

ALAMEDA COUNTY LIBRARY CASTRO VALLEY BRANCH

*New Library Facility and Grounds
Show How Beautiful Green Can Be*



The Castro Valley Library

is no stranger to green buildings. When the library first opened in 1918, Castro Valley was a rural community and the library operated out of a recycled chicken coop. Back then, ranchers and farmers would ride their horses to the library to pick up a weekly supply of reading material for their families.

In October 2009, the Castro Valley branch of the Alameda County Library moved from an overcrowded facility it had been occupying since 1962 to a modern, light-filled building with three times more space. Designed as an energy-efficient, healthy and comfortable place for the community's children and adults as well as the library's staff, the new building offers expanded space for print and audio-visual collections. It also features inviting reading rooms, more public computers, a spacious community meeting room and outdoor patio, a café and a bookstore—all surrounded by beautiful landscaping.

COST

\$11,385,000 (building construction)
\$2,470,000 (site development and landscaping)
\$22,276,000 (total project cost)

LOCATION

3600 Norbridge Avenue
Castro Valley, California

PARCEL SIZE

2.94 acres

BUILDING SIZE

34,537 sq. ft.

LANDSCAPE/ HARDSCAPE SIZE

2.15 acres

BUILDING TYPE

Public library

COMPLETION DATE

Fall 2009

OWNER/DEVELOPER

County of Alameda

ARCHITECT

Noll & Tam Architects
Berkeley, California

GREEN BUILDING CONSULTANT

Simon & Associates, Inc.
San Francisco, California

LANDSCAPE ARCHITECT

Gates & Associates
San Ramon, California

BAY-FRIENDLY LANDSCAPE RATER

Design, Community & Environment
Berkeley, California

GENERAL CONTRACTOR

W.A. Thomas Company
Martinez, California

LANDSCAPE CONSTRUCTION CONTRACTOR

East Bay Construction
Livermore, California

CONTACT FOR MORE INFO

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The library serves the growing population of Castro Valley, an unincorporated area of Alameda County. Situated in a redevelopment zone that includes a mix of homes, businesses and civic buildings, the new library is adjacent to a section of the Castro Valley Creek that has been unearthed and restored.

“The new building is likely to become a real hub for the community,” said Michael Cadrecha, an architect with the Alameda County General Services Agency, which managed the library’s design and construction. And with a BART station only two blocks away, getting to the library will be a lot easier than in its early days.

The building was designed to meet the Silver level of the LEED green building rating system. It is also expected to be designated a Bay-Friendly Rated Landscape, having earned 86 points on the Bay-Friendly Landscape Scorecard, well above the required minimum of 60 points. StopWaste.Org provided a \$75,000 grant to help fund green building and Bay-Friendly Landscape design and construction costs.

■ Green Building Features ■



ENERGY & CLIMATE CHANGE

Daylighting Design. The library was designed to make the most of natural daylight. The daylighting design provides high quality illumination for reading, creates a comfortable, pleasant ambiance, and reduces the use of energy for electric lighting. Photosensors control the electric lights, turning them on or off in response to daylight levels. A row of windows placed high on the building’s north side (an architectural feature known as a clerestory) provides abundant natural light.

GREEN at a GLANCE

SUSTAINABLE SITES

- Transit-friendly location two blocks from BART train station
- Bicycle racks and employee shower facilities installed
- Preferred parking designated for carpools, vanpools and fuel-efficient vehicles
- Number of parking spaces reduced to minimum allowed by code
- Pedestrian access promoted with connection to Castro Valley Creek path
- Full cut-off design on 95% of exterior light fixtures reduces light pollution

WATER EFFICIENCY

- Low-flow faucets, dual-flush toilets and waterless urinals reduce indoor water use by more than 40%

ENERGY & CLIMATE CHANGE

- Exceeds California’s building energy efficiency code (Title 24–2005) by nearly 25%
- Underfloor air distribution reduces energy use
- Building designed for good daylighting
- Exterior and interior shading devices reduce solar gain and glare
- Low-e windows have high visible light transmittance and high SHGC
- Energy-efficient electric light sources and high quality fixtures selected
- Photosensors reduce electric lighting use in response to daylight levels
- Enhanced commissioning conducted

MATERIALS & RESOURCES

- 75% of construction and demolition debris reused or recycled
- Recycled-content materials include steel framing, gypsum board, ceiling tiles, carpeting tiles, and flyash in concrete
- Forest Stewardship Council (FSC)-certified wood used for trim, casework, shelving and some furniture

