

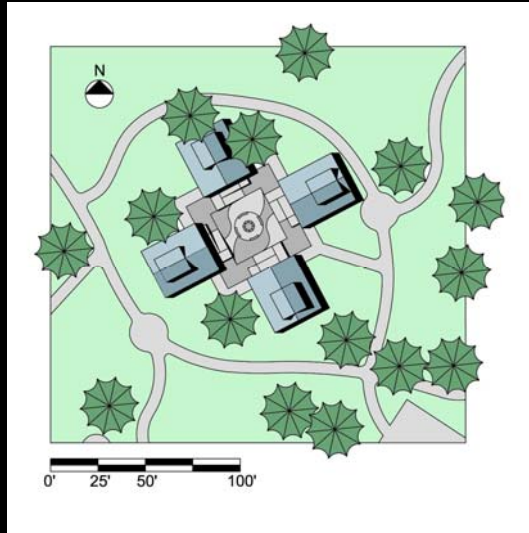


Design Philosophy

- Combine alternative style straw bale construction, and Traditional Japanese architectural details.
- Make cabin carbon neutral as possible
- Make cabin affordable.
- Create an outdoor room for socializing and activities.
- Effectively deal with massive snow loads, wind loads, fire danger, and harsh temperatures.
- Make a structure which is easy to construct, can use mass production techniques such as modular parts.



Pod Site Plan



Site Construction

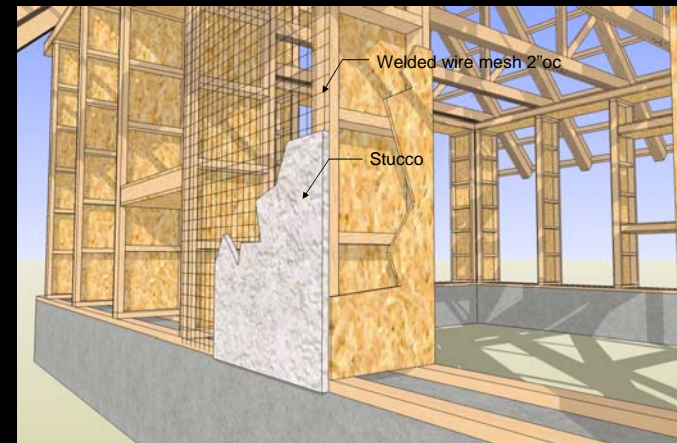


Structure

- Post and beam frame
- Torsion box posts
- Recycled wood attic truss
- Rubble trench foundation

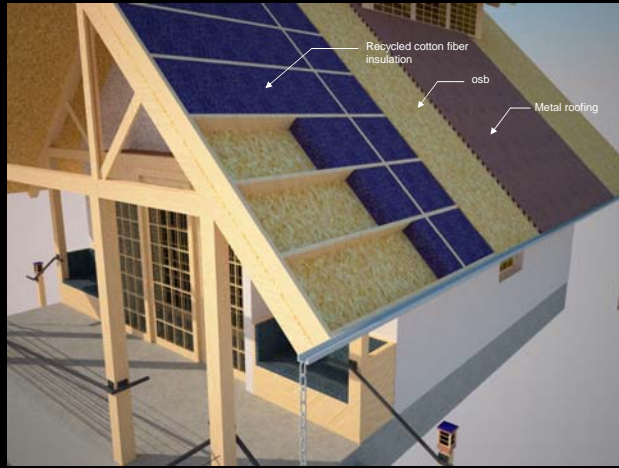


Structure – shear resistance.



- Shear strength provided by welded wire mesh and stucco composite.

