



Consultant/Developer Specifications for the
Delivery of Digital Data to
Local Government and Authorities

Version 3.0.5 Final - Summary
31st May 2019



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A-SPEC Members

Victoria	WA	NSW

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EXECUTIVE SUMMARY

Introduction

A-SPEC Program

A-SPEC is the acronym for the program involved in developing specifications for the delivery of newly constructed assets as Digital Data in a GIS ready format to Asset Owners and Managers in Local Governments, Utilities and Water Authorities around the world.

The **A-SPEC** management model enables Local Governments, Utilities and Water Authorities around the world to participate in the development and use of the standard specifications developed under this program.

The key objectives of the **A-SPEC** initiative is to streamline stake holders' (local government/utilities/water authorities) processes for receiving, handling and storing of data related to newly constructed infrastructure assets either from subdivision developments or internal programs (e.g. capital works) in their GIS and AMIS.

This process will increase the efficiency of information access and result in greater customer satisfaction when dealing with inquiries from engineering consultants, surveyors, developers and prospective residents.

- **Eliminate duplication of effort.** Significant duplication of effort exists in the digitising of as constructed information. This duplication exists between the private sector (who capture as constructed information), and council, utility and water authority staff (who may digitise that information from paper plans);
- **Improve process efficiency**, in the process of accepting and processing lodgements, and in checking existing data against design criteria and/or design plans;
- **Improve customer service** to both internal and external customers of asset information;
- **Improve the quality** of drainage information held in council, utility and water authority systems for audit and financial requirements, as well as operational and business requirements;
- **Provide a structure** for the consistent recording of all council, utility and water authority owned assets, including those created through internal programs such as; capital works and renewals.
- And ultimately **manage assets better** to reduce the need for capital works and/or to reduce ongoing maintenance costs.

A-SPEC data is characterised by having an infrastructure role by:

- functioning as reference data - which means that other kinds of information can and will be linked to the core data.
- being of interest for many different kinds of applications (and being a common denominator and integrator between different data suppliers and product and service providers).
- containing information of specific interest for the public sector in its role to support asset management, efficient transportation, traffic safety, to handle environmental and social planning, etc
- having a structure that is stable over time (even if parts of the data content changes due to user input).
- having specific interest for cross border (across State or national/International boundaries) applications.

R-Spec Standard Specification

The **R-Spec** standard specification (roads) was created to enable Local Governments, Utilities and Water Authorities around the world to participate in the use of a single specification when dealing with the creation of new Councils, Utilities and Water Authorities' assets. This enables Councils, Utilities and Water Authorities to deal more efficiently with the Land Development and Industry Consultants in relation to subdivision development and capital works programs within their local jurisdiction.

The **R-Spec** standard specification was developed to streamline the processes undertaken to display all new road assets within a road reserve in each **A-SPEC** member's geographic information systems (GIS) and asset management information systems (AMIS).

A common specification for the supply of digital road asset data was identified as a major opportunity for the members to achieve efficiency and cost savings in the process of maintaining their corporate GIS and AMIS. Moreover, a common specification shared between Councils, Utilities and Water Authorities would also provide efficiencies to the Land Development Industry by removing the need to maintain separate processes, standards and software tools for Councils, Utilities and Water Authorities.

The **R-Spec** standard specification will enable consultants to provide "**As-Constructed/As Built**" data with the specific characteristics required as GIS ready data to comply with **R-Spec**.

The framework will consist of specifications for data content enabling data exchange. **R-Spec** will enable data to be collected and available in a harmonised, interoperable and quality assured way.

Use of the Specification

This standard specification is for use by Private Developers, the representatives of Private Developers, engineering consultants and surveyors (hereafter referred to as "Consultants") who undertake Land Development or Capital Works activities for one or more members of the **A-SPEC** Consortium.

This specification is not to be used for any other purpose.

Where applicable please refer to the section of the document that stipulates the specific requirements of the relevant region that you are conducting your business in within Australia. It is the responsibility of the consultants to understand the specific requirements of their local government, utility or water authority clients. Assistance will be provided wherever possible to clarify any issues or concerns.

It should also be noted that if there are similar elements in **R-Spec** that also appear in **S-Spec**, **D-Spec**, **B-Spec**, **W-Spec** and **O-Spec**, then the standard specification for those asset classes are to be used to prepare the "**As-Constructed/As Built**" digital data to be delivered along with the road reserve digital data requested.

This document, along with the accompanying A-SPEC document, includes a specification of common features (feature types, attribute types and attribute value domain). It also contains generalisation rules for the graphical representation of the features i.e. assets within road reserves, geodetic reference system and rules for validating the data supplied to ensure compliance.

The "**As Constructed/As Built information**" is to be supplied as features and attributes. Storing the information as attributes means attaching the information directly to the features. This document is a guide on what features to supply and which attributes to attach to the various features.

R-Spec will lay the foundation for road asset data infrastructure built on identified user requirements through a specification framework.

Please note the changes in this specification are indicated as follows:

1234	Blue highlighted text and text struck out	Text to be deleted
5678	Green Highlighted text	Existing attribute moved to another table
9101	Yellow highlighted text	New or modified text

An attribute which is specified as "Conditional" means, it is to be populated if certain conditions are met.

Example: The attribute 'Source' is to be populated in the Area of Work Extent table only if the 'Source' of the information is the same for the whole project. If the asset doesn't meet this condition, then the Code 'REFER', is to be used and each table is to be populated accordingly.

Read attribute descriptions carefully to ensure the conditions are met before populating.

The A-SPEC Accompanying Document

A document has been created called the **A-SPEC DDS – Introduction and Overview** ("A-SPEC DDS"). Where applicable please refer to the section of the document that stipulates the specific requirements of the relevant region where you are conducting your business.

It should also be noted that the **A-SPEC DDS** document contains a list of all asset types covered by the various specifications to enable easier identification for the detailed information.

It is the responsibility of the data providers to understand the specific requirements of their local government, utility or water authority clients. Assistance will be provided wherever possible by GISSA to clarify any issues or concerns.

To log a request for further information, the Data Provider may contact GISSA through the website www.a-specstandards.com.au.

The **A-SPEC DDS** document along with this document, provides the necessary information relating to common features (asset classes, feature types, attribute types and attribute value domains) that are required.

Including

1. generalisation rules for the graphical representation of each feature,
2. geodetic reference systems and
3. rules for validating the data supplied to ensure adherence and compliance.

The Already Constructed data is to be supplied as features and attributes. Storing the information as attributes means attaching the information directly to the features. This document is a guide on what features to supply and which attributes to attach to the various features.

In Summary

The key objective of this standard specification is to provide information to the Consultants that will be dealing with A-SPEC Consortium members. This document outlines the specific requirements for the submission of “As-Constructed/As Built Information” of the works, as GIS Ready digital data of newly constructed road assets as defined by the A-SPEC Consortium members in Australia.

