B&N facets

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INSIDE:

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Shifting Gears

Multimodal Safety and Accessibility Drives Complete Streets Initiatives

A national movement to make streets safer and more accessible for all types of travelers is gaining momentum. As a result, transportation professionals are shifting focus to design roadway solutions for more than just motor vehicles. According to the Federal Highway Administration, ensuring that roads provide safe mobility for all travelers is at the heart of this new approach known as complete streets.

Safe Passage for All

As defined by the National Complete Streets Coalition, the objective of a complete streets project is to provide safe passage for pedestrians, bicyclists, motorists and transit riders of all ages and abilities along and across roadways and intersections.

A complete street may include: sidewalks, bike and bus lanes, comfortable and accessible public transportation stops, frequent and safe crossing opportunities, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts and more.

"We now have a refined multimodal transportation network that is used by more pedestrians and cyclists than ever – people go out of their way to travel this corridor."

- Athens City Engineer Andrew B. Stone, PE

The barrier-separated pedestrian and bike pathway on the Richland Avenue Bridge in Athens, Ohio provides separation from vehicles and a safer bridge crossing. Enhanced safety for all travelers was the intent of the major structural and aesthetic improvements made to the bridge.

Changing the Landscape

Rising gas prices, congested roadways and an increased focus on healthier lifestyles are just a few factors that are changing the transportation landscape. Complete streets projects address these concerns with benefits that include:

- Reduced congestion and emissions by encouraging transit ridership, walking and biking
- Improved safety for multimodal travelers through the development of dedicated lanes and crossings
- Enhanced opportunities for physical activity and healthy lifestyles
- Improved aesthetics along complete streets corridors

Completing the Streets

B&N transportation professionals are working with clients to develop complete streets projects that create safer, more livable communities.

- In Columbus, Ohio, B&N is redesigning a portion of the I-70/71 corridor project – a large urban interstate project that will improve a congested area downtown. According to the Ohio Department of Transportation (ODOT), this full scale reconstruction of I-70/71 is one of the largest projects of its kind in Ohio history.

  In addition to building a safer highway, one of the project goals is to incorporate complete streets enhancements that link downtown neighborhoods. As part of the project team, B&N is working to help identify steps to create this complete streets network that will connect the community and accommodate pedestrians and bicyclists.

- A recently completed project in Athens, Ohio exemplifies a complete streets transformation. A corridor that included an intersection that once was plagued with safety and congestion problems has been redesigned.

  In an area that is frequented by cars, buses, pedestrians and bicyclists, the City of Athens sought to provide safe passage for multimodal travelers. Following a comprehensive community involvement effort, B&N recommended and designed improvements that include a multi-lane roundabout, bridge safety modifications, an ADA-compliant tunnel and paved pathways for pedestrians and bicyclists, retrofitted bike lanes and aesthetic enhancements.

  "Making the area functional for motorists, yet inviting and safe for cyclists and pedestrians, was the main intent of this redesign," states Athens City Engineer Andrew B. Stone, PE.

  "We now have a refined multimodal transportation network that is used by more pedestrians and cyclists than ever – people go out of their way to travel this corridor."

From improving safety, to reducing emissions, complete streets transportation projects lay the groundwork for livable communities and can strengthen opportunities for economic growth. The shift toward complete streets is transforming the way engineers serve the public by providing more choices and safe access for everyone.

Multimodal mobility and safety is at the center of a newly designed corridor in Athens, Ohio. Pedestrians and bicyclists travel on dedicated, ADA-compliant pathways while the new multilane roundabout is large enough to easily accommodate vehicles including buses and tractor-trailers.

SILVER LINING

Lift Station Design Conserves Energy, Improves Efficiency

With many of our nation's wastewater facilities nearing the end of their design life, rehabilitating and replacing this aging infrastructure are vital to protecting public health.

Tight budgets and EPA mandates loom like dark clouds over the sea of communities in need of major capital improvements. The silver lining is an opportunity to significantly improve the energy and operational efficiency of these critical facilities while extending their useful life.

B&N on the Job

In Cleveland, Ohio, the Northeast Ohio Regional Sewer District (NEORSD) recently completed the rehabilitation of the 132 million-gallon-per-day Cuyahoga Valley Interceptor (CVI) Lift Station. Faced with aging equipment and mechanical failures, NEORSD selected B&N to design system upgrades based on an efficient, energy-saving approach that significantly extends the station's life.

