

# LAKE MERRITT MUNICIPAL BOATHOUSE

*A Piece of Oakland's History Restored  
and Returned to Public Use*



## On August 6, 2009

Oakland residents gathered for a ribbon-cutting ceremony to celebrate the rededication of the Municipal Boathouse, a City

Historical Landmark on Lake Merritt. The once dilapidated

structure has been carefully restored, thanks to the Measure DD bond approved by Oakland voters in 2002 to fund municipal improvement projects.

Originally built in 1909 as a saltwater pumping station for the fire department, in 1914 two wings were added to serve as a public boating center.

Jutting out over the water, the handsome Mission Revival building is one of the defining landmarks on the shores of Lake Merritt, a unique saltwater lake bordering downtown and residential neighborhoods.

Over the decades the Boathouse building accommodated a variety of functions, including most recently city offices. The renovation has returned the building and its adjacent four acres of parkland to its historical activities and public uses, including housing a rowing club and serving as a home base for regattas and other boating activities. A new 350-seat restaurant offers indoor and outdoor dining and spectacular views.

With a site designed to help improve Lake Merritt's water quality, and a building designed to consume less energy and water than a comparable conventional building, the project is also the first LEED-NC Gold Certified building owned by the City of Oakland.

### **COST**

\$18 million

### **LOCATION**

1520 Lakeside Drive  
Oakland, California

### **PARCEL SIZE**

4 acres

### **BUILDING SIZE**

16,542 sq. ft.

### **BUILDING TYPE**

Boathouse and restaurant

### **COMPLETION DATE**

August 2009

### **OWNER/DEVELOPER**

City of Oakland

### **ARCHITECTS**

Murakami/Nelson Architectural Corp.  
Oakland, California

### **LANDSCAPE ARCHITECTS**

Wallace Roberts & Todd  
San Francisco, California  
Adrienne Wong Associates  
Oakland, California

### **GENERAL CONTRACTOR**

BBI Construction (building renovation) Oakland, California  
McGuire and Hester (site construction) Oakland, California

### **LEED COMMISSIONING**

KEMA Services, Inc.  
Oakland, California

### **CONTACT FOR MORE INFO**

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## ■ What Makes It Green ■

### SITE CONSIDERATIONS & SOLUTIONS

**Low-Impact Stormwater Management.** As the downstream destination for more than 4,600 acres of urban stormwater runoff, the lake has long been overwhelmed by pollution. To manage runoff along the Boathouse site, which fronts the lake and street for several blocks, the project team designed and constructed a 300-foot bioswale that collects runoff from the site, its parking lots, and the street and nearby buildings. As stormwater enters the bioswale, plants help filter out trash and larger particulates, while microbes in the soil break down hydrocarbons and other small contaminants before they enter the lake. The soil mix was chosen for its ability to filter water as well as to retain enough moisture to support the swale's vegetation. In addition to protecting water quality, the bioswale is an attractive and interactive landscaping feature, bordered by walkways and crossed by footbridges that provide access to the park.

**Recycled Water for Irrigation.** An old and wasteful irrigation system was replaced with a high efficiency system supplied entirely with recycled municipal water from East Bay Municipal Utility District. The Boathouse is one of the first projects in Oakland and the first on Lake Merritt to use recycled water. "Because it's a park, a certain amount of lawn was included for aesthetic and recreational purposes," said John Gibbs, a landscape architect with Wallace Roberts and Todd. "Using nonpotable water allowed us to have a large lawn and still be conscientious about water use."

**Park Improvements and Connectivity.** During the planning process, the area's residents made it clear they wanted pleasant and safe access around the lake and from the lake to the surrounding neighborhoods. The four-lane road adjacent to the site has been reduced to two lanes for vehicles, and new bicycle lanes were added. The park now features upgraded boating facilities, new pathways for walkers, joggers and bicyclists, places for viewing the lake, and interpretive elements such as stacked limestone pieces showing the historical shoreline.



## GREEN at a GLANCE

### SUSTAINABLE SITES

- Bioswale treats onsite and offsite stormwater
- High albedo pavement and walkways and small green roof on recycling/trash building reduce heat island effect
- New bicycle lanes created
- Shower and changing rooms installed for bike commuters
- Park redesigned to improve safety, access, views and water quality

### WATER EFFICIENCY

- Low-flow faucets and toilets reduce indoor water use by 30%
- 100% recycled water used for irrigation
- High efficiency irrigation system includes flow meter, weather-based controllers and remote monitoring
- Landscape planted with many California native, Mediterranean and other low-water species, including wild lilac (*Ceanothus*), deer grass (*Muhlenbergia rigens*), New Zealand flax (*Phormium*), wild rose (*Rosa rugosa*) and coast live oak (*Quercus agrifolia*).

