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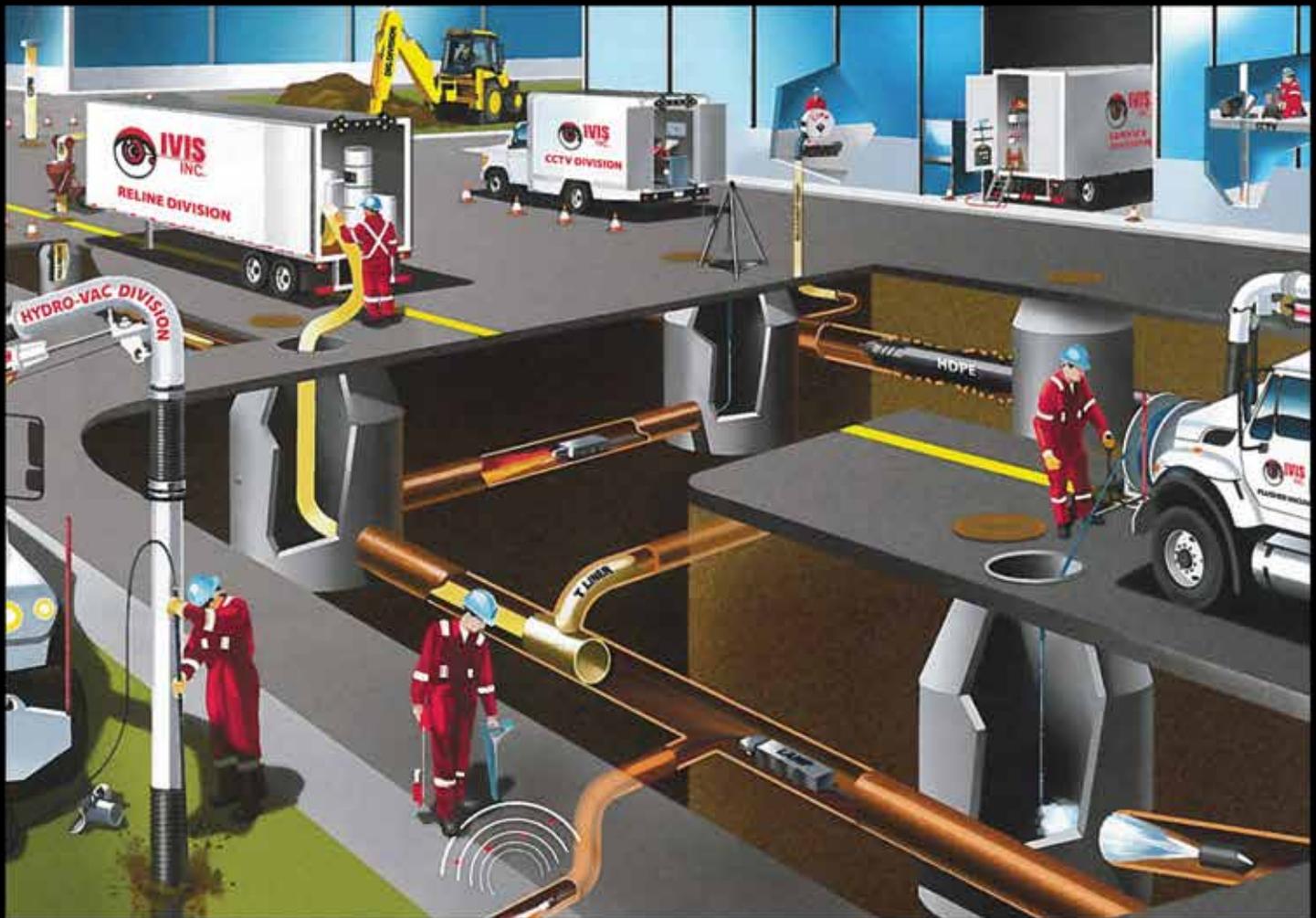
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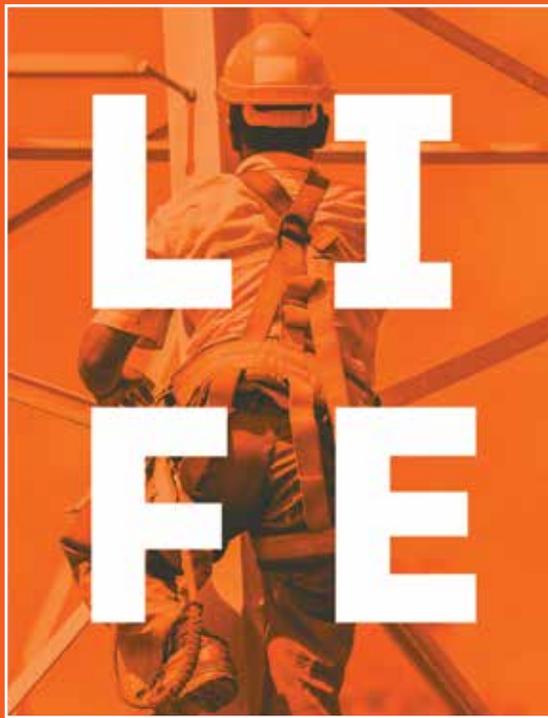
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CONTENTS

- 6** Message from CAPULC President Jamie Andersen
- 8** Who We Are
- 10** CAPULC Committees
- 12** Education and Standards Committee
- 14** Celebrating 20 years of CAPULC
- 16** CAPULC's 2021 AGM and Safety Conference
- 18** First of its kind youth online safety training program launches in Regina
- 20** Working together to ensure safe digging
- 22** Introducing Eos Locate™ for ArcGIS
- 24** Modern methods for safer ground disturbance
- 26** Metrolinx leverages spatial data to revolutionize transit projects in Ontario
- 28** Fiber optics locating
- 30** Training vs. education
- 32** The future of locating in Canada
- 34** CAPULC 2020 Board of Directors and Staff

INDEX TO ADVERTISERS

| | | | |
|---|-----|-------------------------------------|-----|
| Abacus Data Graphics..... | 5 | Locate Management | 16 |
| Alberta One Call Corporation | 3 | Locate Management Ltd..... | 9 |
| BC 1 Call | 11 | Motion Industries (Canada) | 13 |
| Canadian Certified Locator..... | 27 | National Locators | 11 |
| Canadian Locators Inc. | 31 | Northern Lights Locating Ltd..... | 12 |
| Cansel | 25 | Safe Locates | 25 |
| Eos Positioning Systems, Inc. | 23 | T2 Utility Engineers..... | 29 |
| First Alert Locating Ltd. | 29 | Underworld Line Locating Ltd; | 10 |
| Ivis Construction Inc. | IFC | Vivax Canada Inc. | OBC |
| Lawson Consulting & Surveying Ltd. | 21 | | |

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Message from the president of CAPULC

JAMIE ANDERSEN



Members,

Once again, it is an honour to be completing another President's Message for you this year. I would like to thank our membership for supporting us while we continue to navigate the COVID-19 pandemic and the challenges that it has brought to our operations. While the world adjusts to the changes, we forge forward with our goals, hoping to add value to our membership and continue to establish a voice in the locating and damage prevention industry.

The board of directors continued this year's focus on strengthening industry connections, remarketing the association, and working toward common goals with other associations, suppliers, and training groups. In an effort to establish CAPULC's position as a united professional association, we have diligently worked throughout 2021 to focus on the launch of our Education and Standards Committee goals as well as the development toward Locating and Marking Standards. We've had excellent participation with this committee and have made valuable progress. Please refer to our article on the progress of the Education and Standards Committee and watch for future updates. Developing locating and marking standards is not their only endeavor.

