Lodgers !

Reinvigorate Traditional Construction Methods

Traditional Construction Methods

Learning from the past practices — low-tech, low-energy, high community participation

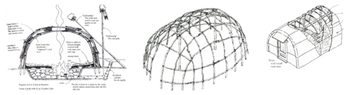
Indigenous Shelter and Craft of Thatching

The Kasubi Tombs in Kampala, Uganda. c. 1882.

Thatched Home by the "Grass House People". c. 1900s.

Tule Hut, Home of a Native, Lake Co. Cal.' c. 1913.

Thatching construction training, early 2000'



Wigwam construction diagram from "Native American Architecture" by Peter Nabokov and Robert Easton.

Land Stewardship

Honoring the indigenous people's harmonious relationship with the land

Fly Ranch has over 10,000 years of history of stewardship by the Indigenous People. The Numu (Northern Paiute) and the Newe (Western Shoshone) have established their own way to live with the land in Nevada. Examples below show only a snippet of their lifestyle, crafts, and shelter. We don't claim expertise in the indigenous practice, and we believe that further dialogue and engagement with the Numu and the Newe are critical for Fly Ranch to continue land stewardship.

Nomad, Hunter, Gatherer

Great Basin Indians harvesting wild rice
Painting by Seth Eastman (American Artist)
ca. 1870

Paiute woman gathering seeds
Photo by © CORBIS
1873

Indigenous woman gathering wild grass
ca.1924

Temporary Brush Shelter & Semi-permanent Wickiup / Wigwam

The Summit Lake Paiutes Wickiup in Nevada

Brush Shelter made of branches and grass

Bannock Tribe by a Brush Shelter

Survival Arts & Recycled Material

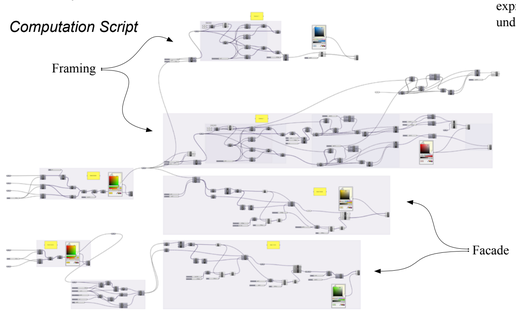
Northern Paiute burden basket
AR
Willow, horsehair, wood splints
ca. 1910

Northern Paiute fish trap
Walker River Reservation, NV
Willow shoots, cloth
ca. 1920

Northern Paiute winnowing basket
Klamath Reservation, OR
Willow shoots
ca. 1920

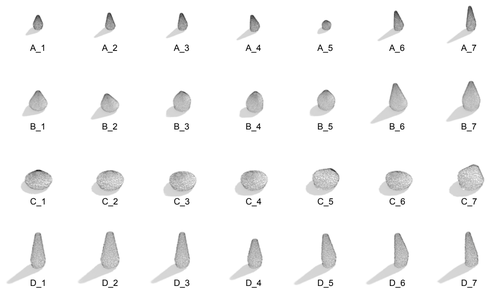
Parametric Design

Reinvigorate Traditional Construction Methods with Computational Tools



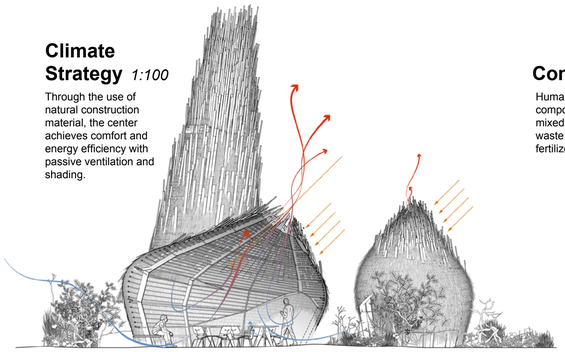
Formworks Based on Various Site Conditions

With computational tools and parametric design strategies, we can reinvigorate historical ingenuity and adapt them to the contemporary design-build process. We developed a script that can modify the structure's formal expression freely based on its touch points on the ground and simultaneously run structural calculations to understand its build-ability.



