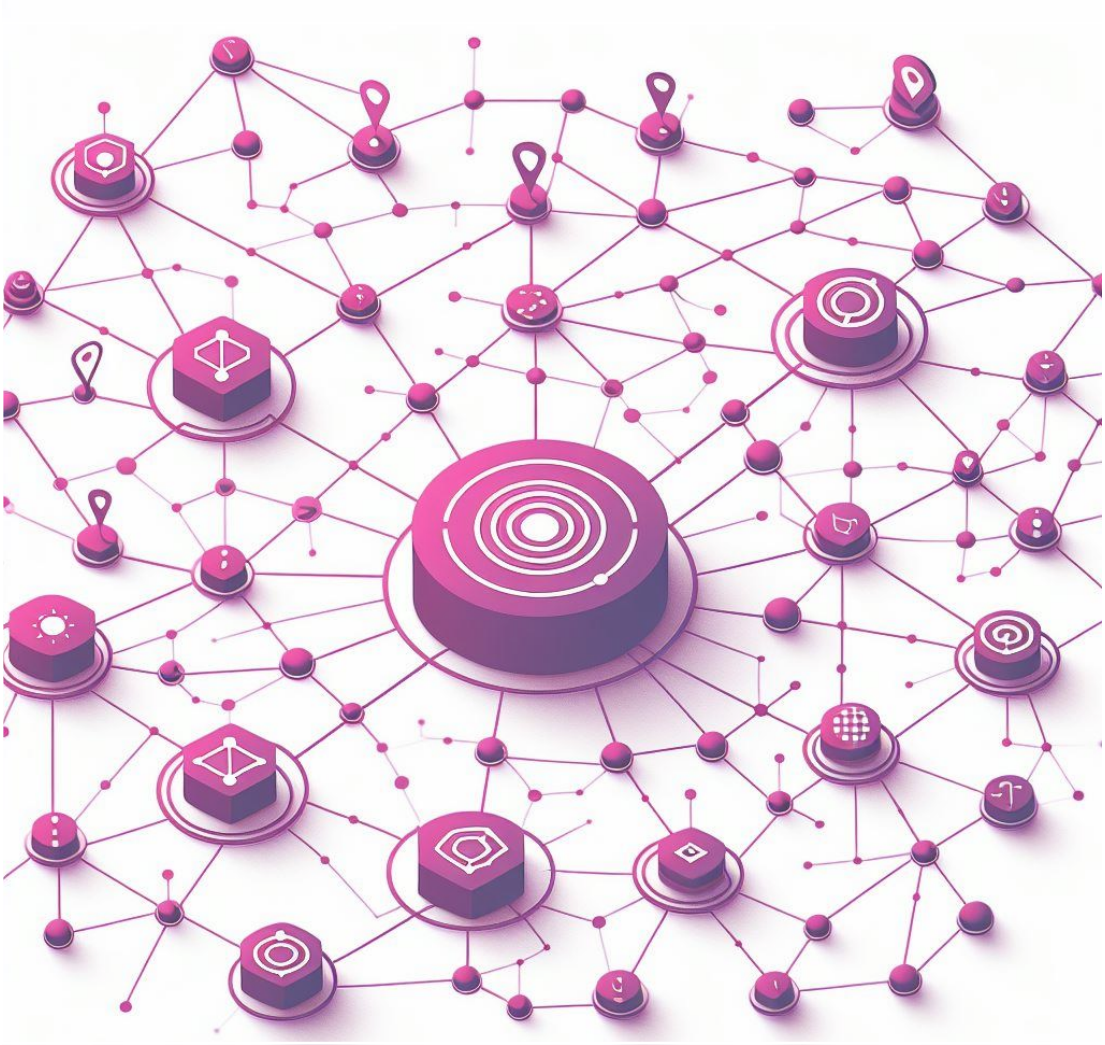
SITE MANAGEMENT DATA STANDARDS

For Data-Driven Project Performance Monitoring and Benchmarking



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Disclaimer

This Guide is a summary of site management data standards that may be adopted for the application of using digital platforms for project performance monitoring and benchmarking and does not purport to be exhaustive or applicable to all situations.

The Building and Construction Authority disclaims any liability (including any liability arising from negligence) arising in respect of any matter and the consequences of any act done or not done by any person in reliance on anything in or omitted from this Guide.

This Guide is intended to be a live document and to be amended from time to time. Please refer to the website of the Building and Construction Authority: www1.bca.gov.sg for the latest version of this Guide.

Feedback

This Guide will be updated progressively from the Version 1.0 published on 22 May 2025.

We welcome your comments about the Data Standards to help us continue to develop and improve it.

Please provide your inputs at https://go.gov.sg/datastd-feedback or scan the QR code on the right.

https://go.gov.sg/datastd-feedback

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China Communication Construction Company Ltd

Chip Eng Seng Corporation Ltd

DEX

Housing & Development Board (HDB)

Infocomm Media Development Authority (IMDA)

(Intercorp Solutions Pte Ltd

Jurong Town Corporation (JTC)

Land Transport Authority (LTA)

Ministry of Manpower (MOM)

Novade Solutions Pte Ltd

Precise Development Pte Ltd

Real Estate Developers' Association of Singapore (REDAS)

SoilBuild Group Holdings Ltd

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SECTION 1

INTRODUCTION

Regulators, clients and contractors are increasingly stepping up efforts to unlock the usefulness of data captured in different digital platforms or solutions used by construction projects. Establishing a set of industry-wide data standards is the key to consolidate these data to achieve data-driven decision-making (see figure 1).

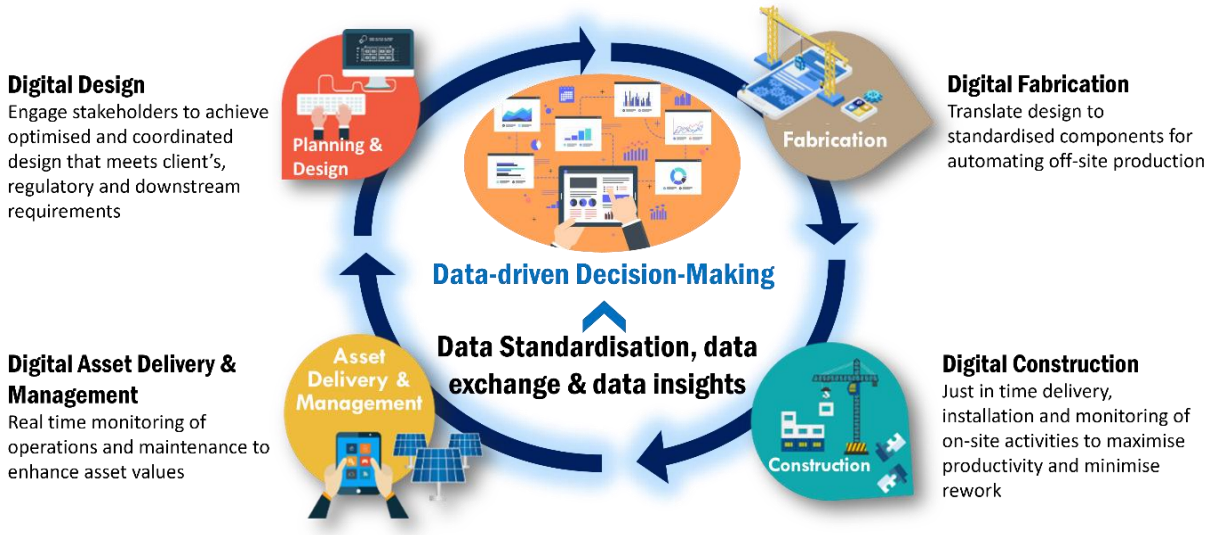

Figure 1: Harness Data for Better Decision-Making

Today's Data Silos and Manual Reporting Process

Collection and management of data from multiple sources is a time consuming and error prone process due to the lack of data standardisation (see figure 2). As a result, project stakeholders are unable to utilise these data to monitor project health and performance. Firstly, contractors have to manually prepare different reports to meet regulatory and client's requirements. They also struggle to efficiently utilise project data scattered across multiple sources for effective project management. Secondly, reports received by regulators and clients from various contractors are predominantly descriptive and presented in diverse formats that are unsuitable for machine processing. This complicates the generation of insights and the performance of industry-level benchmarking.