We have had valuable input and support from other participating associations, working together toward a common goal. While we haven't yet heard from everyone, we see a steady stream of curiosity in our movements to build and improve. In the meantime, CAPULC continues to work with its members, training providers, and subject matter experts to evaluate the best move forward in the way of training processes, competency, and evaluation. We work alongside and respect that each jurisdiction or province has the potential to develop guidelines that could have the capacity for streamlining initiatives and graduate into a national statement. Answering requests for a long-term solution, professional recognition, and the desire for a self-sustaining career path is the ultimate goal.

I would like to recognize our board of directors and all those participating on our active working committees for taking an interest in CAPULC's future growth and successes. With continuation in our industry magazine, *The Locator*, as well as finalizing updates to the website, we will attempt to foster additional participation with CAPULC and its committee work. We have much more in store for the year to come! Make sure to attend our Annual General Meeting in April, and keep up to date with our progress!

Sincerely,
Jamie Andersen ●

Message du président

JAMIE ANDERSEN

À tous nos membres,

Une fois de plus, j'ai l'honneur de vous livrer cette année le message du président. Dans un premier temps, j'aimerais remercier nos membres de leur soutien, alors même que nous continuons de composer avec la pandémie de COVID-19 et les contraintes qu'elle impose à nos activités. Pendant que le monde s'adapte aux changements survenus, nous maintenons le cap sur nos objectifs, espérant ajouter encore plus d'avantages à devenir membre de notre association. Nous continuons également de nous positionner en tant qu'interlocuteur indispensable dans l'industrie de la localisation et de la prévention des dommages.

Le conseil d'administration a continué de concentrer ses efforts cette année sur le renforcement des liens avec l'industrie, le remarketing de notre association et la collaboration avec d'autres associations, fournisseurs et groupes de formation en vue de la réalisation d'objectifs communs. Dans le but d'établir le statut de la CAPULC en tant qu'association professionnelle unie, nous avons travaillé assidûment tout au long de l'année 2021 sur le déploiement des objectifs du comité d'éducation et de normes de l'Association, ainsi que sur l'élaboration de normes de localisation et de marquage. À cette fin, les membres de ce comité se sont montrés très actifs, ce qui a permis à l'Association de réaliser des progrès appréciables. Pour en savoir davantage à ce sujet, veuillez vous reporter à notre article sur les progrès de ce comité et demeurez attentifs aux futures mises à jour. À noter que l'élaboration de normes de localisation et de marquage n'est pas la seule activité de ce comité.

Nous avons aussi bénéficié de la contribution et du soutien précieux d'autres associations participantes, avec lesquelles nous avons travaillé à l'atteinte d'un objectif commun. Bien que nous n'ayons pas encore obtenu de réponse de tout un chacun, nous avons remarqué que nos efforts de renforcement et d'amélioration font l'objet d'une curiosité continue. Entretemps, la CAPULC continue de travailler avec ses membres, formateurs et experts dans le domaine, afin d'évaluer la meilleure façon d'aller de l'avant en ce qui concerne les processus de formation, les compétences requises et l'évaluation. Nous travaillons de concert avec chaque juridiction ou province et respectons leur capacité d'élaborer des lignes directrices qui pourraient rationaliser et simplifier leurs initiatives et donner lieu à un énoncé national. Le but ultime est de répondre aux demandes de solution à long terme, de reconnaissance professionnelle et de l'aspiration à un cheminement de carrière autonome.

Je tiens à remercier notre conseil d'administration, ainsi que tous ceux qui participent activement à nos comités de travail, de l'intérêt qu'ils portent à la croissance et aux succès à venir de la CAPULC. Tout en poursuivant la publication de notre revue sectorielle, *The Locator*, et en finalisant les mises à jour du site Web, nous chercherons à encourager une participation accrue à la CAPULC et au travail de ses comités. Nous avons beaucoup de choses en réserve pour l'année à venir ! Ne manquez pas de participer à notre assemblée générale annuelle en avril et de vous tenir au courant de nos progrès !

Sincèrement,

Jamie Andersen ●

WHO WE ARE



With each year, our membership grows as we make great strides to “provide leadership, promote safety, and work to enhance the value and reputation of the underground facility locating industry in Canada”.

By establishing the highest possible standards for the industry, our objective is to present a generation of qualified and competent locating technicians, trained to excel in their field. Standardization and compliance to the rules and regulations will benefit everyone in the underground pipeline and utility locating industry.

Together we can encourage the locate industry and the ground disturbance community to meet and exceed safety expectations, perform each job with due diligence, and govern the application of rules and regulations as they pertain to the industry.



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OUR MISSION

As contractors, we have a personal stake in shaping our future, and we all have the desire to be proactive in the development of standards for the locating industry in Canada.

As members of CAPULC, we have a vested interest in directing the development of standards for the locating industry in Canada through education and providing industry-specific information to our members.

As a group, we agree that the development of Canadian standards, the guidelines for evaluating competencies and qualifications required, should be determined by those of us with the knowledge and experience involved in the locating industry.

CAPULC endeavours to:

- Define, establish, and preserve the identity and the common interests of the underground facility locating industry.
- Educate and promote better relations between members and governmental agencies, other associations, contractors, professional engineers, manufacturers, suppliers, utility companies, one-call centers, the public, and the underground facility locating industry.
- Develop standards for the locating industry in Canada.
- Promote the practical application of knowledge related to the underground facility locating industry through education and ensure this education

process is available to our members.

- Collect and disseminate information relative to the business in which association members are engaged.
- Promote ethical practices among underground facility locators and the general public.
- Encourage safety in the conduct of work.
- Represent the common interest of association members.
- Encourage the education of Association members in the pursuit of underground facility locating in accordance with sound business principles.

As a member of CAPULC, you will receive numerous benefits:

- Promote industry interests and voice concerns as a group.
- Recognition as a professional locate company.
- Networking with peers and industry suppliers.
- Representation at shows, conferences, and seminars.
- Involvement in special events and AGM.
- Website acknowledgement and promotion.
- Member savings through the CAPULC Marketplace.

MEMBERSHIP TYPES

CAPULC's membership is open to anyone interested in the line locating and

By establishing the highest possible standards for the industry, our objective is to present a generation of qualified and competent locating technicians, trained to excel in their field.

ground disturbance industry. We encourage the input of gas and oil companies, utility owners, industry training facilities, locating companies, as well as the general public, and would highly recommend your involvement at any level with CAPULC. Regardless of your field of work or level of expertise in the line locating and ground disturbance industry, CAPULC is an organization with your interest and safety in mind. Read the following membership requirements and discover how easily you can become a member of this vastly diverse and knowledgeable organization, which is CAPULC.

REGULAR MEMBER

Regular Members are companies or partnerships that provide locating services in Canada. Regular Members must meet the following conditions and requirements for admission as members of the association:

- Regular Members must be corporations or partnerships incorporated in any jurisdiction in Canada;
- Regular Members must pay an annual membership fee as established at each Annual General Meeting; and
- Regular Members must at all times adhere to the standards developed, published, and promulgated by the society.

ASSOCIATE MEMBER

Associate Members are companies or partnerships that serve as suppliers for the locating industry. Associate Mem-

bers must meet the following conditions and requirements for admission as members of the society:

- Associate Members must be corporations or partnerships incorporated or formed in any jurisdiction in Canada;
- Associate Members must operate a business which supplies goods or services to the: (i) locating industry, (ii) buried facility owners/operators that purchase locating services, (iii) training organizations, (iv) one-call centers, or (v) buried facility damage prevention organizations;
- Associate Members must pay an annual membership fee as established at each Annual General Meeting; and
- Associate Members must at all times adhere to the standards developed, published, and promulgated by the society.