Energy Conserved

According to the Electric Power Research Institute, nearly four percent of the nation's electricity goes toward moving and treating water and wastewater. New equipment installed at the CVI Lift Station reduces energy consumption.

Two new low-flow pumps operate at variable speeds depending on demand during dry weather flows. During high volume, wet weather flows, a new control system transfers pumping operations to five larger, existing pumps. Using the smaller pumps during low flow periods saves energy and extends the useful life of the larger pumps by limiting their use.

Induction lighting installed at the lift station uses 50 percent less energy than conventional fixtures and can reduce lighting levels during off-peak hours.

Efficient Operations

A number of new components work together to improve the overall efficiency of the lift station. Improvements include two new mechanically cleaned bar screens with small bar spacing that reduces the amount of extraneous materials that accumulate in the wet wells and clog pumps. The new screens allow the station to process higher volumes of materials without reducing the efficiency of the station. In addition, a new material handling system comprised of a radio-controlled, six ton jib crane and monorail system allows operators to better manage the extraneous materials being removed.

If power is lost, a new hydraulic power unit closes the influent gate in 60 seconds to help prevent flooding. The gate also is designed to open under the significant pressure created by the backup of flow in the interceptor sewer during a station shutdown, and allows a controlled release once emergency conditions have passed.

Due largely to the energy saving aspects of the CVI Lift Station design, NEORSD received stimulus funding as a shovel ready project. These funds covered the $6 million construction cost as well as services during construction.

In addition to assisting clients with complex wastewater design challenges, B&N is a recognized leader in funding assistance, regulatory requirements and compliance issues. **Carl Seifried, PE,** served as project manager for the CVI Lift Station project.

Pictured Left: A new hydraulic power package and accumulator allow the 96-inch influent gate to open under 68 feet of differential pressure. This includes a new hydraulic cylinder that operates under 3000 psi hydraulic pressure to open the gate in 3 minutes and close it in 60 seconds in case of an emergency condition.

Pictured Left: The headworks bar screen and new service platform enhance operator safety.

Pictured Above: Two new 250 horsepower (HP), low-flow pump motors (red) work with existing 800 HP motors (blue). All pumps are equipped with variable speed drives to match incoming flows, conserve energy and extend pump life.

Pictured Right: Low-flow pumps will handle dry weather flows.

Additional Features

- To improve operator safety, a new platform with new gates and gate controls allows operators to service mechanical bar screens without entering the channel which is susceptible to flooding.
- A transfer switch allows portable emergency generators to maintain critical screening and pump operations in case of a power outage.
- A new power distribution system transforms power from 4,160 volt to 480 volt to provide power to the variable frequency drives for the low flow pump motors.

Communities *at* Play

Site Development Services Lay Groundwork for Parks Projects

Enjoyed by millions of people each year, park systems conserve resources, strengthen health and education, and foster closer communities. But before the first ball game or picnic takes place, carefully coordinated site development services help ensure that parks can be enjoyed for years to come.

In the metro Washington, D.C. area, B&N has provided multidisciplinary engineering expertise for many parks and recreation projects.

Leveling the Playing Field

The conversion from grass to synthetic turf on more than 20 athletic fields in Fairfax County, Virginia provides environmental and economic benefits while improving field safety and usability. The quality of water that drains from the fields is improved with a sub-base that is designed as a detention feature that reduces water runoff and soil erosion. Maintenance costs are lowered because there is no need for fertilization, irrigation or mowing. In recognition of B&N's sustainable design efforts, the field at Franconia Park received a Fairfax County Land Conservation Award.

Blazing a Trail

The Washington & Old Dominion Regional Park is a 45-mile paved pedestrian, bicycling and equestrian trail built on a former railroad bed that links urban, suburban and rural areas of Northern Virginia to Washington, D.C. Under the guidance of the Northern Virginia Regional Park Authority, B&N designed the trail which included retrofitting more than 20 bridges and stone arches. Ongoing work includes bridge inspection, connector trail design and technical review of adjacent planned development that could impact the trail.

Growing Green Space

In Montgomery County, Maryland, B&N designed a 200-acre expansion of Ovid Hazen Wells Park that features ball fields, an inline skating facility, hiking trails, a playground, picnic shelters and parking areas. B&N partnered with LSG Landscape Architecture to complete the park expansion for The Maryland-National Capital Park and Planning Commission.