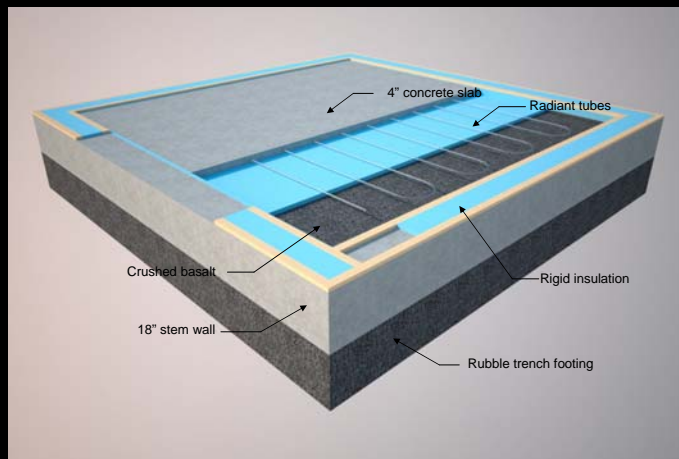
Building Envelope - Roof



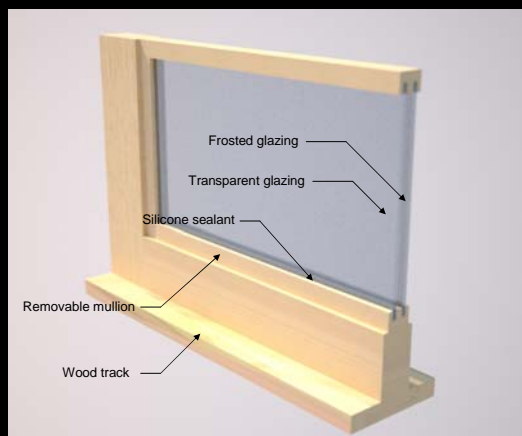
Building Envelope - walls