AFFILIATE MEMBER

Affiliate Members are corporations, partnerships, organizations, and sister associations that endorse and support the principals of CAPULC. Affiliate Members must meet the following conditions and requirements for admission as members of the society:

- Affiliate Members must be corporations, partnerships, organizations, or associations incorporated or formed in any jurisdiction in Canada or individuals resident in Canada;

- Affiliate Members must acknowledge and endorse the purposes and objects of the Society;
- Affiliate Members must pay an annual membership fee as established at each Annual General Meeting; and
- Affiliate Members must at all times adhere to the standards developed, published, and promulgated by the Society.

For more information on becoming a member of CAPULC, please contact our office at:

Canadian Association of Pipeline & Utility Locating Contractors

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Email: admin@capulc.ca ●



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CAPULC Committees

If you are interested in sitting on a CAPULC Committee, please visit www.capulc.ca/Committees.

COMPETENCY TASK FORCE – NEW!

The Competency Task Force has a few initiatives but it also applies in all Canadian provinces. Alberta Occupational Designation is currently stalled but that doesn't mean other provinces haven't looked into the same movement. Also, by relaunching the committee, we are moving towards formings general "locating standards".

Our goals are to re-brand and re-market CAPULC to establish a unique identification within the industries that we are part of to attract more training providers and be the established voice for the locating industry.

GOVERNANCE

To facilitate a comprehensive review of the association's current governance structure in a way that identifies gaps and highlights areas of improvement for the purpose of providing

a defined governance structure and sustainable presence in each province in Canada.

STRATEGIC NETWORKS

To improve CAPULC's presence in the existing network of industry related organizations in a way that enhances the association's voice for the purpose of establishing CAPULC as a leader in the pipeline and utility locating industry.

OUTREACH

To enhance communications with members, non-members and stakeholder groups in a way that increases visibility of the association for the purpose of increasing awareness about association activities and initiatives.

SUSTAINABILITY

To develop a sustainable financial framework in a way that ensures CAPULC has the capacity to meet both short and long-term goals for the purpose of enhancing member benefits and maintaining growth in the membership base.

RECRUITMENT & SERVICES

To market association benefits and to develop new services in a way that will proactively address the needs of the industry for the purpose of establishing CAPULC as the preferred choice for professional membership.

ADVOCACY

To identify, interpret, and react to legislative and industry changes in a way that is relevant and timely to members for the purpose of maintaining the association's position as a leader in the pipeline and locating industry.

EDUCATION

To assist in the promotion and development of education programs in a way that enhances the association's relevance and value to the industry for the purpose of establishing the association as a proactive leader in program development.

If you are interested in sitting on a CAPULC committee, please visit www.capulc.ca/committees. ●



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A collage of images related to utility locating. The central image shows a worker in a yellow safety vest and white hard hat using a locating device on a dirt site marked with yellow and red stakes. Surrounding this are four smaller inset images: top-left shows a worker in a trench; top-right shows a city skyline with orange traffic barrels in the foreground; bottom-left shows a construction site with yellow marking; bottom-right shows a worker near a yellow 'NEW' sign and orange barrels.

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Education and Standards Committee

By Jamie Andersen, CAPULC President

Furthering education and creation of locate standards have always been a focus for CAPULC, and we have been met with additional challenges and roadblocks countless times. The last update we provided for our members was in

2018 was, unfortunately, very disappointing. CAPULC had spent a few years trying to achieve approval for an application for Occupational Designation with the Alberta Apprenticeship and Industry Training Board. We were all crushed when it was denied. However,

with every door that closes, another one reopens, so we went back to the drawing board. After a few emails and phone conversations, we were able to land a meeting with them in June 2018. They readily discussed recommendations for us to ensure we could be prepared to



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re-submit an application under new future guidelines. They would be heavier weighted for success. Since they would be revamping the application process (estimated to a two-year process), it would give the Education and Standards Committee time to take a step back, re-focus, and reorganize.

The first ignition that relaunched this committee back into full action was in April 2020 when the Education and Standards Committee was called back to action by the board of directors and announced at the 2020 AGM. They immediately began work to re-establishing their members and reassembling documents, as the board of directors conducted surveys with the membership, training providers, and Industry. The direction was clear: we needed to move forward on the development of locating standards, seek consistent training models, and conduct research to secure a career path for locators. So, we set to work! Within a few weeks, we were organized.

On May 13, 2021, CAPULC worked in collaboration with Alberta One Call and Consortium members and held an open summit to start communications on what next steps would look like, especially since Alberta Damage Prevention were hopeful it could lead to solutions with locate delays and worker shortages. This conversation sparked interest and brought ideas to the table.

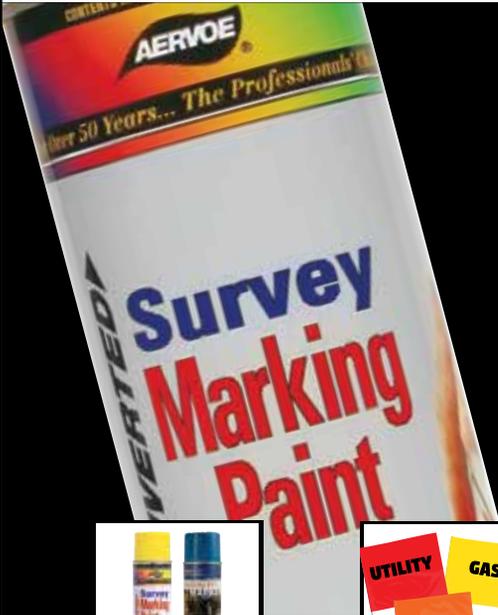
CAPULC Education and Standards Committee completed a Gap Analysis of Training Materials, Competency Documents and existing related standard documents that have been available across the provinces. The goal was to find areas of commonality and discrepancy which would point us to a place to start. With that project now completed, standard elements have been compiled and work has started on the contents for

the standards. Networking with other industry related associations have sparked relationships to provide feedback when its required. While the board of directors strategize for the E&S Committee's next steps, budgets are being established, and the committee continues working on educational and resourceful items that can further support our membership.

I would like to recognize the E&S Com-

mittee and all those participating for this group's dedication and valuable input as we trudge forward. Special appreciation is also necessary to thank Lance Norman, Chair, and Donald Richard, Co-Chair, for their dedication, guidance, and leadership of the E&S Committee. We have much more in store for the months to come! Make sure to attend our General Meeting in October, and watch for notices on our progress! ●









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Celebrating 20 years of CAPULC



CAPULC was formed in 2002 in recognition of the need for the locating industry to improve the product it was providing and promote the locating industry's image with the other stakeholders in the underground facility damage-prevention process. There were significant concerns within the locating industry, and the need for an industry association became clear. CAPULC was formed to represent the Underground Line Locators' voice and to control its future position in the damage prevention industry as a pertinent stakeholder by voicing its expertise to improve the damage prevention process.

On October 1, 1984, Canada's first one-call centre in Alberta formed as a non-

profit corporation. An industry geared toward knowledge and safety for everyone grew and the need for industry experts was established. In 2002, CAPULC held its first documented meeting of a new non-profit corporation took place. Once the paperwork was done and particulars in place, the Canadian Association of Pipeline and Utility Locating Contractors (CAPULC) was born April 22, 2002. Today, CAPULC's membership has grown to over 100 members. The association offers their members value through its Member Marketplace, the collection and circulation of information related to the locating industry, and networking opportunities through its conferences and trade shows.

