

Fern Hill Elementary School



Rendering of the Renovated Fern Hill Elementary School

FLOOR SPACE: 54,630 ft²
BUDGET: \$ 11.8 million (\$216per ft² construction costs)
BUILDING POPULATION: 350 (K-5)
CONSTRUCTION DATES: June 2005—August 2006
OWNER: Tacoma School District No. 10
ARCHITECT: BLRB Architects, p.s.
GENERAL CONTRACTOR: Babbit Neuman Constructors
STRUCTURAL ENGINEERS: Putnam Collins Scott Associates
MECHANICAL & ELECTRICAL ENGINEERS: Tres West Engineers, Inc.
CIVIL ENGINEERS: Sitts and Hill Engineers
LANDSCAPE ARCHITECTS: Cascade Design Collaborative

PROJECT NOTES

SITE AND WATER

- **Adaptive Reuse:** The historic, 3-story masonry classroom building was retained and the exterior was restored, reusing 27,280 square feet of the existing building area and preserving an icon for the local community. Two-story classroom addition reduces building footprint to allow for greater open site area and reduced impervious area.
- **Increased Native Habitat:** New demonstration garden and raingarden are planted with native plants increasing the planted area on the site, providing habitat for native species, increasing pervious area and integrating outdoor learning.
- **Stormwater Management:** Decreased impervious area reduces stormwater runoff. Raingarden provides natural stormwater treatment without the use of filter cartridges and reduces the discharge flow quantity and rate into the city storm system.
- **Outdoor Water Conservation:** Drought-resistant, native landscaping eliminates the need for a permanent irrigation system. Cistern collects rainwater from the roof for use as a learning tool and can be used for irrigation in the demonstration garden.

ENERGY AND ATMOSPHERE

- **Maximum Use of Daylight:** Daylight was introduced into all occupied areas with switched zones to reduce use of artificial lighting.
- **HVAC Upgrades:** An energy efficient 2-pipe fan coil system and computerized energy management system boost the efficiency of the mechanical system.

MATERIALS AND RESOURCES

- **Certified Wood:** SFI-certified forest products are specified for 50% of the building structure.
- **Reused, Recycled Content and Local Building Materials:** Truss and framing timbers, brick, hardwood flooring, stone parapet copings, door casings, chalkboards with wood trim and weathervane were salvaged for reuse to highlight the historic features in the new construction. Structural steel, concrete, GWB, carpet, masonry, selected roofing, and architectural woodwork contain recycled content.
- **Closed Loop Recycling:** Carpet in existing building will be removed and delivered to the factory where it will be remanufactured into new carpet and installed back into the school.
- **Salvaging Construction Waste:** Local retailers salvaged lumber, hardwood flooring, cabinetry, plumbing and light fixtures, lockers, chalkboards, playground equipment, and many other items for stock in local second hand stores.

INDOOR ENVIRONMENTAL QUALITY

- **IAQ Plan:** The team developed an indoor air quality (IAQ) plan for both construction and occupancy. Features include Low VOC adhesives, operable windows and 20 cfm ventilation, with controls to balance the flow.
- **Acoustics:** Relief air supply to balance room air is ducted through return air ducts eliminating direct vents and noise from the outside.
- **Daylight and Views:** Large classroom windows provide views and increase daylight factor for effective student learning.

FERN HILL PUTS HISTORIC PRESERVATION IN A "GREEN" CONTEXT

Fern Hill was designed to comply with the recently adopted State of Washington Sustainable Schools Protocol. Sustainable features include water conservation by way of rainwater harvesting and the use of rain gardens for storm water management. Daylighting is maximized, and all electric lighting is controlled by occupancy sensors and photo-cell controls. The design called for the reuse of existing building materials and the selection of many building materials with high recycle content. All interior finishes were carefully selected to be non-toxic with low- or no-VOC content.

Built in 1911 to replace the original 1887 school on the site, Fern Hill Elementary was an important and memorable place for many area residents. When the school district planned a teardown and complete replacement, community outcry led to the district changing course. BLRB's charge was to design a facility that meets educational program goals, but that also celebrates the school's long history and honors the ties to the community. The design process included an extensive and formal community outreach program, which was key to the success of the project. Through these meetings, where memories were shared and ideas for community use were discussed, a design emerged that necessitated tearing down a less historic addition built in 1925 but that retained and highlighted the original structure. Because of the collaborative planning process, the community understood the reasons behind the plan and embraced the concept.

The design calls for re-using and upgrading the historic, three-story building and adding new construction to house the modern program elements required in a contemporary elementary school. A new bell tower on the main building provides visibility for the historic bell, which has been with the school since 1888. A new school entrance leads into the "Heritage Hall," a display space celebrating school and community history. The community's needs are met, and when complete, the educational program will have a building that supports its goals.

A unique feature of the school is the innovative rain garden bio-system designed to treat water run-off. The deep raingarden soils are engineered to provide "biofiltration" of the stormwater runoff from the parking areas. Oils and particulates are filtered and broken down through the biological processes of natural bacteria in the soils. The absorption capacity of the garden retains runoff, reducing the rate and quantity of water to the storm drain outlet placed below the garden soils.

Rainwater is harvested from the building roof into a cistern located in the demonstration garden to provide a teaching tool for the students. It can be used to irrigate the native plants that surround it. The demonstration garden provides seating areas for small student gatherings and the native plantings are identified to instruct students of the benefits of Pacific Northwest habitats.

