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Taking Green a Step Further

The Ogden Resource Center (ORC), built in 2003, serves as Washington State's instructional resource center for blind and visually impaired children. Its purpose is to distribute learning material to school districts across the state for those students who do not attend the Washington State School for the Blind (WSSB). ORC also houses the Braille Access Center. It produces Braille and large print books as well as other material for WSSB and the community at large.



When ORC was built, the goal was to seek more than improved energy efficiency. The center also hoped to incorporate as many sustainable elements into the facility as possible.

The intent was to integrate as many sustainable elements into this new building as possible. The GreenGrid® modular green roof, photovoltaic system, day lighting, onsite storm water management and a bioswale planter are among the technologies integrated into the structure. These were essential because due to budget cuts, the facility's use and maintenance costs had to be kept to a minimum.

Its sustainable features include:

- **13.5KW Photovoltaic Array**—This photovoltaic solar array is a chemically active response to the sun's rays. The system converts the sun's energy into electricity. On a sunny summer day, this solar array system can easily produce 80 percent of its rated output of 13,500 watts (10.8 KW), which is greater than what is required to run the power requirements of the ORC. The ORC is the first state owned building to implement this system. In addition to the building, the system is supplying a renewable source of electricity to the community through selling Green-Tags to the Clark County PUD power grid. By selling Green- Tags, WSSB will be able to offset some of their operating expenses.
- **Rooftop Light Monitors and Natural Lighting Techniques**—Approximately 80 percent of the building functions on natural light thereby reducing the need for artificial light and unnecessary energy consumption.
- **On-Site Storm Water Management**—All storm water stays on-site. It is used for landscaping and related needs. Excess rainwater that is not absorbed by the green roof is directed to a bioswale planter integrated into the buildings facade. The remaining water is passed to drywells along with the runoff from parking lots. These techniques minimize the on-site storm water management requirements and costs.
- **Building Aspect**—The building has been designed and oriented to work with the sun. The potential heat gain for the building has been reduced with the use of covered walkways along buildings south and west sides and with the majority of the windows located on the north side of the building. Roof protrusions serve dual purpose by orienting the photovoltaic array toward the sun and allowing natural light into the building.
- **Earthen Structure**—The building was designed to work with existing topography thus reducing negative environmental impact through minimizing construction earthwork. The building is also set in the ground 5 feet on the north side, thereby further reducing heating and cooling costs. Terra Architecture has been monitor energy expenditures at ORC in order to recommend these sustainable design features to the state of Washington and to future clients based on actual data.

And on the roof, ORC installed the first modular Green roof ever employed in the state—the system made famous by GreenGrid Green Roofs, a business of Weston Solutions.

The 10,000 square foot rooftop was outfitted with 830 intensive GreenGrid® modules to cover approximately 6,640 square feet of surface area. The modules were prefilled with the specified GreenGrid® lightweight soil media and pre-planted with drought tolerant native coastal strawberries (*Fragaria chiloensis*). The green roof was completely installed in approximately 30 hours.

The architect selected the plant materials for the green roof based on the drought tolerance and attractiveness of coastal strawberries. Installation of a green roof was part of a sustainable design to

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manage stormwater; decrease heat loss and heat gain inside the building envelope, and reduce HVAC energy requirements. The GreenGrid® system also will reduce the heat island effect, improve air quality on site, and increase the roof life expectancy. The GreenGrid® system was the preferred green roofing choice because of its costs when compared to traditional green roofs and its versatility that enables sections of the green roof to be moved for maintenance or reconfiguration then be easily put back in place.

This green roofing system was the first modular green roof to be installed in the state of Washington.



International Facility Management Association

1 E. Greenway Plaza, Suite 1100 • Houston, TX • 77046-0194 USA
Phone: 713-623-4362 • Fax: 713-623-6124 • webmaster@ifma.org