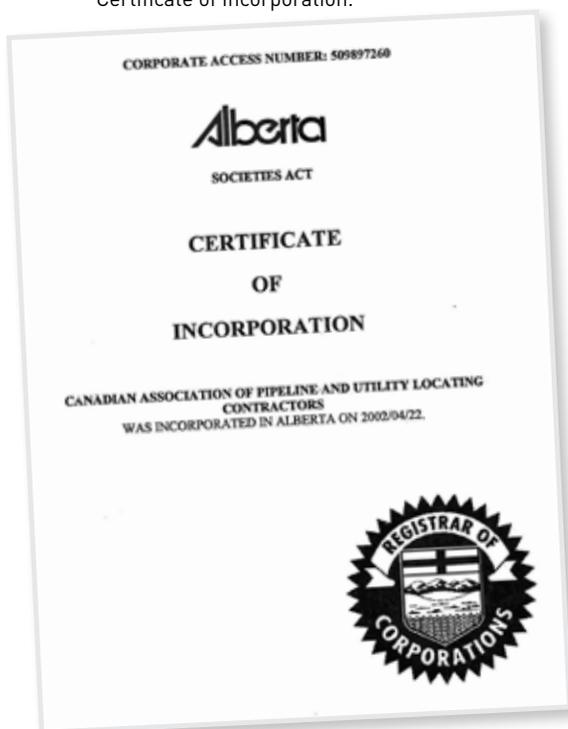
The founders were contractors in the field, and they devoted their time and resources, collaborating to develop a corporate direction as a united group. They agreed that the locating standards and guidelines for evaluating competencies and qualifications should be determined by those with the knowledge and experience involved in the locating industry. Their goal, through membership, was to impact the industry through education to improve the standard, ethical practices and competency level that could be recognized by all.

Just some of what CAPULC has done over the past 20 years includes:

- June 25, 2004: first Annual General Meeting

- February 2005: Discussions begin to create info sessions to clients covering techniques and procedures, what clients need to supply a locator, types of machines, etc.
- March 18, 2005: Canadian Locating Standards Version 1 approved by CAPULC.
- June 15, 2005: CAPULC standards committee releases Version 2 of the Canadian Locating Standards based on feedback from membership and industry.
- Southern Alberta Institute of Technology (SAIT) course development for pre-employment line-locating training is discussed.
- February 17, 2006: CAPULC's Canadian Locator Technician Standards is renamed to Locating Industry Recognized Practices (LIRPs) to signify changes within the creation and direction of the standards document to include more information. "Practices that have been proven effective through experience under a variety of conditions," is used as LIRPs' definition.
- August 2006: Members formally adopt LIRPs.
- January 2008: An audit tool for courses, a three-part system to define the criteria and assessment results, is in development.
- July 2011: CAPULC supports the Canadian Common Ground Alliance's application to the Canadian Radio-television and Telecommunications Commission (CRT C) for shared use of 811 in Canada for public access to

Certificate of Incorporation.



both non-emergency medical services and call before you dig (a nationwide three-digit number to eliminate confusion between provinces).

- 2011: A new website and online tools for members to interact are launched allowing membership renewals, marketplace access, advertising, news and events, and a job notification service. CAPULC also creates a training and education committee with the directive to find out how to properly train underground facility locators. SAIT is approached to provide a training solution for UFLs and develop an advanced line-locating course.
- 2012: A task force is developed by industry (CAPULC, Alberta One-Call, Enbridge Inc., TransCanada, Canadian Association of Petroleum Producers, Canadian Energy Pipeline Association, and Canadian Association of Geophysical Contractors) to apply for designated occupation status.
- May 2015: CSA Z247 – damage prevention standard for the protection of underground infrastructure – is published. It is the first damage prevention standard in Canada. Sponsors include the National Energy Board, Natural Resources Canada, the Canadian Energy Pipeline Association, and the Canadian Gas Association.
- November 2015: Article is published in the Damage Prevention Professional Magazine recognizing CAPULC's efforts and additions to the locating industry.
- January 2016: CAPULC establishes a competency review committee to address the more than 3,200 competencies identified in the UFL competency profile and any gaps.
- The January 2017 issue of the Ontario Construction Report publishes an article as a special feature for CAPULC's focus on competency, ethics, and professional recognition.



Day in the life.

While there have been many changes that have impacted the locating industry – i.e., the Pipeline Safety Act – Bill C46 in 2015 – and ongoing challenges like getting underground facility locators officially designated occupation status, CAPULC has provided leadership, enhanced the value, and gained a reputation for the underground facility-locating industry

CAPULC has made strides to establish

the educational elements necessary to develop programs, excel in the field, and influence educational decisions. And by ensuring locators can do their jobs properly and safely, promoting members and their work in the industry, and advocating for what members need to do their work safely and effectively, the association continues to be an important support for clients, the public, the locate industry, industry associations, and government regulating agencies. ●



2019 AGM Rodeo.

CAPULC's 2021 AGM and Safety Conference



The Canadian Association of Pipeline and Utility Locating Contractors' 2021 virtual Annual General Meeting and Safety Conference took place on April 22, 2021. There were some exciting updates to share on the industry relations and partnerships CAPULC has made over the past year. The Education and Standards committee was reinstated and tasked to continue to define, establish, and maintain the industry recognized underground line locator standards. The buzz has begun!

The virtual meeting was a success that featured a lineup of speakers who were keen in the ground disturbance and line-locating industry, discussing topics such as updates on new technology and equipment for line locators, non-intrusive methods of GPR and how it is used to locate underground utilities, and the locator's safety tips of the do's and don'ts in the field. The

lineup of guest speakers also included an update from Alberta One-Call since their unification with Alberta Common Ground Alliance and the administration of Where's the Line and the tasking of notifying defunct pipelines.

"Mental Health in the Workplace and Why it Matters" was the message to promote and contribute to a safe working environment that impacts one's everyday activities. Jenan Nasserdeen, founder of Catalyst Training Services Inc., provided a well-informed understanding of mental health and how it affects us daily throughout of lives – at home and at work.

The 2022 AGM and Safety Conference and Trade Show is slotted for April 21, 2022! If you are interested in becoming a trade show exhibitor or a sponsor, please contact the CAPULC administration office at admin@capulc.ca or call 1-888-492-8279. ●

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First of its kind youth online safety training program launches in Regina



The phrase “Youth is our future” – is it just another tired cliché? Or is it something that many take to heart?

For the Saskatchewan Safety Council (SSC), the Saskatchewan Common Ground Alliance (SCGA) and the Heavy Construction Safety Association of Saskatchewan (HCSAS), that phrase isn’t just empty words. It’s a call to action that they realized – together – during a special media event on July 15th.

On that day at a Wappel Construction site in Regina, they launched what is believed to be a North American first: partnering together to create an online safety construction program, aimed at youth aged 14 to 21. The “Ground Disturbance for Saskatchewan Workers” training initiative, available on the SSC website at www.sasksafety.org, will instill safe working skills to potential future young employees in the field.

For SSC President Ryan Jacobson, the initiative is a game changer, especially in a larger and more sparsely populated province like Saskatchewan.

“Everyone who works in a ground disturbance industry – whether it be agriculture, landscaping, construction, or road building – needs access to basic best practices to work safely,” says Jacobson. Citing the unique industry-created online course, he adds that it provides a way “to get all those trained

in rural Saskatchewan that may not have training agencies close at hand.”

The approximately two-hour online course is free, delivered via the SSC website (<https://ssc.mclms.net/en/package/5143/course/10445/view>). If the participant passes the course, they will receive a recognized safety construction certificate, immediately downloadable upon completion. The program is a key component in the Council’s Career Safety Education Program, which has been designed by industry experts to address the most common injuries to new workers in their respective fields.

SCGA President Derrick Mann told the media conference that evidence shows injuries happen both during complex construction work but also during what most people would recognize as more routine situations. Canada experiences \$1 billion worth of damages every year from underground facility damage. But Mann says the biggest issue remains eliminating the risk of personal risk of injury and even death. These incidents are preventable with the right safety mindset.

“Developing safety habits when one is young produces a lifetime of benefits,” Mann says.

Construction activity in Saskatchewan has remained at historically high levels, even during the COVID-19 pandemic. There were 151,282 requests for line locates in 2020, a close to seven

per cent increase from the year previous, and about 700 contacts with underground facilities in 2019.