SECTION 1

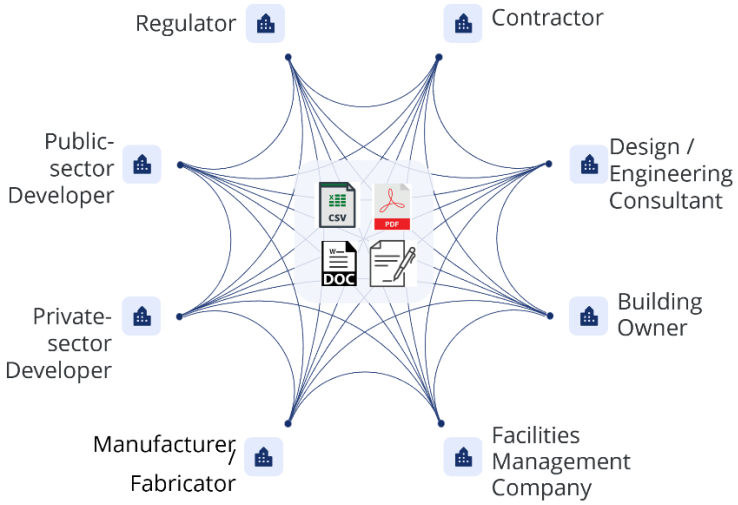

Figure 2: Challenges in Harnessing Data of Different Formats from Various Systems

A Proof-of-Concept (PoC) Demonstrated Structured Data Exchange

A PoC was conducted to demonstrate structured data exchange via a single point of connectivity (i.e. SGBuildex) developed by IMDA in 2024. It involved standardisation of 5 datasets needed by BCA, HDB and REDAS for regulatory compliance and project management purposes. Based on the data standards, 5 contractors and 3 solution providers were able to submit structured data using a set of data exchange Application Programming Interface (API) successfully.

The key takeaways are as follows:

- PoC participants recognised the **value of data standardisation for interoperability, data exchange and generating insights for informed decision-making.**
- **Data for regulatory compliance and project delivery should be harmonised** to ease data preparation, submission and analysis efforts.
- **A single point of connectivity (i.e. SGBuildex) with comprehensive openAPI** for data exchange **reduced the cost and effort** of data submission.
- Standardised data enabled data users to harness it effectively for **better insights** and **benchmarking** at both **project** and **industry levels for improvement.**

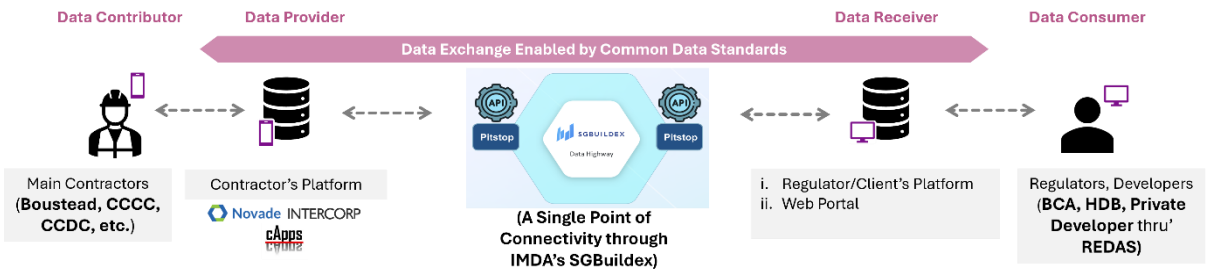

Figure 3: PoC Demonstrated Structured Data Exchange through SGBuildex

SECTION 2

OBJECTIVES

The site management data standardisation effort is a crucial step forward in addressing the challenges faced by the industry in harnessing data locked in multiple digital platforms or solutions.

Establishing common data standards and exchange tools allow data consumers and contributors the flexibility to exchange data from their preferred digital platforms via a single point of connectivity. It not only **reduces the time** and **effort in report preparation** but also **provides real-time project performance data for timely insights and informed decisions**. Data collected over time could be used for benchmarking across various projects. **The envisaged data-driven approach is**, as depicted in figure 4, **where data is standardised, harmonised, and exchanged seamlessly between the various stakeholders from different data sources for multiple purposes**. This enables stakeholders to **derive actionable insights, and implement early preventive and predictive intervention, leading to more informed decisions and better project delivery outcomes**.

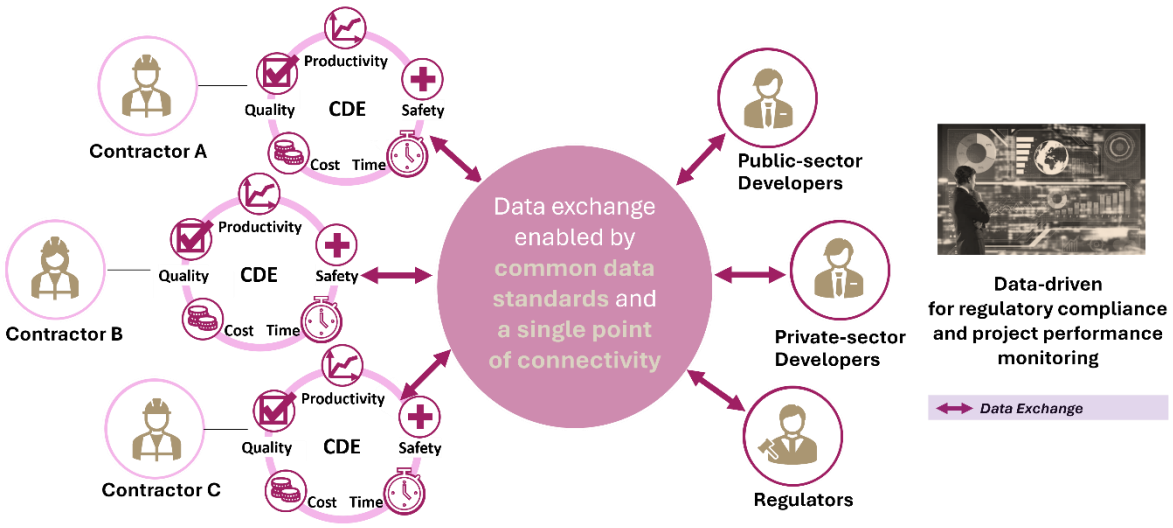

Figure 4: Envisaged Data-driven Project Performance Monitoring and Benchmarking

SECTION 3

SITE MANAGEMENT DATA STANDARDS

Site management data standards cover the 5 key aspects of Built Environment project performance, namely safety, productivity, quality, time and cost from both regulatory and project delivery perspectives (see figure 5).

Regulatory data requirements serve as a baseline, while project delivery data requirements form a broader set, which extends to include time and cost for better site and project management. The following sub-sections detail the respective data requirements. Solution providers can refer to the OpenAPI specification (SGBuildex APIs) to establish data exchange with SGBuildex.

Site Management Data Standards					
Project Delivery Data Requirements	**Safety**	**Productivity**	**Quality**	**Time**	**Cost**
Regulatory Data Requirements	Structural Safety Environment, Health and Safety	Construction Productivity	CONQUAS[1]	*Not required by regulators*	

Figure 5: Scope of Site Management Data Standards

1 CONQUAS is a mandatory requirement for all private building projects built on Government Land Sales sites and all public sector building projects with an estimated construction cost (without contingency sum) of $10 million or more. CONQUAS is also imposed on private residential projects or mixed development projects with residential component of new and poor performing developers through the Housing Developers (Control and Licensing) Act and on building projects under the BE Transformation Bonus Gross Floor Area Incentive Scheme.

SECTION 3

3.1 Safety Data Standardisation

This section describes the recommended data standardisation requirements for safety data in Appendix A and Appendix B respectively. It aims to ensure consistency, accuracy, and interoperability in collecting, exchanging and analysing the root causes and trends of safety issues on construction sites, with focus on the following two aspects:

a. Structural safety for regulatory compliance (see Appendix A); and
b. Environment, Health and Safety (EHS) for site safety management (see Appendix B), with examples of performance metrics in table 1 and table 2 respectively.

