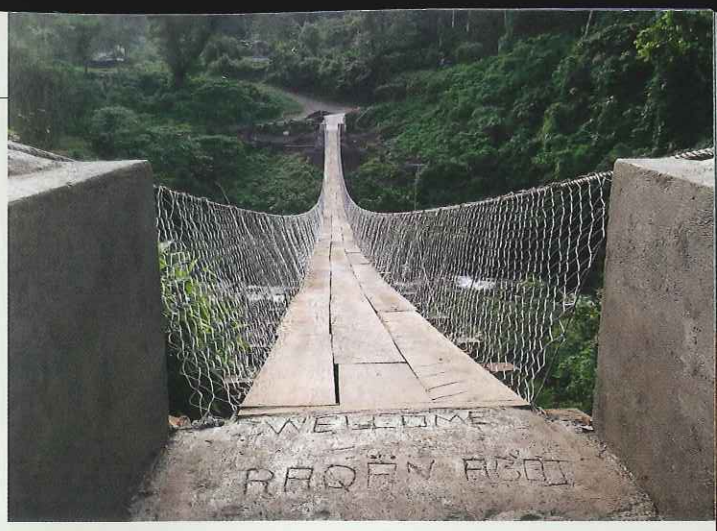
HONORAWARDS

North Bank Bridge and Park, Boston/Cambridge, Mass.
Greenman-Pedersen; Carol R. Johnson Associates; Stantec; Ammann & Whitney–Wilmington, Mass.

A former brownfield site has been transformed into a breathtaking new park along the Charles River Basin. Constructed on contaminated materials that were too expensive to remove, the project team used hard landscape fill materials to create a safe separation barrier for the public. The park features waterfront esplanades, multiuse pathways, passive open space with iconic views and special treatments at the base of the north and south pylons of the nearby Zakim Bridge. The showpiece is a 700-foot sinusoidal tubular truss pedestrian bridge that connects Paul Revere Park in Charlestown to Cambridge's North Point Park and spans commuter rail tracks, a boat ramp and Miller's River. The third park to be completed as part of Big Dig mitigation efforts, the project provides thousands of pedestrians with a safe, accessible and attractive route between Cambridge and Charlestown.



Nueva Providencia Pedestrian Bridge, Nueva Providencia, Guatemala
CH2M HILL–Milwaukee, Wis.

A new pedestrian bridge in Guatemala demonstrates more than excellence in design. When Hurricane Agatha destroyed a suspended foot bridge across the Rio Santo Teresa in Guatemala, the community of Nueva Providencia had no alternate way to access schools, clinics and markets during the six-month rainy season. A project team featuring engineering interns designed a 280-foot replacement bridge and trained local masons on bridge-building techniques. The design included an innovative stabilization system to reduce bridge movement. In lieu of a cash contribution, local residents washed 15 cubic yards of sand and the same amount of gravel and collected nearly 100 cubic yards of stones for the project. The project demonstrates not only the value of engineering, but also the importance of sharing engineering knowledge with local maintainers of the bridge.

Sandia National Laboratories, Molten Salt Test Loop, Albuquerque, N.M.
Bridgers & Paxton Consulting Engineers, Inc.–Albuquerque, N.M.

This first-of-its-kind concentrated solar power (CSP) testing plant will one day allow CSP power plants to be constructed on the same scale and magnitude as fossil-fuel-powered-generation plants. The CSP industry currently operates with lower temperature/pressure components than the standard electrical utility industry. The new Molten Salt Test Loop (MSTL) facility tests plant-sized components at higher temperatures and pressures to achieve a higher efficiency power cycle. The MSTL technology involves pumping molten salt through various types of solar collectors, which convert sunlight into thermal energy for use in a heat-driven turbine that generates electrical power. The system will one day allow accelerated lifecycle testing of prototypes of various solar receivers or subcomponents prior to large-scale development.

Loyd Ray Farms Waste-to-Energy Project, Yadkinville, N.C.
Cavanaugh & Associates, P.A.–Winston-Salem, N.C.

Resourceful engineering has transformed a 154-acre pig farm into a model of environmental stewardship and renewable energy production. The farm's nearly 9,000 hogs produce more than 400,000 gallons of manure each week. The manure's high nitrogen content makes it unsuitable fertilizer. The waste was previously discarded into a nearby lagoon, which allowed for the release of methane, ammonia and "an unholy stink." The project team incorporated a new anaerobic digester, a nitrification/denitrification system, a biogas collection and conditioning system, and an electricity generation system to produce biogas from the pig waste. That waste now fuels a 65-kilowatt micro-turbine generator and provides half the farm's power. The system also eliminates the release of 5,000 metric tons of carbon dioxide per year—the emission equivalent of 900 cars. The project is a model for managing farm animal waste in a cost-effective, sustainable manner.