B&N's site development services for parks include public involvement, civil and structural engineering, geotechnical services, environmental engineering, surveying, construction testing and inspection.

Pictured Above: This playground, designed by B&N, is a new feature at Ovid Hazen Wells Park.

Pictured Below: B&N provided civil engineering services for this Fairfax County trail.

Pictured Below: Soccer players enjoy one of the new synthetic turf fields in Fairfax County.

Renewal Studio

Sustainable Urban Development

Transforming Liabilities into Assets

For many years, B&N has successfully led brownfield assessment and cleanup projects to prepare properties for reuse. The firm recently launched a new business initiative – the Renewal Studio for Sustainable Urban Development – to provide turnkey redevelopment services for environmentally impacted and underutilized properties.

Using a studio approach that encourages creativity and the art of possibility, B&N works closely with clients and partners to plan, design and implement projects that rationalize infrastructure and revitalize communities.

The Renewal Studio's urban reinvestment strategies include:

- Urban Planning and Visioning
- Economic Development
- Brownfield Assessment and Remediation
- LEED® Certified Site and Architectural Design
- Infrastructure Design
- Project Development and Finance

To date, B&N has participated in many projects that achieve sustainable and effective redevelopment of contaminated and historic properties.

Pictured Above: The Fort Piqua Hotel in Piqua, Ohio.

Photo courtesy of City of Piqua

In Columbus, Ohio, B&N helped transform the Whittier Peninsula brownfield site into an urban oasis with a park, wetlands and the Grange Insurance Audubon Center. B&N performed Phase I and Phase II Environmental Site Assessments, Human Health Risk Assessments and supervised remedial activities resulting in a Covenant Not to Sue from the Ohio Environmental Protection Agency. Additional services included site engineering, site development, environmental and utility permitting and sustainable, urban design elements for the LEED® Gold Certified Audubon Center.

Pictured Below: A view of the Columbus skyline from one of Whittier Peninsula's new wetland areas.

The historic Fort Piqua Hotel in Piqua, Ohio was converted into a public library and conference center following environmental assessments, a remedial action plan and Clean Ohio Revitalization Fund grant assistance provided by B&N. The project received a Covenant Not to Sue from the Ohio Environmental Protection Agency and was named "2010 Best Downtown Success Story" by the Ohio Department of Development.

For more information on the Renewal Studio, please contact **Bruce Mansfield, AICP** (bruce.mansfield@burgessniple.com) or **Tom Mignery, CPG, CP** (tom.mignery@burgessniple.com).

Projects TAKE ROOT

Along waterways and roadways, at parks and plants, across the country, B&N projects are taking root.

The Parklands of Floyds Fork

In Louisville, Kentucky, B&N is performing civil engineering services for one of the largest metropolitan parks projects in the nation – The Parklands of Floyds Fork. When complete, The Parklands will be comprised of four major parks, an 18-mile section of the citywide paved trail called the Louisville Loop, scenic park drives and 100 miles of new hiking, biking and equestrian trails within the 4,000 plus acre park.

Working as a subconsultant to landscape architecture firm Wallace Roberts & Todd, B&N is providing hydraulic modeling for seven bridges, topographic surveying, construction administration services, design of park roads, design of the 18-mile Louisville Loop and park site work including layout, grading, drainage and utilities. Design work on the roads and trails within the first park is complete and construction is underway. B&N also provided site design, surveying and construction administration services for a playground and splash play area that opened in July 2011.

Hap Cremean Water Treatment Plant

B&N is leading a team with Montgomery Watson Harza for the design of improvements at the City of Columbus, Ohio's largest water treatment facility – the Hap Cremean Water Treatment Plant. The improvements are based on the results of a two-year study B&N conducted to evaluate treatment methods. Intermediate ozonation with biologically active filtration (BAF) was chosen as the preferred treatment method because it provides the necessary level of treatment with the lowest capital investment and operating costs. Detailed design is scheduled for completion in early 2012 with construction expected through early 2015.

B&N also conducted a full-scale demonstration study to increase the plant's Ohio EPA approved capacity from 100 mgd to 125 mgd, which was approved. This represents 25 mgd of additional capacity without requiring additional capital improvements.

Philippi Wastewater System

B&N recently completed design services for two City of Philippi, West Virginia wastewater treatment facilities.

