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Mapping of underground utility infrastructure

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Preface

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This Standard was prepared by the Technical Committee on Mapping of Underground Utility Infrastructure, under the jurisdiction of the Strategic Steering Committee on Structures (Design), and has been formally approved by the Technical Committee.

September 2011

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S250-11
Mapping of underground utility infrastructure

0 Introduction

The purpose of this Standard is to specify the mapping records requirements used to identify and locate underground utility infrastructure. This Standard is intended to promote the use and drive the advancement of mapping records during the planning, design, construction, and operation of underground utility infrastructure.

Underlying the development of this Standard is the two-fold recognition that it is a privilege, not a right, to bury anything underground in the public right of way and that it is in consideration or exchange for that privilege, that the owner is obliged to provide an accurate and retrievable as-built location of that utility infrastructure.

The underground is a maze of pipes and cables. Currently, thousands of kilometres of underground pipes and cables have never been accurately mapped or recorded. Infrastructure in Canada's older cities was installed more than 100 years ago when as-built drawings, if any existed, referred to surface features that have long since disappeared. Up until recently, recording the presence and location of such utilities was not formally required or was not carried out in an accurate or methodical way. Today, many of the records that do exist are in formats that are incompatible between utilities, making it difficult to position one company's pipes relative to another's cables.

With so many communications lines, fibre-optic cables, and petroleum, natural gas, electricity, water and sewer lines, public safety issues arise as to how quickly utility infrastructure can be located and accurately identified in order to avoid an excavation mishap that could result in significant damage, an interruption of service, possible serious injury to workers or the public, or negative impact to the environment.

Municipal authorities and the construction industry are now making a concerted effort to prevent accidental damage to underground utility infrastructure. For example, the Common Ground Alliance (CGA) has launched a "Call Before You Dig" program designed to serve as a national resource for professional excavators. In addition, a new Damage Information Reporting Tool (D.I.R.T) has been developed to catalogue and identify the causes of the estimated 675 000 utility infrastructure strikes that occur each year in Canada and the United States.

But these are reactive measures. There is much that can be done proactively to establish recording, mapping, and reporting standards that will improve the usefulness of the underground mapping record going forward. The work of the Technical Committee is dedicated to that effort.

The as-built drawings, records, and mapping systems are the final component of the design and construction activity. They are the combination of many records created during the planning, design, construction, and operation lifecycle of a utility infrastructure. At the planning and design stages, it is decided and recorded that the plant should be locatable and identifiable during construction. At the construction stage, records are generated on how the plant is laid, how the tracer wire is applied, and how the tracer is tested. At the construction stage, records are generated to illustrate changes to the design, actual clearances from other utilities, and depth of cover. At the operation and maintenance stage, records are generated to illustrate modifications to the utility infrastructure and the repairs made to them at each phase of its lifecycle.

Application of this Standard on a go forward basis does not necessarily mean that utilities need to dispose of their current mapping policies and practices. However, at a minimum, among the benefits associated with adopting this Standard is the opportunity to establish accuracy and quality levels that are consistent across all Canadian jurisdictions. Adoption of a single standard makes it easier for all end users to respond to calls for proposals, eliminates the need for familiarity with the details of multiple standards, and encourages consistency of approach.