Revitalizing Global Underground Utility Infrastructure
**SCHEDULE AT A GLANCE**

(Subject to change)

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#### FRIDAY, JULY 13

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<tr>
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<td>Committee Meetings</td>
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#### SATURDAY, JULY 14

<table>
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</thead>
<tbody>
<tr>
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<td>Registration Hours</td>
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<tr>
<td>8:00 a.m.–5:00 p.m.</td>
<td>Committee Meetings</td>
</tr>
<tr>
<td>8:00 a.m.–12:00 p.m.</td>
<td>Pre-Conference Workshop</td>
</tr>
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#### SUNDAY, JULY 15

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 a.m.–6:30 p.m.</td>
<td>Registration Hours</td>
</tr>
<tr>
<td>7:00 a.m.–6:00 p.m.</td>
<td>Committee Meetings</td>
</tr>
<tr>
<td>8:00 a.m.–5:00 p.m.</td>
<td>Pre-Conference Workshops</td>
</tr>
<tr>
<td>2:00 p.m.–7:00 p.m.</td>
<td>Bookstore Hours</td>
</tr>
<tr>
<td>5:30 p.m.–7:00 p.m.</td>
<td>Welcome Reception in Exhibit Hall</td>
</tr>
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</table>

#### MONDAY, JULY 16

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 a.m.–4:30 p.m.</td>
<td>Registration and Bookstore Hours</td>
</tr>
<tr>
<td>7:30 a.m.–9:00 a.m.</td>
<td>Plenary Breakfast and Keynote Speaker</td>
</tr>
<tr>
<td>9:00 a.m.–4:00 p.m.</td>
<td>Exhibit Hall Hours</td>
</tr>
<tr>
<td>9:00 a.m.–10:00 a.m.</td>
<td>Networking Break in Exhibit Hall</td>
</tr>
<tr>
<td>10:00 a.m.–11:30 a.m.</td>
<td>Concurrent Technical Sessions</td>
</tr>
<tr>
<td>11:30 a.m.–1:00 p.m.</td>
<td>Exhibit Hall Lunch</td>
</tr>
<tr>
<td>1:00 p.m.–2:30 p.m.</td>
<td>Concurrent Technical Sessions</td>
</tr>
<tr>
<td>2:30 p.m.–4:00 p.m.</td>
<td>Networking Break in Exhibit Hall</td>
</tr>
<tr>
<td>4:00 p.m.–5:30 p.m.</td>
<td>Concurrent Technical Sessions</td>
</tr>
</tbody>
</table>

#### TUESDAY, JULY 17

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 a.m.–6:00 p.m.</td>
<td>Registration Hours</td>
</tr>
<tr>
<td>7:00 a.m.–4:30 p.m.</td>
<td>Bookstore Hours</td>
</tr>
<tr>
<td>7:30 a.m.–4:30 p.m.</td>
<td>Exhibit Hall Hours</td>
</tr>
<tr>
<td>7:30 a.m.–8:30 a.m.</td>
<td>Continental Breakfast in Exhibit Hall</td>
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<tr>
<td>7:30 a.m.–8:30 a.m.</td>
<td>Women in Engineering Breakfast</td>
</tr>
<tr>
<td>8:30 a.m.–10:00 a.m.</td>
<td>Concurrent Technical Sessions</td>
</tr>
<tr>
<td>10:00 a.m.–11:30 a.m.</td>
<td>Networking Break in Exhibit Hall</td>
</tr>
<tr>
<td>11:30 a.m.–1:00 p.m.</td>
<td>Awards Luncheon</td>
</tr>
<tr>
<td>1:15 p.m.–1:45 p.m.</td>
<td>Bechtel Lecture</td>
</tr>
<tr>
<td>2:00 p.m.–3:30 p.m.</td>
<td>Concurrent Technical Sessions</td>
</tr>
<tr>
<td>3:30 p.m.–4:30 p.m.</td>
<td>Networking Break in Exhibit Hall</td>
</tr>
<tr>
<td>4:30 p.m.–5:30 p.m.</td>
<td>Concurrent Technical Sessions</td>
</tr>
<tr>
<td>6:30 p.m.–9:30 p.m.</td>
<td>Special Event (off-site) – Centre Island</td>
</tr>
</tbody>
</table>

#### WEDNESDAY, JULY 18

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 a.m.–1:00 p.m.</td>
<td>Registration Hours</td>
</tr>
<tr>
<td>7:30 a.m.–8:00 a.m.</td>
<td>Continental Breakfast</td>
</tr>
<tr>
<td>8:00 a.m.–9:30 a.m.</td>
<td>Concurrent Technical Sessions</td>
</tr>
<tr>
<td>9:30 a.m.–10:00 a.m.</td>
<td>Networking Break</td>
</tr>
<tr>
<td>10:00 a.m.–11:30 a.m.</td>
<td>Concurrent Technical Sessions</td>
</tr>
<tr>
<td>12:30 p.m.–6:00 p.m.</td>
<td>Tours/Recreational Activities</td>
</tr>
</tbody>
</table>
Letter from UESI President

On behalf of the Conference Steering Committee, we would like to welcome one and all to Toronto, Canada and to the Utility Engineering and Surveying Institute (UESI) Pipelines 2018 Conference. Toronto is the largest city in Canada, the fourth largest city in North America, and is a premier destination. Its rich diversity offers boundless visitor experiences and learning opportunities.

In its 38th year, this Conference has continued to provide a great forum where pipeline practitioners can gather to exchange ideas and get revitalized. The unique attribute for the 2018 Conference is that it is the first international conference under the auspices of UESI to be held in Canada. We anticipate close to 1000 attendees from our global pipeline community.

In keeping with this year’s Conference theme of “Revitalizing Global Underground Utility Infrastructure”, we have developed a strong program with more than 180 peer-reviewed papers, poster sessions and panel discussions spread over 8 tracks, plus 6 focused pre-conference workshops. The presentations will cover various aspects of pipelines, utilities, surveying and geomatics. We expect strong participation of exhibitors to complement the technical sessions, and given past success, the program is designed to allow ample time to visit the exhibit hall.

The Conference will kick-off officially on Sunday evening with a networking reception in the exhibit hall. A plenary breakfast featuring Michael Cook, the photographer who turned Toronto’s sewers into art, will precede the technical sessions on Monday. Prior to the start of the technical sessions on Tuesday, we are introducing this year’s Women in Engineering Breakfast. At Tuesday’s luncheon, we will recognize and honor the contributions of two dedicated professionals in our industry by bestowing the ASCE Stephen D. Bechtel Pipelines Engineering Award and the UESI Pipelines Division Award of Excellence. The luncheon will also showcase commentator/author Rex Murphy as the keynote speaker.

There will be numerous opportunities to network during the catered functions in the exhibit hall, dinner Tuesday evening at Centre Island located a short ferry ride in Toronto Inner Harbor, and golf on Wednesday at the conclusion of the conference. The attendees will also have the opportunity to tour the City’s John Street Pumping Station and the Energy Transfer Station that houses Enwave’s Deep Lake Water Cooling system which is the world’s largest lake source cooling system.

Come to Toronto and join your peers and be part of the Revitalizing Global Underground Utility Infrastructure community. In addition, bring home with you fond memories of one of the most cosmopolitan cities in the world.

Cheers and see you in Toronto!

ON BEHALF OF THE CONFERENCE STEERING COMMITTEE
William Fernandes
Director, Toronto Water

Conference Steering Committee

CO-CHAIR
Tennyson Muindi, P.E., M.ASCE
Lead Associate
McMillen Jacobs Associates

CO-CHAIR
William Fernandes, M.ASCE
Director, Toronto Water, Water Treatment & Supply City of Toronto

UESI LIASON
John Galleher, P.E., M.ASCE
Vice President, Pure Technologies U.S. Inc.

TECHNICAL PROGRAM CO-CHAIR
Jason S. Luke, Ph.D., P.E., M.ASCE
Trenchless Practice Leader, Associated Engineering

ADVISOR TO THE TECHNICAL PROGRAM CO-CHAIRS
Anna Pridmore, Ph.D., M.ASCE
Vice President, Pipeline Solutions, Structural Technologies

PIPENELINES DIVISION EXECUTIVE COMMITTEE LIASON
Samuel T. Ariaratnam, Ph.D., P.E., F.ASCE
Arizona State University

EDUCATION CHAIR
Erin McGuire, P.E., M.ASCE
CDM Smith

EXHIBITS AND SPONSORSHIP CHAIR
Devan G. Thomas, P.E., M.ASCE
Vice President, Technical Director, Conveyance/Infrastrucure Services, AECOM

INTERNATIONAL CHAIR
Sandra Rolfe-Dickinson, P.E., C.Eng. (UK)
Senior Technical Consultant, Technical Director, Pipeline Technologies, PipeTech Inc.

ASCE SPONSORSHIP AND EXHIBIT SALES
Sean Scully
Manager, Sponsorship and Exhibit Sales

UTILITY ENGINEERING & SURVEYING INSTITUTE (UESI)
OF ASCE
John Segna, P.E., F.ASCE
Director, UESI

Cristina Charron
Conference Manager, UESI

Susan Reid, Aff.M.ASCE
Manager, UESI
The large diameter pipeline owners group is a consortium of large diameter pipeline owners, currently totaling over 80 members, which work together and discuss the operation, maintenance, and management of their large diameter pipeline systems. The forum will discuss condition assessment and monitoring related to large diameter pipeline systems. Presenters will include owners, researchers, and consultants. The session will also include an owner’s roundtable discussing challenges and solutions relating to the asset management of large diameter pipelines.

