



NORTH AMERICAN SOCIETY FOR TRENCHLESS TECHNOLOGY
Great Lakes and St. Lawrence Chapter
Chapitre des Grands Lacs et du Saint-Laurent

**UPCOMING
EVENTS:**

**INFRA 2004 –
CERIU, November
15th to 17th, 2004 in
Montreal, Quebec**

**No-Dig 2005 –
NASTT
April 24- 27, 2005 in
Orlando, Florida**

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VOLUME 1, ISSUE 1

JUNE 2004

From the Chair: *by Ernie Ting*

It has been a successful year again for NASTT. The past success of International No-Dig 2003 in Las Vegas was followed by the recent success of No-Dig 2004 last March in New Orleans, Louisiana. Thanks to the major sponsors and supporting organizations, exhibitors and presenters, the exhibits were well received and the 4-track technical papers sessions were very educational, unbiased and objective. This year's event was held in cooperation of the Directional Drilling Contractors Association (DCCA).

The kick-off breakfast featuring Mr. Bob Arno, Gentleman Thief and Comedy Pickpocket, was amazing and provided the full house breakfast crowd with laughs and made the crowd wonder "How did he do that?" The 2004 Trenchless Technology Person of the Year was presented to Steven Kramer, P. E. Please see the March 2004 issue of Trenchless Technology magazine about his accomplishments.

The Educational Fund Auction during the conference was a complete success, making a generous amount of money towards the educational benefits of students, deserving individuals or organizations. Generous donors and bidders have made this annual event at the No-Dig, a fun and exciting occasion.

At the Gala Awards Dinner night, the first NASTT Chairman's Outstanding Lifetime Service Award was presented to Trent Ralston. Knowing Trent and his accomplishments, dedication and service to the industry and NASTT as past chairman, we say congratulations for a most fitting and deserving award.

Like our past attendance, this years' conference added more to our knowledge in the science of the trenchless technology as we learned more from our colleagues in their technical papers and through conversations and discussions of their first hand



**Seated LtoR: Frank Badinski, Derek Potvin, Mike Willmets
Standing: Ernie Ting, Joe Loiacono, Piero Salvo. Brad Johns**

experiences. We learned what others are doing or have done, their positive and negative experiences, ongoing research in many areas, new products in the industry and we expanded our network of colleagues whom we share and learn our knowledge.

The 2005 No-Dig conference will be on April 24-27, 2005 at the Gaylord Palms Resort and Conference Centre in Orlando, Florida. Call for papers have already gone out. If you are interested in presenting your paper at this conference, please visit the NASTT website at www.nastt.org for more information.

On our Chapter activities, we have just completed a short workshop in Ottawa last April 23, 2004. Fifty of our colleagues in the Ottawa area attended this free workshop entitled "Horizontal Directional Drilling using Terra-Brute". "Terra Brute" is a PVC pipe manufactured by IPEX and is mainly used for horizontal directional drilling. Thanks to our board members Piero Salvo, Mike Willmets and Derek Potvin for this successful event.

The "NAAPI Sewer Condition Classification Training Course" at the York Region headquarters in Newmarket was recently completed. This training course was offered in collaboration of the Great Lakes and Saint Lawrence Chapter (GLSL), North

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American Association of Pipeline Inspectors (NAAPI) and Centre for Advancement of Trenchless Technology (CATT). Board member and treasurer, Frank Badinski, coordinated training course.

This year, we will conduct our second Horizontal Directional Drilling course. There is a plan to do the same in Quebec. Announcement on the dates of these events will be announced soon. Please watch for the announcement or visit our website www.nasttgisl.on.ca for further information.

Congratulations to Professor Ian Moore for successfully establishing the Queen's University student chapter of NASTT. The visionary professors at Waterloo and Queens have taken the lead to establish the student chapters to enhance their knowledge and curriculum and to provide the students the opportunity to be on the leading edge in the science of trenchless technology. Through our chapter activities and with the NASTT educational fund that we fully support, we will work closely with the student chapters and their liaison to bring benefits to their members.

The National Guide to Sustainable Municipal Infrastructure has now published several best practices guidelines. Numerous cities and municipalities in Canada have adopted these guidelines for their practice. To obtain a copy of the published guidelines and for more information, visit their website at www.infraguide.ca.

If you or your organization are interested in our activities or have any concern regarding our chapter, NASTT or are interested in some information regarding trenchless technology, we may be able to help you. Please call me or send me an e-mail or contact any of our board members listed in this newsletter.

