WHKS & CO.

ENGINEERS ■ PLANNERS ■ LAND SURVEYORS

Shaping the Horizon

February 2010

Mason City, Iowa 19th Street SW Overpass Complete

WHKS assisted the City of Mason City, Iowa by providing design solutions for a grade separation structure for 19th Street SW over the Union Pacific Railroad (UPRR). With continuing development along 19th Street, and in the west area of the City, the City recognized the street as an important traffic artery. 19th Street SW is a major east-west route with a continuous alignment across the City. As the volume of train traffic increased, the conflicts at the railroad crossing worsened, cementing the City's decision to build an overpass at the crossing. The City was also considering another project to upgrade and signalize the 19th Street SW and South Pierce Avenue intersection to eliminate traffic congestion. This intersection is located to the west of the railroad crossing. The City asked that the intersection improvement project be combined with the grade separation project.

Project under construction

WHKS assisted the City with obtaining and securing additional funding for the project by completing the Feasibility Study for the grade separation project and preparing Iowa Clean Air Attainment Program (ICAAP) applications for FY 2007 and 2008. The City was awarded two separate ICAAP grants for a total of $2.35 million and $1.08 million in Federal appropriations to be applied towards the design and construction of this project.

WHKS designed a Prestressed Concrete Beam Bridge overpass structure with Mechanically Stabilized Earth (MSE) retaining walls at each abutment. The roadway consists of four 12-foot wide lanes with attached curb and gutter for through traffic, plus a 16-foot maximum variable width median to provide left turn lanes at the Pierce Avenue intersection. Intersection improvements included roadway widening to provide left turn lanes on all approaches, conversion of South Pierce Avenue from a four-lane section to a three-lane section with a two-way left turn lane, and an overhead warning beacon on 19th Street to the east of the intersection to alert approaching traffic of the traffic signal. A sidewalk is also included along the south side of 19th Street. WHKS worked with City staff and the public to develop aesthetic components to highlight the project area. The final bridge, wall and roadway plans were prepared in accordance with Iowa DOT, Union Pacific Railroad, and City of Mason City Standards and Policies.

From left, Mayor Roger Bang, City Engineer Mark Rahm and WHKS President/CEO Fouad Daoud discuss the project.

To meet the needs of the City, an aggressive design and construction schedule were established and met. WHKS Project Manager Fouad Daoud praised the teamwork that contributed to the successful completion of the project. "A team effort was required to complete this fast-track project from beginning to end, with efforts by the City, Iowa DOT, Union Pacific Railroad, WHKS, the contractor, and local businesses," said Daoud.

Construction on the project began in 2008 and was completed in 2009 at a cost of $8,242,700. Financing of the project included ICAAP and traffic safety improvement funding, participation from the UPRR, earmarked Federal funds and local funding.

WHKS & Co. publishes this newsletter for our clients and friends. For more information about our company, please contact us:

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Complex Design and Aggressive Schedule for Generation Repair and Service Facility

In April 2009, Iowa Governor Chet Culver, civic leaders, and community members joined NextEra Energy Resources in the groundbreaking for its new Generation Repair and Service Facility in Story City, Iowa. The building is the first of its kind in the Midwest and will be used to refurbish and repair electric generation equipment for wind turbines, as well as for a storage warehouse for renewable energy operations.

WHKS was hired by Story Construction Company, of Ames, Iowa, to provide structural design for the structural steel building and foundation, and to provide construction assistance as needed. An existing 30,000 sq. ft. spec building was chosen by NextEra, while adding on a 6,000 sq. ft. office addition and a 45-ft. tall, 54,000 sq. ft. production area to meet the needs of the facility. WHKS met the challenge of an aggressive design schedule, with the project kicking off in January 2009 and design complete by May 2009.

The production area involved a complex design including two bridge cranes that traverse the entire length of the building. The cranes are approximately 30 feet off the ground with a 60/30-ton weight capacity and are used to move the gearboxes around the building. Multiple single-leg gantry cranes also operate along the length of the building and are used to move smaller parts and components. These smaller gantry cranes are around 15 feet off the ground and have a 5-ton weight capacity.

WHKS also designed a 14-inch thick production area floor slab to accommodate a large 30-ton capacity forklift, which could be used in place of the crane if needed. A test area, surrounded by impact-resistant concrete block walls, was designed to provide a safe, secure area for testing of the repaired units. When testing the overhauled gearboxes, the units spin at full speed as if installed on wind turbines. WHKS designed a large mat foundation, placed in two stages, that could handle the weight of the testing equipment and the required 1,000,000 foot-pounds of torque developed by the spinning units.

