Shaw Nature Reserve builds a "Little House on the Prairie."

by Barbara Troutman

The 2400-acre Shaw Nature Reserve in Gray Summit, Missouri is about 10% tallgrass prairie due to the effort begun in 1980 by Bill Davit and continued to this day by Dr. James Trager. The Reserve's prairie was created to showcase an ecosystem that once covered roughly one third of the state of Missouri.

This past fall, in an effort to interpret the human aspect of prairie life, a sod house was built in the prairie. The goal was to have it completed for a Prairie Day event in September co-sponsored with the Missouri Department of Conservation.

I was given the task of researching sod houses, drawing the building plans, preparing a materials list, establishing a construction schedule, and recruiting volunteer help. I "searched the net," went to the library, and Borders Books Store. I purchased the book Sod Walls by Roger Welsch to use as a guide. I read it twice, highlighting in yellow, jotting down notes, and making sketches.

There were many variables in the way pioneers built their sod homes, Welsch's book gave good general sod house construction directions, which included lots of illustrations and old photographs. I incorporated features that were most commonly used during sod house construction in the latter part of the 1800's, the period in which most sod houses were built. A few were still being built in the early part of the twentieth century.

Our "soddie" is rectangular in shape with a gabled roof, two foot thick walls, one door and two windows. We were able to find most of the building materials at the Reserve. The cedar came from trees removed during ecological restoration work. Some of the trees were made into poles and some were milled into boards. The door and windows were leftovers from a collection of old log structures that have been reassembled and incorporated into our Dana Brown Overnight Education Center's log lodges.

Actual construction started construction in August, which was a little early. Traditionally the best time to build with sod was in the fall after the roots from the prairie grasses have had time to penetrate deep into the soil. The roots help to hold the sod blocks together. The consensus was to not cut up our prairie but to cut sod from one of the fescue fields on the Reserve. Fescue roots are not as dense as the roots of prairie grasses so there were some minor problems with crumbling during handling. Some reinforcing rods were used in our sod house walls for additional support.

Early settlers used a special grasshopper plow or sod cutter pulled by oxen to slice strips of sod from the prairie. We had neither grasshopper plow, sod cutter or oxen, nor could any local nurseries or sod farms cut sod blocks the four inch minimum thickness we wanted. Gregg Caldwell from our building maintenance staff researched and built a sod cutter to use with a tractor. It worked perfectly. After mowing the grass to about four inches in height , our staff was able to cut sod strips twelve inches wide and four inches deep that could then be cut with a spade to the required lengths. Instead of transporting the blocks by team and wagon ours were stacked on wooden pallets, picked up with a fork lift, and transported to the building site. Historically it took about an acre of sod to build a twelve foot by fourteen foot house. Our soddie is twelve by sixteen feet.

We chose a building site in the prairie just off a major hiking trail that required very little effort to level. Our grounds maintenance crew leveled the site with a bobcat and rakes. The early settlers cleared and leveled with a sharp spade. Sometimes they wetted and tamped the entire floor area with a fence post into a concrete-hard base. We didn't.

I recruited the volunteer help of a retired brick layer to help keep the walls plumb. He embraced the project, his 98 year old mother having been born in a soddie in Oklahoma. With the help of staff and volunteers the walls were built two sod blocks thick, with the vertical layers staggered like typical brick construction. Every third layer of sod was laid crosswise to hold the inner and outer layers together. No mortar was used. All cracks or holes between the sod bricks were filled with loose soil.

The door frame was set and propped in place with a pole and the walls were built up around the frame. Once the sod was stacked to the desired level the window frames were put into place and propped up. The door and window frames were open boxes the depth of the walls and made of one or two inch thick lumber, usually cedar. Ours was made with two inch thick cedar. One inch diameter holes were drilled through the boards so that wooden rods could be driven into the sod to hold the frames in place. As the walls rose above waist height a wagon was pulled along side to use as a platform from which to work. We pulled our wagon with a truck instead of horses or oxen. The walls both inside

and out were shaved with a spade to keep them relatively smooth. When the sod reached the tops of the door and window frames the headers which were either poles or boards were placed across the tops of the frames. We used four inch diameter cedar poles.

Historically three different roof designs were used: gable, hipped and shed or lean-to. We built our soddie with the most commonly used gable roof. The roof ridge pole and the six other beams, all eight inches in diameter, are cedar as was common. Forked posts were often used for extra support under the ends of the ridge pole either inside or out. Ours are outside. Two inch thick cedar boards in random widths were attached vertically to the horizontal roof poles. The roof frame profile is a triangle forming the strongest kind of structural brace. It looks like a squatty letter "A." Historically, some were built looking like an inverted "V" that had the tendency to push the walls outward. Having the cross brace is much more structurally sound.

The roof boards were covered with tar paper or canvas followed by a layer of sod. Sod was applied over the sheathing boards one to three layers thick. We used tar paper and one layer of sod blocks butted against one another as apposed to lapping them over each other as was also common. A board or "stop" was nailed horizontally to the lower edge of the roof to keep the sod from sliding off. The sod was placed grass side down for the walls and grass side up for the roof. Consequently, the roof keeps growing. I saw one photograph during my research where a sod house with a flat shed style roof was built against a hillside and a cow was grazing on the roof of the house.

Windows were usually as large and numerous as was possible. The most common window was the twelve-pane frame sash like we used that permits the opening of either the upper or lower sash. Most sod houses had windows on all sides set toward the outer edge of the deep frames. Doors were commonly made of three or four planks joined by several crossbars as was ours.

Only the crudest sod houses had unfinished inner walls. The walls were usually smooth out and white washed. Ours are not. The ceilings were rarely left open to the rafters. Ours was left open so the roof construction can be viewed from the inside. The most common ceiling covering was a white muslin sheet tacked to the ceiling beams. Canvas or heavy brown paper was also used. The cover kept dirt and rain from falling into the room.

Sod house furnishings consisted of whatever was affordable or could be made. Many sod houses had a wooden (usually cedar) completely enclosed closet or wardrobe. They either had a fireplace or cast iron stove. Some had rugs covering the dirt floor. Mice were often present as well as an occasional snake. So far our only menace has been poison ivy.

It was common for pioneers to build a modest sod house in about a week. Our crew, which varied in numbers from two to six, worked sporadically for about a month and a half. The project was both challenging and fun as well as a great learning experience. The sod house has become a curiosity and has increased visitation to our tallgrass prairie.

We wonder if we have the only "soddie" in Missouri?

SOD HOUSE MATERIALS LIST

1 slab door and frame assembled to specs.
(Using recycled door with frame built to fit.) To be built by volunteers.
2 windows and frames assembled to specs.
(Using recycled windows with frames built to fit.) To be built by volunteers.
7 8" diameter cedar logs 18' long for roof rafters. (cut with 1 flat side)
6 4" diameter cedar logs 6' long for door header
12 4" diameter cedar logs 5' long for window headers
300 square ft. sheathing boards 2" thick by 18' long (width can vary)
300 square ft. tar paper
300 square ft. sod for roof only
2 X 4 X 18' long for stops to keep sod from slipping off roof. (cedar)
2 X 6's to tie roof poles together on either 16" or 24" center (cedar)

If 24 inch 0/C:	If 16 inch 0/C:
8-2X6-12'	12-2 X6-12'
8-2X6-9"	12-2X6-9'
8-2 X6-5'	12-2X6-5'

1500-2000 pieces of sod 12"X18"X4" thick for side walls
Rebar, spikes to hold door and window frames in place, hinges for door, nails, gravel
200 square feet of canvas to tack to ceiling inside
Lots of muscle!