This course puts the industry “one step closer to be able to create that safety culture, that safety behavior right on site,” says Natalya Uchacz, Chief Operational Officer with the Heavy Construction Safety Association of Saskatchewan. “When we’re able to start right at the beginning with our youth and help them become informed before they actually go into construction site, then overall we will have a safer industry.”

The partners are confident this training can reduce the incidents caused by striking underground utility infrastructure or soil collapse. The course includes content such as ground disturbance and hazards assessment, reporting damage and line locating, daylighting, control zones, color codes, soil conditions, and emergency assessment.

Young workers and those new to jobs that work in soil who are

pursuing careers in agriculture, heavy construction, residential construction, landscaping, or with companies that provide services to utility companies are encouraged to complete this free training course.

For Eli Sorenson, a young field worker, the course is the kind of encouraging development that shows that the industry, in addition to aiming to provide competitive pay and a good working environment, is interested in the health and wellbeing of workers.

“As a person with my whole life and career in front of me, I want to work in a place where they take safety seriously,” Sorenson told the media conference.

That’s exactly the type of environment these three partners want to create in every construction workplace. They want to prove that working safely, much like investing in our youth, is definitely more than a cliché. ●



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LOCATE TIPS

Underground facility locates: working together to ensure safe digging

By Matt Cooper, CRSP

With the digging season in Alberta well underway, the importance of obtaining underground utility locates in a timely manner is critical to ensure worker safety is maintained and project schedules are met. Alberta has a very extensive and complex underground infrastructure of pipes and cables valued in the billions of dollars that has been built over the last century. These buried systems supply goods and services that are essential to the functioning of today's society.

Every time a member of the digging community disturbs the ground, there is a risk of damage to buried facilities. The possible consequences of damaging a buried facility are extensive and could include injury/loss of life, public evacuations, disruption of essential services, third-party property damages, contractor down time, lawsuits to negligent parties, and fines, to name just a few.

Mike Sullivan, President of Alberta One Call, knows the importance of obtaining locates prior to disturbing the ground:

"Requesting a locate through Alberta One-Call engages the damage-prevention process among a variety of stakeholders whose shared primary objective is to secure your safety while you complete your project. Plan your work and work your plan – always ClickBeforeYouDig. One click costs you nothing. Not clicking could cost you everything."

Paul Richard, President of Locate Man-

agement Institute and Canadian Certified Locator Assessor, knows the challenges faced by locators:

"The underground network is a complex array of pipes, cables, conduits, duct banks, vaults, tanks, tunnels, etc. Locators face huge obstacles which cause signal problems that can negatively affect the accuracy of the locate. Pipe materials include steel, concrete, cast iron, polyethylene, polyvinyl chloride, fibreglass, and aluminum. Cables may be copper, fibre optic, aluminum, coax, etc. Buried facilities also have different shapes, compositions, densities, and diameters. They can be buried just beneath the surface or deeper than 50 metres. Newer facilities are often bored, and their depths and direction vary along its path. Facilities can also be stacked vertically or grouped in a conduit, duct bank, or common trench. Conductive surface structures, such as buildings, fences, overhead lines, facility housings, vehicles, equipment and even rebar, can steal signals and mask buried facilities. Records can be inaccurate and incomplete. The removal of existing facilities rarely occurs; therefore, they remain in place when they're no longer of use, and once abandoned, evidence of their existence is lost."

There are methods available to ground disturbers to help ensure underground facilities within their projects are obtained in as short a time as possible.

White-line/pre-mark your work area: This ensures that the locator who arrives

on-site can focus his or her time and attention locating only the facilities within the ground disturbance activity areas. A clear example of this is when conducting removal of existing sidewalks, curbs, and gutters during rehabilitation works. There are usually multiple, unconnected areas of existing concrete that need to be removed rather than long, continuous stretches. These specific areas can be identified using the polygon system within the Click Before You Dig locate request and then physically marked with white paint at the sites. Placing a locate request for multiple city blocks in their entirety without identifying the specific areas in which the work will be completed requires the locator to mark the whole area, which will take considerably longer than if they had specific areas to locate and mark.

Resist the urge to place a locate request too far in advance: This is a critical best practice and when not applied can significantly extend the wait times for locates. Requesting locates for a project three or more weeks out from the proposed start date results in locator resources being allocated away from other contractor projects that are scheduled to begin earlier. The current Alberta Pipeline rules state that, "A person proposing to undertake a ground disturbance within the controlled area of a pipeline shall notify the licensee of the pipeline and Alberta One-Call at least two days and not more than 10 days, excluding Saturdays, Sundays and holidays, prior to commencing

the ground disturbance so that Alberta One-Call may notify the licensee of any buried pipeline of the intent to disturb the ground and request that the licensee identify and mark the location of the pipeline." It's difficult to resist the urge to place locate requests well in advance of a proposed project start date, especially with prior experience they have taken three, four, or even more weeks to be completed. Early locate requests means waiting for locates on your projects while locators are marking others that aren't actually beginning. All contractors need to resist the urge to place far advanced locate requests for the system to balance out and the locates to be completed in a timely manner.

Iain Stables, Supervisor, Damage Prevention Natural Gas Division with Atco, has these tips to share to help ensure your locates are completed in a timely manner:

"Place manageable size locate requests. In urban areas, request them in 3-5 blocks. In rural areas, three to five miles is ideal. Whenever possible, communicate your plans and priorities with our locate vendors. White-lining and sending diagrams of your dig area to our locate vendors helps them complete the locates efficiently. Choose different work start dates if you're placing multiple locate requests at once."

Damage prevention is critical to ensure the safety of workers and the successful completion of projects as we all work together to rebuild Alberta's economy after the pandemic. Each of the stakeholder groups in the damage-prevention process has roles and responsibilities, which, when recognized, accepted, and fulfilled, will enhance the process and have a positive impact on worker safety, public safety, protection of the environment and preservation of the integrity of the buried infrastructure on which we all depend in our daily lives.

Jamie Anderson, President of the Canadian Association of Pipeline and Utility Locating Contractors (CAPULC), has the following perspective from a locator:

"Locators are the 'boots on the ground' and have become the 'faces' to the one call system, especially as technology advances online with 'click before you dig'. They are the bridge between placing the one call and completing the excavating. Locators do their best to handle high-volume ticket requests within the restraints of their time and heightened responsibility. They are the first line of defense to underground facility damage prevention and carry the weight of what happens if they don't perform their job duties accurately, effectively, and within acceptable timelines. Support and communication from our digging community are two of the most important ingredients to an effective damage prevention solution."

Some final tips for a successful digging season:

- Keep open communication with the locate service provider. They will work with you!
- Ensure you keep your paperwork on site

and have all notified utilities clearances. Double-check that your work areas match the location and the locate ticket matches the marks on the ground and nothing has been missed – know your work zone. This documentation will be very important if you have a near miss or strike an underground facility.

- Ensure proper use of the "planning and design" ticket. Requesting this ticket is not a locate request but is meant only to inform the ground disturber concerning mapping and facilities in the area for planning or bidding purposes.
- Provide as much information as you can to assist the locator in doing their work efficiently. As you know, they are on a schedule and have many tickets to respond to – give a good description of what you're doing, if there is restricted access and/or who to meet with on site, etc.
- The motto "Damage prevention is a shared responsibility" is not lip service. We all have a responsibility to work together to ensure ground disturbance is conducted safely.

