Renaissance of a Junction

TranSystems Corporation – Kansas City, Missouri

Grand Award

Rail freight could no longer pass efficiently through the historic, but antiquated, Chicago Junction in Kansas City – the second largest rail hub in the nation. The project team applied a "highway overpass" concept to transform the congested rail yard into a three-level railroad junction, which includes the world's largest rail flyover. The project included reconstruction and rehabilitation of two existing approach bridges, and construction of the Argentine Connection Flyover – a 9,300-foot, high-speed double track connection that carries Burlington-Northern Santa Fe's transcontinental line through the junction. The result is an increase in Kansas City's rail capacity, shorter train schedules, and the Chicago Junction – now named the Kansas City Junction – becoming a world engineering model for meeting the challenges of increased railway congestion.

Honor Awards

Reconstruction and Rehabilitation Program Master Plan for the Coalition Provisional Authority, Iraq

Michael Baker Jr., Inc. – Moon Township, Pennsylvania

Stanley Consultants, Inc. – Muscatine, Iowa

Honor Award

The Coalition Provisional Authority in Iraq needed a master plan for the largest reconstruction endeavor since the post-World War II Marshall Plan, and the largest external reconstruction effort in a single country in history. The project team worked with the Provisional Authority and Iraqi ministries in Baghdad to create a database of more than 5,000 potential projects in such areas as oil, electric, public works/water, transportation, and education. Following a detailed on-site needs analysis, more than 2,300 projects were prioritized to provide immediate benefits to the Iraqi people. The project team also prepared more than $4 billion in task orders, including scopes of work and preliminary construction cost estimates for implementing those projects deemed most critical to Iraq's recovery.

Biosolids Flow-Through Thermophilic Treatment Process

Brown and Caldwell – Atlanta, Georgia

Honor Award

The South Columbus Georgia Water Resource Facility needed new technology for sludge treatment. The project team developed a scientific breakthrough called the Biosolids Flow-Through Thermophilic Treatment Process (CBFT3) which produces pathogen destruction by using a combination of new techniques, materials, and equipment that consistently meets all treatment standards, while reducing capital and operations costs by $3 million. The research indicated that more could be accomplished with less rigorous time and temperature regimes than previously believed. The facility also is the first of its kind in the nation to operate entirely by burning digester gas to create electrical power. The new process will allow utilities nationwide to upgrade sludge treatment levels at greatly reduced cost over currently available options.

Seattle Center Library (Communications System)

Sparling – Seattle, Washington

Honor Award

Called Seattle's most striking and imaginative structure since the Space Needle, the new Central Library's futuristic design created a unique challenge for implementing a communication system for staff and library patrons. The project team developed a new communications approach for the 12-story, 363,000-square-foot facility—a centralized wireless system and wireless "smart" necklaces for internal staff. The smart necklaces allow staff to immediately research materials and answer patron questions from anywhere inside the building, while also permitting live assistance to patrons who telephone the library. The result is seamless wireless communications and instantaneous information exchange between employees, patrons and 27 branch locations.

Maria Fareri Children's Hospital, Westchester Medical Center

Syska Hennessy Group – New York, New York

Honor Award

The new Maria Fareri Children's Hospital at Westchester Medical Center in New York was designed to help children and families cope more effectively with the stress associated with a child's hospitalization. To effectively meet challenges of creating a "child friendly" hospital environment, the project team designed the facility's building systems to blend seamlessly into the distinctive structural details. Lighting and HVAC systems were integrated into creative child-imaginative displays including a 5,000-gallon aquarium; an authentic locomotive; the world's largest doll house; an actual fire engine cab; a sports arcade, a toy store, and a food court; and a miniature golf course outside. The result was the New York area's first all-specialty children's health care facility, home to some of the world's finest pediatric specialists, and a newly engineered standard in child-friendly health care.

Earthquake Building Instrumentation

Degenkolb Engineers – San Francisco, California

Honor Award

In the aftermath of an earthquake, San Francisco city officials needed an advanced way to inspect all buildings to determine whether they were structurally safe to be reoccupied. The project team developed and implemented a system of sensors that can be strategically placed throughout a building. The sensors continually relay information on building movement to a central data collection box, which can be accessed via an Internet-based application on-site or from remote locations. The system provides immediate data on the building's condition to designated users who can assess the structure's stability during and after the event. Post-earthquake inspections now can be performed by structural engineering firms who can maintain a familiarity with the building by monitoring the building's seismic health before and after.