Speakers: Nathan Faber, John Plattsmeier, Balvant Rajani, Steve Simon, Serge Martin Paul, Mike Zantling

Registration Fee: Onsite: $245
Number of PDHs: 4 hrs
Sponsored by: pure

SUNDAY, JULY 15

WELCOME RECESSION IN EXHIBIT HALL
5:30 p.m.–7:00 p.m. | Osgoode/Sheraton Hall
Join your fellow attendees in opening the conference by enjoying food, drinks and viewing the exhibits!
Included in Full, Speaker, Moderator, Municipal, Student, and Monday Daily registration rates.

Additional tickets: $85
Sponsored by: AECOM

POSTER VIEWING IN GRAND BALLROOM FOYER
Posters available for viewing from Sunday, July 15 at 6:00 p.m. through Tuesday, July 17 at 4:30 p.m. Presenters will be available for questions on Monday, July 16 from 3:00 p.m.–4:00 p.m. and Tuesday, July 17 from 3:30 p.m.–4:30 p.m.

MONDAY, JULY 16

PLENARY BREAKFAST, WELCOME, AND KEYNOTE PRESENTATION
7:30 a.m.–9:00 a.m. | Grand Ballroom
Join us for the introductory event of the 2018 Pipelines Conference! Start the morning with a welcome from a city of Toronto official and Robin A. Kemper, PE, LEED AP, FSEI, FASCE, followed by the Keynote Speaker, Michael Cook. Don’t miss the exceptional opportunity to fuel up for a day of learning with friends and colleagues.

Jaye Robinson is a Toronto City Councillor for Ward 25 – Don Valley West and the City of Toronto’s Chair of Public Works and Infrastructure Committee. She oversees a $2 billion portfolio that includes Transportation Services, Toronto Water, Solid Waste Management and Engineering and Construction Services. As Chair of Public Works, Jaye continues to push for greater resiliency in our water infrastructure by improving service capacity and preparing for extreme cold weather conditions. She has also moved numerous motions to increase funding and accelerate significant infrastructure projects, such as the rehabilitation of the Don River as a part of the City of Toronto’s Wet Weather Flow Master Plan. Jaye remains focused on innovative, fiscally sound solutions to Toronto’s goals and priorities – moving our city forward through consensus and clear, evidence-based decision making.

Robin A. Kemper, PE, LEED AP, FSEI, FASCE and ASCE President-elect, has over thirty-five years of diverse and extensive structural engineering experience in design, analysis, and forensics, focused mainly on buildings. Robin currently is a Risk Engineer with Zurich North America. She works for both the Professional Liability and Construction Properties Risk Engineering Groups, providing technical support to construction project policies, developing best practices, and investigating losses on construction projects. Robin has a passion for Engineering Ethics and since 2011, in her spare time, Robin has given over 20 presentations to various engineering groups. Robin is a licensed Professional Engineer in six jurisdictions, and a Fellow of both ASCE and the ASCE Structural Engineering Institute. She is currently a member of the Civil Engineering Industrial Advisory Boards for Rutgers University and the College of New Jersey. Robin has been recognized for her service to ASCE throughout her career. Her most recent recognitions are the 2013 William H. Wisely American Civil Engineer Award (a National award), and the 2015 ASCE New Jersey Section Civil Engineer of the Year.
Michael Cook is a Canadian researcher, underground explorer, landscape architect and heritage consultant. In 2015, he was named one of Canada’s greatest modern explorers by Canadian Geographic magazine for his work to reveal the unseen infrastructure of Toronto and other cities. His photography has been shown in special public exhibitions for Toronto’s CONTACT Photography Festival and for Doors Open Toronto, featured in Maclean’s magazine, and published internationally in a variety of books, periodicals and online venues.

In his work on infrastructure, Cook emphasizes the value of public attention and understanding of the systems that allow our cities and society to function. By revealing the physical scale, material reality and geographic presence of otherwise hidden infrastructure, his photographs and writing encourage informed public engagement with the history and contemporary challenges of water, wastewater and power. Rather than presenting an obstacle to project success or operational management, Cook suggests that an interested public is one that is better-positioned to support system expansion and renewal, tolerate disruptions, and provide more valuable input to planners and managers. Cook will present stories from his own underground experiences—from Toronto’s historic Garrison Sewer to the famed hydroelectric tunnels at Niagara Falls—and review cases of public engagement with subsurface infrastructure from around the world.

Included in Full, Speaker, Moderator, Municipal, Student, and Monday Daily registration rates.

Additional tickets: $45
Sponsored by: Cardno

EXHIBIT HALL OPEN
9:00 a.m.–4:00 p.m. | Osgoode/Sheraton Hall

NETWORKING BREAK IN EXHIBIT HALL
9:00 a.m.–10:00 a.m. | Osgoode/Sheraton Hall

Sponsored by: SYNTEC

CONCURRENT TECHNICAL SESSIONS
10:00 a.m.–11:30 a.m. | See room assignments on page 8.

EXHIBIT HALL LUNCH
11:30 a.m.–1:00 p.m. | Osgoode/Sheraton Hall

Enjoy lunch as you tour this year’s exhibit hall, meet exhibitors, and learn about the exciting new developments and products in the pipelines industry.

Included in Full, Speaker, Moderator, Municipal, Student and Monday Daily registration rates.

Additional tickets: $55
Sponsored by: Northwest Pipe Company

CONCURRENT TECHNICAL SESSIONS
1:00 p.m.–2:30 p.m. | See room assignments on page 9.

NETWORKING BREAK IN EXHIBIT HALL
2:30 p.m.–4:00 p.m. | Osgoode/Sheraton Hall

Sponsored by: American Concrete Pressure P

POSTER PRESENTATIONS
Posters available for viewing from Sunday, July 15 at 6:00 p.m. through Tuesday, July 17 at 4:30 p.m. In the Grand Ballroom Foyer Presenters will be available for questions on Monday, July 16 from 3:00 p.m.–4:00 p.m. and Tuesday, July 17 from 3:30 p.m.–4:30 p.m.

CONCURRENT TECHNICAL SESSIONS
4:00 p.m.–5:30 p.m. | See room assignments on page 10.

TUESDAY, JULY 17

EXHIBIT HALL OPEN
7:30 a.m.–4:30 p.m. | Osgoode/Sheraton Hall

CONTINENTAL BREAKFAST IN EXHIBIT HALL
7:30 a.m.–8:30 a.m. | Osgoode/Sheraton Hall

Sponsored by: CHIMEN

WOMEN IN ENGINEERING BREAKFAST AND PANEL DISCUSSION
7:30 a.m.–10:00 a.m. | Grand West

Breakfast will precede the WWomen’s Forum and will provide an excellent opportunity for networking with female colleagues from across the industry. The Women in Engineering Panel Discussion will feature a guided discussion covering a wide array of topics tailored for women professionals in the water & wastewater industry. Tips, stories and guidance on day-to-day interactions, how to manage challenging situations and achieving your career vision will be explored. We are honored to be joined by our moderator, Anna Pridmore, and a group of esteemed panelists which includes:

- Robin Kemper – ASCE President-Elect
- Therese Kline – Michigan DOT
- Marlee Frazen – DC Water
- Marlene McInerney – Black & Veatch
- Stephanie Darr – First Energy

We invite and encourage all women attending Pipelines – from young members to seasoned veterans – to join us for this groundbreaking morning session.

Sponsored by: CHIMEN

CONCURRENT TECHNICAL SESSIONS
8:30 a.m.–10:00 a.m. | See room assignments on page 11.

NETWORKING BREAK IN EXHIBIT HALL
10:00 a.m.–11:30 a.m. | Osgoode/Sheraton Hall

Sponsored by: CIMAP

AWARDS LUNCHEON
11:30 a.m.–1:00 p.m. | Grand Ballroom

Please join us in celebrating the achievement by the winners of the 2018 Stephen D. Bechtel Pipeline Engineering Award and the ASCE Pipeline Division Award of Excellence. This annual awards luncheon will include a State of the Division address and conclude with a keynote speech by our guest of honor, Mr. Rex Murphy.

2018 STEPHEN D. BECHTEL PIPELINE ENGINEERING AWARD

Established by the ASCE Board of Direction in 1970, this award recognizes outstanding achievements in pipeline engineering. The Bechtel Foundation donated funds to support the award in honor of contributions made by Stephen D. Bechtel. The award is made annually to an ASCE member who has made a significant contribution to the advancement of pipeline engineering in research, planning, design, or construction.

Randy Randolph, P.E., M.ASCE

Randy has over 30 years of experience in the design, construction and maintenance of dams, canals, pipelines, pumping plants, groundwater recharge projects and other associated facilities that are part of the Central Arizona Project (CAP). He managed the Engineering Department for 8 years and recently retired as the Director of Centralized Maintenance and Reliability Engineering. Pipeline work included the design, construction, inspection and repair of prestressed concrete, cast-in-place concrete and steel pipelines ranging in diameter from 6 feet up to 21 feet.
ASCE PIPELINE DIVISION AWARD OF EXCELLENCE
The ASCE Pipeline Division Award of Excellence was established in 1988 by the Pipeline Division. It is given to a Fellow, Member, or Associate Member of ASCE who is adjudged by the Executive Committee to have given outstanding continuous and conspicuous service to the profession, ASCE, and the Pipeline Division.