Improvements to the City's primary 1.5 mgd plant include: expanding the preliminary treatment system, a new solids handling building, rehabilitating the secondary clarifiers, a new sludge pumping station, a new plant lift station, replacing the UV disinfection system and effluent meter, new controls to automate return and waste sludge systems and converting the sludge decant tank to an aerated sludge holding tank. These improvements will optimize operations performance and increase efficiency.

The second facility is a 25,000 gallon per day package treatment plant that serves the Tygart Glen subdivision. B&N designed a replacement for this facility following an evaluation of the existing plant components.

Construction is slated to begin in 2012.

State Route 100/Moody Boulevard

Rehabilitation is underway on SR 100/Moody Boulevard in Flagler County, Florida. Under a contract with the Florida Department of Transportation, B&N is providing roadway design services to restore a three-mile section of four-lane rural divided highway on SR 100/Moody Boulevard east of I-95.

Project components include milling and resurfacing, as well as pedestrian and bicycle improvements, utility coordination, drainage and permitting. B&N team members will work closely with key stakeholders in Flagler County and the cities of Flagler Beach and Palm Coast. Design work began in March 2011 and is set for completion in October 2012.

Wastewater Flow Meter Rehabilitation

In Texas, B&N is working with the Trinity River Authority (TRA) to provide detailed design for the rehabilitation of 33 wastewater flow meter stations in Tarrant and Dallas counties. The stations are used by TRA to track the quantity of raw sewage treated for municipalities.

B&N is designing structural station components, telemetry systems, station security measures and all-weather access roads to the site. B&N also performed in-depth hydraulic and structural analyses of the stations and assessed the existing digital monitoring equipment during the evaluation phase of the project.

Detailed design is ongoing and scheduled for completion in December 2011. B&N will provide services during construction, which is set for 2012.

Milton-Madison Bridge

The design/build team of Burgess & Niple, bridge engineering firm Buckland & Taylor Ltd. (B&T) and Walsh Construction Company (prime), was awarded the contract for the replacement of the Milton-Madison Bridge over the Ohio River.

Pictured Above: The existing Milton-Madison Bridge.

The Milton-Madison Bridge is the only crossing on a 74-mile stretch of the Ohio River. Bid documents indicated that the existing bridge would need to close for 365 days to accommodate construction and that a ferry service would need to be provided.

The Walsh/B&N/B&T team proposed a solution that cuts the bridge closure to just two five-day periods, eliminating the need for the costly ferry service. The solution involves building the new bridge truss superstructure downstream of the existing bridge on temporary piers, allowing the existing bridge to be used until the new bridge is ready to be slid into place and the existing truss superstructure removed.

B&N is managing the design portion of the project. The new bridge is scheduled to open in September 2012. This $103 million bridge replacement project is being managed by the Indiana Department of Transportation.

On-Call Transportation Planning and Roadway Design

B&N recently was selected for a new two-year, on-call contract to provide transportation planning and design services for the Maricopa Association of Governments (MAG). Potential tasks include performing alternatives analysis for interchange designs, analyzing traffic modeling operations and facilitating public involvement efforts.

B&N also has been selected by the City of Glendale, Arizona to provide on-call roadway design consulting services. Potential tasks include the design of street and roadway improvements, median work and traffic signal and roadway signage design under a two-year term.

B&N Bulletin Board

Award-Winning Work

Design Expedited
A West Virginia Department of Transportation (WVDOT) Engineering Excellence Award was presented to B&N for the emergency replacement of Fisher's Chapel Bridge in Jackson County, West Virginia. B&N expedited delivery of design plans for the 250-foot-long, steel rolled beam bridge within six weeks. The design saved time and project costs with the use of shortened end spans. Because the shortened end span piers were constructed outside of the existing piers, costs and time spent during demolition were reduced. This project was recognized in the Small Bridge Category.

Pictured Above: From left-WVDOT Commissioner Paul Mattox with Rodney Holbert (B&N), Matt Lewellyn (B&N) and WVDOT Director of Engineering Greg Bailey at the award ceremony.

