7. Main Map Data Frame

7.1 Main Map Data Frame

name [Main Map Data Frame]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	B1		Main Map Distribution Header		a
2		B2		Main Map Basic Data Frame		c
3		B3		Main Map Extended Data Frame		c
-	-	-	-	-	-	-
4	Free	B4		Route Guidance Data Frame		c

7.1.1 Main Map Distribution Header

name [Main Map Distribution Header]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	SWS	Header Size	(1)	a
2	2	8	PID	Lower Left Reference Parcel ID Number	(14)	a
3	10	2	N:N	Lower Left Reference Parcel Location Code within the Block	(2)	a
4	12	2	N:B::N:N:N	Divided/Integrated Parcel Identifier	(3)	a
5	14	4	N:B:B::B:B:B:	Practical Management Code	(4)	b
6	18	2	B:B:N	Data Source Flag	(5)	a
7	20	2	B:N	Real-length Data in Normalized Longitudinal (X-axis) Direction	(6)	b
8	22	2	B:N	Real-length Data in Normalized Latitudinal (Y-axis) Direction	(6)	b
9	24	2	I	Geomagnetic Strength Data	(7)	b
10	26	2	I	Geomagnetic Declination Data	(8)	b
11	28	4	DSA	Offset to Route Guidance Data Frame	(9)	b
12	32	2	BS	Size of Route Guidance Data Frame	(10)	b
13	34	2	N	Number of Regions used for Route Planning Data	(11)	a
14	36	B1	N	A Sequence of Route Planning Data Region Numbers	(12)	c
15	O1	B2	M	A Sequence of Basic Data Frame Management Records (#1 to n)		a
16	O2	B3	M	A Sequence of Extended Data Frame Management Records (#1 to m)		c
17	O3	B4		Adjacent Parcels Address Information	(13)	c
18	O4	B5		Extension (Main Map Distribution Header)	(15)	c

The number of basic data frame management record sequences and the number of basic data frame management records, n is specified in Chapter 6, "Level Management Record"

The number of extended data frame management record sequences and the number of basic data frame management records, m is specified in Chapter 6, "Level Management Record"

(1) Header Size

The size of the main map distribution header is described in this field.

(2) Lower Left Reference Parcel Location Code

The relative location of the parcel data in the management block is specified counting from the lower left reference parcel. The "number of parcels in latitudinal direction" and the "number of parcels in longitudinal direction" specified in the parcel management information determines the number of divisions. The parcels in a block are coded in ascending order in the longitudinal and latitudinal directions from the reference point of the block diagonally as shown below. For both parcel location in latitudinal direction and longitudinal direction, it can be coded from 0 to 255.

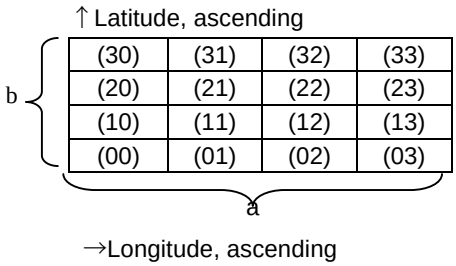

Figure 7-1 Placement of Regular Parcels (4 x 4)

In the above example, "a" indicates the latitudinal divided area number and "b" indicates the longitudinal divided area number.

No.	bit	Description
1	15 to 8	Latitudinal Divided Area Number
2	7 to 0	Longitudinal Divided Area Number

(3) Divided/Integrated Parcel Identifier

The identifier indicates whether the regular parcel is divided or multiple regular parcels are integrated.

When regular parcel is divided further, the relative location in the regular parcel is described in this field. When multiple regular parcels are integrated, the size of the integrated parcel is described in this field.

When the parcel is divided, its relative location in the regular parcel is described in this field. A regular parcel can be divided up to 64 (8 x 8) parcels.

When multiple parcels are integrated, the number of the integrated regular parcels counted from the regular parcel is described in this field. Up to 64(8 x 8) parcels can be integrated.