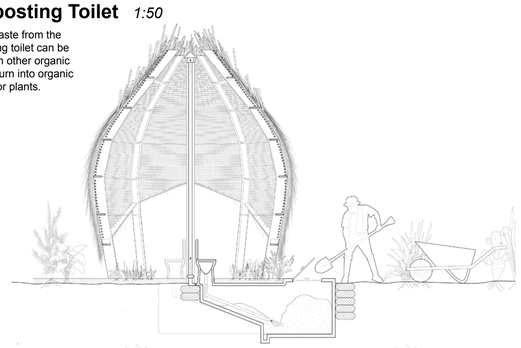
Climate Strategy *1:100*

Through the use of natural construction material, the center achieves comfort and energy efficiency with passive ventilation and shading.

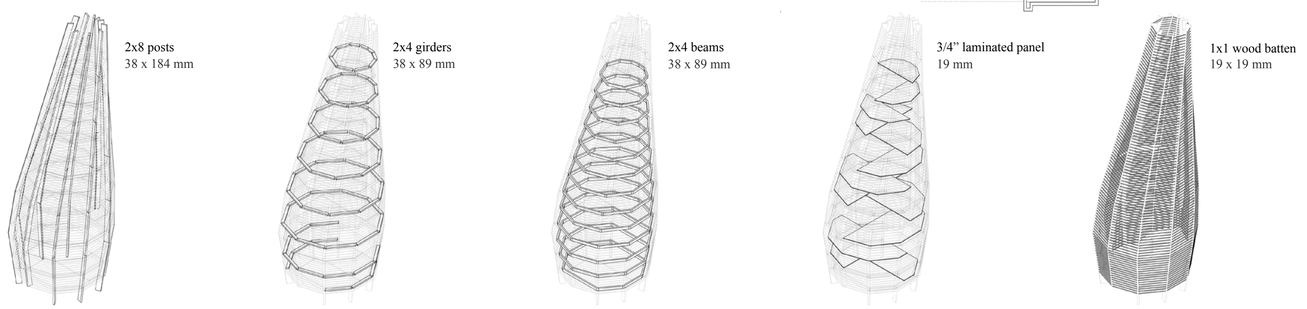


Composting Toilet *1:50*

Human waste from the composting toilet can be mixed with other organic waste to turn into organic fertilizer for plants.