Whilst all care has been taken with the preparation of this document it is the responsibility of the consultants to confirm that all details are current and relevant. For example there are specific references in this document that **only** relate to particular jurisdictions.

Note the requirement for Western Australian A-SPEC users to record the WAPC reference number “WAPC_No” , is now accommodated within the “Permit_No” attribute field as the “WAPC_No” attribute field was renamed to “Permit_No”.

The project to determine the suitability of the **R-Spec** standard specification was developed and is being managed by GISSA International Pty Ltd.

The Atrium Suite 10, 476 Canterbury Road, Forest Hill Victoria, AUSTRALIA, 3131.

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Submission of “As Constructed Information” as GIS Ready Data

The key objective of the specification is to provide “As Constructed Information” as digital data of assets within the Road Reserve in a GIS ready format to the Consortium of members using the **R-Spec** standard specification.

This document outlines the specifications for the delivery of digital data containing: - information of assets within the Road Reserve and the boundary showing the extent of the works. This data is to be provided to the **A-SPEC** Consortium members as outlined in the Asset Table in [Section 1.3 Theme/Layer Structure](#).

Consultant Register

The **A-SPEC** Consortium will list Consultants who have registered through the **A-SPEC** website and will provide updates or revisions as necessary. You are advised to read this specification carefully and any comments or suggestions you have regarding this specification are welcomed.

- Consultants who have registered will be shown on the **A-SPEC** website;
www.a-specstandards.com.au (formerly www.dspec.com.au)

A-SPEC Member Contact

All inquiries relating to the delivery of the digital information should be directed to the **A-SPEC** representative of the relevant organization:

- Please either contact GISSA International on +613 9877 6972 or your local point of contact with the organisation you are dealing with.

Intellectual Property

The **A-SPEC** Consortium members own the intellectual property of the developed specifications in conjunction with GISSA International and Intellectual Property rights are not to be sold, transferred or assigned to any party without the prior written approval of the **A-SPEC** Consortium and **GISSA International**.

The **R-Spec Standard** Specifications will be available free of charge to the consulting & development industry. **A-SPEC** data structures are only to be used for the delivery of As Constructed data to **A-SPEC Consortium members only**.

All material is copyrighted and under a trademark.

Disclaimer

On occasion **A-SPEC** Consortium members may supply consultants with digital data to assist them with their planning and design phases. The **A-SPEC** Consortium accepts no liability for the accuracy or completeness of the information and it is the responsibility of the consultants to ensure that the data supplied is appropriate and applicable to the end use intended.

Deliverables

The following are acceptable media for providing the digital data files.

- Email files to A-SPEC member representative.
- USB memory device, portable hard drive
- Cloud Mediums (FTP, Dropbox, Google Drive etc.)

Certification Form - Readme / Metadata File

The readme.txt is a simple text file that contains information about the project the digital data is being provided for and MUST accompany **EVERY** digital data submission.

It is an expectation of the **A-SPEC** Consortium that all data be verified by the developer or their representatives (consultants) with relation to its completeness and graphical accuracy prior to submission.

Errors and omissions will result in the data being returned to the consultant for correction and may result in a non-conformance being placed on the data submission.

The following information may also be used as part of validating the data submission.

Label	Description	Example
COMPANY	Company name taking responsibility for the data	<i>GISSA International</i>
CONTACT	Contact name for this project	<i>George Havakis</i>
TELEPHONE	Telephone number	<i>(03) 9877 6972</i>
FACSIMILE	Facsimile number	<i>NA</i>
EMAIL	Email address (as applicable)	george@gissa.com.au
MAILING ADDRESS	Mailing address	<i>Suite 10, 476 Canterbury Rd, Forest Hill VIC 3131</i>
PHYSICAL ADDRESS	Physical business address	<i>'As Above'</i>
A-SPEC MEMBER	Participating Authority	<i>City of Gosnells Wyndham City Council</i>
DATE SUBMITTED	Date the digital data submitted to A-SPEC member	<i>31/1/2014</i>
DOCUMENT VERSION	Version of the document used	<i>R-Spec Digital Data Specifications – V3.0.5</i>
SOFTWARE FORMAT & VERSION	The software used to create the digital data	<i>QGIS</i>
PROJECT or SUBDIVISION	Project or Subdivision name	<i>Wyndham Estate</i>
STAGE	Subdivision Stage Name	<i>Stage 3B</i>
DESIGN COMPANY	Design Company Name	<i>Fred Charles & Associates</i>
PLAN NUMBER	As Constructed Plan Number	<i>6080R212</i>
CONSTRUCTION COMPANY	Construction Company Name	<i>Jamieson Construction</i>
CONSTRUCTION DATE	Date the asset was constructed/ built/ installed	<i>12/03/2017</i>
COORDINATES/DATUM	The coordinate system the data is in	<i>GDA94 Zone 50</i>
DATUM	Vertical Height Datum	<i>AHD71</i>
TRANSFORMATION	The coordinate system the data was transformed from	<i>Perth Coastal Grid to GDA94 Zone 50</i>
TRANSFORMATION BY	Who carried out the transformation from the original coordinate system to the relevant system	<i>City of Gosnells – Jack Dowling</i>
SOURCE OF DATA	The type of capture used	<i>Field Asset Capture</i>
NOTES/COMMENTS	Important notes or information to be included here.	<i>Information provided in this submission is a combination of data picked up in the field along with confirmation by the contractor responsible ICANDOIT Pty Ltd</i>

1.3 Theme/Layer Structure

The following level/layer structure is intended as a guide to assist Consultants when arranging their graphical information for members of the **A-SPEC** Consortium. The key principal is that each asset class must be delivered on a separate level/layer and the files must be clearly labelled in accordance with the “**Universal File Name**” indicated below.

Depending on the asset to be captured, not all the levels/layers indicated here may appear in the submitted data.

It is important to note that each level/layer should only contain the listed features; any other features present will impede the acceptance testing and may result in non-conformance with the requirements.

