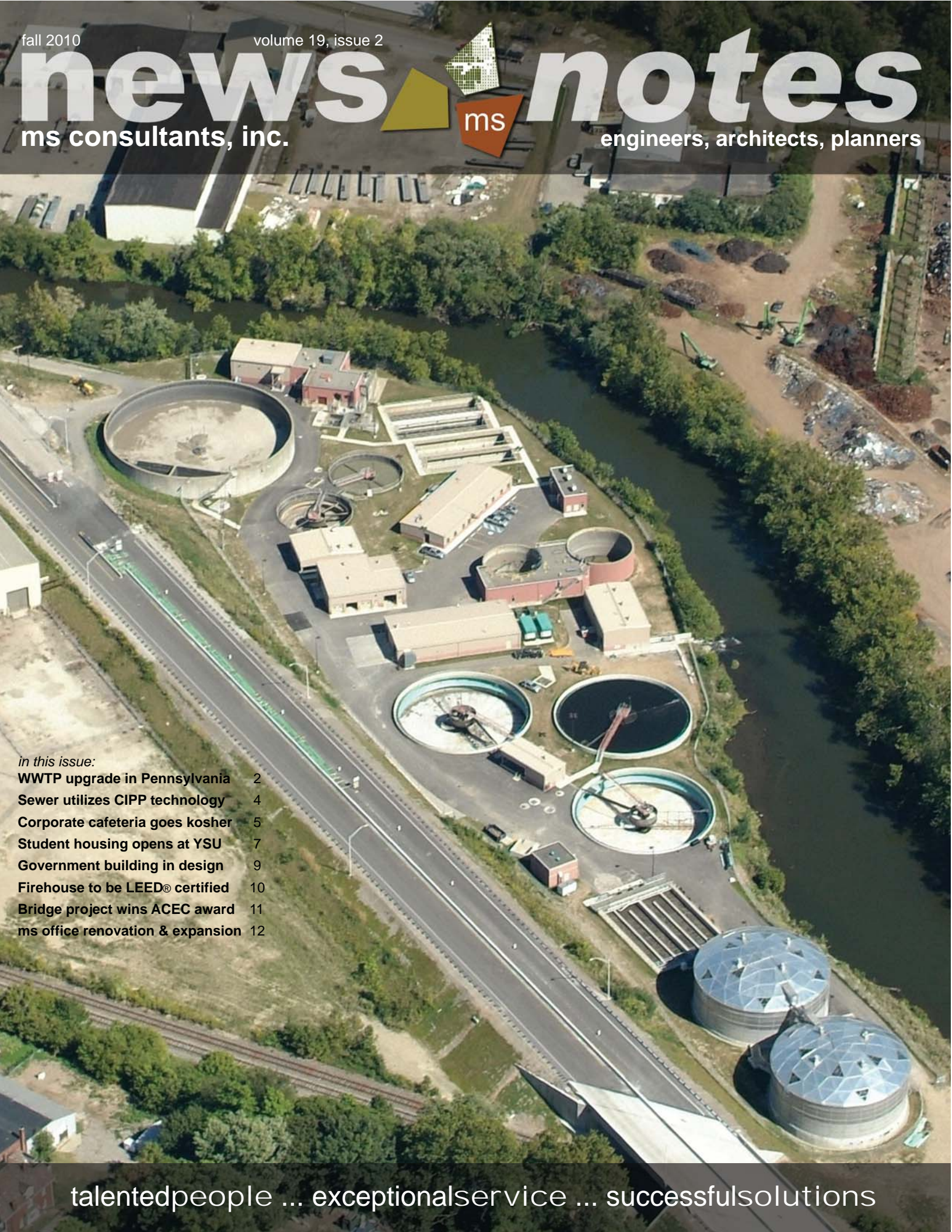


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news notes

ms consultants, inc. engineers, architects, planners



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wastewater treatment plant upgraded to meet federal requirements

The City of Sharon Sanitary Authority's Water Pollution Control Facility (WPCF) was expanded and improved to enable the Authority to meet more stringent National Pollution Discharge Elimination System (NPDES) effluent limitation requirements. The facility offers operating staff the flexibility to handle fluctuating organic loads as well as high hydraulic excursions during extraordinary weather events.

