



NORTHWEST NEWS

North American Society for Trenchless Technology

Northwest Chapter

Alberta, British Columbia, Washington

May 2004

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Northwest Chapter Spring 2004 Report

The Northwest Chapter, which covers the Provinces of Alberta and British Columbia, and the State of Washington, has been quite active since its formation in April 1997. It has had an annual symposium almost every year since its inception. Quarterly Board meetings are conducted with telephone conference calls. The Annual General Meeting (AGM) was held at the No-Dig conference in New Orleans. On October 2 ~ 3, 2003 a two-day workshop on Horizontal Directional Drilling was held in Edmonton attended by 36 participants. On November 19, 2003 the Chapter held its annual symposium in the City of Calgary and attracted more than 120 participants. Activities for each of the regions are elaborated below.

The Edmonton region has been holding its technical luncheon meetings in the Faculty Club of the University of Alberta in the fall and winter months every year. Technical luncheon meetings attracted from 20 to 40 individuals with representation from contractors, consultants, manufacturers, academia and government. There were six technical luncheons in the reporting period (September 2003 to March 2004). Regional meetings were held after each of the Technical meetings. A joint dinner meeting was held with the Canadian Society for Civil Engineering (CSCE) on October 16, 2003 on "Double Barrel Pipe Live Inspection". In conjunction with the Student Chapter of the University of Alberta, free technical seminars and luncheons were afforded to a group of undergraduate students in March 2004 to interest them in doing research in trenchless technology. An annual scholarship of \$1,000 is set up to encourage graduate research. Further, a series of activities were presented to the students. These activities included a student mixer on September 23, 2003, student night on September 25, an introduction to trenchless technology presentation on September 26, 2003, student night again on March 4, 2004 and scholarship presentation on March 18, 2004. The 2003 scholarship of \$1,000 was awarded to Mr. Al-Battaineh Hussein, a graduate student who presented his research on "Schedule Optimization by Using Genetic Algorithms" in the technical luncheon session.

NASTT NORTHWEST CHAPTER ANNUAL GENERAL MEETING DURING 2004 NO-DIG SHOW

TTBC held a two days conference on trenchless technology on July 8-9, 2003. The title of the workshop was "Trenchless Technology BC – No-Dig Live 2003". The event took place at the Burnaby campus of BCIT with two tracks of technical sessions each day. A Trade Show and live demonstrations of trenchless technology were part of the workshop with approximately 50 participants for this two days event. The TTBC AGM was also held in conjunction with the conference on July 8, 2003. During the AGM, a majority of TTBC members voted to form a separate chapter under NASTT. Presently pending is the submission of the revised bylaws for approval from Headquarters. Technical luncheon meetings have also been offered throughout the year with the final luncheon held on December 10, 2003 at the Burnaby Mountain Golf Club. In addition, TTBC is also developing an on-going relationship with BCIT. A two days trenchless workshop entitled Trenchless Technology BC: No-Dig 2004 was held on March 22-23, 2004.

Washington State has been quiet to date due to lack of organization. The Northwest Chapter Board is presently working on getting things going. Washington State NASTT members are encouraged to support the local organizing committee and participate in future events. The short course on HDD good practices guideline is being organized for fall 2004. This event is hoped to generate interest in trenchless technology and the technology of HDD in particular. Other courses on trenchless technology are also being considered for future events. These courses include pipe bursting, micro tunneling, relining and the PACP condition assessment courses.

Submitted by:
Ken Chua, MSCE, P. Eng.
Liaison to NASTT
Northwest Chapter

The Northwest Chapter of the North American Society for Trenchless Technology (NWNASTT) held its annual general meeting on March 23, 2004 in New Orleans during the 2004 No-Dig Show. Twelve members attended the annual general meeting. Mark Wallbom, current Chair of NASTT, attended the meeting as well.

The meeting started with the report from the Chairperson of the Northwest Board, Dave Krywiak. The activities from the past year were summarized. In particular, the TTBC situation was reviewed in detail.