Asset Type	Universal File Name	Data Type	Description	Attribute Table
Area of Work Extent	Area_Extent	Polygon	Polygon representing the extents of the subdivision development or capital works	Yes
Road Reserve	Road	Polygon	Property Boundary to Property Boundary	No. Graphics Only.
Surface (Seal)	Surface	Polygon	The seal / surface above the pavement	Yes
Pavement	Pavement	Polygon/	Lip of Kerb to Lip of Kerb	Yes
Surface (Seal) Centreline	S_CLine	Line/Polyline	Centreline of Road, from intersection to intersection or to the end of current works	Yes
Pathways	Pathways	Polygon	Perimeter of Pathway	Yes
Pathway Centreline	P_CLine	Line/Polyline	Centreline of Pathway, from intersection to intersection or to the end of current works	Yes
Tactile Ground Surface Indicators	Tactile	Polygon	Extent of tactile paving	Yes
Parking	Parking	Polygon	Perimeter of Parking Area	Yes
Kerb, Kerb & Channel and Shoulder	Kerbs	Line/Polyline	Back of the Kerb. If NO Kerb & Channel, edge of the shoulder must be provided.	Yes
Table Drain	T_Drain	Polygon	Perimeter of the table drain	Yes
Traffic Management Devices	Dev_Perim	Polygon	Perimeter of Device	Yes
Traffic Management Device	Tr_Lines	Line/Polyline	Line Markings, Pedestrian crossings/ medians/ chevrons	No. Graphics Only.
Traffic Management Device	Dev_Loc	Point	Location of Device	Yes
Shelters	Shelter	Polygon	Perimeter of the bus shelter	Yes
Abutments	Abutment	Polygon	Perimeter of Abutments	No. Graphics Only.
Bridge/Major Culvert	Br_Cul	Polygon	Perimeter of Bridge / Major Culvert	Yes

Asset Type	Universal File Name	Data Type	Description	Attribute Table
Bridge/Major Culvert Components Attribute & Validation File Format Instructions	Bridge Components catalogue	Spreadsheet	Individual components of a bridge or a major culvert WITHOUT GRAPHICS	Yes
Signs	Signs	Point	Centre of Sign	Yes
Trees	Trees	Point	Centre of Tree	Yes
Lighting (Point)	Lighting	Point	Non-standard Public Lighting	Yes
Vehicle Crossing (Polygon)	Vhcl_Cross	Line/Polyline	Driveway access	No. Graphics Only.
Road Safety Barriers (Line/Polyline)	Barriers	Line/Polyline	Centreline depicting extents of barrier	Yes
Traffic Signals- Point	Traffic_Signals	Point	Location of Traffic Signals	Yes
Intelligent Transport Systems (ITS) Features – Points	ITS_Point	Point	Location of ITS components	Yes
Intelligent Transport Systems (ITS) Features – Lines	ITS_Line	Line/Polyline	Line indication position of ITS cables	Yes
Intelligent Transport Systems (ITS) Features – Polygons	ITS_Poly	Polygon	Perimeter of ITS areas	Yes
Matching to Existing Infrastructure	Problems	Polygon	Circle of radius 10m and associated comments listing all problems with a unique number (i.e. 1,2,3 etc.)	Yes

1.3.1 Other Asset Types that may be found in a Road Reserve

The following asset may also be found in a road reserve and are covered in other specifications developed by the A-SPEC Consortium.

Where this occurs please refer to the relevant **A-SPEC** standard specifications to ensure compliance with the delivery of **“As Constructed”** data. The table above lists some of the specifications available.

Amenities	Please refer to O-Spec for requirements
Bins	Please refer to O-Spec for requirements
Drainage Pits and Pipes and other infrastructure	Please refer to D-Spec for requirements
Fences	Please refer to O-Spec for requirements
Landscaping	Please refer to O-Spec for requirements
Minor Structures	Please refer to O-Spec for requirements
Nature Strips	Please refer to O-Spec for requirements
Public Art and Memorial	Please refer to O-Spec for requirements
Sewerage Pits and Pipes and other infrastructure	Please refer to S-Spec for requirements
Water Pits and Pipes and other infrastructure	Please refer to W-Spec for requirements

This will be updated from time to time so please do not hesitate to contact GISSA International on +61 3 9877 6972 or refer to the website on www.a-specstandards.com.au.

1.4 Graphical Data Construction Principles

Each of the following sections detail the graphical data construction principles that consultants must adhere to for all linework, polygons and points provided. Where practicable, the alignment of all data; whether “As Constructed Measurements”–or Survey Enhanced “As Constructed Measurements” data, must be related to the title/property boundaries abutting the road reserve.

It is requested to use sound computer-assisted design (CAD) practices when recording data, such as snapping to lines and closing polygons.

1.5 Graphical Representation Principles

Each of the following sections details the requirements for how the graphics for each asset is to be provided. As mentioned in the previous section all data that is provided is to be a:

- Point
- Line (Polyline where multiple vertices are required) or a
- Polygon

The following standard drawing format has been created to depict how each asset element may appear in the context of other road assets and wherever practicable photographs have been included for visual illustration of the asset in real life.

This format will be used in each section as appropriate.

Figure 1 below is an example of the typical assets that may be found in a Road Reserve.



Figure 1 - Typical Assets within a Road Reserve

The figures that follow show a centreline in relation to typical road assets (Figure 2 and Figure 3) and as a polyline (Figure 4).

