Land Transport Authority

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an LTA Open Data Initiative

Geospatial User Guide & Specifications

Version 1.3
15 April 2021

Document Change Log

Version No.	Change Details	Release Date
1.0	First release.	07 April 2015
1.1	Added section on GDAL.	13 April 2015
1.2	Added Covered Linkway and Footpath	19 April 2015
1.3	Updated Lane Marking documentation	15 April 2021

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1. ABOUT GEOSPATIAL SHAPEFILES

Geospatial data is a collection of vector data – points, lines or polygons. These typically represent physical entities or locations, such as a bus stop (point), a road (line) or even a constituency (polygon).

LTA's geospatial datasets are encoded as ESRI shapefiles. This is a proprietary standard which allows points, lines and polygons to be easily defined and accessed. For full technical definition on ESRI shapefiles, you may refer to:

http://www.esri.com/library/whitepapers/pdfs/shapefile.pdf

Each geospatial dataset is a zip archive that contains 8 separate files (refer to Figure **1.1** below) that needs to be processed to extract spatial information that you will use in your development and/or research purposes.

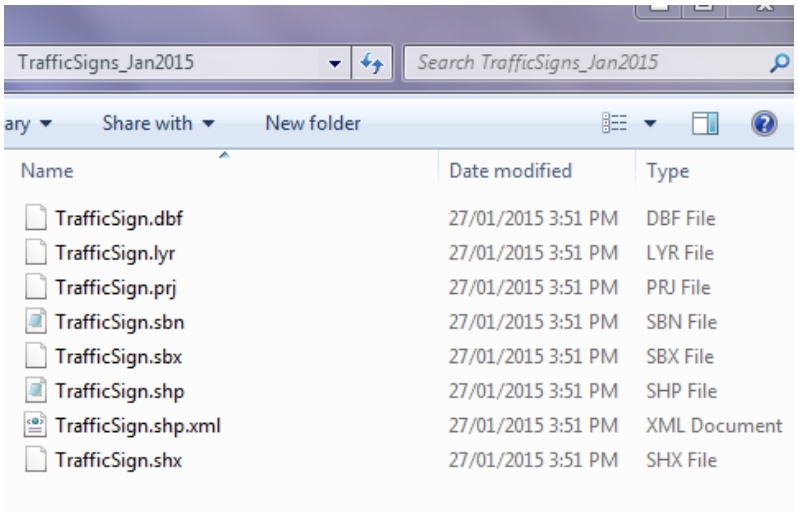


Figure 1.1: a set of files that forms one geospatial dataset

Some standard spatial information that you will find in geospatial data include:

Attribute	**Description**	
properties	A collection of attribute-value pairs that uniquely describes each point, line, or polygon, and therefore varies across datasets. Specifications for each geospatial dataset may be found in Section 3 of this User Guide.	
geometry	type	The type of vector feature: point, line, polygon.
	coordinate *(LTA's geospatial data are under **SVY21** system)*	Latitude-longitude pair(s) that define the location of the vector features. Points are defined by a pair; lines are defined by two pairs, while polygons are defined by a set of pairs.

The following are sample spatial information you may find in the geospatial datasets.

Dataset: Arrow Marking (Point)

{ "type": "Feature", "properties": { "TYP_CD": "B", "BEARG_NUM": 5.000000, "BEARG_NUM_": null, "TYP_CD_DES": "B - St\/Lt Turn" }, "geometry": { "type": "Point", "coordinates": [41850.949109771288931, 36418.658599032089114] } }

Dataset: Passenger Pickup Bay (Line)

{ "type": "Feature", "properties": { "SHAPE_LEN": 16.304837 }, "geometry": { "type": "LineString", "coordinates": [[32550.172179710119963, 36959.311381651088595], [32562.167958052828908, 36970.354434320703149]] } }

Dataset: Covered Linkway (Polygon)

{ "type": "Feature", "properties": { "SHAPE_AREA": 64.584770, "SHAPE_LEN": 60.029009 }, "geometry": { "type": "Polygon", "coordinates": [[[31597.694404867579578, 39221.842085721094918], [31574.630992666363454, 39206.476809959007369], [31573.391504064809851, 39208.309705873791245], [31596.26679 4926454168, 39223.839076249976642], [31597.694404867579578, 39221.842085721094918]]] } }

The next section of this User Guide carries instructions to guide you in extracting attributes from the geospatial datasets. The rest of this User Guide carries the specifications for all datasets that you may refer to better understand the attributes.

2. GEOSPATIAL DATA ABSTRACTION LIBRARY

The **Geospatial Data Abstraction Library** (GDAL) is a very handy tool to convert ESRI shapefiles into readable formats such as GeoJSON, and to convert between geospatial coordinate systems, such as from **SVY21** to the common **WGS84** for our usual latitude-longitude values.

2.1 INSTALLING GDAL

FOR WINDOWS
Step 1: Go to www.gisinternals.com/sdk/ and click on "Stable Releases"
Step 2: Under "MSVC 2013", select the correct architecture for your computer (win32 for 32-bit, x64 for 64-bit) and click on the relevant link to the download files.
Step 3: Download the core installation file, with description "Generic installer for the GDAL core components".
Step 4: Run the .msi file to install GDAL
Step 5: Run the GDAL command prompt under Start Menu > All Programs > GDAL.
You're good to go!

FOR MAC OS X
Step 1: If you don't already have it, install Homebrew (www.brew.sh)
Step 2: In your open Terminal window, type
```
>> brew install gdal
```
Step 3: Verify your installation
```
>> which ogr2ogr
```
This should print "/usr/local/bin/ogr2ogr".
You're good to go!

FOR UBUNTU LINUX
Step 1: Open your Terminal window and type
```
>> sudo apt-get install gdal-bin
```
Step 2: Verify your installation by typing
```
>> which ogr2ogr
```
This should print "/usr/bin/ogr2ogr" or similar.
You're good to go!

2.2 USING GDAL

Open your Linux/OSX Terminal (or the GDAL Command Prompt for Windows) to start using GDAL. Here are a few sample commands to get you started.

Obtaining metadata description of a shapefile:

```
>> ogrinfo <shapefile>.shp –al -so
```

Converting a Shapefile to WGS84 GeoJSON:

```
>> ogr2ogr -f GeoJSON –t_srs WGS84 <jsonFileName>.json
<shapefile>.shp
```

To see full list of output file formats:

```
>> ogr2ogr ––long-usage
```

2.3 LANGUAGE SUPPORT FOR GDAL

GDAL supports multiple languages and can be directly embedded in your applications. Links for instructions on installation and usage can be found below.

