

Shorebird Nature Center

Architects: VanMechelen Architects, Berkeley CA
510.558.1075, www.vanmechelenarchitects.com
Dan Smith & Associates Architects, Berkeley CA
510.526.1935, www.dsaarch.com

Design Team: Dan Smith, Greg VanMechelen,
Kelly Lerner, Bob Theis

Contractor: Gilbert-Morad Engineering & Construction, Fairfield, CA
707.429.2699, www.gmeconstruction.com

Client: Shorebird Nature Center, City of Berkeley
Patty Donald, Denise Brown 510.644.8623
www.ci.berkeley.ca.us/marina/marinaexp/naturecenter.html



*Shorebird Nature Center
as seen from across the bay*



South View of the Nature Center. Photovoltaic panels are on the left roof, hot water solar panels are on the right roof.

The new Shorebird Nature Center is a 1300 square foot showcase for environmental learning, supplementing a City of Berkeley-owned portable building that is used for environmental education at the Marina. The new facility will house an office, a Visitor's Center, and additional teaching space for classes. The Project to build the structure began in 1996, as a collaboration among the architects, the City of Berkeley, Lawrence Berkeley National Laboratory and the Department of Energy. Funding for the project came from diverse sources, including corporate and private donations, local and state government grants, private foundations, and the City.

The Visitor's Center is the only City-owned, run, and maintained, publicly accessible, green building demonstration project of its kind in the Bay Area. It is open six days a week to provide interpretive brochures, presentations, open houses, and workshops. This facility expands existing educational programs and helps demonstrate how practical, affordable, and environmentally responsible green building construction can be.

Sustainable Building Strategies used in The Shorebird Nature Center:

- Straw bale exterior walls
- Passive solar design
- Building integrated photovoltaics
- Hot water solar panels for radiant heating system
- Natural linoleum floors
- Interior walls made from compressed straw panels
- Sustainably harvested wood framing
- Cabinetry from wheat straw particleboard
- Countertops made from recycled glass

Strawbale Features:

The construction is post and beam with strawbale infill, using metal strapping for diagonal bracing. A straw-clay slip was used around gaps at wood, particularly posts, doors, and windows.

Another unique feature is the cast-in-place concrete exterior window sill. Building the formwork was more work than using prefabricated or wood sills, but the results came out quite well, and should last much longer.

Numerous volunteers worked on the project, and many of who stayed on for an extraordinarily long period of time. There were 30-40 volunteers for the bale raising, which went very smoothly under the guidance of the strawbale contractor. Volunteers also helped construct the gravel bag seat wall. Volunteers included students from Berkeley Schools, local residents, and AmeriCorps National Service Volunteers.



Raising bales



Placing final bales in gable end



UC students filling gravel bags



Community Volunteers at the public Bale Raising



.... and stacking them for outdoor benches

Products Found in the Shorebird Environmental Learning Center

Element, Manufacturer/ Supplier

High Volume Fly ash concrete
Berkeley Ready Mix
510-526-1611
"Mehta" Mix with 50% Fly Ash



Environmental Benefit

Flyash is made from soot captured in coal-burning electric plants, this waste material substitutes for Portland Cement, which consumes a lot of energy in its manufacture.



Strawbales
Flying M construction
3650 Gillis Canyon Rd.
Cholame, CA 93461
Greg Macmillan (805) 238-4820

Straw bales are a waste byproduct of agriculture, that are traditionally burned. Strawbale walls are rated R-30 for thermal insulation, the equivalent of 9" of fiberglass batts

Framing Lumber - FSC Certified Wood
Forest Stewardship Council,
www.fscusa.com
Hayward Lumber Supplies
www.haywardlumber.com

The Forest Stewardship Council (FSC) certifies that the wood used is harvested in a manner that does not harm forest ecosystems.

Pressure Treated Lumber
ACQ™ by Chemical Specialties Inc.,
877.653.2273, 800.421.8661
www.treatedwood.com
Wolman Natural Select, available at
Truitt & White Lumber, Berkeley
www.wolmanizedwood.com

These treated woods do not contain arsenic or chromates, which can leach into the soil.