“No-Dig 2004” *by Mike Willmets, City of Ottawa*

Always the premier forum for the advancement of Trenchless Technologies, this year's No-Dig at New Orleans, Louisiana set a new high for Canadian content. Canada's experts abounded from the podiums of the session halls and from the floor of the Trade Show. More than 20% of the papers presented at the technical sessions were by Canadian delegates. Topics were diverse encompassing: microtunneling, quantifying social costs, site candidate selection, quality control, pipe bursting, operational considerations, record management, directional drilling plus numerous sewer and watermain rehabilitation case studies.

The Great Lakes and St. Lawrence Chapter was well represented by seven of the current Directors and meetings were held to confirm support for the Student Chapters as well as planning future local events. Student members from all 4 of the Canadian NASTT Chapters, Queen's University, University of Alberta, University of Calgary and University of Waterloo played a large role in supporting the technical sessions. Congratulations to three Great Lakes and St. Lawrence Chapter Directors (Ernie Ting, Joe Loiacono and Piero Salvo) who served on this year's Program Committee.



L to R: Derek Potvin, Frank Badinski, Piero Salvo, Ernie Ting, Mike Willmets.

Aside from the lectures and supplier exhibits, New Orleans proved to be a generous host for the Conference weary. Cajun dining, Mississippi Riverboat cruises, Louisiana swamp tours (complete with alligators), Bourbon Street antics and Dixie Land Jazz made for a more than memorable time. No-Dig continues to be the best venue to keep abreast of the latest trends in Trenchless Technology. Hope to see ya'll next year in Orlando.

Terra Brute Seminar: *by Piero Salvo, WSA Trenchless Consultants Inc.*



On Friday, April 23rd, 2004, our Great Lakes Saint Lawrence Chapter (GLSL), in collaboration with IPEX Inc., held a Trenchless Technology luncheon in Ottawa. The purpose of the luncheon was to present the use of IPEX's Terra Brute pipe in Horizontal Directional Drilling (HDD) and other trenchless applications. A total of 55 people attended this luncheon, predominately from the Ottawa/Gatineau area.

Richard St-Aubin of IPEX began the luncheon with an overview of the design criteria and parameters of the Terra Brute product that were co-developed by the University of Western Ontario, Professor Erez Allouche and IPEX Inc.

Fernando Marcuccio of the City of Ottawa presented a case study of the project that used the Terra Brute product in a HDD application to close a link in the water distribution system. The project was not a large scale project, but a successful one based on the presentation by Mr. Marcuccio.

We would like to thank all those that attended the luncheon, with a special thank you to the organizing committee of Derek Potvin, Robinson Consultants; Michael Willmets, City of Ottawa and Piero Salvo, WSA Consultants. If any of you have any suggestions for future luncheon topics, please let your Board of the Great Lakes & Saint Lawrence Chapter know. Thank you.

Halifax South Street Watermain: *by Kim Howie, Robinson Consultants*

The Halifax Regional Water Commission (HRWC) has recently completed the successful lining of an existing 600mm diameter concrete pressure pipe watermain, the first such undertaking in this size range for the Commission.

The South Street watermain is a 1300m long, 600mm diameter concrete pressure pipe located at the south end of downtown Halifax. The closest current AWWA designation for this pipe is C303 Bar Wrapped Concrete Cylinder Pipe. Historic failures have occurred in this type of pipe as a result of corrosion of the steel components. In August 2002, a major break occurred in the watermain, followed by a second break within 10 days of the initial break.

Changes in the distribution system resulted in the 600mm diameter watermain serving a less critical role than that for which it was installed in the early 1960s. Several local watermains provided service to local customers and the South Street watermain could be decommissioned without significant short-term effects on the level of service. Reliability of the system would be an issue if the watermain remained out of service for an extended length of time.

The watermain was decommissioned after the second break and the HRWC began to explore options for rehabilitation or replacement.

It was felt that lining the watermain was an option worth exploring and the Commission retained Robinson Consultants Inc. of Ottawa, Ontario, to investigate options for the rehabilitation or replacement of the watermain.

The study investigated replacement options and trenchless rehabilitation options for the watermain. Methods to investigate the condition of the existing watermain were explored but existing external condition assessment methods would require excavations and would only reveal information about the condition of the watermain at the point of excavation. An internal condition assessment would not likely provide any insight into potential additional weak points in the watermain, which were thought to be external.

