

HRC Continues to Flourish



George E. Hubbell II, P.E.

HRC has indeed been busy this winter. As we approach spring and summer I'd like to report some exciting news.

First, we have formally opened our newest office, located in Grand Rapids, Michigan, headed by Dennis Benoit, P.E. We

have already been successful in securing work in the Cities of Grand Rapids, Muskegon, and Petoskey and Delhi Township. We have also recently been awarded a reconstruction project for MDOT in the City of Kentwood. We are very excited about having a presence on the west side of the state. On February 8, we hosted our formal open house at the new Grand Rapids office. Our office space is impressive. We are located in a refurbished 1939 building that was formerly the home of the American Seating Company (makers of the original Tiger Stadium seats). The renovation transformed this old warehouse into a well lit, efficient, contemporary work space.

Next, we established our newest HRC Group, the Environmental Engineering Department or EED. This group is headed by Jamie Burton, P.E. The EED brings together our former Watershed and Landscape Architects Divisions, along with a staff of technicians and design engineers. We are very excited about this new group and their capabilities. The group's projects vary from wetland mitigation and streambank stabilization to assisting over 60 communities with their Phase I and Phase II storm water compliance. The 13 people in the group have tremendous skills, including landscape architects, professional engineers, and environmental scientists.

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In this Issue...

Going Trenchless (A Primer on Trenchless Technologies)

Delivering Good Projects

Award Winning Projects

City of South Lyon Innovative Wastewater Treatment Plant Improvements
MDEQ Recognizes Plant as "Model Facility"

The City of South Lyon Wastewater Treatment Plant Improvements project earned the prestigious *Honorable Conceptor Award* from the American Council of Engineering Companies/Michigan (ACEC/M), the *2006 Project of the Year Award* in the Environment, \$10 million to \$100 million category from the American Public Works Association Michigan Chapter (APWA/M), and the American Society of Civil Engineers Southeast Michigan Branch (ASCE/M) *Outstanding Civil Engineering Project of the Year Award*.



City of South Lyon Wastewater Treatment Plant

HRC assisted the City in obtaining State Revolving Funds (SRF) for this \$14 million project to increase treatment capacity from 1.5 to 2.5 million gallons per day (MGD). Challenges included restrictive effluent limits, as the plant discharges to a section of the upper Huron River which is very sensitive to phosphorus loadings. The City wanted to maintain the existing footprint requiring retrofit of its current

facilities in lieu of constructing new buildings and tanks. The challenge was to do more with less - to treat more wastewater using the same WWTP area and many of the same buildings and tanks. Some buildings at the WWTP had been constructed as recently as seven to eight years ago, creating a strong incentive to retrofit rather than build new. HRC provided design engineering *(continued on page 2)*

City of Troy Sylvan Glen Golf Course Streambank Stabilization Project
Features Rosgen Stream Classification System & High Tech Hydraulic Modeling

An American Public Works/Michigan Chapter (APWA/M) *2006 Project of the Year Award* in the Environment Less than \$2 Million category, and the American Society of Civil Engineers Southeast Michigan Branch (ASCE/M) *Quality of Life Project of the Year Award* were earned as a result of the innovative approaches to the streambank restoration on the Sylvan Glen Golf Course. Constructed in 1922, the Course is owned by the City of Troy and has experienced severe impacts



Sylvan Glen Golf Course Weir and Streambank Stabilization

from stormwater runoff generated by increased development. These impacts included bank erosion; loss of vegetation within the stream channel; exposed irrigation, utility and drainage infrastructure; increased downstream sedimentation; degraded aquatic habitat; and diminished water quality. More than 55,000 rounds of golf per year are played at Sylvan Glen, almost twice the national course average.