Have a safe digging season, everyone! ●

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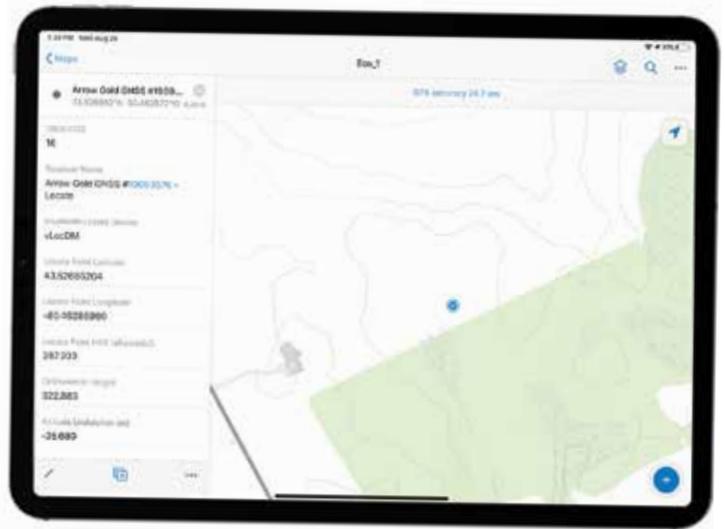
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Introducing Eos Locate™ for ArcGIS

Map underground utilities with high-accuracy into an Esri platform

By Eos Positioning Systems



It's no secret that mapping existing buried assets is a challenge. Some as-builts are digitized from paper or CAD files into a GIS. But often this information is incomplete, inaccurate, or both. Another option is to dig small holes and map the exposed assets, then infer the trajectory by connecting points. But this is expensive, potentially dangerous, and can also result in inaccurate data. Not to mention, it's less than aesthetic.

Sometimes, utilities or third parties can double-dip with 811 calls. One team locates and marks the asset, and another team goes out with GPS to map the marks. The downside here is that this data lacks elevation information, and someone in the office still needs to manually merge and incorporate it into the GIS.

To date, most methods for remapping buried pipelines include some level of manual (re)work, high expense, and dedicated field initiative.

But what if there were a new way to map buried utilities — accurately, in real time, with no digging?

A SENSIBLE WAY TO MAP UNDERGROUND UTILITIES

In 2019, Canadian company Eos Positioning Systems and U.S. geospatial leader Esri partnered to release the

world's first high-accuracy, real-time underground mapping solution that allows a single field personnel to map underground utilities in real time with high precision. With Eos Locate™ for ArcGIS, one person can accurately map underground infrastructure in seconds. The solution is free to anyone who has the compatible hardware and software technologies. Here's how it is being piloted at utilities globally right now:

Imagine a gas utility sends an employee — “John” — to respond to an 811 call. John takes his utility locator, which has been dressed with a bracket holding a GNSS receiver and iPad running a GIS app. John locates and spray-paints his target. Then he opens his web map and pushes his locator button again, which now triggers a submission to record his locate on the web map. In seconds, the asset has been captured.

Not only does the asset's 3D location, including depth below cover, go straight to the utility's GIS back in the office, but it also contains complete GNSS and locator metadata for quality assurance.

WHAT WOULD THEY GAIN?

Benefits of mapping buried assets with GNSS directly into a GIS

With a utility able to map all its assets in this manner, over time the benefits are manifold:

- **Confidence:** They know the exact location of all buried assets.
- **Compliance:** They more easily comply with upcoming industry standards, such as tracking and traceability.
- **Speed:** Crews responding to emergencies can more quickly treat affected assets.
- **Service:** Customer service is interrupted for less time.
- **Cost Savings:** The utility spends less time and fewer resources in the field.
- **Safety:** The severity of any threat, such as a leak, can be mitigated as response improves.
- **Future-Proof:** Because GNSS metadata is captured, the utility knows the absolute XYZ of its assets. If pavement changes, they can always recalculate absolute depth below cover.

And there are fewer holes in the field.

REAL-WORLD APPLICATIONS

This type of solution is currently being deployed at utilities worldwide, and an increasing number of technologies are becoming compatible with this type of solution.

To learn more about this type of workflow, visit www.eos-gnss.com. ●



[Eos Positioning Systems]



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Modern methods for safer ground disturbance

Provided by Safe Locate Solutions Inc.

Excaavation mishaps are the leading cause of damaged infrastructure in Canada, costing roughly \$1 billion dollars per year. The root cause of these mistakes can be broken down into simple categories:

- Buried facilities not being located or marked;
- Inaccurate markings from the locator;
- Incorrect facility records;
- Unsafe excavation practices.

How many times have you heard that this is the cost of doing business?

With the deployment of RFID as part of hydro and mechanical excavation processes, the cost savings increase yearly and last the lifetime of the facility. Environmental impact is lowered, safety and visibility of assets are drastically increased, user-friendly records available for excavation crews, and time savings are some of the benefits by the deployment of this technology.

We interviewed Timber Weiss, Professional Engineer, Washoe County Utilities from Reno, Nevada to ask about the major issues with underground excavation.

WHAT ARE THE MAJOR ISSUES YOU ARE FACING TODAY WITH LOCATING YOUR UNDERGROUND FACILITIES?

TW: There is a major disconnection between paper plans and real-world conditions, which cause problems with accuracy of underground infrastructure location. As a result, it is a common process to install tracing wire, RFID tape, and RFID markers along subsurface infrastructure. Historically, not all underground facilities are properly tagged, if at all. Underground infrastructure located under roadways may move over time as roadway base material settles. The best available information used to locate underground infrastructure may be incorrect or outdated design plans, which are rectified with the use of RFID markers.

WHAT ARE THE INDIRECT COSTS ASSOCIATED WITH MISSING THE MARK?

TW: It is quite common during excavation to discover unmarked facilities or buried assets and artifacts that disrupt a project timeline. If a damaged underground facility cannot be located, the unplanned time and resources can increase the cost of the project exponentially. Another frequent issue is that the location of underground facilities on construction sites can't be determined by a developer, the governing regulatory agency, or government; the project may require the developer to halt operations to reassess.

WHAT ARE THE ENVIRONMENTAL IMPACTS WITH THE CURRENT METHODS?

TW: Damage to unmarked underground utility infrastructure may cause a catastrophe, contamination, or resource loss, resulting in environmental and public health concerns. Excessive surface disturbance due to inaccuracies of underground facility locations may cause development projects to be noncompliant with environmental regulations and subsequently halted.

HOW WOULD RFID HELP YOUR CURRENT METHODS?

TW: The ability to quickly and accurately locate underground infrastructure or unaccounted objects results in an increase in construction precision, reduced disaster and ultimately reduced costs by removing redundancies. Excavation of existing, previously unmarked infrastructure would be unnecessary as it's possible to locate that infrastructure from above ground with RFID technology.

Adopting RFID technology into your company's daily excavation and backfill processes provide comprehensive records attached to each marker, available during toolbox talks at the start of shift. Let's set up our field crews for success with better visibility of assets before they start ground disturbance activities. ●

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SURVEY | MAPPING | AUTODESK | WIDE FORMAT | GENERAL LINE | CONSTRUCTION | PROFESSIONAL SERVICES

Metrolinx leverages spatial data to revolutionize the delivery of transit projects in Ontario

