engineers
architects
planners

Portfolio

t o t t e n s i m s h u b i c k i a s s o c i a t e s

TSH in partnership for Subsurface Utility Engineering

TSH has partnered with Clearwater Florida's TBE Group Inc., a leading provider of Subsurface Utility Engineering (SUE) in the U.S. to create TSH/TBE Subsurface Utility Engineers Joint Venture and provide SUE services to Ontario municipalities. Gene Chartier, P. Eng., Manager, Transportation Planning and Design for the Regional Municipality of Durham says, "By contracting for SUE services, we expect to get the control, timeliness, and accuracy that we need to meet our increasingly tighter project schedules and budgets."

SUE is a proven method of accurately locating and mapping underground utilities. It is widely used in the United States and strongly supported by the Federal Highway Administration, and state and local road and utility authorities. SUE involves designating (determining the existence and nature of underground utilities), locating (determining the precise horizontal and vertical positioning of underground utilities), and data management (transferring data into the client's computer-aided design and drafting system). The U.S. experience shows that using SUE as part of the design stage of a project reduces delays resulting from utility conflicts during construction, reduces claims associated with utility conflicts, and improves construction safety. An evaluative 2000 study from Purdue University reports that every dollar spent on SUE results in an average $5 savings in construction costs.

TSH/TBE has provided SUE services to the City of Toronto, York Region, and Durham Region. City of Toronto staff reported that using SUE resulted in construction tenders five per cent below estimate. TSH/TBE was also awarded a project by Niagara Region's Water and Wastewater staff to locate, designate, and map over 12 km of watermains.

The Centre for Advancement of Trenchless Technology (CATT) featured SUE in the OGRA/CATT Water and Sewer Workshops and will co-sponsor a SUE workshop in 2003. TSH/TBE was invited to participate in a CATT committee to develop Utility Locate Guidelines for the Ontario Provincial Standards. TSH/TBE was also featured at the Public Works Expo at the International Centre in Toronto, in December 2002.

Sault Ste. Marie co-composting pilot study

The City of Sault Ste. Marie retained TSH to manage the implementation of a Co-composting Pilot Project. The city received a grant from the federal government's Green Municipal Enabling Fund to conduct a feasibility study on co-composting biosolids from two sewage treatment plants with residential organic waste. If implemented on a full scale basis, the amount of organic waste going to landfill annually would be reduced significantly. Currently, 9,000 tonnes of biosolids are landfilled, with the quantity anticipated to increase to 13,000 tonnes over the next five years. It is also estimated that another 22,000 tonnes of organic waste from residential and business sectors is landfilled.

The Pilot Study included two major components: residential participation in the separation of organics and the feasibility of composting biosolids with residential waste. The first component examined whether or not residents will regularly separate organics from the waste stream. Six hundred homes in the city were given containers for kitchen organics and paper bags for yard waste, and asked to separate organic material from the waste stream. Weekly collection began in September 2002 and ended January 2003.

The second component examined the feasibility of composting biosolids with the residential organics, and determining the quality of compost produced. Composting of organic waste began October 2002 and ended February 2003.

Organic wastes are being processed through two different technologies. One is an enclosed, aerated, static pile system, and the other is a rotary drum digester that expedites and enhances composting. Different mixes of the organic waste are being tested for the best results. The effectiveness of each will be monitored by quality testing the finished compost. Research is also underway on other biosolid composting technologies and the availability of local markets for the finished compost. A final report will be completed in the spring of 2003.

Environmental group helps with Waste Management needs

TSH employs professional staff skilled in all aspects of Solid Waste Management. Recurring assignments include assessments, designs, approvals, and monitoring of landfill sites. We can assist with recycling, composting, and waste management planning. In the past year we have assisted municipalities with site closures, transfer stations, weigh scale installations, recycling facilities, household hazardous waste facilities, and the municipal financial reporting function.

Deseronto water pollution control

The Bay of Quinte is designated a Remedial Action Plan (RAP) area by the International Great Lakes Joint Commission. As part of the RAP status, all wastewater treatment plants discharging into the bay were required to reduce their effluent phosphorous concentrations to 0.3 mg/L or less, and ensure a non-toxic effluent.