Hydraulic modeling was done to determine optimum drainage channel improvements, furnishing a stream bank erosion inventory to identify sources of sediment inflow and implementation of guidelines for course maintenance using watershed management techniques and Best Management Practices. Hydraulic modeling was high tech in that refined modeling was undertaken to ascertain more precise storm *(continued on page 2)*

South Lyon Wastewater Treatment Plant Improvements

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and construction support for the project, which when completed:

- Utilized enhanced rate clarification technology for phosphorus removal, a first-time application in the State
- Used innovative technology and design techniques to provide flow equalization in the new activated sludge basins - thus greatly reducing the size of subsequent treatment units
- Met the stringent discharge requirements while increasing flow capacity
- Re-equipped existing facilities for new processes, a cost savings for the City
- Was on time and within budget
- Demonstrated superior performance and received positive reviews by MDEQ

The City's water and wastewater superintendent, Mr. Robert Martin, sums up the City's



HRC designed a tertiary treatment system never before used in a wastewater treatment application in Michigan, using Enhanced High Rate Clarifiers, commercially named Actiflo®.

experience by stating "...we are delighted with our new WWTP facility."

The MDEQ report states that "This is a model facility, neat, orderly, appears to be operating well, and to be well operated." ♦

Troy Sylvan Glen Golf Course Streambank Stabilization Project

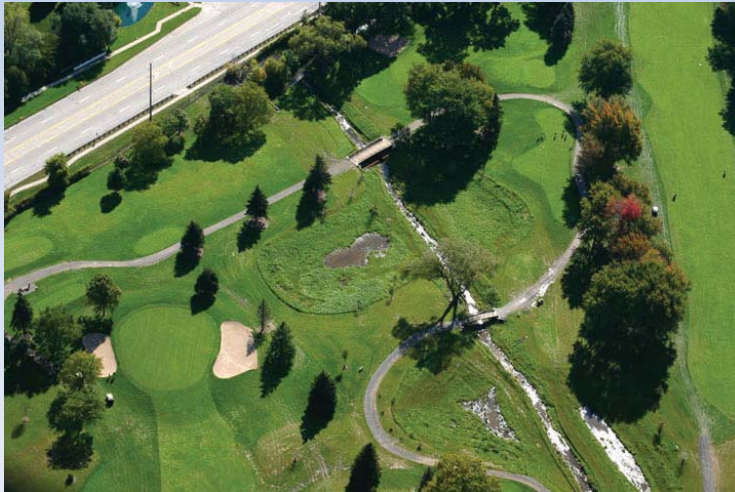
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events to properly size the step weirs and the elevations of the side channel overflows. This was then compared to the state-of-the-art fluvial geomorphology as developed by Rosgen for stream classification, one of the first projects in the Midwest to use this system.

Six weirs provide control for flows in excess of baseline flows. These weirs allow aquatic life to live in and travel along the entire length of the stream. Innovative bio-engineering bank stabilization techniques saved the City 70% in costs

over a traditional approach. 12,000 wetland planting plugs, and more than 250 native trees and shrubs were utilized to provide water quality improvements. These stabilized the re-contoured stream bank, reducing erosion and sedi-

ment and filtering fertilizer and pesticides from the course run-off. Approximately 7 acres of



Sylvan Glen Golf Course Newly Developed Wetland Areas

wetland were added to the course, which had no pre-existing wetland environment. These new wetland areas provide future mitigation or "wetland banking" for other City projects. ♦

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Lastly, I'd like to introduce a new feature article we will include in our newsletters "HRC Through the Years." Having almost 95 years of experience, there is no shortage of history here at HRC. We have found that many people enjoy reading and learning about HRC's rich past, and the impact we have had on south-east Michigan. Our inaugural article was written by our latest partner, Tom Doran. Future articles may talk about a particular project or era, including stories or vintage photographs. Please let me know if you enjoy this new feature, and if you have any particular project or period of time you would like us to highlight.

In closing, I wish you all the very best, and hope you have a wonderful spring and summer. ♦

HRC Innovation Earns Patent

HRC recently received a U.S. patent for a unique tertiary treatment process at the Bay City Wastewater Treatment Plant. The process includes pressure carbon filters which directly filter secondary effluent to remove polychlorinated biphenyl (PCB). The backwash from the filter system can be settled in a separate clarifier to segregate potential PCB solids from the remainder of the plant waste streams. The system saved Bay City over \$5 million by not having to construct a pressure sand prefiltration system which was the prior state-of-the-art process.