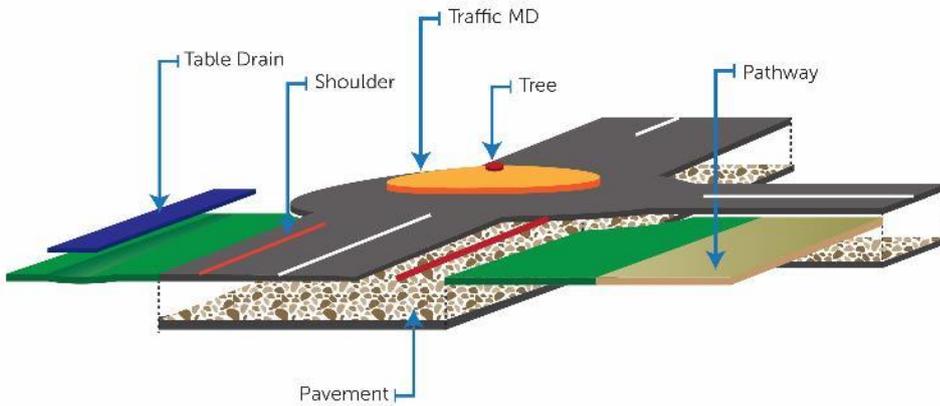


Figure 2 - 3D view of typical road assets

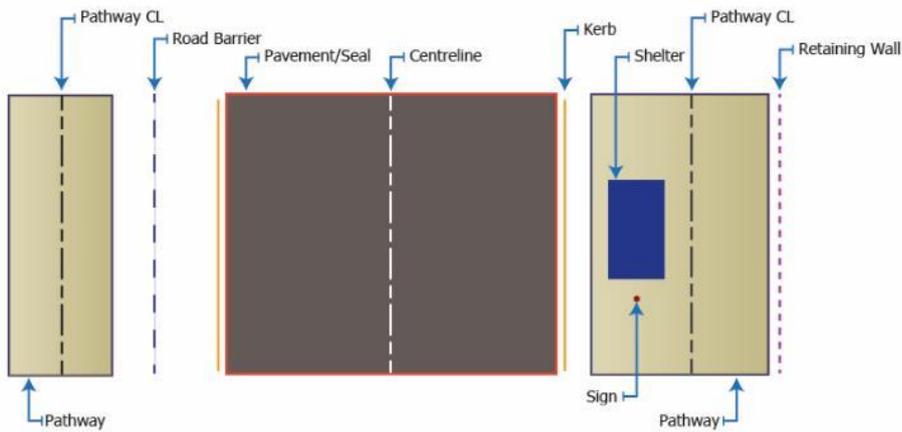


Figure 3 - A plan view of Typical Road Components

Note: CL = centreline

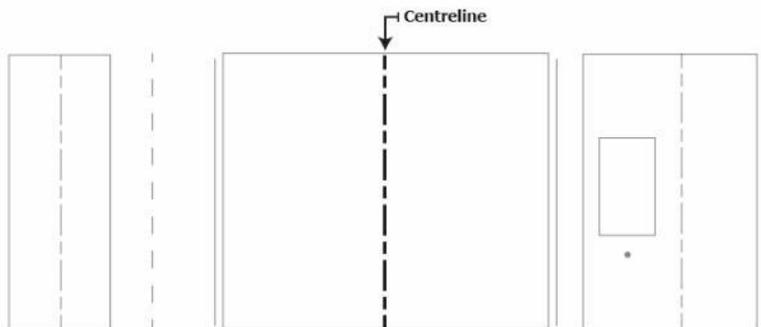


Figure 4 - Centreline Represented as a Polyline

1.6 Acceptance Testing

All graphical information will be checked against the Attribute file/table. Please refer to Section 2 for guidelines designed to assist Consultants when putting together attribute information.

It is mandatory that each Consultant implement checks to ensure that their plans and data conform to the specification and that they run these checks prior to the submission of data to an **A-SPEC** Consortium member. Members will undertake random in-house testing to ensure compliance.

Following the acceptance of the digital data, the relevant Certificates will be issued and the ownership of the digital data reverts to the **A-SPEC** Consortium member.

2 Attribute & Validation File Specifications

This section provides details of the attribute fields and their respective validation requirements for each asset table and includes the following information.

All coordinates will be provided in the preferred datum of each individual A-SPEC Consortium member as specified on the A-SPEC website www.a-specstandards.com.au or as otherwise agreed to with the respective Consortium member.

For further detail and definitions of the Attribute Data Types and Column name explanations, please refer to the document **A-SPEC DDS – Introduction & Overview V2.1.0 Final**.

Attribute Data Field Requirements

This section details the attribute field data entry requirements that data providers are to adhere to for all data submissions of asset types listed in [Section 1.3 – Theme/Layer Structure](#).

Please note that the Project related data needs to be provided only once.

The following are the key requirements for the structure of the data to be provided in each submission.

- Maximum field widths are specified for Alpha/Numeric and Alpha data.
 - These are to be adhered to.
- For decimal data the number of characters after the decimal point are specified.
- Dates are to be provided as dd/mm/yyyy, EG: 07/06/2001
- All fields are to be populated in accordance with the notes supplied for each field
- All Attribute fields are to use the Column Names and structures set out in **Section 2 – Attribute & Validation File Format Instructions**.
- Validation checks for each data field have also been provided in **Section 2 – Attribute & Validation File Format Instructions**.
- A set of CODELISTS are provided to standardise the capture of information in the Attribute files. They can be found in [Section 3 – R-Spec CODELISTS](#). The A-SPEC website will also contain the most current CODELISTS.
- If a Code does not exist the new asset feature is to be recorded in the “Comments” field and a note sent via the A-SPEC website **ContactUs** form so a new code can be created.
- ~~Fields that are highlighted in grey are common to all tables.~~
- All fields that are common to all tables are captured in the Area of Work Extent table
- Please take note of default values for specific fields. These have been provided for the relevant fields.
- Please note that every attribute name is case sensitive. Use the given name format when creating your fields to supply the data.

Attribute Data Validation Requirements

Please note the column **QA Validation** stipulating the Validation Check to be carried out is provided as a guide to assist Developer/Consultants when putting together information for submission.

Coordinate fields

The key objective of storing this information is to ensure that the practice of collecting the “As Constructed Information” meets the accuracy requirements of the A-SPEC Consortium. The accuracy of the information must be relative to the property boundary.

As all new cadastral information in Australia is placed on the MGA (Map Grid of Australia) grid it is an expectation that all data provided by consultants will be representative of this level of accuracy.

Where significant discrepancy occurs between the property map base and the coordinates of the cadastral development as a result of the unavailability of the connection to the MGA grid or other instance, then the consultant will notify the consortium member so that steps can be taken to record the adjusted coordinates.

The key objective of having this notification in place is to take into consideration occurrences where the cadastral mapbase exceeds a particular accuracy. This is to ensure that if required the assets can be located via means of a GPS or other distance measurement equipment.

In Australia – All Z coordinates (levels) will be provided in AHD metres in accordance with the jurisdictional requirements.

3 R-Spec CODELISTS

CODELISTS are used to standardise terminology by providing a range of item descriptions relating to a particular attribute. A number of attributes specified in the attribute fields may require the input of a CODELIST entry number.

Consultants please note that should an entry not exist within a CODELIST please Use the ‘**SeeComment**’ value.

CODELIST entries will be constantly reviewed by the consortium and additions and amendments made as the need arise.

Aggregate Size or Nominal Stone

Code	Description
5	5mm
7	7mm
8	8mm
10	10mm
14	14mm
20	20mm
22	22mm
CL	Combination Layers
MIX	Mixed
NA	Not Applicable
SeeComment	To be used when an Aggregate Size or Nominal Stone is not listed. The new Aggregate Size or Nominal Stone is to be listed in the ‘ Comments ’ field.

Asset Status

Code	Description
ABN	Abandoned or Disused
INUSE	In-Use
OTHER	Other Use
REM	Removed

Base and Sub-base Material

Code	Description	Code	Description
AP100	All passing 100mm sieve	STRIP	Quarry Strippings - Ungraded
AP150	All passing 150mm sieve	LIMES LS	Limestone
AP20	All passing 20MM sieve	LIMER LSROCK	Limestone Rock
AP40	All passing 40MM sieve	RCC	Recycled Crushed Concrete
AP65	All passing 65MM sieve	RC0	Reinforced Concrete – No Class/Unknown
AP7	All passing 7mm sieve	ROP300	Run of Pit - Graded Max 300mm
AP75	All passing 75MM sieve	ROP500	Run of Pit - Graded Max 500mm
ASP	Asphalt	ROR300	Run of River - Graded Max 300

Code	Description	Code	Description
CONC	Concrete	ROR500	Run of River - Graded Max 500
CR	Crushed Rock	NA	Not Applicable
CRN	Crusher Run	SILT	Silt
DIRT	Dirt	SAND	Sand
ESL ESLS	Emulsion Stabilised Limestone	SAP7	Scoria all passing 7mm sieve
FILTER	Filter cloth	RR	River Run
GAP100	Graded all passing 100mm sieve	SAP100	Scoria all passing 100mm sieve
GAP150	Graded all passing 150mm sieve	SAP150	Scoria all passing 150mm sieve
GAP20	Graded all passing 20mm sieve	SAP20	Scoria all passing 20MM Sieve
GAP40	Graded all passing 40mm sieve	SAP40	Scoria all passing 40mm sieve
GAP65	Graded all passing 65mm sieve	SAP65	Scoria all passing 65mm sieve
GAP7	Graded all passing 7mm sieve	SeeComment	To be used when a Material is not listed. The new Material is to be listed in the 'Comments' field.
GRVL	Gravel	SEALS	Old seals
HCTC	HCTC Rockbase	SCLAY	Sand Clay

Bridge/Major Culvert Purpose

Code	Description
COMBO	Over combination
OVRWTR	Over Waterway
PRKL	Over Parkland
RAMP	On/Off Ramp to/from State Highway
RLWY	Over Railway
ROAD	Over Road
UROAD	Under Road
SeeComment	To be used when a Purpose is not listed. The new Purpose is to be listed in the 'Comments' field.