Minimizing Impact
The Fairfax County (VA) Department of Public Works and Environmental Services recently presented B&N with Land Conservation and Tree Preservation awards for the Aerospace Corporation at Westfields site plan in Northern Virginia. The project was recognized in the Erosion and Sediment Control Category as the top Large Commercial project and also was named the Best Protected Environmentally Sensitive Site. Additionally, the project won two Tree Preservation awards. As the project's surveyors and site civil engineers, the site plan developed by B&N minimized overall environmental impact at the site.

Multimodal Modernization
The Richland Avenue Corridor Improvement Project in Athens, Ohio received the 2010 Innovative Transportation Solutions Award from the Women's Transportation Seminar (WTS) Columbus Chapter. The annual award recognizes the creative work of an outstanding and innovative transportation project or service that improves the quality of life for its users and the community. Aimed at improving safety, mobility and corridor aesthetics for multimodal travelers, B&N's design incorporated a roundabout, bridge improvements and pedestrian and bicycle tunnels. This project is featured on the cover of this issue of *Facets.*

Pictured Below: An aerial view of the Richland Avenue Corridor Improvement Project.

Driving Change
The American Society of Highway Engineers (ASHE) Central Ohio Chapter recognized the SR 161-Post Road/Industrial Parkway Project in Dublin, Ohio with the 2010 Outstanding Highway Industry Project Award. The design solution provided by B&N improved safety, traffic flow and truck access to area businesses in response to rapid traffic growth and planned development. The design included roadway expansion, roadway relocation, two roundabout intersections and complex utility relocation.

Pictured Above: The new SR 161-Post Road/Industrial Parkway roundabout.

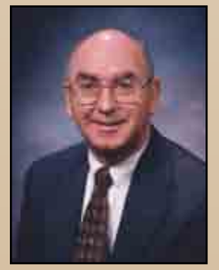
Appointments

Stephen McDevitt, PE
was recently appointed Director of B&N's Louisville, Kentucky office. Steve has led the development of infrastructure projects throughout the state of Kentucky and has more than 25 years of professional experience. He previously served as a senior project manager and team supervisor in the Louisville office.

Jeff Sharon, PE
recently joined B&N as Utility Infrastructure Leader working out of the Columbus, Ohio office. With more than 30 years of planning and design expertise, Jeff will help guide the firm's growth in the water/wastewater market.

Executive Retirements

Best wishes to the following B&N executives who recently retired:



Jim Edwards, PE
Owner
38 Years of Service
Columbus, Ohio

Dave Kalina, PE
Owner
24 Years of Service
Painesville, Ohio

Janet Skees, PE
Louisville Office Director
25 Combined Years of Service with B&N and Skees Engineering (acquired in 2007)
Louisville, Kentucky

Rankings on the Rise

For the fourth consecutive year, B&N has been named to *Roads and Bridges* magazine's list of 65 top design firms preferred by Department of Transportation (DOT) subscribers. B&N was ranked 18th in Bridge Design and 21st in Road and Highway Design.

B&N was ranked 16th on the 2010 list of the Top 50 Trenchless Design Firms in North America by *Trenchless Technology* magazine. The listing is based on a firm's annual billings, trenchless billings, the number of trenchless professionals and total projects completed. B&N reported approximately $10 million in trenchless billings in 2009, about 10 percent of the firm's total billings for the year.

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Naval Facility Noted as *"Hub for Innovation"*

Using cutting-edge modeling and simulation technology, the Navy Warfare Development Command (NWDC) analyzes military operations to enhance the nation's maritime capabilities. B&N designed a new headquarters facility in Norfolk, Virginia to support this mission critical work.

Pictured Above: Officials celebrate the NWDC headquarters facility opening.

"It's not only a state-of-the-art building, it is a hub for innovation, concept generation and development, lessons learned, modeling and simulation," noted United States Navy Vice Admiral Peter H. Daly during the ribbon cutting ceremony.

The new facility supports the Command's extensive technology needs, exceeds Anti-Terrorism Force Protection (ATFB) requirements and integrates technology and functionality on the interior. Design features include:

- An 85,000-square-foot headquarters building with a 10,000-square-foot Modeling and Simulation Laboratory
- LEED® Certified standards with sustainable components such as low flow plumbing fixtures, a white roof, native landscaping and stormwater management measures
- Mechanical and electrical systems designed to accommodate diverse loads

B&N worked with project lead Tetra Tech Tesoro on the new NWDC headquarters. Approximately 340 personnel work in the building, which replaces the Command's former headquarters facility in Newport, Rhode Island.