

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

**Version 1.0**

**December 2013**

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

<b>Rev</b>	<b>Revision Details</b>	<b>Prepared by (LS)</b>	<b>Reviewed by (SLS)</b>	<b>Approved by (CLS)</b>	<b>Effective Date</b>
1.0	Initial release	H.C. Tam	S.B. Chan	K.W. Ng	2.12.2013

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### 1. General

- 1.1 This document describes the GIS Specifications for Engineering Surveys in Highways Department, Hong Kong Special Administrative Region Government (HyD) in support of the highway asset management of road inventory data and covers road inventory data maintained by Highways Department which can be obtained by direct field surveying.
- 1.2 It 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.
- 1.3 Graphical data
- (i) All the features shall be surveyed within the positional accuracy requirements in Hong Kong 1980 Grid Co-ordinates Datum and Hong Kong Principal Datum.
  - (ii) For polygon feature, all polygons must be cleaned topologically. (i.e. free from any dangle node, duplicate arcs, unclosed polygon, absence or duplicated polygon label, negative or null area values, overlapping polygon, etc.)
  - (iii) For linear feature, the alignment of the feature shall follow the actual alignment of the feature or parallel to the kerb alignment as appropriate.
  - (iv) 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.
  - (v) Ground feature coding during field surveying and plan drafting of a road inventory data shall refer to the supplementary notes to the “Drafting Specifications for Engineering Survey” of its corresponding section. Survey feature codes used by HyD only are shown in red with bold italic type (***RED***).
- 1.4 Attribute data and other data
- (i) All the date fields shall be in ‘Date’ data type and in DD/MM/YYYY format.
  - (ii) The format of the identifiers for inventory shall adhere to this specification.
  - (iii) For all inventory data attribute tables, all non-null fields (specified as “Yes” in the “Require” column) shall be filled up according to this specifications.
- 1.5 Survey Feature Identifiers (SFID)
- The SFID comprises two parts, namely; Feature Type (2/3 characters) + Serial Number (7 digits with leading zero) e.g. MH0000012.

## GIS Specifications for Engineering Surveys of Highways Department

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Survey Feature Type (e.g. MH = manhole)	Serial Number (Serial Number with leading zero; totally 7 digits) (e.g. 0000012)
F F	N N N N N N N

### 1.6 Domain Code List – LVL (Level of feature from ground)

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

### 1.7 The GIS data shall be in ESRI Shape File format or ArcGIS 10.1 File Geodatabase format for facilitating direct upload to the Road Data Maintenance System (RDMS) of HyD.

### 2. Data Specifications of Road Inventory Data of Highways Department

#### 2.1 Grating (Road Drain)

##### 2.1.1 General

- (i) The spatial data type is point, irrespective of the existence of the gully below the grating.
- (ii) It refers to the centre location of the cover of grating.

##### 2.1.2 Attribute Table

Table Name: INV\_GR

Field Name	Description	Key	Require	Data type	Remark
GR_SFID	Survey Feature Identifier of grating/gully e.g. GR0000001	PK	Yes	Varchar2(9)	
LVL	Level of features from ground e.g.-3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
GRAT_TYPE	Grating Type e.g. GA1-450 GA1-325 Others		Yes	Varchar2(7)	
OVERFLOW	Overflow weir exist e.g. Yes, No, Unknown		Yes	Varchar2(7)	
GU_UNDER	Gully exist under the grating e.g. Yes, No, Unknown		Yes	Varchar2(7)	
TOP_LEVEL	Level of the top of the grating in mPD e.g. 132.53		Yes	Number(5,2)	
TRAP_INLET	Presence of Gully inlet trap (Y)es – presence of inlet trap (N)o – absence of inlet trap (U)nkown		Yes	Varchar2(1)	
TRAP_GULLY	Trapped gully (Y)es – as in Highways Department Standard Drawing No. H3110A (N)o – the gully is not a trapped gully (U)nkown		Yes	Varchar2(1)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

Domain Code List – TRAP\_INLET (Presence of Gully inlet trap)

Code	Description
Y	Present of inlet trap
N	Absence of inlet trap
U	Unknown

### Domain Code List – TRAP\_GULLY (Trapped gully)

Code	Description
Y	The gully is a trapped gully
N	The gully is not a trapped gully
U	Unknown

### 2.1.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
G1	Refer to the latest version of the “Drafting Specifications for Engineering Survey”.		
G2	Refer to the latest version of the “Drafting Specifications for Engineering Survey”.		

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### 2.2 Gully Sump (Road Drain)

#### 2.2.1 General

- (i) The spatial data type is point.
- (ii) It refers to the centre location of the cover of a Gully that serves the drainage from more than 1 grating.

#### 2.2.2 Attribute Table

Table Name: INV\_GS

Field Name	Description	Key	Require	Data type	Remark
GS_SFID	Survey Feature Identifier of gully sump e.g. GS0000001	PK	Yes	Varchar(9)	
LVL	Level of features from ground e.g.-3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
COVERLEVEL	Level of the cover in mPD e.g. 132.53		Yes	Number(5,2)	
COVERSHAPE	Shape of cover e.g. C-Circular, R-Rectangular		Yes	Varchar2(1)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

#### 2.2.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
GU	Refer to the latest version of the “Drafting Specifications for Engineering Survey”.		



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### 2.3 Catch Pit

#### 2.3.1 General

- (i) The spatial data type is point.
- (ii) It refers to the centre location of the catch pitch located at the roadside.

#### 2.3.2 Attribute Table

Table Name: INV\_CP

Field Name	Description	Key	Require	Data type	Remark
CP_SFID	Survey Feature Identifier of catch pit e.g. CP0000001	PK	Yes	Varchar(9)	
LVL	Level of features from ground e.g.-3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
CP_NO	Regional CP number (as shown on site) e.g. P123			Varchar2(10)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

#### 2.3.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
CP1	Refer to the latest version of the “Drafting Specifications for Engineering Survey”.		