The next agenda item was the election of executive members. The followings are the election results:

- Kim Staheli Louch from Washington State will succeed Dave as the Chairperson.
- The Vice-Chair is vacant.
- Albert Kwan from Alberta Region will remain as the secretary.
- Neil Kucharski from the Alberta Region will assume the Treasurer position.
- The Directors are as follows:
 - Eileen Robinson and Jack Burnam for Washington State
 - Bill Boyes for the Alberta Region
 - Richard Harper for the B.C. Region
- The B.C. Region will have 2 vacant director positions in the Northwest Chapter executive board.
- Ken Chua will remain as the Liaison to NASTT.
- Dave Krywiak will step down and assume the duty of Past-Chair.

LOCAL GROUP NEWS

ALBERTA



The Edmonton Region has conducted 6 Technical Luncheons since the last AGM. A scholarship of \$1,000 was presented for graduate research on trenchless technology at the University of Alberta. In addition, the HDD course was conducted in October 2003 with 36 participants. A presentation on trenchless technology was given to the undergraduate class. Several student mixer events were conducted at the University of Alberta as well.

The Calgary region held the trenchless symposium in November 2003, with over 120 registrations for the event and Mark Wallbom as the keynote speaker. The event was very successful and has sparked a lot of interest in the Calgary region. A local board will be formed to promote trenchless technology in

Calgary.

BRITISH COLUMBIA



Congratulations! The BC region has been approved as a separate chapter pending the submission and approval of the new bylaws. We certainly wish all the best for all the members in BC.

Technical luncheon meetings have been offered throughout the year with the final luncheon being held on December 10, 2003 at the Burnaby Mountain Golf Club. In addition, TTBC is also developing an on-going relationship with BCIT.

TTBC has conducted 2-day workshops on trenchless lateral installations on March 22 and 23, 2004. These meetings were organized for the lower mainland and Vancouver Island, respectively.

WASHINGTON



The Northwest Chapter Board is presently working on getting things going. Washington State NASTT members are encouraged to support the local organizing committee and participate in future events.

The short course on HDD good practices guideline is being organized for fall 2004 in Seattle. This event is hoped to generate interest on trenchless technology in general, and HDD in particular.

NORTHWEST TRENCHLESS PROJECTS

72 kV Transmission Lines Crossing the North Saskatchewan River

Stantec Consulting Ltd. was retained by EPCOR Transmission Inc. to provide engineering services to replace two separate 72kV transmission lines crossing beneath the North Saskatchewan River.

At one location, a routine inspection found a 17m long section of transmission line exposed on the riverbed. At another location the cable was located in an unstable section of the river valley. Both crossing locations are in close proximity to established residential communities. To further complicate matters, both lines are oil-filled pipe type (OFPT) cables. In addition to the potential power disruption should the casing pipe be damaged, there was the risk of an oil spill into the North Saskatchewan River.

The project involved a field investigation, preliminary and detailed design, obtaining all necessary regulatory approvals, contractor pre-qualification and selection, and an extensive public communication program. To assist with the design and regulatory approvals, the following investigations were undertaken:

- Geotechnical and Geophysical Investigation complete with ground penetrating radar
- Noise Impact Assessment
- Vegetation and Wildlife Assessment
- Fish Habitat Assessment
- Historical Resources Impact Assessment complete with archaeological excavations

In total, seven notices and applications were prepared and submitted to the regulatory agencies for each crossing.

The final design involved installation of a new 400mm steel casing pipe at each location for installation of the 150mm OFPT pipe. The new casing was installed using horizontal directional drilling (HDD) technology, following a drill path profile 15m below the riverbed to reduce the potential for a drilling fluid frac-out. The Crossing Company of Nisku was the selected contractor for the HDD casing pipe installation. As part of the construction plan, the contractor was required to implement noise mitigation measures to meet the city of Edmonton Noise Bylaw and the Energy and Utilities Board Noise Guidelines. This was particularly important as once drilling was underway construction proceeded

on a 24/7 basis. Noise monitoring during construction confirmed that the conditions of the bylaws were met.