Language	URL
Python	http://trac.osgeo.org/gdal/wiki/GdalOgrInPython
C# / .NET	http://trac.osgeo.org/gdal/wiki/GdalOgrInCsharp
Ruby	http://trac.osgeo.org/gdal/wiki/GdalOgrInRuby
Java	http://trac.osgeo.org/gdal/wiki/GdalOgrInJava
R	http://trac.osgeo.org/gdal/wiki/GdalOgrInR
Perl	http://trac.osgeo.org/gdal/wiki/GdalOgrInPerl

3 GEOSPTIAL DATASET SPECIFICATIONS

	Geospatial Datasets (Total 28)	**Description**
1	Arrow Marking	A point representation of an arrow painted on the road surface to advise motorists on the direction of traffic flow.
2	Bollard	A point representation of a strong thick post erected on streets to deter vehicles from passing through. It is also used as markers on road divider or as safety barriers along bus bay or side of roads. The split arrow bollard is captured under the 'Traffic Sign' dataset.
3	Bus Stop Location	A point representation to indicate the position where buses should stop to pick up or drop off passengers.
4	Control Box	A point representation of a box containing an electronic device to control traffic lights, street lighting, ERP and traffic camera (J-eyes).
5	Convex Mirror	A point representation of a mirror placed at street corner where visibility is poor, to assist motorists when making a turn at blind spots.
6	Covered Linkway	A polygon representation of a covered passage designated for pedestrian use to link up with other commuter facilities.
7	Cycling Path	A line representation of an intra-town path designated for cyclists. Excludes park connectors.
8	Detector Loop	A polygon representation of an electronic loop on the road surface at strategic locations to detect traffic movements for traffic control purposes.
9	Emergency Gate	A point representation of a gate found along the opening on the island divider of an expressway that can be used by authorised vehicles such as police cars, fire engines, etc during an emergency.
10	ERP Gantry	A line representation of a raised metallic structure spanning across a carriageway to support electronic equipment for ERP.
11	Footpath	A line representation of a path designated for pedestrian use.
12	Guard Rail	A line representation of a safety barrier to prevent vehicles from veering off the road or carriageway.
13	Lamp Post	A point representation of a pole for mounting street lighting.

14	Lane Marking	A line representation painted on the road surface to guide motorists along the carriageway.
15	Passenger Pickup Bay	A line representation of an area along the side of road designated for vehicles to pick up or drop off passengers. Pick-up bays are normally found at MRT/LRT stations and commercial sites.
16	Pedestrian Overhead Bridge / Underpass	A polygon representation of a raised or underground structure to be used by pedestrians to cross a road or canal.
17	Railing	A line representation of a metallic barrier to separate between two areas; for instance, between two road carriageways, along edges of road or embankment.
18	Retaining Wall	A line representation of a wall that supports the adjacent soil from erosion or landslide.
19	Road Crossing	A line representation of a designated location for pedestrians to cross the road.
20	Road Hump	A line representation of a raised section across a road to reduce the speed of vehicles. Road Humps are painted over with distinctive diagonal alternate black and yellow strips. It is usually preceded by a "HUMP AHEAD" marking on the road in the direction of the traffic flow.
21	Road Section Line	A line representation with information on road name and road code.
22	Speed Regulating Strip	A line representation of raised painted strips across a road to reduce the speed of vehicles when approaching a bend or near heavy pedestrian traffic.
23	Street Paint	A polygon representation of a section of the road paved in red to warn motorists that they are entering a zone where school children may be crossing roads.
24	Taxi Stand	A point representation to indicate the position where taxis should stop to pickup or drop off passengers.
25	Traffic Light	A point representation of lights consisting of signal aspects such as ground, overhead, green filter arrow, beacons, etc to control traffic flow.
26	Traffic Sign	A point representation for traffic signs that help regulate, warn, guide or inform all road users.
27	Word Marking	A point representation of a word painted on the road surface to give motorists advance information on approaching facilities or traffic related devices. (e.g. HUMP AHEAD, SLOW etc.)

3.1 Arrow Marking

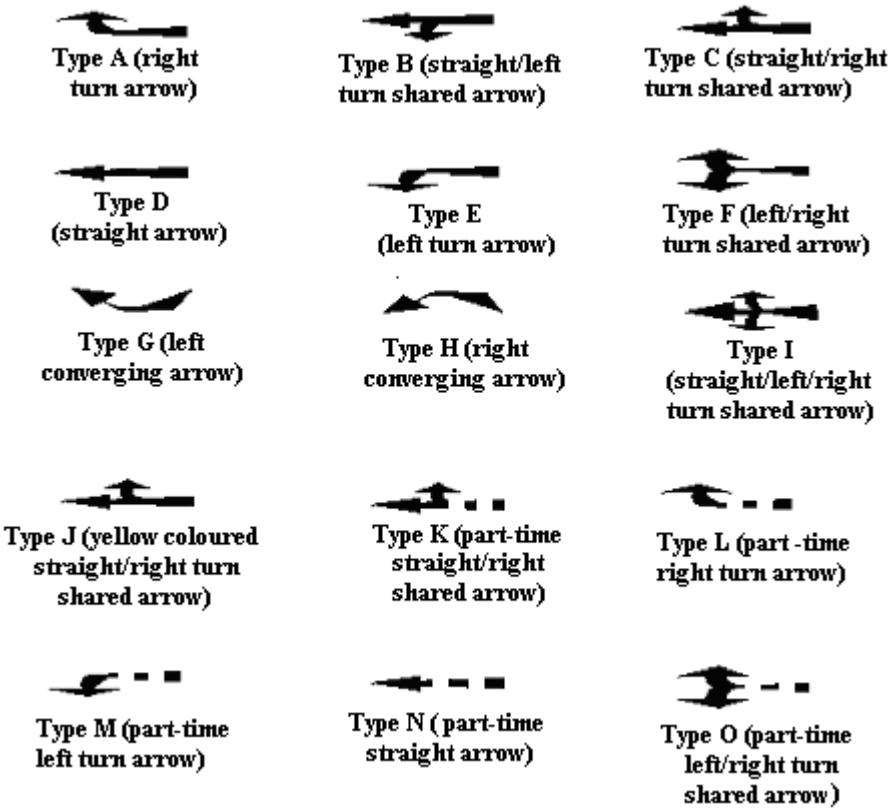
Filename	ArrowMarking.shp
Description	A point representation of an arrow painted on the road surface to advise motorists on the direction of traffic flow.

