

B&Nfacets

BURGESS & NIPLE ■ When the results matter now... and years from now.



INSIDE:

Structural Repairs Expedited at Coal Plant, page 2

Issue 1 ■ 2013

3 Getting to the Root of I/I

4 Renovation Revitalizes Military Command

5 Award-Winning Work

6 B&N Projects Take Root

CALLING IN Reinforcements

B&N Expedites Structural Repairs at Coal Plant

Most revenue, hundreds of employees out of work and the struggle to keep an aging coal plant operational – these were the challenges facing Excel Mining, LLC at the Pontiki coal mining complex in Martin County, Kentucky.

In 2012, the Mine Safety and Health Administration (MSHA) ordered the closure of the Pontiki coal plant following a conveyor collapse. Because this was the third structural failure in two years, MSHA required a comprehensive structural inspection and repairs before the plant could reopen. With the mine shut down, 250 employees were temporarily out of work and lost revenue was mounting.

Expedited Inspection

Excel Mining selected Burgess & Niple (B&N) to provide structural inspections, repair recommendations and repair details of all aboveground facilities. B&N engineers were on site within three days to determine how to keep the plant operational.

B&N used rope access and adapted climbing techniques as well as mechanical access equipment to inspect coal silos, buildings and a steel conveyor system that spans the length of the two-mile site.

Triage Approach

After the inspection, B&N and Excel Mining used a triage approach to prioritize conveyor and building repairs. The massive project was divided into three zones – the



B&N engineers inspected the aboveground mining facilities and identified solutions to improve structural integrity.

first zone reopened within the first month, which restarted the mine's revenue stream. The remaining two reopened soon after, allowing all mine employees to return to work six days ahead of Excel's targeted date.

Time & Cost Savings Techniques

To speed up the process, inspection photos were linked with repair spreadsheets to generate work orders, which was faster than developing detailed drawings.

B&N's quick response and on-site expertise meant the mine reopened sooner than expected. In addition to improving the structural integrity of the aboveground facilities, repairs are being completed for millions of dollars less than originally projected.

Repairs were initially completed by outside contractors and Excel's maintenance personnel. Eventually, the mine maintenance personnel took over the repairs. This reduced the need for outside contract labor and lowered projected construction costs significantly.

Costs were further reduced when B&N recommended reinforcing one conveyor system instead of replacing it as originally planned.

With major repairs complete, the mine is running again. Ongoing improvements continue, with B&N providing inspections of finished work.

Scott Sondles, PE serves as Project Manager.

Peeling the I/I Onion

B&N Gets to the Root of Inflow and Infiltration

Many communities are faced with overwhelmed sewerage systems when groundwater and stormwater enter the sanitary sewers instead of storm sewers. This inflow and infiltration (I/I) causes excessive overflows that can pose a threat to public health and the environment, and violate discharge regulations set forth by the U.S. Environmental Protection Agency.

Peeling back the layers of the I/I onion is a complicated process that requires examining many potential causes. Burgess & Niple (B&N) has successfully implemented complex I/I reduction programs focused on getting to the root of problems within a system.

Keys to reducing I/I include:

Data-driven testing. The collection of data is the foundation of a thorough I/I reduction program. Data gathering steps can include interviewing city and county staff; studying available mapping, maintenance and complaint records; and reviewing historical flow meter and rainfall data. The data is used to pinpoint areas with a history

of I/I-related problems, such as water in basements or sanitary sewer overflows.

Zero in. Once problem spots are identified, flow monitoring may be set up in those areas to narrow down the search for I/I. Flow meters are also installed at other locations to provide a system-wide snapshot and discover issues that may have gone unnoticed.

Persistence pays. Finding I/I sources often takes multiple steps and a combination of tools. In addition to flow monitoring – smoke testing, dye testing, site visits and rainfall simulation testing can provide important insight. Researching both public and private I/I pathways is important.

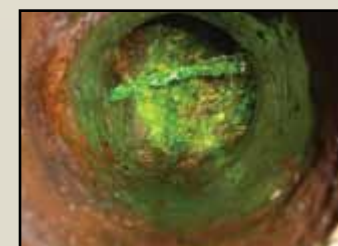
Once I/I sources have been identified, B&N engineers develop solutions for reducing inflow and infiltration. Performing a hydraulic capacity analysis can determine the impact those potential solutions will have on the total sewer system. An important step includes providing a cost/benefit analysis of the recommended improvements to help prioritize and budget I/I reduction measures.



