if we'd made the shortest end vigas a little longer.

Two 55 gallon drums work great to roll the cut vigas to the casitas. To lift the vigas we use a ramp made of two 2x6x18's staked in the ground and resting just over the lip of the bond beam. We use ropes to pull the vigas up the ramp. The voice of experience says, yes, the round does make a difference. We placed the 4x6's too far apart. The curve of the bond beam stuck out and we could not push/pull/tip the viga the rest of the way. We had to shove the 4x6's closer on top. Also a longer ramp makes for a gentler, easier slope to move the vigas.

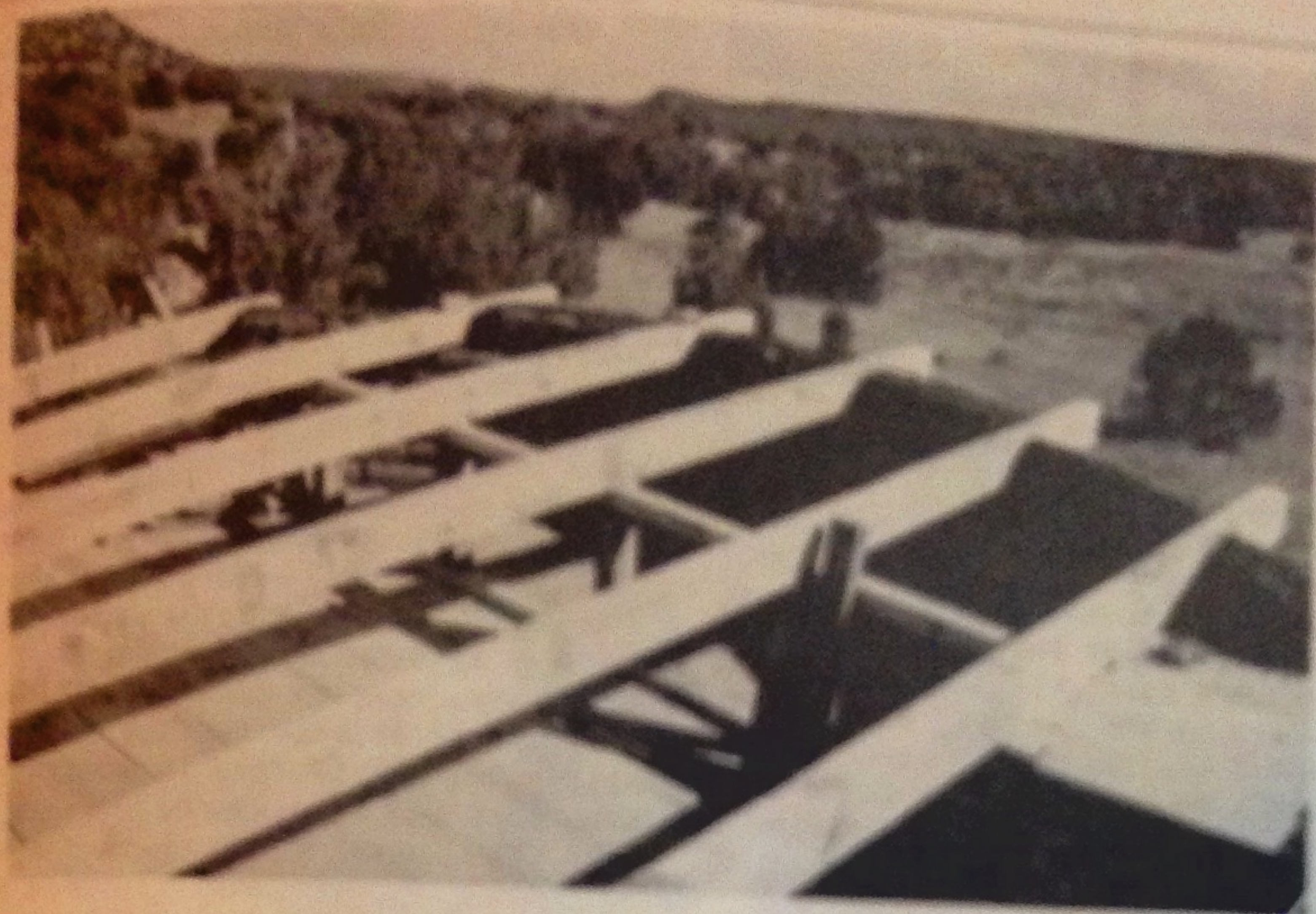
One innovation helped us when the viga got stuck at the top. Letting it all the way down safely is pretty hard. We had drilled 5/8" holes 3" deep every 4' up both 4x6 ramps. We just stuck an anchor bolt in the top holes of both ramps and let the viga down that far. The bolts held the viga while we figured what to do. Really handy. These kinds of precautions made our building a lot safer.



