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Australian STANDARD®

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Classification of Subsurface Utility Information (SUI)

Part 1: Subsurface Utility Information

AS 5488.1:2022

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National Utility Locating Contractors Association
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Classification of Subsurface Utility Information (SUI)

Part 1: Subsurface Utility Information

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Preface

This Standard was prepared by the Standards Australia Committee IT-036, Subsurface Utility Engineering Information to supersede AS 5488.1:2019.

The objective of this document is to provide a framework for the consistent classification of information concerning subsurface utilities for the management of subsurface utilities. This document focuses on the classification of Subsurface Utility Information (SUI). AS 5488.2 provides guidance on the management of subsurface utilities, as referred to by Subsurface Utility Engineering (SUE).

This document also provides guidance on issues such as how Subsurface Utility Information may be obtained (refer to AS 5488.2), and how that information should be conveyed to the information users.

This document does not provide guidance on specific methods to determine, manage or apply the spatial position of subsurface utilities. However, it is acknowledged that increasing access to high-accuracy positioning technologies has the potential to drive significant progressive improvements in subsurface utility management. In recognition of these benefits, this document recommends, through the adoption of Quality Level A, the absolute positioning of subsurface utilities in three dimensions, as an improvement upon the current widely adopted method of relative positioning.

This document recognizes the Geocentric Datum of Australia 2020 (GDA2020) as the national "Recognized-Value Standard (RVS) of measurement of position", supporting legal traceability of positioning in Australia.

The major changes in this edition are as follows:

(a) Updates to terms and definitions.

(b) Recognition of the Geocentric Datum of Australia 2020 (GDA2020) as the national "Recognized-Value Standard (RVS) of measurement of position", supporting legal traceability of positioning in Australia.

The terms "normative" and "informative" are used in Standards to define the application of the appendices to which they apply. A "normative" appendix is an integral part of a Standard, whereas an "informative" appendix is only for information and guidance.

Contents

Introduction

While the depiction and location of subsurface utilities and related asset information may appear in as-built records, due to the lack of historical evidence, utility information and locations may not be exactly as shown or the records may not fully account for all the buried utility systems. This makes the detection and identification of subsurface utilities difficult to establish and verify. This deficiency in reliable information during planning, design and construction activities can result in costly conflicts, delays, utility service disruptions, redesigns, personal injuries and lost lives.

Knowledge of precisely where and what a subsurface utility is and its status in its asset lifecycle can significantly reduce the occurrence of interference and conflict with valuable subsurface utility infrastructure. The application of this document is intended to improve public safety and reduce costly property damage by providing much more accurate information on the location and type of subsurface utilities than has been available in the past, for both new and existing utility infrastructure.

Accurate location information must refer to a suitable datum or coordinate reference system. In Australia, the Geocentric Datum of Australia (GDA2020) and associated Map Grid of Australia 2020 (MGA2020) have improved and replaced GDA94/MGA94. This document advocates, but does not prescribe, the use of GDA2020 for describing the horizontal position of subsurface utilities. For vertical position, the Australian Height Datum (AHD) is the most common datum, but alternatives are also available. More information on datums commonly used in Australia can be found at https://www.icsm.gov.au/australian-geospatial-reference-system.

It is important to note that GDA2020/MGA2020 and GDA94/MGA94 coordinates differ by up to 2.5 m horizontally depending on location. Failure to correctly describe datum relegates position information to metre-level accuracy at best, and significantly increases the uncertainties and risks associated with utility infrastructure management. The actual positioning accuracy achieved, and therefore the classification of the infrastructure in question, is subject to limitations of method(s) employed.

Australian Standard®

Classification of Subsurface Utility Information (SUI)

Part 1: Subsurface Utility Information

1 Scope and general

1.1 Scope

This document provides a framework for the classification of subsurface utility infrastructure based on location (i.e. the act or method of detecting the utility), position (i.e. the spatial information or coordinates of that utility) and attribute information from which specified quality levels are assigned for the management of subsurface utilities.

This document applies to subsurface utilities and associated surface features that facilitate the location, positioning, identification and engineering management of subsurface utility infrastructure.

This document also applies to all existing (including redundant) and under-construction subsurface utility infrastructure.

This document does not apply to utility infrastructure that is above the surface, such as overhead power and telecommunication lines.

This document describes common methods for locating (i.e. detecting) subsurface utility infrastructure, but does not provide guidance on specific methods to determine, manage or apply spatial position information. This focus recognizes that physically confirming the presence and identity of infrastructure is historically the primary concern when considering safe access or avoidance.

However, the authors of this document also recognize that increasingly accurate and accessible positioning methods, coupled with progressively improving catalogues of utility positions, have the potential to drive significant improvements in subsurface utility management. GPS/GNSS positioning at decimetre-level accuracy can be obtained using inexpensive mass-market mobile devices, supported by Augmented Reality (AR) applications to make spatial information easily accessible in the field. While not in scope for this revision of the document, positioning methods can be expected to have an increasing role in the improved detection and management of subsurface infrastructure.

NOTE Consultation with competent professionals is recommended to identify appropriate methods and satisfy tolerances for absolute spatial positioning and relative spatial positioning where required in this document.

1.2 Application

1.2.1 General

This document is intended for users of subsurface utility infrastructure information throughout the lifecycle of the utility, including those that collect, represent, map and manage such infrastructure information.

1.2.2 Representation of subsurface utilities

The representation of subsurface utilities on maps, plans and electronic records, in terms of symbology, line types and colours is the prerogative of the entity that owns or operates the utility. Although this document recommends how this information should be recorded (see Appendix B), it is not intended to prevent or encumber an entity that maps subsurface utilities from using its own symbology, line types and colours to depict and record subsurface utilities in its own geographic information systems, mapping databases, plans, drawings or other records.