Attribute Format:

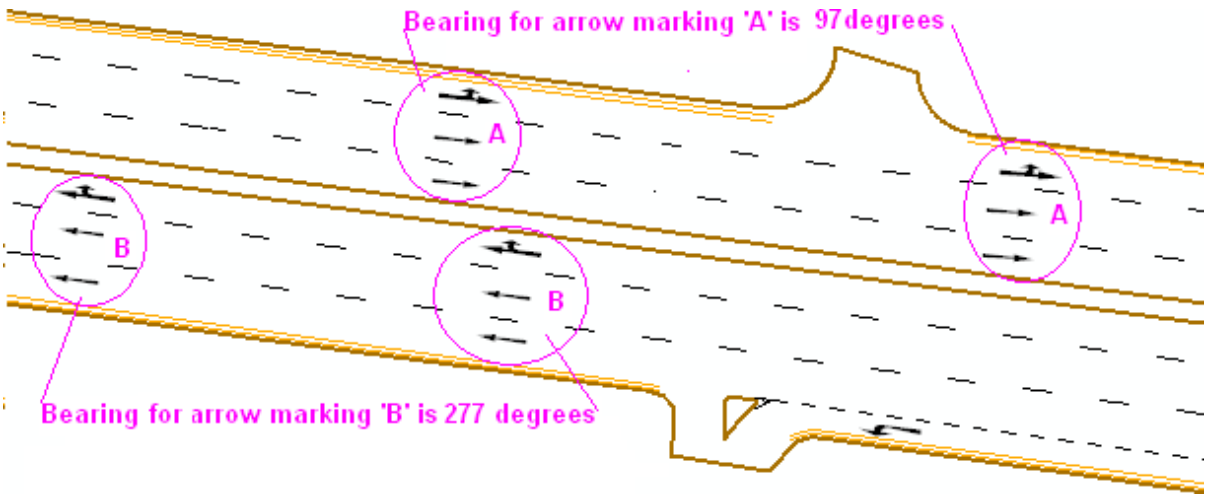
Field Name	Data Type	Size	Precision	Scale	Allow Null	Value	Description
TYP_CD	String	4	0	0	No	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O	Please see Note 1
BEARG_NUM	Double	8	38	8	No	Bearing. Please see Note 2	
LVL_NUM	Short	2	4	0	No	Level of road where feature exists	
						2	At-grade (ground level)
						8	1st level depressed road
						9	1st level elevated road
						7	2nd level depressed road
						10	2nd level elevated road

Notes:

1. List of TYP_CD:



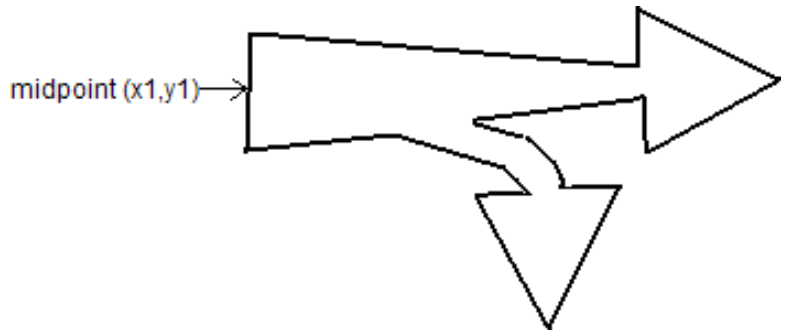
2. The bearing should correspond with the bearing of each individual road. For example, if the bearing of the road is 97 degrees, then the bearing of arrow markings A is 97 degrees and the bearing of arrow markings B is 277 degrees respectively.



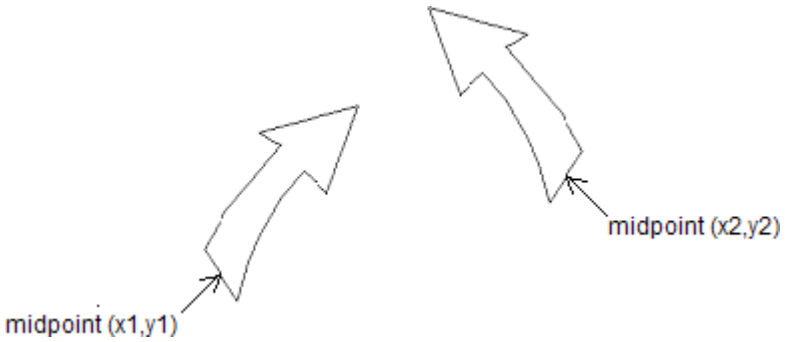
3. Arrow Marking co-ordinate is the midpoint at the base of the arrow in the direction of the traffic flow.

   For example,

   a) Type C (straight / right turn shared arrow): one arrow only, hence only one point (x1, y1) required.



   b) Types G (left converging arrow) & H (right converging arrow): two arrows, hence two points (x1, y1) and (x2, y2) are required.



3.2 Bollard

Filename	Bollard.shp
Description	A point representation of a strong thick post erected on streets to deter vehicles from passing through. It is also used as markers on road divider or as safety barriers along bus bay or side of roads. The split arrow bollard is captured under the 'Traffic Sign' dataset.

3.3 Bus Stop Location

Filename	BusStop.shp
Description	A point representation to indicate the position where buses should stop to pick up or drop off passengers.

Attribute Format:

Field Name	Data Type	Size	Precision	Scale	Allow Null	Value	Description
BUS_STOP_N	String	65	0	0	No	Please see Note 2	
BUS_ROOF_N	String	10	0	0	No	Please see Note 3	
LOC_DESC	Text	255	0	0	No	Location Description as shown on the bus stop pole	

Notes:

1. Records the co-ordinates of the BUS STOP POLE.

2. BUS_STOP_N – The five digit bus stop identification number that is displayed on the bus stop pole eg.50071 or 27301 as shown on new design. To record A as 1, Z as 9, B as 2, Y as 8 etc if the identification number contains alphabets.