Complying with RAP objectives for the Bay of Quinte, the Town of Deseronto retained TSH to design and manage the construction of an enhanced phosphorous removal system. During the design phase, TSH evaluated several alternatives for reducing the plant's effluent phosphorous concentrations. The optimal phosphorous removal technology included an innovative enhanced sedimentation process for tertiary phosphorous removal. This process reduced construction costs by using a smaller building footprint that required less rock excavation. The new phosphorous removal system consistently produces effluent phosphorous concentrations of 0.07 mg/L, more than four times lower than the 0.3 mg/L limit.

Other modifications at the plant included upgraded screening facilities, UV disinfection, and winter biosolids storage. The UV system was the first municipal installation for a new Ontario-based supplier.

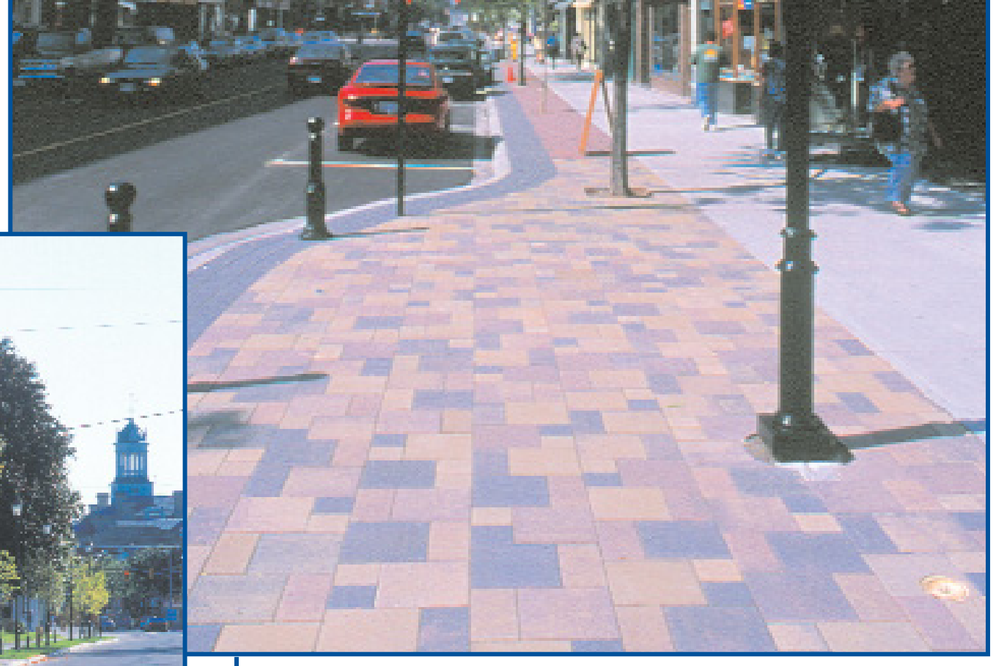
Cobourg's historic downtown business district revitalized

The Town of Cobourg's commitment to infrastructure renewal, together with the Municipality's desire to revitalize the historic downtown business district, led to the recent reconstruction of a four-block section of King Street West. TSH provided design, public consultation, and contract administration services for the project, which required replacement of 100-year-old underground services, provisions for an enhanced streetscape, and traffic-calming features.

To minimize construction delays and business disruptions, extensive field surveys and subsurface investigations were used during the design process to obtain accurate information on existing service and utility locations. TSH also assisted the town in a comprehensive public participation program to inform the public of the project, to solicit design input, and to establish mutually agreeable construction staging and road closure schedules with area businesses.

Commencing in April 2001, the construction contract required completion of a two-block section of the downtown area in time to reopen the roadway for Canada Day festivities. This objective was achieved, as was the completion of the entire project ahead of schedule and within budget.

Following successful completion of this project, Ian Roger, P. Eng., Cobourg's Director of Operations, said "TSH helped the Town of Cobourg plan for all potential conditions in replacing some of the oldest underground infrastructure in eastern Ontario, and worked with both Town staff and the contractor to ensure that the contract was completed as quickly and efficiently as possible."



Streetscape features.

