

GREEN BUILDING COMMERCIAL case study



► SPECIFICS

- City of Boulder
- North Boulder Recreation Center 3170 N. Broadway Boulder, CO
- Renovated: 2001-2003
- Project Cost: \$11.5M Renovation
- Square Feet: 35,000 expanded to 61,700

► FEATURES

- LEED Silver Certification
- Avoided annual energy costs of \$56,000
- 6,000 square feet of solar panels for pool and domestic water heating
- Largest flat-plate solar system installation in U.S. in 20 years
- Solar system reduces natural gas consumption by 50%
- Incremental cost for LEED features: \$540,000 or 4.6% of total budget
- Energy efficient lighting
- Low VOC paints and finishes
- Low-E windows
- Recycled materials used in lockers and benches
- Low-flow showers and toilets
- Recycled rubberized flooring and carpet
- 83% of new building constructed of old building's materials
- Diverted 80% of construction waste during remodel; recycled asphalt, concrete, steel
- Drought tolerant and native landscaping
- 2-yr contract to purchase 50% of electrical need from wind power

► CONTRACTOR

- Rhodes Construction, Inc. 2290 E. Prospect, Suite 100 Ft. Collins, CO 80525 970-482-2996

► ARCHITECT

- Barker Rinker Seacat Architecture 2300 15th Street, Suite 100 Denver, CO 80202 303.455.1366 www.brsarch.com

NORTH BOULDER RECREATION CENTER

The newly renovated North Boulder Recreation Center (NBRC) reopened in January 2003 and features a large spa, sauna, sun deck, and an expanded weight/cardio room and gymnastics center. The NBRC also features both lap and leisure swimming pools that are heated primarily by energy from the sun. The city of Boulder Parks and Recreation Department offers a variety of programs and activities at the North Boulder Recreation Center.

The facility was constructed to meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) silver standard. Improvements to the facility include the latest technology in energy efficiency and environmental sustainability, such as solar heating and high efficiency boilers. The materials used in NRBC were selected based on the criteria of sustainability, indoor air quality (low, or no toxic emissions), and energy efficiency.

Funding for the \$11.5 million renovation came from the .25 cent sales tax for Parks and Recreation passed by Boulder citizens in 1995; property taxes (permanent Parks and Recreation fund); general sales tax (Facilities and Asset Management dollars); and Colorado Lottery and Art in the Park funds.

SPECIFIC PRODUCTS AND DESIGN FEATURES

Sustainable Sites

Location Efficient Project – Two bus lines have stops within a quarter mile of the NBRC, which encourages the use of public transportation. Bike racks are installed on premises and showers are available inside the facility to encourage bicycle commuting. The NBRC even has parking spots with access to electric charging stations and spots reserved for car-pooled vehicles. All contribute to making a Location Efficient Project.

Energy & Atmosphere

Active Solar Hot Water Heating –

Industrial Solar Technology • www.industrialsolartech.com

The solar thermal system is designed to provide heat to the lap and leisure swim-

SUSTAINABLE DESIGN

Architectural Energy Corporation

2540 Frontier Avenue,
Suite 201
Boulder, CO 80301

www.archenergy.com
800.450.4454





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Active Solar Hot Water Heating (continued)

ming pools, and to the domestic hot water system for showers and sinks. Annually this will provide roughly 50% of the thermal requirements of the pool.

The solar system consists of 142, 4x10 flat-plate collectors mounted on the roof of the lap pool and the gym. A glycol anti-freeze solution is circulated through the collectors to absorb the solar energy. Heat is transferred to the swimming pools directly using a heat exchanger for each pool. To supply the domestic hot water, solar heat is absorbed in a 1,200-gallon hot water storage tank. This allows solar-heated shower water to be delivered on a 24-hour per day basis.

Solar thermal systems are very effective and efficient for pool applications because the collectors operate at a low temperature and because the pool water is used as storage for the collected heat. At 5,680 sq. ft. of flat plate solar collectors, this installation is one of the largest systems of its kind installed since the early 1980's. The solar system will avoid the consumption of 17,000 gallons per year of fuel oil equivalent or 425,000 gallons over the lifetime of system.

Materials & Resources

Storage and Recycling of Recyclable – Recycling facilities located on premises to encourage recycling.

Building Reuse – Frequently, complete demolition is the norm when a building is slated for major changes. For the NBRC, 83% of the original building is reused in the new structure, this follows one of the primary tenets of green building- reuse.

Recycling Construction Debris – A construction waste recycling plan was created and implemented at the NBRC. The project recycled cardboard, steel, iron, concrete, tile, masonry, aluminum, copper, and asphalt. Were the weight of all loads to be averaged the NBRC diverted nearly 80% of their construction waste.

Indoor Environmental Quality

Carpet – www.carpet-rug.com

The NBRC installed carpet that meets the CRI Green Label requirement. To identify carpet products that are truly low volatile organic compounds (VOC), CRI has established a labeling program. The CRI Indoor Air Quality Carpet Testing Program green and white logo displayed on carpet samples in showrooms informs the consumer that the product type has been tested by an independent laboratory and has met the criteria for very low emissions.

Composite Wood – The composite wood used at the NBRC does not contain urea-formaldehyde. Formaldehyde, a colorless, pungent-smelling gas, can cause watery eyes, burning sensations in the eyes and throat, nausea, and difficulty in breathing in some humans exposed at elevated levels (above 0.1 parts per million). High concentrations may trigger attacks in people with asthma. There is evidence that some people can develop a sensitivity to formaldehyde. It has also been shown to cause cancer in animals and may cause cancer in humans.

Paints – Low-VOC paints were used when possible in the interior of the NBRC.

For More Information

Visit the city of Boulder's Planning & Development Services' web site at www.ci.boulder.co.us/pwplan/index.htm

For commercial LEED green building standards, visit the US Green Building Council's web site at www.usgbc.org

Sponsored by the city of Boulder's Office of Environmental Affairs www.environmentalaffairs.com