Table 1 - Structural Safety [Updated]

Report/Dataset	Metric
Piling Installation Record	• Percentage of type of pile use • Total number of piles • No. of piles installed • No. of short piles • Piling progress
Working Load Test (WLT) Ultimate Load Test (ULT)	• No. of satisfactory/unsatisfactory WLT/ULT • No. of WLT/ULT carried out by type • No. of WLT/ULT that confirmed pile design
Concrete Cube Test	• No. of satisfactory/unsatisfactory cube tests • Strength of concrete over time • No. of cube tests carried out • Strength of concrete by supplier • Number of additional tests done
Steel Element Test Steel Rebar Test	• No. of satisfactory/unsatisfactory steel rebar/element tests • No. of steel rebar/element tests carried out by type • Strength of steel rebar/element • Strength of steel rebar/element by supplier • No. of outstanding rectification works
Site Progress	• No. of blocks/zones within the project site • Demolition works progress • Piling works progress • Basement/substructure works progress • Superstructure works progress • ERSS works progress

QP Attendance	• No. of times QP visits site
Site Inspection & Approval Records (ERSS Annex C-1)	• Annex C endorsed before commencing next stage of works • No of strut (or support) levels within this ERSS report
Certification & Monitoring Building Settlement (Annex D)	• Maximum building settlement • No. of building settlement that exceed design limits • No. of outstanding Annex D yet to be filled
Generic Notification Module	• No. of critical issues
Instrumentation & Monitoring Records	• No. of readings/instruments that exceed alert level • No. of readings/instruments that exceed Work Suspension Level (WSL) or Predetermined Level (PDL) • Change in instrument readings overtime • No. of outstanding rectification works

Table 2 – Environment, Health and Safety (EHS) [Pending Updates]

Report/Dataset	Metric
Safety Incident and Investigation Report	• Accident Frequency Rate (AFR) • Accident Severity Rate (ASR) • Workplace Injury Rate (WIR) • No. of safety accidents reported • No. of safety incidents by project • Root Causes
Safety Inspection Report - Non-Conformity Report (NCR)/Site Safety Inspection Negative Observation	• No. of safety non-conformances by project • Top non- conformances highlighted by consultants /safety team • No. of non- conformances created by consultants and contractor management/safety team • No. of various types of safety non-conformances • No. of safety non- conformances based on trades • No. of safety non-conformances based on subcontractors • Outstanding/overdue non-compliance (>3 days) by project

	• Outstanding/overdue non-compliance (>7 days) by project
- Site Safety Inspection Positive Observation	Nil
e-Permit to Work (PTW)	• No. of PTWs issued by project • No. of types of PTW

SECTION 3

3.2 Productivity Data Standardisation

This section describes the recommended data standardisation requirement for manpower utilisation in Appendix C. It aims to establish and uniform methods for collecting and analysing productivity derived from the manpower utilisation data in table 3. The data described in this section is already required in the existing Electronic Productivity Submission System (ePSS) templates for mandatory submissions[2].

Table 3 – Manpower Utilisation [Pending Updates]

Report/Dataset	Metric
Manpower utilisation data as per required in ePSS templates	• Total manpower (mandays) by project • Total manpower by trade • Total manpower by subcontractors by project • No. of unique count of workers by project[3] • No. of unique count of workers by trade by project[4]

2 Submission of Construction Productivity Data is mandatory for all Building works that involves a Gross Floor Area (or increase in Gross Floor Area for A&A works) of 5,000 m2 or more, except the following:

- Any culvert, bridge, underpass, tunnel, earth retaining or stabilizing structure, slipway, dock, wharf or jetty;
- Any theme park;
- Any place of worship;
- Any power station; or
- Any waste processing or treatment places.

3 This is applicable to Building works as described under Footnote (2).

4 This is applicable to Building works as described under Footnote (2).

SECTION 3

3.3 Quality Data Standardisation (Future Release)

3.4 Time Data Standardisation (Future Release)

3.5 Cost Data Standardisation (Future Release)

SECTION 4

CONCLUSION

Site management data standards serve as the critical foundation for the transformation of the industry into one that is data-driven, where stakeholders are able to harness data for analytics and insights to make near real-time and informed decisions to uplift performance at project and enterprise level.

Appendix A – Safety Datasets (Structural Safety)

Piling Installation Record [Updated]

Data Element Name (Data Field)	Definition	Mandatory/ Optional	Data Field Type	Data Validation Rule - Format
Project Reference Number	Project Reference Number (e.g. A1234-12345-2022)	Mandatory	string	Field length = 16 1st character: Alphabet is either A or E 2nd-5th character: Number 6th character: Hyphen 7th-11th character: alphanumeric 12th character : Hyphen 13th-16th character: Number
Project Title	Project Title (e.g. Proposed Construction of 50 Story Mixed Commercial & Residential Building)	Mandatory	string	Field length = max 1000
Project Location Description	Project Location Description (e.g. 52 Jurong Gateway Road Singapore 608549, MK01 LOT 00001A, Interchange between Jalan Bahar and Pioneer Road)	Mandatory	string	Field length = max 2000
Project Main Contractor Company Name	Project main contractor company name as in ACRA	Mandatory	string	
Project Main Contractor Company Unique Entity Number	Project main contractor company Unique Entity Number (UEN) as in ACRA	Mandatory	string	Field length = 9-10 Businesses registered with ACRA(1) : NNNNNNNNX Local companies registered with ACRA(1) : YYYYNNNNNX All other entities which will be issued new UEN : TYYPQNNNNX where 'N' = A number 'P' = An alphabetical letter

				'Q' = An alpha-numeric digit 'PQ' = Entity Type(2) 'TYY' / 'SYY' / 'YYYY' = Year of issuance(3) 'X' = A check alphabet For example, the UEN for a limited liability partnership (LLP) formed on 1 January 2009 could be 'T09LL0001B' (1) No change from existing ACRA Registration Number (2) E.g. 'LL' = 'Limited Liability Partnership' (3) 'T' represents 20, 'S' represents '19' and 'R' represents '18'. E.g. T08 means year 2008, S99 means year 1999 and R00 means year 1800.
Project Piling Contractor Company Name	Project piling contractor company name as in ACRA	Mandatory	string	
Project Piling Contractor Company Unique Entity Number	Project piling contractor company Unique Entity Number (UEN) as in ACRA	Mandatory	string	Field length = 9-10 Businesses registered with ACRA(1) : NNNNNNNNX Local companies registered with ACRA(1) : YYYYNNNNNX All other entities which will be issued new UEN : TYYPQNNNNX where 'N' = A number 'P' = An alphabetical letter 'Q' = An alpha-numeric digit 'PQ' = Entity Type(2) 'TYY' / 'SYY' / 'YYYY' = Year of issuance(3) 'X' = A check alphabet For example, the UEN for a limited liability partnership (LLP) formed on 1 January 2009 could be 'T09LL0001B' (1) No change from existing ACRA Registration Number

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Project Land Surveyor Company Name	Project land surveyor company name as in ACRA	Optional	string	
Project Land Surveyor Company Unique Entity Number	Project land surveyor company Unique Entity Number (UEN) as in ACRA	Optional	string	Field length = 9-10 Businesses registered with ACRA(1) : NNNNNNNNX Local companies registered with ACRA(1) : YYYYNNNNNX All other entities which will be issued new UEN : TYYPQNNNNX where 'N' = A number 'P' = An alphabetical letter 'Q' = An alpha-numeric digit 'PQ' = Entity Type(2) 'TYY' / 'SYY' / 'YYYY' = Year of issuance(3) 'X' = A check alphabet For example, the UEN for a limited liability partnership (LLP) formed on 1 January 2009 could be 'T09LL0001B' (1) No change from existing ACRA Registration Number (2) E.g. 'LL' = 'Limited Liability Partnership' (3) 'T' represents 20, 'S' represents '19' and 'R' represents '18'. E.g. T08 means year 2008, S99 means year 1999 and R00 means year 1800.
Technical Controller Person Name	Technical controller name as in Unique Identification Number (UIN), i.e. National Registration Identity Card	Mandatory	string	Field length = maximum 66

	(NRIC) or Foreign Identification Number (FIN)			
Registered Engineer Registered Technical Officer Person Name	Registered Engineer / Registered Technical Officer (RE/RTO) name as in Unique Identification Number (UIN) i.e. National Registration Identity Card (NRIC) or Foreign Identification Number (FIN)	Mandatory	string	Field length = maximum 66
Registered Engineer Registered Technical Officer Registration Number	Registered Engineer / Registered Technical Officer (RE/RTO) registration number as registered with Institute of Engineers Singapore (IES) (e.g. RE-1234, RTO-1234)	Mandatory	string	Field length = 7-8 Field value = Alphanumeric, including special character i.e. hyphen
Qualified Person Supervision Person Name as in Unique Identification Number (UIN) (i.e. NRIC or FIN)	Qualified person (supervision) name as in Unique Identification Number (UIN), i.e. National Registration Identity Card (NRIC) or Foreign Identification Number (FIN)	Mandatory	string	Field length = maximum 66
Qualified Person Supervision Registration Number	Qualified person (supervision) registration number as registered with Professional Engineers Board (PEB) (e.g. 0123)	Mandatory	string	Field length = 4 Field value = Numeric, may have led zero
Qualified Person Geotechnical Person Name	Qualified personnel (geotechnical) name as in Unique Identification Number (UIN), i.e. National Registration Identity Card (NRIC) or Foreign Identification Number (FIN) (i.e. required for building 30 storey or higher)	Optional	string	Field length = maximum 66