Bridge/Major Culvert Type

Code	Description
CUL	Culvert
FB	Footbridge
PED	Pedestrian Overpass/underpass
RB	Road bridge
SeeComment	To be used when a Bridge/Major Culvert Type is not listed. The new Bridge/Major Culvert Type is to be listed in the 'Comments' field.
UP	Stock crossing/Underpass

Call Box Type

Code	Description
RETAIL	Retail
POL	Police
TAXI	Taxi
MOTAID	Motorist Aid
NA	Not Applicable
SEC	Security
SeeComment	To be used when a Call Box Type is not listed. The new Call Box Type is to be listed in the ' Comments ' field.

Cell Material

Code	Description
BRK	Brick
HDPE	High Density PE (PE100)
MDPE	Medium Density PE (PE80B)
NA	Not Applicable
PP	Polypropylene
SPIR	Spiral Wound Steel/Aluminium
uPVC-P	Profile-Wall Un-plasticised PVC
SeeComment	To be used when a Cell Material is not listed. The new Cell Material is to be listed in the ' Comments ' field.

Cell Type

Code	Description
ARCHED	Arched
BOX	Box shaped
NA	Not Applicable
OVAL	Oval
T_ARCH	Twin arched
T_BOX	Twin boxes
T_CIRC	Twin circular
TR_CIRC	Triple circular
SeeComment	To be used when a Cell Type is not listed. The new Cell Type is to be listed in the ' Comments ' field.

Communication Method

Code	Description
BLUETOOTH	Bluetooth
MICROWAVE	Microwave
NA	Not Applicable
SeeComment	To be used when a Communication Method is not listed. The new Communication Method is to be listed in the ' Comments ' field.

Component Type

Code	Description
TBEAM	Tbeam
BOXGRD	Box Girder
CLMN	Column
SeeComment	To be used when a Component Type is not listed. The new Component Type is to be listed in the ' Comments ' field.

Control System Type

Code	Description
AUTO	Automatic
MAN	Manual
NA	Not Applicable
SEMI	Semi-automatic
SeeComment	To be used when a Control System Type is not listed. The new Control System Type is to be listed in the ' Comments ' field.

Earthing Type

Code	Description
EQEARTH	Equipment Earthing
NTEARTH	Neutral Earthing
NA	Not Applicable
SeeComment	To be used when an Earthing Type is not listed. The new Earthing Type is to be listed in the ' Comments ' field.

Finishing Material

Code	Description
CONCR	Concrete Render
GAL	Galvanised
GLZ	Glazing
LAM	Laminate
PLAS	Plaster
PNT	Paint
POLISH	Polish
STEEL	Steel
STGLASS	Stained Glass
TILE	Tile
SeeComment	To be used when a Finishing Material is not listed. The new Finishing Material is to be listed in the ' Comments ' field.

Foundation Material

Code	Description
CLAY	Clay
CONC	Concrete
EARTH	Earth
RC	Reinforced Concrete – No Class/Unknown
SeeComment	To be used when a Foundation Material is not listed. The new Foundation Material is to be listed in the ' Comments ' field.

Foundation Type

Code	Description
INDF	Individual footing
MFOUND	Mat foundation
PILE	Piling
SeeComment	To be used when a Foundation Type is not listed. The new Foundation Type is to be listed in the ' Comments ' field.
STRF	Strip footing

Health & Safety Issues

Code	Description
CONFINED	Confined Spaces
ENERG_SRC	Energy Source
FORKLIFTS	Forklifts Operating
HAZ_SUB	Hazardous Substances
HEIGHT	Working At Height
HIGH_VOLT	High Voltage
LIFT_EQUIP	Cranes and Lifting Equipment
NIL	No Requirement
POWER_EQ	Power Plant and Equipment
RESTRICTED	Restricted Space
SeeComment	To be used when a Safety Issue is not listed. The new Safety Issue is

Housing Type

Code	Description
CAB	Cabinet
PIT	Pit
POLE	Pole
TUBE	Tube
SeeComment	To be used when a Housing Type is not listed. The new Housing Type is to be listed in the ' Comments ' field.

ITS Area Type

Code	Description
ILP	Inductive Loop
NA	Not Applicable
STE	ITS Site
WEIGH	Weigh Bridge
SeeComment	To be used when an ITS Area Type is not listed. The new ITS Area Type is to be listed in the ' Comments ' field.

ITS Component Type

Code	Description
CAB	Cabinet
CONT	Controllers
CCTV	CCTV
DET	Detectors
EGATE	Electronic Gates

Code	Description
ENV	Environment Systems
ESIGN	Electronic Signs
FIRED	Fire Detection
ICE	Ice Detection System
NA	Not Applicable
PHONE	Emergency Telephone
SeeComment	To be used when an ITS Component Type is not listed. The new ITS Component Type is to be listed in the ' Comments ' field.

ITS Material

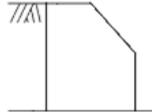
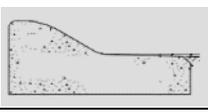
Code	Description
AC	Asbestos Cement
BRASS	Brass
CI	Grey Cast Iron
CU	Copper
FRC	Fibre Reinforced Cement
FRP	Fibre Reinforced Plastic
FSP	Fibre Reinforced Pipe
NYL	Nylon
SeeComment	To be used when a Material is not listed. The new Material is to be listed in the ' Comments ' field.

Kerb Material

Code	Description
CCONC	Coloured Concrete
CONC	Concrete
EARTH	Earth
ABL	Asphalt – Black
ARD	Asphalt – Red
BITUMEN	Bitumen
BRK	Brick
BSTN	Bluestone
LSBLOCK	Limestone Block
RUB	Rubber
NYL	Nylon
TMBR	Timber
SeeComment	To be used when a material is not listed. The new Material is to be listed in the ' Comments ' field.

