

# BANNER

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**Construction Services Group (CSG)** In 2009, Banner created the CSG to provide construction services from the start of construction to the completion of the project for projects designed by others. One of the CSG's current projects is at the new wastewater facility in Lennox, SD. Designed by another firm, the Banner CSG was hired to provide the construction administration and field observation for the project. The CSG is led by Matt "Rip" Rippentrop. Rip graduated from the South Dakota School of Mines & Technology in 2000 and has been associated with Banner Associates since 2005 as the chief resident engineer for numerous projects. Prior to his employment at Banner, he was employed with various contractors. There he gained a wealth of on the job experience and knowledge from the contractors side that is a benefit to CSG clients.

**Hartford Beach State Park Construction Services** In 2010 significant improvements and additions were added to the campground complex at the Hartford Beach State Park.

Hartford Beach State Park was established in 1945 and is located 15 miles north of Millbank, SD on Big Stone Lake along State Highway 15. During this past fall, the South Dakota Game, Fish & Parks (SD GF&P) added a new campground loop to the existing campground complex. This new loop contains 57 camp sites, of which, two are ADA accessible. The ADA accessible and campground host camp sites are paved, while the remaining 53 camp sites have gravel surfacing. All of the camp sites have a 50 amp electrical connection and water and sewer hook-ups. Other improvements and additions consist of a new comfort station, a new dump station, and a new parking area for the relocated disc golf course. The entire camp loop road, dump station area, and new parking areas are paved.

Banner Associates' Construction Services Group (CSG) provided the construction administration, field observation, and project coordination for the construction of the campground loop road, camp sites, water lines, and dump station. Banner also performed all of

the construction staking for the project, as well as performing a topographical survey to enable the SD GF&P to lay out the new dump station.

The new campground loop at Hartford Beach State Park is scheduled to be open to campers beginning in June 2011.

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## Deer Creek Station

**B**asin Electric Power Cooperative retained Banner's services to provide engineers to help oversee the civil and the structural aspects of the construction of its newest power generation plant, Deer Creek Station. Our services include verifying that construction complies with design documents and coordinating with the design engineer, the owner, and the contractor to obtain responses when construction questions come up in the field.

generation will be a steam turbine powering a second generator. The natural gas will be supplied by a new natural gas pipeline that ties into the Northern Border Pipeline approximately 14 miles north of the site. The electricity will be transmitted to a Western Area Power Administration (WAPA) substation less than a mile away. The heat from the exhaust will be used to heat a closed water system to create steam as it passes through a series of heat exchangers in the Heat Recovery Steam Generator (HRSG). The exhaust will then be vented out a stack. The steam will be routed through piping to power the steam turbine. The spent steam will be piped outside to the Air Cooled Condenser where it will be cooled and condensed back to the liquid state and returned to the HRSG.

Deer Creek Station will be the site of a 300 megawatt combined-cycle power generating facility and is located approximately six miles east and two miles south of White, SD. The first cycle of power generation will be a natural gas fired gas turbine which will power the one generator. The second cycle of power



## Aberdeen WWTF Improvements Phase II B

**T**he Aberdeen WWTF has a treatment capacity of 8 MGD and has seen spring flows as high as 24 MGD, making it one of the largest wastewater treatment plants in the state. The Phase IIB improvements were bid in April 2008 and the major part of construction took place through-out 2008 and 2009. The project was split into two bid schedules. Bid schedule I was awarded to PKG, and bid schedule II was awarded to Lien Transportation. Bid schedule I pertained to all of the treatment plant improvements, and bid schedule II pertained to all of the equalization system improvements.

**Bid Schedule One** A new Huber 1/4" step screen along with a screenings conveyor and washer/press unit were installed in the pretreatment building. In both of the 82' diameter primary clarifier tanks, equipment was replaced with



the primary clarifier scum pump. Improvements were made to the bio-gas handling system; including replacing the valves, flame arrestors, gas mixing compressor, and waste gas burner. A new digester boiler and heat exchanger were installed for heating of the digester tanks and building. Both of the digester tank covers were sandblasted, repainted, and reinstalled.

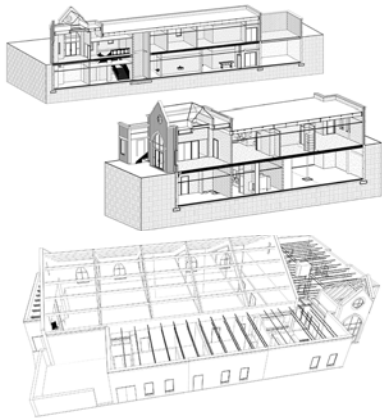
**Bid Schedule Two** All of the cattails, vegetation and muck from the north equalization 12 acre pond were removed and disposed of in the south equalization pond. The pond bottom and slopes were reshaped and a new clay liner installed. The overflow structures for both ponds were replaced. New asphalt surfacing and a new sump box were installed in the equalization basin along with new submersible mixers.



new EIMCO stainless steel spiral rake blade clarifier equipment. The dissolved air flotation (DAF) thickener equipment was replaced with new Westech stainless steel tank equipment, pressurization pump, pressurization tank and air compressor. All of the digester building pumps and piping were replaced, along with



## Architectural Design Software



At Banner Associates, we believe the most successful projects are the ones which generate the most client satisfaction. Communication is critical to understanding the client's needs and wishes. To assist with our communication, we utilize state-of-the-art computer tools to explore design concepts with our clients and develop them throughout the design process.