Qualified Person Geotechnical Registration Number	Qualified personnel (geotechnical) registration number as registered with Professional Engineers Board (PEB) (i.e. required for building 30 storey or higher) (e.g. 0123)	Optional	string	Field length = 4 Field value = Numeric, may have leading zero
Land Surveyor Person Name	Land surveyor name as in Unique Identification Number (UIN), i.e. National Registration Identity Card (NRIC) or Foreign Identification Number (FIN)	Optional	string	Field length = maximum 66
Land Surveyor Registration Number	Land surveyor registration number as registered with Land Surveyors Board (LSB) (e.g. 123)	Optional	integer	Field length = maximum 3
Project Total Piles	Total number of piles for the project	Mandatory	integer	
Structural Plan Number	Structure plan number	Mandatory	string	
Pile Reference Number	Pile reference number as per approved piling plan	Mandatory	string	
Piling Installation Date	Date of piling installation. (i.e. best practice for Piling Installation Record to be sent as and when, upon completion of piling installation).	Mandatory	datetime	Field length = 25 YYYY-MM-DD[T]hh:mm:ss+hh:mm e.g. 2015-01-01T12:00:00+08:00 for UTC +8
Project Piling Work Type	Project Piling work type [Selection: 1 - Driven Reinforced Concrete Pile (Displacement Type); 2 - Driven Steel Micro Pile (Displacement Type); 3 - Jack Reinforced Concrete Pile (Displacement Type); 4 - Spun Pile (Displacement Type); 5 - Steel Pile (Displacement Type); 6 - Other Displacement Pile (including Load Bearing Steel Pipe Wall, etc);	Mandatory	integer	Field length = maximum 2 Minimum value = 1 Maximum value = 12

	7 - Barrette Pile (Replacement Type); 8 - Bored Pile (Replacement Type); 9 - Bored Micro Pile (Replacement Type); 10 - Caisson (Replacement Type); 11 - Diaphragm Wall (Replacement Type); 12 - Other Replacement Pile]			
Project Piling Work Type Other	Description of other piling work type (i.e. to populate if "Other Displacement Pile" or "Other Replacement Pile" is selected for Project Piling Work Type)	Optional	string	Mandatory if project_piling_work_type = 6 or 12
Project Piling Foundation Type Other	Description of other piling foundation type (i.e. to populate if "Other Displacement Pile" or "Other Replacement Pile" is selected for Project Piling Work Type)	Optional	string	Mandatory if project_piling_work_type = 6 or 12
Pile X Easting	As-built Singapore Vertical Datum (SVY21) easting coordinates of piles in metres	Mandatory	double	up to 3 d.p
Pile Y Northing	As-built Singapore Vertical Datum (SVY21) northing coordinates of piles in metres	Mandatory	double	up to 3 d.p
Pile Cut Off Level	As-built elevation at which the pile is cut off or terminated according to Singapore Height Datum (SHD) in metres	Mandatory	double	up to 3 d.p
Pile Toe Level	As-built elevation of the bottom of a pile where it meets the ground or soil according to Singapore Height Datum (SHD) in metres	Mandatory	double	up to 3 d.p
Pile Diameter Longest Length	Diameter or length of longest side of pile in millimetres	Mandatory	integer	

Pile Width	Length of shorter side of pile in millimetres (no value if pile is circular)	Optional	integer	
Pile Design Penetration Length	Design penetration length of pile from cut off level in metres	Mandatory	double	up to 3 d.p
Pile As Built Length	Actual penetration length of pile from cut off level in metres	Mandatory	double	up to 3 d.p
Pile Design Socketing Length	Design socketing length into bedrock in metres as in approved piling plan (value 0 if no requirement for socketing) (i.e. to populate if replacement type pile is selected for Project Piling Work Type)	Optional	double	up to 3 d.p Mandatory if project_piling_work_type = 7, 8, 9, 10, 11 or 12
Pile Actual Socketing Length	Actual socketing length into bedrock in metres as in approved piling plan (value 0 if no requirement for socketing) (i.e. to populate if replacement type pile is selected for Project Piling Work Type)	Optional	double	up to 3 d.p Mandatory if project_piling_work_type = 7, 8, 9, 10, 11 or 12
Pile Design Embedment Length	Design embedment length into competent soil in metres as in approved piling plan (value 0 if no requirement for embedment) (i.e. to populate if replacement type pile is selected for Project Piling Work Type)	Optional	double	up to 3 d.p Mandatory if project_piling_work_type = 7, 8, 9, 10, 11 or 12
Pile Actual Embedment Length	Design embedment length into competent soil in metres as in approved piling plan (value 0 if no requirement for embedment) (i.e. to populate if replacement type pile is selected for Project Piling Work Type)	Optional	double	up to 3 d.p Mandatory if project_piling_work_type = 7, 8, 9, 10, 11 or 12
Pile Local X Eccentricity	Horizontal distance between the centerline of the pile and the specified location on the pile, in the local X direction, in millimetres	Optional	integer	

Pile Local Y Eccentricity	Horizontal distance between the centerline of the pile and the specified location on the pile, in the local Y direction, in millimetres	Optional	integer	
Pile Zone Borehole Number	Borehole number that the zone pile is located in, according to pile design (e.g. BH01, EBH01)	Optional	string	
Pile Boring Start Date Time	Date and time when boring or jacking of piles started (i.e. with reference to BCA Piling Inspection Form)	Optional	datetime	Field length = 25 YYYY-MM-DD[T]hh:mm:ss+hh:mm e.g. 2015-01-01T12:00:00+08:00 for UTC +8
Pile Boring Complete Date Time	Date and time when boring or jacking of piles completed (i.e. with reference to BCA Piling Inspection Form)	Optional	datetime	Field length = 25 YYYY-MM-DD[T]hh:mm:ss+hh:mm e.g. 2015-01-01T12:00:00+08:00 for UTC +8
Pile Verticality	Verticality ratio reading as measured by piling machine (ratio as in 1:value) (i.e. with reference to BCA Piling Inspection Form)	Optional	integer	
Pile Reinforcement Bar Number Size	Number of reinforcement bar, type of reinforcement bar and reinforcement bar size/diameter (e.g. 10H16) (i.e. with reference to BCA Piling Inspection Form)	Optional	string	
Pile Reinforcement Bar Length	Length of reinforcement bar in metres (i.e. with reference to BCA Piling Inspection Form)	Optional	double	up to 3 d.p
Pile Reinforcement Link Size Spacing	Type of reinforcement bar, reinforcement bar size/diameter, reinforcement link spacing in millimetres (e.g. H10-200) (i.e. with reference to BCA Piling Inspection Form)	Optional	string	

Pile Spacer Size	Size of pile spacer in millimetres (i.e. with reference to BCA Piling Inspection Form)	Optional	integer	
Pile Spacer Spacing	Spacing of pile spacer in millimetres (i.e. with reference to BCA Piling Inspection Form)	Optional	integer	
Pile Concreting Method	Method of pile concreting (i.e. with reference to BCA Piling Inspection Form) [Selection: 1 - Dry; 2 - Tremie; 3 - Other Concreting Method]	Optional	integer	Field length = 1 Minimum value = 1 Maximum value = 3
Pile Concreting Method Other	Description of other concreting method (i.e. to populate if "Other Concreting Method" is selected for Pile Concreting Method)	Optional	string	Mandatory if pile_concreting_method = 3
Pile Concrete Grade	Grade of pile concrete (e.g. C40/50, C32/40) (i.e. with reference to BCA Piling Inspection Form)	Mandatory	string	
Pile Toe Cleaned	Pile toe cleaned (i.e. with reference to BCA Piling Inspection Form) [Selection: True - Yes; False - No]	Optional	boolean	
Pile Concreting Start Date Time	Date and time when concreting started (i.e. with reference to BCA Piling Inspection Form)	Optional	datetime	Field length = 25 YYYY-MM-DD[T]hh:mm:ss+hh:mm e.g. 2015-01-01T12:00:00+08:00 for UTC +8
Pile Concreting Complete Date Time	Date and time when concreting completed (i.e. with reference to BCA Piling Inspection Form)	Optional	datetime	Field length = 25 YYYY-MM-DD[T]hh:mm:ss+hh:mm e.g. 2015-01-01T12:00:00+08:00 for UTC +8

Pile Calculated Concrete Volume	Calculated volume of pile concrete in cubic metres (i.e. with reference to BCA Piling Inspection Form)	Optional	double	up to 3 d.p
Pile Actual Concrete Volume	Actual volume of pile concrete in cubic metres (i.e. with reference to BCA Piling Inspection Form)	Optional	double	up to 3 d.p
Project Pile Concrete Supplier Company Name	Project pile concrete supplier company name (i.e. with reference to BCA Piling Inspection Form)	Optional	string	
Competent Soil Standard Penetration Test Requirement	N value of soil standard penetration test (i.e. with reference to BCA Piling Inspection Form)	Optional	integer	
Competent Soil Depth	Depth from cut off level where competent soil encountered in metres (i.e. with reference to BCA Piling Inspection Form)	Optional	double	up to 3 d.p