Due to the suspect condition of the existing watermain a fully structural solution was desired, which would result in a reduction in the watermain diameter. The study included hydraulic

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Halifax South Street Watermain *continued from Page 3*

modeling of the existing system to evaluate the effects of a diameter reduction. Modelling was carried out for existing and future conditions. The study concluded that the watermain should be rehabilitated using a 508 mm (20") HDPE liner.

The design was separated into three sections, with the first section being the priority for construction. Both break locations are located in this first 370m section of watermain.

South Street is one of the main east-west routes to downtown from the south end of Halifax and a bus route. Traffic control requirements were carefully considered during the design and close coordination was required with the Halifax Regional Municipality and Metro Transit to ensure a smooth operation during construction.



Because of the location of the watermain near downtown Halifax, construction was not desired during the peak tourist season from July 1st to mid-September. The design was completed and tendered in June 2003. The contract was awarded to Atlantic Underground Services Ltd. and construction was successfully completed in approximately six weeks starting in September 2003.

The construction involved two separate HDPE liner pulls, 200m and 150m in length. Connections were made to the HDPE liner by cutting away the host pipe after the liner insertion and grouting procedures. This procedure was contrary to the standard method of providing pits at connection points and removing the host pipe prior to the lining procedure.

HRWC personnel involved in the project were: James Hannam, M.B.A. P.Eng., Chief Engineer; Jim Branton, C.E.T, Project Manager; and Mike Campbell, On-Site Inspection.

La Municipalité de Rougemont

by Benoit Grondin, CIMA

À l'automne 2002, la Municipalité de Rougemont réalisait pour la première fois des travaux d'importance par forage dirigé.

Tout comme l'ensemble des municipalités du Québec, Rougemont est aux prises avec des infrastructures vieillissantes qui nécessitent de plus en plus d'interventions. Leur remplacement, lorsque devenu nécessaire, ne se fait pas sans causer divers soucis aux gestionnaires municipaux.

Les conduites désuètes étaient situées sous un accès routier à la Municipalité très fréquentée. Par conséquent, la méthode traditionnelle par excavation aurait été très néfaste pour les pomiculteurs dont les entreprises se trouvent dans la zone des travaux et pour l'achalandage touristique en cette période de cueillette des pommes. Les inconvénients liés à la méthode traditionnelle, tels que les détours, les routes endommagées, la poussière, etc., auraient tôt fait de décourager les touristes

venus cueillir leurs pommes et admirer le paysage champêtre de la Municipalité.

L'utilisation du forage dirigé a donc contribué au maintien de la saison touristique, activité primordiale pour les commerçants locaux. La rapidité d'exécution, les fermetures de rues presque qu'inexistantes, les commerçants offrant des produits du terroir en façade de leur propriété n'ayant pas été incommodés par la poussière, ainsi que l'assurance d'une route carrossable en tout temps ont été des facteurs déterminants dans la réussite de ce projet.

L'utilisation du forage dirigé aura aussi permis à la Municipalité de réaliser des économies importantes comparativement aux mêmes travaux réalisés en tranchée ouverte.

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La Municipalité de Rougemont

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Dans le cadre du projet, la Municipalité de Rougemont a procédé au remplacement de deux (2) kilomètres de son réseau d'aqueduc, qui en totalise douze (12). Le projet incluait également le remplacement de quatre-vingt (80) entrées de services et le remplacement d'une dizaine de bornes-fontaines.

Les travaux étant prévus pour l'automne (période de fort achalandage touristique en raison des festivités entourant la cueillette des pommes), la nature du sol jumelée avec les conditions de nappe phréatique élevée (qui avait pour effet de rendre difficile toute excavation) et la présence de ponceaux de grand diamètre, ainsi qu'une dalle sous la chaussée compliquaient tous travaux prévus en tranchée ouverte.

Les conduites remplacées dans le cadre du projet étaient âgées de 60 ans (CHW évalué à 40 selon l'âge, le matériau et le nombre de bris). Elles étaient en fonte grise et installées dans un environnement corrosif. Au cours des ans, ces conduites s'étaient beaucoup détériorées et elles présentaient de graves problèmes de fuites et de bris de parois. La Municipalité se trouvait également aux prises avec des problèmes de corrosion au niveau des sellettes utilisées pour les branchements de service. On dénombrait en moyenne trois (3) bris par année (soit 1,5 bris/km/année) causés par la détérioration de l'extérieur de la paroi. Par conséquent, la Municipalité était contrainte d'intervenir de plus en plus fréquemment sur le tronçon touché par les travaux. Ces interventions représentaient pour la Municipalité des coûts importants tant en perte d'eau potable qu'en frais connexes reliés aux diverses interventions. En 1999, selon les données recueillies par la Municipalité, 30% de l'eau injectée (soit 10 500 mètres cube) dans cette portion du réseau n'avait pas été consommée.