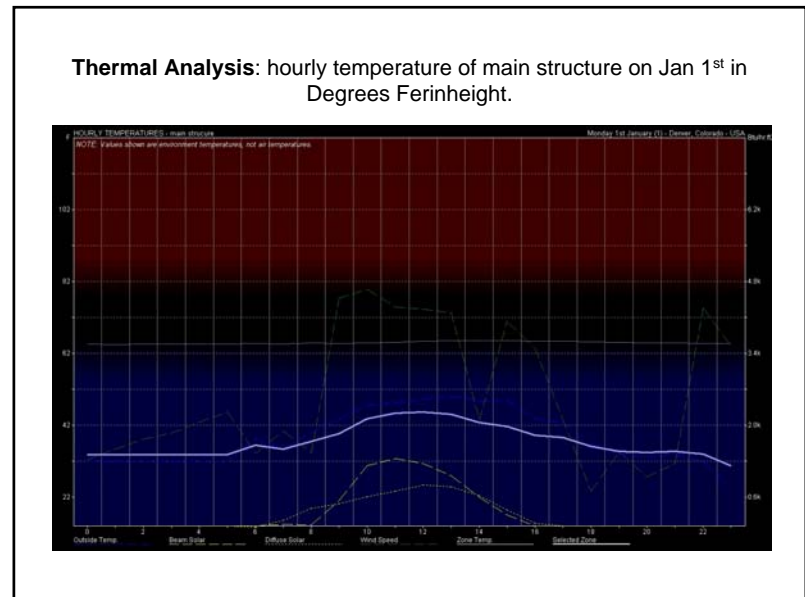
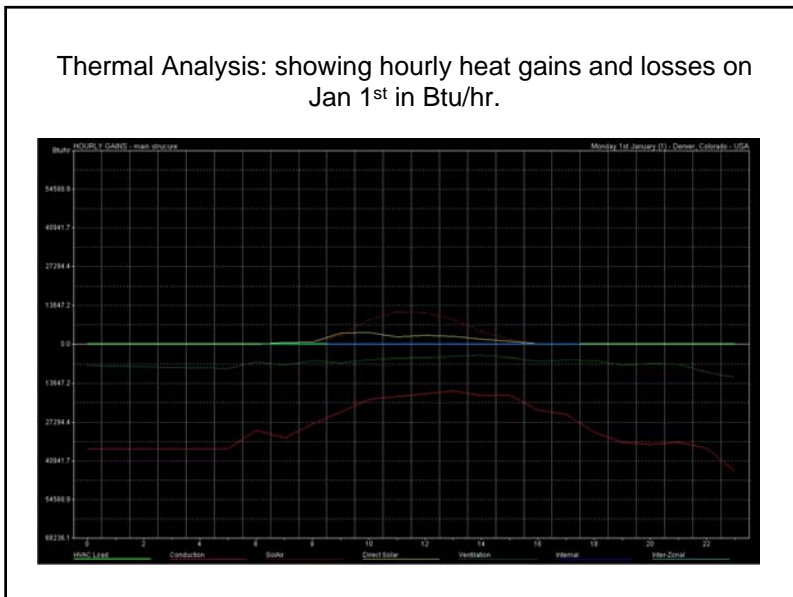
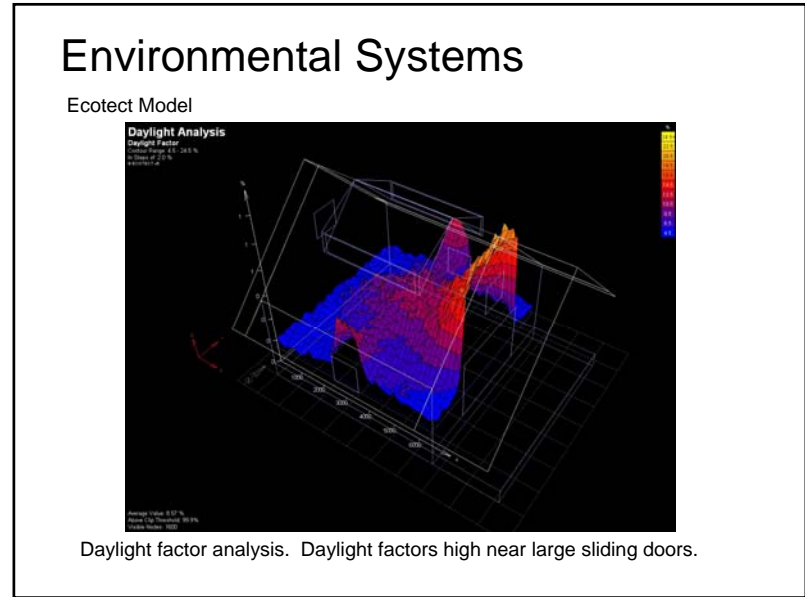
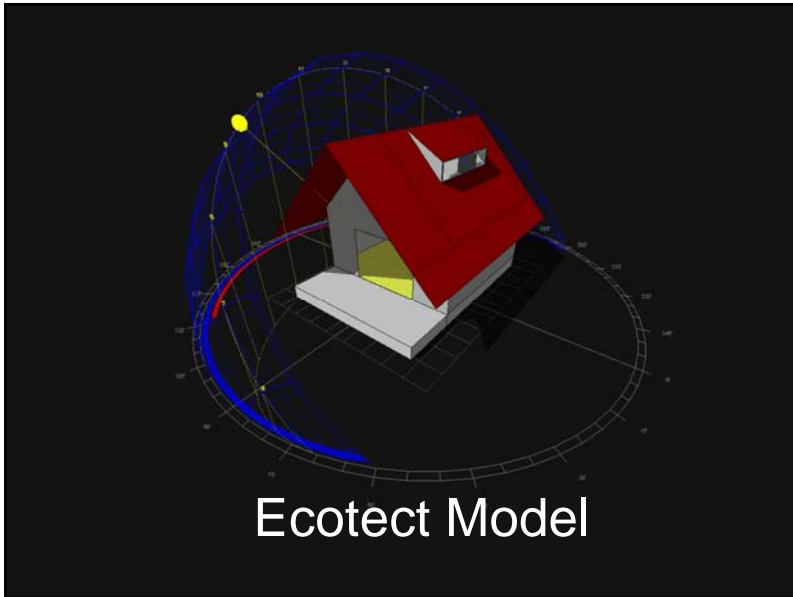