Working Load Test (WLT) [New]

Data Element Name (Data Field)	Definition	Mandatory/ Optional	Data Field Type	Data Validation Rule - Format
Project Reference Number	Project Reference Number (e.g. A1234-12345-2022)	Mandatory	string	Field length = 16 1st character: Alphabet is either A or E 2nd-5th character: Number 6th character: Hyphen 7th-11th character: Alphanumeric 12th character: Hyphen 13th-16th character: Number
Project Title	Project Title (e.g. Proposed Construction of 50 Story Mixed Commercial & Residential Building)	Mandatory	string	Field length = Maximum 1000
Project Location Description	Project Location Description (e.g. 52 Jurong Gateway Road Singapore 608549, MK01 LOT 00001A, Interchange between Jalan Bahar and Pioneer Road)	Mandatory	string	Field length = Maximum 2000
Project Main Contractor Company Name	Project main contractor company name as in ACRA	Mandatory	string	
Project Main Contractor Company Unique Entity Number	Project main contractor company Unique Entity Number (UEN) as in ACRA	Mandatory	string	Field length = 9-10 Businesses registered with ACRA(1) : NNNNNNNNX Local companies registered with ACRA(1) : YYYYNNNNNX All other entities which will be issued new UEN : TYYPQNNNNX where 'N' = A number 'P' = An alphabetical letter 'Q' = An alpha-numeric digit 'PQ' = Entity Type(2)

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Technical Controller Person Name	Technical controller name as in Unique Identification Number (UIN), i.e. National Registration Identity Card (NRIC) or Foreign Identification Number (FIN)	Mandatory	string	Field length = Maximum 66
Registered Engineer Registered Technical Officer Person Name	Registered Engineer / Registered Technical Officer (RE/RTO) name as in Unique Identification Number (UIN), i.e. National Registration Identity Card (NRIC) or Foreign Identification Number (FIN)	Mandatory	string	Field length = Maximum 66
Registered Engineer Registered Technical Officer Registration Number	Registered Engineer / Registered Technical Officer (RE/RTO) registration number as registered with Institute of Engineers Singapore (IES) (e.g. RE-1234, RTO-1234)	Mandatory	string	Field length = 7-8 Field value = Alphanumeric, including special character i.e. hyphen
Qualified Person Supervision Person Name	Qualified person (supervision) name as in Unique Identification Number (UIN), i.e. National Registration Identity Card (NRIC) or Foreign Identification Number (FIN)	Mandatory	string	Field length = Maximum 66
Qualified Person Supervision Registration Number	Qualified person (supervision) registration number as registered with Professional Engineers Board (PEB) (e.g. 0123)	Mandatory	string	Field length = 4 Field value = Numeric, may have led zero

Qualified Person Geotechnical Person Name	Qualified personnel (geotechnical) name as in Unique Identification Number (UIN), i.e. National Registration Identity Card (NRIC) or Foreign Identification Number (FIN) (i.e. required for building 30 storey or higher)	Optional	string	Field length = Maximum 66
Qualified Person Geotechnical Registration Number	Qualified personnel (geotechnical) registration number as registered with Professional Engineers Board (PEB) (i.e. required for building 30 storey or higher) (e.g. 0123)	Optional	string	Field length = 4 Field value = Numeric, may have leading zero
Project Total Working Load Test	Total number of Working Load Test (WLT) performed for project (i.e. to update number if there is/are additional WLT performed, arising from earlier failed WLT)	Mandatory	integer	
Structural Plan Number	Structure plan number	Mandatory	string	
Pile Reference Number	Pile reference number as per approved piling plan	Mandatory	string	
Working Load Test Date	Date when Working Load Test (WLT) is performed (i.e. best practice for WLT to be sent as and when, upon completion)	Mandatory	datetime	Field length = 25 YYYY-MM-DD[T]hh:mm:ss+hh:mm e.g. 2015-01-01T12:00:00+08:00 for UTC +8
Working Load Test Method	Method adopted for Working Load Test (WLT) [Selection: 1 - Reaction Test Pile (e.g. Kentledge, Ground Anchor, Tension Pile etc); 2 - Bi-directional Load Test; 3 - Rapid Load Test; 4 - Other WLT Method]	Mandatory	integer	Field length = 1 Minimum value = 1 Maximum value = 4

Working Load Test Method Other	Description of other Working Load Test (WLT) method (i.e. to populate if "Other WLT Method" is selected for Working Load Test Method)	Optional	string	Mandatory if working_load_test_method = 4
Pile Diameter	Diameter or length of longest side of pile in millimetres	Mandatory	integer	
Pile As Built Length	As-built length of a pile as measured on site from the cut-off level in metres	Mandatory	double	up to 3 d.p
Pile Working Load	Design working load of tested pile, in kilonewton	Mandatory	integer	
Pile Head Settlement 1.5 Time Working Load	Measured pile settlement at 1.5 time working load, in millimetres	Mandatory	double	up to 3 d.p
Pile Head Settlement 2.0 Time Working Load	Measured pile settlement at 2.0 time working load, in millimetres	Mandatory	double	up to 3 d.p
Working Load Test Result	Result of Working Load Test (WLT) [Selection: 1 - Passed; 2 - Failed (Downgrade Single Pile with Additional 2 WLT); 3 - Failed (Downgrade All Piles for Whole Zone with Additional 2 WLT); 4 - Failed (Downgrade All Piles for Whole Zone without Additional 2 WLT)];	Mandatory	integer	Field length = 1 Minimum value = 1 Maximum value = 4
Additional Working Load Test	Indicate if this Working Load Test (WLT) is the additional test required due to an earlier failed WLT [Selection: True - Yes; False - No]	Mandatory	boolean	

Working Load Test Amendment Remarks	Amendment remarks for the Working Load Test (WLT) that requires amendment (i.e. to populate if "Failed" is selected for Working Load Test Result)	Optional	string	Mandatory if working_load_test_result = 2, 3 or 4
Working Load Test Amendment Date	Date when Working Load Test (WLT) amendment is performed (i.e. to populate if "Failed" is selected for Working Load Test Result)	Optional	date	Field length = 25 YYYY-MM-DD[T]hh:mm:ss+hh:mm e.g. 2015-01-01T12:00:00+08:00 for UTC +8 Mandatory if working_load_test_result = 2, 3 or 4

Ultimate Load Test (ULT) [New]

Data Element Name (Data Field)	Definition	Mandatory/ Optional	Data Field Type	Data Validation Rule - Format
Project Reference Number	Project Reference Number (e.g. A1234-12345-2022)	Mandatory	string	Field length = 16 1st character: Alphabet is either A or E 2nd-5th character: Number 6th character: Hyphen 7th-11th character: Alphanumeric 12th character: Hyphen 13th-16th character: Number
Project Title	Project Title (e.g. Proposed Construction of 50 Story Mixed Commercial & Residential Building)	Mandatory	string	Field length = Maximum 1000
Project Location Description	Project Location Description (e.g. 52 Jurong Gateway Road Singapore 608549, MK01 LOT 00001A, Interchange between Jalan Bahar and Pioneer Road)	Mandatory	string	Field length = Maximum 2000
Project Main Contractor Company Name	Project main contractor company name as in ACRA	Mandatory	string	
Project Main Contractor Company Unique Entity Number	Project main contractor company Unique Entity Number (UEN) as in ACRA	Mandatory	string	Field length = 9-10 Businesses registered with ACRA(1) : NNNNNNNNX Local companies registered with ACRA(1) : YYYYNNNNNX All other entities which will be issued new UEN : TYYPQNNNNX where 'N' = A number 'P' = An alphabetical letter 'Q' = An alpha-numeric digit 'PQ' = Entity Type(2)