The first and longer of the two crossings at almost 600m was completed in the spring of 2003. The second crossing was completed in winter 2004. Although slightly shorter at just under 400m in length, the second crossing entry location was through a fill area that contained construction rubble. This required the installation of a more than 40m-conductor barrel through the fill zone, through which the drill was completed.

Pipe Bursting for Roadway/Drainage Coordination Program

The City of Edmonton has discovered a 450-mm diameter clay tile sewer with multiple severe fractures. The defective sewer is located along 114 Avenue from 97 Street to the west lane of 101 Street, a total of 189 meters long. 97 Street is the main north-south corridor between downtown and north Edmonton. Therefore, it is almost impossible to close down 97 Street for the repair of this sewer. In addition, 101 Street will be paved in 2004, thus requiring all sewer repairs affecting 101 Street to be completed prior to the paving work. Based on the above constraints, pipe bursting was considered as a potential rehabilitation method for this project.

In addition to the environmental considerations, cost effectiveness for the various methods to rehabilitate this pipe were also performed. The various methods considered included pipe bursting only, hand tunnel spot repairs with relining, pipe bursting with relining, and open-cut spot repairs with relining. The effectiveness between in-house contracting and contracting was evaluated as well. Based on the evaluation, the pipe bursting option using an outside contractor was selected. The project was successfully tendered and the pipe bursting work will be completed in June 2004.

The successful contractor is Tectonic Trenchless Inc. from Calgary Alberta. The proposed pipe bursting will include a machine pit at the upstream end of the pipe. A drill stem will be sent through the existing pipe to the downstream manhole on 97 Street. The drill stem will then be surfaced east of 97 Street. The new pipe will be pulled through the pipe by the drill stem. The pipe bursting process will be completed in about one week.

A Holistic Approach Sewer Rehabilitation Strategy

The City of Edmonton has a total of 4590 kilometers of sanitary, storm and combined sewers. As majority of the sewers are more than fifty years old, a sewer rehabilitation work plan is mandatory not only for maintaining the sewer system to the current level of service but also avoiding high costs associated with emergency repairs as well as alleviating potential adverse environmental and social impacts. The City has been taking a proactive approach in sewer rehabilitation since 1980. A number of sewer rehabilitation programs have been successfully carried out. These programs include annual sewer inspection, local sewer rehabilitation, neighbourhood rehabilitation, sewer upgrading and trunk sewer rehabilitation. Because of the recent developments in new technologies with respect to sewer inspection, data management and sewer rehabilitation methods, and new approaches in strategic planning, as well as environmental regulation and social demands, the City recognized the benefit of these new technologies and approaches. As a result of the City's commitment to the environment and public and therefore, decided to take a further step to develop a more comprehensive sewer rehabilitation strategy project charter as a guide for sewer rehabilitation.

In developing the project charter, a holistic approach was taken. Best practices suitable to the City's environment were adopted, life cycle management and economic life concepts were considered and existing rehabilitation programs for water mains and road works were amalgamated to make all related infrastructure programs become more cost effective. The holistic approach optimized problems between technical, environmental and economical considerations while also taking the social conditions into account.

The scope of work in the development of the project charter includes the assessment of the City's current infrastructure rehabilitation programs, carrying out a research on latest technologies and best practices in sewer rehabilitation, carrying out a gap analysis between the existing programs and is required for best practices and sustainability for the establishment of new sewer rehabilitation programs with respect to asset inventory, condition assessments, performance assessment, rehabilitation prediction and cost forecasting, investigation appraisal and delivering methods as well as monitoring requirements. In order to ensure that accurate information be shared across all lines during the project so that effective decisions can be made and the support of the senior management can be gained, a steering committee was proposed. This paper outlines the requirement for a steering committee and specifies the role and responsibilities of each member of the

steering committee. In addition, this paper outlines a short and long term prioritized sewer rehabilitation work plan for the City on the basis of risk analyses.

The project charter developed is an effective sewer system management system based on the principle of sustainability and best practices. At present, the first phase of the project is underway.