Building Envelope - floor

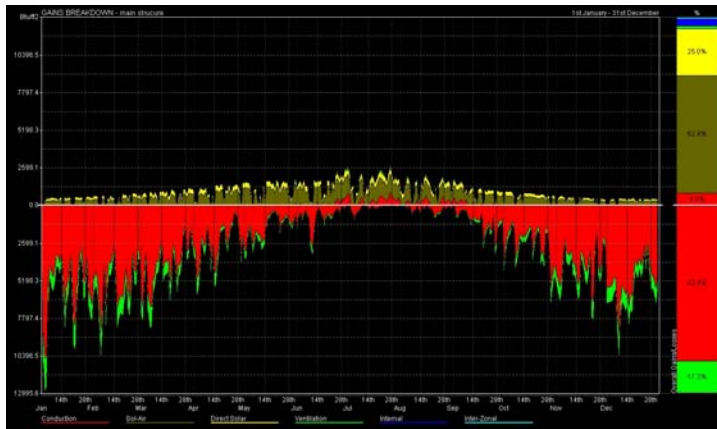


Shoji glazing Detail

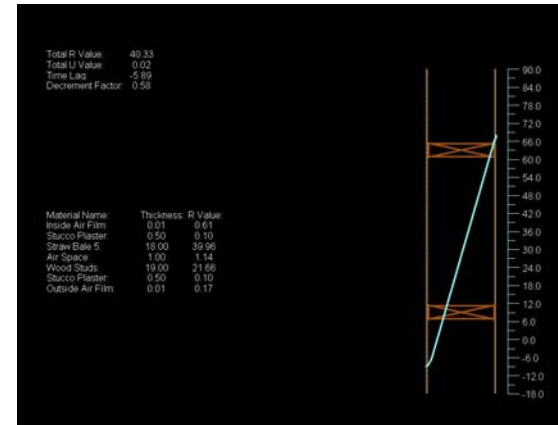




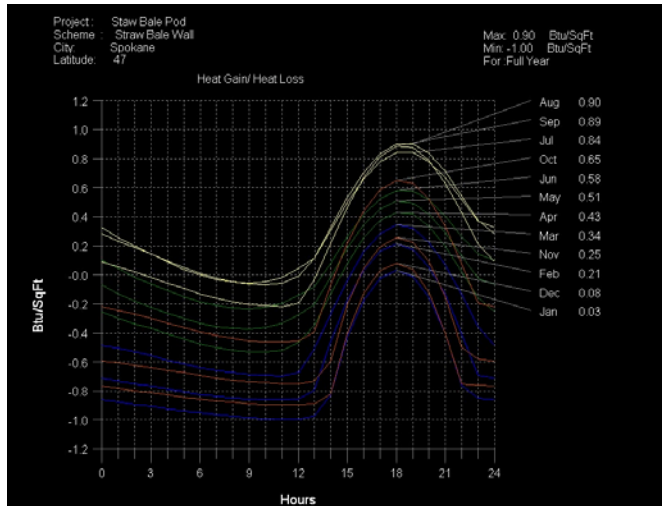
Thermal Analysis: thermal gains.



