



The Greater Toronto Airport Authority Automated People Mover

What's Inside?

2

President's Message

3

Profile:
Montreal Office

4

Community Involvement

5

Asset Management

6

Employee Commitment

7

Visualization

Earth Tech's Design Centre in Renovation Mode

Experienced, versatile, and seeking challenging design assignments - that describes the 150 employees who comprise Canada's Design Centre. This group, centered in Toronto and Calgary, thrives on the opportunity for diversified projects, regularly shifting their focus from industrial and commercial to municipal and retail design. The Design Centre provides a range of services that include master planning at the conceptual stage of a project, complete design, construction site supervision and commissioning assistance for projects across North America and internationally.

The Design Centre has the ability to work on major projects such as the Greater Toronto Airport Authority Automated People Mover, the Clarkson Water Pollution Control Plant, the University of Calgary's Health Research Centre and the G.S. Lachie Middle School in Lethbridge, Alberta. The Design Centre is also capable of handling smaller projects simultaneously.

"The project involving the Toronto Pearson International Airport Automated People Mover has provided the greatest

opportunity to demonstrate the wide ranging abilities of our group at a local level," says Robert Jones, Practice Leader for the Central Region Design Centre. This project allowed Earth Tech to undertake planning, design and construction administration. This system will provide transit between terminals, between parking and the terminals, and an inter-terminal connection for passengers from the proposed Air Rail Link from downtown Toronto to Pearson Airport. He continues, "Outside of Central Region, we have had the tremendous opportunity to work on assignments for China – the Blue Garden Landscape and the Nanjing building competition – and in the US, the Chicago Transit Authority Brown Line Irving Park Station."

The Clarkson Wastewater Treatment Plant is being expanded to include a new headworks building; new aeration tank, air blower and secondary clarifier; two new anaerobic digesters along with improvements to three existing digesters; odour control scrubbers;



President's Message

I would like to take this opportunity to wish you a prosperous 2004 and welcome you to the Winter issue of our Canadian newsletter. In the past twelve months, Earth Tech Canada has succeeded in numerous areas while addressing challenges, opportunities and change. Through each of our regional offices across Canada, one component has remained the same – our commitment to our clients, adding value and exemplary service!

In this issue, you will read about Earth Tech's overall commitment to our clients, our communities and our employees. It includes stories on our national Design Centre, a profile on our Montreal office, our various community and charitable efforts, as well as professional development programs for our employees.

We continue to be committed to servicing our clients to help position your organization to take advantage of emerging project delivery mechanisms and new technology applications. We will continue to expand our Technical Practices groups in the specialization of Water\ Wastewater, Transportation, Environment, Urban Infrastructure and Facilities. Our success in winning numerous awards during 2003 gives us a new benchmark to exceed for 2004.

In 2004, we at Earth Tech will continue to grow our staff, expand our locations in Canada as well as bring new global services to our clients. We will continue to focus our energy on exceptional client service and satisfaction, delivering innovative solutions on time and on budget, and remaining your professional consultant of choice.

Best Regards,
Rob Andrews
President, Earth Tech Canada Inc.

article continued from page 1

expanded disinfection facilities and outfall modifications; and plant-wide SCADA system for improved process control and automation. There are seven major construction contracts with an overall project completion date of Summer 2006.

For the University of Calgary project, Earth Tech designed the innovative and sustainable mechanical systems for this state-of-the-art building to be adaptable and scalable for future support requirements.

Currently, the group is working on the renovation of the fourth floor of the Toronto Transit Commission Inglis Building. This is the first project of a three-year assignment utilizing the mechanical, electrical and structural resources of the group in conjunction with a local architectural firm. In addition, their work with the Ontario New Home Warranty Program has provided a number of challenging opportunities including the recent award of a contract to coordinate the investigation, reporting and monitoring of repair work to a number of homes in the Greater Toronto Area due to defective concrete.

In the future, the Design Centre will continue to liaise with other Tyco companies to create a true "one-stop" alternative, as well as leverage our combined relationships. The Design Centres comprise a number of services including architectural, structural,



Nanjing Apartment and Office Complex, China

mechanical, electrical, landscape and design/interior design.

To increase its range of services, the group in Central Region (Ontario and Quebec) is beginning to develop a Project Management/Industrial Group. The Calgary office has focused on these same service areas for the last ten years, with a strong client base in the food and beverage sector.

