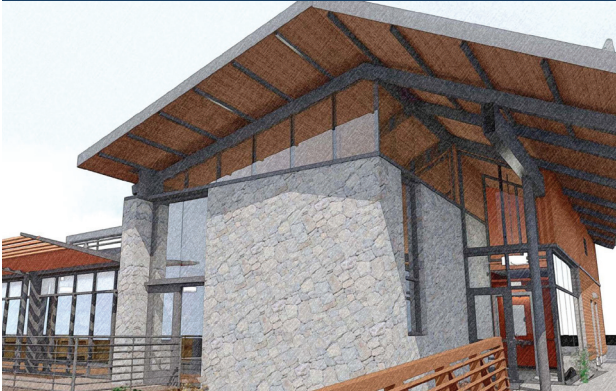


Nederland Community Library



Project Type:	Library
Owner:	Nederland Community Library District
Certification Goals:	LEED Silver (not certifying)
Construction Cost:	\$1.3M
Building Size:	4,200 sf
Number of Floors:	1
Completion:	January 2011
Project Team:	
Architect:	OZ Architecture
Owner's Rep:	Wember, Inc.
Contractor:	Fransen Pittman Construction
Mechanical/ Electrical Engineer:	ME Group, Inc.
Civil/ Structural Engineer:	JVA, Inc
Landscape Architect:	PCS Group, Inc.

GEO High Performance Consultant:

Ambient Energy

Information and Images courtesy of: OZ Architecture / ME Group / Ambient Energy

community library achieves superior efficiency with cost effective best practices

sustainable goals

- Community showcase for efficiency.
- Net zero site energy as funding allows.

project description

Since its inception in 2001, the Nederland Community Library has been an integral part of this small mountain community. Due to its popularity, the library has quickly outgrown its two prior locations. Working with the community, the Library Board and Foundation outlined a plan for a new library. The project received donated land from the town and the Library Foundation bought an additional parcel. A recent mill levy increase was supported by the residents and provided the funding necessary for the project to move forward. The new 4,500 sf library includes a large flexible space for reading, book stacks, and computers. Additional spaces include administrative offices, a shared multi-use room, and exterior public areas.

integrated project and community process

The project started with an open and integrated process and this has continued throughout. Providing a sustainable library was a top priority for the Library District and important criteria for selecting the design team. Working within the constraints of a tight budget, the owner and project team members participated in design charrettes to define the characteristics of the library. Several key team members provided

critical feedback before the final building layout was determined. As the design took shape, open forum presentations allowed community residents to provide their input.

a focus on climate specific design

Climate specific design was fundamental to the library's design. Because of the cold micro-climate, the team made decisions to incorporate passive solar heating and natural ventilation. The team employed energy and daylight modeling to explore and assess energy saving strategies. The GEO consultant provided assistance in reviewing the models and offering additional input. The project team used results from the model to best determine the building orientation, plan, and layout to take advantage of the climate and lighting conditions. As a result of these efforts, the heating load for the library is a fraction of the typical libraries in this climate zone and a majority of the cooling load is provided through natural ventilation.

efficient building = efficient mechanical systems

Careful attention was paid to site orientation, building envelope, and glazing to enable passive strategies to be the primary means of thermal comfort. This approach allowed the mechanical system to be smaller and more economical. While other systems such as geothermal were considered, the energy model, life cycle costs and budget informed the

decision to use an efficient in-floor radiant heating system supplied by condensing boilers. Condensing boilers recover latent heat from combustion that would otherwise be lost through the flue and feed it back into the heating system. Fresh make up air is provided through energy recovery ventilators (ERV's) to minimize heat loss. Cooling is primarily through natural ventilation but is supplemented with an indirect-direct evaporative cooler, which cools the library without adding excess humidity.

flexibility and shared community use

Flexibility was an important factor for the design team to consider. The role of a library, particularly in small communities, is varied and constantly evolving. As a result, the project team created a large open space for book stacks, reading areas, tables, and computers, which can easily be adapted to future needs. The large open room also supports the passive daylighting for the library. A smaller multi-purpose room is available for after hour community use or configured for daily library use.

This shared use extends outside of the facility as well. The library is adjacent to North Boulder Creek and a new pedestrian bridge connects the library with community access trails and hiking paths. A south facing exterior deck is open for community use and the adjacent windows are shaded by a structure that helps reduce summer heat gain inside the library.

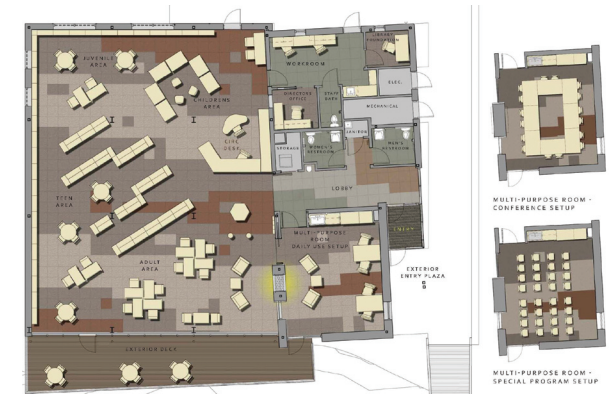
sustainable materials with a regional focus

The facility incorporates numerous sustainable materials. Low VOC materials and finishes, as well as sustainably harvested woods (FSC certified) were specified. Additionally, an effort was made to include products from local sources including stone and "beetle-kill" pine. Where possible, local subcontractors were used to reduce travel cost and support the local economy.

high performance design features

- Condensing boilers with in-floor radiant heat.
- Indirect-direct evaporative cooling.
- Air to air energy recovery ventilation (ERV).
- Demand control ventilation with CO2 sensors.
- Operable windows for passive ventilation.
- Efficient natural and artificial lighting and control design.
- High bay clerestories for additional daylight penetration.
- Roof pitch and electrical system designed to be solar photovoltaic ready.
- Low flow plumbing fixtures.
- Reduced use of impervious concrete and asphalt.
- High cut off exterior lighting for dark skies.
- Regionally appropriate, drought tolerant landscape.

results that put money back into books



projected energy use

- **94.1 kBtu/sf/yr** - benchmark energy use.
- **32.6 kBtu/sf/yr** - projected energy use.
- **65%** energy savings over ASHRAE 90.1-2007.
- **98** - projected Energy Star rating.

A photovoltaic ready roof plane will enable future energy savings and enable the library to be a net zero building.

projected lifetime energy and cost savings

- **258.3 MMBtu** - estimated annual energy savings.
- **10332 MMBtu** - estimated energy savings over the life (40 years) of the building.
- **\$5279** - estimated annual energy cost savings.
- **\$211,160** - estimated energy cost savings over the life (40 years) of the building.