Geographical Information System (GIS) Specifications for Engineering Surveys of Highways Department

Version 3.0

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September 2019

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Amendment History of the GIS Specifications for Engineering Surveys of Highways Department

Rev	Revision Details	Prepared by (LS)	Reviewed by (SLS)	Approved by (CLS)	Effective Date
1.0	Initial release	H.C. Tam	S.B. Chan	K.W. Ng	2.12.2013
2.0	Modification of the data specification of all inventories to align with the "HyD GIS Specification for Maintenance Term Contract 01/HY/2014"		H.C. Tam	S.B. Chan	24.8.2015
3.0	(i) The road inventory of gully sump, slope planter wall and special paving panel are removed to tally with road inventory of RDMS. (ii) The data requirements for tree are removed. User is required to follow the "Requirements for Handover of Vegetation to Highways Department" posted on the HyD website to prepare the GIS data. (iii) The accuracy requirements in Para. 2.4 are revised.	W.S. Au Yeung	S.L. Chan	K.F.Chang	6.9.2019

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DATA SPECIFICATIONS OF ROAD INVENTORY DATA OF HIGHWAYS DEPARTMENT .

Grating/Gully (Road Drain) . *6* .

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Catch Pit (Road Drain) . *11* .

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Noise Barrier . *53* .

Drop Kerb . *55* .

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General .

THIS DOCUMENT DESCRIBES THE

1 Foreword

Highways Department (HyD) has established an effective asset management framework for more than a decade. Under this framework, all the road asset information are stored and managed in a centralized database using the technology of Geographical Information System (GIS). By reviewing the ordinary as-built survey, we identify that many road inventory data such as gully grating, railing, road drains, etc. have already been measured in the as-built survey and can be further extracted out as road inventory data.

To effectively collect the road inventory data from newly built roads, HyD begins to include the requirement of collecting road inventory records in works contract. After the completion of road works contracts or handing over of new roads to HyD, the consultants/ contractors are required to submit the road inventory data according to this document - *GIS Specifications for Engineering Surveys of Highways Department*.

This document describes the types of road inventory data which can be extracted from as-built survey and converted into GIS data format. Apart from extracting the graphic element of CAD, some useful attribute information is required to be collected during the as-built survey in order to support the asset management purpose. The specification shall be read in conjunction with the "CAD Standard for Works Projects (CSWP)" issued by the Development Bureau and the "Drafting Specifications for Engineering Survey" issued by the Civil Engineering Development Department (CEDD).

The CAD Standards for Works Projects aims at aligning the Works Departments' CAD standards, setting standards for data exchange and provisions for basic requirements of CAD data management. The Drafting Specifications for Engineering Survey acts as the standard for coding ground features and provides guidance for field surveying and plan drafting in all Engineering Survey Offices of AFCD, CEDD, DSD, HyD, HD and WSD.

刪除:)

刪除: Department, Hong Kong Special Administrative Region Government (HyD) in support of the highway asset management

刪除: and covers road inventory data maintained by Highways Department

刪除: obtained by direct field surveying with references to the latest GIS Specification for Maintenance Term Contract. .
It

刪除: <#>Graphical data .

2 General Requirements

2.1 All newly built road inventory features described in this document within the project limit of the contract shall be collected.

2.2 The road inventory data shall be prepared using GIS software and stored in ESRI shape file format (.shp) or ESRI File Geodatabase format (.gdb), or other compatible GIS format agreed by HyD. The data structure and data type shall strictly follow the requirements in Section 3.

2.3 Each type of road inventory data described in Section 3 shall be stored in one single layer.

2.4 Graphical Data Requirements:

(i) Horizontal Datum

All inventory data shall be referenced to Hong Kong 1980 Geodetic Datum and presented in HK1980 Grid System.

(ii) Vertical Datum

The height information (if required) of features shall be referenced to Hong Kong Principal Datum.

(iii) Positioning Accuracy

All inventory data shall be collected according to the graphical descriptions of each feature. For road drains features described in Sections 3.1-3.4, the position accuracy of inventory data shall be within ± 0.05m in horizontal position and ± 0.02m in vertical height. (For other features, the position accuracy of inventory data shall be within ± 0.05m in horizontal position and ± 0.1m in vertical height.)

(iv) GIS Data Errors

a. For arc segment and curved line feature, it shall be converted and presented in a series of short chords.

b. All polylines must be cleaned topologically. (i.e. free from line self-intersect, overlapping with other line features, etc.)

2.5 Attribute data

(i) All inventory data attribute tables shall be filled up according to this specification.

(ii) All the date fields shall be in DD/MM/YYYY format.

(iii) Unique Feature Identifier

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刪除: positional accuracy

刪除: Co-ordinates

刪除: and

刪除: For polygon feature, all polygons

刪除: any dangle node, duplicate arcs, unclosed polygon, absence or duplicated polygon label, negative or null area values,

刪除: polygon,

刪除: <#>For linear feature, the alignment of the feature shall follow the actual alignment of the feature or parallel to the kerb alignment as appropriate.

Usually, smooth lines, either straight or curved (i.e. a series of short straight segments), shall be used in creating the line or polygon features.

Ground feature coding during field surveying and plan drafting of a road inventory data shall refer to the reference survey feature code used in the "Drafting Specifications for Engineering Survey".

刪除: and other data

刪除: <#>All the date fields shall be in 'Date' data type and in DD/MM/YYYY format.

The format of the identifiers for inventory shall adhere to this specification.

For all

刪除: <#>tables, all non-null fields (specified as "Yes" in the "Require" column)

刪除: <#>specifications

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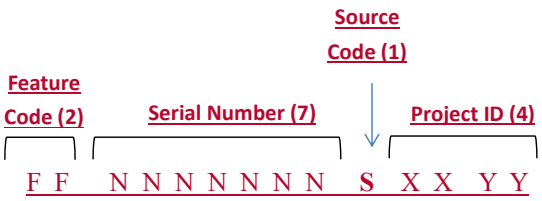
Common Fields

Survey

刪除: (SFID)

Each inventory record has a unique identifier (UID) which is 14-characters long and comprises four parts:



a. Feature Code (2 characters)

Each inventory feature is described by a 2-characters code. The feature code is mentioned in the data description of each inventory feature in Section 3.

b. Serial Number (7 digits)

Serial Number is a 7-digits sequential number assigned to each inventory record. This number shall not be repeated within each inventory feature layer.

c. Source Code (1 character)

Source code is used to identify the source of data within the departmental inventory database. "S" is assigned for all the data collected under this document.

d. Project ID (4 characters)

Project ID is a unique identifier assigned by Survey Division for each works contract/ project. The consultant/ contractor shall contact Land Surveyor/ Tech Unit, Survey Division of Highways Department to receive the project ID before preparation of any inventory data. The contact details may refer to Section 2.8 of this document. In assigning the Project ID, XX counts from 01 to 99. After that, it starts from 0A to ZZ. YY represents the last two characters of the year.

删除: The "SFID" field

删除: two parts, namely; Survey

删除: Type

删除: +

删除: with leading zero) e.g. MH0000012.