The WPCF serves the residents of the City of Sharon and the Upper Shenango Valley Water Pollution Control Authority (USVWPCA) in Pennsylvania, and a small portion of Brookfield Township, in Trumbull County, Ohio. The USVWPCA consists of the Borough of Sharpsville, the City of Hermitage, and the west side of South Pymatuning Township. The WPCF is located on a triangular shaped 7.5-acre tract of land that is bounded by US Route 62 on the north, Norfolk Southern Railroad on the west, and the Shenango River on the southeast.

Improvements to the WPCF resulted from a Consent Order and Agreement (COA) entered in November 2002 by and between the PADEP, the City of Sharon, and the USVWPCA. The project eliminated hydraulic overloads in the collection system (Connelly Boulevard siphon) and hydraulic and organic overloads of the treatment facility that caused violations of the NPDES permit.

Construction of the facilities began in October 2007 and continued through early 2010.

How does the plant work?

Flow from the City of Sharon collection system enters an influent pump station that discharges to the influent building where the flow combines with the flow from the USVWPCA Orangeville Pump Station. Screening and grit removal is provided in the influent building as well as flow monitoring for compliance and billing purposes.

Flows are channeled through the division well into the primary clarifiers. During high flow events the flow is diverted to the equalization (EQ) basin that functions as a primary clarifier/EQ basin. Primary clarifier effluent is discharged to a primary effluent pump station for conveyance to two trickling filters. The primary effluent pump station also houses primary sludge pumps that discharge to four aerated sludge storage tanks.

Discharge from the trickling filters is channeled through two aeration/solids contact tanks. These tanks allow for:

- 1) recirculation back to the trickling filters through the primary effluent pump station during low flow periods, and
- 2) introduction of return activated sludge from the secondary clarifiers.



Effluent from the aeration/solids contact tanks is channeled to three secondary clarifiers. Secondary sludge removal is handled by a secondary sludge pump station capable of pumping return activated sludge to the aeration/ solids contact tanks and waste activated sludge to the aerated sludge holding tanks. Effluent from the secondary clarifiers enters an ultraviolet (UV) disinfection basin where non-potable water is also withdrawn for plant operations. Effluent from the UV basin enters a Parshall flume for flow metering prior to cascade aeration and final discharge into the Shenango River.

A thickening centrifuge and a dewatering centrifuge perform solids handling duties. The thickening centrifuge is fed from the four aerated sludge storage tanks and stored in two aerated sludge storage tanks prior to dewatering for eventual disposal.

Innovative use of alternative technology

The trickling filter/solids contact process was chosen to meet anticipated future permit limits and provide for flexible operation at lower capital and operating costs. In addition, the trickling filter process permits the facility to adequately address higher organic loading excursions emanating from an industrial source while consistently meeting effluent limits and minimizing upsets to plant processes.

Dual use of the EQ basin as a primary clarifier/EQ basin allowed for the treatment facility to meet its requirements for average daily and peak hourly flows, without incurring additional costs to expand primary clarification on a limited site footprint.

Additional improvements to the plant also include administrative offices, laboratory facilities and a garage/maintenance facility.



The sludge thickening centrifuge

Three generators provide standby emergency power throughout the treatment facility. Based on full load operations, emergency power can be provided for a minimum of 16 hours prior to refueling the diesel-fired engines.

The improvements were funded by Guaranteed Sewer Revenue Bonds in the amount of \$26,585,000, and a PENNVEST low interest loan in the amount of \$15 million. The project was also financed, in part, by a \$9 million H2O PA grant from the Commonwealth of Pennsylvania, Commonwealth Financing Authority. And by using existing plant infrastructure as part of the upgraded design, approximately \$2.5 million was saved in project costs.

Effective in January 2009, the City of Sharon Sanitary Authority assumed all assets and operational control of the wastewater system from the City of Sharon. The Authority continues to enhance the operations to ensure the long-term viability and cost effectiveness of its system.

Please contact John Pierko, P.E. at 330.744.5321 for more information about this and other environmental projects. ■



One of the secondary clarifiers

urban sewer rehabilitation project utilizes CIPP technology



The City of Indianapolis is undertaking a trenchless repair to a sewer that flows through the south side of downtown. The work is being done in an area located adjacent to Lucas Oil Stadium, with the sewer line running primarily below Merrill Street.

The project includes a 60-mgd bypass system that extends over 3,400 feet, sewer cleaning and lining of approximately 2,900 feet of 60-66" concrete sewer using CIPP technology.

A cured-in-place pipe (CIPP) is one of several trenchless rehabilitation methods used to repair existing pipelines. CIPP is a jointless, seamless, pipe-within-a-pipe with the capacity to rehabilitate pipes of varying sizes and lengths.

