Spring 2009

SPALDING DEDECKER ASSOCIATES, INC.
Engineering Consultants | Infrastructure | Land Development | Surveying

The SDA CONNECTION

Severstal NA Blast Furnace "C" Rebuild

Spalding DeDecker Associates, Inc. (SDA) served as the lead surveyor for Graycor Industrial Constructors, the Construction Manager hired by SeverStal North America (SeverStal NA) and responsible for the Blast Furnace "C" Rebuild design-build project.

SeverStal was formerly part of Ford's River Rouge automobile plant. In 1982, Ford sought to form a separate entity encompassing the steel-making operations called Rouge Steel. Rouge Steel was sold in 1989, later struggled financially, entered bankruptcy, and was eventually purchased by SeverStal NA around 2004.

SeverStal NA is revitalizing this facility and investing more than $1 billion in upgrades to reduce cost and emissions and increase efficiency, environmental compliance, quality, and safety.

The steel-making operations at the facility include three blast furnaces. Blast furnace "A" was constructed in 1920 and is not currently in use. Blast furnace "B" was added in 1922. Blast furnace "C" was later constructed in 1948.

The Blast Furnace "C" Rebuild project included removal of the existing furnace and replacement from the ground-up with a new furnace and related appurtenances; replacement of the main conveyor and conveyor tube; the addition of a new casthouse, bag-house, pumphouse, cold blast building, PCI building, control room, and office; reconstruction of the existing stoves; re-routing of rail lines; and re-routing of the various elevated piping connecting the various elements.

Dozens of onlookers watch as the pre-assembled 1,500-ton casthouse is moved on four haulers to its permanent location.

Inside this issue

Industry TIPS

State and local agencies are taking advantage of the influx of American Reinvestment and Recovery Act (ARRA) funding to reconstruct or rehabilitate their infrastructure assets. On March 31, 2009, Michigan legislation was enacted that allows the spending of a total of $873 million for Michigan transportation, with $635.4 million directed to the state trunkline (US, I, and M routes) fund, $211.8 million directed to programs administered by local jurisdictions, and $25.8 million directed to rural and intercity bus capital projects.

But there is no free lunch. Agencies must comply with numerous requirements associated with the funding. SDA has many years of experience working on federal aid projects and is ready to assist our clients with whatever ARRA project needs they may have. For example, by following a Quality Based Selection for any engineering services associated with a potential ARRA funded project, an agency will preserve its ability to capture ARRA funding for eligible engineering services. Furthermore, SDA understands the monthly reporting requirements of Sections 902 and 1515 of the ARRA and can assist an agency in complying with those requirements.

Severstal cont'd.

One of the most demanding aspects of the project was meeting the Owner's schedule. The Contractor had 100 days to shut down and demolish the existing blast furnace, rebuild the new furnace in its place, and get the new furnace up and running. This scheduled 100-day shutdown was completed in 98 days, consuming one million man-hours during that time and involving 1,300 craft workers. This ambitious undertaking required more than six months of preplanning to find innovative ways to approach the project, including preassembling the casthouse in a temporary location and moving the building onto its foundation after the crane had been moved from that area.

SDA provided layout for every aspect of this project and verified that the project's exacting tolerances were met. The survey crews kept up with around-the-clock work by the trades, with operations on several different areas of the site occurring simultaneously. SDA provided 24-hour coverage, 7 days per week for extended periods of time.

Nearly 200' above the ground, Crew Chief Mark Andrews carefully checks the blast furnace centerline alignment

SDA's responsibilities included establishing and preserving site control; providing layout and as-built measurements for piles, piers, anchor bolts, and other foundation details; verifying layout performed by carpenters for various building details; performing as-built measurements for various circular and irregular shaped pieces that were later assembled to form the shell for the blast furnace; performing layout on the pieces for a multitude of holes and other fabricating details that were added to the parts on site; marking the centerline and quadrants of the various pieces and providing layout for alignment as these pieces were stacked upon one another; providing layout for the east casthouse and casthouse foundations, as this building was constructed

View of Blast Furnace from above

in a temporary location and then moved onto the foundation; providing layout for conveyors, conveyor tube, and other piping leading to the blast furnace; providing precise horizontal and vertical layout for the reconstruction of the stoves; providing as-built measurements and alignment for new crane rails and adjustment of existing crane rails; and providing layout for the tap gun, mud drill, and other mechanical features that needed to be precisely aligned with the center of the blast furnace.

This project received the *2009 Engineering / Surveying Excellence Award of Merit for Surveying* from the American Council of Engineering Companies of Michigan and the Michigan Society of Professional Engineers.

