

# The Dalles Middle School



Vertical sunscreens at east and west windows of The Dalles Middle School provide shade in late afternoon, while still providing access to views. Graphic courtesy of Boora Architects

FLOOR SPACE: 94,000 ft<sup>2</sup>  
BUDGET: \$12.5 million (\$104 /ft<sup>2</sup>, not including site work)  
BUILDING POPULATION: 600 students  
CONSTRUCTION DATES: Completed August 2002  
OWNER: Dalles School District #12  
ARCHITECT: Boora Architects  
GENERAL CONTRACTOR: Turner Construction  
PROJECT MANAGER: Heery International  
GREEN BUILDING CONSULTANT: Green Building Services  
MECHANICAL ENGINEER: CGB Consulting Engineers  
ELECTRICAL ENGINEER: Interface Engineers  
COMMISSIONING AGENT: Hatten/Johnson  
CIVIL ENGINEER: MGH  
LANDSCAPE DESIGNER: Lango Hansen

## PROJECT NOTES

### SITE AND WATER

- **Smart Parking:** Bike parking and provisions for future electric car charging stations support alternative transportation; parking area will be shaded and light colored to reduce heat island impacts.
- **Rehabilitation:** The site had suffered severe landslide damage. Improvements renewed the site and created a vital community asset.
- **Night Sky Protection:** Specifying downlight-only for exterior light fixtures protects night-time views and wildlife nocturnal patterns.
- **Water Efficiency:** Drought-resistant plants and efficient plumbing fixtures reduce the demand for potable water. Captured ground water will be used for irrigation.

### ENERGY AND ATMOSPHERE

- **Energy Savings:** The building uses a ground source heat pump system along with daylighting and natural ventilation. An Oregon Office of Energy energy analysis predicts a minimum 46% reduction in energy use (using ASHRAE Standard 90.1, 1999, the reference standard for LEED™-NC) and 51% reduction in energy costs.
- **Commissioning:** The project is using a third-party building commissioning agent to verify that installed equipment matches mechanical design.
- **Ongoing Verification:** Permanent measuring devices integral to the HVAC system will ensure that designed savings are actually achieved.

### MATERIALS AND RESOURCES

- **Resource Savings:** Despite limited recycling opportunities, the contractor was able to recycle or salvage approximately 30% of the construction waste generated in the project. Using local building products reduced the fuel used to transport them to the project. Choosing durable, long lasting materials reduced replacement requirements.
- **Closing the Loop:** Major materials in the building contain recycled content; ceiling tiles were produced from 75% post-consumer recycled waste. Recycling facilities will serve occupants.
- **Sustainable Harvest:** Wood materials drawn from forests sustainably managed make good sense in this Pacific Northwest school.

### INDOOR ENVIRONMENTAL QUALITY

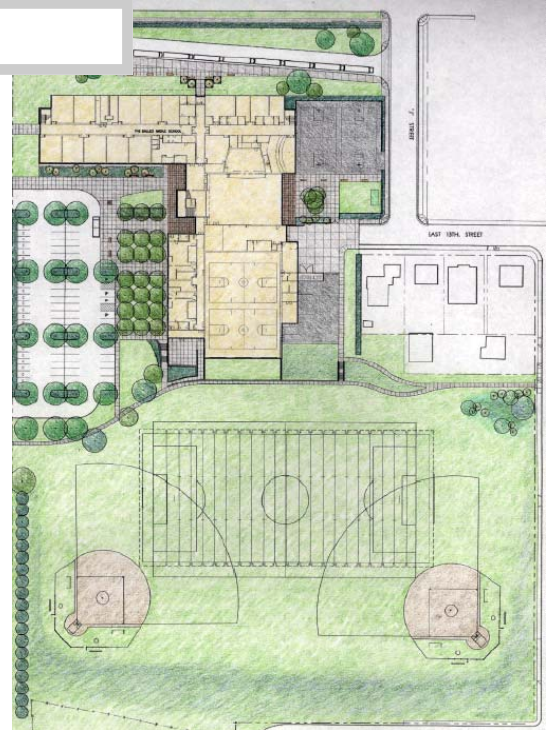
- **Fresh air:** The design calls for effective delivery of natural, fresh air, as well as continual monitoring of CO<sub>2</sub>. Specifying low-emitting woods, paints, and sealers and air quality standards during construction will help avoid creating problems in the first place. Choosing materials that allow for efficient, healthful maintenance also helps.
- **Zoning for Health:** The science classrooms are zoned separate from other spaces to avoid exposure to hazardous chemicals.
- **Natural Connection:** Design allows for outdoor views by incorporating windows in at least 90% of all occupied spaces.

CREATING A SUSTAINABLE COMMUNITY ASSET

The Dalles Middle School is located near the center of town in The Dalles, Oregon. The school is expected to achieve at least a Silver LEED™ rating due to the sustainable features incorporated in its construction. In part, this feat was accomplished in spite of, and because of, unique and challenging site conditions.

The site was developed in the 1960s as a junior high school and later changed to a middle school program. The original development consisted of four individual, single-story, wood frame structures that provided space for the gymnasium and administration in one building and classrooms and support spaces in the other three structures. The four buildings were connected with a breezeway.

Unfortunately, the site is located in a landslide area and over the years the three classroom buildings located at the upper portion of the site experienced substantial damage due to the movement of the landslide. An attempt to stabilize the slide area included installing deep de-watering wells above the site. Although this slowed the slide somewhat, enough damage had occurred to the existing three classroom buildings to force abandonment of the structures. Only the gymnasium/administration building, located on the northerly area of the site, stayed in operation, serving the middle school program along with a number of temporary buildings.



The site plan focused on rehabilitation of a site that was largely abandoned due to landslide damage, providing safety and security to students, and sustainable features. Graphic courtesy of Boora Architects

After an extensive search for alternative properties and several attempts to gain voters' approval for a new middle school on an alternative site, The Dalles community finally approved funding construction of a new middle school on the existing site with provisions for demolishing all existing structures and creating a "safe building area" on an expanded site, more appropriately sized for a 600-student middle school.

In order to do this, the District purchased a number of residential lots located east of the existing site. This expanded the cramped nine-acre site to a total of 14 acres. In addition to providing more space for building and playfields, the increased size provided more flexibility to locate the new building on an east-west axis away from the toe of the slide area. As a result, the once useless site, which had been a reminder of damage and neglect, was converted into a new school and community center that is now a focal point for the community.

In addition, the integrated, sustainable process used to design the school led to an ingenious solution on the site. The water from the de-watering wells was being pumped at a rate of 130 gallons per minute into a storm system and the Columbia River. The design for the new school called for piping this water to a tank on the site and using it in the operation of the ground-source heat pump. After use in the heat pump, the water is reclaimed to irrigate the play fields.

By thinking sustainably, a problem was converted into an opportunity!



Ground water is captured and used to operate ground source heat pump (and also to irrigate ball fields.) Graphic courtesy of Boora Architects

**Acknowledgements:** The information used in this case study was drawn from a number of publications of the Oregon Office of Energy [www.energy.state.or.us](http://www.energy.state.or.us) and Rebuild America Services [www.rebuild.gov](http://www.rebuild.gov). Additional information was provided by Green Building Services (PGE), Portland, Oregon.