Kyrene Monte Vista Pedestrian Bridge

SVR, Inc. Consulting Engineers – Tempe, Arizona

Honor Award

The Kyrene Monte Vista Elementary School and recreation facilities in Phoenix, are located on a corner identified as one of the five most hazardous pedestrian crossings in the metro area. A safe crossing for children was deemed imperative by concerned parents, school administrators, and city officials. A special pedestrian bridge over the busy intersection solved the problem, which featured designed innovative bi-level piers modeled after the heads of two towering eagles and combined into a single base to reduce costs. Moving the high point of the bridge away from adjacent residences added privacy and allowed the creation of an unconventional, fun promenade complementing the new structure. The result merges imagination, art and engineering to provide a safe crossing for children.

Bunker Hillsides Re-Vegetation Project

CH2M HILL – Eaglewood, Colorado

Honor Award

Idaho's Silver Valley was once among the most productive mining areas in the world. A century of production resulted in an abandoned hazardous waste site with contaminated hillsides inhospitable to plant and animal life. The project team developed a re-vegetation plan that quickly stabilized portions of six barren and eroding watersheds within the 1,100-acre area. Grasses were established to retain water while helicopters were used to apply a mixture of lime, grass seed and mulch. Today the stunted trees have resumed their growth, existing vegetation is producing new seed, and seedlings as high as two feet are emerging. The project team also utilized a variety of mapping and imagery technologies to help federal and state officials monitor the progress of the restoration.

Geysers Recharge Project

CH2M HILL – Santa Rosa, California

Honor Award

Production of geothermal energy from The Geysers, the 25-square-mile largest steam field in the world, has declined steadily since 1987. The City of Santa Rosa also needed to do something productive with its treated wastewater. The project team designed a 40-mile pipeline from Santa Rosa's Laguna Treatment Plant across vineyards, an Audubon Sanctuary, and rugged wilderness to the The Geyers. Four pumping stations now send 11 million gallons of treated wastewater through the pipeline and uphill 3,300 feet each day to The Geysers. The wastewater is then sent deep into the earth as much as 11,000 feet through injection wells to replenish the aquifer and extend the productivity of the steam field. The Geysers now produce 85 Megawatts of clean power, enough electricity for 100,000 homes.

Morris Forman Wastewater Treatment Plant

Black and Veatch Corporation – Kansas City, Missouri

Honor Award

The Morris Forman Wastewater Treatment Plant in Louisville was using 1970s technology to treat sludge, which created disposal problems and produced an incredibly offensive odor that prompted complaints for more than 15 years. The project team replaced three massive outdated incinerators with a new set of the largest heat dryers in the nation. Drying technology was coupled with the latest in anaerobic digestion. Mass and volume of solids were reduced, and the amount of sludge delivered to a nearby landfill was minimized. The system also converts a portion of the waste biomass into methane gas, to help fuel plant operations and further reduce operation costs. "Louisville Green" also was created from the waste byproduct and is now sold as a soil conditioner, fertilizer, or fuel for electric utility boilers.

Panhandle Road Constructed Wetlands Project

CH2M HILL – Atlanta, Georgia

Honor Award

The Clayton County Georgia Water Authority wanted to sustain its limited supply of raw water and decided to construct wetlands to receive treated wastewater. The natural biological and biogeochemical mechanisms in the wetlands provided a final polishing for the treated wastewater. Special ponds were created to provide additional wastewater effluent treatment before the water is discharged into Shoal Creek, the area's primary source of drinking water. The site for the wetlands, however, presented a significant challenge with uneven terrain, slopes and elevations. The project team created a terraced, multi-cell wetland configuration that helps blend the new ponds into the surrounding environment. The completed wetlands have attracted increased wildlife and a diversity of vegetation.