Victor E. Fernandez-Cuervo
Victor E. Fernandez-Cuervo, PE, CGC, ENV SP, F. ASCE is the recipient of the 2018 Pipeline Division Award of Excellence for his service and leadership as executive committee chair of the UESI Pipeline Division during FY 2017. Victor previously served as co-chair of the ASCE Pipelines Conference in Miami Beach and continues to be involved with technical committee work. Victor is a Registered Professional Engineer and Certified General Contractor with over 32 years of experience in public and private sectors, mainly engaged in utility infrastructure planning, utility coordination, survey, design, permitting, contract procurement, construction, project management, and program management activities. Victor attended Purdue University where he earned his BSWE degree and subsequently earned advanced MSIE and MBA degrees from the University of Miami. Employed by Miami-Dade County since 1991, Victor has held various senior level positions, including Chief Engineer, and throughout his career he has directed multiple divisions responsible for implementing municipal water & sewer projects and CIP programs. Victor has co-authored technical publications, most notably the article featured in the January 2018 edition of ASCE’s Civil Engineering magazine, and has formally presented on varying technical topics to students and colleagues throughout the US and China.

KEYNOTE PRESENTATION: REX MURPHY
Social Commentator, Editorialist & Distinct Canadian Voice
The one and only Rex Murphy is a trusted face and voice across Canadian media. His intellect and biting humour strike through the heart of profound political and social issues. Canadians are treated to weekly commentary from Rex on CBC’s The National along with his Saturday column in the National Post. He’s also acted as an editorial contributor to CBC Radio’s Definitely Not the Opera. For over 20 years he was the host and moderator of CBC Radio’s Cross Country Checkup. The show brought over one million listeners and, at times, 15,000 callers wanting to join in discussions.

As a speaker, Rex radiates intelligence and trustworthiness. His endearing style brings forth a sarcastic intellect and deep insight into issues affecting individuals and businesses. Audiences can expect to be simultaneously informed and entertained by Rex’s provocative commentary. He knows what makes Canadians tick, and what drives our political and social affairs. Rex makes us important, reminds us we have culture beyond hockey. His thought-provoking, sometimes stinging commentary and original insights are delivered through a vocabulary to make Webster’s consider updating.

Included in Full, Speaker, Moderator, Municipal, Guest, Student and Tuesday Daily registration rates.

Additional tickets: $65

2018 STEPHEN D. BECHTEL AWARD LECTURE
1:15 p.m.–1:45 p.m. | Dominion North

CONCURRENT TECHNICAL SESSIONS
2:00 p.m.–3:30 p.m. | See room assignments on page 12.

NETWORKING BREAK IN EXHIBIT HALL
3:30 p.m.–4:30 p.m. | Osgoode/Sheraton Hall

Sponsored by:

POSTER PRESENTATIONS
Posters available for viewing from Sunday, July 15 at 6:00 p.m. through Tuesday, July 17 at 4:30 p.m. In the Grand Ballroom Foyer Presenters will be available for questions on Monday, July 16 from 3:00 p.m.–4:00 p.m. and Tuesday, July 17 from 3:30 p.m.–4:30 p.m.

CONCURRENT TECHNICAL SESSIONS
4:30 p.m.–5:30 p.m. | See room assignments on page 13.
Monday, July 16 from 3:00 p.m.–4:00 p.m. and Tuesday, July 17 from 3:30 p.m.–4:30 p.m.

Poster presentations will be available for viewing from Sunday, July 15 at 6:00 p.m. through Tuesday, July 17 at 4:30 p.m. Presenters will be available for questions on Monday, July 16 from 3:00 p.m.–4:00 p.m. and Tuesday, July 17 from 3:30 p.m.–4:30 p.m.

**COMMITTEE MEETINGS**

<table>
<thead>
<tr>
<th>COMMITTEE</th>
<th>DATE</th>
<th>TIME</th>
<th>MEETING ROOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>UESI Pipeline Division</td>
<td>July 13, 2018</td>
<td>8:00 AM–5:00 PM</td>
<td>VIP Room (concourse level)</td>
</tr>
<tr>
<td>UESI Board of Governors</td>
<td>July 14, 2018</td>
<td>8:00 AM–5:00 PM</td>
<td>VIP Room (concourse level)</td>
</tr>
<tr>
<td>Seismic Design of Buried Pipelines Task Committee</td>
<td>July 14, 2018</td>
<td>8:00 AM–5:00 PM</td>
<td>Dominion South (2nd Floor)</td>
</tr>
<tr>
<td>Thrust Restraint Design for Buried Pipelines Task Committee</td>
<td>July 14, 2018</td>
<td>8:00 AM–5:00 PM</td>
<td>York (Richmond Tower)</td>
</tr>
<tr>
<td>Sustainable Design of Pipeline</td>
<td>July 14, 2018</td>
<td>9:00 AM–4:00 PM</td>
<td>Peel (Richmond Tower)</td>
</tr>
<tr>
<td>Pipeline Infrastructure Committee</td>
<td>July 14, 2018</td>
<td>1:00 PM–5:00 PM</td>
<td>Oxford (Richmond Tower)</td>
</tr>
<tr>
<td>Pipe Bursting Projects Task Committee</td>
<td>July 14, 2018</td>
<td>8:00 AM–12:00 PM</td>
<td>Norfolk (Richmond Tower)</td>
</tr>
<tr>
<td>Trenchless Installation of Pipelines (TIPS)</td>
<td>July 14, 2018</td>
<td>3:00 PM–5:00 PM</td>
<td>Chesnut (Richmond Tower)</td>
</tr>
<tr>
<td>AWWA Pipeline Rehabilitation Standards Committee</td>
<td>July 15, 2018</td>
<td>6:30 AM–8:00 AM</td>
<td>Peel Room (Richmond Tower)</td>
</tr>
<tr>
<td>Pipeline Location &amp; Installation Committee</td>
<td>July 15, 2018</td>
<td>8:00 AM–10:00 AM</td>
<td>York (Richmond Tower)</td>
</tr>
<tr>
<td>Task Committee on Pipe Bedding, Backfill, and Trench Shoring</td>
<td>July 15, 2018</td>
<td>8:30 AM–2:30 PM</td>
<td>Linden (Richmond Tower)</td>
</tr>
<tr>
<td>Inspecting Pipeline Installation (MOP 117) Task Committee</td>
<td>July 15, 2018</td>
<td>8:00 AM–5:00 PM</td>
<td>Maple (Richmond Tower)</td>
</tr>
<tr>
<td>Asset Management Division</td>
<td>July 15, 2018</td>
<td>8:00 AM–5:00 PM</td>
<td>Carleton (Richmond Tower)</td>
</tr>
<tr>
<td>Pressure Pipeline Design for Water &amp; Wastewater</td>
<td>July 15, 2018</td>
<td>9:00 AM–1:00 PM</td>
<td>Peel (Richmond Tower)</td>
</tr>
<tr>
<td>Standards Division ExCom</td>
<td>July 15, 2018</td>
<td>10:00 AM–12:00 PM</td>
<td>Oxford (Richmond Tower)</td>
</tr>
<tr>
<td>UESI Younger Membership Engagement Committee</td>
<td>July 15, 2018</td>
<td>1:00 PM–2:30 PM</td>
<td>Cedar (Richmond Tower)</td>
</tr>
<tr>
<td>Journal Editorial (invitation only)</td>
<td>July 15, 2018</td>
<td>2:00 PM–5:00 PM</td>
<td>Oxford (Richmond Tower)</td>
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<td>Task Committee on Direct Pipe &amp; Other Directional Microtunnel</td>
<td>July 15, 2018</td>
<td>2:00 PM–6:00 PM</td>
<td>Peel (Richmond Tower)</td>
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<td>UESI Marketing &amp; Membership Committee</td>
<td>July 15, 2018</td>
<td>2:30 PM–4:00 PM</td>
<td>Cedar (Richmond Tower)</td>
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<td>UESI Organizational Members (invitation only)</td>
<td>July 15, 2018</td>
<td>3:00 PM–5:00 PM</td>
<td>Norfolk (Richmond Tower)</td>
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<tr>
<td>Trenchless Magazine Editorial Advisory (invitation only)</td>
<td>July 17, 2018</td>
<td>10:00 AM–11:00 AM</td>
<td>Carleton (Richmond Tower)</td>
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Due to last minute requests, please double check meeting schedule updates as reflected in our live platforms:
The mobile app and the itinerary planner – https://www.eventscribe.com/2018/ASCE-Pipelines

**POSTER PRESENTATIONS**

Register Now! Visit www.pipelinesconference.org | 7
**TECHNICAL PROGRAM – MONDAY, JULY 16**

7:30 a.m.–9:00 a.m.  
**Plenary Breakfast and Keynote Speaker**

9:00 a.m.–10:00 a.m.  
**Networking Break in Exhibit Hall**

10:00 a.m.–11:30 a.m.  
**Concurrent Technical Sessions**

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CITY HALL | Planning & Design 2  
Shaoqing Ge  
DOMINION NORTH | Condition Assessment 1  
Roberts McMullin  
DOMINION SOUTH | Condition Assessment 2  
Felipe Pulido  
PROVINCIAL NORTH |

**SESSION A1**  
DESIGN  
ANDREW STANTON

386548 – New Transmission Watermain Specifications  
Toronto Water  
Henry Polvi, Prapan Dave, Chad Stephen, Stewart Dickson

387863 – Challenges Associated with Designing Large Diameter Watermain Interconnection Chambers  
Daniel Maskel, Jacek Pawlus, Wendy Tian

