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Article Summary: Roger Welsch explores the complex and exacting technology of sod house building, providing descriptions and conclusions about the actual building methods, based on pioneer accounts, interviews, historian descriptions, and a computer analysis of 800 sod-house photographs.

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Names: Everett Dick, Mrs W H Hodge, Mrs Myrtle Chapin Herrick, Mrs H C Stuckey, Mrs Jane Shellhase, Mrs Leota Runyan, Mrs Marie Gebhart Varney, Mr and Mrs Clarence Carr

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Photographs / Images: Family in front of sod house



When the roof failed, the house failed.

THE NEBRASKA SODDY

BY ROGER L. WELSCH

My house is constructed of natural soil,
The walls are erected according to Hoyle,
The roof has no pitch, but is level and plain,
And I never get wet till it happens to rain.
*(From the folksong "Lane County Bachelor," or
"Starving to Death on a Government Claim")*

WE all know the story. There was no wood, no stone, no fuel for firing bricks, nothing but shoulder-high grass. Even along the major rivers there were only occasional cedar groves, low chokecherry and plum brush and fragile willow wands. It seems obvious to us then that sod was the only answer to the housing problem. The Indians of eastern Nebraska used sod in constructing their earthlodges, and the Mormons built sod houses at Winter Camp in 1846, and then all along the Mormon trail through the Platte Valley.

But the techniques and rationale of sod construction are not as simple as that. Too often we view the products

Mr. Welsch, Assistant Professor of Folklore and German at Nebraska Wesleyan University, delivered this paper at the annual meeting of the Nebraska State Historical Society in Lincoln, September 23, 1967. The material was taken from Mr. Welsch's book Sod Walls: The Story of the Nebraska Sod House, published by Purcell Books, Inc., Broken Bow, Nebraska, and is used with permission of the publisher.

of a past pioneer technology as primitive and crude when they are in fact quite complex and exacting. Such is the view of those of us who have been born long after the "Sod-House Frontier"—as Everett Dick so well described it. Because of our ignorance of the techniques involved, we consider sod construction rude and unsatisfactory, a temporary answer to a problem posed in the distant past. Those pioneers among us who well remember the soddy frequently dismiss the complexities of sod-house construction because of their proximity to them; the sod house was too everyday for them to be seen as anything but pedestrian.

Building a sod house however was more than merely stacking chunks of "Nebraska marble" one atop the other, and pathetic efforts of some Nebraska communities and organizations to build replicas of the sod house graphically bear this out, for few of the imitations match to any degree the durability and polish of the originals. The following descriptions and conclusions about the actual building methods represent a very brief summary of a study based on pioneer accounts and reminiscences, interviews, accounts and descriptions by historians, examinations of extant soddies and a computer analysis of 800 sod-house photographs.¹

First I would like to describe the techniques used in building a sod house; but, of course, because of space limitations, I can treat only the most common forms and not the many variants and sub-types. In different parts of the plains and under different conditions, in the hands of various craftsmen, sod construction techniques varied a good deal, as do all folk forms, but in short most Nebraska sod houses were built in the following manner.

¹ I owe thanks to Nebraska Wesleyan University and Prof. Walter Elwell for the use of the Computer Facility; to the Nebraska State Historical Society, and especially the staff of the Picture Room, for permission to examine the photos; and to Solomon Devoe Butcher, the pioneer photographer who had the foresight to make the pictures.

The site for the house was cleared of grass and brush and leveled with a spade. Holes were filled with loose earth and the floor area, usually a rectangle about fourteen by sixteen feet, was tamped concrete-hard with a fence post or wagon tongue. Very few homes enjoyed more of a foundation than this. The walls were usually aligned straight north and south, east and west, with the help of the North Star on a clear night.

A good stand of slough grass or buffalo grass was found for the wall sods. If the sodbuster had a choice, he built in the fall when the prairie grasses were wire-tough and woody, yet at a time when the ground was moist enough to hold the soil firmly to the sod bricks when they were lifted to the wagon box or stoneboat bed. If the grass was high, like big blue-stem, he might mow it first, saving the cut grass for roof thatch.

