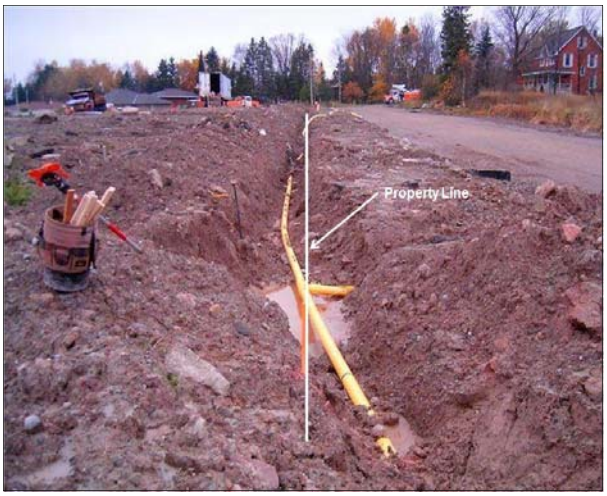
As-Built Drawings of Underground Utilities

Ref: 2009—006

Recommendations for Municipalities



Association of Ontario Land Surveyors
1043 McNicoll Avenue Toronto Ontario M1W 3W6 Canada
T: 416-491-9020 F: 416-491-2576 admin@aols.org www.aols.org

The Challenge
Unreliable or Missing Drawings of Underground Services

The Association of Ontario Land Surveyors recognizes a significant variation in the quality and reliability of drawings showing the location of underground utilities in the road allowance. Utility service connections, which extend from the main service lines in the road to a building on private property, are particularly problematic, as the records may not exist or may be of questionable quality due to the techniques used to measure the facility. Many surveyors have first-hand experience with buried pipelines installed outside the limits of municipal easements. Lack of knowledge about the location of buried services impedes the efficient management of the road allowance, degrades the effectiveness of safety and damage prevention efforts, clouds property rights, and increases costs of boundary retracement surveys of municipal land.

What Municipalities Can Do

- Require as-built drawings as a condition of road cut permit approval, and ensure that the drawings contain sufficient measurements to enable the underground services to be plotted on a base plan.
- Ensure that the name of the company which secured the permit, the permit number, the names of the company and its employee(s) who prepared the drawing, and date of fieldwork are recorded on the drawing, together with a signature of the person certifying the content of the drawing. The Canadian Standards Association will be releasing a standard for recording buried utilities in 2010.
- Develop policies to require underground services to be referenced to permanent features such as boundaries, or a generally accepted reference system such as the 1983 North American Datum (Canadian Spatial Reference System)
- Require as-built drawings to be submitted in scanned or vector file format.

Why Municipalities Should Obtain Reliable Drawings of Underground Utility Services

- Reliable drawings showing the location of underground utility services improve the efficiency and effectiveness of planning, design, construction and maintenance of roads, including reducing design changes and subsequent construction delays due to unexpected subsurface utilities.

- Reliable drawings showing the location of underground utility services improve the quality of utility locate services and thereby contribute to safety during construction and reduced costs of field work.

- Reliable drawings showing the location of underground utility services reduce the possibility of damage claims by municipal and private utilities. Many underground services are being installed using horizontal boring techniques. There are concerns that gas lines and lateral sewer connections could be inadvertently penetrated.

- Reliable drawings showing the location of underground utility services contribute to the preservation of survey monuments, which would reduce the cost of municipal boundary retracement surveys.

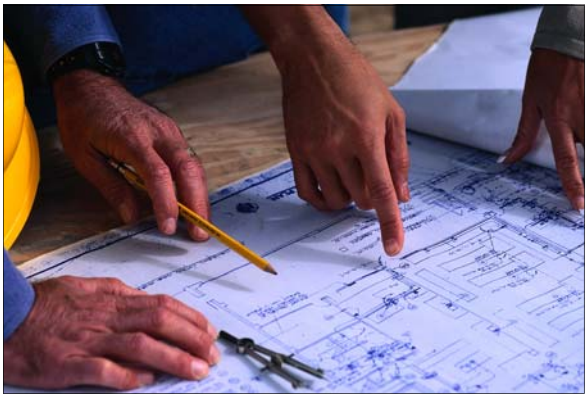
- The electronic drawings can be linked to a street centreline network to facilitate access to the data and information.

- As-built drawings, referenced to boundaries or a defined coordinate system, would ensure the permanency of information contained in the drawings. Underground services are often referenced to location of physical features such as trees, buildings, curbs, road centrelines, and utility poles that can change over time.

- As-built drawings assembled into continuous maps and integrated parcel mapping networks can be a valuable tool for the management of limited subsurface space in urban centres.

Action

Work with professional surveyors who can provide advice on techniques for preparing, assembling and managing road cut permit and as-built drawings, including system design that meets short, medium and long-term plans and budgets of municipalities.



Association of Ontario Land Surveyors:
The Association of Ontario Land Surveyors was formed to regulate the practice of professional land surveying and to govern its members so that the public interest may be served and protected.

The Association of Ontario Land Surveyors (AOLS) issues licences to Cadastral (Legal Boundary) Surveyors and Certificates of Registration (C of R) in Geodesy, Geographic Information Management, Hydrography and Photogrammetry. Applicants must comply with academic requirements, a Term of Articles and pass the professional examinations. All members are entitled to use the designation O.L.S. (Ontario Land Surveyor) or O.L.I.P. (Ontario Land Information Professional).

Many of the members of the Association of Ontario Land Surveyors are employed by municipalities and government agencies, and provide services to municipalities. Professional surveyors are in a position to identify practices that will improve the efficiency and effectiveness of municipal operations.

Author
Walter Kowalenko , O.L.S., O.L.I.P.
wkowalen@toronto.ca

Reviewers
Paul J. Benedict, O.L.S., O.L.I.P.
Roderick Finnie, O.L.S., O.L.I.P.
Michael Gorman, O.L.S., O.L.I.P.
Peter Lamb, O.L.S., O.L.I.P.
Grant Lee, M.C.I.P., R.P.P.
David U. Maughan, O.L.S., O.L.I.P.
Michael J. Gorman, O.L.S., O.L.I.P.

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Related Policies
Title and Reference Number:
1. Inventories of Subsurface Features in Rights-of-Way 2009-001
2. Survey Plans Are protected By Copyright—2009-002
3. Engage Professional Surveyors To Build Geospatial Infrastructure 2009-003
4. Engage Professional Surveyors to Develop a Road Database 2009-007

Revision Dates