By Elizabeth Tayag, Manager, Utilities with Capital Projects Group at Metrolinx

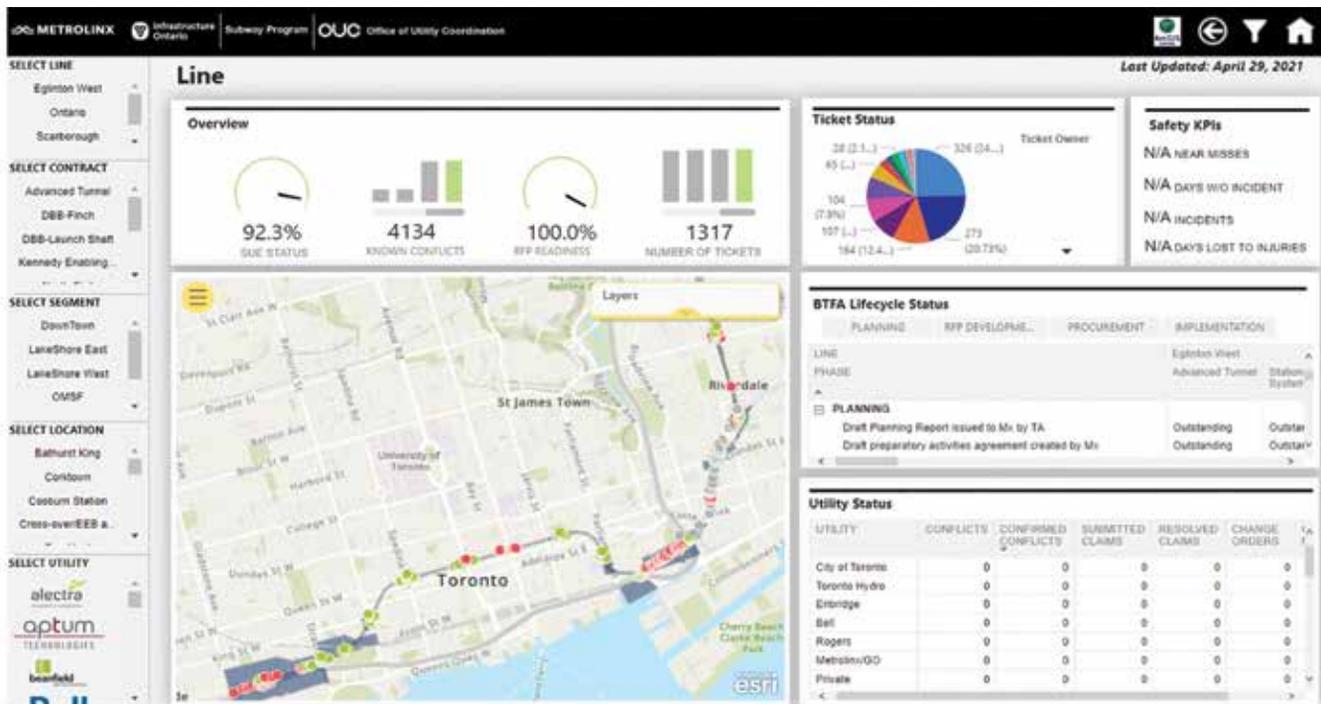
In recent years, there has been a clear and pointed shift in focus toward digital transformation as a key driver to organizational success. While digital technologies continue to dramatically reshape industry after industry, these transformations are considered more commonplace in certain sectors over others. Despite existing in a traditionally non-digitally savvy industry, Metrolinx has embraced this change and is now leading the charge on transforming best practices within the utilities space through new digital methods and tools.

Following the passing of the Building Transit Faster Act (BTFA) in 2020, Metrolinx was tasked with the challenge of improving the coordination of utility asset relocations to deliver Ontario's subway plans within its tight timelines (i.e., the Ontario line, Eglinton Crosstown West Extension, Yonge North Subway Extension and Scarborough Subway Extension). As the crown agency partnered with Infrastructure Ontario and the Ministry

of Transportation Ontario, Metrolinx will create an entirely new way of managing utility conflicts that could change project delivery across the province moving forward.

One of the most significant risks to the timely delivery of major transit projects is posed by utility infrastructure – and particularly buried infrastructure – that conflicts with project plans. These assets are often difficult to find, costly to protect and cumbersome to relocate, with grave consequences if done incorrectly. These consequences can include cutting off essential services, incurring expensive delays and repair costs, causing environmental harm, explosions or leakages, and endangering workers' safety and even lives. To reduce these risks while simultaneously streamlining the delivery of the province's four priority subway lines, Metrolinx developed two parallel initiatives: the Utility Coordination Program (UCP) and the Office of Utility Coordination (OUC).

Figure 1: The UCD Dashboard by Subway Line



Between the initial announcement of the BTFA and its final passing, the UCP aimed to simplify the complex interactions that plague major transit projects. The program aimed to streamline delivery by developing a new, clear, mutually agreed upon process for relocating infrastructure, and a policy guideline to help third parties interpret the updated procedures.

Now that this new way of working has been developed and is in place, Metrolinx is turning its attention to layering on a notification component to track it all: the OUC.

The OUC is a new division within Metrolinx mandated to implement the Utility Coordination Program and monitor compliance to its new, more streamlined way of working. This group will oversee a geo-spatially enabled platform of the same name that will allow data sharing between Metrolinx and its government oversight, utility companies, and technical advisors.

The OUC currently houses the Utility Coordination Dashboard (UCD) which will provide a visual map of project metrics making it easier for users to track utility asset locations and BTFA metrics moving forward. The development team is also looking into developing a Utility Infrastructure Repository (UIR), which will collect utility infrastructure data to enable informed decision making and improve data access for transit projects.

The objective of the OUC is not only to centralize and report on key data for the new subway lines, but also to provide strategic services that will enable continuous improvement and innovation for transit projects. In practice, that means moving beyond just reporting on project metrics to identifying opportunities for efficiency gains and assisting in the delivery of key projects within their goals.

To make informed decisions, utility and construction professionals (such as designers, planners, engineers, and technical specialists across the industry) need quick access to the right data at the right time. The OUC enables just that to support – and improve – the design, procurement, and construction of all four of Ontario’s subway lines as it relates to utility relocation.

Utility asset management solutions such as the OUC are becoming more commonplace. In the United States in particular, both private and public entities are developing digital solutions to monitor and manage assets and their performance. The success that each of these solutions has shown is providing a sneak peak into the digital future of the utility sector and the promise of reduced risk brought on by working with a smarter grid. ●



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Fiber optics locating

By Dustin Ward, General Manager, Switch Utility Location & Oilfield Services Ltd.

Fiber optics has been the lifeblood to getting high-speed internet to vast amounts of the population, and it continues to grow with each community served. Some would say that it has been a “game changer” for our ability to communicate at near instant speed. A revolutionary method of transmitting data, once thought to be too expensive other than for commercial use, is now being installed to the homeowner just like a traditional phone line.

Due to the cost when fiber was first installed, it was usually pretty easy to identify, as it was a mainline running down a highway or a very well identified line in a commercial area. Now, with the cost being relatively inexpensive compared to the early days, fiber optics can be found running in your backyard with very little identification.

Performing a utility locate on fiber optics can be very challenging. It's inherently the most difficult utility to be located due to there being so little “metal” for the electromagnetic signal to be carried on. This is why the best way to perform a locate on fiber is with a direct-connect (conductive) locate at a low current. This allows the locator to isolate each fiber line and keep a low current on the target utility. For many years, this was the only way to properly identify a fiber line. Unfortunately, due to the increased use of fiber optics and the installation procedures that are being used today, this isn't the case anymore. Many private companies are installing fiber networks to rural communities at a rapid pace. With this, the

installation process has made a direct-connect locate almost impossible in some circumstances. The following is an example of this.

One client that we perform locates for has a vast network of rural fiber optics in place. Their system has grown very quickly, and unfortunately, with little understanding of how to perform a locate on fiber optics, their install procedures have left us with a difficult job of identifying their infrastructure. Many of their locations for a direct connect are at canisters in ground vaults. These canisters are sealed, and some may have a tracer wire to connect to, but not all. Unfortunately, the tracer wire is not always helpful either, as all fiber lines are tied to one common tracer inside the canister. When tying onto this, we've found that sometimes the signal only travels down the least resistive fiber lines and won't travel down all lines that are connected. Because of this, we had to try to find a machine that would allow us to produce a signal with a clamp and also with an inductive approach.