Kerb Type

Code	Description	Comments/Picture
BK	Barrier kerb (kerb) "B1" - VicRoads Standard 2001	
BKCI	Barrier kerb & channel (kerb & channel) (incline gutter) "B2" - VicRoads Standard 2001	
BKCD	Barrier kerb & channel (kerb & channel)(decline gutter) "B3" - VicRoads Standard 2001	
CPK	Car park kerb	
CSTK	Castellated Kerb	
DDC	Dish drain/channel	
EDGE	Edge Strip	<No Diagram>
FK	Flat kerb	
GKERB	Garden Kerb	
LK	Layback Kerb & channel	
MEDGE	Mowing Edge	
MK1	Mountable kerb "M1" - VicRoads Standard 2001	
MK4	Mountable kerb "M4" - VicRoads Standard 2001	
MKCI	Mountable kerb & channel (incline gutter) "M2" - VicRoads Standard 2001	

Code	Description	Comments/Picture
MKCD	Mountable kerb & channel (decline gutter) "M3" - VicRoads Standard 2001	
MKCCI	Chamfered Mountable Kerb & Channel (incline gutter) "M5" - VicRoads Standard 2001	
MKCCD	Chamfered Mountable Kerb & Channel (decline gutter) "M6" - VicRoads Standard 2001	
NA	Not Applicable	
RK	Riley kerb (Used as a lane barrier)	
RKC	Roll top kerb & channel	 
SBK	Semi-Barrier kerb	 
SBKC	Semi-Barrier kerb & channel	<No Diagram>
SeeComment	To be used when a Kerb Type is not listed. The new Kerb Type is to be listed in the 'Comments' field.	
SH	Shoulder	
SMK	Semi-Mountable kerb "SM1" - VicRoads Standard 2001	
SMKCI	Semi-Mountable kerb & channel (incline gutter) "SM2" - VicRoads Standard 2001	
SMKCD	Semi-Mountable kerb & channel (decline gutter) "SM3" - VicRoads Standard 2001	 
SK	Separation kerb	

Lighting Type

Code	Description
BOL	Bollard
DIR	Directional
FEA	Feature
NAV	Navigational
SOL	Solar
SPT	Sport Lighting
SeeComment	To be used when a Lighting Type is not listed. The new Lighting Type is to be listed in the ' Comments ' field.
TWN	Twin Light
UPL	Up Light

Luminaire Type

Code	Description
LED	Light-emitting diode
HID	High-intensity discharge
INCAN	Incandescent Lighting
FLRSC	Fluorescent
NA	Not Applicable
SeeComment	To be used when a Luminaire Type is not listed. The new Luminaire Type is to be listed in the ' Comments ' field.

Mounting Type

Code	Description
POST	Post
GANTRY	Gantry
GROUND	Ground
NA	Not Applicable
SeeComment	To be used when a Mounting Type is not listed. The new Mounting Type is to be listed in the ' Comments ' field.

Parking Purpose

Code	Description
BUS	Bus
DIP	Diplomatic
DIS	Disabled
LOZ	Loading Zone
MTC	Motorcycle
POL	Police
PRAM	Pram
REG	Regular
RES	Residents
SeeComment	To be used when a Parking Purpose is not listed. The new Parking Purpose is to be listed in the ' Comments ' field.
TAXI	Taxi
TRAILER	Car Trailer eg. trailer, caravans, boats

Pathway Type

Code	Description
BA	Beach Access
BIKE	Bike Only Path
BKPD	Bike and Pedestrian
FP	Footpath
HT	Horse Trail
PA	Pedestrian Access
PRAMR	Pram Ramp
SeeComment	To be used when a Pathway Type is not listed. The new Pathway Type is to be listed in the 'Comments' field.
SP	Shared Path
STEPS	Steps
TRL	Trail
WT	Walking Track

Pole/Post Material

Code	Description
AL	Aluminium
IRON	Iron
NA	Not Applicable
PCM	Powder Coated Metal
SSTEEL	Stainless Steel
STEEL	Steel
TMBR	Timber
WOOD	Wood
SeeComment	To be used when a Pole/Post Material is not listed. The new Pole/Post Material is to be listed in the 'Comments' field.

Pole/Post Type

Code	Description
CMPST	Composite
TOW	Tower
SNG	Single
PEDST	Pedestal
CANT	Cantilever
NA	Not Applicable
SeeComment	To be used when a Pole/Post Type is not listed. The new Pole/Post Type is to be listed in the 'Comments' field.

Position

Code	Description
OVRHD	Overhead
ABG	Above Ground
PRTBRD	Partially Buried
UNDGRD	Underground

Power Source

Code	Description
MAINGRID	Main Grid
SOL	Solar
SeeComment	To be used when a Power Source is not listed. The new Power Source is to be listed in the ' Comments ' field.

Rail Material

Code	Description
AL	Aluminium
BRASS	Brass
NA	Not Applicable
SSTEEL	Stainless Steel
STEEL	Steel
WI	Wrought Iron
WOOD	Wood
SeeComment	To be used when a Rail Material is not listed. The new Rail Material is to be listed in the ' Comments ' field.

Rail Type

Code	Description
POST	Post
BLSTR	Baluster
CONTHR	Continuous Rail
DBLR	Double Rail
NA	Not Applicable
SeeComment	To be used when a Rail Type is not listed. The new Rail Type is to be listed in the ' Comments ' field.

Road Barrier Material

Code	Description
AL	Aluminium
IRON	Iron
METAL	Metal
PVC	Polyvinylchloride
STEEL	Steel
SeeComment	To be used when a material is not listed. The new Material is to be listed in the ' Comments ' field.

Road Barrier Restraint Type

Code	Description
CANT	Cantilever
CSTEM	Cantilever Stem / Counterfort
FACE	Facing
GRAVITY	Gravity
PILE	Piling
SeeComment	To be used when a Restraint Type is not listed. The new Restraint Type is to be listed in the 'Comments' field.

Road Barrier Tie System Type

Code	Description
ANCH	Anchored
DEAD	Deadman
PIN	Pins and nails
NA	Not Applicable
SeeComment	To be used when a Tie System Type is not listed. The new Tie System Type is to be listed in the 'Comments' field.

Road Barrier Type

Code	Description
GUARD	Guard Rail
NJB	New Jersey Barrier
NOISE	Noise Attenuation
SAFETY	Safety
SIGHT	Sight Rail
WIRE	Wire Rope
SeeComment	To be used when a Road Barrier Type is not listed. The new Road Barrier Type is to be listed in the 'Comments' field.

Rooting Environment

Code	Description
TRPT	Tree Pit
FP	Footpath
CLBLK	Cell Block
SeeComment	To be used when a Rooting Environment is not listed. The new Rooting Environment is to be listed in the 'Comments' field.

Signal Type

Code	Description
TRAFFIC	Traffic Control
PDST	Pedestrian
SPECIAL	Special Vehicle (Bus, Tram, Bike etc.)
BEACON	Beacon
NA	Not Applicable
SeeComment	To be used when a Signal Type is not listed. The new Signal Type is to be listed in the ' Comments ' field.