The table below shows several examples:

Year	XX	YY	Project ID
2019	01	19	0119
2019	99	19	9919
2019	0A	19	0A19
2019	ZZ	19	ZZ19
2020	01	20	0120
2020	12	20	1220

(iv) Level of Features

Roads are sometimes constructed in multiple levels. The attribute "LVL" is used to identify road features at different road levels. "LVL" is an integer with 2-digits in length. The reference domain code list is shown as below:

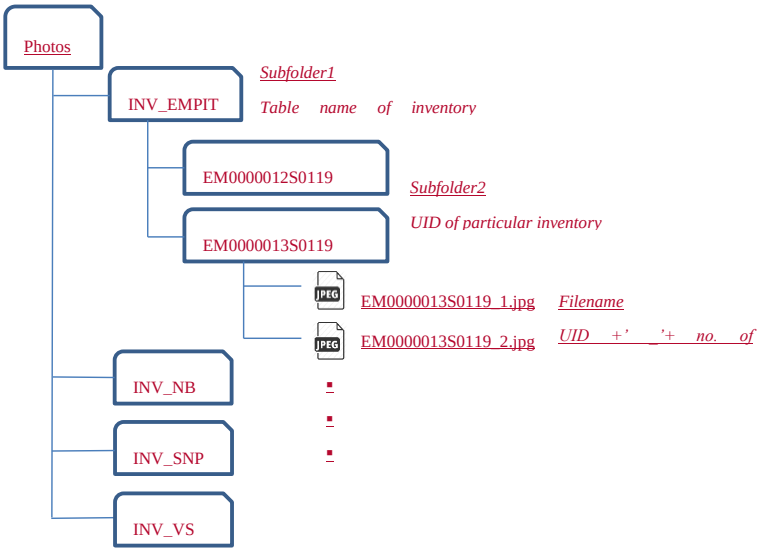
Code	Description
3	Level 3 bridge/flyover/structure above Level 2
2	Level 2 bridge/flyover/structure above Level 1
1	Level 1 bridge/flyover/structure above Ground Level
0	Ground Level
-1	Underground Level 1 subway/tunnel/structure below Ground Level
-2	Underground Level 2 subway/tunnel/structure below Underground Level 1
-3	Underground Level 3 subway/tunnel/structure below Underground Level 2

(v) Photos of Inventories

For E&M pit, noise barrier (at grade and not exceeding 3m high), street name plate and visitor sign, photos are required as supplementary information. The resolution of the photos shall be 1024 x 800 pixels and file size smaller than 1MB in jpeg format to save storage space. They shall be stored in a separate folder called "Photos".

The hierarchical requirements for sub-folders and filenames of the "Photos" folder are referred as below:

(vi) For more information, please refer to "Sample Reference of Highways Road Inventories" showing sample photos of different road inventories.



2.6 Quality Assurance

Spatial and attribute data shall be verified and validated periodically during the data entry. Data verification and data validation shall be performed to check whether spatial data matches with field situation and check the completeness and logical consistency of inventory data.

2.7 Data Delivery

Contractor/Consultant shall deliver the whole set of inventory data to the representatives of HyD (Survey) or Project Engineer in the handing over process. Files could be delivered on CD/ DVD or by e-mail.

2.8 Contact Information

For any enquiry and request for project ID, please contact:

Dept/Office: Highways Department , Survey Division
Title: Land Surveyor/Tech
Tel.: 3903-6685
Email: lstech.sur@hyd.gov.hk

刪除: Code

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刪除: P

3 Data Specifications of Road Inventory Data of Highways Department

3.1 Gully Grating (Road Drain)

3.1.1 Data Definition

(i) Gully Grating refers to the fixed frame of bar that covering the inlet openings of road drain.

(ii) Each grating is regarded as 1 record, irrespective of the existence of the gully below the grating.

3.1.2 Graphic Presentation

(i) Each grating is represented by a point which is defined as the centre of grating.

3.1.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

	Survey Feature Code in drafting specifications	Description(s)		
G1	Grating (1 pt.)			
G2	Grating (2 pts.)			

(i) In as-built survey, grating features are surveyed and represented by either G1 or G2.

(ii) If the feature code is G1, the position of grating in as-built survey can be directly adopted.

(iii) If the feature code is G2, the position of grating should be re-computed as the mid-point of the 2 surveyed points.

3.1.4 Attribute Table

Table Name: INV_GR

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
GR_UID (Primary Key)	Unique identifier of grating (e.g. GR0000001S0119)	Text	14			Feature Code: GR Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
GRAT_TYPE	Type of grating	Text	7			Refer to 3.1.5
GRAT_MAT	Type of grating material	Integer		1		1 – Metallic 2 – Compound materials
OVERFLOW	Kerb overflow weir exits	Text	1			Y – Yes N – No
GU_UNDER	Gully installed under the grating	Text	1			Y – Yes N – No # – Unknown

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刪除: Para. 1
刪除: PK
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刪除: .

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
ROTATION	Orientation of grating (Whole circle bearing of grating)	Double		10	1	To the nearest 10 degree
TOP_LEVEL	Level of the top of the grating in mPD	Float		5	2	
TRAP_INLET	Presence of Gully inlet trap	Text	1			Y – Yes N – No # – Unknown
TRAP_GULLY	Use of Trapped gully	Text	1			Y – Yes N – No # – Unknown
CONT_NO	Contract number of the construction works (e.g.03/CEDD/2016)	Text	50			
TIMESTAMP	Date of field survey	Date				Refer to 2.5 (ii)

3.1.5 Domain Value

GRAT_TYPE (Grating Type)

Domain Value	Description
GA1-450	Grating described in HyD Standard Drawings H3116, H3117 and H3118B
GA2-325	Grating described in HyD Standard Drawings H3119 and H3120
Other	Other non-standard grating

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刪除: type
刪除: cover…op of the grating in mPD .
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刪除: Number(…,2)
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3.2 Catch Pit (Road Drain)

3.2.1 Data Definition

(i) Catch pit refers to the concrete empty pit connected with inlet and outlet drain pipes.

(ii) Each catch pit is regarded as 1 record.

3.2.2 Graphic Presentation

(i) Catch pit is represented by a point and the point is defined as the centre location of catch pit.

3.2.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
CP1	Catch pit (1 pt.)
CP2	Catch pit (2 pts.)

(i) In as-built survey, catch pit features are surveyed and represented by either CP1 or CP2.

(ii) If the feature code is CP1, the position of catch pit in as-built survey could be directly adopted.

(iii) If the feature code is CP2, the position of catch pit should be re-computed as the mid-point of the 2 surveyed points.

3.2.4 Attribute Table

Table Name: INV_CP

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
CP_UID (Primary Key)	Unique identifier of catch pit (e.g. CP0000001S0119)	Text	14			Feature Code: CP Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
CONT_NO	Contract number of the construction works (e.g.03/CEDD/2016)	Text	50			
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

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3.3 Manhole (Road Drain)

3.3.1 Data Definition

(i) Manhole refers to the outer limit of the structure of the manhole.

(ii) Each manhole is regarded as 1 record.

3.3.2 Graphic Presentation

(i) Manhole is represented by a polygon.

3.3.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
MHS	Manhole structure

(i) In as-built survey, manhole structure features are surveyed and represented by MHS.

(ii) The position of manhole in as-built survey can be directly adopted.

3.3.4 Attribute Table

Table Name: INV_MH

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
MH_UID (Primary Key)	Unique identifier of manhole (e.g. MH0000001S0119)	Text	14			Feature Code: MH Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
MC_UID	Unique identifier of manhole cover	Text	14			Refer to 3.5.4
COVERLEVEL	Cover level of the manhole	Float		5	2	
CONT_NO	Contract number of the construction works (e.g.03/CEDD/2016)	Text	50			
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

删除: survey

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3.4 Connection Pipe, Drain and Channel (Road Drain)

3.4.1 Data Definition

1.Connection pipe refers to pipes connecting gullies under the carriageway.

2.Drain refers to cross road drains and carrier drains.

3.Channel refers to surface channels including covered channel, step channel, dish channel, u-channel, rectangular channel and trapezoidal channel positioned on footway and carriageway. Surface channels along the crest and toe of, or within, the slopes are **not** included in this category.

4.Each pipe, drain or channel is regarded as 1 record.

5.If a channel has 2 different directions of waterfall originating from the highest point, it shall be considered as 2 individual records.

3.4.2 Graphic Presentation

(i) Each pipe, drain or channel is represented by a line or a series of line segments.