During the repair process, a resin-saturated, polyester tube is inserted or pulled into the existing or damaged pipe, as the photos on this page illustrate.

Little to no digging is involved in this trenchless process, making for a more environmentally friendly method than traditional "dig and replace" pipe repair methods. Next, hot water or steam is used to cure the resin and form a tight-fitting, jointless and corrosion-resistant replacement pipe.

ms consultants is performing construction inspection and construction administration for the Indianapolis Department of Public Works. Not only is the inspection being performed as the pipe liner is installed, the pipe will also be inspected internally by closed-circuit television.

ms consultants is expert at trenchless rehabilitation, and has used CIPP technology on various projects totalling more than 50,000 feet of sewer to date.

For more information about this or other ongoing projects in Indiana, please contact Jim Trachtman at 317.566.0050 or jtractman@msconsultants.com. ■





Oversized structural concrete columns create the rhythm of the space and divide the dining area into two spaces, an intimate side with a big screen TV viewing area and social side with banquet style seating. The organic shape of the walking path and reflected drop ceiling is juxtaposed with the rigid layout of the column spacing throughout the space.

an unused basement gets new life as a corporate cafeteria

A 10,000-square-foot cafeteria was designed within a portion of the existing basement space at the Schottenstein Stores Corporation (SSC) headquarters. This space was once used for government payroll check printing, but was vacated and left unused until SSC relocated their office headquarters in 2009. The cafeteria serves the 300 employees of Schottenstein Stores as well as tenants from the adjacent lease spaces for breakfast, lunch, and special catering services for corporate entertainment functions.

This space was designed at the client's request to be a full-service kosher cafeteria, meeting strict dietary and religious standards. The kitchen contains two separate fully equipped kitchens that are physically divided – one kitchen each for meat and dairy – for preparations and serving. A certified kosher kitchen in an office setting is a unique feature not often found in corporate America.

ms consultants provided architectural and engineering services for design development, construction documents and construction support services. The existing basement space includes natural light along the south side of the space, existing oversized concrete structural columns and beams, structural concrete floor slab and an utility shaft. These elements provided unique design parameters to be incorporated with specific program elements requested by the client, such as the kosher serving line, salad bar, drink stations, employee kitchenette, pizza oven and big screen TV viewing area.



A hot stone gas fired pizza oven is built into the kitchen space. Freshly baked artisan pizzas are offered daily for employees and guests.

The architectural design reached to each stage of construction to include a space layout, dual kosher kitchen layout, material selections and furniture selections. The goal of the client was to create a bright and colorful cafeteria space to be enjoyed by the employees and clients alike.

Complex engineering design and coordination was needed to make a successful project given the client criteria and the existing conditions and logistics of a corporate cafeteria in a basement location. Staged construction plans were provided to incorporate existing and new utilities into the space, including a complex trenching plan of the existing structural floor slab to integrate the sanitary and water lines into and out of the space. Detailed air balancing calculations were completed to ensure that a comfortable indoor environment was provided for both the guests and the employees of the kitchen.

Interior lighting photometrics were studied to integrate natural daylight into the space, as well as accent lighting around the cafeteria. The photometric plans and studies allowed the designers and client to understand the use and impact of lighting and effects for the proposed design as perceived by the human eye.

For more information about this project, please contact Joel Hostetler at 614.898.7100 or jhostetler@msconsultants.com. ■



As shown in these two photos, the existing windows were incorporated into the renovated space to take advantage of natural light.



The serving line is divided into two spaces - dairy and meat - to reflect the Kosher kitchen elements.

new student housing project follows national trend



If you attended college prior to 1990 and lived on campus, chances are you lived in a “dormitory” style residence hall with double-loaded corridors, double-occupancy rooms and the furniture in your room most likely anchored to the floor and/or walls. Worse yet, you probably shared a “group” bathroom with as many as 30 to 40 other students on your floor.

Since you weren’t allowed to cook in your room, at mealtimes you had to trudge over to the central dining hall no matter the weather, and you probably had to eat dinner by 6:30 or 7:00 pm before the kitchen closed for the night. If you craved a meal or snack later in the evening you were on your own. Thousands of pizza shops nationwide can credit their success back then to closed dining halls.

Millions of baby boomers can close their eyes and remember those days vividly, and they aren’t necessarily bad memories - that’s just the way dorm life was in those days.