Initially, for quick exploration of various schematic designs, we start with a program called Sketchup. The graphics generated by the software communicates clearly to the client and architect the spaces, relationships and overall impact of the design being proposed.

As the process of design progresses, we incorporate the Building Information Modeling (BIM) software, Revit Architecture and Revit Structure. The virtual model developed, utilizing the software, allows for complete collaboration among design team members. Revit is a database driven software in

which quantities, material takeoffs, and schedules are automatically generated. An advantage of using BIM is that the model reveals issues that may have only been exposed during construction when using traditional design methods. Early identification and resolution of issues saves money and avoids delays during construction.

Through the integration of these two programs we are able to produce detailed graphic renderings depicting surfaces, light patterns and materials as well as create virtual walkthroughs and animations. These programs create a 3-dimensional representation of the project from schematic design through construction documentation which helps us deliver a successful project.

BIM also possesses the potential for integration with facility management software. As more clients utilize software as a tool in managing their facilities, the BIM files will become a valuable asset.

## SDDOT Regional Office Addition—

This project consisted of a two-story addition to the DOT's regional office in Pierre, South Dakota. The two-story addition totaled approximately 6,000 sq ft. The primary purpose of the addition was to provide more office space for overcrowded staff. The secondary purpose was to provide handicapped accessibility to the building.

The addition matched the existing brick and concrete block construction. We were especially successful in matching the existing brick and exterior finishes. Accessibility, however, proved to be the real challenge for this project. The original building was constructed in 1961 and was not conceived with accessibility in mind. Neither the building nor site access to the building were accessible. A significant grade change of approximately 10 ft obstructed access to the main entrance from adjacent parking areas; the main entrance itself, being located between floors, was segregated from the rest of the building by stairs to either floor; the existing construction did not include an elevator or accessible restrooms.



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The main entrance was re-located to the lower level of the new addition to enhance the functional relationship between the entrance, waiting, and reception areas. The existing entrance was left intact and downgraded to a secondary use. To provide accessibility, existing site grades were reduced to correspond with the new main entrance for access at grade. In order to avoid excessive ramps and railings, accessible parking was then created at grade directly adjacent to the new entrance by way of a single-lane drive from the existing parking areas. The new addition also included an elevator and new accessible restrooms.

## Cured-in Place Pipe



Many wastewater treatment facilities are experiencing hydraulic overload with recent high levels of precipitation. One way to reduce flows into the overall system is to improve aging sanitary sewer pipe thereby reducing wastewater flows and also improving the collection system. Cured-in Place Pipe (CIPP) reduces infiltration into the system, restores full carrying capacities of pipe by removing roots and failing liners, and improves service connections and pipe joints with chemical grouting without the cost of open-cut construction. CIPP is a jointless pipe within a pipe capable of restoring structural integrity. In certain cases, the existing pipe may be deteriorated to the point of partial collapse where pipe bursting followed by slip-lining with a new pipe can restore the sewer with minimal open cut construction.

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## Lewis & Clark RWS Update

**Several of the contracts** for the Lewis & Clark project have resumed construction following winter shut down and steady progress continues to be made. Lewis & Clark's goal is to begin delivering water to the first of its member systems by the summer of 2012.

The Phase 1 Water Treatment Plant project reached Substantial Completion in December. This project includes the high service pump station which features four 1,250 HP pumps, a 3 million gallon clearwell and electrical building. Construction of the massive Phase 2 main treatment facility project has concentrated on concrete work for the main plant features and the building shell for the solids contact units, filters and chemical feed areas. Construction is also well underway for the two 7.5 million gallons reservoirs at Tea, the Tea Pump Station and the 85th Street Water Tower.

Work is also progressing on several pipeline projects. Nitteberg Construction completed installation of the 5-mile, 6" PVC Centerville line and they have installed all but 3,000 feet of the 13.8-mile, 10" PVC Parker line. Morgan Contracting has completed installation of all 5 miles of 24" and 30" steel pipe on the Treated Water Pipeline Segment 10 (TWP-10) project near Sioux Falls. S.J. Louis completed installation of the 5-mile, 24" steel pipe on the TWP-11 project near Beresford. Winter Brothers Construction completed the Lennox & South Lincoln RWS Service Lines project (1-mile of 6" and 1-mile of 8" diameter pipe).

Welf Construction is in the process of installing five new vertical wells; installing pumps in six existing vertical and angle wells; constructing new pump buildings and vaults; and installing piping and electrical equipment at Lewis & Clark well area south of Vermillion, South Dakota.

Through May 2010, Lewis & Clark has awarded nearly \$287 million of construction contracts. Since the end of 2010, Lewis & Clark has awarded construction contracts for the following projects:

- September 2010 - Meter Buildings Package 1 (meter building/pump stations for Centerville, Lennox, South Lincoln RWS and MCWC west) was awarded to Hoogendoorn Construction for \$1.75 million.
- September 2010 - TWP Segment MN-1 (8.4 miles of 24" diameter steel pipe) was awarded to Morgan Contracting for \$7.58 million.
- May 2011 - Meter Buildings Package 2 (meter building/pump stations for Beresford, Parker and Sioux Falls North) was awarded to Hoogendoorn Construction for \$2.11 million.
- May 2011 - Pipeline Commissioning was awarded to Judds Bros. Construction for \$1.6 million. This project involves testing, flushing, disinfection and readying the treated water pipeline system for operation - some of this pipe was installed as early as 2005.