For further information on our design services, please contact Robert Jones in our Toronto office at 905-886-7022, extension 2878 or Robert Johnston in our Calgary office at 403-254-3301.

case study

G. S. Lakie Middle School

Location: Lethbridge, AB

Earth Tech Contract: Mechanical Engineering

Green Elements: Energy & Atmosphere

- Low Flow Air/Water Systems
- Heat Recovery
- DDC controls

CBIP Grant: No Application Made.

Client Reference: Dan Westwood
(403) 327-3113



Earth Tech provided mechanical engineering services for this middle school that opened in the fall of 2003. The requirements for this school included the need for air conditioning without affecting the overall budget while being energy efficient.

The project was accomplished through the use of a low temperature air system, low flow chilled water and glycol systems, and heat recovery on the ventilation system. Earth Tech worked closely with the architect to identify items that would assist in reducing air conditioning loads such as building orientation, external shading with climate-friendly trees and shrubs and glazing selection. The end result was a building system that is estimated to exceed the model energy code by approximately 20%.

Earth Tech's Montreal office more than just on track!

In June 2001, under the direction of George Gault of Earth Tech Chicago, we opened our office in Montreal, Québec. This move was part of a strategic initiative to make inroads into the railway market sector. At that time, Bruno Côté – current District Manager for the Montreal office – left CN Rail to join Earth Tech as its first employee. One month later, there were already plans for six new hires. “We were all railroaders without any prior experience in the consulting industry,” says Bruno.

Within the first year, the office proved successful and showed a positive bottom line despite the initial start-up costs. In the beginning, most of the business stemmed from CN, but as they moved forward, they began to get involved in studies for VIA Rail, GO Transit and the AMT that runs the commuter rail in Montreal. Chris Audet was appointed Manager of Environmental Services and that added a new dimension to our office. “Chris is an expert in railway environmental services which was a good fit with us,” continues Bruno.

Indeed they were. In addition to Bruno and Chris, the core team included three experienced railroaders that would manage most of the projects: Julian Mikus, Andrew Middleton and Philippe Guevremont. Bruno says, “They are really the jack-of-all trades for railway bridge work. They can manage the projects, service the client, act as technical experts, do preliminary and detailed design, as well as field work. Their presence on a job is a guaranteed success story.”



Ohio River Bridge Steel Repairs, Cairo Subdivision - Mile 363.40



Quebec Bridge Illumination

Bruno also recalls the stroke of luck he had when hiring Olga Popescu as the new Office Manager. “The second week on the job, she basically got thrown in the water to see if she could swim,” Bruno admits. With Olga on the team, the relocation of the office was underway despite the financial constraints and seemingly impossible time lines. “Olga made sure that we were right-on-plan with budgets and schedules. I knew that we would have a very smooth year on the administrative side,” comments Bruno.

The business targets were high and, with even the most optimistic business vision, they came nowhere near our targets. “At CN, George Gault showed us how to design a railway bridge. Now at Earth Tech, he would teach us how to make a business out of it. His strategy was brilliant. First we developed and completed successful projects, then he raised the bar, challenging us to run a profitable business and diversifying it. Then he enabled us to predict our success on a monthly basis and, finally, he challenged us to improve our cash flow turnaround.” Bruno adds, “At the end of each month, we were more and more amazed when we exceeded our targets. Our desire to be successful grew as each month went by. At year end, we reached our goal – the same goal that we thought was out of reach the year before.”

The Montreal office is currently in its third year and the team feels confident about the new opportunities awaiting them. The primary focus will be to continue growing in the rail and environmental market sectors. With the assistance of Earth

Tech resources and local independent contractors, the office can provide the full spectrum of rail engineering and environmental services.

They are presently finalizing their biggest project to date, a multi-disciplinary environmental remediation project at an industrial logging site—a very challenging project from both a technical and regulatory perspective. Earth Tech acted as the general contractor and provided the environmental expertise with Chris Audet, a Registered Professional Forester and ecologist, at the helm of this project to ensure its successful completion.

Other major projects include the design of a post-tensioned bridge in the City of Montreal and the multi-million dollar repair program of an 8000-foot CN bridge over the Ohio River. Earth Tech was awarded all of the first four phases of the latter project, performing design and construction supervision. Both of these are being managed by Julian Mikus with the design for phase five to start this year.