Sur le plan hydraulique, la pression dans cette portion du réseau était d'environ 275 kPa (40 psi) sous des conditions normales d'opération. Cette pression ne permettait donc pas de maintenir un service répondant aux exigences de la « Directive 001 » du ministère de l'Environnement du Québec en matière de protection incendie sur toute la longueur de la conduite.

Enfin, la position de la conduite causait plusieurs problèmes à la Municipalité lors des diverses interventions. Par conséquent, le déplacement de la conduite était nécessaire.

Considérant les multiples problèmes lorsqu'il s'agit de remplacer une conduite de distribution en milieu urbanisé tels que :

- la diminution de l'achalandage touristique;
- l'interruption de la circulation;
- les délais d'exécution des travaux;
- les problèmes engendrés suite à la réfection des fondations et de la chaussée vis-à-vis les tranchées;
- la diminution de l'achalandage aux commerces;
- la diminution de la quiétude des riverains; et
- les contraintes budgétaires.

La Municipalité de Rougemont a décidé de mettre le forage dirigé en compétition avec la technique traditionnelle pour le remplacement de ses conduites d'aqueduc.

En comparant le prix soumis par le plus bas soumissionnaire en forage dirigé au prix soumis par le plus bas soumissionnaire en excavation, la Municipalité a réalisé des économies de l'ordre de 20% en réalisant les travaux par forage dirigé.

Les conduites installées dans le cadre du projet étaient en polyéthylène haute densité de 150 mm et 250 mm de diamètre DIPS (Ductile Iron Pipe System). Ce type de conduite a le même diamètre extérieur que celui des conduites de fonte ou de PVC. Comme le diamètre extérieur s'apparente à celui des autres matériaux normalement utilisés par les municipalités, aucune pièce spéciale n'est nécessaire pour l'installation de la conduite. Ainsi, aucun inventaire supplémentaire n'est requis pour les réparations ou toutes interventions futures devant être réalisées sur le réseau (ex. nouvelle entrée de service). Une attention particulière doit toutefois être apportée aux réactions du polyéthylène face aux variations de température.

Le taux de pose dans le cadre du présent projet était d'environ 300 mètres par deux jours, soit une journée pour effectuer le trou pilote et une autre journée pour l'insertion de la conduite. Enfin, l'entrepreneur réalisait en moyenne 5 entrées de service par jour.

La technique employée nécessitait peu d'excavation. Les excavations étaient nécessaires à chacun des raccordements entre deux sections de conduite installées ou pour le raccordement des branchements de service. Par conséquent, la circulation a été maintenue pratiquement durant toute la période des travaux. Seule une excavation a obligé l'interruption de la circulation sur ce tronçon.

Ainsi, les citoyens avaient accès à leur propriété en tout temps avec un minimum d'encombrement, la poussière était grandement réduite, les commerçants situés en bordure de la rue ont pu opérer leur commerce en toute quiétude sans diminution de leur chiffre d'affaire. À plus longue échéance, les excavations ayant été limitées, les impacts sur la dégradation de la chaussée ont été minimisés et auront permis d'assurer la pérennité de la structure.



Great Lakes & Saint Lawrence Chapter

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North American Society for Trenchless Technologies

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About Us:

The North American Society for Trenchless Technology ([NASTT](http://www.nastt.org)) is an association of consulting engineers, educators, contractors, governmental agencies and regulators involved with the application of [trenchless technologies](#). Our Chapter is an affiliate of NASTT and helps to represent the Canadian perspective in the North American trenchless technology marketplace.

The Great Lakes and St. Lawrence Chapter encourages and facilitates the science and practice of trenchless technology for the public benefit. We achieve this by fostering education, and research and acting as a catalyst for technological and process change.

One of the goals of Great Lakes and St. Lawrence Chapter is to provide a forum for discussion and thus our involvement in this event. We are strong believers in sharing knowledge and promoting it through a variety of venues. There are several Great Lakes and St. Lawrence Chapter initiatives which have taken place since its inception in 1995. We are proud of our past initiatives and the value of our Chapter provides to the infrastructure world.

What can the Great Lakes and St. Lawrence Chapter do for municipalities interested in applying trenchless technology in a proactive manner? Our Chapter will continue to foster education, research and act as a catalyst for effective technological and process change. We recognize that there is an evolving role for trenchless technologies and in helping infrastructure managers to ensure system performance and reliability.