AS 5488.2:2022

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Classification of Subsurface Utility Information (SUI)

Part 2: Subsurface utility engineering (SUE)

AS 5488.2:2022

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Australian Industry Group
Australian Institute of Mine Surveyors
Austroads
Energy Networks Australia
Engineers Australia
Geospatial Information & Technology Association
National Utility Locating Contractors Association
NSW Department of Customer Service — Spatial Services
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Originated as AS 5488—2013.
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Preface

This Standard was prepared by the Standards Australia Committee IT-036, Subsurface Utility Engineering Information, to supersede AS 5488.2:2019.

The objective of this document is to provide a framework for the consistent engineering management of subsurface utilities. This informative Standard is designed to aid in the proper understanding and use of information surrounding such utilities.

This document also provides guidance on issues such as how Subsurface Utility Information (SUI) may be obtained, 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.

This document should be read in conjunction with AS 5488.1. Part 1 focuses on the classification of SUI, while Part 2 (this document) focuses on Subsurface Utility Engineering (SUE).

The major changes in this edition are as follows:

(a) Updates to terms and definitions.

(b) Amendments to the Model Schema in Appendix A.

(c) 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

Due to the age, complexity of the environments in which they operate, and changes in technology and requirements, the information available to (and from) utility owners and operators is often limited. Additional sources of data, including physical checks and determining position at the time of installation and/or inspection, can augment the information available from the utility owner, enabling better decision making when working with subsurface utilities.

Engineers may have received or compiled by various means, a mixture of evidence of the existence, type, condition and location of utilities. Such evidence may vary widely as to its credibility, primarily by virtue of disclaimers from the providers of the information. Application of this document and the establishment of a credible approach to the management of subsurface utilities will improve the critical items of time, cost, quality and safety, and reduce risk across projects involving subsurface utilities.

Any available Before You Dig Australia (BYDA) data should be requested as a first step of interacting with utility authorities.

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 and models 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.

For reliable information during design and construction, the following should be confirmed —

(a) that utilities, whether active, abandoned, or unknown, are identified;

(b) that the utilities are recorded correctly;

(c) that the numbers of actual utility pipes or cables under the ground are known or represented by correctly understood multiple numbers;

(d) that the width of utilities is correct;

(e) that the depths of utilities are known and utility, clearances and access needs are understood; and

(f) that the position of utilities, both horizontally and vertically are known to the best reasonable quality, and uniquely and unambiguously identified for both relative and absolute positioning.

Traditionally, projects where subsurface utilities require amendment may encounter issues that are routinely handled through variation orders, insurance payouts, contingency pricing and, especially in the construction sector, after a design has been completed. When problems create significant costs and safety risks, stakeholders may receive blame, for example the person who has documented their designs, regardless of disclaimers. All stakeholders will benefit from improved management of subsurface utilities including the application of modern locating and positioning techniques.

NOTES

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Section 1 Scope and general

1.1 Scope

This document provides a framework for the management of information and decision-making tools for projects that may impact subsurface utilities. It has been written primarily from an engineering perspective, and applies to all existing (including redundant) and under-construction subsurface utility infrastructure and associated surface features.

This document does not apply to utility infrastructure that is above the surface, such as overhead power and telecommunication lines. Therefore, any reference within this document to above ground utilities is in the context of spatial constraints of plant and machinery to the overhead utility while working on subsurface utilities.

However, this document recognizes that the same principles of conflict identification may be applied to aerial assets, as their replacement can involve subsurface activities and solutions.

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

This document is intended for use by all entities or individuals involved in the management of subsurface utilities. This document, as a reference or as part of a specification, is intended to assist design or utility engineers, project and utility owners and authorities, and constructors in understanding the management of utility data.

1.3 Normative references

There are no normative references in this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

1.4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.