NextEra chose to design the restroom area to follow FEMA guidelines for a “Community Safe Room” to be used for a tornado shelter. WHKS designed the area with 8-inch thick concrete block walls filled with reinforcing and grout to withstand the required wind force and debris impact criteria. The roof of the shelter is constructed of precast, prestressed hollowcore concrete planks, securely anchored to the walls. Per FEMA specifications, the area was built to withstand 250 mph winds from an EF-5 tornado.

The $20 million project was completed in December 2009 and is expected to be fully operational in early 2010. It is expected to create 20-25 full-time jobs when fully operational and contribute significantly to the local economy.

WHKS Assists the City of Waverly with Flood Repairs to Cedar River Rail-Trail Bridge

After severe flooding ravaged Iowa in June and July 2008, the City of Waverly, Iowa retained WHKS to investigate the condition of the Cedar River Rail-Trail Bridge. The Cedar River had crested locally at over 19 feet, resulting in the evacuation of many residents and damage to the City's infrastructure.

WHKS personnel accessed the area by boat to conduct the scour investigations, which were done by probing around the substructure in the water. WHKS teamed with Lambourne Environmental Diving Service, LLC, to assist with the underwater inspection. The underwater inspection was necessary to see the conditions of the bridge piles and would help provide a better assessment of the bridge's condition.

The investigation determined that as a result of the flooding, scour had undermined the integrity of the bridge piers. Scour is the erosion or removal of streambed or bank material due to flowing water. Although scour can occur at any time, it is especially strong during flooding events.

WHKS submitted the findings of the investigation and the cost estimates for repairs to the Cedar River Rail-Trail Bridge to the City. The City hired WHKS to design permanent scour countermeasures to help protect the structure against future flooding events. The project included placement of stone fill and revetment at five piers along the Cedar River, using a barge to place the material. The project construction was completed in December 2009.

Investigations to the Cedar River Rail-Trail Bridge in Summer, 2008

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WHKS Establishes New Twin Cities, Minnesota Office and Welcomes Glenn R. Gustafson, P.E.

WHKS & Co. is pleased to announce the establishment of a new office in the Twin Cities, Metropolitan Area office and the addition of Glenn R. Gustafson, P.E., as the Office Manager.

Glenn comes to WHKS with over 14 years of experience as a consulting engineer, with extensive experience in municipal, state and federal engineering projects including design, planning, and funding of wastewater treatment, street and utility, site development, and flood control projects. His responsibilities will include the management and business development of municipal and other civil engineering projects.

Glenn R. Gustafson, P.E.

Glenn has a Bachelor of Science degree in Civil Engineering from the University of North Dakota (Grand Forks, North Dakota), Master of Science degree in Civil Engineering from the University of Minnesota (Minneapolis, Minnesota), and a Master of Business Administration degree from Augsburg College (Minneapolis, Minnesota). He is a registered professional engineer in Minnesota, Montana, North Dakota, South Dakota, and Wisconsin. For more information on the Twin Cities office, or to find out how Glenn can assist you with your project needs, please contact the office at (612) 246-0023.

Design Underway for East Dubuque Street Improvements

Existing 6th Street

WHKS is providing survey and design engineering services for the City of East Dubuque, Illinois for various street improvement projects.

WHKS will survey, design, prepare plans and specifications and provide letting guidance for the improvements to 6th Street, and as funding allows, WHKS will also provide comparable services for improvements to St. Mary's Drive, Mortimer Street, and Sidney Street. The 6th Street project is especially unique and challenging, since the street is built on top of the 6th Street Levee on the Mississippi River.

The projects are funded by the Emergency Repair Program (ERP), as administered by the Illinois Department of Transportation.

What's Happening at WHKS

Representative projects currently underway:

Mason City, Iowa

2010 Mill and Overlay
Project Design and Construction Administration & Observation
Client: City of Algona, Iowa

Final Design of Bridge on County Road B30 over
Iowa Northern Railroad
Client: Cerro Gordo County, Iowa

Dubuque, Iowa / East Dubuque, Illinois

Water System Expansion and New Well
Client: City of Guttenberg, Iowa

Survey and Site Design at Dubuque Regional Airport
Client: Crawford Murphy & Tilly, Inc. for the Dubuque Regional Airport

Ames, Iowa

Bridge Damage Evaluation and Assessment for Overpass Bridge near Fremont, Nebraska
Client: Acuity Insurance Company

Survey of Track Expansion – Boone, Iowa
Client: Union Pacific Railroad

Rochester, Minnesota

2010 Street and Utility Improvements
Client: City of Eyota, Minnesota

Wastewater Treatment Facility Improvements
Design & Construction Phase Services
Client: City of Peterson, Minnesota

Springfield, Illinois

IL 159 over Interstate 64 Bridge Widening
Client: Illinois Department of Transportation

Miscellaneous Sidewalk and Signage Improvements
Client: Village of Illiopolis, Illinois

For additional information on any WHKS projects, please contact our offices.

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