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### 2.4 Manhole

#### 2.4.1 General


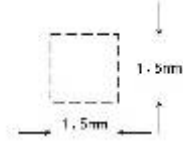
- (i) The spatial data type is point.
- (ii) It refers to the location of the centroid structure of the manhole.

#### 2.4.2 Attribute Table

Table Name: INV\_MH

Field Name	Description	Key	Require	Data type	Remark
MH_SFID	Survey Feature Identifier of manhole e.g. MH0000001	PK	Yes	Varchar(9)	
LVL	Level of features from ground e.g. -3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
MC_SFID	Survey Feature Identifier of manhole cover e.g. MC0000001		Yes	Varchar(9)	Para. 2.6
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

#### 2.4.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
<b>MHS</b>	The centroid of the storm water manhole structure shall be surveyed and shown by the symbol as illustrated to the right. Level is normally not shown.		806
<b>MHF</b>	The centroid of the foul water manhole structure shall be surveyed and shown by the symbol as illustrated to the right. Level is normally not shown.		806

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### 2.5 Pipe, Drain and Channel

#### 2.5.1 General

- (i) The spatial data type is line.
- (ii) It refers to the centre line of the pipe, drain and channel features.

#### 2.5.2 Attribute Table

Table Name: INV\_PIPE

Field Name	Description	Key	Require	Data type	Remark
PP_SFID	Survey Feature Identifier of pipe, drain and channel e.g. PP0000001	PK	Yes	Varchar2(9)	
LVL	Level of features from ground e.g.-3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
TYPE	Type of the pipe (1) - Connection pipe (2) - Carrier drain, (3) – Cross road drain (including CP outfall) (8) - Others (9) – Surface Channel		Yes	Number(2)	
DIAMETER	Internal nominal diameter of the pipe in mm			Number (4)	Nominal Diameter or height shall be entered
HEIGHT	Internal height of pipe in mm			Number (4)	
WIDTH	Internal width of pipe in mm			Number (4)	
LENGTH	Length of pipe in m		Yes	Number (5,2)	
US_LEVEL	Invert level of the pipe at upstream end in mPD		Yes	Number (15,3)	
DS_LEVEL	Invert level of the pipe at downstream end in mPD		Yes	Number (15,3)	
CADDWG_REF	CAD drawing reference no. e.g. Plan No.		Yes	Varchar2 (50)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

#### 2.5.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
PP	Connection pipe refers to a pipe that is connected to a gully/grating.  Refer to the latest version of the “Drafting Specifications for Engineering Survey”.		

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DX	<p>Cross road drain refers to pipe/drain that conveys water across a road.</p> <p>Refer to the latest version of the “Drafting Specifications for Engineering Survey”.</p>		
DC, DX	<p>Carrier drain refers to a pipe other than connection pipe and cross road drain.</p> <p>Refer to the latest version of the “Drafting Specifications for Engineering Survey”.</p>		
CC, CX SC, SX	<p>Surface channel refers to dish channel, u-channel, rectangular channel, trapezoidal channel and step channel.</p> <p>Refer to the latest version of the “Drafting Specifications for Engineering Survey”.</p>		

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### 2.6 Manhole Cover

#### 2.6.1 General

- (i) This manhole cover feature includes all drainage manhole covers on Highways Polygon or within the project limit of the contract.
- (ii) The spatial data type is point.
- (iii) It refers to the centre location of the manhole cover.

#### 2.6.2 Attribute Table

Table Name: INV\_MC

Field Name	Description	Key	Require	Data type	Remark
MC_SFID	Survey Feature Identifier of Manhole Cover e.g. MC0000001	PK	Yes	Varchar2(9)	
LVL	Level of features from ground e.g.-3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
MH_TYPE	Type of manhole (1) – Foul water manhole (2) – Storm water manhole		Yes	Number(1)	
COVERLEVEL	Cover level of the manhole in mPD e.g. 132.32		Yes	Number(5,2)	
COVERTYPE	Type of cover (1) – Metallic cover (2) – Recessed cover		Yes	Number(1)	
COVERSHAPE	Shape of cover (C) – Circular (R) – Rectangular (S) – Square		Yes	Varchar2(1)	
DIM_COVERL	Nominal dimension of cover in mm - Diameter for circular shape - Side length for square shape - Longer side length for rectangular shape		Yes	Number(4)	
DIM_COVERW	Nominal shorter side length of rectangular cover in mm			Number(4)	
MAINT	Maintenance Department of Manhole underneath the cover		Yes	Number (1)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

Domain Code List – MAINT (Maintenance Department of Manhole underneath the Cover)

Code	Description
1	Highways Department
2	Drainage Service Department
3	Water Supplies Department
4	Others

2.6.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

<b>Survey Feature Code</b>	<b>Description</b>	<b>Symbol/Line-style</b>	<b>CSWP Class</b>
MF, MF2	Foul water manhole cover Refer to the latest version of the “Drafting Specifications for Engineering Survey”.		
MS	Storm water manhole cover Refer to the latest version of the “Drafting Specifications for Engineering Survey”.		

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### 2.7 Pavement Polygon

#### 2.7.1 General




- (i) The feature covers the pavements maintained by the HyD as stated in the Domain Code List - Feature\_Type in this section.
- (ii) The spatial data type is polygon.
- (iii) The polygon is formed by reference to the surveyed extent of the feature for recording its surface material type.
- (iv) Each polygon shall record one uniform pavement surface type.