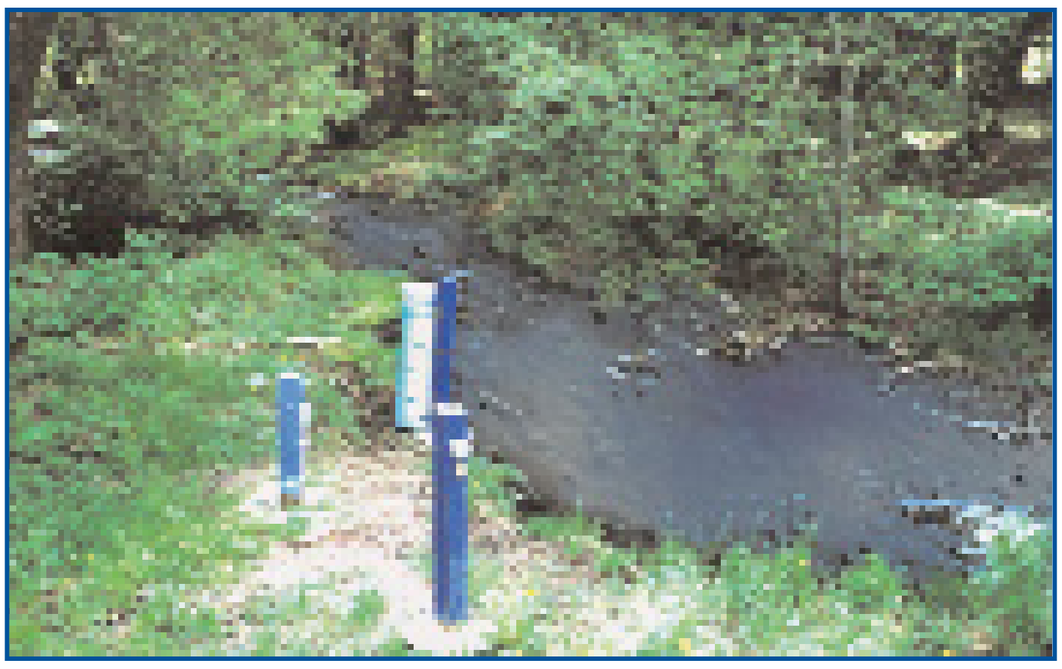
King Street West.

TSH provides a new approach for Environmental Management in Guelph

In response to urbanization pressures, the City of Guelph and Grand River Conservation Authority commissioned TSH to prepare a Subwatershed Management Strategy for Torrance Creek to guide future land use, and to manage natural resource features. Torrance Creek supplies water to one of the major aquifers in the area which is a significant source of groundwater for the City of Guelph. Torrance Creek is also crucial to maintaining a sensitive fish habitat in the area. The pressure for future land use enhancements led to concerns from the local community about the potential impact on the subwatershed environment.

The Torrance Creek subwatershed conditions provided unique challenges for developing a strategy, somewhat similar to those faced at the Oak Ridges Moraine. The soils in the upper part of the subwatershed are highly permeable and provide virtually 100 percent infiltration of rainfall. Also, kettle features form part of the landscape, and other environmental features required elevation for protection.

A comprehensive strategy was developed to provide for the future management approach. This management strategy provides for protection of the corridor and enhanced infiltration to protect and augment base flows and stream conditions.