The system, which is the first of its kind in the world, could have additional applications for wastewaters which contain other organic contaminants. HRC also has a patent pending for an effluent screening system used in many combined sewer retention treatment basin designs. ♦

HRC Through the Years

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infrastructure for the Willow Run Bomber Plant where 42,000 workers were employed and where each new bomber was produced in less than an hour, the "miracle production story of the war." Mr. Ford was a demanding client at a time when deadlines were met, period; no excuses. We are proud that this spirit has carried over to the present day.

Since its founding, the firm has been the recipient of numerous awards, highlighted by the selection in December, 1999 by the Michigan Section of the American Society of Civil Engineers of HRC's project, the Detroit Wastewater Treatment Plant, as number six on its list of **The Top Ten Michigan Civil Engineering Outstanding Achievements of the Twentieth Century.** ♦

Aging infrastructure is one of the most serious problems facing Michigan. Pipe rehabilitation/improvement techniques can save communities



millions of dollars. Historically, underground utility piping had to be installed by open cut excavation, or jack-and-bore operations. These techniques are disruptive to the environment, vehicular and pedestrian traffic. Construction zones or detour routes affect commerce and are costly from a fiscal, social and environmental perspective. While there is no zero-impact pipe installation method, more and more techniques are being developed to minimize disruption at affordable costs.

An increasing number of projects lend themselves to “trenchless technologies” including:

- Horizontal Directional Drilling
- Pipe Bursting
- Microtunneling
- In-situ lining

Horizontal directional drilling uses a computer guided boring head to open a “lubricated” underground conduit into which a pipe can be pulled. Pipe bursting uses the old pipe itself as a conduit, opening it up with a bursting head and expander to admit the new pipe, often at a larger diameter than the old pipe. Microtunneling involves pushing a pipe into a conduit opened by a remotely controlled boring machine employing a cutting head at the face. In-situ lining is a pipe rehabilitation technique accomplished by inserting a flexible liner within the existing conduit and curing it, thereby sealing areas of deterioration, restoring structural integrity, and preventing leakage or infil-

tration. Each of these technologies, can...

- make the work almost invisible to those above-ground
- minimize traffic disruptions and detour routes
- reduce the installation and rehabilitation time line
- protect environmental features (large trees) and landscaping
- be more cost effective than traditional open cut excavation

We offer these ideas for where these technologies can best be applied...

- Horizontal directional drilling is best suited for pipes that do not have strict line and grade requirements and minimal service leads. It is not well-suited for drilling through hardpan or cobble or multiple set-ups due to the need to change direction.
- Pipe bursting may be used in areas with poor access and where the existing pipe is at the desired line and grade. It is not as well suited for applications where the existing pipe has experienced significant line or grade distortions or where there are many leads needing to be connected.
- Microtunneling is generally used for larger diameter pipes (greater than 36”) where excavation is impractical, and the soil conditions are permissive.
- In-situ lining is often a cost effective way to rehabilitate a pipe, if the conditions are well documented and the pipe is not too deteriorated or distorted. High groundwater is a challenge as it impedes effective curing. A combination of pre-grouting, point repairs and lining can be the most cost effective way to rehabilitate a pipe.

HRC has successfully used these techniques on many projects, comprising tens of thousands of feet of piping in a variety of environments. We don't view these techniques as cure-alls. Rather, they offer an opportunity to explore better ways of delivering high visibility/impact projects in cost conscious times. HRC collaborates with the Center for Underground Infrastructure Research and Education (CUIRE) to model and quantitatively evaluate the impacts and costs of these trenchless technologies in comparison with conventional construction techniques. We utilize our own project experience to assess many factors before recommending one of these techniques to our clients. Having knowledgeable engineers and construction observation staff that have experienced successful trenchless technology projects is a great resource when we evaluate the ideal design for a particular pipe utility project. ♦

Project management has all the glamour of a public utility that provides good service but is rarely recognized by its customers. Project management is misunderstood too, often reduced to coordination of the technical work, or mistaken for the application of the right software, or considered a left-over duty when the technical work is done.