## GREEN at a GLANCE

### ENERGY & CLIMATE CHANGE

- Enhanced commissioning conducted
- Title 24 requirements exceeded by 31%
- Efficient HVAC system includes economizer cycle, direct digital controls and CO2 sensors
- Dual-pane, argon-filled windows have low-e, high solar heat gain coefficient glazing
- Operable windows have mechanized PVC-free sunshades

### MATERIALS & RESOURCES

- 93% of existing structure was reused
- 95% of construction and demolition debris was diverted from landfill
- FSC-certified mahogany used for interior finishes and deck
- Recycled-content products include ceramic wall and floor tile, high volume flyash concrete, concrete reinforcing steel, structural steel, fiberglass insulation
- Regionally manufactured materials include granite in landscape and wood windows, doors, trim and casework

**Cool Site.** With the exception of the Boathouse building, the entire site is designed to reduce the heat island effect. Areas that are not vegetated, such as the staircase and walkways, are surfaced with high-albedo concrete or decomposed granite to reduce heat absorption. A vegetated roof covers a small recycling and trash building. As Oakland's first City-owned living roof, it serves as a demonstration project for green roof technologies.

### REUSE, RECYCLING & BUILDING LONGEVITY

**Adaptive Reuse and C&D Recycling.** When the renovation started, the interior was “chopped up into a bunch of little offices, with lots of partitions and low ceilings,” said architect Zachary Goodman of Murakami/Nelson. “We gutted it and opened the spaces to be pretty close to how they were originally.” Ninety-three percent of the existing structure was reused and 95 percent of the construction and demolition debris was recycled. “The City has a 75 percent mandatory threshold for recycling C&D materials,” Goodman said. “We far exceeded that.”

**Durable Materials and Construction.** “We made very conscious and careful decisions to build in a manner that will last,” said Gibbs. The concrete used on the site, for example, is thicker and more carefully reinforced than is typical in conventional construction. Sustainably harvested mahogany certified by the Forest Stewardship Council (FSC) was used for much of the building's new wood, including casework, trim, interior and exterior doors, windows, the floor in one of the wings, and the deck. Mahogany was chosen for its superior durability in a saltwater environment. “This building is 100 years old,” said Goodman. “We're going to return it to the people. Let's make sure it's going to last another 100 years.”

### ENERGY EFFICIENCY & REDUCED CARBON FOOTPRINT

**Efficient, Long-Lasting HVAC System.** Instead of the rooftop heating and cooling equipment typically installed on a building this size (often called “packaged units”), the City opted for a more expensive but longer-lasting and more efficient system. Sometimes called a “mini central plant,” the Boathouse's HVAC system consists of a series of air handlers in the building's attic space connected to an outdoor chiller that provides cooled water for space cooling and a basement boiler that provides hot water for space heating. The air handlers bring in fresh air through outside air intake vents. This type of hydronic heating and cooling is “always a more comfortable system” than heating with a furnace and cooling with a compressor and condensing fan, said Robert Crane of KEMA, the project's commissioning agent. “The City chose to install a system that's sophisticated and will not need to be replaced as often as a packaged system.”

**Controls and Sensors.** The HVAC system has direct digital controls, which allows monitoring, troubleshooting and control of the system from a central location, as well as tracking of energy consumption trends. Carbon dioxide sensors were installed to ensure delivery of adequate fresh air whether there are 30 or 300 people in the building. If indoor carbon dioxide levels exceed certain thresholds, then outside air dampers (called economizers) open to allow more fresh air inside. When the weather is mild, the economizers open automatically to bring in cool air, reducing the energy use of the mechanical cooling system.

**Enhanced Commissioning.** The City opted for an enhanced commissioning process that gives the commissioning agent a bigger role early in the design process to help ensure that individual systems and the building as a whole are designed to operate optimally. The enhanced commissioning also included performing tests during the warranty period to address potential problems while the systems are under warranty. Facilities staff and tenants were trained to make sure they understand how the systems work and how to properly maintain the building.

## GREEN at a GLANCE

### INDOOR ENVIRONMENTAL QUALITY

- 100% of core and shell spaces have access to daylight and 90% have access to views
- Low-emitting adhesives, paints and composite woods used
- Formaldehyde-free fiberglass batt insulation installed
- Carbon dioxide sensors improve ventilation
- Separate exhaust system installed in janitorial room
- Walk-off mats installed at main entrances