Fast forward to 2010 and life at campus is much different. Students now live in apartment “suites” that include private bedrooms and baths, a kitchen, living room, cable television and computer hookups. Many also include other amenities such as workout rooms, swimming pools, covered parking and house-keeping services.



And because state budgets are being stretched to the limit, university administrators and trustees are adjusting the priorities of their capital budgets - placing more emphasis on education and research facilities than on new dormitories. Many universities and colleges have no plans to build any new dorms in the future.

As a result, the private sector views the demand for new student housing as a development opportunity. Private developers have been successfully building and managing off-campus student apartments for more than 10 years. And the trend is that more and more of these projects are coming online at campuses all across the country.

One such example is The Flats at Wick, a new student housing complex adjacent to Youngstown State University in Ohio.

ms consultants has been working with US Campus Communities on the project, the company developing the site located directly across the street from two existing residence halls.

With the first building opened for the fall semester of 2010,

plans are moving forward for the next phase of what will ultimately be a 216-unit, 450-bed student housing complex when completed.

Each building includes one-, two-, three- and four-bedroom units, and each floor plan includes separate baths, a kitchen, common living areas, ample storage and walk-in closets.

On-site parking is provided to each residence, and the building layouts include laundry rooms on each floor, study rooms, a computer area/recreation center, and a lounge and large lobby for visitors. Security is also provided for the entire complex.

As the project continues, ms consultants is providing comprehensive architecture and engineering design services, including architecture, mechanical, electrical, plumbing, life safety systems design, landscape architecture and site civil engineering.

Please contact Anthony Hayek, AIA, NCARB, for more information about this or other ongoing education projects. He can be reached at 330.744.5321 or khayek@msconsultants.com. ■



county government building underway



A full-service ms consultants team, led by the architecture sector, is designing a new two-story steel frame and masonry veneer office facility of approximately 76,000 square feet that will consolidate Columbiana County offices, streamlining many county operations and optimizing the interaction between citizens and the county agencies.

County departments to be housed in the Columbiana County Government Services Building include the Columbiana County Department of Job and Family Services, the County Veterans Service Office, the Mahoning-Columbiana Training Association and the Columbiana County Board of Elections.

ms consultants is providing complete architectural and engineering services, and has already completed programming/space planning, schematic design and design development phases of the project.

The traditional design is meant to relate to the historic architectural character of the City of Lisbon and the surrounding Columbiana County community. The \$11.8 million project includes new furnishings and moveable file storage systems that ms will assist the county in choosing.

The scope of services includes site selection, programming, mechanical and electrical engineering, building design, structural design, interior office design, construction administration and bidding assistance.

Prior to being selected for design services, ms worked with the Columbiana County commissioners in conducting detailed site analyses of six identified sites and produced a report wherein the sites' features, strengths and weaknesses were compared. A final site selection recommendation was then made. The commission

endorsed the recommended site near the intersection of State Route 45, Saltwell Road/Township Highway 867 and Dickey Drive.

“We did a very thorough programming analysis with all the departments, and especially with the Board of Elections,” according to Project Architect Summer Barker, AIA, LEED® AP. “Our programming research included a visit to the Delaware County Board of Elections office, where Columbiana County officials saw some features they hoped to integrate in their new facility,” Ms. Barker said. Those included mobile furnishings for varying work tasks, specialized file and storage units and some of the room/space sizes and adjacencies. Another feature integrated in Columbiana County’s building observed at Delaware County’s facility was the integration of a community room, where the public and media can observe officials involved in tallying votes at the conclusion of elections, she said.

The structure is being designed to integrate the latest innovations in energy efficient mechanical and electrical design, and a geothermal heating and cooling system. The majority of interior offices will employ open-office planning to provide flexibility for future agency needs.

Sustainable design is being incorporated into the selection of materials and construction methods, including specifying interior finishes with low VOC content and low-flow plumbing fixtures to reduce water consumption.

Please contact Anthony Hayek, AIA, NCARB, at 330.744.5321 or khayek@msconsultants for more information about this project. ■

design team expects Virginia firehouse project to be LEED® certified when completed

In need of an updated firehouse, Henrico County, Virginia, turned to the team of RP Hughes Architects and ms consultants to successfully complete the design - one that should result in the firehouse becoming one of a limited number of LEED® certified facilities in the Richmond metropolitan area.

Intended to be a U.S. Green Building Council LEED® Silver certified building, the design team carefully considered sustainability during each phase and aspect of the project design. Projects must be awarded a certain number of points out of a 100-point scale to obtain LEED® certification. The points are awarded based on a variety of criteria:

- sustainability of its site;
- the building's water efficiency and energy usage;
- materials and resources used to construct the building;
- indoor environmental quality; and
- innovation of the design.