But, project management competency is often the difference between a successful and unsuccessful project. At its best, it's a science, a skill. It is driven by desired outcomes.

It's hard in just a few words to capture the essence of effective project management, but the most important elements are...

- Delineation and definition of the desired outcomes of the project, non-technical as well as technical, operational, funding, public perception...everything.
- Consistent application of clear communication tools to ensure that all parties understand these desired outcomes and the Roadmap to getting to this destination. These tools can include a documented client interview process that goes deeper than typical scope definition, a Work Plan that communicates these client desires and the bounds of the project to the entire project team, and a concise Account of Project Standing that gives regular updates and alerts to the client.
- Regular monitoring of scope, schedule, budget and risks using spreadsheets, software, etc. that are appropriate to the project size and content.
- Occasional validation that the project is on track by a senior person not involved in the project with prompt remedial action when necessary.
- Measurement of performance at the end of the project in relation to metrics established at the beginning, and the use of this information to promote better future performance.

It's rewarding to manage a project that achieves the outcomes that were set out for it. People often recall the good projects they worked on during their careers, the projects that made everyone associated with them proud. In the end, project management is all about this *quest to deliver good projects.* ♦

HRC...by Addition

Dana Calhoun Joins HRC's Environmental Engineering Department

Hubbell, Roth & Clark, Inc. (HRC) is pleased to announce that Dana Calhoun, P.E., has joined HRC as Project Engineer after most recently serving as Engineering Director for West Bloomfield Township. Ms. Calhoun previously served as Storm Water Engineer for the City of Troy. As a member of HRC's Environmental Engineering Department, Ms. Calhoun will manage complex and challenging environmental projects. Ms. Calhoun holds a bachelor's degree in Civil Engineering from the University of Kansas and a bachelor's degree in Biology from the University of Michigan and is a registered professional engineer in the state of Michigan. ♦

Jennifer Morreale Rejoins HRC

Hubbell, Roth & Clark, Inc. (HRC) is pleased to announce that Jennifer Morreale, P.E., has recently rejoined HRC as Project Engineer in HRC's Civil Department and will work mainly out of HRC's Detroit office location. Ms. Morreale previously worked for HRC for 7 years and most recently worked in a similar capacity for another firm. Ms. Morreale specializes in computer modeling in the field of hydrology and hydraulics and has conducted flow metering studies to determine infiltration/inflow on numerous municipal sewer systems. She holds a bachelor's degree in Civil Engineering from the University of Windsor and is a registered professional engineer in the state of Michigan. ♦



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HRC desires that our newsletters be interesting, thought-provoking and useful. We know that your time is valuable. We welcome your feedback and constructive criticism. Please send your thoughts and ideas to Tamara Bishop at tbishop@hrc-engr.com.

HRC Through the Years



Thomas M. Doran, P.E.

When future archaeologists sift through the remains of our society in Michigan they will frequently encounter artifacts that were designed by HRC. Many of these will be found at the very lowest reaches of the site. This is reflective of the pioneering role that HRC has had in so many significant Michigan projects. Very large projects, like the Detroit Wastewater Treatment Plant, were designed by HRC and built at costs that would surprise us today, they were so low. Willard Scott of NBC once referred to the Wenonah Park Plaza atop the HRC-designed Wenonah combined sewer overflow retention treatment basin in Bay City as "the most beautiful septic tank in the world." Many of the systems designed by HRC decades ago are still working and providing great service.

In those early days, Detroit Commissioner of Public Works, George Fenkel, and Clarence W. Hubbell collaborated on important wastewater treatment projects in Detroit. Roads named after these two men intersect at Cooley High School. Past and present continue to intersect: HRC began working for the City of Wyandotte in the 1920s and continues performing projects there; Clarence's great-grandson, George, is the current President of HRC.

HRC has a history of working under intense pressure. We survived the Great Depression; very few companies can say that. We even helped in the recovery process by loaning the services of a company founder, Homer Clark, to lead the Works Projects Administration (WPA) in Detroit and Wayne County. HRC did a lot of work to support the war effort in WWII, including work for the Ford Motor Company, developing much of the

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