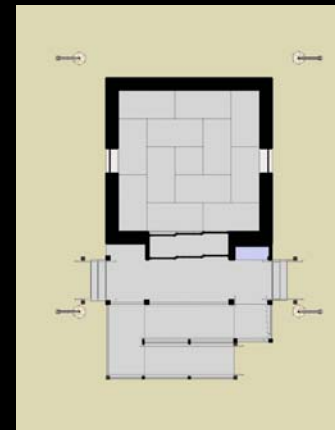
Opaque model



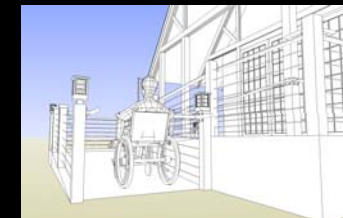
Straw Bale wall R- value of 39.96

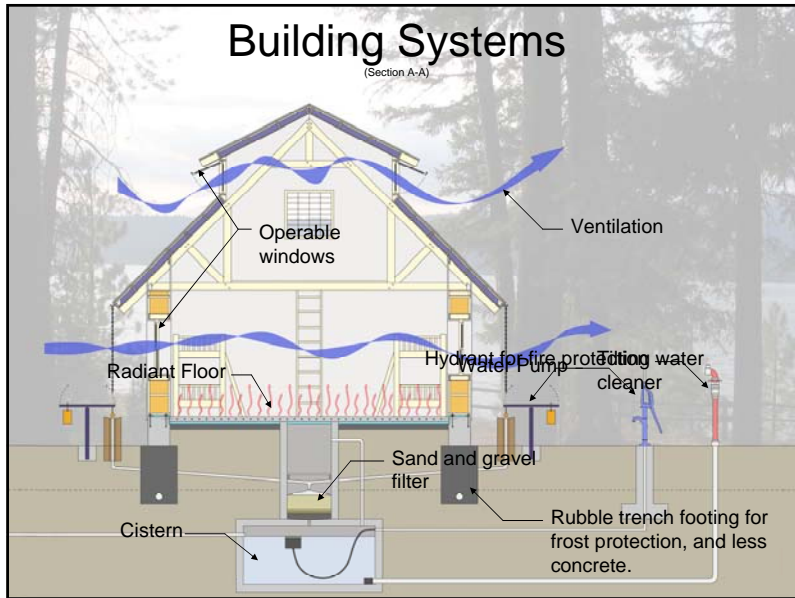


Spatial Systems



- Floor plan – based on straw bale module.
- ADA compatible Ramp.





Building Materials

McCall Outdoor Science School - Cabin Materials Usage, and Carbon Emissions

material	initial cash and labor cost \$	carbon cost	
		production	lifetime
recycled cabin wood	medium	medium	low
straw bales	low	high	low
virgin timber	high	high	low
crushed basalt	low	high	low
rigid foam insulation	high	medium	low
psb	medium	high	low
nails	low	medium	low
welded wire mesh	low	medium	low
concrete stucco	medium	high	low
metal roofing	low	high	low
metal pipe	medium	high	low
stainless steel wire rope	high	high	low
radiant floor heating sys.	high	medium	low
glass	medium	high	medium
galvanized chain	low	high	low
basalt columns	high	high	low
steel water cleaner	medium	high	low
metal channel rain gutter	medium	high	low
recycled cotton fiber insulation	medium	medium	low

Carbon Neutral?

NY Wa\$teMatch Building Materials Reuse Calculator

Quantity of Material	Per Unit	Total	Carbon Air Pollution	Percent	Total
Wood Shavings	12.000	1,200,000	12,000	1.00%	12,000
2x12 Lumber	1,200,000	1,200,000	12,000	1.00%	12,000
Insulation	10,000	10,000,000	100,000	0.83%	100,000
Refrigeration	1,000	10,000	100,000	0.83%	100,000
Roofing	1,000	10,000	100,000	0.83%	100,000
Water Heating	1,000	10,000	100,000	0.83%	100,000

- NY Wa\$teMatch Materials reuse calculator.
- Energy Star Target – 95
- By reusing the cabin wood we are saving 2.34 tons of Carbon Dioxide

Target Energy Performance Results

Energy	Design	Target	Target %
Energy Performance Rating (LEED)	12	95	79%
Energy Production (%)	50%	52	43%
Building Energy Use Intensity (BTU/Sq Ft/Year)	295.6	72.5	24.5%
Site Energy Use Intensity (kBtu/Sq Ft/Year)	69.2	24.1	34.7%
Total Annual Design Energy (kBtu)	1,429,049.0	302,541.0	21.2%
Total Annual Site Energy (kBtu)	347,210.0	120,227.7	34.6%
Total Annual Energy Cost (\$)	\$ 5,360	\$ 1,890	35.2%

Model Images



Shoji and Light

Rainwater catchment system inspired by traditional Japanese hearth.



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Designed for snow.....questions?