

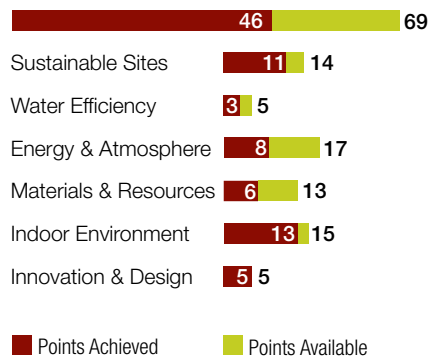
Yesler Community Center Seattle Parks and Recreation



Photo courtesy of Mithun

Square Feet: 22,800, 2 stories
Site: 60,000 square feet
Location: First Hill neighborhood
Construction Cost: \$158/square feet
Completed: January 2005

LEED Facts - NC Gold



Benefits

- 42% reduction in energy use
- 63% less water use
- 76% of construction waste diverted from landfills
- 95% of building is naturally ventilated and daylit
- 41% of products and materials from regional sources

Project Overview

Located along a major arterial in central Seattle, Yesler Community Center serves as a neighborhood hub. The building contains a gymnasium, teen center, childcare facility, fitness center, computer room and meeting rooms.

Public spaces are all visible from the interior circulation area or commons. The commons is visually linked to the street, which enhances the experience of community and public life while providing for casual reconnaissance. Hundreds of daily occupants benefit from

the perception of openness and safety as well as the health attributes of natural lighting and ventilation.

Full time staff at the community center is typically three to five people. Volunteers and program leaders make up the remaining staff. Visitors to the community center ranges from 10 to 500 people on a daily basis depending on the programming and activities occurring. The center is occupied six days per week and is open until 9 p.m. most nights, opening alternately at 10 a.m. and 1 p.m.



Photo above courtesy of Ela Lamblin

The Public Art Program of the Mayor's Office of Arts & Cultural Affairs integrates artworks and the ideas of artists into a variety of public settings.

Title: *Current Events*

Artist: Ela Lamblin

Completed: 2005

Commissioned: 1999 Community Centers Levy 1% for Art Funds.

This stainless steel gazebo-like structure, with a twirling wind-catch and aluminum tubular bells, uses wind and rain to provide visual and aural interest at the entry to the Community Center. Rain provides percussive punctuation on the stainless steel skin, and sounds emitted from the wind-turned aluminum slit gongs whirl about inside the dome.



Photo courtesy of Mithun

Sustainable Sites

Yesler Community Center is located on the southern edge of Yesler Terrace, which was built by the Seattle Housing Authority in the 1940s on the south side of Seattle's First Hill neighborhood. Yesler Terrace consists of several hundred two-story rowhouse apartment dwellings with small front yards. The community will undergo a planned transition that includes the introduction of office and neighborhood commercial space into the overall mix.

Yesler Community Center lies along the "Blue Ring," a proposed open space network in Seattle that connects inner city neighborhoods. One of these future open spaces lies along the building's west side, so that building and greenbelt are connected to the nearby International District.

The site is on previously developed urban land. Because lead and asbestos in the building materials of the adjacent old community center were present in the soil, the site was officially classified as a brownfield and cleaned up prior to construction.

The primary means of travel to the site are buses and walking. Six different bus routes have stops within 1/4 mile of the building. While city parking requirements call for 42 stalls, the owner received a design departure to build only 36, a 15 percent reduction. Special parking areas are designated for vans, carpools and alternative fuel vehicles. As a result of community design meetings, the

program was revised so that half of the parking requirement was met below grade in a structure tucked underneath the gymnasium wing. This leaves an open area on the downhill side for outdoor play in connection with the child care center. Sunlit terraces and walkways surround the major volumes of the building.

To preserve and protect large red oaks on the site, the building was set back and tree wells were dramatically enlarged. Plantings were selected to reduce water use for irrigation by 63 percent, eliminate pesticide use, and support a variety of soil insects and microrizae unique to the Northwest. Red trig dogwood and viburnum tolerate the dry shade on the north, and vine maple and sword fern are shaded by large existing trees on the east side. On the south side, rockrose, native creeping raspberry and ceonothus are planted in front of a heat absorbing wall.