#### 2.7.2 Attribute Table


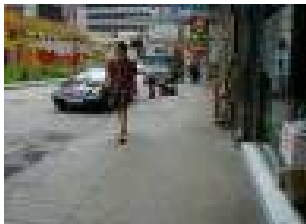
Table Name: INV\_PG

Field Name	Description	Key	Require	Data type	Remark
PG_SFID	Survey Feature Identifier of Pavement (Footway) Polygon e.g. PG0000001	PK	Yes	Varchar2 (9)	
FEAT_TYPE	Polygon feature type code e.g. 2 (i.e. –Footway)		Yes	Number (2)	
SUR_TYPE_1	Primary surface material type of Pavement Polygon e.g. 1 (i.e. Flexible)		Yes	Number (2)	
SUR_TYPE_2	Secondary surface material type of Pavement Polygon e.g. 2 (i.e. Rigid)			Number (2)	
SUR_PROP	Proportion of primary surface material type of Pavement Polygon e.g. 1 (i.e. 100%)		Yes	Number (1)	
PAVER_TYPE	Type of pavers e.g. C (i.e. Clay)		Yes	Varchar2(1)	
LVL	Polygon level code e.g. 0 – Ground level polygon)		Yes	Number (2)	Para. 1.6
CONT_NO	Contract number for the construction or maintenance works e.g. HY/2012/03		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

(i) Domain code list – FEAT\_TYPE (Polygon Feature Type)

Code	Description	Sample Photo(s)
2	Footway	
9	Public Transport Interchange - Footway	
31	Traffic Island – Refuge Island	

ii) Domain code list – SURF\_TYPE\_1 (Primary Surface Material Type) and SURF\_TYPE\_2 (Secondary Surface Material Type)



Code	Description	Sample Photo(s)
1	Flexible	
2	Rigid	



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3	Paving Block	
7	Flexible with Colour Dressing	
8	Rigid with Colour Dressing	
9	Concrete paving slab	
10	Work in Progress (WIP)	

### iii) Domain code list – PAVER\_TYPE (Type of Pavers)

Code	Description	Sample Photo(s)
G	Granite	
A	Artificial Granite	
R	Concrete	
C	Clay	
O	Others	

### 2.7.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

<b>Survey Feature Code</b>	<b>Description</b>	<b>Symbol/Line-style</b>	<b>CSWP Class</b>
<i>PX</i>	The outer limit of the pavement is to be surveyed and shown as solid line. Level is normally not shown.	Solid line	806

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### 2.8 Non-carriageway Pavement Centreline (NPC)

#### 2.8.1 General

- (i) The feature 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) The spatial data type is line.
- (iii) The NPC shall be drawn more or less along the centre alignment and along the PP.
- (iv) One NPC shall be drawn for each PP.

#### 2.8.2 Attribute Table

Table Name: INV\_PL

Field Name	Description	Key	Require	Data type	Remark
PL_SFID	Survey Feature Identifier of Pavement Polygon e.g. PL0000001	PK	Yes	Varchar2 (9)	
PG_SFID	Survey Feature Identifier of Pavement (Footway) Polygon e.g. PG0000001	PK	Yes	Varchar2 (9)	Para. 2.7
CONT_NO	Contract number for the construction or maintenance works e.g. HY/2012/03		Yes	Varchar2 (50)	
SUB_DATE	Date of submission to HyD		Yes	Date	

#### 2.8.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
Not Applicable			

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2.9 E&M Pit

2.9.1 General

- (i) E&M Pit feature includes all types of E&M Pits maintained by HyD.
- (ii) The spatial data type is point.
- (iii) It refers to the centre location of the cover of the E&M pit.

2.9.2 Attribute Table

Table Name: INV\_EMPIT

Field Name	Description	Key	Require	Data type	Remark
EM_SFID	Survey Feature Identifier of E&M Pit e.g. EM0000001	PK	Yes	Varchar2 (9)	
LVL	Level of features from ground e.g. -3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
DIM_COVERL	Length of cover in mm e.g. 450		Yes	Number(4)	
DIM_COVERW	Width of cover in mm e.g. 450		Yes	Number(4)	
BEADREQUIR	The pit needs to be filled with polystyrene beads		Yes	Varchar2(1)	
BEADFILLED	The pit is filled with polystyrene beads		Yes	Varchar2(1)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

Domain Code List – BEADREQUIR (The pit needs to be filled with polystyrene beads)

Code	Description
Y	Yes
N	No
U	Unknown

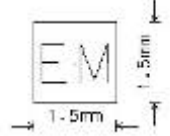
Domain Code List – BEADFILLED (The pit is filled with polystyrene beads)

Code	Description
Y	Yes
N	No
U	Unknown

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### 2.9.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
<i>EM</i>	The centre of the E&M pit is to be surveyed and shown by the point symbol as illustrated to the right. Level is normally not required.		806

## GIS Specifications for Engineering Surveys of Highways Department

### 2.10 Tree

#### 2.10.1 General

- (i) This feature covers trees growing on the Vegetated Areas of the Highway Registered Slopes or within expressway boundaries or within the project of the contract.
- (ii) The tree to be surveyed refers to a plant with trunk diameter of 95 mm or more at a height of 1.3m above the adjacent ground or root level
- (iii) The spatial data type is point.
- (iv) It refers to the centre location of the tree trunk at root level.

#### 2.10.2 Attribute Table

Table Name: INV\_TR

Field Name	Description	Key	Require	Data type	Remark
TR_SFID	Tree Survey ID e.g. TR0000001	PK	Yes	Varchar2(9)	
DBH	Diameter at Breast Height (DBH) in mm e.g. 300		Yes	Number (4)	
HEIGHT	Overall tree height above ground to the top of the tree crown within +/- 0.5m e.g. 3.5		Yes	Number(5,1)	
SPREAD	Tree spread in m			Number(5)	
TR_LEVEL	Level at Tree trunk base (root level location) in mPD e.g. 123.45		Yes	Number (5,2)	
ROOT_LEVEL	(Y)es – tree root level (N)o – tree trunk base level		Yes	Varchar2(1)	Domain ‘YesNo’
SLOPE_NO	GEO Slope Number. e.g. 11NW-A/C64			Varchar2(15)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

#### 2.10.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
TE	Refer to the latest version of the “Drafting Specifications for Engineering Survey”.		