3. BUS_ROOF_N – B-Series Number showed on the side of bus shelter roof eg. B01.

3.4 Control Box

Filename	ControllerBox.shp
Description	A point representation of a box containing an electronic device to control traffic lights, street lighting, ERP and traffic camera (J-eyes).

3.5 Convex Mirrors

Filename	ConvexMirror.shp
Description	A point representation of a mirror placed at street corner where visibility is poor, to assist motorists when making a turn at blind spots.

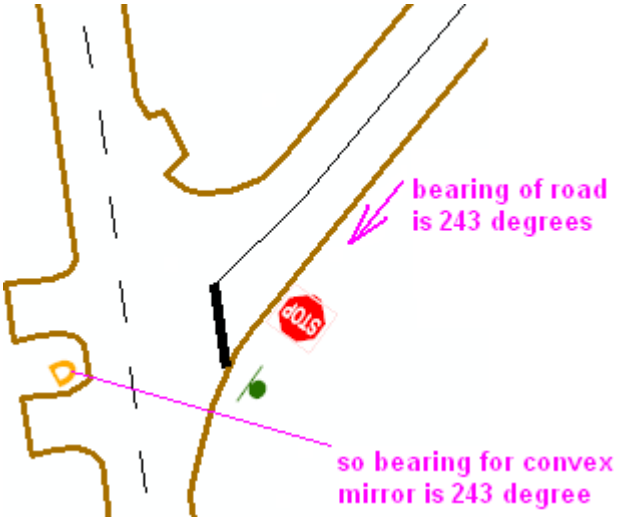
Attribute Format:

Field Name	Data Type	Size	Precision	Scale	Allow Null	Value	Description
BEARG_NUM	Double	8	38	8	No	Bearing. Please see Note 2	

Notes:

1. Record the co-ordinate of the pole on which the CONVEX MIRROR is mounted.

2. Bearing of convex mirror



3.6 Covered Linkway

Filename	CoveredLinkWay.shp
Description	A polygon representation of a covered passage designated for pedestrian use to link up with other commuter facilities.

Notes:
The linkway shall be represented by a polygon outlining the structure as seen from aerial view. The outline shall correspond to the outer edge of the roof of the covered linkway, as shows on example below by points 1, 2, 3, 4, 5, 6, 7, 8 & 9.

3.7 Cycling Path

Filename	LTACyclingTrail.shp
Description	A line representation of an intra-town path designated for cyclists. Excludes park connectors.

Attribute Format:

Name	String	Sembawang Cycling Path	Name of the cycling path
Hyperlink	String	www.mytransport.sg /content/mytransport /home/cycling.html	URL to MyTransport Cycling Page
Description	String	Intra-town Cycling Path in Sembawang Estate	Description of the cycling path.

3.8 Detector Loops

Filename	DetectorLoop.shp
Description	A polygon representation of an electronic loop on the road surface at strategic locations to detect traffic movements for traffic control purposes.

3.9 Emergency Gate

Filename	EmergencyGate.shp
Description	A point representation of a gate found along the opening on the island divider of an expressway that can be used by authorised vehicles such as police cars, fire engines, etc during an emergency.

Notes:

1. An emergency gate.

3.10 ERP Gantries

Filename	Gantry.shp
Type	Line
Description	A line representation of a raised metallic structure spanning across a carriageway to support electronic equipment for ERP.

Attribute Format:

Field Name	Data Type	Size	Precision	Scale	Allow Null	Value	Description
TYP_CD	String	4	0	0	No	Please see Note 1	
						P	ERP
TYP_CD_DES	Text	12	0	0	No	ERP	

Notes:

1. List of TYP_CD:

TYP_CD	Description	
P	ERP	

3.11 Footpath

Filename	Footpath.shp
Description	A line representation of a path designated for pedestrian use.

Notes:

1. The centre line of the FOOTPATH is to be captured.

3.12 Guard Rail

Filename	GuardRail.shp
Description	A line representation of a safety barrier to prevent vehicles from veering off the road or carriageway.

3.13 Lamp Posts

Filename	LampPost.shp
Description	A point representation of a pole for mounting street lighting.

Attribute Format:

Field Name	Data Type	Size	Precision	Scale	Allow Null	Value	Description
LAMPPOST_N	String	20	0	0		The number that is displayed on the lamp post. Please see Note 1.	

Note:

1. A lamp post with its lamp post number 27.

3.14 Lane Markings

Filename	LaneMarking.shp
Description	A line representation painted on the road surface to guide motorists along the carriageway.

Attribute Format:

Field Name	Data Type	Size	Precision	Scale	Allow Null	Value	Description
TYP_CD	String	4	0	0	No	Please see Note 5	
						A	
						A1	
						A2	
						A3	
						A4	
						A5	
						B	
						B1	
						C	
						D	
						E	
						F	
						G	
						H	
						I	
						J	
						K	
						L	
						M	

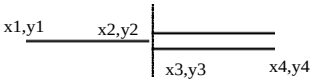
						N	
						O	
						P	
						Q	Multi-headed arrow marking
						R	Bus zone
						S	Continuous red line for full day bus lane
						S1	Dotted red line for full day bus lane
						T	Turning pocket
						U	Pedestrian Ahead marking
						V	Vibraline
						X	Traffic calming marking
						Y	Mandatory give way to buses exiting yellow box

Notes:

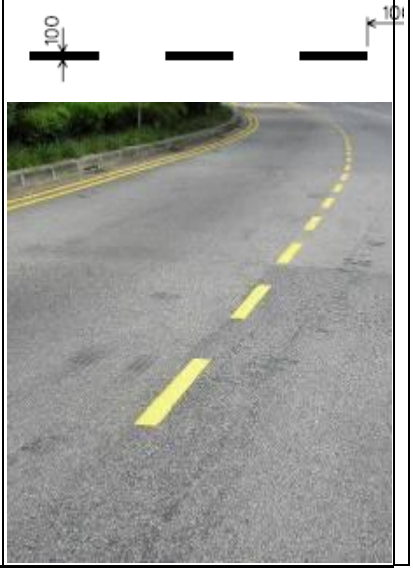
1. LANE MARKINGS within all Road are required to be collected and identified

accordingly.