Based on the number of points a project receives, a building can be certified at silver, gold or platinum recognition levels.

The team prepared LEED® documentation for certification. As part of this service, ms documented end-usage results of implemented lighting controls, light pollution reduction, landscaping utilizing water efficient and indigenous plants, and water-conserving fixtures.

The U.S. Green Building Council requires energy modeling to assess the baseline energy use of a building and quantify savings attributed to the final design. ms provided building energy modeling and rainwater harvesting systems that were incorporated into the final design to reduce water consumption.

One of the more challenging aspects of the project was its site constraints. Designed as a replacement project, the new 11,300-square-foot fire station facility will be constructed while the existing station remains operational. The new project site is located across the street from the existing structure and contains two water towers that posed various design challenges to the project team, as adjustments had to be made to avoid the existing water tower easements.

During the design phase, ms consultants' primary role was to provide mechanical, electrical, utility and plumbing engineering expertise. Additionally, the firm provided full landscape architecture design for the site.

ms consultants has received preliminary documentation from the U.S. Green Building Council indicating anticipated LEED® certification approval once construction is complete in 2011.

For more information, please contact Brian Crider, P.E., R.L.A., at 614.898.7100 or bcrider@msconsultants.com. ■



bridge replacement project wins ACEC Silver Award

In August 2008, officials of the city of South Charleston, West Virginia hired ms consultants to develop a solution to a problem first outlined by ms bridge inspectors a year earlier – the rapid deterioration of the 50-year-old Central Avenue Bridge carrying vehicle and pedestrian traffic over the CSX railroad tracks and First Avenue in South Charleston.

The bridge is an important crossing for school buses and fire trucks, linking the neighborhoods on the north and south sides of Interstate 64 and the railroad tracks. As such, it had been routinely inspected by the West Virginia Department of Transportation. After an inspection in June 2007 when inspectors noted chunks of concrete fallen from the bridge, city officials closed it to traffic. City officials then called in ms consultants for a thorough inspection. After temporary repairs developed by ms were made, the bridge was reopened to vehicles with a three-ton load limit.

For permanent repairs, ms performed a detailed inspection to determine if the bridge’s abutments and concrete piers could be salvaged, and prepared construction plans for replacement of the bridge deck, steel beams and bearings, and the rehabilitation of abutments and piers.

The project also required coordination with utility companies for relocation of utilities on or near the bridge, and coordination with CSX railroad.

At the request of city officials, ms also developed aesthetic treatments for portions of the structure, including decorative lighting and fencing for what is considered the signature bridge for South Charleston.

The completed project is a two-lane street and bridge that connects 2nd Avenue on the north to the Kanawha Turnpike on the south, crossing over 1st Avenue and CSX railroad tracks before passing under Interstate 64.

The project consisted of complete superstructure replacement and substructure repair. Construction was completed a week early and slightly under the budget of \$1,755,200.

Services provided by ms included structural inspection, struc-

tural engineering, bridge design, roadway design, traffic engineering, lighting design and surveying.

In October, the project received a Silver Award from the American Council of Engineering Companies (ACEC) in West Virginia as part of their annual Engineering Excellence Awards.

For more information about this or other projects in West Virginia, please contact Muhammad Riaz, P.E., at 304.346.1211 or mriaz@msconsultants.com. ■



Photograph courtesy of the City of South Charleston



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Youngstown office being refurbished and expanded



Work progresses on the Youngstown office expansion.

ms consultants is in the process of renovating and expanding its office building in downtown Youngstown, a further commitment to the northeast Ohio community that the firm has been a part of since 1963.

The company has been in the building at 333 East Federal Street for almost a quarter century, originally moving in during September 1986. Prior to that, ms was located downtown in the City Center One building.

The expansion project is adding 6,800 square feet to the existing 20,000-square-foot building.

ms is moving its environmental group into the building when construction is complete. Their offices are currently in the Ohio Edison Penn Power Credit Union building, which is located next door. Employees currently in the ms building have been moving into renovated spaces upon completion.

Anthony Hayek, AIA, NCARB, led the in-house architectural design team for the project, with ms also providing all M/E/P, structural and site/civil engineering services.

The project is on schedule to be completed by the end of the year. An update and photos will follow in the Spring 2011 issue of NewsNotes. Please call 330.744.5321 for more information. ■