381166 – Design Considerations for Dual 9-Inch Water Transmission Pipeline Pig Retrieval Station  
Dorian French, David Miller, Jonathan Howard, Heidi Fischer

**SESSION B1**  
PLANNING  
CHRISTINE ELLENBERGER

386555 – Balancing Prescription and Innovation through Design-Build of a Major Recycled Water Conveyance Project  
Jonathon Marshall, William Wong, Kyle Rohrer, Ryan Sellman

386088 – Breaking In: Planning Your Next Large Diameter Pipeline Shutdown  
Justin Reeves, John Green

**SESSION C1**  
COATINGS  
JONATHAN SHIRK

381544 – Gloss and Color Changes During Exposure of Polyurethane Coatings for Steel Water Pipes and their Possible Link to Long Term Corrosion Protection  
Stuart G. Croll, Chinju Gu, Vinod Upadhyay, Brent D. Keil

379676 – Long Term Weathering Effects of Pipeline Coatings  
Jose Pena, Jeffry Giddings, Ed Weaver, Matt Gaughan

385454 – Accelerated Degradation Test on Coating Materials for Steel Pipes  
Johnnatan Garcia-Ruiz, Shad M. Sargand, Teruhisa Masada

**SESSION D1**  
INSPECTIONS  
JERRY SNEAD

380553 – Application of Pipe Penetrating Radar for Asbestos Cement Pipe Condition Assessment  
Csaba Ékes

383375 – Assessing the Effectiveness of Acoutic Wall Thickness Technology Through Meta-Analysis  
Balvant Rajani, Fred Pfeifer, Donald Shields

386409 – Investigation of Acoustic Wave Propagation and Attenuation in a Damaged Buried Pipe  
Ali Alavinasab, Ashkan Khalili, Marshall Kennedy, Cameron White

**SESSION E1**  
LIVING APPLICATIONS  
MARK POPPE

386993 – Pipeline Rehabilitation of the Orange County Feeder  
Michael McReynolds, Amir Bidgoli, Carl Allen

380947 – Deployment of an Airborne Polymeric Liner for Water Main Renewal  
Brian Thorogood, Mark Knight, Randall J. Cooper

387744 – Qualitative Assessment of Mechanical & Adhesive Service Connections for CIPP  
George Bonitz, Robert Kodladek, Michael Caputi, Rick Baxter, Ian Lancaster

**SESSION F1**  
HDD  
NEIL HARVEY

385068 – Muskingum River Sanitary Sewer Force Main Project – Keys To A Successful HDD River Crossing From The Owner’s Perspective  
Joseph Tucker, Martin Scanlan

385286 – Avoiding Rush Hour with Utilizing Horizontal Directional Drilling  
Clayton Barnard, Arthur Hartle, Marvin Lee, David Reuter

386683 – Crossing an 8,800 Foot Wide Body of Water to Get Long-Term Water Supply to Limestone County  
Allon Hethcoat, Jeff Seal

**SESSION G1**  
ASSET MANAGEMENT  
DOUG JENKINS

386613 – Tarrant Regional Water District’s Asset Management of the Pipeline System Using GIS  
Courtney Jalbert, Lauren Tijerina, Jason Gehrig

Gregory Baird, Tad Radzinski

385608 – The City of Montreal’s Experience with Pipeline Asset Management  
Serge Martin Paul, Brian Brochu

**SESSION H1**  
CONSTRUCTION CONUNDRUMS  
CIAN McDERMOTT

387100 – Stopping and Restarting a $90 Million Pipeline Project is Harder Than it Looks  
Randall Parks, James Light, Matt Turney, Michael Gossett

389051 – Change Management of Key Staff During the Construction of Pipeline  
Todd Warrix, Andrea Beymer

386415 – Some of the Perils and Benefits When Design Responsibility is Moved Down the Process Toward Contractors and Manufacturers  
Dennis Dechant

11:30 a.m.–1:00 p.m.  
**Exhibit Hall Lunch**
1:00 p.m.–2:30 p.m.  Concurrent Technical Sessions

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**SESSION A2**
- DELIVERY
  - KYLIE COUTURE
  - 386864 – Keys to Successful Delivery of a Design-Build Pipeline
    - Gregory Harris, Janet Atkinson, Matthew Carpenter
  - 389524 – Planning, Sequencing and Design of Canada’s Largest CSO Project
    - Daniel Crossman, Allan Rocas

**SESSION B2**
- DESIGN
  - RICH MIELEKE
    - John Bambei, Elizabeth Ralph, David Lay, Brent Keil
  - 381506 – Experimental Full Scale Tests on Shallow Buried Pipes Under Live Load Conditions
    - Bert Bosseler, Mark Klameth, Martin Liebscher, Bernhard Falter, Martin Achmus
  - 386929 – Between a Track and a Hard Place – Thrust Restraint Alternatives in a Constrained Location
    - Keith Bushdiecker, Jeremy Ross, Michael Gosselt

**SESSION C2**
- CRITICAL WM’S
  - PETER NARDINI
  - 384866 – City of Hamilton Approach to the Management of Critical Watermain Infrastructure
    - Mike Zantingh
  - 378619 – An Innovative Approach to Prioritization of the Miami-Dade Water and Sewer Department Water Transmission Mains
    - Robert Card, Olena Lytvyn
  - 380748 – Forensic Evaluation of PCCP Failures: Green Bay Water Utilities Case Study
    - Bryon Livingston, Rasko Ojdrovic, Brian Powell

**SESSION D2**
- DISTRIBUTION & TRANSMISSION MAINS
  - BRYON LIVINGSTON
  - 390329 – Enid Wastewater Treatment Plant Addresses Challenging In-Service Repair of 30-inch Pipeline
    - Murat Engindeniz, Anna Pridmore, Rasko Ojdrovic, Mike Larsen, Mark Geraghty

**SESSION E2**
- CFRP
  - AHMAD HABIBIAN
  - 389776 – Middlesex Water Company 30-Inch Pipeline Upgrade under US Route 1
    - Jan Chwiedosiuk, David Tanzi, Anna Pridmore, Rasko Ojdrovic
  - 385364 – Rehabilitation of the Burrungubugge Intake Shaft to Help Maintain One of the Civil Engineering Wonders of the Modern World
    - Scott Arnold, John de Groote, Brad Doudican

**SESSION F2**
- CONSTRUCTION
  - JENI TATUM
  - 381682 – Hurricanes, Conquistadors, and Endangered Species – The Unique Challenges of Under-Bridge Pipe Replacement on Florida’s Historic Coast
    - Grant Mistry, Christine Ellenberger, Scott Trigg
  - 386068 – An Unexpected Reducer: Engineering A Pipe Connection Solution in the Field
    - Justin Reeves, John Green, Pierce Smith
  - 386649 – Using Augmented Reality in Horizontal Directional Drilling to Reduce the Risk of Utility Damages
    - Samuel T. Arraratnam, Amr Fenais, Nikolas Smilovyk

**SESSION G2**
- WHAT IS IT?
  - MATTHEW DUFFY
  - 385221 – Is it a Road Project or Water Main Project?
    - Cassandra Marshall, Moubin Al-Malla
  - 390031 – The U.S. City’s Resilient Solution
    - Peter Dyke
  - 381551 – Results of a Full-scale Fault-offset Test on a Glass Fibre Reinforced Polymer Pipe Buried in Dense Olivine Sand
    - Hendrik Williams, Amir Fam, Ian Moore

**SESSION H2**
- DEEP THOUGHTS
  - MARK MIHM
  - 386912 – Using Air Caster Technology to Install Large Diameter Pipe in a Tunnel
    - Shelly Hattan, Robert Fults, Charles Cameron

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2:30 p.m.–4:00 p.m.  Networking Break in Exhibit Hall
# TECHNICAL PROGRAM – MONDAY, JULY 16