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### 2.11 Roadside Planter Wall

#### 2.11.1 General


- (i) This feature covers the roadside planter walls maintained by HyD.
- (ii) The spatial data type is line.
- (iii) It refers to the outermost line of the planter wall.

#### 2.11.2 Attribute Table




Table Name: INV\_RPW

Field Name	Description	Key	Require	Data type	Remark
RPW_SFID	Survey Feature Identifier of Roadside Barrier or Planter e.g. RPW0000001	PK	Yes	Varchar2 (10)	
FEAT_TYPE	Feature type code e.g. 2 (i.e. – Granite Stone Pitched Surface)		Yes	Number (2)	
LENGTH	Graphical length of roadside planter (in metre)		Yes	Number (12,2)	
CONT_NO	Contract number for the construction or maintenance works e.g. HY/2012/03		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

#### Domain code list – FEAT\_TYPE (Feature Type)

Code	Description	Sample Photo(s)
1	Tile Surface	

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2	Granite Stone Pitched Surface	
3	Concrete Surface	
4	Washed Granolithic Surface	
9	Other features supporting/ enclosing planting area	

### 2.11.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
<b><i>RW</i></b>	The alignment of the roadside planter wall is to be surveyed and shown by solid line.	Solid line	806



## GIS Specifications for Engineering Surveys of Highways Department

### 2.12 Slope Planter Wall

#### 2.12.1 General


- (i) The feature covers all planter walls exceeding 0.5m height on Highway Registered Slopes and Highway Unregistered Slopes.
- (ii) The spatial data type is line.
- (iii) It refers to the outermost line of the planter wall.

#### 2.12.2 Attribute Table

Table Name: INV\_SPW

Field Name	Description	Key	Require	Data type	Remark
SPW_SFID	Survey Feature Identifier of Slope Planter Wall e.g. SPW0000001	PK	Yes	Varchar2 (10)	
FEAT_TYPE	Feature type code e.g. 2 (i.e. – Granite Stone Pitched Surface)		Yes	Number (2)	
LENGTH	Graphical length of slope planter wall (in metre)		Yes	Number (12,2)	
SLOPE_NO	GEO Slope Number for Highway Registered Slope			Varchar2 (15)	
HYD_NO	HyD Reference Number for Highway Unregistered Slope			Varchar2 (15)	
CONT_NO	Contract number for the construction or maintenance works e.g. HY/2012/03		Yes	Varchar2 (50)	
TIMESTAMP	Date of Survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

#### Domain code list – FEAT\_TYPE (Feature Type)

Code	Description	Sample Photo(s)
1	Tile Surface	

## GIS Specifications for Engineering Surveys of Highways Department

2	Granite Stone Pitched Surface		
3	Concrete Surface		
4	Washed Granolithic Surface		
9	Other		

### 2.12.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
<i>LW</i>	The alignment of the planter wall exceeding 0.5 m height on Highway Registered Slopes and Highway Unregistered Slopes is to be surveyed and shown by solid line.	Solid line	806

## GIS Specifications for Engineering Surveys of Highways Department

### 2.13 Special Paving Panel

#### 2.13.1 General

- (i) The feature covers all the special paving panel maintained by HyD.
- (ii) The spatial data type is point.
- (iii) It refers to the centre location of the paving panel.

#### 2.13.2 Attribute Table



Table Name: INV\_SPP

Field Name	Description	Key	Require	Data type	Remark
SPP_SFID	Survey Feature Identifier of Special Paving Panel e.g. SPP0000001	PK	Yes	Varchar2 (10)	
SPP_NATURE	Nature of the Paving Panel		Yes	Number(2)	
DIM_LENGTH	Length of the panel in metre		Yes	Number (4,2)	
DIM_WIDTH	Width of the panel in metre		Yes	Number (4,2)	
MAX_LENGTH	Longitudinal length of the panel in metre along the direction of the footway			Number (4,2)	
HOUSE_NO	House Number		Yes	Varchar2 (20)	
LVL	Level of features from ground e.g. -3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

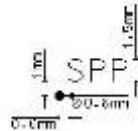
Domain code list – SPP\_NATURE (Nature of the Paving Panel)

Code	Description	Sample Photo(s)
1	Equestrian 2008	

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2	East Asia Games 2009		
3	Paving with House Numbering		

### 2.13.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
<i>SPP</i>	The centre of the special paving panel is to be surveyed and shown by the point symbol as illustrated to the right. Level is normally not required.		806

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2.14 Tactile Paving

2.14.1 General


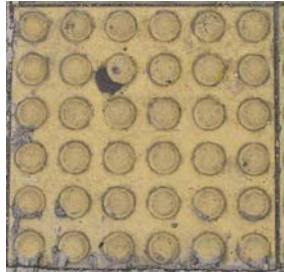
- (i) The feature includes all kinds of tactile paving on area maintained by HyD.
- (ii) The spatial data type is line.
- (iii) It refers to the centreline along the tactile paving.