(ii) Pipe, drain and channel should be drawn in sequence in accordance with the flow direction.

(iii) Unless the pipe, drain and channel are open-ended, they should be connected with other road drain features. Therefore, the ending and starting points of the line shall be drawn by snapping with other point drainage features such as catch pit, gully/grating, manhole cover, etc.

(iv) If the pipe, drain and channel are open-ended, the position of open end should be surveyed on ground.

(v) If the pipe, drain and channel are injected/ connected to other pipe features, the ending of pipe, drain and channel should be drawn until touching the alignment of injected/ connected pipe.

3.4.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
PP	Connection pipe or Carrier drain
DX, DC	Straight or Curved cross road drain
CX, CC	Straight or Curved dish channel, u-channel, rectangular channel, trapezoidal channel
SX, SC	Straight or Curved step channel

(i) In as-built survey, connection pipe features are surveyed and represented by PP; drain features are surveyed and represented by either DX or DC; and channel features are surveyed and represented by CX, CC, SX or SC.

(ii) The pipe, drain and channel shall be surveyed from the upstream end to downstream end.

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The spatial data type is line. .
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(iii) The position of pipe, drain and channel in as-built survey can be directly adopted.

3.4.4 Attribute Table

Table Name: INV_PIPE

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
PIPE_UID (Primary Key)	Unique identifier of pipe, drain and channel (e.g. PP0000001S0119)	Text	14			Feature Code: PP Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
TYPE	Type of the pipe	Integer		2		Refer to 3.4.5
DIAMETER	Internal nominal diameter of pipe or width of channel (mm)	Integer		4		
LENGTH	Length of pipe/ channel (m)	Float		5	2	
US_LEVEL	Invert level of the pipe/ channel at upstream end in mPD	Float		5	2	
DS_LEVEL	Invert level of the pipe/ channel at downstream end in mPD	Float		5	2	
CONT_NO	Contract number for the construction works (e.g. 03/CEDD/2016)	Text		50		
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

3.4.5 Domain Value

TYPE (Type of pipe)

Domain Value	Description
1	Connection pipe
2	Carrier drain
3	Cross road drain
8	Others
9	Surface Channel

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3.5 Manhole Cover

3.5.1 Data Definition

(i) Manhole cover refers to all covers of road drains include storm and foul water manhole maintained by HyD.

(ii) Each manhole cover is regarded as 1 record.

3.5.2 Graphic Presentation

(i) Each manhole cover is represented by 1 point and the point is defined as the centre of manhole cover.

3.5.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
MF	Foul water manhole cover (1 pt)
MS	Storm water manhole cover (1 pt)

(i) The position of manhole cover in as-built survey can be directly adopted.

3.5.4 Attribute Table

Table Name: INV_MC

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
MC_UID (Primary Key)	Unique identifier of Manhole Cover (e.g. MC0000001S0119)	Text	14			Feature Code: MC Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
MH_UID	Unique identifier of Manhole	Text	14			
MH_TYPE	Type of manhole	Integer	1			1 – Foul water 2 – Storm water

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删除: i
删除: MC0000001
删除: Yes
删除: Number(…)
删除: Para. 1…efer to 2.5 (ii
删除: .
删除: Type of manhole .
删除: Yes
删除儲存格
删除: Number(1)
删除儲存格
删除: Note (i)
删除儲存格
删除儲存格
插入儲存格
插入儲存格
插入儲存格
插入儲存格
插入儲存格
删除: manhole
删除: COVERLEVEL

COVER TYPE	Material type of cover	Integer	1			1 – Metallic cover 2 – Recessed cover 3 – Compound materials cover				
COVER SHAPE	Shape of cover	Text	1			C – Circular R – Rectangular S – Square				
DIM_COVERL	Nominal dimension of cover in mm - Diameter for circular shape - Side length for square shape - Longer side length for rectangular shape	Integer	4							
DIM_COVERW	Nominal shorter side length of rectangular cover in mm	Integer	4							
CONT_NO	Contract number for the construction (e.g.03/CEDD/2016)	Text	50							
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)				

删除: Type of cover .
删除: Yes
删除: Number(1)
删除: Note (ii)
删除儲存格
删除儲存格
删除儲存格
删除儲存格
插入儲存格
插入儲存格
插入儲存格
插入儲存格
插入儲存格
删除: Shape of cover .
删除: Yes
删除: Varchar2(1)
删除: Note (iii)
删除: Yes
删除儲存格
删除: Number(…)
插入儲存格
删除: Number(…)
删除: MAINT
删除: Yes
删除儲存格
删除: Varchar2(…0)
插入儲存格
插入儲存格
删除: or .
删除: PHOTOPATH
删除: Indicator for survey audit of the record (P)ass - the record
删除: Varchar2(1)
插入儲存格
删除: Para. 1…efer to 2.5 (iii
删除: AUDIT_DATE
删除: AUDIT_DATE

3.6 Pavement Polygon

3.6.1 Data Definition

(i) Pavement polygon refers to the pavements maintained by HyD.

(ii) Each pavement polygon is regarded as 1 record.

3.6.2 Graphic Presentation

(i) Pavement is represented by a polygon and each polygon is defined as the extent of the feature for recording its surface material type.

3.6.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
PX	Pavement polygon

(i) In as-built survey

(i) , pavement polygon are surveyed and represented by PX.

(ii) The position of pavement polygon in as-built survey can be directly adopted.

3.6.4 Attribute Table

Table Name: INV_PG

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
PG_UID (Primary Key)	Unique identifier of Pavement Polygon (e.g. PG0000001S0119)	Text	14			Feature Code: PG Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
FEAT_TYPE	Polygon feature type code	Integer		2		Refer to 3.6.5 (i)
SUR_TYPE_1	Primary surface material type of Pavement Polygon	Integer		2		Refer to 3.6.5 (ii)
SUR_TYPE_2	Secondary surface material type of Pavement Polygon	Integer		2		Refer to 3.6.5 (ii)
SUR_PROP	Proportion of primary surface material type of Pavement Polygon	Integer		1		Refer to 3.6.5 (iii)
PAVER_TYPE	Type of pavers	Text		1		Refer to 3.6.5 (iv)

刪除: Code
刪除: Sample Photo
刪除: Description
刪除儲存格
刪除: <物件> .
分節符號 (下一頁)
刪除: feature code used in the "Drafting Specifications for
刪除: polygon is formed by reference to the surveyed
刪除: Key
刪除: Require
合併儲存格
刪除儲存格
刪除: Remark
合併儲存格
合併儲存格
合併儲存格
刪除: type
刪除: Survey Feature Identifier…nique identifier of Pavement
刪除: SFID
刪除: Para. 1
刪除: PK
刪除: Yes
刪除: Varchar2(9)
插入儲存格
刪除: i
刪除: PG0000001
刪除: Yes
刪除: Number (…)
插入儲存格
刪除: Note
刪除: .
刪除: Yes
刪除: Number (…)
刪除: Note
刪除: .
刪除: Number (…)
刪除: Note
刪除: .
刪除: Yes
刪除: Number (…)
刪除: Note
刪除: .
刪除: .
刪除儲存格
刪除: .
刪除: .
插入儲存格
刪除: .
刪除: .