## 4:00 p.m.–5:30 p.m. Concurrent Technical Sessions

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<td><strong>Condition Assessment 1</strong>&lt;br&gt;Roberts McMullin&lt;br&gt;Dominion South</td>
<td><strong>Condition Assessment 2</strong>&lt;br&gt;Felipe Pulido&lt;br&gt;Provincial North</td>
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<td><strong>SESSION A3</strong>&lt;br&gt;HDD&lt;br&gt;STEVEN KRAMER</td>
<td><strong>SESSION B3</strong>&lt;br&gt;DELIVERY&lt;br&gt;KEITH BUSHDIECKER</td>
<td><strong>SESSION C3</strong>&lt;br&gt;LARGE DIAMETER&lt;br&gt;CHRIS MACEY</td>
<td><strong>SESSION D3</strong>&lt;br&gt;CONDITION ASSESSMENT&lt;br&gt;OF CRITICAL MAINS&lt;br&gt;ROSS STANDIFER</td>
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<tr>
<td>SESSION A3&lt;br&gt;386619 – Negotiating and Executing High-Risk, Contractor-Proposed 30-Inch Horizontal Direction Drill along Colonial-Era, Historical Structure in Urban, Downtown Corridor&lt;br&gt;William Gibson, Tim Marsh, Mathew Francis</td>
<td>SESSION B3&lt;br&gt;388399 – Innovative Twin-Pipe Design to Serve Short-Term and Long-Term Operating Needs&lt;br&gt;Wendy Tran, Joseph Ng, Cian McDermott</td>
<td>SESSION C3&lt;br&gt;386979 – Large and Critical Valve Maintenance Strategies for Establishing System Control and Reliability&lt;br&gt;Britt Klein</td>
<td>SESSION D3&lt;br&gt;378672 – Howard County Pilots Condition Assessment Technology for Critical Metallic Mains&lt;br&gt;Allison Stroebele, Paul DiMarco, Jorge Rodriguez, Grant McDaniel</td>
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<td><strong>Construction &amp; Rehabilitation 1</strong>&lt;br&gt;Murat Engindeniz&lt;br&gt;Grand East</td>
<td><strong>Construction &amp; Rehabilitation 2</strong>&lt;br&gt;Duane Strayer&lt;br&gt;Grand Centre</td>
<td><strong>UES</strong>&lt;br&gt;Doug Jenkins&lt;br&gt;Provincial South</td>
<td><strong>Multidiscipline</strong>&lt;br&gt;Mark Mihm&lt;br&gt;Grand West</td>
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<tr>
<td><strong>SESSION E3</strong>&lt;br&gt;LINING&lt;br&gt;DAVE CAUGHLIN</td>
<td><strong>SESSION F3</strong>&lt;br&gt;CONSTRUCTION&lt;br&gt;ERIC SCHEY</td>
<td><strong>SESSION G3</strong>&lt;br&gt;SHOW ME THE MONEY&lt;br&gt;ANDREW WILLIAMS</td>
<td><strong>SESSION H3</strong>&lt;br&gt;THINKING CAPS REQUIRED&lt;br&gt;AD SHATAT</td>
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<td>SESSION E3&lt;br&gt;386513 – North Charleston sewer District’s Ashley Interceptor Sewer Rehabilitation by Cured-in-Place Pipe Methodology&lt;br&gt;James Reigart, Phillip Sexton</td>
<td>SESSION F3&lt;br&gt;385435 – Pure Water Branched Subaqueous Diffuser Pipeline&lt;br&gt;Badr Badriya, Kathy Haynes, Jeff Sorian</td>
<td>SESSION G3&lt;br&gt;387811 – Cost, Risk, Performance: Icon Water’s Sewer Network Investment Optimisation&lt;br&gt;Andy Gibson, Sagar Khadka, Mark Engelhardt</td>
<td>PANEL&lt;br&gt;386647 – Optimizing Utility Valuation Using Acoustic Condition Assessment Technologies&lt;br&gt;John Marciszewski, Anthony Festa</td>
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<td>SESSION E3&lt;br&gt;385140 – Benefits of Performance-Based Large Diameter Pipeline Rehabilitation&lt;br&gt;Samantha La Hée, Mark Mihm, Jeremy Koch, Art Tillberg</td>
<td>SESSION F3&lt;br&gt;386332 – Baltimore Siphon Rehabilitation: Changing Conditions, Dynamic Solutions&lt;br&gt;Cece Nguyen, Jessica Weron, Pono Hanson</td>
<td></td>
<td>PANEL&lt;br&gt;385182 – Water and Energy Efficiency: Transmission Operations Optimizer (TOO) – City of Toronto Water Supply&lt;br&gt;Alnoor Allidina, Gary Thompson, Rose Hosseinzadeh</td>
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**Revitalizing Global Underground Utility Infrastructure**
### TECHNICAL PROGRAM – TUESDAY, JULY 17

**8:30 a.m.–10:00 a.m.** Concurrent Technical Sessions

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#### SESSION A4
**PLANNING JEFFREY SHOAF**

385933 – The Importance of Terrain Analysis for Pipeline Planning and Pipeline Asset Management

Dennis O’Leary, Bailey Theriault, Mark Nixon, Anne Sommerville

385601 – Not All Projects are Created Equal – the King County Mercer Enatai Project Goes from 945 Alternatives to One

James Chae, Sibel Yildiz, Grizelda Sarria

386178 – The Amazing Race, Oklahoma Edition: Fast-Track Alignment Selection for a 70-Mile Pipeline

Amanda Powers, Clay Herndon, Scott Maughn

#### SESSION B4
**DESIGN WILLIAM BRICK**

372760 – Design Considerations for Water Supply Intakes on the Great Lakes

John Green

385814 – Riser Pipe and Port Design for the Toronto Ashbridges Bay Treatment Plant Outfall

Kevin Wafer, Graeme Henderson, Colleen Gammie, Justyna Kempa-Teper, Vlad Petran

386834 – Innovative Steel Casing Pipe Installation Using Mechanical Interlocking Joints

Brent Keil, Bob Card, Trevor Gonterman

#### SESSION C4
**INSPECTIONS MIKE LARSEN**

385720 – North Fork Siphon Condition Evaluation

Marshall Gibbons, Andy Romer, Christopher Macey, Blake Buehler, Donald Champenos

386960 – Underwater Inspection and Imaging Technologies for Pipelines

Terence Browne, Roy Forsyth, Chris Hartzell, Shanon Chader

386862 – River Crossing Inspections – Balancing Risk with the Need to Obtain Advanced Pipeline Condition Assessment Data

Adam Braun, Mike Gaudreau, Jordan Thompson, Christopher Macey, Marv McDonald

#### SESSION D4
**CASE STUDIES JAMES STEELE**

386216 – A Comparison of Technologies for a “One of a Kind” Pipeline: Condition Assessment of the 46-Inch Transmission Main in Grand Rapids, MI

Britton Evans, Bryan Livingston, Alex Fleet

387120 – Condition Assessment and Asset Preservation Rationalization for the St. Paul Regional Water Services (SPRWS) in St. Paul, MN

Christopher Macey, Marshall Gibbons, Dave Wagner, Rich Hibbard

386063 – A Comprehensive Condition Assessment of a High Risk Coastal Force Main: Comox Valley Regional District Case Study

Kris La Rose, Justin Hebner, Vasilis Sagiannos

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#### SESSION E4
**SEWER REHAB CONSIDERATIONS GEORGE BONTUS**

383994 – Rehabilitation Design for Old Brick Conduits

Veyssel Sever, Zachary Neukam, Jeremy K. Cawley

372725 – 20 Years of Protecting Concrete in Sewers

William Shook

382834 – Pilot Study – Biogenic Corrosion Mitigation Alternatives for Trunk Sanitary Sewers in the Region of Peel

Graeme Henderson, Kevin Wafer, Simon Hopton, Ajay Puri David Mutombo

#### SESSION F4
**TUNNELING DUANE STRAYER**

386872 – Large Diameter Tunnel, to Expedite Consent Decree Pipeline

Jeffrey Farnsworth, David Bennett

371111 – A Case Study on Design, Testing and Installation of Two Large Diameter Tunnel Liner Projects for the City of Los Angeles

Henry Bardakjian, Joel Olmos

386759 – LADWP City Trunk Line Sequential Excavation Method Tunnel Underneath the Tujunga Wash

Ruwanka Purasinghe, Philip Lau, Wolfgang Roth, S. Nesarajah, Jianping Hu, Juergen Laubischier

#### SESSION G4
**NATURE CALLS HENRY POLVI**

382061 – The Tree Amigos: Friendly Practices to Avoid, Minimize, and Mitigate Impacts to a Forested Wetland

Paul Dossert, Chris Bogert, David Flores, Todd Butler

386317 – Assessment of Potential Damage to Utilities due to Tunneling and Excavation

Sandra Rolfe-Dickinson, Masoud Manzari, Richard Atkinson, Mohamed Hosney

387095 – Omlsted Flowline Seismic Retrofit

Mitchell Dabling, Cort Lambson

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**THE WOMEN’S FORUM ANNA PRIDMORE**

The Women in Engineering Panel Discussion will feature a guided discussion covering a wide array of topics tailored for women professionals in the water & wastewater industry. We invite and encourage all women attending Pipelines – from young members to seasoned veterans – to join us to for this groundbreaking morning session.

Robin Kemper, Therese Kline, Marlee Frazen, Bethany McDonald, Stephanie Darr

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10:00 a.m.–11:30 a.m. Networking Break in Exhibit Hall
11:30 a.m.–1:00 p.m. Awards Luncheon
1:15 p.m.–1:45 p.m. Bechtel Lecture

Register Now! Visit www.pipelinesconference.org | 11
### 2:00 p.m.–3:30 p.m. Concurrent Technical Sessions

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Jeff Heidrick  
**CITY HALL**

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| 386866 – Pipe Considerations for Deep St. Louis LMMDP CSO Tunnel Dewatering Pump Station Cale Underberg, Jeffrey Gratzer, Rebecca Elwood, Patricia Pride  
385799 – Design and Construction of the South Hartford CSO Tunnel James Sullivan, Andrew Perham  
385258 – Two-dimensional Computer Analysis of Deteriorated Steel Culverts Treated with Invert Faving Abdul Qaim Fekrat, Teruhisa Masada |

#### TRACK B
**Planning & Design 2**
Shaoqing Ge  
**DOMINION NORTH**

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| 384423 – Creating a Seismic Resilient Pipe Network for Los Angeles Craig Davis  
383608 – Using API Line Pipe for Improved Seismic Performance of Water Transmission Mains Mike Dadik, Wayne Grash, Mark Haokeost, Tim Collins  

#### TRACK C
**Condition Assessment 1**
Roberts McMullin  
**DOMINION SOUTH**

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| 383681 – Automated Sewer Pipeline Inspection Using Computer Vision Techniques Saeed Moradi, Tarek Zayed, Farzaneh Golakho  
383495 – Condition Assessment of Piping at a Typical Wastewater Treatment Plant – How Risk-Based Planning can Assist Owners in Making Decisions on Condition Assessment Projects Jose Villalobos, Noy Phannavong, Clinton McAdams  
383302 – Remaining Life Determination and Risk Management Decision Support for Wastewater Pipes with External Inspections Berk Uslu, Robert Abernathy |