New Projects

- *Accident Fund Insurance Building Survey, Lansing, MI*
- *Waterfront East Development Survey, Detroit, MI*
- *U.S. Steel Water Leak Detection, Ecorse, MI*
- *Sewer System Evaluation Study (SSES), Inkster, MI*
- *MDOT As-Needed Road Design Services, Port Huron, MI*
- *Bridge Inspections, Troy, MI*
- *2009 Pathway Program, West Bloomfield, MI*
- *Construction Engineering As-Needed Services, Novi, MI*
- *Scioto River Riverbank Stabilization, Chillicothe, OH*
- *Call Center Distribution Site Expansion, Round Rock, TX*
- *U of M Player Development Center for Intercollegiate Basketball, Ann Arbor, MI*
- *Huron Valley Schools As-Needed Civil Design, MI*

Community Matters

Each year, SDA employees make a commitment to help those who are less fortunate. Every other Friday is "Jeans Day," and $3 is collected from everyone who elects to wear jeans. This pool of money is then split at the end of the year and donated to several charities. This year, we adopted a Selfridge Family who lost their parents. One of the children who is raising her own child is also raising her seven siblings. We received a Christmas wish list for each child, and SDA employees purchased all of the items on the list. We were also able to purchase many gift cards for groceries and gasoline. Because of the generosity of SDA, this family was able to celebrate Christmas with presents for all. Their Thank You note touched our hearts. "Being part of a military family can be both financially and emotionally stressful. Thanks to your unselfish acts, you have provided more than just gifts for Christmas. You reassured me that there are still good people out there. With heartfelt thanks."

The Cutting-Edge / De-Icing a Bridge

When the Michigan Department of Transportation (MDOT) set out to widen the superstructure of the M-97 (Groesbeck Highway) bridge in Macomb County over the Clinton River (B01 of CS 50031 - JN 77970), they looked not only to make geometric improvements but also to incorporate innovative safety solutions in the design. Spalding DeDecker Associates, Inc. designed the deck replacement, widening, and steel and substructure repairs, and worked closely with MDOT staff to develop an anti-icing system to be installed during the construction of the new deck.

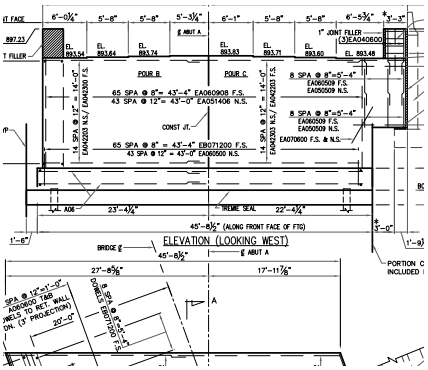
To help prevent icing, a Freeze Free™ Automated Anti-Icing System was incorporated into the bridge deck of the M-97 Bridge. It is a fixed anti-icing system that provides automatic treatment of a bridge, ramp, or other targeted area. The Freeze Free™ System dispenses a liquid de-icing agent by pumping the chemical through a series of high-pressure spray nozzles, individually controlled by a series of solenoid valves. Upon actuation, the System energizes a motorized pump and automatically sequences the solenoid valves to spray the de-icing liquid over the targeted area. A flow sensor and pressure sensor are used for system diagnostics during the spray sequence. Automatic activation of the system is provided by an ice prediction system employed to accurately measure pavement surface conditions. The ice prediction system utilizes a pavement sensor that uses electrical conductivity measurements, surface temperature, and optical measurements to determine the surface temperature, and optical measurements to determine the surface state. From the measured data, water-layer thickness, depression of freezing point, and chemical concentration are calculated to provide ice and frost warning conditions. A computer algorithm uses the measured and calculated data to automatically activate the anti-icing system when icing conditions are predicted. The anti-icing cycle can be initiated by a remote dial-up communication with a computer or manually pushing a button on the controller assembly.

This structure was chosen due to the high incidence of accidents in near freezing temperatures. During the past two winters the system has been in place, the number of accidents has been reduced.

The Freeze Free™ System dispenses a liquid de-icing agent to the surface of the bridge deck to help prevent icing (above)

RWIS and Pumphouse located near the bridge (above)

Piping located along the bridge carries the liquid de-icing agent to the high-pressure spray nozzles (below)



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Dietrich, Bailey and Associates, PC Joins SDA

Spalding DeDecker Associates, Inc. (SDA) acquired Dietrich, Bailey and Associates, PC (DBA) on Wednesday, February 4, 2009.

SDA President, David Lakin, PE said, "The combination of SDA and DBA will make both companies stronger. With approximately 100 employees and a diverse offering of Professional Civil Engineering and Surveying services, SDA adds strength to the DBA client base in both the Municipal and Private sectors. DBA provides SDA with a greater presence in Western Wayne County and also adds Landscape Architecture to our catalog of services."

Dietrich, Bailey and Associates, PC Plymouth Office

DBA will continue to serve their client base out of their Plymouth and Monroe offices, and Michael Bailey, PE will remain in his current capacity as President in charge of DBA. "We are very excited to join forces with a strong company like SDA while providing an ownership stake for me and DBA's employees. This bodes very well for the future of DBA, our clients, and our employees," said Michael Bailey.

SDA OWNER'S MANUAL *cont'd.*
from Summer issue

Last year, we introduced the SDA Owner's Manual. Based upon The Power of Full Engagement, by Jim Loehr and Tony Schwartz, this manual is a reminder to SDA Owners of the culture and conduct that has made SDA a great company and will continue to do so. The manual contains four engagement areas; Emotional, Spiritual, Physical, and Mental.

Excerpt of Mental Engagement: "Owners make decisions to get involved. I will take an active role in my work by getting involved in work-related processes and organizations. My involvement may be as simple as communicating my thoughts or through volunteering for committees and other assignments."

More to come in our next issue. . .