*Lua and JC lifting viga. Pretty exciting.*







### RAFTERS

sizing the 15'-25' 4x6 roof rafters to fit the round is easiest after they're up. They're measured much like the vigas, from outside edge of wall to outside edge plus 1' South and 4' North overhang (prevents rain off low North roof from sculpting the adobe). Dropping a string or a level marks the vertical angle cut. We use a chainsaw.

Placing the rafters is a tad more complicated. The rise from back to front is about 2'. Because of the round, the height from the ceiling boards decreases as we move around the circle closer to the back. To us the easiest way to deal with this quirk of the round is to build a short frame wall at a place on the ceiling where all rafters can rest level on it. Once the rafters are in place we build the adobe wall up to them. This adobe wall is only 6" high at the north increasing around the circle to 11" at the south.

Now to build our mini-wall. We determine the height we want the rafters and the height the wall needs to be to hold the rafters there. The little wall is built like any frame wall with the uprights placed directly

under the rafters. With wind shear in mind, we securely plate all parts of this wall together. The wall is squared to the south. We lay across the entire wall through the ceiling boards and into the vigas. Also, we extend the doubled top sill of the little wall out about 2' to help support the flyrafters that'll hold the side roof overhang.

On the low north end the rafters also need to be supported. This is simply a matter of placing a long 4x6 squared on the ceiling just where it needs to be to catch all the rafters and hold them at the height we want. It's like a 6" support wall. The 4x6 is also firmly lag screwed into the vigas and extends over the wall edge to help support fly rafters.

Rafters are plated and spited to the 2 support 'walls', again making sure they are square so the roof will line up to the south, that same E/W batter board line we set so long ago. Square only matters if your roof needs to line up to a particular direction. We place our rafters 16" on center (on center: from the middle of one to middle of the next) because our roofing comes in 16" widths and we want to secure it to the rafters at every joint.



## FLYRAFTERS

Flyrafters are quite the marvel to round out a roof. They are short 2x boards attached to the last rafter to extend a side roof out beyond the wall. We choose the lengths and they shape our roof. Handy. They are angle cut where they plate to the rafter to project out to where we need them.

Since none of us had ever done flyrafters we were a tad leary. But then most of us have never done a lot of what we're doing. We just decide to secure and support them every way we can.

Our first support is a 2x2 attached flush to the bottom of the last rafter. Then we attach a flat 2x4 to the top of the extensions on the 2 rafter support walls (the 4x6 and the mini-wall). This 2x4 is further supported by the adobe in the middle. We rest the 2x4 flyrafters on both the 2x2 and the 2x4, plating all 4 sides to the rafter and nailing them to the 2x4 support. They're spaced about 2' apart.

Once they're in place we measure out from the wall and mark the lengths needed (we want the roof to hang out over the rafters a couple inches). We need a frame around the entire perimeter to attach the roof sheathing so boards are run from rafter to rafter. This can be done either between or outside the rafters. A chainsaw trims neat edges to flush everything to the round.

These flyrafters work great and a flat roof can be contoured to any shape using them. A pretty neat way to get a round roof.



## Roofing

Finally. Once the flyrafter roof frame is done, we attach the 1x6 rough cut roof sheathing boards--solid on the edges and spaced 6" apart over the casita. Chainsawing from a scaffold on the outside does the nicest job trimming these board flush to the rounded rafter frame. A jigsaw or sawzall also works.