Brackish Water Desalination Facility

CDM – Walnut Creek, California

Honor Award

The customer base for California's Alameda County Water District has more than doubled over the past 30 years, forcing the need to find more sources of drinking water, and improving the quality and reliability of the water supply. The project team designed a new, energy-efficient, 8-million gallon-per-day desalination plant that transformed what had been an unusable groundwater source into high-quality drinking water. High-efficiency, low-pressure reverse osmosis membranes transform the groundwater containing high levels of dissolved solids into quality drinking water. The plant is the first large-scale brackish water desalination facility in northern California, and now enables Alameda County to tap its own groundwater resources rather than purchase water from other agencies.

I-75 Alligator Alley Barrier

American Consulting Engineers of Florida – Land O' Lakes, Florida

Honor Award

Accidents on Interstate-75 in Collier County Florida, known as Alligator Alley, frequently ended in fatalities when vehicles crashed through wildlife fencing into adjacent canals where victims often drowned. In response to the disturbing trend, the project team designed a unique 50-mile cable barrier system to supplement and reinforce the existing wildlife fence. Two above ground cables, supported by existing posts, were fitted with high-tension springs attached to the anchor assembly, effectively preventing errant vehicles from breaking through the barrier. Strobe lights attached to each anchor assembly are activated when a crash occurs. The system alerts the regional traffic management center via wireless and microwave communications. Since the cable barrier was installed, there has been a dramatic decline in fatalities associated with vehicle crashes into the barrier.

Pier T Container Terminal Development

KPFF Consulting Engineers – Seattle, Washington

Honor Award

The Pier T Container Terminal in the Port of Long Beach, is the largest single development project in the port's history. Located on the former U.S. Navy Long Beach Naval Complex site, which closed in 1995, the 380-acre development is now home to a new world-class mega-terminal, which serves several shipping lines. The project included demolition of an extensive military complex of 250 buildings and six major concrete piers. Nearly 6 million cubic yards of material were dredged, including earthwork to provide for a foundation for cargo handling facilities, a rail line, an access road and container storage. With the terminal complete, the site is once again a significant economic engine for the Long Beach community.

Route 29 South Riverwalk Park

Vollmer Associates – Rochelle Park, New Jersey

Honor Award

State Route 29, which connects downtown Trenton with Interstate-295, via a section of historic Lamberton Street, has long been a source of noise and disruption to area residents. Rush hour traffic literally shook the homes, leading to the decision to build a four-lane, limited-access tunnel through the area, which eliminated the traffic problem, but also restricted convenient access for residents to the Delaware River. The project team turned the tunnel roof into a community park that includes sweeping lawns, playgrounds, winding paths, pavilions, beaches, a riverfront esplanade and a community event area. The new park is another component to the revitalization of Trenton's waterfront.

Mustard Agent Decontamination System

Merrick & Company – Aurora, Colorado

Honor Award

A highly toxic, mustard chemical warfare compound was stored at the Aberdeen Proving Ground in Maryland. International treaties mandated disposal of the agent to eliminate potential threats to both people and the environment. The project team designed an automated system to remove and decontaminate the mustard agent from 1,800 canisters, each of which holds approximately 1,700 pounds of the concentrated toxic liquid. The new technology neutralizes, rather than incinerates the toxic materials. The enclosed system performs 12 procedures to drain the canisters of mustard agent, which is piped to a separate room to be neutralized. The system also registers the level to which the canisters have been cleaned – with a target of at least three/one-thousandths part of agent per cubic meter per volume of air – which permits the scrap cylinders to be transported by truck for recycling.

Reconstruction Group Temporary Compound, Afghanistan

PAE/Louis Berger Group – Washington, D.C.

Honor Award

The U.S. State Department needed temporary housing and an office compound in Kabul, Afghanistan, across the street from the U.S. embassy. The project team first coordinated the clearing of an eight-acre site of 230 pieces of unexploded ordnance, and then designed an attractive new compound. The new facility includes 142 sleeping rooms, 21,000 square feet of offices, a 100-seat cafeteria, on-site utility systems, recreation facilities and vehicle support areas. To create an attractive look, the housing modules were arranged to form a main street, including walkways and paved sitting areas for cookouts and gatherings. As part of the construction program, the project team trained more than 450 Afghan citizens in various construction trades.