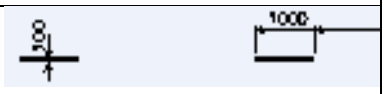
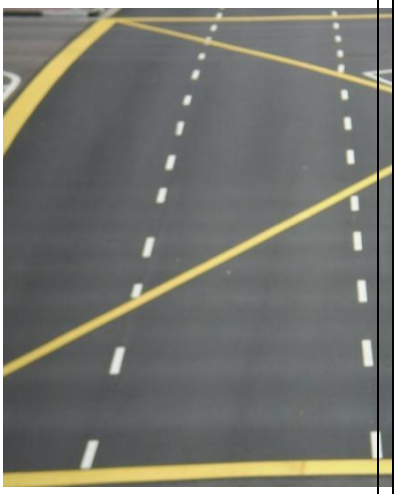
2. All coordinates captured shall be based on the centre of the lines.
3. If part of LANE MARKING is a single line and the other part is a double line, record as two separate records (see example below).

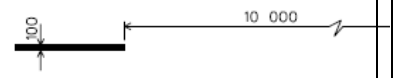


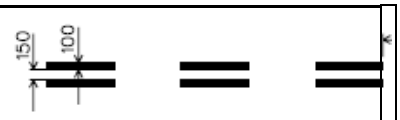
4. For Yellow Box Junction, bus zone and turning pocket capture all the vertices forming the out lines.
5. List of TYP_ CD:

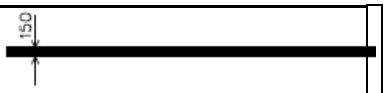
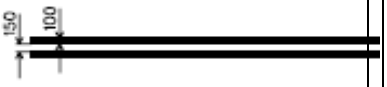
TYP_CD	Colour	Description		
A	White	These white lines are used to indicate the edge of the carriageway adjacent to auxiliary lanes e. g. Exclusive right / left turn lanes at junctions, lay-bys, bus bay etc	1 m x 1 m x 0.1 m	
A1	Yellow	These yellow lines are used along bus lanes to indicate a break for use by other turning vehicles	1 m x 1 m x 0.1 m	

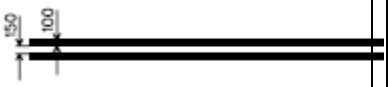
A2	White	These white lines are use to indicate the edge of the carriageway adjacent to auxiliary lanes e.g. Exclusive right/left turn lanes at acceleration/deceleration lanes along expressways. It is also known as speed change lane marking	1 m x 1 m x 0.2 m	 
A3	Yellow	These broken yellow lines are used along bus lane at junction with side road	1 m x 1 m x 0.3 m	 
A4	White	These broken white lines are used to demarcate signalised pedestrian crossing lines	0.2mx 0.3mx0.2m	

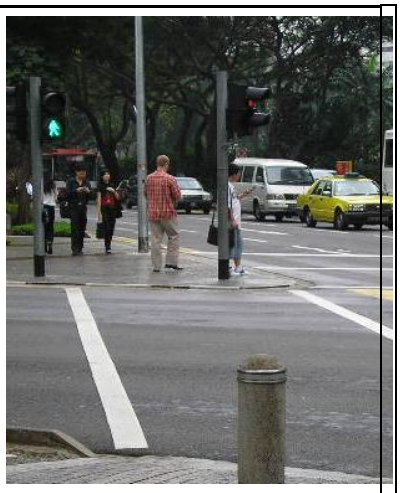
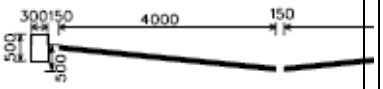
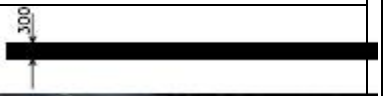
				
A5	White	These broken white lines are used for guiding motorist across a wide/ skewed junction	1m x 3m x 0.1m	 
B	White	These white lines are used as lane marking between lanes	2 m x 4 m x 0.1 m	 

B1	White	These white lines are used as lane marking between lanes on expressway only	2 m x 10 m x 0.1 m	 
C	White	These white lines are used as lane markings at light controlled intersection and along the approaches at/before the stop line. (Generally 7 to 10 marks are painted)	4 m x 2 m x 0.1 m	 

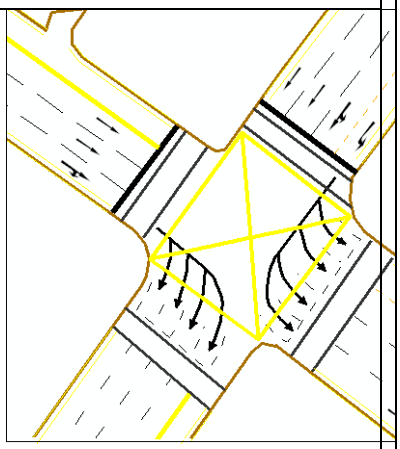
D	White-Double	Two parallel white lines indicate that traffic approaching these lines is to give way to oncoming traffic either on the left or right	1 m x 1 m x 0.1 m	 
E	White	These white lines are used as centre lines on a two-way carriageway	2.75 m x 2.75 m x 0.15 m	 

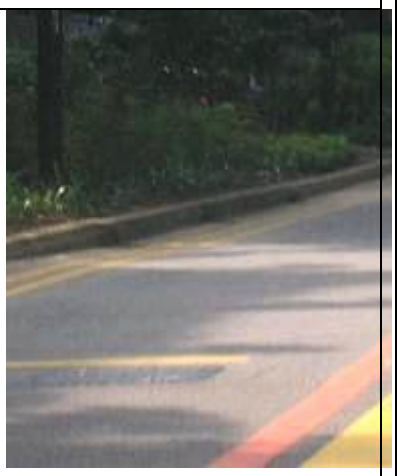
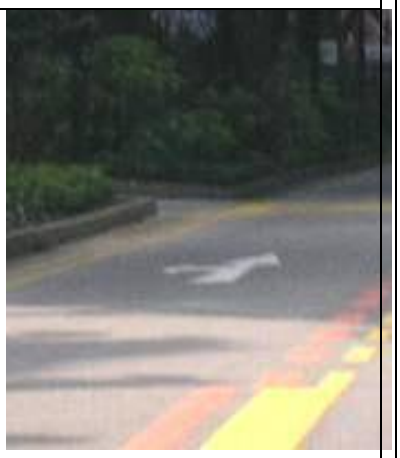
F	White	This continuous white line is used as a centre line on a two- way carriageway and also indicates no parking on both sides	Continuous x 0.15 m	 
G	Yellow	This continuous yellow line by the side of the carriageway indicates no parking from 7.00a.m. to 7.00p.m on that side of the carriageway except Sundays and public holidays	Continuous x 0.15 m	 
H	White-Double	Two parallel continuous white lines used as centre line on a two-way carriageway or between lanes to indicate no crossing of the lines	Continuous x 0.10 m	