CONT_NO	Contract number for the construction works (e.g.03/CEDD/2016)	Text		50			
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)	

3.6.5 Domain Value

(i) FEAT_TYPE (Polygon Feature Type)

Domain Value	Description
1	Carriageway
2	Footway
3	Other
5	Cycle Track
6	Side/Back Lane
7	Run-in
8	Public Transport Interchange – Carriageway
9	Public Transport Interchange - Footway
23	Carpark - Carriageway
24	Carpark - Footway
31	Traffic Island – Refuge Island
32	Traffic Island – Other

(ii) SURF_TYPE_1 (Primary Surface Material Type) and SURF_TYPE_2 (Secondary Surface Material Type)

Domain Value	Description
1	Flexible (without Colour / Anti-skid Dressing)
2	Rigid (without Colour / Anti-skid Dressing)
3	Pavers
7	Flexible with Colour / Anti-skid Dressing
8	Rigid with Colour / Anti-skid Dressing
10	Works In Progress

(iii) SUR_PROP (Proportion of primary surface material type of Pavement)

Domain Value	Description
1	100%
2	Not less than 90% and less than 100%
3	Not less than 80% and less than 90%
4	Not less than 70% and less than 80%

刪除: Yes
刪除儲存格
刪除: Varchar2(
刪除:)
插入儲存格
插入儲存格
刪除: or maintenance
刪除: HY/2012/
刪除: PHOTOPATH
刪除: Indicator for survey audit of the record (P)ass - the record is audited with pass .
(F)ail – the record is audited with fail (N)o - the record is not
刪除: Varchar2(1)
插入儲存格
刪除: Para. 1
刪除: (iii
刪除: AUDIT_DATE
刪除: AUDIT_DATE
刪除: code list –
刪除: Code
刪除: Sample Photo(s)
刪除儲存格
刪除: .
刪除: .
刪除: .
刪除: .
刪除: Code
刪除: Sample Photo(s)
刪除儲存格
刪除: 1
刪除: Flexible (without Colour / Anti-skid Dressing)
刪除: .
刪除儲存格
刪除: 2
刪除: 2

5	Not less than 60% and less than 70%
6	Not less than 50% and less than 60%

(iv) PAVER_TYPE (Type of Pavers)

Domain Value	Description
G	Granite
A	Artificial Granite
R	Concrete
C	Clay
H	High Quality Concrete
E	Recycle[1]
M	Mixed Granite and Clay
N	Mixed Granite and Concrete
S	Concrete with recycled glass[2]

Notes:
1. containing recycled aggregates without recycled glass.
2. containing recycled aggregates with recycled glass.

刪除: ……分節符號 (下一頁)……

Domain code list –

刪除: Code

刪除: Sample Photo(s)

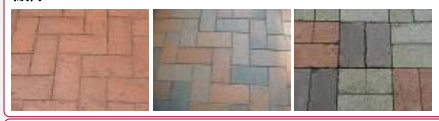
刪除儲存格

刪除:

刪除:

刪除:

刪除:



刪除: <#>Reference survey feature code used in the "Drafting Specifications for Engineering Survey"

Survey Feature Code

3.7 Non-Carriageway Pavement Centreline (NPC)

3.7.1 Data Definition

(i) Non-Carriageway Pavement Centreline covers Pavement Polygon (PP) of Footway, Carpark-Footway, Public Transport Interchange-Footway, Cycle Track, Side/Back Lane and Run-in. The purpose is to record the length of PP with respect to the type of surface material.

(ii) Each Non-Carriageway Pavement Centreline is regarded as 1 record.

3.7.2 Graphic Presentation

(i) Non-Carriageway Pavement Centreline is represented by a line and drawn along the centre alignment of PP.

(ii) Each NPC shall be drawn for each PP.

3.7.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
NPC	Non-Carriageway Pavement Centreline

3.7.4 Attribute Table

Table Name: INV_PL

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
PL_UID (Primary Key)	Unique identifier of Non-Carriageway Pavement Centreline (e.g. PL0000001S0119)	Text	14			Feature Code: PL Refer to 2.5 (iii)
PG_UID	Unique identifier of Pavement Polygon	Text	14			
CONT_NO	Contract number for the construction works (e.g.03/CEDD/2016)	Text	50			
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

删除: carriageway
删除: <#>General .
删除: <#>The spatial data type is line. .
删除: more or less …long the centre alignment and along the
删除: One…ach NPC shall be drawn for each PP.
删除: Key
删除儲存格
合併儲存格
删除: Require
删除: Remark
合併儲存格
删除: type
合併儲存格
合併儲存格
删除: Survey Feature Identifier…nique identifier of . Non-
删除: SFID
删除: Para. 1
删除: PK
删除: Yes
删除: Varchar2(9)
插入儲存格
删除: i
删除: PL0000001
删除: Survey Feature Identifier…nique identifier of Pavement
删除: _SFID
删除: PK
删除: Yes
删除: Varchar2(9)
删除: Para. 2.7
插入儲存格
删除: Yes
删除儲存格
删除: Varchar2(…0)
插入儲存格
删除: or maintenance
删除: HY/2012/
删除: SUB_DATE
删除: submission to HyD
删除: Yes
删除: Date
删除: .

3.8 E&M Pit

3.8.1 Data Definition

(i) E&M Pit refers to all types of E&M Pits maintained by HyD including ATC, E&M, TCSS and PL.

(ii) Each E&M Pit is regarded as 1 record.

3.8.2 Graphic Presentation

(i) E&M Pit is represented by a point and the point is defined as the cover centre of E&M Pit.

3.8.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
EM	E&M Pit (1 pt)

(i) In as-built survey, E&M Pit features are surveyed and represented by EI, EM or DP.

(ii) The position of E&M pit in as-built survey can be directly adopted.

3.8.4 Attribute Table

Table Name: INV_EMPIT

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
EM_UID (Primary Key)	Unique identifier of E&M Pit (e.g. EM0000001S0119)	Text	14			Feature Code: EM Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
EM_TYPE	Type of E&M pit	Integer		2		Refer to 3.8.5
DIM_COVERL	Length of cover (mm) e.g. 450	Integer		4		
DIM_COVERW	Width of cover (mm) e.g. 450	Integer		4		
CONT_NO	Contract number for the construction works (e.g.03/CEDD/2016)	Text	50			
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

删除: <#>General .
删除: feature includes
删除: The spatial data type
删除: . .
删除: the
删除: Key
删除儲存格
合併儲存格
删除: Require
删除: Remark
合併儲存格
删除: type
合併儲存格
合併儲存格
删除: Survey Feature Identifier
删除: SFID
删除: Para.1
删除: PK
删除: Yes
删除: Varchar2(9)
插入儲存格
删除: i
删除: EM0000001
删除: Para. 1
删除: Yes
删除: Number(…)
删除: .
删除: ii
删除: Yes
删除: Number (…)
删除: Note (i)
插入儲存格
删除: in
删除: Yes
删除: Number(…)
删除: in
删除: Yes
删除: Number(…)
删除: BEADREQUIR
删除: Yes
删除儲存格
删除: Varchar2(…0)
插入儲存格
插入儲存格
删除: .
删除: .
删除: .
删除: .
删除: .
插入儲存格

3.8.5 Domain Value

EM_TYPE (Type of E&M pit)

Domain Value	Description
1	E&M (Electrical and Mechanical)
2	ATC (Area Traffic Control)
3	TCSS (Traffic Control & Surveillance System)
4	PL (Public Lighting)
0	Other

3.8.6 Other Requirements

(i) Each E&M pit record should be associated with at least one photo for ease of identification on ground. The requirement on photo submission should be referred to Section 2.5 (v).

刪除: Notes : .

刪除: Code List –

刪除: Code

刪除: Sample Photo(s)

刪除儲存格

刪除: 1

刪除: E&M

刪除: .

.

刪除儲存格

3.9 Tree

The requirements of preparing GIS data for trees shall be referred to the prevailing version of "Requirements for Handover of Vegetation to Highways Department" which can be retrieved from the Highways Department Website.

3.10 Roadside Planter Wall

3.10.1 Data Definition

(i) Roadside planter wall refers to the planter wall built on roadside landscape area which is maintained by HyD.

(ii) Each discrete roadside planter wall is regarded as 1 record.

