

BEST OF 2007 AWARDS

Eco-Restroom

PROJECT OF THE YEAR: Environmental

Combining conservation education with composting and gray-water recycling systems, the \$1.6 million Eco Restroom at the main entrance to the Bronx Zoo has sparked conversations and gained visitors' attention

"Our goal is to inspire people to care about wildlife and wild places, and a part of that is conservation of your environment," says Sue Chin, director of planning and design for the Wildlife Conservation Society in New York.

The society needed to replace an aging bathroom with an outdated septic system at a zoo that attracts more than two million annual visitors. No city sewer lines run nearby, and the organization thought this project represented an opportunity to conserve water and energy and also educate visitors about the system and steps they can take at home to save water.

"We decided to make it a showcase, not just have the toilets, but turn it into something that tells people about the technology and encourages them to think about their own behaviors and resource use," Chin says.

The WCS hired Edelman Sultan Knox Wood Architects of New York to design the 1,100-sq-ft building. Sustainable design concepts drove the building's architectural expression.

The Eco Restroom, built by Summit Construction Services Group of White Plains, N.Y., contains 12 toilets and six sinks for women, and two toilets, four waterless urinals and four sinks for men. It features toilet composting and gray-water systems manufactured by Clivus Multrum, of Lawrence, Mass.

From the user's perspective the toilet fixtures appear similar to any other. But the difference soon becomes apparent. Rather than flushing with water, foam ap-



pears around the top of the bowl, before and after the receptacle is used, and washes waste downward.

The foam and waste end up in large, polyethylene compost collection bins, located in a full 9-ft-high basement below the restroom. That required excavating about 12 to 14 ft below grade; shoring to protect the integrity of an existing walkway and roadway; and removing rock by machine, with no blasting. Crews poured the foundations directly onto the remaining rock.

Because it's a waterless system, maintaining the proper slope and run of the waste lines was critical to a successful operation. Even the location of steel beams was determined by placement of water lines.

At start-up, source material with sawdust and worms were added to the 10 composting bins. The worms eat the waste. Pipes vent the bins to the outside. The roof orientation, sloping to the south, exploits the prevailing winds and helps dissipate air released from the composting units.

"It's odorless," Murphy says. "It's con-

Key Players

Owner: Wildlife Conservation Society, New York

Contractor: Summit Construction Services Group, White Plains, N.Y.

Architect: Edelman Sultan Knox Wood / Architects, New York

Structural Engineers: Dunne and Markis Consulting Structural Engineers, Riverdale, N.Y.

MEP Engineers: P.A. Collins, PE Consulting Engineers, New York

Cost Estimating: G2 Planning, New York

Expediter: Agouti Construction Consulting, New York

Civil Engineer: Leonard J. Strandberg and Associates, Staten Island, N.Y.

stantly ventilating the composting bin."

Zoo workers maintain the fixtures with special products to avoid damaging the composting system. Every couple of weeks, they must inspect the bins to >>

make sure they are working properly. The bins should fill up after about one year, at which time the compost material will be hauled away for use as fertilizer.

“It’s one of the first composting toilets in New York City,” Murphy says. “It’s an innovative, low-tech process of dealing with human waste.”

Eco-power faucets with sensors turn on when someone’s ready to wash up. But rather than relying on electrical power or a battery, the faucets recharge as water runs through them. Water flowing down the sinks runs through pipes, laid at a proper height, to irrigate a gray-water garden outside the restroom.

“The garden was constructed by excavating the existing clay soil and refilling the opening with soil that would accept a lot water delivered from the building,” says Ruslan Dimarsky, project manager

for Summit Construction.

Summit Construction mixed the special soil onsite, combining top soil with sand to obtain the optimal mix. Crews added plants that like copious amounts of water.

The building sits on 85% of the original restroom’s footprint to minimize affecting the surrounding treed area. The team moved the new building slightly from its original space to avoid hitting tree roots.

Rooftop barrels and swales were added to divert rainwater to a special rainwater garden.

Skylights and glazed panels in a steel frame allow daylight into the western red cedar-clad, wood-frame building while preserving privacy. The interior features stone flooring, sloped ceilings and exposed wood rafters. A standing-seam metal roof covers the building.

The skylights cut across the standing-

seam aluminum roof, requiring a custom gutter system to avoid water collecting around the skylight and leaking.

The operable windows and louvered doors provide natural ventilation. Trees and shrubs shade the east side. On the west side, seasonal plantings on a trellis will provide cover to the entrance in the summer.

The sink area features Corian countertops, a low-volatile organic compound. The team left the wood rafters unfinished to avoid introducing polluting chemicals into the indoor space. A semi-translucent exterior stain, which complies with federal VOC requirements, covers the durable, insulating cedar siding. <<