



## **INTRODUCTION**

The purpose of this document is to look at specific phases in a foundation project and how the data is exchanged; it will also look at the classification system Uniclass and the need to classify foundations as assets.

The information requirements are split into data drops. Data drops are specific points in a project where information is exchanged, with each drop requiring a different level of detail and level of information. The type of information and data that is listed is required for a piling contractor to design, price, programme and construct foundation solutions (assets). It also defines the information that would be handed over to allow the foundations to be operated and maintained. Below lists how the data drops relate to stages of a foundation project:

Data Drop 1 - Tender  
Data Drop 2 – Pre-contract  
Data Drop 3 - Construction  
Data Drop 4 - As built – Handover

Through all of these drops the information/data must be compatible and comparable with each other in a common language which should be outlined prior to data drop 1 and cascaded down. The information in data drop 4 should be split down to an asset product level (see below).

### **Classification & Uniclass**

To help manage all the data across the many different stages and aspects of a construction project, each 'asset' is given a unique reference number. The need for a system like this stems from needing to quickly and easily produce, manage and retrieve project data, it enables a standardised but not limited approach to identifying construction items. The classification reference can be applied to different data types, from drawings and specifications to QR codes and metadata. This classification system is called Uniclass and consists of 10 tables:

**Co** – Complexes  
**En** - Entities  
**Ac** - Activities  
**Sp** - Spaces  
**EF** - Entities by Form  
**Ee** - Elements  
**Ss** - Systems  
**Pr** - Products  
**Zz** - CAD  
**PP** - Project Phases

Foundations fall into systems and products, where products such as Continuous Flight Auger Piles can be used to create a Contiguous Bored Pile system, similar to Diaphragm Walling and Drilled & Cast Anchors can create an Anchored Pile Retaining Wall system. The asset definition section of this document focuses on the products as they are the base for our systems. There are currently twenty three different

products covering piles and ancillary products, soil nails, ground anchors and ground improvement, some of which are still awaiting a code.

## **ASSET DETAILS**

This document covers the following products:

Pr\_20\_85\_62\_11 Carbon Steel Bearing Piles (circular tubes or H piles)

Pr\_20\_85\_62\_15 Carbon Steel Sheet Piles (various types)

Pr\_20\_85\_62\_16 Concrete Displacement Piles

Pr\_20\_85\_62\_18 Concrete Driven Piles (Pre-cast, cast in-situ)

Pr\_20\_85\_62\_19 Concrete Pile Caps

Pr\_20\_85\_62\_20 Concrete Plunge Column Piles

Pr\_20\_85\_62\_22 Concrete Screw Displacement Piles

Pr\_20\_85\_62\_23 Concrete Underpinning Piles

Pr\_20\_85\_62\_36 Hardwood Piles

Pr\_20\_85\_62\_80 Softwood Piles

Pr\_20\_85\_62\_?? Diaphragm Walls Panels

Pr\_20\_85\_62\_?? Rotary Bored Piles

Pr\_20\_85\_62\_?? Continuous Flight Auger Piles

Pr\_20\_85\_62\_?? Mini piles

Pr\_20\_85\_61\_?? Combi Wall Piles

Pr\_??\_??\_??\_?? Vibro Techniques

Pr\_??\_??\_??\_?? Dynamic compaction

Pr\_??\_??\_??\_?? Soil Mixing

Pr\_??\_??\_??\_?? Vertical Drains

Pr\_20\_29\_81 Soil Nails

Pr\_??\_??\_?? Self Drilled Anchors

Pr\_??\_??\_?? Drilled & Cast Anchors

Pr\_??\_??\_?? Grouted Ground Anchor

## **DESCRIPTION**

The foundation solutions comprise bearing piles or ground improvement to transfer structure (asset) loading into the ground to ensure serviceability of the structure. It may also comprise a ground retention system to allow the structure to be constructed; this may or may not form part of the overall permanent works.

## **INFORMATION/DATA EXCHANGE**

Prior to the initial data drop, a BIM execution plan should be written outlining the basic parameters for the project. This will outline the classification system, numbering and data types for the various stages.

### DATA DROP 1

This is the minimum level of information required to make decisions in relation to requirements, surveys and constraints. This is the minimum information to determine the correct foundation solution.

Attribute	Description
Ground conditions	Desk survey or factual report.
Existing site use and history	Desk survey or factual report. Surface & sub-surface structure details
Proposed development	Conceptual design including superstructure and sub-structure details
Site restrictions	Known specific constraints that could determine a technique. (Headroom, vibration)

All of the above information needs to be compatible and comparable with each other in a common language.

### DATA DROP 2

This is the minimum level of information required to assure the client has the right data for the outline solution. This is the minimum level of information to provide cost certainty for a solution.

Attribute	Description
Ground conditions	Site investigation information in AGS format. (strata levels/ strength/ permeability/ stiffness parameters)
Site details	Factual information on surface and subsurface structures, services and potential obstructions.
Site restrictions	Known limitations
Foundation Product Details for structural loading (Engineer Design)	Number / Diameter/ length/ reinforcement / material specification in the format of FPS electronic pile schedule where applicable.
Foundation Product Details for structural loading (Contractor Design)	Loading information and scope of works (live/ dead/ wind/ lateral/ moment). Supplied in FPS electronic pile schedule format where applicable.
Specification	For deflection, tolerance limits testing and other requirements
Ground retention system requirements (in addition to structural loading)	Excavation level, loading information (surcharge/ structural), permanent propping levels.
Programme Limitations	

All of the above information needs to be compatible and comparable with each other in a common language. 3D electronic data to a standard co-ordinated system.

### DATA DROP 3

This is the minimum level of information required for the contractor and supply chain to deliver and/or construct the asset.

The information required will be the same as data drop 2 at approved for construction status. This will also include details of the developed foundation solution and how it will be constructed.

All of the above information needs to be compatible and comparable with each other in a common language.

#### **DATA DROP 4**

This is the minimum level of information needed to operate and maintain this asset.

Attribute	Units	Description
Pile diameter / Size	mm	
Pile length	M	
Pile reference number		Unique pile ID
Construction record		
Reinforcement details		RC fabrication drawings
Pile co-ordinates	WCS	
Pile Loading	kN	The load the pile has been designed to
Testing		Load or integrity test

#### **PERFORMANCE DATA**

This will specify the performance data to be gathered from this asset when in operation