Gravel Bag Exterior Seating
Polyethylene bags filled with site gravel, covered with chicken wire mesh and exterior stucco.

System developed by NASA, local sand or gravel can be used. Durable and no maintenance required.

Plywood Sheathing - FSC Certified Wood
Plywood and Lumber Sales, Oakland
800.675.7257, www.pals4wood.com

See certified lumber above



Spray Cellulose Insulation
GreenStone Industries
800.228.0024, www.greenstone.com

Made from 85% recycled newspaper, cellulose insulation also provides better insulation due to higher quality installation.

Metal Roof
McElroy Metal, Inc.;
P.O. Box 1148,
Shreveport, LA 71163;
800.950.6531, www.mcelroy.com

Metal roofs have a longer lifespan, warranted for 50 years, they can expect to last much longer.

Photovoltaic Panels
UniSolar, United Solar Systems Corp.
www.uni-solar.com installed by
Sun Light & Power, Berkeley
510.845.2997,
www.sunlightandpower.com

Panels convert the sun's energy into electricity, which powers the building and the electrical grid.

Hot Water Solar Panels
Heliodyne, Inc.
510.237.9614, www.heliodyne.com

Water is heated by the sun in the panels, which is pumped through tubes in the concrete slab to heat the building

Floor Radiant Heating
Reid Heating and Cooling (installer)
1945 D Francisco Blvd. San Rafael CA
94901
415- 485-5000, rhes@pacbell.net



Element, Manufacturer/ Supplier

Salvaged Doors

Urban Ore
900 Murray Street, Berkeley
510.841.0113
Ohmega Salvage and Ohmega II
510.843.7368

Fiberglass Windows

Milgard Windows
www.milgard.com

Exterior Window Sills

Site fabricated using white cement

Interior Recycled Glass Window Sills

Counter/ Production,
701 Bancroft Avenue,
Berkeley, CA 94710,
510.843.6916
www.counterproduction.com

Interior Wall Compressed Straw Panels

Prestowall, by Affordable Building
Systems
866.364.1198,
www.affordablebuildingsystems.com
Supplied by Better Building Systems
(530) 477-8017,
www.betterbuilding.com

Interior Finish Plaster

TransMineral USA, Inc.
707.769.0661,
www.transmineralusa.com

Interior Paints and Stains

American Formulating & Manufacturing
www.afmsafecoat.com/

Reception Desk

Made by Glenn Nunez, Woodware,
510-548-2116
Made with Interior Straw Particleboard
(see below)

Interior Straw Particleboard

Plywood and Lumber Sales, Oakland
800.675.7257, www.pals4wood.com

Reception Desk Countertop

Phenix BioComposite, Dakota Burl
800.324.8187, www.phenixbiocomposites.com

Natural Linoleum Flooring

Forbo Natural Linoleum
800.842.7839,
www.forbolinoleumna.com
Installation of Linoleum Flooring
Floor Dimensions
East Frontage Rd. Albany CA 94704
(510)-525-5656

Interior Lighting

Janmar Lighting (Track Lights)
626.858.6776, www.janmar.com

Environmental Benefit

The doors came from several sources, including UC Berkeley. Exterior doors should always have insulating glass to minimize energy use.



Fiberglass frames are energy efficient, and require less maintenance. The glazing is specified for the solar orientation and this climate.



Durable and require no maintenance.

85% recycled glass, which comes from curbside pick up and traffic lenses, which were replaced during retrofits with more efficient traffic lighting.



Straw is a waste byproduct of grain production, these walls are thinner, but have good acoustics, and minimize the use of wood.

Natural lime plasters use less energy in production, and allow moisture to pass through the wall system, minimizing the potential for rot.

Zero VOC paints provide a healthier indoor environment.

Straw is a waste byproduct of grain production.

Made from recycled newspaper, soy bean flour, sunflower seeds, and a non-toxic binder.

Unlike vinyl, natural linoleum is made from all natural ingredients - linseed oil, wood flour, pine rosin, and mineral chips on a jute grass backing. Linoleum lasts longer, is durable, and actually self heals cuts while providing natural fungicides in the oils.

Fluorescent lights are 5 times more energy efficient than incandescents, and the bulbs will last up to 10 times as long.