2.14.2 Attribute Table



Table Name: INV\_TP

Field Name	Description	Key	Require	Data type	Remark
TP_SFID	Survey Feature Identifier of Tactile Paving e.g. TP0000001	PK	Yes	VarChar2(9)	
TP_TYPE	Type of Tactile Paving		Yes	VarChar2(5)	
DIMENSION	Dimensions of the tactile paving (in mm) e.g. 750 x 750			VarChar2(9)	
GRADIENT	Ramp gradients of the tactile paving e.g. 1:10			VarChar2(4)	
LOC_TYPE	Type of tactile paving location		Yes	VarChar2(1)	
LVL	Level of features from ground e.g. -3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

(i) Domain code list – TP\_TYPE (Type of Tactile Paving)

Code	Description	Sample Photo
HWB	Hazard Warning Block	
HWTS	Hazard Warning Tile/Slab	

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PTSB	Positional Tile/Slab/Block		
DTSB	Directional Tile/Slab/Block		

(ii) Domain code list – LOC\_TYPE (Type of Tactile Paving Location)

Code	Description
A	Warning Strip – Drop Kerb
B	Warning Strip – Other
C	Guide Path

### 2.14.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
<i>TV</i>	The alignment of the tactile paving is to be surveyed and shown by solid line.	Solid line	806

## GIS Specifications for Engineering Surveys of Highways Department

### 2.15 Street Name Plate

#### 2.15.1 General

- (i) The feature covers all form of street name plates, with or without building numbers, maintained by HyD.
- (ii) 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.
- (iii) 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.
- (iv) The spatial data type is point.
- (v) It refers to the centre location of the street name plate.

#### 2.15.2 Attribute Table

Table Name: INV\_SNP

Field Name	Description	Key	Require	Data Type	Remark
SNP_SFID	Survey Feature Identifier of street name plate e.g. SNP0000001	PK	Yes	Varchar2 (10)	
LVL	Level of features from ground e.g. -3/-2/-1/0/1/2/3		Yes	Number (2)	Para. 1.6
ROAD_NAME	Street Name		Yes	Varchar2 (50)	
POST_DIA	External nominal diameter of post (in mm)		Yes	Number (3)	
ACT_LENGTH	Measured length of SNP (in mm) e.g. 820		Yes	Number (4)	
ACT_HEIGHT	Measured height above ground at the middle of the plate bottom (in mm) e.g. 2100		Yes	Number (4)	
PLATE_ADDR	House number adjacent to the SNP e.g. 123A			Varchar2(6)	
MOUNT_TYPE	Type of mounting e.g. A2		Yes	Varchar2 (2)	Note 1
FACE_TYPE	Face type C = Facing Carriageway F = Facing Footway B = Facing Both Carriageway and Footway		Yes	Varchar2 (1)	
COLOUR	Colour type e.g. 0 – black and white			Number (2)	Note 2
ARROW	Actual number of arrow per face 0= No arrow L= Left arrow only R= Right arrow only 2= Both left & right arrows		Yes	Varchar2 (1)	
BLDG_NO_L	Building number displayed on left of the carriageway-facing plate (If FACE_TYPE = “F”, number on footway facing plate will be used)			Varchar2 (20)	
BLDG_NO_R	Building number displayed on right of the carriageway-facing plate (If FACE_TYPE = “F”, number on footway facing plate will be used)			Varchar2 (20)	

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OLD_PLATE	Old plate indicator (Y)es -old plate (N)o -new plate		Yes	Varchar2 (1)	
ROTATION	Orientation facing carriageway (In smallest value of whole circle bearing in degree)		Yes	Number (6,3)	Note 3
PHOTO_FILE	Photo pathname and filename		Yes	Varchar2 (40)	Note 4
PHOTO_DATE	Date of Photo taken		Yes	Date	
DATA_SOURCE	Source of the Data 1 = Surveyed 2 = Inspected 3 = Data from other records		Yes	Number(1)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

Notes:

1. Domain code list – MOUNT\_TYPE (Type of mounting)

Code	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
O	Others

2. Domain code list – COLOUR (Colour of the Text on Street Name Plate)

Code	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. The rotation of the SNP feature is defined as the clockwise angle from true north (i.e. whole




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circle bearing) to the sign face of SNP to the nearest 10 degree. A SNP facing north would mean that rotation is 90 degree

4. Photo file should be prepared in .pdf format. The filename for the photo file shall adopt the SNP\_SID.

### 2.15.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style
<i>SNP</i>	<ol style="list-style-type: none"> <li>i. The position of the post for single post support and cantilever mount is to be surveyed and shown by the symbol as illustrated on the right. Level is normally not required.</li> <li>ii. The midpoint of two posts supporting the street name plate is to be surveyed and shown by the symbol as illustrated on the right. Level is normally not required.</li> </ol>	

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### 2.16 Traffic Sign Plate

#### 2.16.1 General

- (i) Traffic sign feature includes, but not limited to, all types of traffic signs, directional signs and tunnel signs maintained by HyD.
- (ii) Reference should be 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.
- (iii) 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.
- (iv) The spatial data type is point.
- (v) It refers to the centre location of the traffic sign plate.

#### 2.16.2 Attribute Table

Table Name: INV\_TS

Field Name	Description	Key	Require	Data type	Remark
TP_SFID	Survey Feature Identifier of sign plate e.g. TP0000001	PK	Yes	Varchar2 (9)	
LVL	Level of features from ground e.g.-3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
TS_CODE	Directional Sign Code or Traffic sign code (TD)		Yes	Varchar2(50)	
SIGN_TYPE	Type of sign		Yes	Number (2)	
DIRECTION	Direction which that plate is facing (In smallest value of whole circle bearing in 10 degree) e.g. 60.0		Yes	Number (10,1)	Note 1
POST_ID	Sign post ID or Lamp post number e.g. ETS0000407, EA2214		Yes	Varchar2(10)	Note 2
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

#### Notes:

1. The direction of the sign is defined as the clockwise angle from true north (i.e. Whole circle bearing) to the direction where the sign is facing to the nearest 10 degree. A sign facing north would mean that the sign direction is zero degree.
2. The identifier of a new sign post feature (POST\_ID) is defined as ITSNNNNNNNN where "ITS" is a prefix and N is a sequential number: (e.g. ITS0000407).