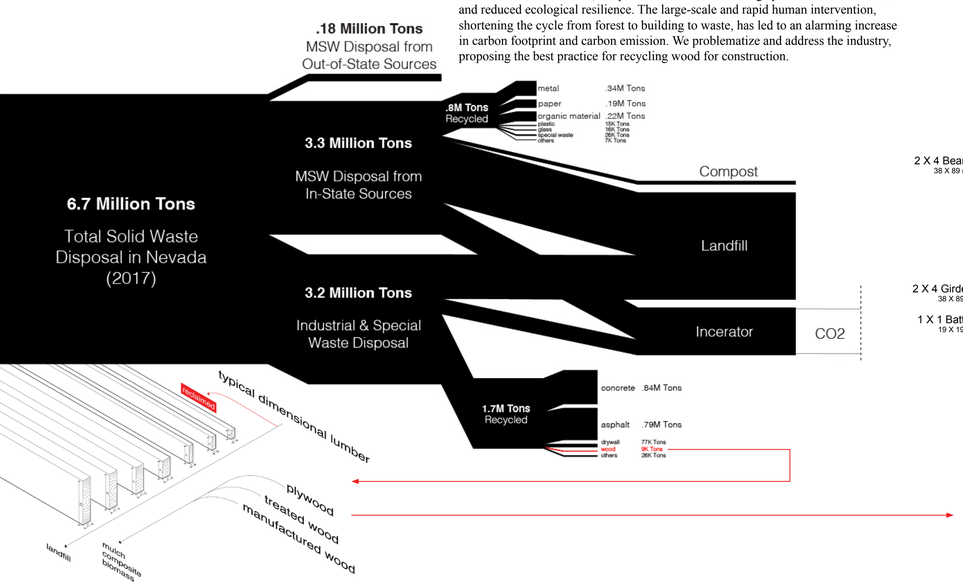


Framing Detail

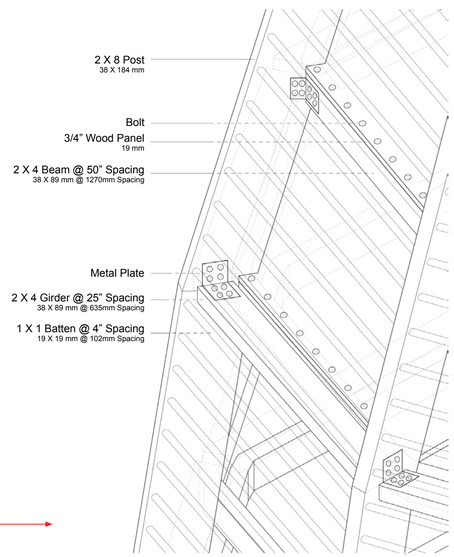


Timber Industry and Recycling in Nevada

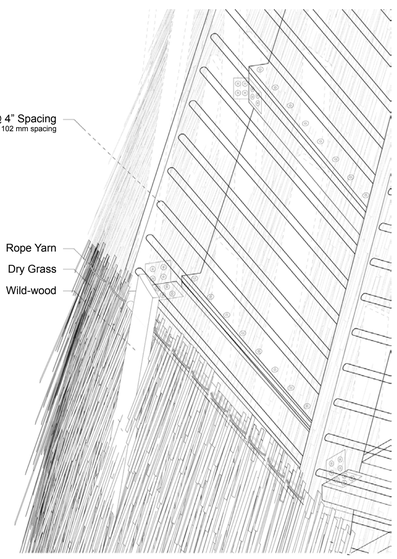
The timber and logging industry in the U.S. has grown substantially to fulfill the market demand. However, the practices have altered a large portion of native forests and reduced ecological resilience. The large-scale and rapid human intervention, shortening the cycle from forest to building to waste, has led to an alarming increase in carbon footprint and carbon emission. We problematize and address the industry, proposing the best practice for recycling wood for construction.



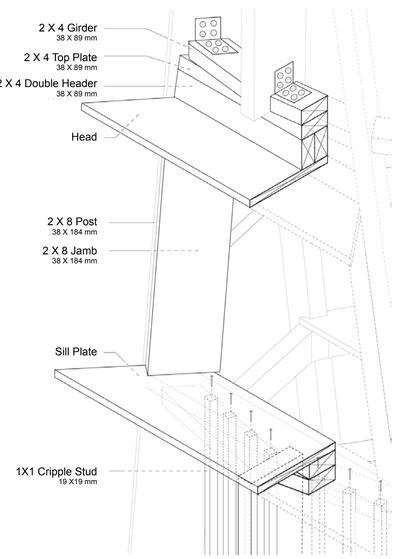
Construction Details



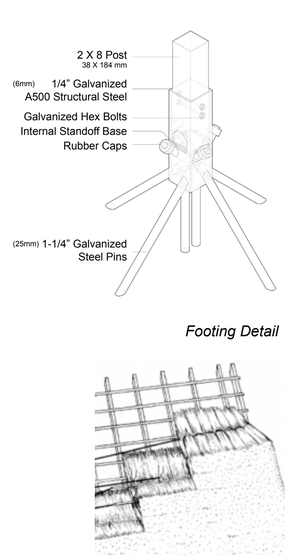
Typical Wood Framing Detail Axon



Facade Connection Axon



Window Assembly Axon



Footing Detail

Facade to Structure Detail

Our design proposal emphasizes three main areas to achieve sustainability, efficiency and net zero – material sources, construction methods, and prefabricated products.

Firstly, we source renewable and reclaimed wood, including typical dimensional timber for 95% of the structure and dried grass for 100% of the facade, for our design. The other 5% of the materials used in the design are the small metal components such as plates and bolts. The intention is to collect the wood on-site and from nearby demolition sites to reduce the carbon footprint in material transportation.

Furthermore, we adapt the indigenous shelter and light timber framing construction methods using computational tools to iterate and test for low environmental impact. With light timber framing and thatching construction, we eliminate the need for heavy equipment on-site and specialized training for our crew. Moreover, we hope to engage communities at Fly Ranch in the construction process.

Finally, we will use innovative and low environmental impact prefabricated products to support the proposal's function. Based on our research, we choose to use an affordable footing available on the market that requires little excavation, no heavy tools, or specialized training for installation. This footing will be easy to remove if the structure is decommissioned in the future. We also choose to use composting toilets to lower water usage and recycle waste into fertilizer.