				'TYY' / 'SYY' / 'YYYY' = Year of issuance(3) 'X' = A check alphabet For example, the UEN for a limited liability partnership (LLP) formed on 1 January 2009 could be 'T09LL0001B' (1) No change from existing ACRA Registration Number (2) E.g. 'LL' = 'Limited Liability Partnership' (3) 'T' represents 20, 'S' represents '19' and 'R' represents '18'. E.g. T08 means year 2008, S99 means year 1999 and R00 means year 1800.
Technical Controller Person Name	Technical controller name as in Unique Identification Number (UIN), i.e. National Registration Identity Card (NRIC) or Foreign Identification Number (FIN)	Mandatory	string	Field length = Maximum 66
Registered Engineer Registered Technical Officer Person Name	Registered Engineer / Registered Technical Officer (RE/RTO) name as in Unique Identification Number (UIN), i.e. National Registration Identity Card (NRIC) or Foreign Identification Number (FIN)	Mandatory	string	Field length = Maximum 66
Registered Engineer Registered Technical Officer Registration Number	Registered Engineer / Registered Technical Officer (RE/RTO) registration number as registered with Institute of Engineers Singapore (IES) (e.g. RE-1234, RTO-1234)	Mandatory	string	Field length = 7-8 Field value = Alphanumeric, including special character i.e. hyphen
Qualified Person Supervision Person Name	Qualified person (supervision) name as in Unique Identification Number (UIN), i.e. National Registration Identity Card (NRIC) or Foreign Identification Number (FIN)	Mandatory	string	Field length = Maximum 66
Qualified Person Supervision Registration Number	Qualified person (supervision) registration number as registered with Professional Engineers Board (PEB) (e.g. 0123)	Mandatory	string	Field length = 4 Field value = Numeric, may have led zero

Qualified Person Geotechnical Person Name	Qualified personnel (geotechnical) name as in Unique Identification Number (UIN), i.e. National Registration Identity Card (NRIC) or Foreign Identification Number (FIN) (i.e. required for building 30 storey or higher)	Optional	string	Field length = Maximum 66
Qualified Person Geotechnical Registration Number	Qualified personnel (geotechnical) registration number as registered with Professional Engineers Board (PEB) (i.e. required for building 30 storey or higher) (e.g. 0123)	Optional	string	Field length = 4 Field value = Numeric, may have leading zero
Project Total Ultimate Load Test	Total number of Ultimate Load Test (ULT) performed for project (i.e. to update number if there is/are additional ULT performed, arising from earlier ULT that QP was not satisfied)	Mandatory	integer	
Structural Plan Number	Structure plan number	Mandatory	string	
Pile Reference Number	Pile reference number as per approved piling plan	Mandatory	string	
Ultimate Load Test Date	Date when Ultimate Load Test (ULT) is performed (i.e. best practice for ULT to be sent as and when, upon completion)	Mandatory	datetime	Field length = 25 YYYY-MM-DD[T]hh:mm:ss+hh:mm e.g. 2015-01-01T12:00:00+08:00 for UTC +8
Ultimate Load Test Method	Method adopted for Ultimate Load Test (ULT) [Selection: 1 - Reaction Test Pile (e.g. Kentledge, Ground Anchor, Tension Pile etc); 2 - Bi-directional Load Test; 3 - Rapid Load Test; 4 - Other ULT Method]	Mandatory	integer	Field length = 1 Minimum value = 1 Maximum value = 4

Ultimate Load Test Method Other	Description of other Ultimate Load Test (ULT) method (i.e. to populate if "Other ULT Method" is selected for Ultimate Load Test Method)	Optional	string	Mandatory if ultimate_load_test_method = 4
Pile Diameter	Diameter or length of longest side of pile in millimetres	Mandatory	integer	
Pile As Built Length	As-built length of a pile as measured on site from the cut-off level in metres	Mandatory	double	up to 3 d.p
Pile Working Load	Design working load of tested pile, in kilonewton	Mandatory	integer	
Pile Head Settlement 1.5 Time Working Load	Measured pile settlement at 1.5 time working load, in millimetres	Mandatory	double	up to 3 d.p
Pile Head Settlement 2.0 Time Working Load	Measured pile settlement at 2.0 time working load, in millimetres	Mandatory	double	up to 3 d.p
Maximum X Time Working Load Before Failure	Maximum time of working load the pile is loaded to before failure (e.g X times of working load)	Mandatory	double	up to 3 d.p
Pile Head Settlement X Time Working Load	Measured pile settlement at X time of working load, in milimetres	Mandatory	double	up to 3 d.p
Ultimate Load Test Result	Result of Ultimate Load Test (ULT) [Selection: 1 - Proceed with Working Pile (QP Satisfied with ULT, Confirmed Design Parameter and Optimisation Not Required); 2 - Proceed with Working Pile Pending Amendment Plan (QP Satisfied with ULT,	Mandatory	integer	Field length = 1 Minimum value = 1 Maximum value = 4

	Confirmed Design Parameter and Optimisation Required); 3 - Do Not Proceed with Working Pile Pending Amendment Plan (QP Satisfied with ULT and Did Not Confirm Design Parameter); 4 - Redo ULT (QP Not Satisfied)]			
Redone Ultimate Load Test	Indicate if the Ultimate Load Test (ULT) is the redone required due to an earlier ULT that QP was not satisfied [Selection: True - Yes; False - No]	Mandatory	boolean	
Ultimate Load Test Amendment Remarks	Amendment remarks for Ultimate Load Test (ULT) that requires amendment (i.e. to populate if "Pending Amendment" and "Redo ULT" is selected for Ultimate Load Test Result)	Optional	string	Mandatory if ultimate_load_test_result = 2, 3 or 4
Ultimate Load Test Amendment Date	Date that Ultimate Load Test (ULT) amendment is performed (i.e. to populate if "Pending Amendment" and "Redo ULT" is selected for Ultimate Load Test Result)	Optional	datetime	Field length = 25 YYYY-MM-DD[T]hh:mm:ss+hh:mm e.g. 2015-01-01T12:00:00+08:00 for UTC +8 Mandatory if ultimate_load_test_result = 2, 3 or 4

Appendix B – Safety Datasets (Environment, Health and Safety)

Non-Conformity Report (NCR)/ Site Safety Inspection Negative Observation [Pending Updates]

Data Element Name (Data Field)	Definition	Mandatory/ Optional	Data Field Type	Data Validation Rule - Format
Report Identification Number	Report unique serial number generated by site management platform	Mandatory	string	
Report Date Time	Report submission date and time	Mandatory	date	YYYY-MM-DD
Report Revision	Report revision, starting value to be 1 and subsequent revision to be incremental by 1	Mandatory	int8	Minimum value = 1
Safety Inspection Observed Date/ Time	Date and time when safety inspection is observed	Mandatory	date-time	YYYYMMDD HH:MM:SS
Safety Inspection Trade	Trade relating to the safety inspection (for HDB), as per HDB reference guide (e.g. A1, B3, C5)	Optional	string	Min characters = 3, Max characters = 4, Range: A.1-A,6, B.1-B.17, C.1-C.15, D.1-D.7
Project Reference Number	Project Building Plan (BP) number issued by URA (e.g. A1234-12345-2022)	Mandatory	string	
Project Name	Project name or development name	Mandatory	string	
Location Gridline	Location (where safety inspection is observed) gridlines as per working drawings	Optional	string	
Location Zone	Location (where safety inspection is observed) zone as per working drawings	Optional	string	
Location Block	Location (where safety inspection is observed) block number	Optional	string	
Location Storey	Location (where safety inspection is observed) storey number	Optional	string	
Location Unit	Location (where safety inspection is observed) unit number	Optional	string	

Location Area	Location (where safety inspection is observed) area [Selection: 1 - Carpark; 2 - Bathroom; 3 - Balcony; 4 - Bedroom; 5 - Living Room; 6 - Kitchen; 7 - Others]	Optional	int8	Minimum value = 1, Max value = 7
Location Area Others	Description of other location area [Free Text description, mandatory when Others is selected]	Optional	string	loc_area_others = NOT NULL, IF loc_area = 7
Reporter Company Name	Reporter (of safety inspection) company name as in ACRA	Mandatory	string	
Reporter Company UEN	Reporter (of safety inspection) company Unique Entity Number	Mandatory	string	Min characters = 9 Alpha Numerics, Max characters = 10 Alpha Numerics
Reporter Personnel Name	Reporter (of safety inspection) personnel name as in NRIC or FIN	Mandatory	string	
Reporter Personnel Role	Reporter (of safety inspection) role or designation [Selection: 1 - Consultant Project Manager 2 - Contractor Project Manager 3 - Workplace Safety and Health Officer 4 - Workplace Safety and Health Coordinator 5 - Workplace Safety and Health Supervisor 6 - Site Engineer 7 - Site Supervisor 8 - Environmental Control Officer 9 - Resident Technical Officer 10 - Resident Engineer]	Optional	int8	Minimum value = 1, Max value = 10
Inspector Company Name	Inspector (of safety inspection) company name as in ACRA	Mandatory	string	
Inspector Company UEN	Inspector (of safety inspection) company Unique Entity Number	Mandatory	string	Min characters = 9 Alpha Numerics, Max characters = 10 Alpha Numerics