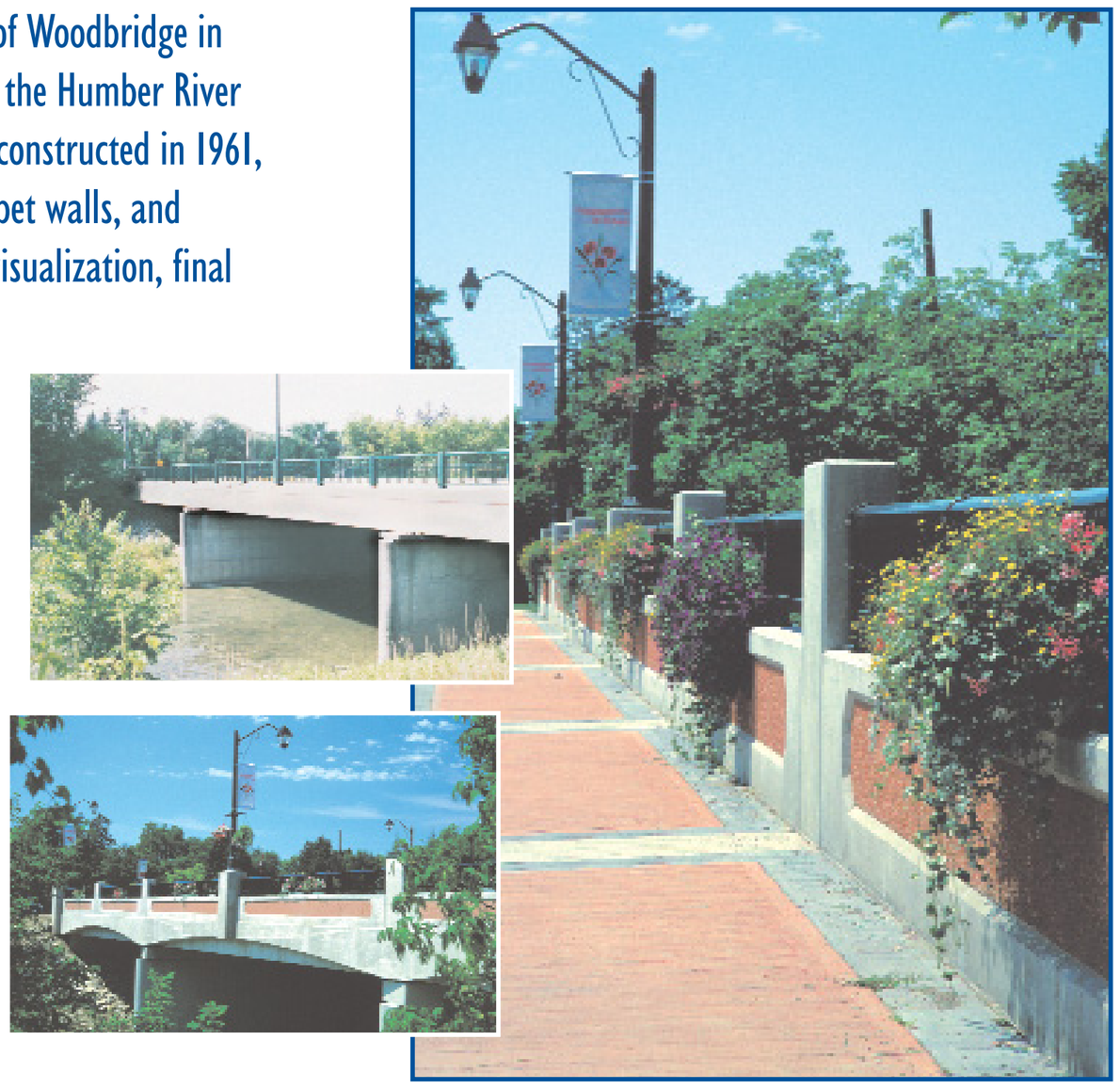


A new gateway to Woodbridge

Woodbridge Avenue is a key gateway to the community of Woodbridge in the City of Vaughan. The busy four-lane roadway crosses the Humber River just west of Islington Avenue. When the original bridge, constructed in 1961, needed complete deck replacement, new sidewalks, parapet walls, and streetlighting, the City of Vaughan hired TSH for design visualization, final design, and construction administration services.

The original bridge structure included a three-span precast concrete voided slab with a concrete deck topping and asphalt driving surface. The new design included many aesthetic enhancements to highlight the structure as a gateway to the community, to blend the architecture with the neighborhood, and to reflect the intent of the Urban Master Plan for the area.

Reconstruction challenges included decommissioning the asbestos ducts in the existing sidewalk, demolition of the bridge over the Humber River, and overcoming heavy traffic by staging the work to keep two lanes open at all times.



