2015 ENGINEERING EXCELLENCE AWARDS

GRAND AWARD

Engineering Excellence is our annual design competition recognizing engineering achievements which demonstrate the highest degree of merit and ingenuity. 24 projects ranging from research studies and buildings and water resources to transportation entered this year's state competition. Awards were presented on Wednesday, February 25th at Happy Hollow Country Club in Omaha.

Entries were rated on the basis of innovation and originality; technical value to the engineering profession; social and economic considerations complexity; and how successfully the project met the needs, including time and budget constraints, of the client.



US34 Bridge over the Missouri River

HDR Engineering Category C Winner

For the Iowa Department of Transportation & Nebraska Department of Roads

The new U.S. 34 Missouri River Bridge connects Iowa and Nebraska, providing a road to future economic growth. More than 20 years of planning culminated with the October 2014 bridge opening, attended by nearly 250 residents, business owners, elected officials and media. The three-year, \$115 million project represented a partnership between the Iowa Department of Transportation and the Nebraska Department of

Roads, with HDR as the lead design engineer. The new four-lane bridge provides a direct connection between I-29 in Iowa and U.S. Highway 75 in Nebraska. The new route has been re-designated as U.S. Highway 34, offering an alternative to existing two-lane toll bridges that connect the states north of the new bridge in Bellevue, Neb., and south of the site in Plattsmouth, Neb. Projected to carry 2,000 vehicles a day, the bridge provides a more efficient route for freight movement and better access for businesses in the community. Elected officials anticipate open land along the new corridor to attract new businesses, while the new route will also help improve community cohesion in southwest Iowa and southeast Nebraska.

Along this reach of the Missouri River, the new 3,276-foot-long, 86-foot-wide structure marks the first bridge constructed on new alignment since the Bellevue toll bridge in 1950. The innovative steel girder design maintained a navigational opening for barges passing on the river with a 515-foot main span extending beyond the traditional length of steel girders. Engineers designed the bridge deck with long-term maintenance and cost-effectiveness in mind.

2015 HONOR AWARDS



144th Street Dodge Road to Eagle Run Drive Felsburg Holt & Ullevig

Category H Winner For the City of Omaha

FHU worked with City of Omaha to complete the design and environmental documentation for roadway improvements along the 144th and Blondo Street corridors, reconstructing the existing two-lane pavement to a four-lane urban arterial. If you remember what it was like to drive in the bumper-to-bumper traffic at 144th & Blondo during rush hour PRIOR to

construction, you understand how badly this project was needed. On 144th Street, a 1.5 mile four-lane boulevard with meandering trails has replaced the heavily- traveled existing two-lane roadway. Blondo Street from 135th Street to Nelson's Creek Drive has also been reconstructed providing a four-lane divided cross section with dual left turn lanes at the intersection with 144th Street. Today, drivers and pedestrians enjoy efficient movement along the corridor, better access to neighboring residential, commercial and educational developments, and a safer user experience. The design ties into a regional transportation system supporting growth and local connectivity between central Omaha and western Douglas County. Sustainability is woven throughout the project. The alignment minimizes impacts to neighborhoods, businesses, greenspace, wetlands, and waterways. Innovative drainage design reduces stormwater runoff and three miles of trails encourage biking and walking. Design elements such as colored concrete medians, a textured noise wall, and eight rain gardens create a visually appealing landscape, adding value to nearby neighborhoods.



Gardens Sewer Separation HDR Engineering

Category F Winner For the City of Omaha

The Lauritzen Botanical Gardens were constructed over a closed balefill, with the City of Omaha's combined sewer being located under the balefill. Over time, the weight of the balefill had crushed the existing sewers that carried both storm water and sanitary sewage. In addition, extensive settlement of the balefill resulted in several unsightly areas in the

Gardens that required constant maintenance. As part of Omaha's CSO Long-Term Control Plan, the combined sewers under the Gardens were required to be separated. In order to preserve the Gardens, the sewer separation necessitated the use of several trenchless construction methods and innovative construction methods. The challenge for the project was to design and construct new sanitary and storm sewers around the perimeter of the balefill; abandon the existing sewers in place; improve the storm water drainage on the balefill; while having a minimal impact on the botanical garden exhibits. The project team met this challenge by implementing four types of trenchless methods of construction that allowed the pipe to be installed under the exhibits without adversely impacting them. A pipe bridge was designed to support the new storm and sanitary sewers over the balefill. The type of pile selected maintained the integrity of the balefill systems and protected the environment.



UP Santa Teresa Terminal Wilson & Company Engineers and Architects

For Santa Teresa, New Mexico

Located at the eastern end of the Union Pacific Railroad's historic Sunset Route, the Santa Teresa Terminal is at the crossroads of freight movement from west coast ports to major consumer markets located anywhere from Atlanta to Chicago. This 2,200-acre features a run-through fueling facility, intermodal ramp, and a location for a future block swap yard.

The run-through fueling facility consolidates three existing fueling terminals in the El Paso, Texas, area into one centralized facility, which allows increased train speed and efficiency though the region. Less than 10 miles from the U.S. and Mexico border crossing at Santa Teresa, New Mexico, the intermodal ramp provides increased efficiency of container movement and relieves stress from the existing at-capacity facilities in El Paso, both internal and external to UP. West coast ports currently are required to assemble 8,000-foot trains with containers going to the same final destination. By reserving space for a future block swap yard, the Santa Teresa Terminal ultimately allows trains to leave ports more quickly with multiple destination blocks, which increases efficiency of port traffic by allowing trains to be blocked at a separate location. Santa Teresa is a nationally recognized facility for innovation, safety, service performance, and reliability in the railroad industry, and sets a new standard for engineering excellence.