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- (a) If a sign is mounted on a traffic light post, the POST\_ID of the traffic light post shall be assigned using the above definition, with the first number assigned as 9 (e.g. ITS9000407).
- (b) If a sign is mounted on a street name plate, the POST\_ID shall be assigned as 7 (e.g. ITS7000407)).
- (c) If a sign is mounted on at rail /fence, the POST\_ID shall be assigned as 8 (e.g. ITS8000407)).
- (d) If a sign is mounted on a lamp post, the POST\_ID shall be the lamp post number as marked on the lamp post. Lighting Division of HyD should be consulted to confirm the lamp post number if required.
- (e) TD Drawings series CT174/51-1, CT174/51-2 and CT174/51-3, TD drawings on individual traffic sign and Traffic Aids Drawings shall be referred to for the domain value of TS\_CODE. For non-standard directional sign where TS\_CODE is not available, TS\_CODE shall be assigned as “-99”.

Domain code list – SIGN\_TYPE (Type of Sign)

Code	Description
1	Traffic Sign Plate
2	Directional Sign Plate

2.16.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
SP	The midpoint of the posts along the sign face shall be adopted to represent large signs with multiple posts. Each signpost may have one or more traffic sign(s).	Refer to the latest version of the “Drafting Specifications for Engineering Survey”.	806

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### 2.17 Visitor Sign Plate

#### 2.17.1 General

- (i) The feature includes all kinds of visitor signs that have been hand-over to and maintained by HyD.
- (ii) Reference should be 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.
- (iii) The spatial data type is point.
- (iv) It refers to the centre location of the visitor sign plate.

#### 2.17.2 Attribute Table

Table Name: INV\_VS

Field Name	Description	Key	Require	Data type	Remark
VS_SFID	Survey Feature Identifier of visitor sign e.g. VS0000001	PK	Yes	Varchar2 (9)	
LVL	Level of features from ground e.g.-3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
PHOTO_FILE	Photo filename		Yes	Varchar2 (50)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

#### 2.17.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
<b>VS</b>	The centre of the visitor sign plate is to be surveyed. It is shown as a point with annotation “VS”. Level is normally not required.		806

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### 2.18 Barrier Fence

#### 2.18.1 General


- (i) Barrier Fence includes all types of beam barrier, parapet, fencing and concrete profile barrier
- (ii) Reference can be made to the Transport Planning and Design Manual (TPDM), HyD standard drawings for more information on the feature.
- (iii) A Barrier Fence feature is defined by its types. For example, 2 consecutive sections of concrete profile barrier and beam barrier will be considered as 2 Barrier Fence features.
- (iv) The spatial data type is line.
- (v) It refers to the centre line of the barrier fence.

#### 2.18.2 Attribute Table


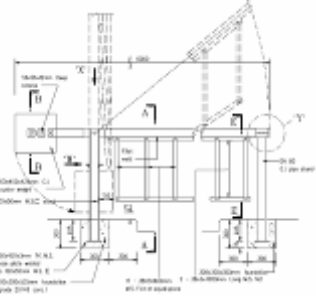






Table Name: INV\_BF

Field Name	Description	Key	Require	Data type	Remark
BF_SFID	Survey Feature Identifier of barrier fences e.g. BF0000001	PK	Yes	Varchar2 (9)	
BARR_TYPE	Type of Barrier Fences		Yes	Number(2)	
LENGTH	Graphical Length of railing (in metre) (or nominal diameter for single bollard)		Yes	Number (12,2)	
LVL	Level of features from ground e.g.-3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	





- (i) Domain code list – BARR\_TYPE (Type of Barrier Fences)

Code	Description	Sample Photo
10	Concrete Profile Barrier	

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11	Barrier for Central Dividing Strips	  <p>Extracted from H2109</p>
12	Beam Barrier – Corrugated Beam	
13	Untensioned Corrugated Beam Barrier	
14	Thrie Beam Barrier	
15	Parapet (Wall-like Barrier)	 
16	Fence	

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20	Granite Kerb	
21	Concrete Kerb	
22	Rubble Kerb	
24	Traffic Cylinder	
25	Other Barrier	

### 2.18.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
<b>BK</b>	The centreline of the barrier fence is to be surveyed and shown as solid line.	Solid line	806

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### 2.19 Strategic Route Chainage Marker

#### 2.19.1 General

- (i) This feature includes all Strategic Route Chainage Marker maintained by HyD.
- (ii) The spatial data type is point.
- (iii) It refers to the centre position of the strategic route chainage marker.

#### 2.19.2 Attribute Table

Table Name: INV\_ECM

Field Name	Description	Key	Require	Data Type	Remark
ECM_SFID	Survey Feature Identifier of strategic route chainage marker e.g. ECM0000001	PK	Yes	Varchar2(10)	
REG_CODE	Region code		Yes	Varchar2(3)	
ROUTE_NO	Strategic Route Number		Yes	Number(2)	
CHAINAGE	Chainage (in km)		Yes	Number (5,3)	
PLATE_POS	Plate position w.r.t. the reference alignment		Yes	Char(1)	
BOUND	Traffic Bound		Yes	Char(2)	
TYPE	Type of plate 1 = km interval (850x700) 2 = 0.1km interval (425x325)		Yes	Number(1)	
HEIGHT	Height of plate above carriageway (in mm)		Yes	Number(1,2)	
MOUNTING	Mounting Type 1 = Pole 2 = Side of profile barrier 3 = Side of Beam barrier		Yes	Number(1)	
PREV_ROUTE_NO	Previous Strategic Route No.			Number(2)	
PREV_CHAINAGE	Previous Chainage (in km)			Number(5,3)	
PHOTO_FILE	Photo pathname and filename			Varchar2(40)	Note 1
PHOTO_DATE	Date of photo taken			Date	
DATA_SOURCE	Source of the Data 1 = Surveyed 2 = Inspected 3 = Data from other records 4 = Computed		Yes	Number(1)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

#### Notes:


1. Photo file should be prepared in .pdf format. The filename for the photo file shall adopt the ECM\_ID.



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### 2.19.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
<i>ECM</i>	The centre of the strategic route chainage marker is to be surveyed. It is shown as a point with annotation “SCM” as illustrated to the right. Level is normally not required.		806

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### 2.20 Tunnel Chainage Marker

#### 2.20.1 General

- (i) This feature includes all Tunnel Chainage Marker maintained by HyD.
- (ii) The spatial data type is point.
- (iii) It refers to the centre position of the tunnel chainage marker.