#### TRACK D
**Condition Assessment 2**
Felipe Pulido  
**PROVINCIAL NORTH**

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| 384253 – Hot Tapping Facilitates 36-Inch PCCP Condition Assessment as a Sustainable Approach to Save $15 Million in Immediate Maintenance Expenditures Charles Herckis  
386511 – Leakage Rate Uncertainty in Water Distribution Systems with Uncertain Demands: Impacts on Delivery Pressures Vali Ghorbanian, Leilaamezan  
385671 – Integrated Asset Management of Wastewater Collection and Treatment System Hamed Mohammadi-Fardi, Mark A. Knight, Andre Unger |

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#### TRACK E
**Construction & Rehabilitation 1**
Murat Engindeniz  
**GRAND EAST**

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| 387763 – Old Pipe, New Tricks: A Pragmatic Approach to Partially Deteriorated Pipeline Rehab Design Adam Murdock, Dan Buonadonna, Brian Jacobs  
385209 – Considerations for Management of a Large-Scale Watermain Relining Programme Anthony Sinaguglia, Stewart Dickson, Garry Boychuk, Mike Klipina |

#### TRACK F
**Construction & Rehabilitation 2**
Duane Strayer  
**GRAND CENTRE**

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| 384934 – Trains to Mains: How to Relocate Three Kilometers of Water Main in Preparation for Light Rail in Downtown Tacoma, WA  
387106 – Emergency Stabilization of 84-inch Chapman Raw Water Pipeline Crossing the South Sulphur River, Greenville, Texas Jeff Hogan, Sam Marston, Ben Stephens, Dave Burkhard  
385445 – Emergency Pipeline Rehabilitation Ensures Raw Water Supply to Domtar Paper Mill Robert Collwell, Steve Nipper, Michael Feury |

#### TRACK G
**UES**
Doug Jenkins  
**PROVINCIAL SOUTH**

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| 386810 – Transmission Pipeline Route Analysis to Support Growing Water Demand Daniel Huffman, Chris Leathers  
368180 – Why Are These Record Drawings So Inaccurate? Roger Beiler |

#### TRACK H
**Multidiscipline**
Mark Mihm  
**GRAND WEST**

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<th>SWIFT SOLUTIONS</th>
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| 386678 – Who are you going to call? On-Call Contracting for Large Diameter Water Line Repairs Gregory Henry, James Wilson, Benjamin McCray  
375207 – Urgent Need Drives Record Completion of 42-Inch Pipeline in Flint, Michigan Kyle Couture, Matt Rayson  
384280 – Understanding Hot Tapping and Plugging As An Effective Procedure for Relocation, Repair or Modification of Water Infrastructure When Uninterrupted Operation is Necessary Charles Herckis |

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### 3:30 p.m.–4:30 p.m. Networking Break in Exhibit Hall
**TECHNICAL PROGRAM – TUESDAY, JULY 17**

**4:30 p.m.–5:30 p.m.  Concurrent Technical Sessions**

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Felipe Pulido  
**PROVINCIAL NORTH** |

**SESSION A6**  
**BIG THINGS**  
ANDREW SNEED

398921 – Design, Manufacture and Microtunnel Construction  
Using Wet Retrieval of the 108-Inch Diameter Low Level Outlet at NYC’s Gilboa Dam  
Everette Knight, Rich Mielke, Emory Chase, Leszek Glodkowski  
389194 – Holistic Transient Analysis of a Large Pressure Zone  
Eppo Eerkes

**SESSION B6**  
**LARGE DIAMETER**  
MATT GAUGHAN

387105 – Sustainable Construction for Large Diameter Steel Pipeline on the Integrated Pipeline Project  
Jonathan Shirk  
389862 – Large Diameter Feederman Takes Advantage of Groove Technology  
Chris Sundberg

**SESSION C6**  
**PANEL**  
ROBERTS MCMULLIN

PANEL  
500000 – Fort McMurray Wildfire Emergency Response and Water System Recovery  
Jason Vanderzwaag

**SESSION D6**  
**MODELING**  
BRIAN BALL

388391 – Experimental Study and Numerical Simulation of Three-Edge Bearing Test of Large Diameter Prestressed Concrete Cylinder Pipes  
Mehdi Zarghamee, Mohammadeza Moharrami Gargari  
359837 – Condition Assessment of Concrete Bar-Wrapped Cylinder Pipe, The Next Phase of San Diego County Water Authority’s Asset Management Program  
Martin Coghill, Nathan Faber, Andi Corrao, Chris Garrett

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**SESSION E6**  
**DESIGN TOOLS AND INNOVATION**  
RICHARD SUKUT

386772 – Strike While the Iron is Hot – An “All of the Above” Approach Blends Rehabilitation and Renovation with Reactive Replacement  
Peter J. Pfister, Michael J. Mitchell  
390042 – Handy PE Design Tools with Expert Trenchless  
Peter Dyke

**SESSION F6**  
**MICROTUNNELLING**  
CHARLES MARSH

386919 – Microtunnel Crossing of Alberta’s Busiest Highway  
Craig Pass  
374161 – From Pipe Ram to Microtunnel – How Owner and Contractor Worked Together  
Erik Waligorski, Ron Speer, Ken Van Den Bergh, Greg Hill

**SESSION G6**  
**O&M AND AM IN THE PM**  
JASON LUEKE

Mike Brannon, Niall Robertson  
385342 – Ahead of the Curve: Lake Huron & Elgin Area Water Systems Develop their Asset Management Program  
Billy Haldander, Andrew Henry, Heather Edwards

**SESSION H6**  
**ETHICS IN CIVIL ENGINEERING AND CONSTRUCTION**  
MARK WOODSON

This session reviews the ethical principles that guide professional engineers, and provides a sampling of real-life case studies that illustrate the importance of honoring ethical principles in the practice of engineering.
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<td>Michael Lehrburger, Marvin Lee</td>
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<td>372776 – Defect Based Risk Assessment Model for Prioritizing Inspection of Sewer Pipelines Mohamed Abdelrahman Elmasry, Tarek Zayed, Alaa Hawari</td>
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<td>385836 – Evaluation of the Environmental Sustainability During Fabrication of Commonly Used Pipe Materials Alhossin Alsadi, John Matthews, Elizabeth Matthews</td>
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9:30 a.m.–10:00 a.m. Networking Break
### TECHNICAL PROGRAM – WEDNESDAY, JULY 18

#### 10:00 a.m.–11:30 a.m. Concurrent Technical Sessions

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**SESSION A8** TESTING ALAN SWARTZ

Olena Gordiyenko, Simon Hopton, Martin Pritchard, Mark Belanger, Seamus Tynan, Brandon Gorr

379983 – Measurement of Ground Heave due to Horizontal Borehole Instability During Horizontal Directional Drilling Tests in Sand
Haitao Lan, Ian Moore, Dong Wang

372583 – Evaluation of Thin-Walled Steel Fiber Reinforced Concrete Pipes Performance Using Three-Edge Bearing Test
Fouad Al Rikabi, Shad Sargand, Husam Hussein, John Kurdziel

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**SESSION B8** DYNAMIC THINGS BRENT KEIL

386696 – Pipe Dynamic Load Analysis for Transient Multiphase Flow
David Cheng, Mohan Rathaivasabapathy, Sukanta Bhattacharjee

388233 – Understanding Pneumatically-Induced Hydraulic Surges and Geysers In Sewers
Anthony Margevicius

385645 – Overview of the Geometric Parameters of a Press-Fit: Experimental and FEA Analysis of Steel Pipe Joint
Urso A. Campos, David Hall, John Matthews, Chris Morgan, Shaurav Alam, Hadi Baghi

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**SESSION C8** DISTRIBUTION AND TRANSMISSION MAINS FELIPE PUJIDO

385289 – Forensic Study of a 16-Inch PVC Water Pipe Failed During Tapping
Shaoqing Ge, Suzanne Chiavari, Dave Hughes

389998 – Air Pocket Detection in Water and Waste Water Conveyance Pipelines Using Inverse Transient Analysis
Ahmad Malekpour, Yuntong She

385451 – When Reliability Fails: Emergency Repairs to a 50-Year-Old Aqueduct
Nick Lester, Michael McBee

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**SESSION D8** SEWER AND STORMWATER LOUIS RAGOZZINO

387622 – Qualitative Investigation of Microbially Induced Corrosion of Concrete in Sanitary Sewer Pipe and Manholes
Vinayak Kaushal, Mohammad Najafi, Johnny Love

383289 – Advanced Asset Management for Force Main and Gravity Pipe Infrastructure Systems
Berk Uslu, Sunil Sinha, Walter Graf

385705 – Consequence of Failure of Sewers (COFS) Model for Risk-Based Asset Management Using Analytical Hierarchy Process
Greta Vladeanu, John Matthews

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**SESSION E8** LINING WILLIAM SHOOK

387189 – Pressure Testing of CIPP Liners to Failure
Mark Knight, George Bontus

382527 – City of Taylor Rehabilitates 60-Year-Old Cast Iron Mains via Pre-Chlorinated Pipe Bursting
Greg Mayhew, June Baterina, Martin Scanlan

373970 – Spray in Place Pipe (SIPP): Materials Composite and Implementation Methodology for Surviving Pressure Pipe Failure
Kent Weisenberg, Tom Iseley, Lin Li

