



Fostering the Land Ethic through the legacy of Aldo Leopold



Leopold Legacy Center Construction Journal
Report 6.2 – Wood & Plastics

August 25, 2006

Using Leopold Pine: Trusses in the Round



Luther Farms transports the 70-foot logs from the Leopold Shack to the building site

The pine trees Aldo Leopold and his family planted in 1935-1948 will be a major building component in the Leopold Legacy Center. In the form of structural beams, siding, finish work, and even impressions in concrete, Leopold wood will appear in all three of the buildings that will compose the Center.



Volunteers peel logs at the building site



Wooden forms hold the truss at the correct angle while it is constructed

The trusses are built from Leopold logs left in the round. This construction technique has allowed the architects to engineer both buildings using material that would usually be considered “substandard” for structural purposes. The logs forming the trusses are of small diameter — between 6” and 8” — that could not be milled into load bearing beams. However, by keeping the logs in the round, the sapwood, the strongest part of the wood, is retained, and in the truss formation, these logs are incredibly strong. In fact, they are strong enough that they can span the roof of a 30’ deep building without any internal support columns.



Workers from Bachmann Construction install the webs of the truss

The 75’ long logs were transported to the building site with the help of Luther Farms where the bark would then be peeled off by teams of volunteers.



Threaded steel pipe spans the area between webs, strengthening the truss

In order to be used in round-log construction, the bark had to be removed by hand from each of the 240 pine logs to be used in the building. Individuals and groups came to the site to help from February to May, totaling an impressive 300 volunteer hours from 150 different people.

After the logs were peeled, they had to be graded for quality and structural soundness. The timber grader, Mac Garcia, looked at



Each truss, weighing about 2,500 pounds is lifted into place with a SkyTrak forklift



The completed trusses are carefully positioned and anchored into place with temporary supports

the knot size and straightness of the logs, and for any catastrophic defects such as interior rot, then assigned each a number grade. Almost all of the Leopold round logs graded out as a #1 – the highest possible score.

Each truss is formed of a bottom chord, which will be parallel to the ground, a top chord, which will form the angled



A series of five trusses will support the roof of the Axe-in-Hand Stewardship Workshop

roofline of the building, and shorter web pieces that run in between. The webs are attached to the cords at all bearing surfaces with foot-long steel screws. Compression from the weight of the roof will help to provide additional stability to the truss. The truss structure is reinforced with steel supports, both by steel plates inserted inside the beams at critical points, and by threaded steel pipe pieces that run diagonally between the webs.

The Axe-in-Hand Stewardship Workshop will be one of the places in the Legacy Center where the Leopold Pine will be most obvious and easy to view. There it will serve as a constant inspiration to all of the Foundation's land stewardship activities.

Building design by:
The Kubala Washatko Architects
Cedarburg, WI



Thanks to:

*USDA Forest Service
Forest Products Lab
Bachmann Construction
Beaudette Engineering
Expedition Log Homes
Luther Farms
Kompilomen Engineering*