All light fixtures are shielded to reduce uplighting, consistent with LEED dark sky criteria. The membrane on roof surfaces has a reflective index of .65 and total emittance greater than .9 for reduction of the heat island effect. Light colored concrete is used on exterior sidewalks, shaded by large existing street trees.

Water Efficiency

The use of native plantings minimizes outdoor water use on site, limiting it to 1,000 gallons per year. This natural landscaping scheme will conserve 29,862 gallons per year, saving Parks and Recreation \$448 per year in utility costs.



Site Plan

Graphic courtesy of Mithun



Photos courtesy of Mithun

There is sufficient permeable surface to manage 20 percent of precipitation on-site through infiltration.

Without the possibility of on-site stormwater reuse, conservation is the main objective for water cycle design, and the strategy is low-flow fixtures. Low-flow urinals and showers were installed. The use of low-flush urinals (0.5 gallon-per-flush) saves an estimated 20,000 gallons per year in the building. Low flow showers (1.8 gallons per minute) save another 15,000 gallons per year. The efficient plumbing fixtures added no capital cost but will reduce annual operating costs. The combination of all of these fixtures results in a 30 percent reduction in indoor potable water use over standard fixtures, conserving 132,900 gallons per year and generating \$1,796 in annual savings.

Energy & Atmosphere

The principal energy conservation strategy at Yesler Community Center consists of design features that dramatically enhance natural ventilation and also make calculated, comprehensive use of daylight. As a result, there is no mechanical comfort cooling, and the building relies on natural light instead of electric lighting during daylight hours.

The community center is set into a south-facing hillside and branches into three major volumes to enhance southern exposures. The branched footprint means that most of the building can function as a perimeter zone, and manually and electrically operated windows can be used

for passive cooling and ventilation for most of the year. When the center is in heating mode during winter months, ducted heating-only minimum ventilation is used in conjunction with heat recovery for pre-heating ventilation air.

All major spaces can be used during the day without artificial lighting, including the gymnasium, a condition believed to be unprecedented in a building of this size. The gymnasium is the first in Seattle that relies on natural lighting and ventilation. The ventilation system, refined through thermal modeling, brings cooling air through low level louvers located at the perimeter of the gymnasium on one side and releases it through higher level vents and clerestory openings in the ceilings that are integrated with the daylighting features, relying on principals of thermal stacking. Gym vent doors open without motors during warm weather.

For balance, each interior space has multiple sources of natural light, an arrangement which also provides cross-ventilation. All windows and skylights are also tasked for ventilation in order to move maximum volumes of air through the building for minimum cost. To achieve the greatest benefit and efficiency, detailed daylighting and natural ventilation studies were run in tandem for every room. Detailed analyses were performed for the proposed skylight and window openings, and the positions and dimensions of windows were refined to allow effective use of photocell controlled lighting ballasts throughout the building.

Energy consumption was further reduced with condensing boilers for the hot water heating system (90 percent efficiency); variable frequency drives on hydronic pumps; heat recovery in air handling units; high-performance insulation package that exceeds code requirements; and, fluorescent lights with dimming ballasts that adjust to increasing sunshine.

Together, the integrated strategies improve the energy performance of the building by 42% beyond the ASHRAE 90.1-1999 Standard, or more than 325,000 kWh each year. That is enough energy saved to supply power to 36 Seattle single-family households each year. Seattle Parks and Recreation will benefit through reduced utility bills, saving an anticipated \$7,900 each year.

Seattle City Light funded over \$20,000 in consultant services through their Energy Smart Services Program; \$15,000 was provided for natural ventilation modeling and \$5,000 was provided for advanced commissioning. The Seattle Daylighting Lab contributed services for daylight modeling and education.

Materials & Resources

Because of the owner's need to keep down long-term maintenance costs and to count on a building life of 50 years, building structure and materials must be very durable, as well as sustainable. High durability and low maintenance materials specified in this project include: brick and concrete facades; stainless steel base flashing at masonry walls; concrete floor in

the commons area; built-in walk-off mats and grills at all entries; high-performance KEE roofing membrane; galvanized steel deck on gymnasium and commons; anodized aluminum windows at all wall openings; and, heavy duty extruded windows at high monitors.