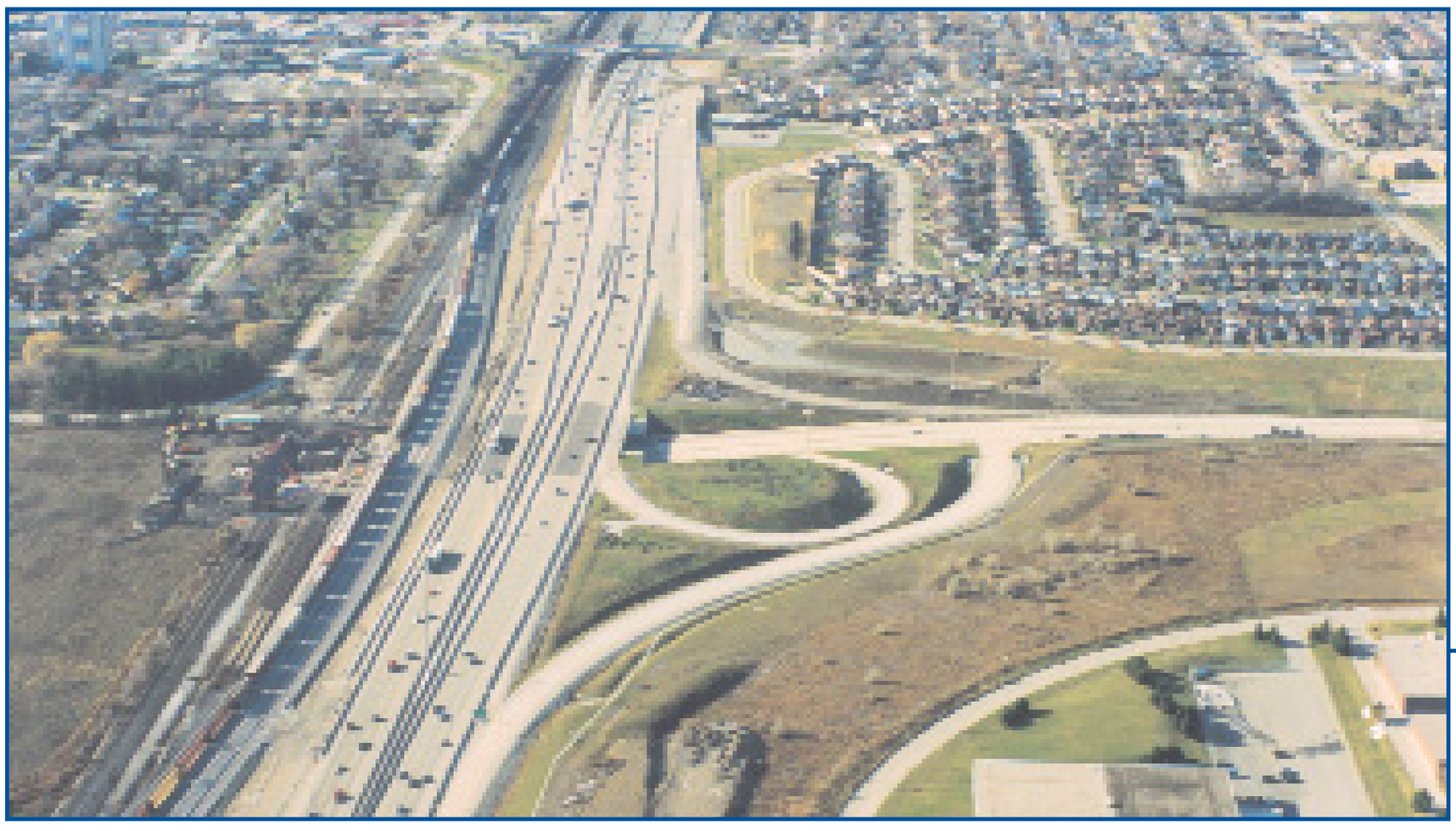
Special design features of this bridge include coloured panel inserts in the parapet walls, coloured concrete inlays in the sidewalks, an arched deck cantilever, and heritage-style streetlights that feature banner arms and hooks for hanging flowers and banners during special events.

Highway 401 interchange at Salem Road is good news for commuters

Good news for commuters, residents, and merchants in the Region of Durham. To deal with significant growth in the eastern Greater Toronto Area over the past decade, the Ontario Ministry of Transportation (MTO), the Region of Durham, and the Town of Ajax entered into a cost-sharing agreement to improve the Highway 401 corridor.

The existing interchange at Harwood Avenue no longer effectively handles the traffic volume, nor is the adjacent road network able to distribute the traffic to the new commercial area in northeast Ajax. The new interchange, east of Harwood Avenue, was designed to better serve the new traffic patterns.

MTO hired TSH to carry out the preliminary design, Environmental Assessment, detailed design, and project management of the $50-million project. TSH's in-house engineers and landscape architects designed the roadwork, structures, lighting, landscaping and stormwater facilities. TSH's contract included designing new bridges for Harwood Avenue, GO Transit, and the Canadian National Railway. In order to build the new railway bridges, railway diversions were designed. The roadwork component included freeway detours and widening Highway 401 from six to ten lanes, with provisions to widen the highway to a collector-distributor system in the future.