3.10.2 Graphic Presentation

(i) Each roadside planter wall is represented by a line, a series of line segments or a closed line segments and is defined as the outermost of the roadside planter wall.

3.10.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
RW	The outermost of the roadside planter wall

(i) The

(i) position of

(i) roadside planter wall in as-built survey can be directly adopted.

3.10.4 Attribute Table

Table Name: INV_RPW

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
RPW_UID (Primary Key)	Unique identifier of Roadside Planter Wall (e.g. RP0000001S0119)	Text	14			Feature Code: RP Refer to 2.5 (iii)
FEAT_TYPE	Type of roadside planter wall	Integer		2		Refer to 3.10.5
LENGTH	Graphical length of roadside planter (m)	Double		12	2	
CONT_NO	Contract number for the construction works (e.g.03/CEDD/2016)	Text	50			
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

刪除: 2
刪除: ATC
刪除: .
刪除儲存格
刪除: 3
刪除: TCSS
刪除: .
刪除: 4
刪除: 4
刪除: pit needs to be filled with polystyrene beads) .
刪除: the Highway Registered Slopes or within expressway
刪除: walls maintained by HyD. .
刪除: Key
合併儲存格
刪除: Require
刪除儲存格
刪除: Remark
合併儲存格
刪除: type
合併儲存格
合併儲存格
刪除: Survey Feature Identifier
刪除: Barrier or
刪除: SFID
刪除: Para. 1
刪除: PK
刪除: Yes
刪除: Varchar2(9)
插入儲存格
刪除: i
刪除: RP0000001
刪除: Feature type code .
刪除: Yes
刪除: Number (…)
刪除: Note (i)
插入儲存格
刪除: Yes
刪除: Number (…2,2)
刪除: (in .
刪除: Yes
刪除儲存格
刪除: .
插入儲存格
刪除: .
刪除: .
刪除: .
刪除: .
刪除: .
插入儲存格

3.10.5 Domain Value

FEAT_TYPE (Type of Roadside Planter Wall)

Domain Value	Description
1	Tile Surface
2	Granite Stone Pitched Surface
3	Concrete Surface
4	Washed Granolithic Surface
5	Other non-removable roadside planter walls retaining/enclosing planting area

刪除: Notes : .

刪除: code list –

刪除: (Feature

刪除: Code

刪除: Sample Photo(s)

刪除儲存格

刪除: .

刪除: ……分節符號 (下一頁)……

2

3.11 Tactile Paving

3.11.1 Data Definition

(i) Tactile paving refers to the textured indicator on pavement maintained by HyD.

(ii) Each discrete tactile paving is regarded as 1 record.

3.11.2 Graphic Presentation

(i) Each tactile paving is represented by a line and the line is defined as the centre line along the tactile paving.

3.11.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
TV	Tactile Paving

(i) The position of tactile paving in as-built survey can be adopted.

(ii) However, the alignment of tactile paving should be split into different segments/records according to the types of tactile paving

3.11.4 Attribute Table

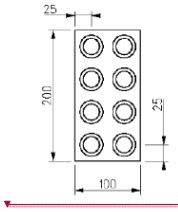
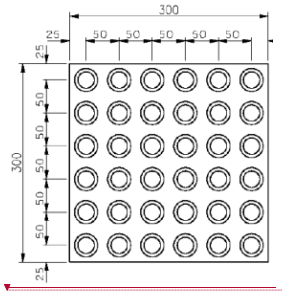
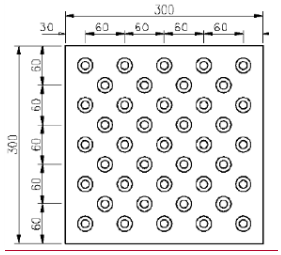
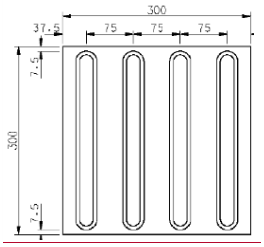
Table Name: INV_TP

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
TT_UID (Primary Key)	Unique identifier of Tactile Paving (e.g. TT0000001S0119)	Text	14			Feature Code: TT Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
TP_TYPE	Type of Tactile Paving	Text	4			Refer to 3.11.5 (i)
LOC_TYPE	Type of tactile paving location	Text	1			Refer to 3.11.5 (ii)
CONT_NO	Contract number for the construction works (e.g.03/CEDD/2016)	Text	50			
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

删除: <#>General .
删除: area
删除: The spatial data type
删除: . .
删除: Key
合併儲存格
删除: Require
刪除儲存格
删除: Remark
合併儲存格
合併儲存格
删除: type
合併儲存格
删除: Survey Feature Identifier
删除: SFID
删除: Para. 1
删除: PK
删除: Yes
删除: VarChar2(9)
插入儲存格
删除: i
删除: TT0000001
删除: Yes
删除: VarChar2(5)
插入儲存格
删除: Note
删除: MATERIAL
删除: Yes
刪除儲存格
删除: VarChar2(…)
删除: Note (iii)
插入儲存格
插入儲存格
删除: LVL
删除: Yes
刪除儲存格
删除: Varchar2(…0)
插入儲存格
插入儲存格
删除: or maintenance
删除: HY/2012/
删除: PHOTOPATH
删除: Indicator for survey audit of the record (P)ass - the record
删除: .
插入儲存格
删除: .
删除: .
删除: .

3.11.5 Domain Value

(i) TP_TYPE (Type of Tactile Paving)

Domain Value	Description	Preview
HWB	Hazard Warning Block	
HWTS	Hazard Warning Tile/Slab	
PTSB	Positional Tile/Slab/Block	
DTSB	Directional Tile/Slab/Block	
Note: Detail refers to Highways Deaprtment Drawing No.: H 5118C		

删除: .
Notes : .
.

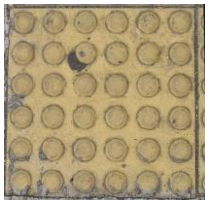
删除: code list –

删除: Code

删除: Sample Photo(s)

删除: .

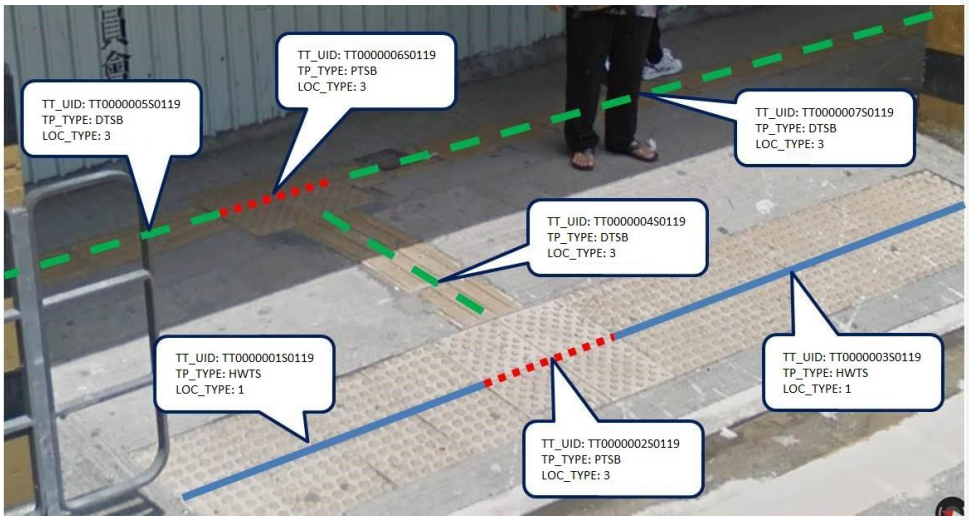
删除: .