Britannia/Youngstown Area Drainage Infrastructure Rehabilitation

The Britannia/Youngstown neighborhood is located in west Edmonton. The drainage infrastructure in the Youngstown subdivision consists of sanitary and storm sewers built in 1958 and 1959. The storm sewers are concrete pipe, with a total length of about 3.3 km and sizes ranging from 250mm to 375mm in diameter. The sanitary sewers are tile pipe, with a total length of about 3.1 km and sizes ranging from 200mm to 375mm in diameter. The sewer depth ranges from 2.5m to 4.2m with an average depth of 2.9m. There are approximately 46 sanitary manholes and 49 storm manholes in this area.

As part of the Neighborhood Infrastructure Program (NIP), Drainage Services of the City of Edmonton started the drainage rehabilitation design project in 2002. The project objective was to design and implement structural rehabilitation for the existing deteriorated drainage system in the subdivision using trench and trenchless technology, coordinating with roadways and other utilities rehabilitation plans, to achieve cost savings and meet the quality standards of Drainage Services.

The design work included review of CCTV tapes and reports, assessment of structural condition, generating rehabilitation location list, determining rehabilitation methods, and conducting cost analysis. The design was started in September 2002. Based on the CCTV review results, all televised locations (46) were assessed using the City's Standard Sewer Condition Classification. The assessment results were documented in a standard evaluation form used by the Upgrading Group of the Design and Construction section. After the structural assessment, 32 pipe locations were selected for rehabilitation from the 46 locations assessed. The total rehabilitation length is approximately 1950m (with about 150m of open cut repair and 1800m of trenchless repair using CIPP lining). The preliminary design was finished at the end of 2002, and the final design was finished at the end of June 2003. The construction started on April 14, for completion by May 21. The estimated costs for the open cut and reline repairs are \$143,500 and \$530,781, respectively.

STUDENT CHAPTERS NORTHWEST CHAPTER



Professor -in- Charge	Dr. Mohamed Al-Hussein mhussein@construction.ualberta.ca	Dr. Janaka Ruwanpura janaka@ucalgary.ca
Student Organizer	Hussein Al-Battaineh htdb@construction.ualberta.ca	

CHAPTER SCHOLARSHIP

Several scholarships will be set up to promote interest in trenchless technology at the university level. These scholarships will be awarded to the best graduate research or the best undergraduate studies on trenchless technologies. Please contact the NASTT Northwest Chapter Executive Board for information.

NASTT Education Fund

NASTT has established two programs designed to encourage the establishment of new student chapters and to support the activities of existing chapter. These two programs are student chapter grant program and student chapter leadership stipend program. Each of these programs provide up to US\$1,000 to student chapters and professors. It is encouraged that the student chapters and their professors apply for these grants to further their interest in trenchless activities and development.

ABSTRACTS REQUEST FOR 2005 NO-DIG SHOW

The North American Society for Trenchless Technology (NASTT) is requesting abstracts (500 words or less) for the 2005 No-Dig Show, April 24-27, in Orlando, Fla.

The deadline for submitting abstracts is July 16, 2004. The Program Committee will meet on July 23, 2004. Authors will be notified shortly thereafter.

For your convenience, you may submit an abstract online at <http://www.nastt.org/2005papers.html>.

The goal of the 2005 Program Committee is to include more than 100, high quality, peer reviewed papers in the conference.

NASTT ROUNDUP

Trenchless Training Modules

One of the NASTT objectives is to provide educational and training programs for all persons interested in the Technology. In order to establish and promote guidelines and standards for acceptable economic and safe application of the Technology in the public's interest, a series of education and training modules are to be developed over the next few years. NASTT has since developed a Horizontal Directional Drilling Good Practices Guidelines. Following the successful implementation and participation by the industry in this module, NASTT is now undertaking the development of two more education and training modules. These two modules include the Cured-in-Place Pipe (CIPP) and Pipe Bursting. The Centre for the Advancement of Trenchless Technology (CATT) is leading the work on the CIPP. And a team leading by David Bennett of Bennett/Staheli Engineers and Dr. Samuel Ariaratnam of Arizona State University is developing the other module on the Pipe Bursting.