#### 2.20.2 Attribute Table

Table Name: INV\_TCM

Field Name	Description	Key	Require	Data Type	Remark
TCM_SFID	Survey Feature Identifier of tunnel chainage marker e.g. TCM0000001	PK	Yes	Varchar2(10)	
REG_CODE	Region code		Yes	Varchar2(3)	
TUN_CODE	Tunnel code		Yes	Varchar2(4)	Note 1
CHAINAGE	Chainage in km		Yes	Number (5,3)	
PLATE_POS	Plate position w.r.t. the reference alignment (a), (b), (c) or (d)		Yes	Char(1)	
BOUND	Traffic Bound NB = North Bound SB = South Bound EB = East Bound WB = West Bound		Yes	Char(2)	
PREV_CHAINAGE	Previous Chainage (in km)			Number(5,3)	
PHOTO_FILE	Photo pathname and filename			Varchar2(40)	Note 2
PHOTO_DATE	Date of photo taken			Date	
DATA_SOURCE	Source of the Data 1 = Surveyed 2 = Inspected 3 = Data from other records 4 = Computed		Yes	Number(1)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

Notes:

1. Domain code list – TUN\_CODE (Tunnel code)

CODE	Description
ABT	Aberdeen Tunnel
CTT	Cheung Tsing Tunnel
CHT	Cross Harbour Tunnel
DBT	Discovery Bay Tunnel
ENT	Eagle's Nest Tunnel
EHC	Eastern Harbour Crossing
KTT	Kai Tak Tunnel

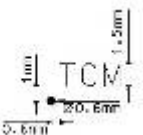
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LRT	Lion Rock Tunnel
NWT	Nam Wan Tunnel
STHT	Sha Tin heights Tunnel
SMT	Shing Mun Tunnel
TLT	Tai Lam Tunnel
TWT	Tai Wai Tunnel
TCT	Tate's Cairn Tunnel
TKOT	Tseung Kwan O Tunnel
WHC	Western Harbour Crossing

- Photo file should be prepared in .pdf format. The filename for the photo file shall adopt the TCM\_SID

### 2.20.3 Supplementary Notes to the "Drafting Specifications for Engineering Survey"

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
<b><i>TCM</i></b>	The centre of the tunnel chainage marker is to be surveyed. It is shown as a point with annotation "TCM" as illustrated to the right. Level is normally not required.		806

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### 2.21 Railing

#### 2.21.1 General


- (i) Railing includes all types of railing and bollard.
- (ii) A railing feature is defined by the type of railing. For example, 2 consecutive sections of Type 1 and Type 2 railings respectively will be considered as 2 railing features.
- (iii) For multiple amenities railings in a section of footway, the line of the railing feature shall include the space between consecutive amenities railings.
- (iv) For multiple bollards in a section of footway, the line of the railing feature shall include the space between bollards. For a standalone bollard, the line shall represent the nominal diameter of the bollard.
- (v) Reference should be made to the Transport Planning and Design Manual (TPDM) and HyD standard drawings for more information on the feature.
- (vi) The spatial data is line.
- (vii) It refers to the centre line of the railing.

#### 2.21.2 Attribute Table


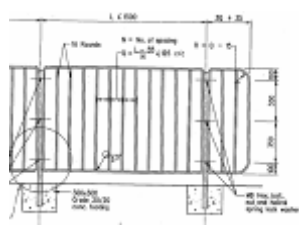




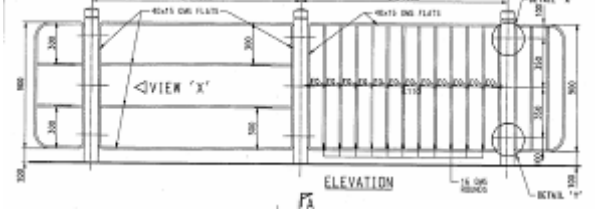

Table Name: INV\_RAIL

Field Name	Description	Key	Require	Data type	Remark
RL_SFID	Survey Feature Identifier of railing e.g. RL0000001	PK	Yes	Varchar2 (9)	
LVL	Level of features from ground e.g. -3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
RAIL_TYPE	Type of railing		Yes	Number (2)	
LENGTH	Graphical Length of railing (in metre) (or nominal diameter for single bollard)		Yes	Number (12,2)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIME_STAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	



Domain code list – RAIL\_TYPE (Type of Railing)

Code	Description	Sample Photo
1	Type 1 Railing	 <p>Extracted from Drawing No. H4701B</p>

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2	Type 2 Railing	  <p>Extracted from Drawing No. H2130F</p>
3	Type 3 Railing	
4	Tubular Railing	
5	Amenities Railing	
6	Ornamental Railing	
7	Bollard and Rail	 <p>Extracted from Drawing No. H2259</p>
8	Hand Railing of Bus Shelter	

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26	Decorative Railing	 <p>Three photographs showing decorative railings: a black metal railing with a red car in the background, a railing with a yellow and black chevron pattern, and a railing with a white and black chevron pattern.</p>
27	Removable Railing	 <p>A photograph of a silver, U-shaped removable railing on a sidewalk.</p>
28	Decorative Bollard	 <p>Three photographs showing decorative bollards: a row of black bollards on a sidewalk, a close-up of a black bollard on a road, and a row of black bollards on a sidewalk.</p>
9	Other Railing	

### 2.21.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
RC, RX	Railing Refer to the latest version of the “Drafting Specifications for Engineering Survey”.		
BO	Bollard Refer to the latest version of the “Drafting Specifications for Engineering Survey”.		