Inspector Personnel Name	Inspector (of safety inspection) personnel name as in NRIC or FIN	Mandatory	string	
Inspector Personnel Role	Inspector (of safety inspection) role or designation [Selection: 1 - Consultant Project Manager 2 - Contractor Project Manager 3 - Workplace Safety and Health Officer 4 - Workplace Safety and Health Coordinator 5 - Workplace Safety and Health Supervisor 6 - Site Engineer 7 - Site Supervisor 8 - Environmental Control Officer 9 - Resident Technical Officer 10 - Resident Engineer]	Optional	int8	Minimum value = 1, Max value = 10
Contractor Company Name	Contractor (of safety inspection) company name as in ACRA	Mandatory	string	
Contractor Company UEN	Contractor (of safety inspection) company Unique Entity Number	Mandatory	string	Min characters = 9 Alpha Numerics, Max characters = 10 Alpha Numerics
Contractor Personnel Name	Contractor (of safety inspection) personnel name as in NRIC or FIN	Optional	string	
Contractor Personnel Role	Contractor (of safety inspection) role or designation [Selection: 1 - Consultant Project Manager 2 - Contractor Project Manager 3 - Workplace Safety and Health Officer 4 - Workplace Safety and Health Coordinator 5 - Workplace Safety and Health Supervisor 6 - Site Engineer 7 - Site Supervisor 8 - Environmental Control Officer 9 - Resident Technical Officer 10 - Resident Engineer]	Optional	int8	Minimum value = 1, Max value = 10

Rectifier Company Name	Rectifier (of safety inspection) company name as in ACRA	Optional	string	rectifier_coy_nm = NOT NULL if no_rectification_performed = True
Rectifier Company UEN	Rectifier (of safety inspection) company Unique Entity Number	Optional	string	Min characters = 9 Alpha Numerics, Max characters = 10 Alpha Numerics
Rectifier Personnel Name	Rectifier (of safety inspection) personnel name as in NRIC or FIN	Optional	string	rectifier_personnel_nm = NOT NULL if no_rectification_performed = True
Rectifier Personnel Role	Rectifier (of safety inspection) role or designation [Selection: 1 - Consultant Project Manager 2 - Contractor Project Manager 3 - Workplace Safety and Health Officer 4 - Workplace Safety and Health Coordinator 5 - Workplace Safety and Health Supervisor 6 - Site Engineer 7 - Site Supervisor 8 - Environmental Control Officer 9 - Resident Technical Officer 10 - Resident Engineer]	Optional	int8	Minimum value = 1, Max value = 10 rectifier_personnel role = NOT NULL if no_rectification_performed = True
Verifier Company Name	Verifier (of safety inspection) company name as in ACRA	Optional	string	verifier_coy_nm = NOT NULL if nc_rectification_performed = True
Verifier Company UEN	Verifier (of safety inspection) company Unique Entity Number	Optional	string	Min characters = 9 Alpha Numerics, Max characters = 10 Alpha Numerics
Verifier Personnel Name	Verifier (of safety inspection) personnel name as in NRIC or FIN	Optional	string	verifier_personnel_nm = NOT NULL if no_rectification_performed = True
Verifier Personnel Role	Verifier (of safety inspection) role or designation [Selection: 1 - Consultant Project Manager	Optional	int8	Minimum value = 1, Max value = 10

	2 - Contractor Project Manager 3 - Workplace Safety and Health Officer 4 - Workplace Safety and Health Coordinator 5 - Workplace Safety and Health Supervisor 6 - Site Engineer 7 - Site Supervisor 8 - Environmental Control Officer 9 - Resident Technical Officer 10 - Resident Engineer]			verifier_personnel_role = NOT NULL if no_rectification_performed = True
Approver Company Name	Approver (of safety inspection) company name as in ACRA	Optional	string	Approver_coy_nm = NOT NULL if nc_rectification_performed = True
Approver Company UEN	Approver (of safety inspection) company Unique Entity Number	Optional	string	Min characters = 9 Alpha Numerics, Max characters = 10 Alpha Numerics
Approver Personnel Name	Approver (of safety inspection) personnel name as in NRIC or FIN	Optional	string	Approver_personnel_nm = NOT NULL if no_rectification_performed = True
Approver Personnel Role	Approver (of safety inspection) role or designation [Selection: 1 - Consultant Project Manager 2 - Contractor Project Manager 3 - Workplace Safety and Health Officer 4 - Workplace Safety and Health Coordinator 5 - Workplace Safety and Health Supervisor 6 - Site Engineer 7 - Site Supervisor 8 - Environmental Control Officer 9 - Resident Technical Officer 10 - Resident Engineer]	Optional	int8	Minimum value = 1, Max value = 10 Approver_personnel_role = NOT NULL if no_rectification_performed = True
Negative Observation Type	Negative Observation Type (required for submission to HDB) [Selection: 1 - Non-Compliance	Optional	int8	Minimum value = 1, Max value = 2

	2 - Near Miss (observation of an unplanned event that did not result in any injury, illness or damage, but had the potential to do so)			
Negative Observation Classification	Classification of negative observation [Selection: 1 - Work-At-Height Provison; 2 - Falling Objects Provison; 3 - Moving Objects Provision; 4 - Housekeeping; 5 - Professional Enginner (PE) Design Provision; 6 - Lifting Operations/Equipment Compliance; 7 - Electrical Appliances/System Compliance; 8 - Fire Extinguisher Provision; 9 - Fire/Explosion and Hotworks Provision; 10 - Traffic/Pedestrian Safety Management; 11 - Site Entry Requirements; 12 - RAs, SWPs or PTWs Compliance; 13 - Personal Protective Equipment (PPE) Provision; 14 - Temporary Structures Provision; 15 - Machinery/Equipment Maintenance and Operations; 16 - Excavation Precaution; 17 - Hazardous Materials Provision; 18 - Environmental and Noise Control Provision; 19 - Confined Space Provision; 20 - Dangerous Operations Provision; 21 - Statutory Licenses and Certificates; 22 - Others.]	Mandatory	int8	Minimum value = 1, Max value = 22
Negative Observation Others Description	Description of negative observation [Free Text description, mandatory when Others is selected]	Optional	string	no_class_desc = NOT NULL, IF nc_class = 22
Negative Observation Severity	Severity level of negative observation [Selection: 1 - Low Risk / Minor;	Mandatory	int8	Minimum value = 1, Max value = 3

	2 - Medium Risk / Major; 3 - High Risk / Critical / Severe]			
Negative Observation Rectification Performed	Was negative observation rectification performed [True = Yes, False = No]	Mandatory	Boolean	
Negative Observation Rectification Date Time	Date and Time when negative observation is rectified	Optional	date-time	2017-07-21T17:32:28Z no_rectification_dt = NOT NULL if no_rectification_performed = True
Negative Observation Photographs Attachment	Supporting photographs of negative observation	Optional	object	
Negative Observation Photographs Attachment for Pre-Rectification	Supporting photographs of negative observation for pre-rectification	Optional	object	
Negative Observation Pre-Rectifications Photographs Attachment	Negative observation pre-rectification photographs attachment [filename with extension, maximum 10 attachments]	Optional	array	Max 10 attachments
Negative Observation Pre-Rectifications Photographs Attachment Content	Negative observation pre-rectification photographs attachment [content stored in an encoded string format, maximum 10 attachments]	Mandatory	string	

Negative Observation Pre-Rectifications Photographs Attachment Filename	Negative observation pre-rectification photographs attachment [file name stored in an encoded string format, maximum 10 attachments]	Mandatory	string	
Negative Observation Photographs Attachment for Post-Rectification	Supporting photographs of negative observation for post-rectification	Optional	object	
Negative Observation Post-Rectifications Photographs Attachment	Negative observation post-rectification photographs attachment [filename with extension, maximum 10 attachments]	Optional	array	Max 10 attachments
Negative Observation Post-Rectifications Photographs Attachment Content	Negative observation post-rectification photographs attachment [content stored in an encoded string format. maximum 10 attachments]	Mandatory	string	
Negative Observation Post-Rectifications Photographs Attachment Filename	Negative observation post-rectification photographs attachment [file name stored in an encoded string format, maximum 10 attachments]	Mandatory	string	

Site Safety Inspection Positive Observation [Pending Updates]