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**SESSION F8** HDD & OTHER TRENCHLESS JEFF LEBLANC

387127 – Evaluating Arrow Bore™ – An Engineer’s Perspective
Michelle Macauley, David Landing

372713 – The Horizontal Directionally Drilled Installation of Dual Parallel 3220-Foot Fusible PVC Pipelines
George Triebel, Gayleen Darting, Jose Ramirez, Janet Atkinson, Scott Hutcheson

386419 – Cast Iron Trunk Watermains in City of Toronto
Jackie Siu

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**SESSION G8** H₂O ADAM BRAUN

382402 – DC Water At Work: Tackling Fast Track CIP with In-house Design of SIPP
Steve Bian, Mandy LeBlanc, Renni Zhao

382846 – Developing a New Pressure Plane at Super Speeds
Olivia Kerss, Daniel Stoutenburg, Roberto Saucedo

386461 – Analyzing Conflicts over Water Extraction from Great Lakes of North America through Game Theory Approaches
Sevda Payganeh, Mark Knight, Carl Haas

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**SESSION H8** INNOVATIVE THINGS GARY THOMPSON

380545 – New Developments in Multi-Sensor Condition Assessment Technologies for Large Diameter Pipe Infrastructure
Csaba Ékes

386628 – Multi-Sensor Inspection Comes to Salt Lake City, Utah
Doug Jenkins, Emma McGowan, Derek Velarde, Mark Wade

389028 – Large Diameter Couplings for Seismic Conditions
Chris Sundberg

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Long-term Weathering Effects of Pipeline Coatings
Jose Peña, NACE
Monday, July 16, 10:00–11:30 a.m.

Between a Track and a Hard Place — Thrust Restraint Alternatives in a Constrained Location
Keith R. Bushdiecker, PE
Monday, July 16, 1:00–2:30 p.m.

Asset Renewal Forecasting for Water Main Replacement Program
Derek Gardels, PE, ENV SP
Monday, July 16, 1:00-2:30 p.m.

Pure Water Branched Subaqueous Diffuser Pipeline
Badri Badriyha, PhD, PE
Monday, July 16, 4:00-5:30 p.m.

Benefits of Performance-Based Large Diameter Pipeline Rehabilitation
Samantha S. La Hée, PE
Monday, July 16, 4:00-5:30 p.m.

Pipe Considerations for Deep St. Louis LMRDP CSO Tunnel Dewatering Pump Station
Cale J. Underberg, PE
Tuesday, July 17, 2:00-3:30 p.m.
THE OFFICIAL CONFERENCE HOTEL
Sheraton Centre Toronto Hotel
123 Queen Street West, Toronto, ON M5H 2M9

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Our conference session space depends on your patronage of this official conference hotel. Because of our contractual agreements with this hotel and because we strongly believe that staying at this designated conference hotel is an important part of your conference experience, conference organizers recommend this hotel exclusively.

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Valet parking is available for $50 CAD a day. There are a number of self-parking options around our hotel as well. To find out more, please visit: https://parking.greenp.com/find-parking/?a=123+Queen+St.+West

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http://www.sheratonontario.com/en/up-express-service

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To visit Canada, all travelers must meet some basic requirements:
- Have a valid passport;
- Have no criminal or immigration-related convictions;
- Explain to an immigration officer that the purpose of your visit is to attend a conference;
- Explain to an immigration officer that you will leave Canada at the end of your visit and have enough funds for your stay.

Cancellation
If your visa application is denied, please inform ASCE in writing that you wish to cancel your registration. You have to attach a copy of your visa denial.

A full refund will be issued if the cancellation notice is received by the registration refund deadline of June 27, 2018. No refunds will be made for cancellation requests received after that date. Send cancellation requests to registrations@asce.org or fax to +1 (866) 902-5593.

Please file your visa paperwork as far in advance as possible to be eligible for a refund.

ASCE cannot intervene on behalf of the invitees with the Government of Canada by fax, phone, surface mail, or email.

CITY INFORMATION
http://www.seetorontonow.com

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Sheraton Centre Toronto Hotel is fully accessible to the disabled. If you require special assistance at the conference, please submit a written description of your requirements with your registration form or email registrations@asce.org before Wednesday, June 27. While ASCE will make every effort to meet the needs of the disabled, accommodations cannot be guaranteed without prior notification.

ASCE BOOKSTORE
The bookstore is a great opportunity to browse through the many new and classic titles on display covering all topics in civil engineering.

HOURS:
- Sunday, July 15: 2:00 p.m.–7:00 p.m.
- Monday, July 16: 7:00 a.m.–4:30 p.m.
- Tuesday, July 17: 7:00 a.m.–4:30 p.m.

ATTIRE
The dress code for the Conference is business casual (i.e., slacks, casual dresses) to business attire (i.e., neckties, business suits). Meeting room temperatures will vary, so wear layered clothing to ensure your personal comfort. We also recommend attendees wear comfortable shoes. Please note that certain events may have specific details on attire, and you should refer to the description of that event for more information.

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Your name badge is your admission to the Conference. Please wear your badge at all times while in the Sheraton Centre Toronto Hotel. Tickets are required for the pre-conference workshops, meals, and special events. Where tickets are required, please be sure to bring your tickets with you to each event as you will not be admitted without a ticket. Ribbons will be available at the Registration desk. ASCE recommends you remove your badge when leaving the conference hotel.

CONFERENCE PROCEEDINGS
This year, the conference proceedings will be available ONLINE only. One copy is included with each full registration. Additional copies may be purchased for $100. To access your copy, follow the instructions on the Proceedings Retrieval Information Card you will receive with your registration packet. To purchase a copy after the conference, call ASCE at (800) 548-ASCE (2723), send a fax to (703) 295-6211, or order online at www.asce.org/publications.

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ASCE will make every effort to schedule popular events in rooms large enough to accommodate anticipated attendance. Since many events are extremely popular, it is wise to select alternative events as you plan your conference schedule. ASCE and the conference hotel are REQUIRED to follow local fire regulations and may ask participants in rooms filled to capacity to choose another event.

NO SMOKING POLICY
ASCE supports a “No Smoking” policy. Smoking is prohibited in the Sheraton Centre Toronto Hotel, and all venues hosting ASCE events.
POST-CONFERENCE EVALUATION
A Post-conference survey will be sent electronically to all attendees after the event.

PROFESSIONAL DEVELOPMENT HOURS (PDHS)
You may earn PDHs, which are nationally recognized units of record, by attending conference technical sessions and short courses. Please note there are differences from state to state in continuing education requirements for professional engineering licensure. ASCE follows NCEES guidelines on continuing professional competency. Get details on your state’s requirements by going to www.ncees.org/about.

Within 30 days of the end of the conference, the session information will be uploaded into the MyLearning system. You will receive an email from the conference registration system with a link and detailed instructions on how to access MyLearning and to update your session attendance. By accessing the MyLearning system for this conference, you automatically Agree and Certify you attended the selected sessions. The system will remain open for 365 days from the receipt of the registration email to allow you time to make any adjustments and print your certificate and transcript. After that 365-day mark, you will need to contact ASCE Customer Service at registrations@asce.org or (800) 548-2723 to modify your conference attendance information.

Included with your welcome packet, you will receive a badge with your name and a bar code specific to your registration. Before you enter the room for a Pre-Conference Workshop or a Technical Session, you must scan your bar code in order to receive credit. The scanner will acknowledge a successful recording of your name for the specific session. We strongly recommend you scan your badge at the beginning of each session to eliminate any challenges and/or lines later.

Please note that the only way to receive PDH credits is if you scan the bar code located on the back of your conference badge at the start of each session.

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Video or audio recording of any educational session is strictly prohibited without prior written permission from both ASCE and the session presenter(s).

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Photograph Release: By submitting the Registration form, I hereby release any photographs that may be incidentally taken of me during these events by ASCE to be used for any purpose.

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All attendees will receive their name badges and any tickets ordered at the ASCE Registration Desk, Sheraton Centre Toronto Hotel Concourse Level, during registration hours. Early-bird and Advance registrants should present the official ASCE registration receipt to on-site registration staff to obtain conference materials.

ON-SITE REGISTRATION HOURS
(Subject to change)

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MOBILE APP
Be sure to download the Pipelines 2018 Conference App for the latest program information and important details you won’t want to miss.

RECYCLE YOUR NAME BADGE HOLDER!
Please help ASCE & Pipelines stay “green” by leaving your name badge holder in the registration area when you leave the conference. If you are concerned about privacy, you are welcome to remove your name from the holder and take that with you.

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ASCE reserves the right to cancel programs and/or sessions because of low registration. In the unlikely event of a cancellation, all registrants will be notified and will receive a full refund, if applicable. Programs and Sessions are subject to change, and ASCE reserves the right to substitute a program, session, and/or speaker of equal caliber to fulfill the educational requirements.
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Andrews engineer is a consulting civil engineering company specializing in sewer Asset Management, with global experience in all stages of sewer inspection, assessment, and rehabilitation.

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www.aquamcorp.com

Aquam Pipe Diagnostics provide inspection technologies and services for condition assessment, asset management, leak detection and CCTV of pressurized water wastewater and industrial pipelines.

BENJAMIN MEDIA
www.benjaminmedia.com

BMI currently publishes eight trade magazines: Compact Equipment, NASTT’s Trenchless Today, North American Oil and Gas Pipelines, Solar Builder, TBM: Tunnel Business Magazine, Trenchless Technology, UIM: Water Utility Infrastructure Management and Utility Contractor. BMI is committed to online and interactive media by enhancing its print media with innovative and informative online content and mobile apps.