(ii) LOC_TYPE (Type of Location for Tactile Paving)

Domain Value	Description
1	Warning Strip – Drop Kerb
2	Warning Strip – Other
3	Guide Path

3.11.6 Sample Records



刪除: PTSB

刪除: Positional Tile/Slab/Block

刪除: .

刪除儲存格

刪除: DTSB

刪除: DTSB

3.12 Railing

3.12.1 Data Definition

(i) Railing refers to the barriers positioned at the side of footway.

(ii) To align with the practise of as-built survey, only seven types of railings (Type I railing, Type II railing, Type III railing, Tubular Tailing, Amenities Railing, Ornamental Railing and Decorative Railing) are required to be collected in this specification.

(iii) Reference should be made to the Transport Planning and Design Manual (TPDM) and HyD standard drawings for more information on the feature.

3.12.2 Graphic Presentation

(i) The position of railing is represented by a line or a series of line segments and the line is defined as centre line of railing.

(ii) A railing feature is defined by the type of railing as an individual record. For example, 2 consecutive sections of Type 1 and Type 2 railings respectively will be considered as 2 records.

3.12.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
RX	Railing straight
RC	Railing curve
BOL	Bollard Railing

(i) The position of railing in as-built survey can be directly adopted.

(ii) However, the alignment of railing should be split into different segments/records according to the types of railing.

3.12.4 Attribute Table

Table Name: INV_RAIL

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
RAIL_UID (Primary Key)	Unique identifier of railing (e.g. RL0000001S0119)	Text	14			Feature Code: RL Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
RAIL_TYPE	Type of railing	Integer		2		Refer to 3.12.5
LENGTH	Graphical Length of railing (m)	Double		12	2	

删除: survey

删除: used

删除: the

删除: TV

删除: Tactile paving

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
CONT_NO	Contract number for the construction works (e.g.03/CEDD/2016)	Text	50			
TIME STAMP	Date of survey	Date				Refer to 2.5 (ii)

3.12.5 Domain Value

RAIL_TYPE (Type of Railing)

Domain Value	Description	Remark
1	Type 1 Railing	HyD Drawing No. H4107B
2	Type 2 Railing	HyD Drawing No. H2310G
3	Type 3 Railing	HyD Drawing No. H4116B
4	Tubular Railing	HyD Drawing No. H4103B
5	Amenities Railing	HyD Drawing No. H2135C
6	Ornamental Railing	HyD Drawing No. H4102B
7	Bollard and Rail	HyD Drawing No. H2139B
8	Hand Railing of Bus Shelter	
26	Decorative Railing	
27	Removable Railing	HyD Drawing No. H2259
28	Decorative Bollard	
9	Other Railing	

3.13 Crash Cushion

3.13.1 Data Definition

(i) Crash Cushion refers to is a type of barrier to reduce the damage to structures, vehicles, and motorists resulting from a motor vehicle collision, which is usually in front of the terminating blocks

(ii) The spatial data type is line.

(iii) It refers to the centre line along the traffic direction, drawing from the nosing to end of the crash cushion system.

3.13.2 Graphic Presentation

(i) Each crash cushion is represented by a line and the line is defined as the centre line along the traffic direction from the nosing to the end of crash cushion system.

3.13.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
CR	Crash cushion (1 line)

(i) The position of crush cushion in as-built survey can be directly adopted.

3.13.4 Attribute Table

Table Name: INV_CC

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
CC_UID (Primary Key)	Unique identifier of Crash Cushion (e.g. CC0000001S0119)	Text	14			Feature Code: CC Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
LENGTH	Graphical Length of crash cushion (m)	Double		12	2	
CONT_NO	Contract number for the construction or maintenance works (e.g.03/CEDD/2016)	Text	50			
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

3.14 Emergency Gate

3.14.1 Data Definition

(i) Emergency Gate refers to the emergency openings, including emergency crash gates, movable steel barrier, removable concrete barrier and EVA gate maintained by HyD.

3.14.2 Graphic Presentation

(i) Each discrete emergency gate is represented by 1 line and the line is defined as the centre line of the emergency gate.

(ii) For consecutive emergency gates, the line is defined as the centre line of the emergency gate(s) including the spacing between consecutive emergence gates.

3.14.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
EG	Emergency gate

(i) The position of emergency gate in as-built survey can be directly adopted.

3.14.4 Attribute Table

Table Name: INV_EG

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
EG_UID (Primary Key)	Unique identifier of emergency gate (e.g. EG0000001S0119)	Text	14			Feature Code: EG Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
EG_TYPE	Type of Emergency gate	Integer		2		Refer to 3.14.5
LENGTH	Graphical Length of Emergency gate (m)	Double		12	2	
CONT_NO	Contract number for the construction works (e.g.03/CEDD/2016)	Text	50			
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

3.14.5 Domain Value

EG_TYPE (Type of Emergency Gate)

Domain Value	Description	Remark
18	Emergency Crash Gate	HyD Drawing No. H2108B
29	Movable Steel Barrier	HyD Drawing No. H2273
30	Removable Concrete Barrier	HyD Drawing No. H2254, H2255, H2256
31	EVA Gate	HyD Drawing No. H2276A
32	Other Emergency Gate	

3.15 Noise Barrier (at grade and not exceeding 3m high)

3.15.1 Data Definition

(i) Noise a barrier refers to the obstructions built between the highway and the residential area along a highway that is at grade and do not exceeding 3m high.

3.15.2 Graphic Presentation

(i) Noise barrier is represented by 1 line and the line is defined as the centre alignment of the noise barrier at base level.

(ii) A noise barrier feature is defined by its types. For example, 2 consecutive sections of Reflective and Mixed type Noise Barriers will be considered as 2 records.

3.15.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
NX	Noise Barrier Straight
NC	Noise Barrier Curve

(i) The position of noise barrier in as-built survey can be directly adopted.

(ii) However, the alignment of noise barrier should be split into different segments/records according to the types of noise barrier.

3.15.4 Attribute Table

Table Name: INV_NB

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
NB_UID (Primary Key)	Unique identifier of noise barrier (e.g. NB0000001S0119)	Text	14			Feature Code: NB Refer to 2.5 (iii)
NB_TYPE	Type of noise barrier	Integer		2		Refer to 3.15.5
LENGTH	Graphical Length of noise barrier (m)	Double		12	2	
CONT_NO	Contract number for the construction works (e.g.03/CEDD/2016)	Text	50			
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

3.15.5 Domain Value

NB_TYPE (Type of Noise Barrier)

Domain Value	Description	Remark
1	Reflective (transparent and non-transparent)	Refer to "Guidelines on Design of Design of Noise Barriers"
2	Absorptive (sound absorbent materials and possible finishes of absorptive panels)	
3	Earth landscape mound and retaining structures	
4	Mixed (a combination of the above types)	

3.15.6 Other Requirements

(i) Each noise barrier record should be associated with at least one photo for ease of identification on ground. The requirement on photo submission should be referred to Section 2.5 (v).

3.16 Drop Kerb

3.16.1 Data Definition

(i) A drop kerb is a ramp built on a footpath, pavement or refuge island to accommodate the change in level towards vehicular areas which is usually provided at pedestrian crossing and at each end of the footpath of a private street or access road.

(ii) It includes, but not limited to, all types of drop kerbs maintained by HyD.

(iii) Each drop kerb is regarded as 1 record.

3.16.2 Graphic Presentation

(i) Each drop kerb is represented by 1 line and the line is defined as the extent of the drop kerb along the kerb line of footway, pavement or Refuge Island.

3.16.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
DK	Drop Kerb

(i) The position of drop kerb in as-built survey can be directly adopted.

3.16.4 Attribute Table

Table Name: INV_DK

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
DK_UID (Primary Key)	Unique identifier of Drop Kerb (e.g. DK0000001S0119)	Text	14			Feature Code: DK Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
CONT_NO	Contract number for the construction works (e.g.03/CEDD/2016)	Text		5		
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

3.17 Barrier Fence

3.17.1 Data Definition

(i) Barrier Fence refers to the bar passage located at the side of carriageway, including all types of beam barrier, parapet and concrete profile barrier.