Data Element Name (Data Field)	Definition	Mandatory/ Optional	Data Field Type	Data Validation Rule - Format
Report Identification Number	Report unique serial number generated by site management system	Mandatory	string	
Report Date Time	Report submission date and time	Mandatory	date-time	
Report Revision	Report revision, starting value to be 1 and subsequent revision to be incremental by 1	Mandatory	int8	Minimum value = 1
Safety Inspection Observed Date/Time	Date and time when safety is observed	Mandatory	date-time	YYYYMMDD HH:MM:SS
Safety Inspection Trade	Trade relating to the safety inspection (for HDB), as per HDB reference guide (e.g. A1, B3, C5)	Optional	string	Min characters = 3, Max characters = 4, Range: A.1-A,6, B.1-B.17, C.1-C.15, D.1-D.7
Project Reference Number	Project Building Plan (BP) number issued by URA (e.g. A1234-12345-2022)	Mandatory	string	
Project Name	Project name or development name	Mandatory	string	
Location Gridline	Location (where safety inspection is observed) gridlines as per working drawings	Optional	string	
Location Zone	Location (where safety inspection is observed) zone as per working drawings	Optional	string	
Location Block	Location (where safety inspection is observed) block number	Optional	string	
Location Storey	Location (where safety inspection is observed) storey number	Optional	string	
Location Unit	Location (where safety inspection is observed) unit number	Optional	string	
Location Area	Location (where safety inspection is observed) area [Selection: 1 - Carpark; 2 - Bathroom; 3 - Balcony;	Optional	int8	Minimum value = 1, Max value = 7

	4 - Bedroom; 5 - Living Room; 6 - Kitchen; 7 - Others]			
Location Area Others	Description of other location area [Free Text description, mandatory when Others is selected]	Optional	string	loc_area_others = NOT NULL, IF loc_area = 7
Reporter Company Name	Reporter (of safety inspection) company name as in ACRA	Mandatory	string	
Reporter Company UEN	Reporter (of safety inspection) company Unique Entity Number	Mandatory	string	Min characters = 9 Alpha Numerics, Max characters = 10 Alpha Numerics
Reporter Personnel Name	Reporter (of safety inspection) personnel name as in NRIC or FIN	Mandatory	string	
Reporter Role	Reporter (of safety inspection) role or designation [Selection: 1 - Consultant Project Manager 2 - Contractor Project Manager 3 - Workplace Safety and Health Officer 4 - Workplace Safety and Health Coordinator 5 - Workplace Safety and Health Supervisor 6 - Site Engineer 7 - Site Supervisor 8 - Environmental Control Officer 9 - Resident Technical Officer 10 - Resident Engineer]	Optional	int8	Minimum value = 1, Max value = 10
Inspector Company Name	Inspector (of safety inspection) company name as in ACRA	Mandatory	string	
Inspector Company UEN	Inspector (of safety inspection) company Unique Entity Number	Mandatory	string	Min characters = 9 Alpha Numerics, Max characters = 10 Alpha Numerics
Inspector Personnel Name	Inspector (of safety inspection) personnel name as in NRIC or FIN	Mandatory	string	
Inspector Role	Inspector (of safety inspection) role or designation [Selection: 1 - Consultant Project Manager	Optional	int8	Minimum value = 1, Max value = 10

	2 - Contractor Project Manager 3 - Workplace Safety and Health Officer 4 - Workplace Safety and Health Coordinator 5 - Workplace Safety and Health Supervisor 6 - Site Engineer 7 - Site Supervisor 8 - Environmental Control Officer 9 - Resident Technical Officer 10 - Resident Engineer]			
Contractor Company Name	Contractor (of safety inspection) company name as in ACRA	Mandatory	string	
Contractor Company UEN	Contractor (of safety inspection) company Unique Entity Number	Mandatory	string	Min characters = 9 Alpha Numerics, Max characters = 10 Alpha Numerics
Contractor Personnel Name	Contractor (of safety inspection) personnel name as in NRIC or FIN	Optional	string	
Contractor Personnel Role	Contractor (of safety inspection) personnel role or designation [Selection: 1 - Consultant Project Manager 2 - Contractor Project Manager 3 - Workplace Safety and Health Officer 4 - Workplace Safety and Health Coordinator 5 - Workplace Safety and Health Supervisor 6 - Site Engineer 7 - Site Supervisor 8 - Environmental Control Officer 9 - Resident Technical Officer 10 - Resident Engineer]	Optional	int8	Minimum value = 1, Max value = 10
Positive Observation Classification	Classification of negative observation [Selection: 1 - Work-At-Height Provison; 2 - Falling Objects Provison; 3 - Moving Objects Provision; 4 - Housekeeping;	Mandatory	int8	Minimum value = 1, Max value = 22

	5 - Professional Enginner (PE) Design Provision; 6 - Lifting Operations/Equipment Compliance; 7 - Electrical Appliances/System Compliance; 8 - Fire Extinguisher Provision; 9 - Fire/Explosion and Hotworks Provision; 10 - Traffic/Pedestrian Safety Management; 11 - Site Entry Requirements; 12 - RAs, SWPs or PTWs Compliance; 13 - Personal Protective Equipment (PPE) Provision; 14 - Temporary Structures Provision; 15 - Machinery/Equipment Maintenance and Operations; 16 - Excavation Precaution; 17 - Hazardous Materials Provision; 18 - Environmental and Noise Control Provision; 19 - Confined Space Provision; 20 - Dangerous Operations Provision; 21 - Statutory Licenses and Certificates; 22 - Others]			
Positive Observation Others Description	Description of positive observation [Free Text description, mandatory when Others is selected]	Optional	string	po_class_desc = NOT NULL, IF po_class = 22
Positive Observation Attachment	Supporting photographs of positive observation	Optional	object	
Positive Observation Photographs Attachment	Positive Observation photographs attachment	Optional	array	Max 10 attachments
Positive Observation Photographs	Positive Observation photographs attachment [filename with extension, maximum 10 attachments]	Mandatory	string	

Attachment Filename				
Positive Observation Photographs Attachment Content	Positive Observation photographs attachment [content stored in an encoded string format, maximum 10 attachments]	Mandatory	string	

Appendix C – Productivity Datasets

Manpower Utilisation Data [Pending Updates]

Data Element Name (Data Field)	Definition	Mandatory/ Optional	Data Field Type	Data Validation Rule - Format
Report Identification Number	Report unique serial number generated by Biometric Authentication Systems (BAS)	Mandatory	string	
Report Period	Report submission period (e.g. for Jan 2023)	Mandatory	Date-time	YYYY-MM-DD
Report Data Time	Report submission date and time	Mandatory	Date-time	YYYYMMDD HH:MM:SS
Report Revision	Report revision, starting value to be 1 and subsequent revision to be incremental by 1	Mandatory	int8	Minimum value = 1
Project Reference Number	Project Building Plan (BP) number (e.g. A1234-12345-2022)	Mandatory	string	
Project Name	Project name (e.g. Construction of 50 Sty Mixed Commerical & Residential Building at 7 Maxwell Rd)	Mandatory	string	
Report Company Name	Company (that submit report) name as in ACRA	Mandatory	string	
Report Company UEN	Company (that submit report) Unique Entity Number	Mandatory	string	Min characters = 9, Max characters = 10 Alphas
Manpower Total	Total man-days of all trade groups	Mandatory	double	
Manpower Breakdown Group A	Manpower breakdown man-day by trade and trade category	Mandatory	array	
Manpower Trade	Trade (e.g. 2.2, 3.1, 4.1) as specified in the EPSS guidebook Annex A	Mandatory	string	Min characters = 3, Max characters = 4, Range: 1.0, 2.1-2.13, 3.1-3.7, 4.1-4.20, 5.1-5.6, 6.1-6.4, 7.1-7.2

Manpower Total by Trade	Total man-days per trade (e.g. machine operator, carpentry, blockwall) as specified in the EPSS guidebook Annex A	Mandatory	double	
Manpower Total by Trade Category	Total man-days per trade category (e.g. basement, structural works, architectural works) as specified in the EPSS guidebook Annex A	Mandatory	double	
Manpower Breakdown Group B	Manpower breakdown man-day by trade, personnel category and company (for REDAS)	Optional	array	
Manpower Trade	Trade (e.g. 2.2, 3.1, 4.1) as specified in the EPSS guidebook Annex A (for REDAS)	Optional	string	Min characters = 3, Max characters = 4, Range: 1.0, 2.1-2.13, 3.1-3.7, 4.1-4.20, 5.1-5.6, 6.1-6.4, 7.1-7.2
Personnel Category	Personnel category of work at site [Selection: 1 - Structure; 2 - Architecture; 3 - Fabrication; 4 - M&E; 5 - Staff] (for REDAS)	Optional	int8	Minimum value = 1, Max value = 5
Personnel Employer Company Name	Company (that employ personnel) name as in ACRA (for REDAS)	Optional	string	
Manpower Total by Trade Personnel Category Company	Total man-days per trade, personnel category and employer company (for REDAS)	Optional	double	