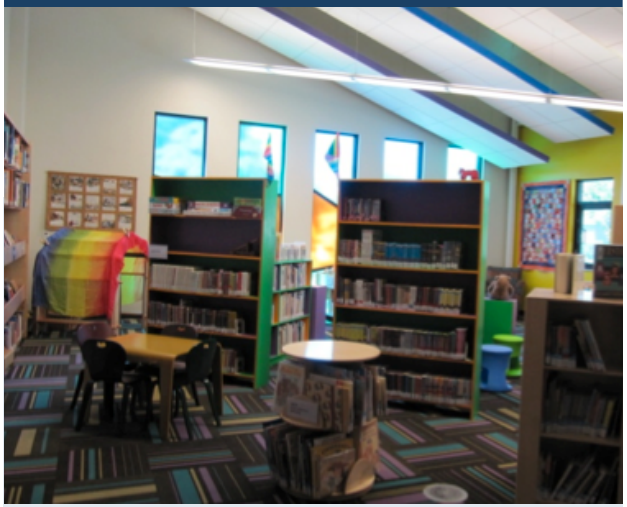
Mancos Library



Project Type:	Public Library
Owner:	Mancos Library District (MLD)
Certification Goals:	LEED NC 2.2 Gold
Construction Cost:	$2.4 million
Building Size:	7,500 sf
Number of Floors:	1
Completion:	June 2009

Project Team:

Architect:	Humphries Poli Architects
Mechanical Engineer:	M-E Engineers
Electrical Engineer:	M-E Engineers
Contractor:	Jaynes Corp.
Sustainability/ Energy Consultant:	Ambient Energy
Commissioning Agent:	M-E Engineers

community participation creates a sustainable library

high performance goals

- Provide an exemplary green showcase for Mancos Valley.
- Obtain LEED certification.
- Provide a building that is respectful of the community and the environment.

project description

Since it's founding in 1946, the Mancos Library has had several locations. Despite being in a small community the library usage per capita is comparable to larger facilities around the state. As a result, the library had outgrown its previous 2,200 square foot facility and started planning for a new building. In November 2005, the voters in the Mancos Library District (MLD) approved a mill levy increase to support the construction of a new library.

a motivated community

At the beginning of the new year, the community and MLD quickly committed themselves to the planning process for the new library. Even before a project team was selected, the Library's Board of Trustees sponsored a meeting that covered how LEED and sustainable building practices could be utilized in the planning of the new library. Community members, library staff, and the board also met with a library consultant to establish the strengths, weaknesses, opportunities and threats of the institution as a whole. By mid-year, the Board had selected an architect, and voted to pursue LEED certification for the project. The architect met with the residents to hear their suggestions for the new facility. In addition to requests for bike racks, public meeting rooms, internet access and art displays, the community also expressed a desire for several sustainable features. These suggestions included low water usage, passive solar, natural light, minimizing light pollution, local materials and a connection to the outdoors.

A sustainability consultant was hired to work with the project team in assessing sustainable strategies. The consultant held a sustainable design charette with the board regarding the specific LEED credits and energy criteria for the project that were to be obtained. The Town of Mancos was also an active supporter of the project and approved a zoning change, waived permit and tap fees, and allowed the MLD to develop the adjacent street and parking areas.

The project team continued to work on the design concept and identify the specific strategies that would support the district's objectives. Many of the sustainable strategies the community and design team discussed earlier began to take shape in the actual building and systems. These features included a passive heating and cooling system, operable windows for natural ventilation, and regional/recycled materials.

capitalizing on the sun for energy savings

transpired solar collector: The library features a unique heating and cooling system. A transpired solar collector is mounted on the south face of the building. The collector consists of a perforated metal panel mounted inches away from the exterior wall. During the winter, air passes through the perforations and is pre-heated between the wall and the panel as it is drawn up and into the building's mechanical system. This pre-heated air greatly reduces energy demand for the heating system. In the summer, the panel acts as a buffer from direct solar radiation and instead of the air being drawn into building, a damper redirects it back out into the exterior environment.

underfloor air distribution: An underfloor plenum and air distribution system directs the conditioned air into the building at occupant level where it is most effective for thermal comfort. As the library grows and modifies its services and programs, the underfloor system also allows for flexibility in interior configuration.

the building envelope: Operable windows allow for a connection to the outdoors. Sunshades on western windows reduce heat gain and glare. Consisting of structured insulation panels (SIPs), the envelope system provides continuous insulation for the walls and roof to better control indoor temperatures.

sustainability beyond energy efficiency

- Regional materials including locally-manufactured CMUs and steel structure composed of 50% recycled material were included.
- Recycled materials including Paper-Stone and Dakota Burl countertops, book stacks donated by Boulder Public Library, and carpet containing 35% recycled material reduced the need for newly harvested materials.
- Information boards throughout the library communicate the building's sustainable components to the community.

evolution of energy savings

- **75%** diversion of construction waste from landfill.
- **28%** savings on annual energy bills.
- **26%** recycled material from steel, ceiling tiles, access flooring, door hardware, transpired solar panels, concrete, gypsum board and tiles.
- **23%** regional material from concrete, CMU, gypsum board and asphalt.
- **37%** reduced potable water usage.
- **90%** of occupants have views to the outside.
- **75%** of occupants have direct access to daylight.
- Used low-VOC stains, adhesives and sealants that meet LEED-NC requirements.
- Reduced light pollution by eliminating lights that extend beyond the site boundary.
- Provided thermal control to building occupants by means of operable windows, underfloor air diffusers and thermostats.