Occasionally the sod, about one acre for the average house, was cut in one direction with a cultivator equipped with vertical knives and then plowed in the other direction so that the sods came out ready cut to size. But usually the sod was cut in a long, solid ribbon and then hacked into blocks about two feet by three feet by three or four inches with a sharp spade. The standard walking plow, a turning plow, could not be used, for its purpose was to tumble the soil and destroy the root mat; a breaking plow, or grasshopper plow shaved off the three-inch ribbon, lifted it from the prairie on iron rods, and then gently rolled it over unbroken. Although horses were the most common draft animal, oxen were generally preferred for sod cutting, for they pulled more slowly and evenly. Homesteaders have told me that as the plow slashed through the virgin sod it sounded like the opening of a giant zipper.

At the house site the sods were laid without mortar, grass down, like huge bricks; in fact, in many areas sod houses were called "brick houses." The walls were two or three sods thick and each sod was set behind the others so that the joints were staggered to discourage invasion by unwelcome guests—snakes, mice, or winter winds. Each

layer was begun in a corner of the house and each layer was finished before the next was begun. Each sod was also put atop the others with staggered joints. Every third or fourth layer was set crosswise on the vertical piles. This binding course added substantially to the stability of the walls.

As the levels for the window and door sills were reached, the frames—simple, open-ended, plank boxes—were propped in place and the walls rose around them. Sometimes one-inch holes were drilled through the planks and pegs or dowels were driven through them and into the walls to hold the frames firmly in place. Frequently the sides of the casements were bevelled to permit more light to pass through the thick walls and into the dark, sometimes smoky, interior of the house.

We dilettantes would probably have just piled our sod directly on top of the window and door casements, but those who learned from tradition knew better. The heavy walls settled six or eight inches in the first year or two, but at the window and door location, where the load was obviously much less, the settling was only two or three inches. To allow for this difference, to prevent the crushing of casements, jamming of frames, and breaking of the precious glass panes—usually the most expensive part of the house, the walls were built up eight inches above both sides of the casement; then logs or planks were set across, leaving a gap between the window and the wood members bearing the overlying sod. This gap was stuffed with loose rags, paper or grass, and as the walls settled around the windows this material was compacted without affecting the windows themselves. These windows were usually commercial, double-hung, twelve-pane frames, and the doors were homemade of three planks with two or three cross-members.

The walls were shaved smooth with a sharp spade and all holes were filled and tamped.

The roof was "the proof" of the soddy; if it succeeded, the soddy succeeded, and if it failed—and it frequently did, the house almost certainly failed.

From hardly any rain we soon had more than we needed. Our roof would not stand the heavy downpours that sometimes continued for days at a time, and it would leak from one end to the other. We could keep our beds comparatively dry by drawing them into the middle of the room directly under the peak of the roof. Sometimes the water would drip on the stove while I was cooking, and I would have to keep tight lids on the skillets to prevent the mud from falling into the food. With my dress pinned up, and rubbers on my feet, I waded around until the clouds rolled by. Then we would clean house. Almost everything had to be moved outdoors to dry in the sun. Life is too short to be spent under a sod roof.²

In June, after the folks were nicely situated in their new one-room soddy, it commenced to rain and continued to rain for four days and nights. The roof was laid with willows, with sod on top of them, and naturally it began to leak. Father said, 'Let's get under the table,' so we did. The long ridge pole on the roof began to crack from the heavy weight of the wet sod, and finally the roof caved in with the pole resting on the table. We were buried beneath the sod and the muck. Finally father saw a little patch of light and he dug his way out.³

But many were not so distressed about the rain falling through the roof because they knew that it was also falling on the fields.

During the last years we lived in [our sod house, it] got pretty leaky. We were so glad for the good rains that caused us to have to get up and put dishpans, washpans, tubs, skillets under the drips, that we did not mind. My dad used to say those drips played a regular tune with soprano, alto, tenor, and bass, in the harmony.⁴

These problems arose from a misunderstanding of the sod roof. Sod is a superb insulator but a miserable water-repellent.

There were three standard styles of roof: in order of frequency, the gable roof with two surfaces, the hipped

² Mrs. H. C. Stuckey in W. L. Gaston and A. R. Humphrey, *History of Custer County, Nebraska* (Lincoln, 1919).

³ Mrs. Jane Shellhase in Frances Jacobs Alberts, *Sod House Memories*, Volume II (Nebraska, 1967), p. 73.

⁴ Mrs. Leota Runyan in a letter addressed to the *Custer County Chief* and the author.

roof with four surfaces, and the shed roof with one surface.

There were two standard types of roof construction, cut lumber and pole-and-brush. Cut lumber was obviously the best, but it was also the most expensive and, therefore, less common than pole-and-brush. The sheathing planks on a cut-lumber roof were arranged in various ways, running from gable to gable or from ridge to eave, with and without framework. Then an insulating layer of sod was set over waterproof canvas or tar paper.