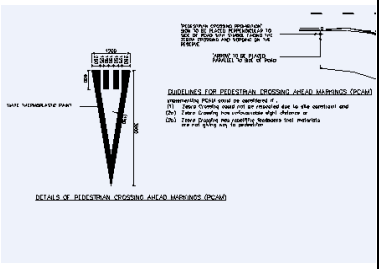
				
I	Yellow-Double	Two parallel continuous yellow lines by the side of the carriageway indicate no parking at all times on that side of the carriageway	Continuous x 0.10 m	 
J	White	This continuous white line is used along expressway adjacent to paved shoulder to indicate the presence of shoulder or adjacent to centre divider to indicate edge line. These are also painted at pedestrian crossings to	Continuous x 0.30 m	

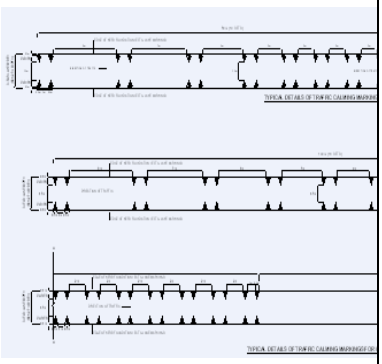
		indicate the area where pedestrians can cross.		
K	White	These zig zag white line are used to indicate approaching zebra crossing. They also indicate no crossing and no parking at area where these lines are painted	Zig Zag x 0.1m	 
L	Yellow	This continuous yellow line is used as bus lane marking	Continuous x 0.30 m	 

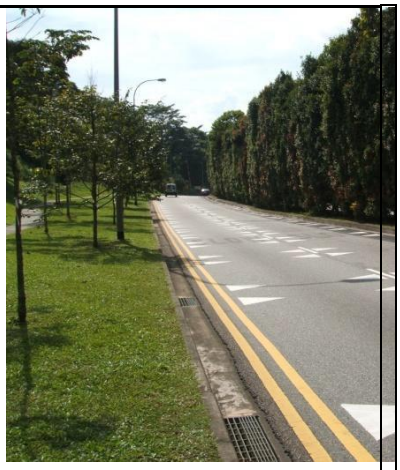
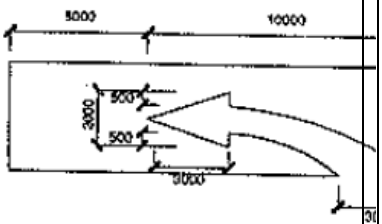
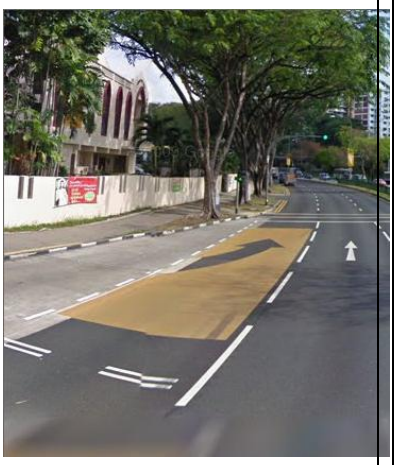
M	White	This continuous white line is used as stop lines & edge lines painted next to the centre divider kerbs. These are also painted along dual 3-lane (and above) roads where street lightings are not provided along the centre divider.	Continuous x 0.20 m	
N	Yellow	These continuous yellow lines are used for yellow box junction. 200mm for the diagonals and 455mm for the sides	Continuous	
O	Yellow	Single zig zag yellow line at the edge of a road prohibiting parking at all times	Zig Zag x 0.1m	

P	Yellow-Double	Double zig zag yellow line at the edge of a road prohibiting stopping of vehicles at all times unless the vehicle is prevented from proceeding due to traffic conditions	Zig Zag x 0.1m	
Q	White	Type Q is for multi-headed arrows LANE MARKING	Continuous	 

R	Yellow	Type R is for Bus Zone marking	Continuous	
S	Red	This line is used as a full day bus lane marking.	Continuous	
S1	Red	These lines are used along bus lanes to indicate a break for use by other turning vehicles.	Dash	

T	White	Type T is for Turning Pocket marking	Dash	
U	White	Pedestrian crossing ahead marking (PCAM)	As shown	

				
V	White	Type V is for Vibraline marking	Continuous	
X	White	Traffic calming marking	As shown	

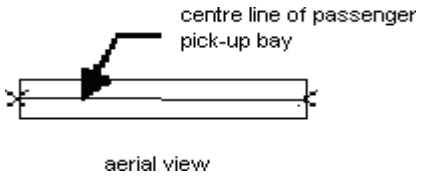
				
Y	Yellow	Mandatory give way to buses exiting yellow box		 

3.15 Passenger Pickup Bay

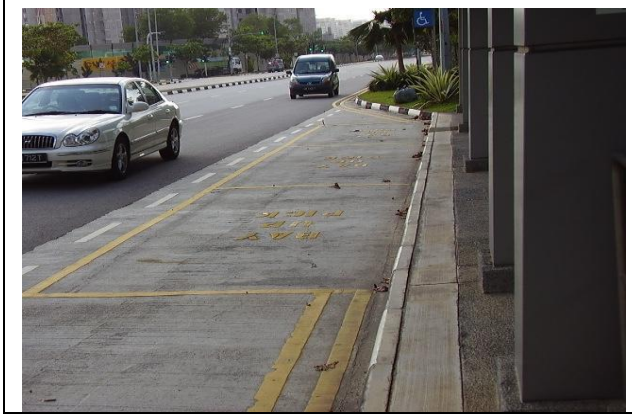
Filename	PassengerPickupBay.shp
Type	Line
Description	A line representation of an area along the side of road designated for vehicles to pick up or drop off passengers. Pick-up bays are normally found at MRT/LRT stations and commercial sites.