For more information visit burgessniple.com's "News & Media" area to download B&N's white paper on reducing wet weather flows.

West 5th Avenue I/I Remediation Study City of Columbus, Ohio

- Cleaned and inspected more than 126,000 feet of sanitary sewers
- Installed flow meters and rain gauges for monitoring
- Used flow data to create a computer model of all sewers to determine areas with high I/I
- Created and modeled alternatives to prevent sanitary sewer overflows
- Provided the overall findings and a cost/benefit analysis to the City



Dye testing, used with closed circuit television inspection, can be a key tool for identifying I/I pathways.



Smoke testing is a tool that can be used for determining public and private I/I pathways.



B&N's on site visits provide an up-close view and invaluable insight into existing conditions.



Flow meters and rain gauges supply important data used to pinpoint problem areas.



Renovation Revitalizes Mission Critical Command

At Randolph Air Force Base in San Antonio, Texas, B&N transformed a 1930s barracks building into a high-tech, worldwide operational hub for the U.S. Air Force.

The five-wing, former barracks complex houses the Air Force Personnel Center (AFPC) Headquarters – a field operating agency responsible for managing personnel programs that impact all active duty and civilian Air Force members. The AFPC frequently communicates with the Pentagon and military theaters around the world.

Working with design/build partner Cherokee General, B&N led a multi-party design team to renovate two wings of this mission critical command. The Cherokee/B&N team provided the building design, interior design, and structural and site civil engineering.

Aesthetically, the design restores the building's original architecture. But beneath the façade is a technologically advanced facility that houses all of the AFPC's administrative and network infrastructure.



Pictured Left: The AFPC conference rooms were designed to maintain a high level of security. Features include large format interactive display workstations, sound isolation, security alarms and privacy window treatments.

Managing Multiples

There were many facets to this complex project. The exterior architecture had to maintain historic preservation guidelines. The interior design had to meet the unique needs of more than 25 command groups. This included the procurement and implementation of a multi-million dollar Furniture, Fixtures and Equipment (FF&E) package for 1,300+ staff members.

Work was coordinated by B&N across two design/build teams – Cherokee/B&N and the team of ITSIL Gilbane, SAIC, and HDR who completed infrastructure, electrical, plumbing and elevator work.

Hidden Armor

To bring the 80-year-old structure up to current Anti-Terrorism/Force Protection standards, B&N retrofitted the building shell with blast resistant capabilities.

A thin composite blast wall made of high strength fiber/mesh fabric and an array of four-inch structural tubes was installed on the interior face of the outer building shell. This

gives the historic building a hidden armor without constructing a concrete block shell that would mask the original structure.

Secure Places. High-Tech Spaces.

The mission critical functions hosted in this facility require spaces with unique security and technical performance capabilities. This includes a board room where all Air Force promotion decisions are made, a 2,675-square-foot Sensitive Compartmented Information Facility (SCIF) used to process classified information and conference spaces with state-of-the-art audio visual and security features.

The AFPC renovation was designed to meet LEED® Silver Major Renovation criteria. One wing opened in late 2012. Construction of the second wing is underway. **Carlos Rojas, AIA** served as B&N's project manager.

Pictured Above: The exterior design restored arched bays and windows that were filled with concrete masonry in the 1960s.

B&N Bulletin Board

Award-Winning Work!

Rich Street Bridge Columbus, Ohio

- 2013 National Recognition Award
American Council of Engineering Companies (ACEC) Engineering Excellence Awards
- 2013 Outstanding Achievement Award
ACEC Ohio Engineering Excellence Awards



- 2012 Outstanding Highway Project Award
Central Ohio Section of the American Society of Highway Engineers (ASHE)

The above photo was selected by the American Society of Civil Engineers (ASCE) for the 2014 Bridge Calendar. This is one of the images selected from 1,100+ entries. The photo was taken by David Blayney, Burgess & Niple.

- 2012 Peer's Choice Award
Central Ohio Section of ASHE

➤ **For more information:** [National ACEC Award](#), [Ohio ACEC Award](#) and [Ohio ASHE Award](#)



Hilliard Triangle Project Hilliard, Ohio

- 2013 Outstanding Achievement Award
ACEC Ohio Engineering Excellence Awards

➤ **For more information about Ohio ACEC Awards**

Northeast Water Treatment Plant Improvement Project Canton, Ohio

- 2013 Honor Award
ACEC Ohio Engineering Excellence Awards

➤ **For more information about Ohio ACEC Awards**



Projects TAKE ROOT

From rural roads in Texas to sanitary sewers in Kentucky, B&N projects are taking root.