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### 2.22 Crash Cushion

#### 2.22.1 General

- (i) Crash Cushion is a type of barrier as defined in Transport Planning and Design Manual (TPDM).
- (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.

#### 2.22.2 Attribute Table

Table Name: INV\_CC

Field Name	Description	Key	Require	Data type	Remark
CC_SFID	Survey Feature Identifier of Crash Cushion e.g. CC0000001	PK	Yes	Varchar2 (9)	
LVL	Level of features from ground e.g.-3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
LENGTH	Graphical Length of crash cushion		Yes	Number (12,2)	
MANUFACT	Manufacturer		Yes	Varchar2(80)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

#### 2.22.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
<b>CR</b>	The centreline of the crash cushion is to be surveyed along the traffic direction, drawing from the nosing to end of the crash cushion system and shown as solid line.	Solid line	806

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### 2.23 Emergency Gate

#### 2.23.1 General

- (i) The Emergency Gate features include all sorts of emergency crash gates, movable steel barrier, removable concrete barrier and EVA gate at emergency openings maintained by HyD.
- (ii) Reference should be made to the Transport Planning and Design Manual (TPDM) and HyD standard drawings for more information on the feature.
- (iii) For multiple emergency gates in an emergency opening, one single feature can be used and the line shall include the space between consecutive emergency gates.
- (iv) The line (and the length) shall refer to the top of the emergency gates.
- (v) The spatial data type is line.
- (vi) It refers to the centre line of the emergency gate.

#### 2.23.2 Attribute Table






Table Name: INV\_EG

Field Name	Description	Key	Require	Data type	Remark
EG_SFID	Survey Feature Identifier of emergency gate e.g. EG0000001	PK	Yes	Varchar2 (9)	
LVL	Level of features from ground e.g.-3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
EG_TYPE	Type of Emergency gate		Yes	Number (2)	
LENGTH	Graphical Length of Emergency gate		Yes	Number (12,2)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	



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Domain code list – EG\_TYPE (Type of Emergency Gate)

Code	Description	Sample Photo
18	Emergency Crash Gate	
29	Movable Steel Barrier	
30	Removable Concrete Barrier	
31	EVA Gate	
32	Other Emergency Gate	

### 2.23.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style
EG	Refer to the latest version of the “Drafting Specifications for Engineering Survey”.	

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### 2.24 Noise Barrier (at grade and not exceeding 3m high) (NB)

#### 2.24.1 General

- (i) The feature includes all the Noise Barriers that are at grade and do not exceeding 3m high. Noise barriers on structure or noise barrier with Structure number as defined in Section 3.5 shall be included as Structure feature.
- (ii) Reference should be made on the Guidelines on Design of Noise Barrier for more information on the feature.
- (iii) A NB feature is defined by its types. For example, 2 consecutive sections of Reflective and Mixed type Noise Barriers will be considered as 2 NB features.
- (iv) The spatial data type is line.
- (v) It refers to the centre alignment of the noise barrier at base level.

#### 2.24.2 Attribute Table





Table Name: INV\_NB

Field Name	Description	Key	Require	Data type	Remark
NB_SFID	Survey Feature Identifier of noise barrier e.g. NB30511608	PK	Yes	Varchar2 (9)	
NB_TYPE	Type of noise barrier		Yes	Number (2)	
LENGTH	Graphical Length of noise barrier		Yes	Number (12,2)	
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD			Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

Domain code list – NB\_TYPE (Type of Noise Barrier)

Code	Description	Sample Photo
1	Reflective	

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2	Absorptive		
3	Earth landscape mound and retaining structures		
4	Mixed		

### 2.24.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
NC, NX	Refer to the latest version of the “Drafting Specifications for Engineering Survey”.		

## GIS Specifications for Engineering Surveys of Highways Department

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### 2.25 Drop Kerb

#### 2.25.1 General

- (i) Drop Kerb feature includes, but not limited to, all types of drop kerbs maintained by HyD.
- (ii) The line of the drop kerb shall be the extent of the drop kerb along the kerb line of the footway or traffic island.
- (iii) The spatial data type is line.
- (iv) It refers to the outmost alignment of the drop kerb.

#### 2.25.2 Attribute Table

Table Name: INV\_DK

Field Name	Description	Key	Require	Data type	Remark
DK_SFID	Survey Feature Identifier of Drop Kerb e.g. DK0000001	PK	Yes	Varchar2 (9)	
LVL	Level of features from ground e.g.-3/-2/-1/0/1/2/3		Yes	Number(2)	Para. 1.6
CONT_NO	Contract number for the construction or maintenance works (e.g. HY/2012/03)		Yes	Varchar2 (50)	
TIMESTAMP	Date of survey		Yes	Date	
SUB_DATE	Date of submission to HyD		Yes	Date	
SVY_AUDIT	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			Varchar2 (1)	
AUDIT_DATE	Date of audit			Date	

#### 2.25.3 Supplementary Notes to the “Drafting Specifications for Engineering Survey”

Survey Feature Code	Description	Symbol/Line-style	CSWP Class
<b><i>DK</i></b>	The line of the drop kerb is to be surveyed and shown as solid line.	Solid line	806