The Montreal office has proven to be a very welcome addition to the Earth Tech family providing rail expertise to the clients it serves and it looks like there is no stopping this train as it continues to pick up speed for a very successful 2004.

For further information on Earth Tech services in Montreal, please contact Bruno Cote at 514-878-1112.



Blainville Line Electrification

COMMUNITY COMMITMENT




Employees from the Vancouver Office participate in a cleanup of Yorkson Creek during Water Week.

Contributing to the well-being of the communities, where our employees, clients and other stakeholders live and work, is an important part of who we are and what we do.

We concentrate most of our charitable giving and activities into organizations and projects that have a direct and immediate impact at the community level – and where our employees have an opportunity to get involved. Our support is focused in the areas of education, with special emphasis on providing students with the skills, tools and information they need to succeed. We help those less fortunate through social services and community programs and provide towards safeguarding our environment through recycling and clean up programs.

Earth Tech applauds our employees who give generously of their own time and money to make our communities a better place to live.



Earth Tech Calgary played a significant role in the University of Calgary 4th Year Students Design Project during the 2002-2003 year. This year's project, in Lisboa Spain, was to develop essential services such as libraries, schools, community centres, green space, playgrounds, improved transportation access and housing to improve the quality of life in the area. Earth Tech employees acted as advisors to students, attending team progress meetings, responding to questions, guiding the students in the right direction for design issues and introducing students to resources, either from other industry mentors or from existing publications.



United Way

Earth Tech and its employees are strong supporters of the United Way. At the conclusion of the 2003 campaign, our employees significantly contributed to United Way agencies across Canada with donations of more than \$60,000.

Earth Tech's Calgary employees chose to support the Calgary Women's Shelter Emergency Shelter Adopt-A-Family program during the 2003 holiday season, including purchasing gifts and preparing food hampers for two families.



For the last six years, Earth Tech's London office has supported Jesse's Journey, a charity that raises money for research into Muscular Dystrophy. This effort began when Jesse Davidson's father walked across Canada to fund a cure for his son. Included in the fundraising efforts is a yearly fundraising day and the annual Jesse's Journey Golf Classic.

Each holiday season, Earth Tech's Edmonton office sponsors families through the Christmas Bureau. For the 2003 season, the Office Social Club packed food hampers for three families. Activities included contacting the families to let them know about the sponsorship, shopping for food and delivering the food hamper just prior to Christmas.

Even when the project ends, Earth Tech's involvement continues. This past summer, a group of Vancouver staff members and their families participated in a cleanup of Yorkson Creek as part of Water Week. Prior to Water Week, the Vancouver office had assisted the Township of Langley with a project involving the Yorkson Creek.



The Kids Cancer Care Foundation of Alberta is a community-based organization designed to holistically bring together all the knowledge and resources needed by children with cancer and those who love and care for them. One of the Foundation's ongoing fundraisers is the "Shave Your Lid for a Kid" campaign. This is the Foundation's largest fundraising activity during the year, with more than 575 heads shaved annually.

This past summer Earth Tech's Calgary office decided to support the Kids Cancer Foundation of Alberta by organizing its own "Shave Your Lid for a Kid" event. The Calgary District Manager, Rob Johnston, along with three department managers participated in the campaign.

With the support of friends, family and colleagues, Earth Tech raised a total of \$4,500 in support of the Foundation's activities.

Managing Assets with the City of Niagara Falls

All of the world's cities are underpinned by a vast infrastructure network of roads, water supply, sewage systems, drainage, power supply, flood protection, recreation as well as other assets. The installation upkeep and replacement of these assets is predominately the responsibility of local municipal governments. In today's rapidly changing regulatory environment, municipalities are seeking to develop ways to support these assets that are both environmentally and financially feasible.

The newly emerging political and legislative landscape will force governing bodies (municipal councils) to be more accountable for the choices they make concerning these assets. For this reason, developing a formal approach to the management of infrastructure assets is vital for municipalities if they are to provide a successful infrastructure in a cost effective and substantial manner.