Building materials and finishes were carefully selected to conserve resources through reuse, recycled content, local sourcing, and sustainable growing and manufacturing processes. Green building materials include: concrete mixes using flyash; efficient composite wood trusses in short span areas, left natural and cleaned with an innovative baking soda blasting; gypsum wallboard with 96 percent recycled content; strawboard in all casework and wainscoting; FSC-certified maple used in the two largest rooms; linoleum and high recycled content carpet for the floor of childcare center.

Over 95 percent of the ceiling structure is left exposed. By allowing the structure to serve as the finish, over 18,000 square feet of ceiling finishes were eliminated. In addition to using less material, the construction waste generated on-site was carefully sorted for recycling. Over 77 percent of construction waste was diverted from landfills, recycling 1,362 tons.

Local sourcing of building materials reduces transportation impacts and strengthens the local economy. The project support these goals by sourcing 41 percent of products from within 500 miles of the site, and of these, 80 percent were manufactured from materials harvested locally.

Indoor Environment

The most significant contribution to indoor air quality is in the natural ventilation and lack of mechanical cooling, resulting in increased ventilation effectiveness throughout the building. As a result of the southerly orientation, branched building footprint and extensive fenestration, approximately 90 percent of the interior spaces have daylight and views. A comfortable

temperature range is regulated by a system that is largely under occupant control.

In addition, several standard measures were taken to protect indoor air quality, including: modeling and commissioning for thermal comfort; low-VOC adhesives and sealants; low-VOC paints; and, two-week flush-out prior to occupancy. Seattle Parks and Recreation also developed and implemented a green housekeeping program that utilizes low toxic cleaning products. The program's implementation included training and educational materials for Parks staff and janitorial service providers.

Lessons Learned

- Yesler Community Center achieved high performance in all of the six LEED categories through integrated design strategies. For example, energy strategies combine daylight with optimized natural ventilation to reduce the need for artificial light and eliminate the need for mechanical cooling.
- The idea of relying on natural light and ventilation in a regulation gymnasium was strongly resisted at the beginning of the project, primarily because of fears of distracting glare that have been experienced in historic examples. Simulation and modeling undertaken as part of design of the gymnasium space allayed fears, and the facility has been a popular and comfortable amenity for the community.
- The process emphasized broad education and collaboration among design team members and owner.
- Taking full advantage of the education embodied in Yesler Community Center will require close monitoring of system components to gather data on power and water usage, as well as tracking of total consumption. This will require funding and commitment from the owner as well as close cooperation between city departments and their members.

Rating & Awards

U.S. Green Building Council LEED® for New Construction Gold Rating

Chapter and Regional ASHRAE Technology Award 2006

AIA Washington Council Civic Design Award 2006

The Teams

Owner

Seattle Parks and Recreation
www.seattle.gov/parks

Architect & Landscape Architect

Mithun
www.mithun.com

Mechanical

Keen Engineers (now Stantec)
www.stantec.com

Civil & Structural

Coughlin Porter Lundeen, Inc.
www.cplinc.com

Electrical

Hultz BHU Cross Engineers
<http://hultzbhucross.lbu.com>

Lighting

Candela
www.candela.com

Daylighting

Seattle Daylighting Lab
www.daylightinglab.com

Contractor

Berschauer Phillips Construction Co.
www.bp-construction.com

Commissioning

Engineering Economics Inc.
www.eeiengineers.com

To Learn More

City Green Building is making green building standard practice in Seattle through education, technical assistance and incentives.
www.seattle.gov/dpd/greenbuilding

Office of Arts & Cultural Affairs promotes the value of arts and culture in and of communities throughout Seattle.
www.seattle.gov/arts

Parks & Recreation provides facilities, parks and urban forests that improve quality of life in Seattle. www.seattle.gov/parks

LEED® is the national benchmark for high performance green buildings developed by the US Green Building Council.
www.usgbc.org

Seattle City Light offers financial incentives and technical assistance for commercial customers through Built Smart Services.
www.seattle.gov/light/Conserve

Seattle Daylighting Lab supports architectural daylighting design strategies.
www.daylightinglab.com