



ENGINEERS ■ PLANNERS ■ LAND SURVEYORS
Shaping the Horizon

March 2008

Construction Underway on Illinois Route 10 over Prairie Creek in Logan County, Illinois

Construction for replacement of the existing structure carrying IL Route 10 over Prairie Creek in Logan County was programmed for 2010. Phase I work was being done by District staff and was underway in June 2006 when a recent change in the criteria for inspection and load rating of PPC Deck beams led to the bridge being posted with a live load restriction. Illinois DOT Region 4



Engineer Christine Reed (now Director, Chief Engineer of Division of Highways) was concerned that this restriction would place undue strain on the farming community in the area and authorized a March 1, 2007 letting for replacement of the bridge. Due to the aggressive schedule, WHKS was selected by the Illinois DOT Bureau of Bridges and Structures to prepare the Type, Size and Location (TS&L) and final bridge plans for the project, and authorized to begin work on June 23, 2006 with a proposed TS&L submittal date of August 18th and Pre-Final Plan submittal date of November 20th.

During development of the TS&L, WHKS worked closely with the District staff to determine the locations of the existing pier foundations. The existing bridge, which was built in 1979, was a replacement of the original 1931 truss bridge. The large cast-in-place concrete footings of the original structure were left in place when the structure was replaced in 1979. Planning of the proposed structure was complicated by the relative locations of the original and existing pier footings. WHKS proposed two alternatives: 1) place the proposed piers between the original and existing piers or 2) span both the original and existing piers. Alternative One allowed for a shorter bridge, but required construction of the new piers within a very narrow area between the original and existing piers. Alternative Two eliminated the need to construct the new piers between the original and existing piers, but required a longer bridge. After excavation and probing, to determine the locations of the footings, the decision was made to go forward with Alternative 2. The TS&L was completed on schedule and approval to begin work on the bridge plans was granted on October 4.



The final structure type was a 3-span welded plate girder on integral abutments and pile bent piers. Both pre-final and final plans were submitted ahead of scheduled submittal dates. After plan completion, District 6 Studies and Plans Engineer, Forman Hardwick, said: "When the schedule was first discussed, I must admit I was a little dubious, but they got it done on time. WHKS did a good job". The project was let on schedule on March 1, 2007 and is currently under construction.

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

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Tile Location Survey for Iowa Department of Transportation

WHKS completed the survey for the US 20 Drainage District Tile Line Survey for the Iowa Department of Transportation. The project location was along the US 20 corridor in Sac, Calhoun and Webster Counties and consisted of locating 22 County Drainage tile crossings of proposed U.S. 20.

In this particular area of Iowa, most of the croplands and fields are tiled for drainage and accurate records of the location of these tiles didn't exist. The purpose of the survey was to locate the County's drainage tile crossings and integrate the locations and elevations into the design plans for the proposed U.S. 20 improvements.

Since accurate records were not available, a preliminary study was performed to establish if any of the tiles were shallow enough for hand probing. For tile locating depths greater than four feet, mechanical trenching was required.

The data collection on the project was challenging due to a number of factors. This project started at the peak of the planting season, so care was of the essence to the landowner's crop and to the landowner's concerns. Trenching was a "last resort" and digital photos and measurements of the trenching were taken to document any damages. Each section of the Highway 20 corridor had to be completed in a timely manner so damages would be minimal. Once the harvest was completed, the tile locating continued until the ground became too frozen to continue.

The property entry had to correspond with Iowa DOT's coordination and agreements with the Drainage Districts. WHKS was careful to abide by Iowa DOT's Entry Policy and attempt to avoid damage to crops and fields during the work. A Tile Locating Team, made up of a WHKS Supervisor and a two-person WHKS survey crew, navigated the tile crossing locations using probes, GPS, and a trenching consultant's estimation of the tile alignment.

The project completed by WHKS under the On-Call Survey Agreement with the Iowa DOT.



WHKS survey crew take measurements during trenching.

Radium Removal for Forest City, Iowa



New chemical equipment at Forest City Water Treatment Facility.

The City of Forest City, Iowa completed a radium removal project at the Water Treatment Facility during the summer of 2007. Radium in ground water is a common problem in Minnesota and Iowa communities. All bedrock naturally contains some radium, typically in small quantities. When groundwater moves through the underground layers of rock, it dissolves minerals as it travels through the cracks in the rock. In areas where the bedrock contains significant levels of radium and the groundwater travels at a slow rate, the water can pick up higher amounts of radium. Immediate health risks from drinking water containing these amounts of radionuclides are small, but long term consumption of excessive amounts of radium have been linked to health concerns. A Federal limit of five (5) picocuries per liter (pCi/L) has been established for radium in drinking water.

WHKS performed a preliminary study in 2006, and designed a radium removal system for the City in 2007. The project adds chemical injection equipment (pumps, tanks, and mixers) to add hydrous manganese oxides (HMO) to the raw water. The radium binds with the HMO in a chemical reaction and is filtered out of the water using pressurized sand filters.

The average daily water usage in Forest City is approximately 500,000 gallons per day. The filtering capacity of the treatment facility is currently over two million gallons per day.

In addition to the radium removal system, the facility has upgraded its electrical control panels and well motor starters. This new electrical and controls equipment will help the facility operate more efficiently and extend the useful life of its existing equipment.

Dayton Park Subdivision, 5th Addition in Ames, Iowa

WHKS provided engineering and survey services on the Dayton Park Subdivision 5th Addition in Ames, Iowa. The project is a four-lot industrial development in the highly visible northwest quadrant of US Highway 30 and I-35 intersection, a growing commercial and industrial area of Ames.

The development of the area was challenging, since the land was originally in the South Skunk River floodplain. WHKS worked

with the developer to raise the ground elevations out of the floodplain and meet local ordinances. WHKS has also provided services to Dayton Park LLC on the 4th Addition of the development.

University of Dubuque Physical Plant Improvements



View of the Facility Building, with construction of the Chlapaty Center underway at the University of Dubuque.

The University of Dubuque recently broke ground for the construction of the new 90,000 square foot, \$26 million Chlapaty Recreation and Wellness Center. The Center will be constructed at the site of the former football stadium and will extend westward. WHKS was a member of the project team and provided survey, overall site design and construction staking services to the University.

The Chlapaty Recreation and Wellness Center will include: a 6,900 square foot, two level fitness center; a new football stadium; a lighted field with a field turf playing surface; relocated Farber tennis courts; a new outdoor track; a 200-meter, six lane indoor track with four multi-use courts in the center of the track; a 16-foot wide concourse running the length of the facility; a training room, locker rooms; a juice bar and lounge area; and a reconfigured press area. The new construction is ADA handicapped accessible.

The engineering services provided by WHKS for the project included three separate areas of development and construction with elements of each overlapping and dependent on the other. WHKS developed three separate sets of plans, one set for the Facility Building area, another for the visitors' bleachers and field entrance building, and a third for the Chlapaty Recreation and Wellness Center area, itself.

WHKS assisted the University with the zoning submittals to the City of Dubuque. The firm also provided preliminary and final design for the driveway and loading areas, proposed street and existing street connections, parking lots, water and sanitary sewer relocations, storm water management, detention pond, together with coordination with the City of Dubuque and on-site construction services.

The project was a collaborative effort between Hastings and Chivetta Architects, Straka Johnson Architects, P.C., and WHKS.