To manage its assets and deliver quality services to the public, the City of Niagara Falls invests heavily in technology. Investment in data and GIS systems, Information Management Systems and integration of key applications across the organization has positioned the City amongst the most technologically advanced municipalities in North America. In an ongoing collaboration with Earth Tech Canada, the City of

Niagara Falls has implemented the technology necessary to not only make better decisions about its assets but also to justify the financial implications of those decisions.

David Watt, City of Niagara Falls' Manager of Infrastructure, explains that this year, for the first time, the City will have the ability to take information from its GIS and data warehouses and juxtapose it with the level of service information to determine the actual cost associated with providing service. This information enables City Staff to make requests for their infrastructure budgets that are "defensible to council", making it easier to secure lump sums of money for infrastructure repairs or replacements and allowing them to justify their capital costs against a desired level of service.

"The foundation data assessments and strategic direction provided by the asset management group at Earth Tech Canada in the formative stages of our asset management project significantly reduced the effort required in building our data warehouse," states Mr. Watt.

Reaching a level that enables the City of Niagara Falls to utilize its asset information in the planning of capital budgets has been a long and multi-staged process. *Here's how the City did it:*

In the beginning phases of the process, the City identified four key components that drive infrastructure decisions and ultimately infrastructure management: data, business processes, technology and people.

In collaboration with Earth Tech, the City conducted an Infrastructure or Asset Management System (AMS) Strategic Plan. This AMS Strategic Plan consisted of Gaps Analysis and Implementation Planning phases. The Gaps Analysis identified current business practices and what steps the City could take to improve these practices. By utilizing this information, the City developed an Implementation Plan that included a phased approach to reaching its goals.

The primary focus of the Implementation Plan

was on data. Decisions, whether asset related or not, are only as good as the quality of information at hand. Developing asset management practices requires collecting and sanitizing massive amounts of data, but doing so can seem like an overwhelming task. In this case, the phased implementation approach was invaluable. The City was able to see a return on its investment as different phases were implemented giving the project enough momentum to continue to the next phase. A functional needs analysis pre-empted the data collection phase. This allowed the individual projects to proceed at an accelerated rate and reduced the overall effort required in maintaining the data sets in the future. In the process, the City integrated its Maintenance Management System (MMS) and water and sewer models with its GIS and Infrastructure Management System (IMS)—the Data Inventory.

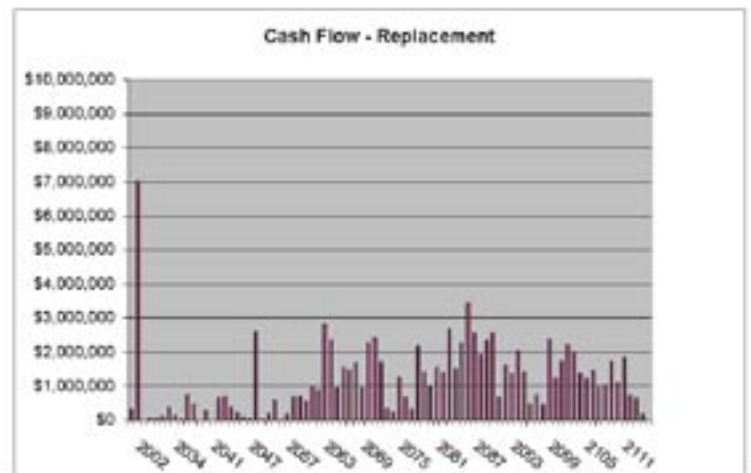
As a result, the City can outline the financial needs of its assets in the capital budget while assessing the condition and performance and, therefore, rank the rehabilitation and replacement needs of every asset, including every road, watermain and sewer pipe in the entire City. Niagara Falls can take this information directly to council to secure funding for the management of those assets.

Having the ability to make decisions defensible to council changes the focus from allocating available funds to the capital budget to allocating the necessary funds to provide these services. The success of the City's decision-

making ability is a direct result of its determination to continue providing quality sustainable services to its customers.

“We continue to benefit from Earth Tech’s non-proprietary approach to data management and integration. Earth Tech’s business model stresses the production of customer sustainable solutions. This has significantly reduced development and ongoing costs,” says Mr. Watt.

For the City of Niagara Falls, achieving this level of infrastructure management has taken many months of hard work and dedication but the process has proven to be invaluable. Asset Management, aside from satisfying regulatory requirements, shifts the onus of determining what level of service citizens of the Region will receive, from the hands of City staff into the hands of those that should be responsible: the council elected by the citizens themselves.