Metal roofing. Whoever would've expected this to be our choice? Yet, it's ideal. Metal roofs are traditional here on adobe houses. As it turns out they are a most efficient roof for heating/cooling. Something about the length of the solar rays they reflect. They're affordable. Perhaps most important, they're non-toxic. Finding nontoxic affordable roofing is problematic. And considering it covers a large area fast and is easy for novices to deal with, metal works great for us. We choose a heavy gauge colored kind called propanel which comes in sheets 3' wide and as long--to the inch--as you want them.

Metal roofing is usually used on high-pitched roofs--a rise of at least 4" per foot. We have a real low-pitched roof (1 1/4"/12") so take particular care installing. It's worth it to us so we can use the metal.

Overhang boards are solid so wind does not vibrate the metal. Our greatest board spacing is only 6" so the metal has a firm base. Metal panels overlap each other on the edges. On each edge we run 3 lengths (each side and top of overlap groove) of a real sticky caulk to seal panels together and insure no leaks. This caulk is about 1/4" wide by 1/8" thick and comes in long rolls on waxed paper (seems non-toxic, too--no smell). We use 3 screws with waterproof washers on each overlap and a screw at every ridge on the roofing.

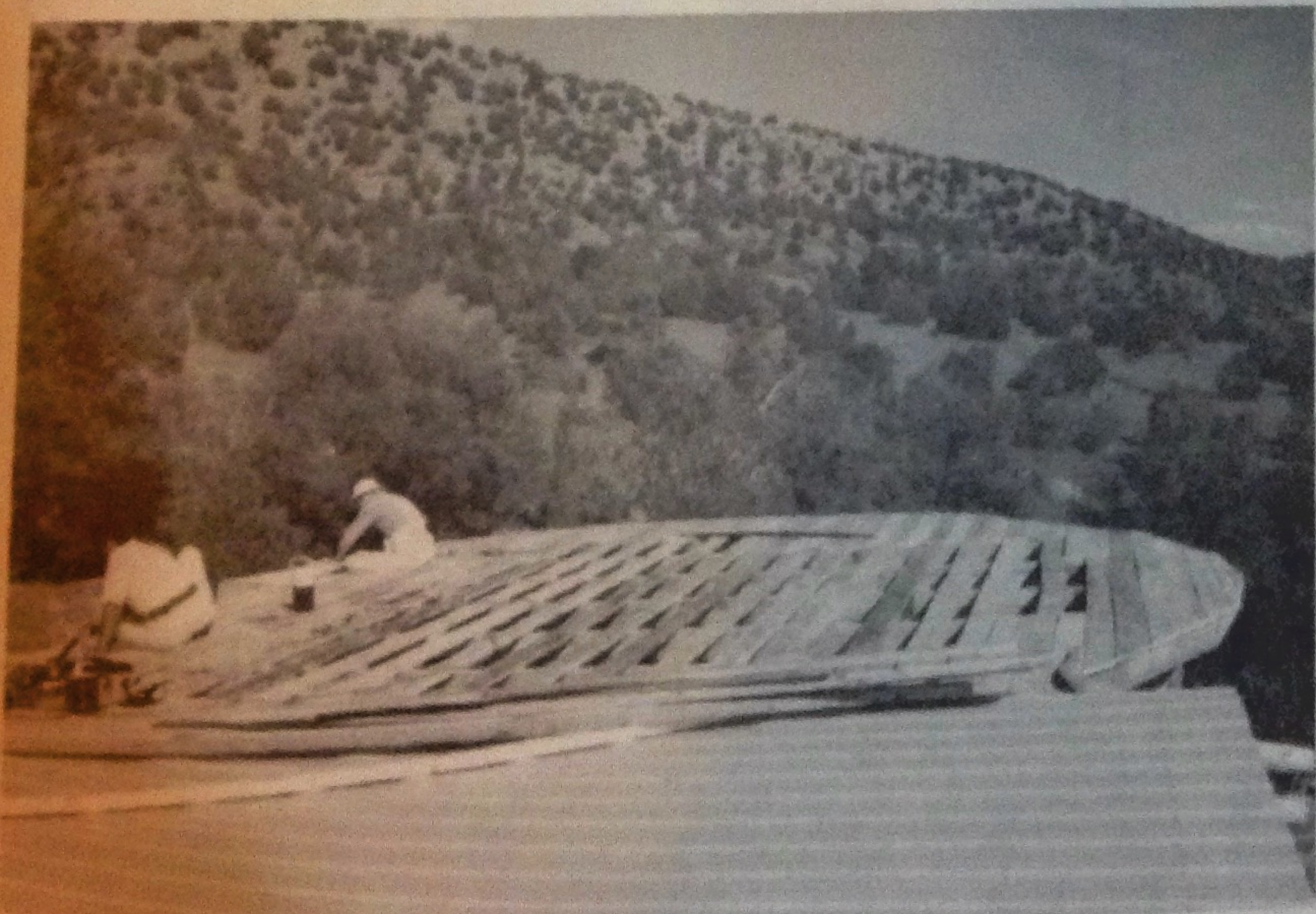
When in place the square roofing sheets stick out over the roof edge. To cut it round, we mark the underside 3" out from the frame all around and drill tiny holes periodically on the line. 3" allows room for trim, protects the boards, and makes for a nicer look. We use a sawzall to cut along a line drawn from hole to hole on the top. We kept breaking blades when we tried to use the jigsaw.