Shelter Type

Code	Description
BUS	Bus
PDST	Pedestrian
SeeComment	To be used when a Shelter Type is not listed. The new Shelter Type is to be listed in the ' Comments ' field.
TRAM	Tram

Sign Material

Code	Description
AL	Aluminium
ALB	Aluminium Bronze
CU	Copper
CORR	Corrugated Steel/Aluminium
FIBRE	Fibreglass
IRON	Iron
NYL	Nylon
PVC	Polyvinylchloride
SSTEEL	Stainless Steel
STEEL	Steel
TMBR	Timber
WOOD	Wood
SeeComment	To be used when a Sign Material is not listed. The new Sign Material is to be listed in the ' Comments ' field.

Source

Code	Description
AS5488	Using the Sub Surface Utility Australian Standard AS5488-2013
ASCON	As Constructed Drawing
CHNOFF	Chainage and Offset
COMB_1	Combination Engineers, Contractors and Field Survey Work
COMB_2	Combination Engineers and Field Survey Work
COMB_3	Combination Contractors and Field Survey Work

Code	Description
COMB_4	Combination Landscape Company and Field Survey Work
CONTRACTOR	Contractor who built the asset
DESPLAN	Design Plan. DESPLAN is only to be used if the asset has not been constructed at time of Practical Completion
DESPLANC	Design Plans issued for Construction. DESPLANC is only to be used if the asset has not been constructed at time of Practical Completion
ENGINEER	Consulting Engineer who designed the asset and or supervised the construction work
FIELD	Field Survey
NA	Not Applicable
REFER	Refer to the individual tables
SeeComment	To be used when a Source is not listed. The new Source is to be listed in the ' Comments ' field.

Structure Material

Code	Description	Code	Description
AL	Aluminium	PCONC	Precast concrete
BRK	Brick	PSTYB	Polystyrene blocks
CONC	Concrete	RC	Reinforced Concrete – No Class/Unknown
CONCM	Concrete Masonry	SeeComment	To be used when a Material is not listed. The new Material is to be listed in the ' Comments ' field.
FCEM	Fibre Cement Sheets	SSTEEL	Stainless Steel
GLASS	Glass	STEEL	Steel
ICONC	In-situ concrete	STNE	Stone
IRON	Iron	TMBR	Timber
NA	Not Applicable	WOOD	Wood

Support Structure Material

Code	Description	Code	Description
AL	Aluminium	SeeComment	To be used when a Support Material is not listed. The new Support Material is to be listed in the ' Comments ' field.
CI	Grey Cast Iron	SPIR	Spiral Wound Steel/Aluminium
CONC	Concrete	SSTEEL	Stainless Steel
EAL	Extruded Aluminium	SSTEEL316	Stainless Steel (grade 316)
GWI	Galvanised Wrought Iron (Also known as Galvanised Mild Steel)	STEEL	Steel
IRON	Iron	TMBR	Timber
MI	Malleable Iron	WI	Wrought Iron
MSW	Mild Steel Welded	STEEL	Steel
NA	Not Applicable	TMBR	Timber
RC	Reinforced Concrete – No Class/Unknown	WI	Wrought Iron

Support Type

Code	Description
CABLE	Cable
CAGE	Cage
ONOP ONEP	One Post
TWOP	Two Post
WALA	Wall Attached
SeeComment	To be used when a Support Type is not listed. The new Support Type is to be listed in the ' Comments ' field.

Surface (Seal) Aggregate Type

Code	Description
BAS	Basalt
BRK	Brick
CONC	Concrete
GRT	Granite
LAT	Laterite
NA	Not Applicable
SeeComment	To be used when a Aggregate Type is not listed. The new Aggregate Type is to be listed in the ' Comments ' field.

Surface (Seal) Binder Modifier/Additive Type

Code	Description
ROX	Red Oxide
RF	Crumb Rubber PMB
S10E	S10E PMB
S15E	S15E PMB
S20E	S20E PMB
S35E	S35E PMB
S45R	S45R PMB
S55R	S55R PMB
A10E	A10E PMB
A15E	A15E PMB
A20E	A20E PMB
A25E	A25E PMB
A35P	A35P PMB
NA	Not Applicable
NONE	None
SeeComment	To be used when a Surface Binder Modifier/Additive Type is not listed. The new Surface Binder Modifier/Additive Type is to be listed in the ' Comments ' field.

Surface (Seal) Binder Type

Code	Description
C170	Bitumen Class 170
C240	Bitumen Class 240
C320	Bitumen Class 320
EME2	High Modulus Asphalt
MULTI	Bitumen Class Multigrade
CB	Cutback Bitumen C170
NA	Not Applicable
SAND	Sand
SeeComment	To be used when a Surface Binder Type is not listed. The new Surface Binder Type is to be listed in the 'Comments' field.
WATER	Water

Surface (Seal) Function Type

Code	Description
1C	1 st coat
2C	2 nd coat
MEMBRANE	Membrane seal (For use in SAM and SAMI seals) (Strain Alleviating Membrane or Strain Alleviating Membrane Interlayer)
NA	Not Applicable
NOTREQ	To be used for unsealed roads
PRIME	Prime Seal
RESEAL	Reseal
WEARC	Wearing Course
SeeComment	To be used when a Surface Treatment Type is not listed. The new Surface Treatment Type is to be listed in the 'Comments' field.

Surface (Seal) Reason

Code	Description
AGED	Aged
BRTHD	Birthday
COND	Condition
FTG	Fatigued
FLUSH	Flushing
HOLDS	Holding Seal
NA	Not Applicable
NEW	A new asset not through a subdivision
SEALEXT	Seal Extension
SeeComment	To be used when a Reason is not listed. The new Reason is to be listed in the 'Comments' field.
SHPC	Shape Correction
SKIDR	Skid Resistance
SUBD	Sub Division
TEXTURE	Texture Correction
OTHER	Other

Surface (Seal) Top Layer Colour

Code	Description
BLACK	Black
CHEQUERED	Chequered
GREEN	Green
GREY	Grey
MIX	Mixed
NA	Not Applicable
PINK	Pink
RED	Red
SeeComment	To be used when a Top Layer Colour is not listed. The new Top Layer Colour is to be listed in the 'Comments' field.
WHITE	White
YELLOW	Yellow

Surface (Seal) Treatment Type

Code	Description
ORG	Original Construction
NA	Not Applicable
RCN	Reconstruction
RHB	Rehabilitation
RSF	Resurfacing
SeeComment	To be used when a Surface Treatment Type is not listed. The new Surface Treatment Type is to be listed in the 'Comments' field.