The Vivax VM560 has been our machine of choice for this. It's obviously not the ideal approach to be locating fiber this way, but it's the only method available in many circumstances. This method has its own flaws, as the VM560 runs at a very high frequency (480kHz) and can easily bleed to other, better-grounded utilities in close proximity. We have to perform some inductive scanning to confirm our locates, but without this machine, we wouldn't even have an option for locating these fiber lines. The clamp with the VM560 has been very useful in

producing signal on fiber lines that we couldn't identify when tying onto the available tracer wire at the canisters. With their newly installed lines, we've worked with the client to incorporate a point of direct connect at the termination point (customer service end) so we're making life a little easier moving forward; however, most of their previous infrastructure doesn't have a tie-on point at the customer end and the fiber lines aren't grounded at this end either. The VM560 has been the only machine we've found that can produce a signal which will stay on the fiber line and allow us to perform a locate up to these ungrounded termination points.

As mentioned earlier, this isn't an ideal way to locate fiber optics cables, but with the scenario we've been given, this machine has truly been invaluable in identifying these troublesome fiber lines.

One additional item to note: the mapping of all underground utilities that are installed is invaluable! The infrastructure maps we were provided were extremely lacking, with very few areas properly mapped out after construction was completed. This has been a major topic of discussion with our client, as without proper mapping it's extremely difficult to be confident on our locates without doing extra problem solving to confirm. We've been working diligently to provide updates to their infrastructure maps as we perform all locates in order to get a proper database. Correct mapping can make the locate so much easier if we know where the line should be. ●



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Training vs. education

By John Brix

There are a lot of people I've talked to that look at training and education as the same thing, but they are dramatically different.

Education is a time-weighted, knowledge-based level of certification. As an example, general doctors complete a four-year undergraduate program, spend four more years in medical school and then complete three to seven years of residency education before they are eligible for their medical licensing.

Training, on the other hand, is competency based and dramatically different. There is simply the need to determine if a person is adequately qualified, suitably trained and has sufficient experience to complete the tasks presented to them.

Training should never have a timeline imposed on it because your goal for training is to determine that the person is competent, not to fulfil a time-weighted program.

If somebody needs to be proven competent on the use of a forklift at your site, you'll offer the training, but the training should not be a mandated six or eight hours. Some students may pick it up quicker, some students may pick it up slower, but generally, as soon as we start installing a time-weighted event onto training, we lose the effect of what good training is all about.

I first started to look into the difference of education versus training because one of the sites I worked at had a minor incident involving a small garbage can fire. What's interesting about this event is that the incident itself was very low risk but it took a while and many fire extinguishers to put the fire out. There was also a lot of chaos involved when more than one fire extinguisher was needed to be used. Personnel involved would have been able to extinguish the fire a lot quicker if multiple people had accessed fire extinguishers and used them properly.

Upon doing a root cause analysis on the event, corrective actions were put into place. One of the corrective actions required us to determine competency with the use of the fire extinguisher for our personnel on site. Upon doing some re-

Training should never have a timeline imposed on it because your goal for training is to determine that the person is competent, not to fulfil a time-weighted program.

search on the training competencies for fire extinguisher and programs that existed, I found out that the industry standard fire extinguisher training was a basic six-hour training program.

I look at training as "what is the return on investment if I'm going to delegate a bunch of personnel to take the training?" So before hiring a third party to host a traditional fire extinguisher certification course, I decided to take it first. The course had a lot of filler to ensure students had a "full" six hours, and at the end, in my professional opinion, the students were "marginally competent".

Using a set of training philosophies that I learned while teaching police recruits and partnering with a very progressive training institution, we set our goal to have a competent fire extinguisher operator course.

Not following a time-weighted education ideology, the end-user fire extinguisher program we created was hugely successful. We saved over \$287,000 with one properly executed training initiative, gained the support from our stakeholders, and more importantly, increased site moral and willingness to learn new competencies because the training was applicable, efficient, and interactive.

For far too long we've been confusing education with training, and our mentorship and safety programs have plateaued because of this. Many great minds are still stuck in this old way of thinking, which doesn't allow for growth and new standards for learning.

We need to adapt to our new world and our increased understanding of how people learn. The largest step forward we can take is to understand the differences between education and training. ●

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The future of locating in Canada

By Donald Richard, Vice President, Locate Management Institute



In 2014, industry in Australia led the development of a locator certification program to set minimum standards and ensure best practices. The working party included the notification centre (Dial Before You Dig), NULCA, major utility owners, and representatives from the construction and training industries. The goal was to ensure people working as locators had the skills and experience to identify underground facilities and ultimately prevent damage to this critical buried infrastructure.

In 2015, this culminated into a Certified Locator program, now delivered by DBYD Certification Ltd. (DCL) that ensures underground facility locators are certified to find critical buried facilities. The mission is “Every Locator a Certified Locator”.

The program certifies locators by industry experts to distinguish locators from self-authorized locators.

“Before the program, there was no objective criteria to determine whether the locator you’ve hired was competent or not to do the job,” says Robert Row, CEO of DCL. “Now companies know when they use someone who has completed the DBYD Certification program, they have been through rigorous testing and assessment.”

In 2019, the program gained international recognition when it was adopted in New Zealand by beforeUdig.

To gain certification, locators must pass a comprehensive theory exam and practical field test conducted by an independent industry assessor. The assessment includes competent use of equipment, workplace safety knowledge and compliance, locating theory, proper locating, marking, and verification procedures, problem-solving skills, and managing abnormal operating conditions.

No specific training course is required prior to enrollment; however, the program lists Recognized Training Organizations (RTOs).

As of 2021, there are over 930 certified locators in Australia, with an overall success rate of 62 per cent. Australia recognizes that there is more work to do, but they are on the right path. To date, the program developers are unaware of any incidents as the result of error by a certified locator.

This program has set the gold standard to ensure locators are qualified to identify where essential infrastructure is located before any ground disturbance takes place.

Is the Canadian market ready for this? And will the future of locating in Canada be “Every Locator a Certified Locator”? ●

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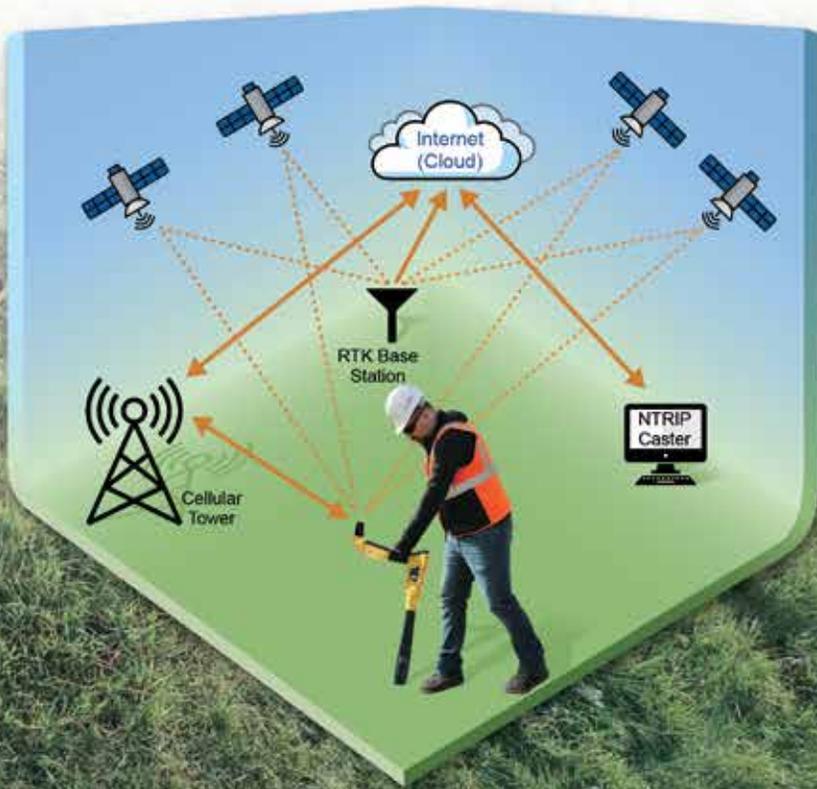


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