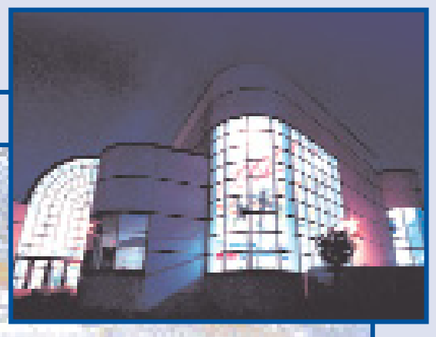


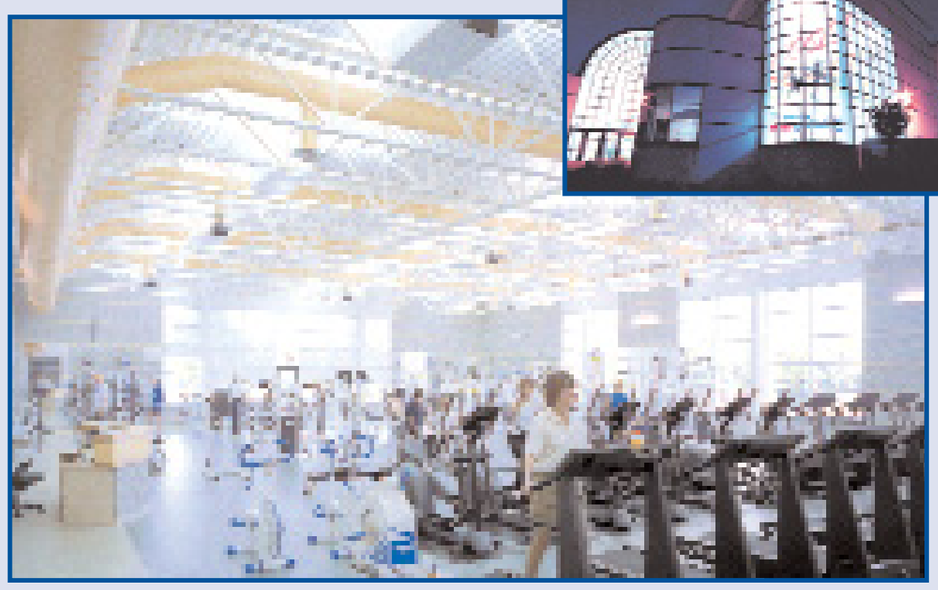
The design schedule was extremely tight, with less than eight months for design and co-ordination of utilities, stormwater management, and negotiations with the railways. Despite the extensive work required, the design was completed on time, construction is well underway, and the interchange should be completed ahead of schedule.

The new interchange at Salem Road in the Town of Ajax under construction.

Recently Completed

McLean Recreation Centre vision achieved





The Ajax McLean Community Centre achieved its vision for a comprehensive full-service facility with the completion of the Fitness Centre expansion. Both the 3,870 m^2 (43,000 sq. ft.) original building, completed in 1994, and the 2,340 m^2 (26,000 sq. ft.) $3.5-million Fitness Centre expansion were part of the original concept designed by TSH.

The expansion included a childcare and youth activity room, community meeting room, double gymnasium, fitness training room, aerobic studio, and changerooms, resulting in an enlarged community centre and premier facility that exceeded membership expectations.

Each new self-contained unit includes four bedrooms, a living room, a kitchen, a dining room, and two bathrooms.

Wellesley Court helps University of Waterloo students find a home

When the University of Waterloo's existing undergraduate residency grew beyond capacity, TSH was contracted as architects and engineers on the Wellesley Court Conversion. TSH converted the existing three-storey, 91 unit, married students' apartment complex into a 360-bed, undergraduate student residence.

TSH completed the project with the help of construction managers from Nith Valley Construction, using an open-book accounting system, a cost plus construction contract, and the construction management method of project delivery. The construction management process allowed TSH to address and resolve construction problems in a collaborative manner, thus maintaining the project schedule. The process was also helpful in negotiations with specialty suppliers and trades when production issues arose.

The Wellesley Court Conversion was completed in the nine-month schedule and within the $5-million budget. Students moved into their converted residence in September, as planned.

Halton Region opens Woodlands Operations Centre

Halton Region staff moved into their new Operations Centre in early spring 2002. The 5,580 m^2 (62,000 sq. ft.) building is located north of the Region's headquarters building on Bronte Road, in Oakville.

When Ambulance Services was transferred from the province to the Region, the Region decided to construct a combined facility that would accommodate Ambulance Services administration, an ambulance station, and Public Works facilities. TSH has proven expertise designing these types of facilities, and referred Halton staff to the previously completed Region of Peel Wolfedale Operations Centre for planning insights.