LUC-75 Project

B&N is leading a major freeway reconstruction effort for the Ohio Department of Transportation (ODOT). The \$176 million LUC-75 project is designed to improve safety and capacity on a three-mile stretch of Interstate 75 in Toledo.

The B&N design will revamp the network of roadways within the existing freeway alignment, increase capacity from two to three lanes in each direction and adjust ramps to meet current safety standards. Two lanes of traffic will be maintained in each direction during construction. The B&N team also will design 12 bridges located within the project area.

B&N is providing highway and bridge design; drainage, lighting and maintenance of traffic plans; and coordinating six subconsultants. Design is expected to be complete in spring 2014 with the start of construction expected in fall 2014.

Buechel Basin System



To help eliminate sanitary sewer overflows (SSOs), B&N designed a 106-million-gallon storage basin system for the Louisville and Jefferson County Metropolitan Sewer District. The project is located in a 48-square-mile urban watershed that supports Louisville, Kentucky area residents. It is anticipated that 19 SSOs will be mitigated once construction is complete.

The Buechel Basin System design includes three basins that will store sanitary sewage in the event that wet

weather overloads the sanitary sewer system. The design also includes 115 million gallons per day of pumping capacity, mechanical screening, washdown systems, standby power generation and odor control.

The basin system is being constructed on a heavily wooded wetland site. B&N submitted a plan to the U.S. Army Corps of Engineers designed to mitigate the impacted wetlands at a three-to-one ratio. The Buechel Basin facility currently is under construction and should be complete in the summer of 2014.



Lick Branch/South Ruffner Road Sanitary Sewer Improvements

B&N designed and is overseeing the construction of sanitary sewer collection system improvements for The Sanitary Board of the City of Charleston, West Virginia (CSB). The project is intended to minimize inflow and infiltration and improve the water quality of Lick Branch.

Replacement and relocation of existing collection system piping will eliminate sewer pipes that were located within the channels of Lick Branch and adjacent tributaries. This will

improve piping access for future operation and maintenance needs.

The project includes the replacement of more than eight miles of sewer pipe and lining. B&N also worked with CSB to verify the location and distribution of service laterals for approximately 260 customers.

Construction of the sanitary sewer collection system improvements is scheduled for completion in 2014.

Loving County Road Improvements

Due to the influx of oil and gas drilling in Loving County, Texas, the county's rural dirt roads are crumbling under the burden of heavy drilling trucks en route to more than 1,000 new well sites.



B&N is leading a project that will pave two of the County's dirt roads to handle this large increase in traffic. The two-lane roadways total 28 miles in length, and are being designed to Texas Department of Transportation standards.

B&N is providing roadway design and plan specifications, drainage design, surveying oversight

and quality assurance/quality control during construction. The paved roads are scheduled for completion in 2014.

Cuyahoga Land Bank Contract for Environmental Services



The Cuyahoga County (Ohio) Land Reutilization Corporation (Land Bank) is a non-profit organization that strategically acquires blighted properties and returns them to productive use. B&N is providing Environmental Site Assessments (ESAs) through a U.S. Environmental Protection Agency grant that the Land Bank received. B&N completed the ESAs for industrial and commercial Land Bank properties through an on-call environmental services contract.

To date, B&N has completed eight assessments (six Phase I ESAs and two Phase II ESAs) and one remediation project for the Land Bank. In addition, B&N is assisting several developers and the Land Bank with the acquisition and transformation of blighted properties.

West Virginia I-79 Interchange

B&N is designing a new interchange for the West Virginia Department of Transportation (WVDOT) on I-79 between Star City and Westover, near Morgantown. The new interchange is intended to reduce traffic conflicts, improve safety and increase capacity.



There are currently two I-79 interchanges in the area that are congested during peak hours. Traffic volumes are expected to increase due to ongoing development. Adding a third interchange will help alleviate current and future congestion.

B&N engineers are working with WVDOT and project stakeholders to identify and evaluate various alternatives for the new interchange. Design of

preliminary interchange alternatives currently is underway.



BURGESS & NIPLE

5085 Reed Road ■ Columbus, Ohio 43220
614-459-2050 ■ Fax 614-451-1385

Facets is published for the clients and friends of Burgess & Niple. Your comments and address corrections are appreciated. Please contact Sarah Johanssen, editor, at sarah.johanssen@burgessniple.com