GREEN at a GLANCE

INDOOR ENVIRONMENTAL QUALITY

- Low-emitting adhesives, sealants, paints, coatings and carpet used
- Composite wood backing and substrates contain no added urea formaldehyde
- Green cleaning and maintenance practices followed
- Underfloor air distribution provides improved indoor air quality
- Operable windows in office areas and in-floor diffusers allow individual thermal comfort control
- Indoor air quality protected during construction; HVAC system flushed out before occupancy
- Floor mats installed at entrances to reduce tracked-in pollutants
- Survey of users' thermal comfort to be conducted within 6 to 18 months of occupancy
- 90% of spaces have views of outdoors

Reading rooms are situated on the building's south side, where they are illuminated by a large bank of windows facing Norbridge Avenue. Exterior overhangs above the south-facing windows block direct sun in the summer; inside, fabric shades can be drawn when needed to reduce glare. The south-facing windows have a high solar heat gain coefficient (SHGC) to reduce heat penetration. Unlike some high SHGC products that are tinted, these windows have a high visible transmittance. This clear glazing makes the library more inviting by giving patrons a better view out and giving people passing on foot or in vehicles a better view in.

Underfloor Air Distribution. Conventional heating and cooling systems use a lot of energy to blow air long distances through overhead ducts. Rather than using ducts, two-thirds of the library is heated and cooled using underfloor air distribution, which moves air through a cavity beneath the floor (known as a plenum). Eliminating ductwork means less pressure is needed to deliver air, which greatly reduces fan power energy use. "By distributing air from under the floor, you're able to have much better air quality circulation and you use less energy to move the air," said project architect Mati Teiblum with Noll & Tam Architects.

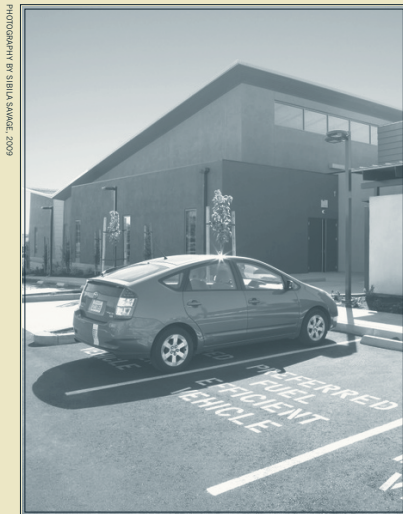
IMPROVED INDOOR ENVIRONMENTAL QUALITY

Protecting Indoor Air Quality. The air inside buildings typically contains many different contaminants, including dust as well as chemicals emitted by furnishings and building materials. To help keep the library clean and healthy, walk-off mats were installed at the entrances to trap dirt and other tracked-in contaminants. The composite woods used in construction, such as plywood, were made without urea formaldehyde, a carcinogen. The library's recycled-content carpets carry the Carpet and Rug Institute's Green Label Plus certification for low emissions, and much of the furniture is certified by GreenGuard for low emissions.

In addition, the janitorial staff has been trained in green cleaning and maintenance procedures, including using less-toxic cleaning products.

Ventilation and Thermal Comfort. Providing a comfortable environment for the community and staff alike was one of the goals of the project. With conventional air distribution systems, conditioned air delivered by the system mixes with air in the room. This mixing dilutes air pollutants, but also keeps them circulating where occupants can breathe them in. The library's underfloor air distribution system works differently: air is delivered at floor level, and as it gains heat from bodies, equipment and other heat sources, it naturally rises, carrying air pollutants up and away from people.

For added comfort, the system's in-floor diffusers are adjustable, allowing people to increase or decrease air flow in their vicinity. The library's office areas have windows that open, providing staff with additional control over their comfort.



PHOTOGRAPH BY SHILPA SANKAR, 2009

■ Bay-Friendly Landscaping Practices ■

Castro Valley Library's grounds model many principles of Bay-Friendly Landscaping, including landscaping locally, landscaping for less to the landfill, nurturing the soil, conserving energy, and protecting water and air quality. Bay-Friendly Landscaping practices also contributed to many of the project's LEED credits.

The landscaping was designed to complement the building design and enhance the community. It also integrates with a separate but related project, the restoration of an adjacent 300-foot-long stretch of the Castro Valley Creek that had been buried for more than two decades in an underground concrete culvert. Thanks to efforts by the Alameda County Flood and Water Conservation District and other partners, a section of the creek that flows past the library's western side has been "daylighted" and the riparian environment restored. The creek improvements help control flooding, remove pollutants from stormwater runoff, and create habitat for waterfowl and other birds, fish and amphibians. A creekside trail and a bridge made from a salvaged railroad flatcar will provide pedestrian and bicyclist access between the library and Castro Valley Boulevard to the north.