TSH's Whitby, Cobourg, and Kitchener-Waterloo offices provided all consulting, architectural, landscape architecture, and engineering services. Site works included construction of a stormwater management pond to control stormwater quality and volume entering nearby creeks. A 250 car parking lot expansion was provided for the adjacent headquarters building to ease overflow.

The new Operations Centre accommodates fleet maintenance, administrative offices, a staff lunchroom, lockers, stores, meeting rooms, training rooms, an ambulance station, and a boardroom for use by all staff.

The site concept separated staff vehicles from Public Works and Emergency Services vehicles, and created generous yard spaces screened from street views.

The building, designed for future horizontal and vertical expansion, was planned to meet the long-term requirements of the Region. Both the design and construction were fast-tracked and the project was completed on schedule.

Elgin Park Drive and the Uxbridge Brook

Upgrades reduce congestion and increase fish migration.

TSH was responsible for the design of a $1.5-million, three-phase project for Elgin Park Drive in the Township of Uxbridge. The recently completed 1.1 km, two-lane roadway links Highway 47 to Concession Road 7, providing a new east/west route, south of downtown Uxbridge. The new road diverts traffic from residential roadways, reduces traffic congestion, and improves a cold-water fish habitat in the tributary of Uxbridge Brook. The roadway design also features a landscaped gateway at Highway 47, incorporating a paved bicycle lane along its length.

TSH completed an Environmental Assessment into features at the eastern and western limits of the route. In the east, where Elgin Park Drive meets Concession Road 7, the need to partially fill a spring and wetland area required the extension of each to compensate for lost fish habitat. TSH replicated the natural shoreline and reintroduced native vegetation. A culvert was designed to permit fish migration between the water features.

In the west, where Elgin Park Drive meets Highway 47, an exhaustive design and approval process, involving various government agencies, resulted in a design that protected the cold-water fishery in the tributary of Uxbridge Brook. Because the former culvert prevented fish migration, TSH designed a 2.1 m high precast concrete box culvert filled with 0.5 m of pea gravel and river run stone to replicate a streambed. The culvert was designed to encourage Trout spawning and migration upstream to the headwaters in the Oak Ridges Moraine.

Value Engineering goes Hollywood… Florida

South Florida is a nice place to work, especially during the Canadian winter. Over the past three years, TSH has performed several Value Engineering (VE) studies for the Florida Department of Transportation's (FDOT). FDOT is a firm believer in the importance of VE studies. The positive results from these studies continue to justify using VE in future projects.

The most recent study was for a one-mile (1.6 km) section of Sheridan Street from State Road 7 westerly over the Florida Turnpike in the City of Hollywood, Florida. South Florida continues to experience considerable growth and increasing traffic. To accommodate this growth, plans are underway to widen the Florida Turnpike. The existing bridge that carries Sheridan Street over the Turnpike will need to be replaced. In addition, FDOT plans to widen Sheridan Street from State Road 7 to 64th Avenue from four to six lanes.

The total project cost was estimated at $20.3-million (U.S.), with over $15.2-million (U.S.) being right-of-way. The VE team identified a number of VE proposals that were accepted by FDOT, and when implemented will reduce costs by approximately $9.6-million (U.S.), without reduction in project function, safety, or constructability.

TSH partnered with a Florida-based engineering company to perform a VE study at the completion of the preliminary design phase. The VE team leader, who has the requisite Certified Value Specialist designation from SAVE International, was from TSH, while most of the other team members were from FDOT.

Computer generated design visualizations

Visualization of the proposed Port Granby LLRW site.

Atomic Energy Canada Limited (AECL) retained TSH to prepare photo-realistic visualizations of the three low-level radioactive waste sites (LLRW) in the Municipality of Port Hope. Entering into an extensive Environmental Assessment stage, AECL required renderings that illustrated construction sequencing and the ultimate appearance of the waste sites. TSH is developing static views, animated sequencing flash files, and an interactive CD-ROM for AECL.

TSH Takes soccer from the field to the World Wide Web

The City of Ottawa hired TSH to complete the design and contract administration of Phase One of a multi-million dollar soccer complex in Ottawa's south end. Phase One includes four championship soccer pitches overlaid with four ultimate fields, a park pavilion, play pods, parking, and a trail network.

Interest from the neighbourhood spurred the development of a project specific Web site. Developed and managed in-house by TSH, the Web site was designed and posted within weeks, providing a timely and convenient service.

www.benfranklinpark.ca park concept plan.

engineers architects planners

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