2015 HONOR AWARDS



Centralized Renewable Energy System NE Innovation Campus Olsson Associates

Category K Winner For Tetrad Properties

Treated effluent water from the City of Lincoln's Theresa Street Wastewater Treatment Plant (WWTP), which would typically go into Salt Creek, is diverted to a centralized heat exchange facility that is located on Nebraska Innovation Campus (NIC). The water is pumped through heat exchangers that decouple the WWTP open loop from a closed loop piping system that serves the campus. Only thermal property is transferred between the open loop and closed loop piping sys-

tems. The treated effluent water is then returned back to the WWTP discharge point into Salt Creek. The effluent water temperatures range from 57-75 degrees Fahrenheit depending on the time of day and the time of year. This water is more stable than a typical closed-loop geothermal heat pump systems which adds to the Central Renewable Energy System (CRES) efficiency and electrical energy savings. Buildings at NIC are connected to the closed-loop system and they transfer heat in and out of the closed-loop according to the season. The reclaimed water discharge from the WWTP will generate enough heating/cooling for approximately 1.8 million square feet of building floor area. Currently there are less than a dozen similar projects in the U.S. and CRES is one of the largest and most unique among the similar facilities.



Hastings Utility Enhanced WPCF HDR Engineering

For the City of Hastings Utilities

Hastings Utilities is leading the charge in Nebraska to reduce adverse impacts to water quality in the Missouri River Basin, as well as reducing detrimental impacts in the Gulf of Mexico. The new discharge permit from the Nebraska Department of Environmental Quality (NDEQ) had more stringent limits, which significantly reduced the amount of ammonia allowed in the discharge from the Water Pollution Control Facility. In addition,

Hastings Utilities had concerns about the overall trend requiring wastewater treatment plants across the Midwest to reduce nutrient loads (nitrogen and phosphorous) discharged from their facilities to diminish the adverse impacts of a growing hypoxic zone (dead zone) in the Gulf of Mexico. These trends, coupled with a permit duration of 5-years, caused Hastings Utilities to rethink its current treatment processes. Hastings Utilities proactively incorporated External Nitrification Biological Nutrient Removal Activated Sludge (ENBNRAS) process into their existing Water Pollution Control Facility. This process, developed for facilities which have a combination of fixed media and suspended growth systems, would meet both the proposed limits and more stringent future nutrient limits. The resulting Water Pollution Control Facility is already reducing the toxicity of ammonia discharged to receiving streams, and is able to reduce nitrogen and phosphorous loads, thus helping to alleviate serious water quality issues in the Gulf of Mexico.



Dodge Street/West Dodge Road Rehab Alfred Benesch Company

Category I Winner For the City of Omaha & NE Department of Roads

The City of Omaha identified several areas of concern along Dodge Street and West Dodge Road from 10th to 98th Street. Beside daily traffic congestion; pavement deterioration due to aging, pavement settling, and pavement striping raised concerns to engineers and the public as a whole. This corridor carries as much as 68,000 vehicles each day and is

the most heavily traveled corridor in the State of Nebraska. Other issues in the corridor included a non-functioning de-icing system at 90th and West Dodge Road; poor drainage; and limited pedestrian accessibility. In one of the most challenging corridors in the State, Benesch was engaged to provide project management, evaluate rehabilitation needs, design solutions and provide construction administration. The outcome demonstrated that careful planning, meticulous coordination, and proactive outreach can expedite construction in the right circumstances and mitigate driver frustration. Alfred Benesch's approach to aggressive phasing and traffic restrictions was accepted by the public and successfully executed by the contractor. As a result, the traveling public will benefit from extended pavement life, a smoother ride and reduced disruptions from maintenance activities.

2015 MERIT AWARDS



- 1. Eppley Airfield Runway 18-36 Reconstruction, Lamp Rynearson & Associates Omaha Airport Authority
- Riverbank Filtration Evaluation, Miller & Associates _ City of Kearney
- 3. NDOR Element Level Bridge Inspection Preparation Services Parsons Brinkerhoff - Nebraska Department of Roads
- 4. Lexus of Omaha Dealership, Morrissey Engineering Performance Auto Group
- University of California Irvine Paul Merage School of Business, Alvine Engineering University of California - Irvine
- 6. UNO Community Engagement Center, Farris Engineering University of Nebraska – Omaha
- 7. Nebraska Crossing Outlets, Thompson, Dreessen, & Dorner Avant Architects
- 8. South Omaha Industrial Area, Wade Trim ——— City of Omaha
- 9. Waterloo Bank Stabilization, JEO Consulting Village of Waterloo
- 10. Arnold Lake & Victoria Springs Lake Rehabilitation, EA Engineering, ______ Science & Tech., Nebraska Games & Parks Commission & City of Arnold in NE
- 11. Rockbrook Tributary Rehabilitation, CH2MHill City of Omaha



- 13. Norfolk Roundabout, Schemmer Associates Nebraska Department of Roads
- 14. Waverly Quiet Zone, Schemmer Associates ______ City of Waverly



- 15. Streetscape Improvements Dundee, Snyder & Associates City of Omaha Public Works
- 16. 126th & West Giles Distribution Center, Schemmer Associates ——— Midwest Contracting
- 17. City of Crawford Wastewater Treatment Plant Baker and Associates - City of Crawford