CONSERVING WATER

The landscape architects, Gates & Associates, employed a variety of strategies to reduce irrigation water use by at least 50 percent compared to a conventional landscape. The first step was to increase the soil's ability to retain water by aerating the soil and incorporating compost. Research has shown that minimal applications of compost can decrease irrigation requirements by 30 percent and can increase water infiltration by as much as 125 percent. To further reduce water loss, a 2-inch layer of mulch covers the soil in the library's planted areas.

BAY-FRIENDLY at a GLANCE

LANDSCAPE LOCALLY

- Site analysis completed to maximize benefits of Bay-Friendly Landscape practices
- Laboratory soil analysis provided recommendations for organic soil amendments and fertilizers

LANDSCAPE FOR LESS TO THE LANDFILL

- To reduce labor costs and plant waste, plant species installed will not require shearing and will grow to mature size within space allotted; overplanting and tight spacing was avoided
- No invasive species were planted
- 100% of compost and mulch used was produced from urban plant waste
- 75% of construction and demolition debris was reused or recycled
- Plant debris was taken to a facility that produces compost and mulch

NURTURE THE SOIL

- Soil was not worked when wet
- A stormwater pollution prevention plan was prepared for the site
- Soil in all landscaped areas was aerated and amended with compost
- Fertilizers prohibited by Organic Materials Research Institute were not used

CONSERVE WATER

- All soil is protected with 2-inch layer of mulch
- 1 inch of compost was tilled into all planting areas
- 86% of all plants are California native or Mediterranean species that require little or no summer water
- No turf was installed
- Plants are grouped by hydrozones
- High efficiency irrigation system includes a smart irrigation controller
- Drip or bubbler irrigation was installed in all narrow landscape beds
- Irrigation plans were reviewed by an Irrigation Association trained irrigation specialist
- Maintenance specifications require checking soil moisture content with soil probes before watering, adjusting the watering schedule based on weather conditions and immediately replacing broken irrigation equipment

BAY-FRIENDLY at a GLANCE

CONSERVE ENERGY

- Deciduous trees shade west-facing building walls and windows
- Full cut-off exterior light fixtures on 90% of exterior light fixtures reduce light pollution
- Site lighting does not cast direct beam illumination onto adjacent properties

PROTECT WATER & AIR QUALITY

- Synthetic pre-emergent herbicides were not used during construction
- Integrated pest management (IPM) will be used during maintenance
- 20% of installed plants are listed by Cornflower Farms as attracting beneficial insects
- More than 85% of average annual runoff is treated in landscape beds, bioswales and median planters



Instead of a traditional water-thirsty lawn, visitors will discover drought-tolerant perennial bunch grasses that don't require mowing, such as Berkeley Sedge (*Carex tumulicola*) and native Deer Grass (*Muhlenbergia rigens*).

The site has been planted with a diverse palette of California-native and Mediterranean plants that thrive with infrequent or occasional watering, including trees such as California Buckeye (*Aesculus californica*) and Coast Live Oak (*Quercus agrifolia*) and flowering shrubs such as Pink Rockrose (*Cistus incanus*), Red-Flowered Buckwheat (*Eriogonum grande* var. *rubescens*) and Sticky Monkey Flower (*Mimulus aurantiacus*).

"A lot of people have the idea that natives are scruffy and uninteresting, but they can be attractive and striking," said Gail Donaldson of Gates & Associates. "You can do a lot with native plants. We used a variety of colors, shapes and forms from ground level to the canopy."

Plants with similar water requirements are grouped together so that those requiring little water can be served by different irrigation valves than those needing more water. The landscaping plan calls for drip irrigation where feasible and appropriate; where spray irrigation is used, it has been carefully designed not to overspray onto paved or nonplanted areas. A smart irrigation controller adjusts irrigation levels based on the weather, and signals if there are leaks in the irrigation system.

PROTECTING WATER QUALITY

Because Castro Valley is a car-oriented community, parking accounts for much of the library's site. With conventional site design, large areas of pavement create stormwater management problems as rainwater flowing over asphalt picks up litter, road oil and other pollutants and dumps them into storm drains. During particularly heavy rainstorms, the volume of water flowing off of buildings and paved areas can overwhelm the storm drains. To manage stormwater at the library site, shallow open channels known as swales were constructed and lined with cobbles. These cobbled infiltration swales capture runoff, filter out pollutants and slow the rate at which the runoff flows into the storm drains.

The parking lot is graded so that rainwater runs through curb notches into planted medians. The runoff then drains into the swales. "There is a special soil mix used in the swales that is very porous and allows the water to percolate down, so it cleans the stormwater before it hits the storm drain," said Kimmy Chen of Gates & Associates.

In addition to the swales in the parking lot, a swale on the building's south side captures rainwater from the roof. The cobbled swale has the look of a dry creek, creating a visual connection with the newly daylighted Castro Valley Creek to the west.