Chapter Reporting

Chapter activity presentation has been historically a part of the agenda in every NASTT Board of Directors meeting. It was decided that each Chapter (Regional and Student) be given an action plan with reporting mechanisms back to the headquarters. Semi-annual briefs are now needed so that regional activities can be shared. These briefings can include topics on the research and development progress, education and training objectives and programs, and partnerships with other organizations and agencies. List of activities can include:

1. Meetings with industry speakers;
2. List of officers and planned events and programs;
3. Chapter Forum at No-Dig ;
4. Outreach to local trenchless companies and universities;
5. Minutes of Board meeting and annual report.

CONGRATULATIONS!

Mr. Hussein Al-Battaineh has been awarded with the \$1,000 scholarship for his research on trenchless technology. The topic of research is "Schedule Optimization by Using Genetic Algorithms". Insituform Technology Inc. has sponsored the research on this interesting topic.

2004 NO-DIG SHOW

The 2004 No-Dig Show was successfully held in the fabulous Hyatt Regency in New Orleans, Louisiana, USA during March 21 to 24, 2004. The event was sponsored by the North American Society for Trenchless Technology (NASTT) in cooperation with the Directional Crossing Contractors Association (DCCA). The show attracted over 1,000 participants with many international representatives.

The format of the conference consisted of 4-track technical paper sessions including the following topics:

- Social Costs
- Contracting
- Keyhole/Fiber Optics
- International Perspective
- Pipe Bursting
- Microtunnelling – Challenging Geology, Urban Environment, Design, Technical Applications
- Pipeline Rehabilitation - Lining Materials, Design, Technology Review, Advances, Large Pipe Rehab
- SUE – Classification Systems, New Approaches
- HDD – Pipe Materials, Research & Innovation, Drilling Fluid, Case Studies, Urban Environment
- Pipe Assessment – Research, Case Studies, Integration & Evaluation

The NASTT & DCCA 2004 Annual Education Fund Auction was also conducted on March 22, 2003 during the 2004 No-Dig Show. The NASTT proceeds have facilitated the development of new NASTT student chapters, supported activities of existing student chapters and sponsored international trenchless technology research. The DCCA proceeds have provided scholarships and grants to continuing education and training for students in the directional drilling industry.

NEWS FLASH

March 4 – Participated in the APEGGA student mixer night at University of Alberta.

March 18 – The Edmonton Local Board held its annual general meeting and elected new board executives. The new executives include David Boyce, Siri Fernando, Jason Lueke, Albert Kwan and Neil Kucharski.

UPCOMING EVENTS

July 2004 - The HDD short course will take place in Seattle, Washington State. This is a two-day training on the best practices for HDD

September 26-28, 2004 - Trenchless Symposium in association with the TAC. This event will be in the Fantasyland Hotel of Edmonton, Alberta. The Northwest Chapter of NASTT, CSCE and TAC will jointly sponsor this symposium and conference.

April 24 to 27, 2005 - The NASTT 2005 No-Dig Show will be held from April 24 to 27, 2005 at Orlando (Kissimmee), Florida, USA. The organizing committee is now accepting abstracts for the 2005 No-Dig Show. Please submit one page abstracts, not more than 500 words by June 1, 2004 for consideration to NASTT, 1655 N. Ft. Myer Drive, Ste. 700, Arlington, VA 2209 (e-mail: nastt@nastt.org and fax: 703-739-6672).

NASTT NW Chapter WEB Site

The NASTT Northwest Chapter Web site has been on-line since January 2004. The Web address is www.nastt-nw.com. Please log on to check for the latest news. Lists of companies in trenchless industry are also provided. Trenchless contractors, manufacturers and service providers are welcomed to add your name onto the list.

This is your newsletter. We are looking for articles, events, suggestions and ideas for the next issue. If you would like to receive the NORTHWEST NEWS, contact the editor. Letters to the editor are welcome.

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NASTT Northwest Chapter WEB Site: www.nastt-nw.com

Editor: Albert Kwan Phone: (780) 496-6852, Fax: (780) 496-6865, e-mail: albert.kwan@edmonton.ca