EMPLOYEE COMMITMENT

Earth Tech Canada currently has several employees in professional development programs that are part of our continued commitment to our employees and their professional growth.

They are:

Philippe Guevremont, who is attending McGill University in Montreal for his Ph.D. in Mining & Metallurgy Engineering.

Robert Johnston who has successfully completed the Executive MBA program at the University of Calgary.

Ian Nesbit who has successfully completed the Industrial MBA program at Simon Fraser University in Burnaby.

Keith Sears, who is attending Purdue University in Winnipeg for his Ph.D. in Wastewater Engineering.

Kelly Voisin, who is attending the University of Western Ontario in London for her Bachelor of Administrative and Commercial Studies.

Congratulations to Ian and Robert on their successful endeavours and we continue to wish Philippe, Keith and Kelly best of luck in their education endeavours.

VISUALIZATION



Anthony Henday Wedgewood Ravine, Bridge Visualization, Edmonton, Alberta



Anthony Henday Wedgewood Ravine, Bridge Visualization, Edmonton, Alberta



Nero-Nema Bridge Ekati™ Diamond Mine, Northwest Territories

Today's projects come under great scrutiny from public and stakeholder groups who demand to know how a project will impact their lives and their communities.

If public and stakeholder concerns are not addressed, they can make it difficult for the project to proceed. Earth Tech has found that visualizations (computer-generated 3D renderings and animations) used in conjunction with public involvement activities are a very useful tool for addressing these concerns. Animations transform the data from two-dimensional drawings, numbers and graphs, which can be difficult to interpret, into a visual representation, allowing people to see what a completed project will look like and how it will function. Animations bridge the information gap that exists when describing technical information, yielding a valuable engineering product to help gain public support.

Earth Tech's visualization and animation services can benefit clients in a variety of situations including the enhancement of public understanding and acceptance at open houses, clarification during the approval process and the development of positive public exposure through local television coverage.

Having a geometrically correct model to view has proven to be a great asset in helping to explain project design. The ability to visualize a finished product from a set of working drawings is not common with the general public. Being able to provide a glimpse at the future product before construction begins has been highly successful with client and public meetings. Having a 3D model to show proposed alignments and changes can help to prevent any "big surprises" that may arise during the construction phase.

Another purpose of our 3D models has been to demonstrate our ability to show existing signage, road geometry and other general conditions from a driver's point of view. As well, the ability to drive a newly designed road that is yet to be built is a valuable tool. Visual aspects of the project can be checked and reviewed from all angles.

Working from aerial photographs and real images, Earth Tech is capable of providing visualization and animation as part of the overall project or as a stand-alone service.

If you are interested in finding out more, please contact Brent Shellborn at 403-254-3372 or brent.shellborn@earthtech.ca.

Earth Tech's visualization and animation services can benefit clients in a variety of situations including the enhancement of public understanding

Earth Tech Inc. was founded in 1970 and with over 8,600 professional and support personnel in 150 offices worldwide. We provide a full range of engineering, operations and maintenance services to government, industrial and commercial clients.

In January 1996, Earth Tech became a wholly owned subsidiary of Tyco International Ltd., a publicly traded, worldwide manufacturing and services corporation that is one of the 50 largest global corporations. Tyco operates in more than 100 countries employing 225,000 people.

Earth Tech Canada (formerly Proctor and Redfern and Reid Crowther) is one of the largest full service engineering companies in Canada, serving our clients for over 95 years. Our Canadian operations encompass almost 1000 professional and support personnel in 19 regional offices across Canada.

We specialize in a wide range of engineering services for both public and private sector clients including design/design-build, environmental, transportation, urban infrastructure, water and wastewater, as well as industrial and land development projects. We also have expertise in the areas of asset management and contract operations serving clients across the country.

Through strategic growth, we have steadily expanded our technical capabilities, geographic presence and client base. Through globalization of our business segments, we have pursued worldwide opportunities with our diverse services and have provided seamless execution for our clients.

Our Mission:

Earth Tech's mission is to continue our national leadership mandate within our industry by setting the standard for quality and client focused solutions through teamwork, technical and management excellence, and our dedication to the professional development and advancement of our people.



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