Surface (Seal) Material Type

Code	Description
ASS	Asphaltic Slurry Seal
BRICKP	Brick Paving
CAS	Combination Asphalt Surface
CAPE	Cape Seal
COLDMIX	Cold Mix Asphalt
CONC	Concrete
CS	Combination Spayed Seal Surface
CTG	Cement Treated Gravel
DDS	Double Double Seal
DGA	Dense Graded Asphalt
EAGC	Exposed Aggregate Concrete
FGGA	Fine Gap Graded Asphalt
FRS	Fibre Reinforced Seal
GPV	Gravel Pave
GRS	Geotextile Reinforced Seal
IDS	Inverted Double Seal
INPAVE	Interlocking Pavers
LS	Limestone
NA	Not Applicable

Code	Description
OGA	Open Graded Asphalt
PRIME	Prime Seal
SCATTER	Scatter Coat
SeeComment	To be used when a Surface Material Type is not listed. The new Surface Material Type is to be listed in the ' Comments ' field.
SMA	Stone Mastic Asphalt
SSS	Single Single Seal
STCONC	Stencilled Concrete
UNSEAL	Unsealed
UTA	Ultra-Thin Asphalt

Table Drain Material

Code	Description
CLAY	Clay
EARTH	Earth
SeeComment	To be used when a Table Drain Material is not listed. The new Table Drain Material is to be listed in the ' Comments ' field.
VEG	Vegetation

Table Drain Shape

Code	Description
PARN	Parabolic (Narrow)
PARB	Parabolic (Broad)
TRAP	Trapezoidal
VSCH	V-Shaped Channel
IRREG	Irregular
SeeComment	To be used when a Table Drain Shape is not listed. The new Table Drain Shape is to be listed in the ' Comments ' field.

Tactile Ground Surface Indicator Type

Code	Description
ADHES	Fixed adhesively to path surface
INDIV	Individually fixed buttons/strips
NA	Not Applicable
SeeComment	To be used when a Tactile Ground Surface Indicator Type is not listed. The new Tactile Ground Surface Indicator Type is to be listed in the ' Comments ' field.
TILES	Tiles

Target Board Material

Code	Description
ABS	Acrylonitrile Butadiene Styrene
AL	Aluminium
NA	Not Applicable
PLASTIC	Plastic
PPAL	Polyester Powder coated Aluminium.
SeeComment	To be used when a Target Board Material is not listed. The new Target Board Material is to be listed in the ' Comments ' field.

Traffic Management Device Material

Code	Description
ABL	Asphalt – Black
ARD	Asphalt – Red
BITUMEN	Bitumen
BRK	Brick
BSTN	Bluestone
CCONC	Coloured Concrete
CONC	Concrete
CORK	Cork
EAGC	Exposed Aggregate Concrete
EARTH	Earth
GR	Grass
LNS	Landscape
NA	Not Applicable
NYL	Nylon
PLASTIC	Plastic
RUB	Rubber
SAND	Sand
SeeComment	To be used when a Traffic Management Device Material is not listed. The new Traffic Management Device Material is to be listed in the ' Comments ' field.
STEEL	Steel
TMBR	Timber

Traffic Management Type – Area

Code	Description
IP	Intersection Platform
MAPRON	Mountable Aprons
MS	Median strip
PR	Pedestrian Refuge (in splitter island)
RBT	Roundabout
RPAV	Raised pavement, raised pedestrian crossing
SB	Speed Bump, Speed Hump, Speed Cushion, Road Bump, Road Hump
SeeComment	To be used when a Traffic Management Type is not listed. The new Traffic Management Type is to be listed in the ' Comments ' field.
SI	Splitter island, traffic island

Traffic Management Type – Point

Code	Description
BOLLARD	Bollard used in traffic management
CHI	Chicane
PDC	Pedestrian Crossing
SCRS	School Crossings
SeeComment	To be used when a Traffic Management Type is not listed. The new Traffic Management Type is to be listed in the 'Comments' field.
T_BARRIER	Traffic Control Barrier

Tree Age

Code	Description
YN	Young – Recently planted
SM	Semi-mature – < 20% of life expectancy in situ
MA	Mature – 20-80% of life expectancy in situ
OM	Over-mature – > 80% of life expectancy in situ

Tree Height

Code	Description
1	< 5m
2	5m – 10m
3	10m – 15m
4	15m – 25m
5	> 25m

Tree Significance

Code	Description
HIS	Historical
CULT	Cultural
STSCP	Streetscape
LNS	Landscape
SCI	Scientific

Tree Plant Method

Code	Description
RM	Remnant
PL	Planted
SS	Self-Sown
UNK	Unknown

Unit of Measure Reference

Code	Description
AREA	Area
CM	Cubic metre
HA	Hectare
KILO	Kilogram
LM	Linear Metre
SCHEDULE	To be used when a schedule of rates is provided
SeeComment	To be used when a Unit of Measure is not listed. The new Unit of Measure is to be listed in the ' Comments ' field.
SQM	Square Metre

Visor Type

Code	Description
OPEN	Open
CLOSED	Closed
CUTAWAY	Cutaway
NA	Not Applicable
SeeComment	To be used when a Visor Type is not listed. The new Visor Type is to be listed in the ' Comments ' field.

4 R-Spec Document Control

Project Name	Road Reserve Module
Document Type	Specification
Document Number	RS-2019-0005
File Name	R-Spec DDS - Version 3.0.5 Final - Summary.docx
Version Date	31 st May 2019
Written by	Kerrie Cruickshank, Duncan Brooks and George Havakis
Reviewed by	George Havakis and Michael Wood
Authorised by	GISSA & R-Spec Technical Working Group

5 Document Revision History

Revision Number	Date	Comments
1.1	5 October 2007	Draft document to Victorian Technical Working Group
1.2	12 November 2007	Changes from Victorian Technical Working Group Meeting
1.3	28 April 2008	Changes from Victorian Technical Working Group Meeting
1.4	26 June 2008	Changes from Victorian Technical Working Group Meeting
1.5	25 November 2008	Changes from Victorian Technical Working Group Meeting
1.6	12 March 2009	Changes from Victorian Technical Working Group Meeting
1.7	7 May 2009	Changes from Victorian Technical Working Group Meeting
1.8	17 March 2010	Changes from Vic TWG and Public Comment
1.9	7 May 2010	Changes from Vic TWG and Public Comment
2.0	1 July 2010	Changes from Vic TWG and Public Comment
2.1	22 February 2011	Changes from WA TWG
2.1	14 July 2011	Changes and clarifications – input from industry and consortium
2.1	1 August 2011	Final published document
2.5	1 November 2014	Update with modifications and amendments
2.5.1	4 December 2014	Minor typographic errors fixed
2.6.0	11 November 2016	Reformatted to group graphical and attribute capture requirements per asset type Document number changed from AS-2008-0005
2.6.0	1 February 2017	Document date changed to coincide with release date NZVD2016 now height datum for NZ
2.6.0	11 April 2017	Updated Bass Coast logo
2.6.1 Draft v22	16 January 2018	Proposed changes and clarifications – input from industry and consortium members.
3.0.0	10 September 2018	Changes adopted and finalised
3.0.1	15 November 2018	Incorporate feedback from members
3.0.5	31 May 2019	Incorporating Addendums and other feedback from members

6 Summary of Specification Changes