Notes:

1. The span of PICKUP BAY shall be the two end-most points of the bays.



aerial view



3.16 Pedestrian Overhead Bridge / Underpass

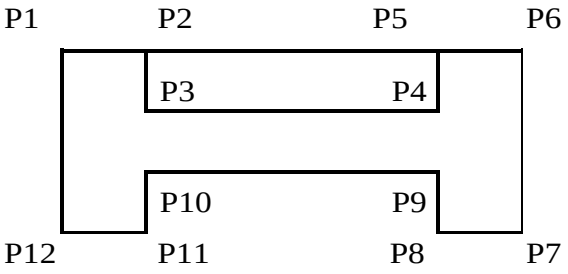
Filename	PedestrianOverheadbridge.shp
Type	Polygon
Description	A polygon representation of a raised or underground structure to be used by pedestrians to cross a road or canal.

Attribute Format:

Field Name	Data Type	Size	Precision	Scale	Allow Null	Value	Description
TYP_CD	String	4	0	0	No	Please see Note 1	
						PO	Pedestrian Overhead Bridge
						PU	Pedestrian Underpass
						FB	Foot Bridge
						BW	Broad Walk
						PB	Pedestrian Bridge

Notes:

1. The PEDESTRIAN OVERHEAD BRIDGE/UNDERPASS shall be represented by a polygon outlining the structure as seen from aerial view. The outline shall correspond to the outer edge of the bridge railing and the base of the staircases at either end of the bridge. Points P1 to P12 need to be captured.



Arial view of a Pedestrian Overhead Bridge with staircases at both ends

2. List of TYP_CD:

TYP_CD	Description	
PO	Pedestrian Overhead Bridge	
PU	Pedestrian Underpass	
FB	Foot Bridge	

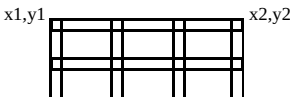
BW	Broad Walk		
PB	Pedestrian Bridge		

3.17 Railings

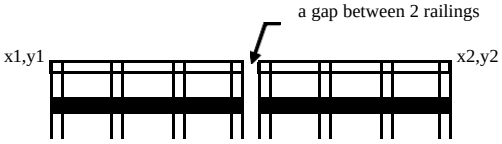
Filename	Railing.shp
Type	Line
Description	A line representation of a metallic barrier to separate between two areas; for instance, between two road carriageways, along edges of road or embankment.

Notes:

1. The length of the RAILING is the two end-most points, i.e.



2. The standard gap between two RAILING panels shall be IGNORED and the two railings panels treated as one continuous span.



3.18 Retaining Walls

Filename	RetainingWall.shp
Type	Line
Description	A line representation of a wall that supports the adjacent soil from erosion or landslide.
Notes: 1. The length of the RETAINING WALL is to be measured along its base.	

3.19 Road Crossing

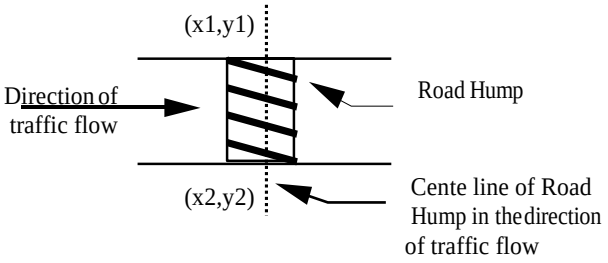
Filename	RoadCrossing.shp
Description	A line representation of a designated location for pedestrians to cross the road.

3.20 Road Hump

Filename	RoadHump.shp
Description	A line representation of a raised section across a road to reduce the speed of vehicles. Road Humps are painted over with distinctive diagonal alternate black and yellow strips. It is usually preceded by a "HUMP AHEAD" marking on the road in the direction of the traffic flow.

Notes:

1. The Road Hump span is to be recorded at the centre line of the hump.



3.21 Road Section Lines

Filename	RoadSectionLine.shp
Description	A line representation with information on road name and road code.

Attribute Format:

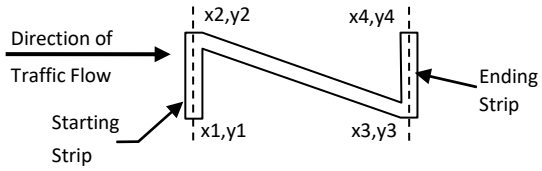
		Sample Value	Description
RD_CD	String	WAC01Y	Road code assigned to road name
RD_CD_DESC	String	WATERLOO CLOSE	Description of the road code

3.22 Speed Regulating Strips

Filename	SpeedRegulatingStrip.shp
Type	Line
Description	A line representation of raised painted strips across a road to reduce the speed of vehicles when approaching a bend or near heavy pedestrian traffic.

Notes:

1 Record the centre line of the strip.
2 For a series of SPEED REGULATING STRIPS found on the road, record only the two end-most STRIPS and join up the two strips with a diagonal line as shown:-



3.23 Street Paint

Filename	StreetPaint.shp
Description	A polygon representation of a section of the road paved in red to warn motorists that they are entering a zone where school children may be crossing roads.

Notes:

1. Capture all corners of the polygon depicting the STREET PAINT section.

3.24 Taxi Stand

Filename	TaxiStop.shp
Description	A point representation to indicate the position where taxis should stop to pickup or drop off passengers.

Attribute Format:

Field Name	Data Type	Size	Precision	Scale	Allow Null	Value	Description
TYP_CD	String	10	0	0	No	TSTOP	Taxi Stop
						TPD	Taxi Pick up/Drop off
						TSTAND	Taxi Stand

Notes:

1) Record the co-ordinate of the TAXI STOP POLE

2) List of TYP_CD:

