



2015/2016 Executive Committee

Mark Tigchelaar – Chair
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2016 CGS-SOS Dinner Lecture

Niagara Tunnel Project

Thursday, March 24, 2016

Mastro's Ristorante Italiano, 890 Wilson Ave., Downsview, ON

Evening Program:	5:30 PM	Cocktails and Socializing
	6:30 PM	Dinner
	7:30 PM	Lecture

Abstract: The Niagara Tunnel provides Ontario Power Generation an additional 500m³/s of water diversion from the Niagara River to their Sir Adam Beck hydroelectric generating station. This is achieved by a 10.4km long, 12.6 m internal diameter tunnel with an intake upstream of Niagara Falls and an outlet at the head works of the generating complex.

The construction of this tunnel established several firsts including; the use of the largest rock tunnel boring machine in the world to date; the pre-stressing of the final tunnel lining by pressure grouting to avoid the need for lining reinforcement; and the installation of a conductive membrane to allow defect detection. The project encountered challenges, particularly with advancing the excavation through highly stressed Queenston Shale. The presentation will address measures that were taken to deal with these challenges.

Speaker: Brian Garrod. Brian recently retired, but continues to work to add to his 40 years of working for Hatch companies. He is a Fellow of the Canadian Academy of Engineering and received the Medal of Excellence from the Professional Engineers of Ontario as well as Engineer of the Year for Hamilton/Halton area in 2014. He was chosen as the Canadian Tunneller of the Year for 2015.

He began his engineering career in 1970 in the UK and joined Hatch in Canada in 1974, where he discovered his passion for tunnel engineering and technology while working on the tunnel and underground station design for the Vancouver SkyTrain.

Brian has played a prominent role on many of the world's most complex tunnel infrastructure projects, including the Channel Tunnel, the Boston Harbor Outfall, the Dulles Airport people-mover tunnels in Washington, D.C., the San Francisco Bay Area Rapid Transit extensions, the St Clair Tunnel, the enlargement of the Windsor-Detroit rail tunnel and the tunnels in Tel Aviv's \$8-billion mass transportation system.

His recent work includes Ontario Power Generation's massive new Niagara Diversion Tunnel, the City of Toronto's Coxwell Sewer emergency bypass tunnel, York Region's Southeast Collector tunnels and the long-awaited pedestrian tunnel to Toronto's Billy Bishop Airport. He has also had a major leadership involvement in every bored-tunnel subway or LRT constructed in Toronto by the Toronto Transit Commission and Metrolinx in the last 40 years.

**The Canadian Geotechnical Society
Southern Ontario Section
Toronto Group**



**La Société Canadienne de Géotechnique
Section Sud de l'Ontario
Groupe de Toronto**

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CGS Members – Early Bird:	\$25.00	<p>*Students: Please note that a limited number of spaces are available on a first come, first served basis through corporate sponsorship. Corporate Sponsors, who subsidize CGS-SOS events, will be recognized at the Dinner Lecture. Please contact any CGS-SOS Executive Committee member if you or your company wish to contribute to this worthwhile initiative.</p>
CGS Members:	\$35.00	
Non-Members – Early Bird:	\$30.00	
Non-Members:	\$40.00	
Student Sponsorship:	\$25.00	
Students*:	Free	
<p>Please confirm your attendance by March 14, 2016, 11:30 PM to qualify for the Early Bid price or by March 18, 11:30 PM, using Eventbrite: http://www.cgs-sos.eventbrite.ca/ This event will be booked solely through Eventbrite.</p>		
<p>If you have difficulties using Eventbrite, please contact Andrew DeSira (Andrew.DeSira@ontario.ca) for assistance.</p>		