A pole-and-brush roof was cheaper, but more complicated. One to seven cedar beams were run from gable to gable; then from ridge to eave were run, every six or twelve inches, willow poles. On these was spread a layer of bluestem grass. Next, successful roofs had a waterproof sheet of gypsum plaster or alkali clay from a creek bank or dry lake bed. Atop this was placed the sod, grass up.

Inside, the fancier houses sported a plank floor (these were always the most popular houses for square dances) but this too sometimes caused regrets.

In the Spring when we had the big rains our roof did its share of leaking and even after the rain was over it seemed like our roof leaked for another day. Mother often wished that it was reversed—the boards on the roof instead of on the floor.⁵

And so, in two or three weeks, with an investment of two to twelve dollars, a sturdy house was built.

After waiting several months to permit the walls to settle, the inside walls were plastered with a thick mixture of clay and fine sand. Some were then papered with commercial wallpaper or newspapers. Muslin or canvas was hung for a ceiling to add elegance, to make the interior brighter and to keep mice, mud and snakes from dropping onto the bed or into the soup.

⁵Mrs. Marie Gebhart Varney in Emerson Purcell, *Pioneer Stories of Custer County, Nebraska* (Broken Bow, Nebraska, 1936), p. 94.

Construction techniques were therefore more complex than is commonly believed. But this I had expected when I began my study. The real surprises lay in the rationale for the sod house. Why did the Nebraska settlers build sod houses? The obvious and best known answer—that there was nothing else—is as incomplete as our knowledge of the building techniques. One by one, new answers came to light.

For example, when I began to work on this project, I advertised in several central Nebraska newspapers for early settlers who remembered building soddies. I was surprised by the hundreds of replies I got—but I was amazed by the number of letters I got from Nebraskans who still live in sod houses. Hundreds still live in attractive, comfortable, nineteenth century and early twentieth century sod houses.

The conclusion suggested by this situation was reinforced through interviews with former sod-house dwellers and published memories of pioneers.

I think it was a good thing people in those days had sod houses to live in; with no more fuel than they had, they would have frozen in a frame house. Those that had frame houses hauled coal from Grand Island or Kearney [to Custer County, twenty-five to one hundred miles].⁶

Our dugout was so warm that during the blizzard of 1888 we sat in it and let the fire go out.⁷

Dozens of Butcher's pictures show a sod house surrounded by board fences, heavy wooden windmills, wooden sheds and cribs and huge frame barns. Again the settlers themselves, like Mrs. Hodge in the above statement, verified the fact of the assumption; repeatedly pioneer Nebraskans testified to the comfort of the sod house, its suitability to prairie conditions, and the unsuitability of frame construction.

. . . The out buildings were wood. The barn was covered with tin later on, but the cattle and all animals [had] winter

⁶ Mrs. W. H. Hodge, *Ibid.*, p. 131.

⁷ Mrs. Myrtle Chapin Herrick, *Ibid.*, p. 84.

coats heavy enough to take care of themselves. Some people thought the frame house was not warm enough for a family to live in.⁵

The frame house was painfully vulnerable to prairie fires, severe weather, and wind. Wood burns, warps, leaks, shrinks, swells, rots and can be eaten by insects and rodents. Sod resists all of these.

In addition to the superior quality of sod, there was another reason for its popularity in house construction even after lumber was available and inexpensive: the momentum of tradition. Plains houses *were* sod houses. When one built a house, he built it of sod, by reason of a regional habit. Just as we continue to build with lumber despite the disadvantages listed above and the ready availability of stone and brick, erecting dangerously flammable cities of wood, Nebraska pioneers continued to build houses of sod out of pure traditional habit.

The sod house is a proud and impressive example of pioneer ingenuity, courage and technology. We are fortunate that many still stand, but we cannot permit ourselves to be satisfied with the shabby and inaccurate parodies that are used around the state for tourist promotion. Instead, the money, effort, and enthusiasm should be directed toward the restoration and preservation of some of the original sod houses that remain.

The hinges are of leather and the windows have no glass,
While the board roof lets the howling blizzards in,
And I hear the hungry coyote as he slinks up through
the grass

'Round that little old sod shanty on my claim.

(*The chorus of the well-known, traditional folksong,
"Little Old Sod Shanty on My Claim"*)

⁵ Mr. and Mrs. Clarence Carr in a letter addressed to the author.