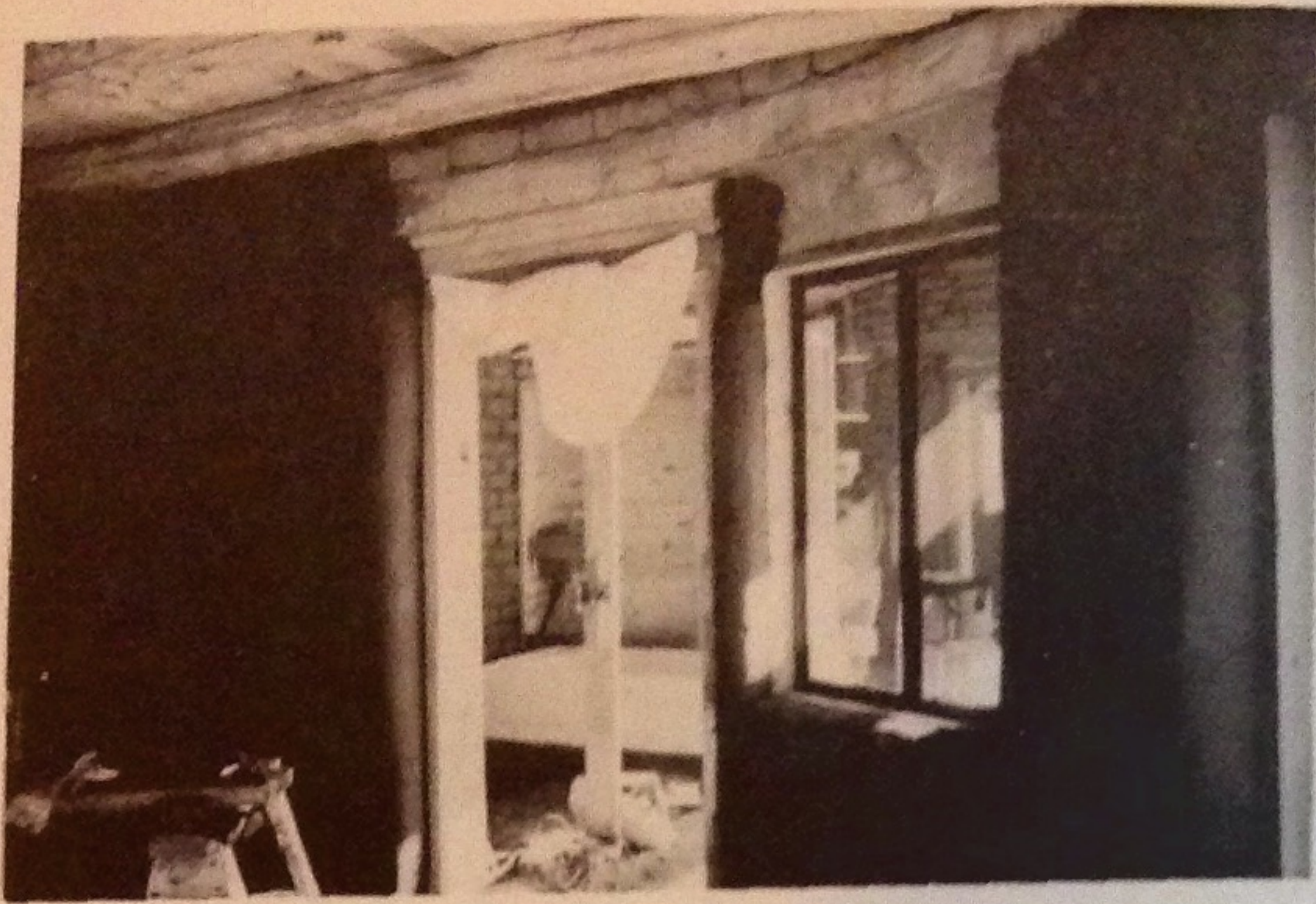
*Jae and Lua dancing on the rafters*

*Photo by JC*



*Lua and Lee attaching roof sheathing boards on the 4' north overhang. Really like that round roof!*





### PLASTER

Plaster is real well suited to building round since it can be sculpted into any kinds of shapes and readily fills gaps. We use a traditional mud plaster (4 parts clay, 1 fine sand, 1 straw) for our first interior and exterior coat. Gypsum plaster, cement stucco or cement added to the mud could also be used.

We trim window adobe block with a hatchet and gringo blocks with a sawzall, eliminating sharp edges. The mud works particularly well contouring around windows, doors and the bondbeam, bringing out the roundness everywhere.

When the first coat is dry, it cracks. The second coat is a thin mix (1 part clay, 1 part fine sand), troweled on, filling cracks and smoothing the wall. Inside we do a third coat, rubbing the wall with a rag dipped into a clay "wash"--thin watery clay.

We choose not to stabilize (add petroleum, yuck) our adobe blocks, mortar or plaster. Cement can also be used as a stabilizer so clay won't erode so easily. Instead we protect the clay with overhangs and plan to re-plaster or patch as needed over the years.





## FLOOR

Floors in the round can be made of almost anything--clay, earth, brick, wood, concrete, tile. We'll probably try a clay floor when we get to a simpler single round. For the casitas we choose brick. Bricks are traditional, a nice red color, absorb solar heat well, are easily maintained, and pretty reasonably priced. Basic to us, they're nontoxic and easy to lay. Shaping them to the round is simply a matter of marking them and using a brick chisel to break them. All in all our perfect floor.

Perhaps where the round takes a little extra figuring is in leveling the 1" sand bed under for the brick. We deal with this by using a fan-shaped leveling guide. We want our finished floor level with the