TYP_CD	Description	
TSTOP	Taxi Stop	
TPD	Taxi Pick-up/Drop Off	

	TSTAND	Taxi Stand		

3.25 Traffic Light

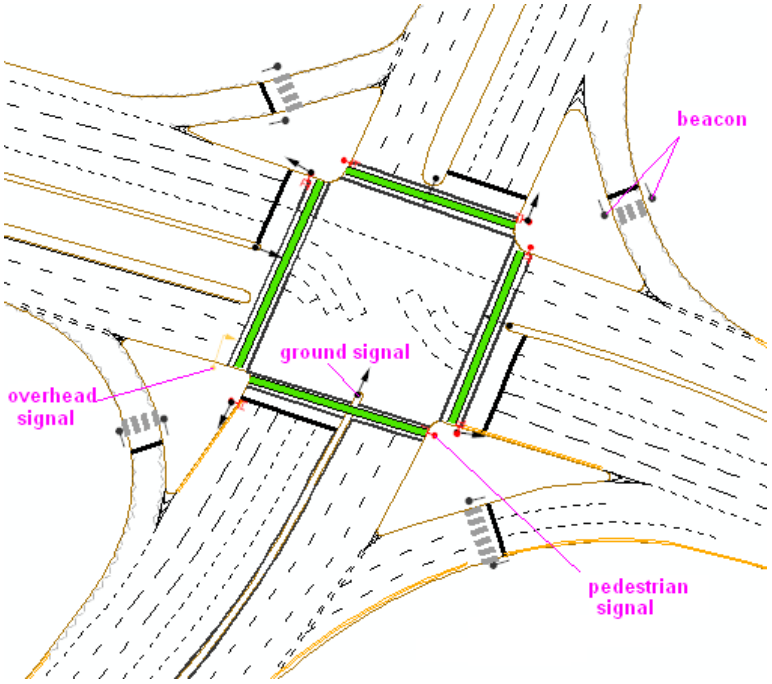
Filename	TrafficSignalAspect.shp
Description	A point representation of lights consisting of signal aspects such as ground, overhead, green filter arrow, beacons, etc to control traffic flow.

Attribute Format:

Field Name	Data Type	Size	Precision	Scale	Allow Null	Value	Description
BEARG_NUM	Double	8	38	8	No	Bearing of traffic signal aspect Please see Note 1	

Notes:

1. The bearing of the traffic signal is required and should be within ± 3° tolerance.



3.26 Traffic Sign

Filename	TrafficSign.shp
Type	Point
Description	A point representation for traffic signs that help regulate, warn, guide or inform all road users.

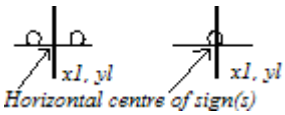
Attribute Format:

Field Name	Data Type	Size	Precision	Scale	Allow Null	Value	Description
TYP_CD	String	4	0	0	No	Please refer to Note 4 for Category	
BEARG_NUM	Double	8	38	8	No	Bearing of the traffic sign. Please see Note 3.	
MOUNT_MTD_CD	String	1	0	0	No	P	Traffic sign mounted on 1 pole
						Q	Traffic sign mounted on 2 poles
						B	Bridge
						G	Gantry
						W	Wall
						L	Lamp Post
						S	Traffic Signal
						X	Others

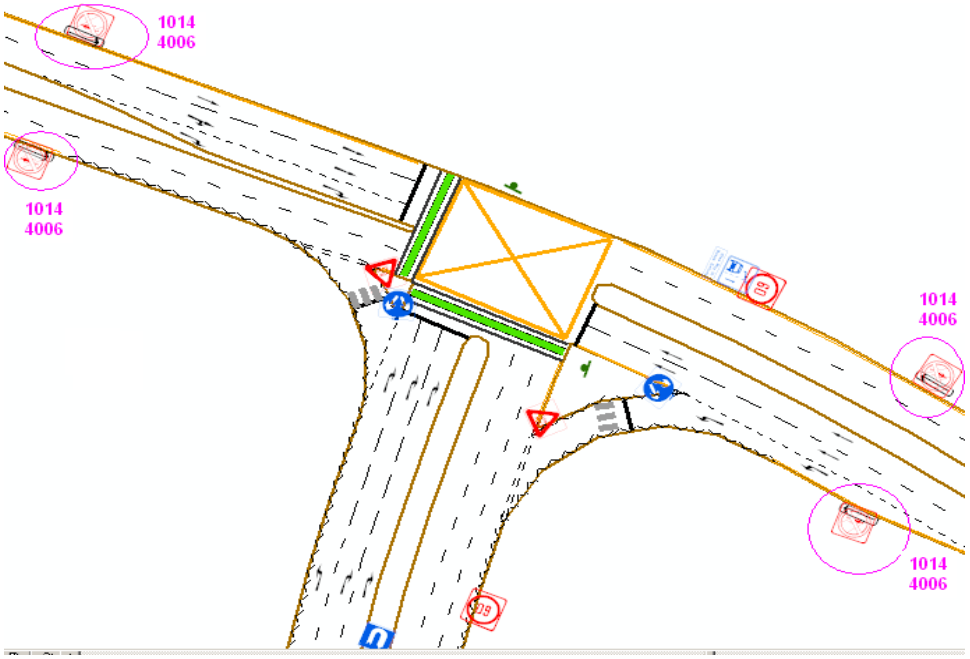
Notes:

1. If traffic sign description does not match any sign in the list, enter 'O###', where ### is a running serial number that uniquely identifies a particular non-standard traffic sign.

2. The co-ordinate of TRAFFIC SIGN should be captured at the horizontal centre of the sign(s).



3. The bearing should follow the flow of traffic except for pedestrian crossing prohibition (1014) and directional arrow (4006) signs. Their orientation are as shown in diagram below:



4. Category of Traffic Signs

1001 to 1999 - Prohibitory Traffic Sign

2001 to 2999 - Warning Traffic Sign

3001 to 3999 - Information Traffic Sign

4001 to 4999 - Supplementary Traffic Sign

5001 to 5999 - Mandatory Traffic Sign

6001 to 6999 - Street Traffic Sign

9001 to 9299 - Flyover Traffic Sign

9300 to 9399 - Tunnel Traffic Sign

9400 to 9499 - Underpass Traffic Sign

9500 to 9599 - Viaduct Traffic Sign

3.27 Word Markings

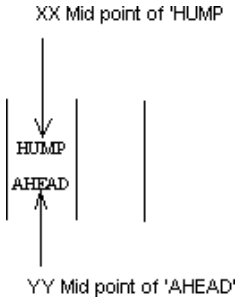
Filename	WordMarking.shp
Description	A point representation of a word painted on the road surface to give motorists advance information on approaching facilities or traffic related devices. (e.g. HUMP AHEAD, SLOW etc.)

Attribute Format:

Field Name	Data Type	Size	Precision	Scale	Allow Null	Value	Description
DESC_TXT	String	15	0	0	No	Record the word (text) of the marking in the description field. Please see Note 2	
BEARG_NUM	Double	8	38	8	No	Bearing. Please see Note 2	

Notes:

1. Word Marking location is the mid-point of the word marked. E.g. HUMP AHEAD, two separate POINT records, xx and yy are to be captured.



2. The bearing of the word marking is required.