(ii) Reference can be made to the Transport Planning and Design Manual (TPDM) and HyD standard drawings for more information on the feature.

(iii) Each barrier fence is regarded as 1 record. Two consecutive sections of different types of barrier fence will be considered as 2 records.

3.17.2 Graphic Presentation

(i) The position of the barrier fence is represented by a line or a series of line segements which is defined as the center line of the barrier fence.

3.17.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
BK	Barrier Fence
FX, FC	Fence (straight, curve)

(i) The position of barrier fence in as-built survey can be directly adopted.

3.17.4 Attribute Table

Table Name: INV_BF

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
BF_UID (Primary Key)	Unique identifier of Barrier Fence (e.g. BF0000001S0119)	Text	14			Feature Code: BF Refer to 2.5 (iii)
BARR_TYPE	Type of Barrier Fence	Integer		2		
LENGTH	Graphical length of railing (m)	Double	12	2		
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
CONT_NO	Contract number for the construction works (e.g.03/CEDD/2016)	Text		5		
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

3.17.5 Domain Value

BARR_TYPE (Type of Barrier Fence)

Domain Value	Description	Remark
10	Concrete Profile Barrier	HyD Drawing No. H2101C, H2102A, H2103, H2104/1A, H2014/2A, H2105/1A, H2015/2, H2106A
11	Barrier for Central Dividing Strips	HyD Drawing No.H2109, H2110, H2111
13	Untensioned Corrugated Beam Barrier	HyD Drawing No.H2113A, H2114B
14	Thrie Beam Barrier	HyD Drawing No. H2190, H2191A, H2192A, H2193B, H2194A, H2195B, H2196, H2197
15	Parapet	HyD Drawing No. H2152, H2153, H2154, H2155B, H2156
16	Fence	
20	Stand Alone Traffic Lane Dividing Granite Kerb	
21	Stand Alone Traffic Lane DividingConcrete Kerb	
22	Stand Alone Traffic Lane DividingRubber Kerb	
24	Traffic Cylinder	
25	Others Barrier	

3.18 Street Name Plate

3.18.1 Data Definition

(i) Street name plate refers to the plate showing the road/street name maintained by HyD.

(ii) Each street name plate is regarded as 1 record. For a post with 2 facing plates, they are regareded as 2 records.

(iii) Coloured street name plates and street name plates mounted with other traffic sign in a multiple sign post manner are included under the Street Name Plate inventory.

(iv) Reference should also be made to Highways Standard Drawings and Guidance Notes on "Installation of New Street Name Plates Inscribed with Building Numbers" (RD/GN031B) for more information on the feature.

3.18.2 Graphic Presentation

(i) Each street name plate is represented by a point and the point is defined as the position of a single post support or the midpoint of the multiple posts support.

3.18.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
SNP	Street Name Plate

(i) For street name plate with single post support, the position of street name plate in as-built survey can be directly adopted.

(ii) For street name plate with multiple posts support, the position of street name plate in as-built survey should be re-computed as the mid-points of the surveyed points.

3.18.4 Attribute Table

Table Name: INV_SNP

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
SNP_UID (Primary Key)	Unique identifier of street name plate (e.g. SN00000001S0119)	Text	15			Feature Code: SNP Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
ROAD_NAME	Street Name	Text	50			
POST_DIA	External nominal diameter of post (mm)	Integer		3		Input "0" in case the post diameter is not applicable, eg. wall mount, sign gantry etc

删除: <#>General .
The feature covers all form of
删除: plates, with or without building numbers,
删除: <#>The spatial data type is point. .
删除: Key
删除: Require
删除儲存格
删除: Remark
合併儲存格
合併儲存格
合併儲存格
合併儲存格
删除: Survey Feature Identifier
删除: SFID
删除: Para. 1
删除: PK
删除: Yes
删除: Varchar2(9)
插入儲存格
删除: i
删除: SN0000001
删除: Yes
删除: Number (…)
删除: Para. 1…efer to 2.5 (ii
删除: .
e.g. -3/-2/-1/0/1/2/3
删除: Yes
删除儲存格
删除: Varchar2(…0)
插入儲存格
删除: Yes
删除: Number (…)
删除: (in

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
ACT_LENGTH	Measured length of SNP (mm) e.g. 820	Integer		4		
ACT_HEIGHT	Measured height above ground at the middle of the plate bottom (mm) e.g. 2100	Integer		4		
MOUNT_TYPE	Type of mounting e.g. A2	Text	2			Refer to 3.18.5
FACE_TYPE	Face type	Text	1			(C) - Facing Carriageway (F) - Facing Footway (B) - Facing Both Carriageway and Footway
COLOUR	Colour type	Integer		2		Refer to 3.18.5
ARROW	Actual number of arrow per face	Text	1			(0) - No arrow (L) - Left arrow only (R) - Right arrow only (2) - Both left & right arrows
BLDG_NO_L	Building number displayed on left of the carriageway/footway-facing plate	Text	2			If no building number is found on the plate, null value can be assigned.
BLDG_NO_R	Building number displayed on right of the carriageway/footway-facing plate	Text	2			Reference can be made to HyD standard drawing No.
ROTATION	Orientation of SNP (Whole circle bearing of sign face facing north is zero degree)	Double		10	1	To the nearest 10 degree e.g 130.0
CONT_NO	Contract number of the construction works (e.g.03/CED D/2016)	Text	50			

删除: Key
删除: Require
合併儲存格
删除: Remark
刪除儲存格
合併儲存格
合併儲存格
合併儲存格
删除: (in
删除: Yes
删除: Number (…)
插入儲存格
删除: Yes
删除: Number (…)
删除: (in
删除: PLATE_ADDR
删除: Yes
刪除儲存格
删除: Varchar2(…)
删除: Note (i)
插入儲存格
插入儲存格
删除: Face type .
刪除儲存格
删除: Yes
刪除儲存格
删除: Varchar2(1)
刪除儲存格
刪除儲存格
删除: =
插入儲存格
插入儲存格
插入儲存格
插入儲存格
删除: =
删除: .
删除: Number (…)
删除: Note (ii)
插入儲存格
删除: Actual number of arrow per face …0=
刪除儲存格
删除: Yes
刪除儲存格
删除: Varchar2(1)
刪除儲存格
刪除儲存格
删除: =
插入儲存格
删除: =
插入儲存格
插入儲存格
插入儲存格
插入儲存格

TIMESTAMP	Date of field survey	Date				Refer to 2.5 (ii)

3.18.5 Domain Value

MOUNT_TYPE (Type of mounting)

Domain Value	Description
A1	Self Mount
A2	Self Mount on Tubular Railing
A3	Mounting on Tubular Railing
A4	Wall Mount (not T shaped)
A5	Mounting on Ornamental Railing
A6	Mounting on Type 2 Railing
A7	Wall Mount (T-Shape)
B1	New support, centre-mounted
B2	Multi-sign support, centre-mounted
B3	New support, cantilever-mounted
B4	Multi-sign support, cantilever-mounted
O	Others

COLOUR (Colour of the Text on Street Name Plate)

Domain Value	Description
0	Black
1	Forest Green
2	Cardinal Red
3	Burgandy
4	Deep Mahogany Brown
5	Dark Green
6	Russet Brown
7	Bottle Green
8	Others

3.18.6 Other Requirements

(i) Each street name plate record should be associated with at least one photo

(i) for ease of identification on ground. The requirement on photo submission should be

(i) referred to Section 2.5 (v).