doorway for wheelchair accessibility. Any straight board works to level. We use the 1" square steel arms from the center poles. Using 3 of them--one perpendicular to the doorway and the other 2 fanned far to the left and right-- we can level any part of the room and still have the screed board resting on 2 of the levelers. Each is leveled to the doorway, then to itself and each other. Add sand til it's slightly above the bars, pull on the screed board resting on at least 2 of the levelers, and the sand base is leveled, ready for the bricks. We tried other ways, but the fan shape greatly simplifies the leveling. Bricks are set on the sand and tapped tight and level with a rubber mallet. Fine sand is swept over the finished floor to fill any cracks.



Shelby and Connie mudding between brick and wall. Another layer of wall plaster neatly covers cut brick edges.



Couldn't ask for it to look any better than this.



These wondrous structures have evolved over the months, the ideas and energy of every Dyke here combining to create the casitas. Two of us (Lee and I) have been here from the beginning mutually designing, planning, figuring how-to's, researching and building every phase, and putting it all together for MAIZE! Every Lesbian who's joined us whether for days or months has helped make it all possible and real. I have such wonder and appreciation for all 27 of us.

Does the round feel any different? I don't know what's the sun and light, the openness, the vigas and wood, the adobe, or the round. What I know is that it's as wonderful as I hoped and

dreamed. The casitas are incredibly earthy, embracing, warm, airy, and homey. I sit back and contemplate them with enormous wonder and appreciation. Remembering/feeling many of us present here, all coming together to create this space. Aware of how often and in so many ways all of us follow our dreams, live our Lesbian values and ideals, build Dyke community and culture, create Lesbian space. All the ways we celebrate ourselves and each other. The ways we live Lesbian.

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