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CanACRE provides land acquisition, geospatial mapping, data management, web-based GIS, land administration, community relations, land feasibility studies and permitting services across Canada and the United States.

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Charlette is the world leader in the design of bladder-type pressure tanks used in potable, raw and wastewater applications. Our tanks are used in a wide range of applications, such as surge protection, pressure regulation, pump cycle control and pressurized storage.
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Echologics is part of Mueller Water Products’ Intelligent Water Technology portfolio of solutions that actively diagnose, monitor and control the delivery of safe, clean drinking water to consumers and businesses, and deliver information that enables water systems to make smart decisions concerning their existing water infrastructure and plan for the future.

Electrosteel USA supplies the next generation of DIP to North America.

The Tomahawk System cleans old encrusted pipes using abrasives in a high-volume, low-pressure airstream in preparation for airborne lining or other lining methods.

FER-PAL Infrastructure was established in 1986 in Toronto, ON to provide municipalities with watermain rehabilitation services using trenchless technology. By utilizing a Cure-In-Place-Pipe (CIPP) which is inserted into existing watermains, FER-PAL fixes deteriorating pipes by essentially creating a new pipe within a pipe. Limited digging is involved in this trenchless process and the result is a watermain repair that is cost-effective, traffic conducive, environmentally sound, and has limited infrastructure impacts to surrounding communities and businesses. Having rehabilitated over six million metres of watermain, including over a million of CIPP alone, FER-PAL is the North American leader in pressure pipe lining.

Forterra is a leading manufacturer of water-related drainage and transmission products in the United States and eastern Canada.

Garney Construction is a 100% employee-owned company with 55 years of experience in constructing water and sewer pipelines and treatment facilities, serving the public, private, and industrial markets.

GF Piping Systems develops, produces and markets a comprehensive range of piping systems and components in a variety of materials used worldwide to transport water, gases and aggressive media.
EXHIBITORS

**GEOSTABILIZATION INTERNATIONAL**  
www.geostabilization.com  
GeoStabilization International® is the leading geohazard mitigation firm operating throughout North America. Our passion is to develop and install innovative solutions that protect people and infrastructure from the dangers of geohazards.

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JM Eagle is the world’s largest and leading plastic pipe manufacturer for both PVC & PE with 20 plants operating across the United States.

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www.norditube.com
NordiTube Technologies has already established a position as the leading technology provider for trenchless pipe rehabilitation and has been producing CIPP liners for more than 30 years.

NORTHWEST PIPE COMPANY
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Northwest Pipe is the only nationwide ISO certified manufacturer of large diameter steel pipe and fittings for the water and wastewater markets.

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PICA CORPORATION
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PICA was incorporated in 2009 with the intent of providing In-Line Inspection services for the municipal water market, the municipal wastewater market and the power generation market (namely, nuclear). PICA developed the SeeSnake and Chimera line of tools which are supported by an electromagnetic technology called Remote Field Testing (RFT). The tools are for use in ferrous pipelines and they have successfully inspected many different industries.

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PipeMedic® provides Fiber Reinforced Polymer (FRP) solutions for repair of pipelines and culverts. Our award winning products are exceptionally strong, versatile, non-corrosive and very economical.

THE PLASTICS PIPE INSTITUTE, INC.
www.plasticpipe.org
The Plastics Pipe Institute (PPI) is the major trade association representing the Municipal and Industrial Division and high-performance PE4710 for water, wastewater, trenchless and open cut construction.

PPI PIPE SYSTEM
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Our iPVC Water Pipe is stronger than Iron and certified to have 100 years lifespan through 2 years test by AWWA (American Water Works Association) and American Water which is No. 1 Utility Company in USA.

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RAEDLINGER PRIMUS LINE INC.
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Primus Line is the manufacturer of a unique system for trenchless pressure pipe rehabilitation. PRIMUS LINE® products enable the cost effective trenchless rehabilitation of pressure pipelines for different media, such as water, oil and gas.

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We have recently expanded into the oil and gas market, focusing on the delivery of environmentally-friendly protection for secondary containment solutions. For nearly 25 years, Raven’s innovative technology has stood the test of time and will continue to do so, well into the future.

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SewerVUE’s pipeline inspection technology uses LiDAR, sonar, and Pipe Penetrating Radar to quantify wall thickness, ovality, and sediment volume in non-ferrous water and wastewater pipes.
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SGH is a national engineering firm with more than 25 years’ experience in condition assessment, structural evaluation, failure risk analysis, failure investigation, and repair of pipelines.

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SippTech is truly unique in that we are the only SIPP company globally to conceptualize, design, engineer and manufacture robotic lining systems and develop and manufacture proprietary lining polymers. The result – a synergistic collaboration providing revolutionary, reliable robotic and polymeric systems to the marketplace.

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SmartCover provides real-time communication – connecting field to headquarters – monitoring sewer system flows to uncover and alert staff to potential damaging overflows and to provide condition assessment of pipelines to identify problems before they occur.

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Structural Technologies, a Structural Group company, develops and integrates specialized products with engineering services to improve, protect and enhance water and wastewater pipelines. Our unique product systems provide structural strengthening for the restoration or renewal of concrete, metallic and polymer-based large diameter pipelines. Our repair options include state-of-the-art materials which provide engineered value through short construction windows with little to no disruption to traffic patterns or operations. Product systems include:

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- **StrongPIPE® Hybrid/FRP** – trenchless, fully structural, internally applied hybrid system for extended runs of 42-inch diameter and above concrete and metallic pipelines
- **XPT®** External Post-Tensioning – semi-structural, externally applied tendon repair system for 48-inches diameter and above pre-stressed concrete cylinder pipe (PCCP)

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TT Technologies is a leading manufacturer of trenchless technology equipment for pipeline installation with Pipe Rammers, HDD Assist/Extraction equipment, Pipe Bursting and Pipe Cracking Systems.

UPONOR
www.uponor-usa.com
Uponor is an international market leader, striving to provide better plumbing, indoor climate and infrastructure solutions across Europe, North America and in other international markets. In close partnership with building industry professionals, we are continuously seeking out innovative ways to ensure our systems offer the most efficient, reliable and high-performing solutions available to residential and commercial structures around the globe.

UNI-BELL PVC PIPE ASSOCIATION
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To promote the use of longer-life, lower-maintenance, corrosion-proof PVC piping materials for real sustainability, strength and long-term asset management in water and wastewater systems.

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U.S. Pipe, a Forterra Company, is the leading supplier of Ductile Iron Pipe, Concrete Pressure Pipe, Welded Steel Pipe, and Fabricated items.

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Val-Matic® Valve & Mfg. Corp. is a leading manufacturer of check valves, quarter turn shut-off valves and air valves for water/wastewater, industrial and building markets. Valve types include Tilted Disc®, Dual Disc®, Swing-Flex®, Surgebuster®, Silent Check Valves, Eccentric Plug Valves, AWWA Butterfly Valves, Air Valves, Foot Valves, VaultSafe® products, Ener-G® AWWA Rubber Seated Ball Valves, Smart Control Systems, and QuadroSphere® Trunnion-Mounted Ball Valves.

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Victaulic is the leading producer of mechanical pipe joining solutions. We build technologies and provide engineering services that address the most complex piping challenges faced by engineers, site owners, contractors and distributors. Engineered with confidence, our solutions put people to work faster, while increasing safety, ensuring reliability and maximizing efficiency.

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www.vortexcompanies.com
The Vortex Companies is a turnkey trenchless solution provider serving the water, sewer and industrial marketplace. Vortex offerings include CCTV inspection, turnkey bypass, pipe bursting, large diameter structural pipe relining, advanced sewer repair materials, trenchless robotic systems, and pipe and drain tools.

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CH2M is now Jacobs. Our combined capabilities create limitless possibilities for us, as well as for our clients. Combined, we bring unequaled talent and innovation to deliver more for our clients and the world. Come hear our pipeline speakers and meet our team of professionals. We look forward to meeting you and sharing about our worldwide pipeline projects and future together.

Our sessions & speakers

**Session B1, Monday July 16, 2018**
A New Source of Water for the UK's Second Largest City
Steve MacKellar

**Session F2, Monday July 16, 2018**
Hurricanes, Conquistadors, and Endangered Species - the Unique Challenges of Under-Bridge Pipe Replacement on Florida's Historic Coast
Grant Misterly, Christine Ellenberger

**Session A4, Tuesday July 17, 2018**
Not All Projects are Created Equal - The King County Mercer Island Project Goes From 945 Alternatives to One
James Chua

**Session G4, Tuesday July 17, 2018**
Olmsted Flowline Seismic Evaluation and Retrofit
Mitchell Dabling

**Session E5, Tuesday July 17, 2018**
Old Pipe, New Tricks: A Pragmatic Approach to Partially Deteriorated Pipeline Rehab Design
Adam Murdock, Dan Buonadonna

**Session G5, Tuesday July 17, 2018**
Why Are These Record Drawings So Inaccurate?
Roger Beierer

**Session G7, Wednesday July 18, 2018**
Thirlmere Reservoir - Past, Present, and Future, 130 Years of Pipeline Engineering
Sean Greenwood

**Session F8, Wednesday July 18, 2018**
Evaluating Arrow Bore - A Case Study of a Pilot Project in Florida
Michelle MacAuley

**Session H8, Wednesday July 18, 2018**
Multi-Sensor Inspection Comes to Salt Lake City, Utah
Emma McGowan

Times/Dates listed are from the preliminary program. Please check the final technical program.

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