刪除: the carriageway-facing plate .
(If FACE_TYPE = "F", number on footway facing plate will be used)

刪除儲存格

刪除儲存格

刪除儲存格

刪除儲存格

刪除: OLD_PLATE ...

刪除: OLD_PLATE ...

刪除: .
Domain code list –

刪除: Code

刪除: .
The rotation of the SNP feature is defined as the clockwise angle from true north (i.e. whole circle bearing) to the sign face of SNP to the nearest 10 degree. A SNP facing north would mean that rotation is 90 degree .
Photo file

刪除: prepared in .pdf format. The filename for the

刪除: file shall adopt the SNP_SID. .
.
Reference survey feature code used in the "Drafting Specifications for Engineering Survey" .
.
Survey Feature Code ...

刪除: made to the Transport Planning and Design Manual (TPDM), Transport Department's drawings series CT174/51-1, CT174/51-2 and CT174/51-3, TD drawings on individual traffic sign and Digitized Traffic Aids Drawing Standard for more information on the feature. .
A traffic sign feature is defined by its sign type. If there is more than one sign or type of sign (e.g. traffic sign and directional sign) on a signpost(s), a separate inventory for each sign is required. .
The spatial data type is point. . ...

刪除: for the domain value of TS_CODE. For non-standard directional sign where TS_CODE is not available, TS_CODE ...

刪除: 分節符號 (下一頁)
. ...

3.19 Visitor Sign

3.19.1 Data Definition

(i) Visitor sign refers to the sign erected at the footway to give instructions to the pedestrians.

(ii) Each visitor sign is regarded as 1 record, irrespective of the number of visitor sign plates.

3.19.2 Graphic Presentation

(i) Each visitor sign is represented by a point and the point is defined as the center location of the sign post.

3.19.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
VS	Visitor sign post (1pt)

(i) The position of visitor sign in as-built survey can be directly adopted.

3.19.4 Attribute Table

Table Name: INV_VS

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
VS_UID (Primary Key)	Unique identifier of Visitor Sign (e.g. VS0000001S0119)	Text	14			Feature Code: VS Refer to 2.5 (iii)
LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
CONT_NO	Contract number for the construction works (e.g.03/CEDD/2016)	Text		5		
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

3.19.5 Other Requirements

(i) Each visitor sign record should be associated with at least one photo for ease of identification on ground. The requirement on photo submission should be referred to Section 2.5 (v).

刪除: <#>General .
刪除: position of
刪除: Key
合併儲存格
刪除: Require
刪除儲存格
刪除: Remark
合併儲存格
刪除: type
合併儲存格
合併儲存格
刪除: Survey Feature Identifier of visitor sign .
刪除: SFID
刪除: Para. 1
刪除: PK
刪除: Yes
刪除: Varchar2(9)
插入儲存格
刪除: i
刪除: VS0000001
刪除: Yes
刪除: Number(…)
刪除: Para. 1…efer to 2.5 (ii
刪除: .
刪除: PHOTO_FILE
刪除: or maintenance
刪除: Yes
刪除: Varchar2(50)
插入儲存格
刪除: HY/2012/
刪除: TIMESTAMP
刪除: Indicator for survey audit of the record (P)ass - the record
刪除: Varchar2(1)
插入儲存格
刪除: Para. 1…efer to 2.5 (iii
刪除: AUDIT_DATE
刪除: AUDIT_DATE
刪除: .

3.20 Traffic Sign

3.20.1 Data Definition

(i) Traffic sign refers to the sign post erected at the side of carriageway including traffic signs, directional signs and tunnel signs maintained by HyD.

(ii) Each traffic sign plate on a traffic sign post is regarded as 1 record. If a traffic sign post has 2 traffic sign plates, they are regarded as 2 individual records and referred to the same sign post number.

3.20.2 Graphic Presentation

(i) Each traffic sign plate is represented by a point and the point is defined as the position of the traffic sign post.

(ii) For large traffic signs with multiple posts support, the position of traffic sign should be re-computed as the mid-point of the the sign posts.

3.20.3 Reference feature code(s) in "Drafting Specifications for Engineering Survey"

Survey Feature Code in drafting specifications	Description(s)
SP	Traffic sign (1pt)
BB	Directional sign (2pts)
ECM	Strategic route chainage marker (1pt)
TCM	Tunnel chainage marker (1pt)

(i) For traffic sign with a single support, the position of traffic sign in as-built survey can be directly adopted.

(ii) For traffic sign with multiple supports, the position of traffic sign in as-built survey should be re-computed as the mid-points of the surveyed points.

3.20.4 Attribute Table

Table Name: INV_TS

Field Name	Description	Data Type	Data Type Properties			Domain Value/ Remarks
			Length	Precision	Scale	
TP_UID (Primary Key)	Unique identifier of Traffic Sign Plate (e.g. TP0000001S0119)	Text	14			Feature Code: TP Refer to 2.5 (iii)
TS_UID	Unique identifier of Traffic Sign Post (e.g. TS0000001S0119)	Text	14			Feature Code: TS Refer to 2.5 (iii)

刪除: VS
刪除: Visitor
刪除: post
刪除: 分節符號 (下一頁)
刪除: feature.
刪除: concrete profile barrier and beam barrier will
刪除: considered as 2 Barrier Fence features.
刪除: centre line
刪除: barrier fence
刪除: _BF
刪除: Key
合併儲存格
刪除: Require
刪除儲存格
刪除: Remark
合併儲存格
刪除: type
合併儲存格
合併儲存格
刪除: Survey Feature Identifier of barrier fences
刪除: SFID
刪除: Para. 1
刪除: PK
刪除: Yes
刪除: Varchar2(9)
插入儲存格
刪除: i
刪除: BF0000001
刪除: Type of Barrier Fences
插入儲存格
刪除: BARR_TYPE
刪除: Yes
刪除: Number(2)
刪除: Note (i)
刪除: LENGTH

LVL	Level of features from ground	Integer		2		Refer to 2.5 (iv)
TS_CODE	Directional Sign Code or Traffic sign code (TD)	Text	50			
SIGN_TYPE	Type of sign	Integer		2		1 - Traffic sign plate 2 - Directional sign plate
DIRECTION	Orientation of traffic sign (Whole circle beaing of traffic sign facing carriageway)	Double		10	1	To the nearest 10 degree e.g 130.0
ROUTE_NO	Strategic Route Number (For chainage marker only)	Integer		2		
CHAINAGE	Chainage (in km) (For chainage marker only)	Double		5	3	
BOUND	Traffic Bound (For chainage marker only)	Text	2			NB - North Bound SB - South Bound EB - East Bound WB - West Bound
TYPE	Type of plate (For chainage marker only)	Integer		1		1 - km interval (850x700) 2 - 0.1km interval (425x325) 3 - 0.1km interval (325x175)
MOUNTING	Mounting Type (For chainage marker only)	Integer		1		1 - Pole 2 - Side of profile barrier 3 - Side of Beam barrier
CONT_NO	Contract number for the construction works (e.g.03/CEDD/2016)	Text		5		
TIMESTAMP	Date of survey	Date				Refer to 2.5 (ii)

刪除: Yes

刪除: Number(

刪除:)

插入儲存格

刪除: Para. 1

刪除: (ii

刪除: .

e.g.-3/-2/-1/0/1/2/3

刪除: or maintenance

刪除: Yes

刪除: Varchar2(50)

插入儲存格

刪除: HY/2012/

刪除: PHOTOPATH ...

刪除: Indicator for survey audit of the record (P)ass - the record is audited with pass (F)ail – the record is audited with fail . (N)o - the record is not audited

刪除: Varchar2(1)

插入儲存格

刪除: Para. 1

刪除: (iii

刪除: AUDIT_DATE ...

刪除: AUDIT_DATE ...

刪除: Notes : .

Domain code list – BARR_TYPE (Type of Barrier Fences) .

Code ...