No.	bit	Description			
1	15 to 14	Divided/Integrated Identifier	bit15	bit14	Meaning
			0	0	(RESERVED)
			0	1	Divided
			1	0	Integrated
			1	1	Not divided/integrated
2	13	Adjacent Parcel Address Information Flag	bit13	Meaning	
			0	Information contained	
			1	No information contained	
3	12 to 10	(RESERVED)			
4	9 to 8	Type Number given by the Number of Managed Parcels (3-1)			
5	7 to 4	Relative Value in Latitudinal Direction (for Divided Parcel) or The Number of Regular Parcels minus 1 (for Integrated Parcel)			
6	3 to 0	Relative Value in Longitudinal Direction (for Divided Parcel) or The Number of Regular Parcels minus 1(for Integrated Parcel)			

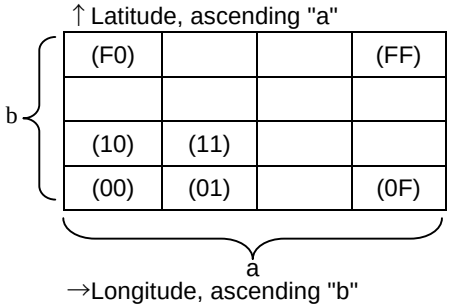

Figure 7-2 Placement of Divided Parcels

In the above example, "a" indicates the latitudinal divided area number and "b" indicates the longitudinal divided area number.

Size of Integrated Parcel

The value described in item No. 5 pluses 1 indicates the number of regular parcels in the latitudinal direction.
The value described in item No. 6 pluses 1 indicates the number of regular parcels in the longitudinal direction.
For example, when both values described in item no. 5 and item no. 6 are 3, the size of integrated parcel is 4 x 4.

(3-1) Type Number given by the Number of Managed Parcels

0 is assigned to the field of management information (parent) referred by parcel block management records .

The " latitudinal/longitudinal divided parcel type number: 1 to 3" specified in the level management information of the level is described in the parcel management information referred for the divided parcels.

For example, when the type number is 1, use the " latitudinal/longitudinal divided parcel management number 1" for the level management information of the level.

(4) Practical Management Code

No.	bit	Description		
1	31 to 24	Area Number (4-1)		
2	23 to 8	Supplementary Parcel Information	bit	Meaning
			23	Area in which infrastructure-1 exists (1--Yes, 0--No)
			22	Area in which infrastructure-2 exists (1--Yes, 0--No)
			21 to 11	(RESERVED)
			10	Area in which data for all roads has been created (1--Valid, 0--Invalid)
			9	Information indicating whether the suburb/city flag exists (1--Valid, 0--Invalid)
			8	Suburb/city flag (1--Suburb, 0--City)
3	7 to 0	(RESERVED)		

(4-1) Area Number

A number (0 to 255) is described in this field to refer to area information defined in the metafile (such as a passage classification).

(5) Data Source Flag

The scale of a data source used for cartographic is described.

No.	bit	Description		
1	15	Height Information Flag (5-1) (specified per regular parcel)	bit15	Meaning
			0	No height information contained
			1	Height information contained
2	14	Data Source Scale Standard (5-2)	bit14	Meaning
			0	Data source scale standard is 1/100.
			1	Data source scale standard is 1/10000.
3	13 to 0	Data Source Identifier (5-3)		

(5-1) Height Information Flag (specified per parcel)

This flag indicates whether the height information for the parcel data is contained or not.

(5-2) The data source scale standard indicates a standard scale for a data source identifier.

(5-3) The data source identifier indicates the denominator of a scale for a data source.
The value is described in this field as follows:

When the data source scale standard is 0 (1/100), each scale is contained as indicated below.
The allowable range is 1/100 to 1/1638300.

1/2500 → 25

1/10000 → 100

1/50000 → 500

When the data source scale standard is 1 (1/10000), each scale is set as indicated below.
The allowable range is 1/10000 to 1/163830000.

1/2500000 → 250

1/10000000 → 1000

(6) Real-length Data

This field describes the 100-folded value of an actual distance (unit: meter) per 1 LSB in the normalized coordinate within a parcel. Data for the X-axis direction is the mean of the upper side and lower side. Data for the Y-axis direction is the mean of the right side and left side.

No.	bit	Description		
1	15	Magnification	bit15	Meaning
			0	Contains 100-folded value of actual distance (unit: meter).
			1	Contains actual distance (unit: meter).
2	14 to 0	Actual Distance		

When the magnification is 0 (100), the allowable range is 0.01 m to 327.67 m.

When the magnification is 1 (1), the allowable range is 1 m to 32767 m.

(7) Geomagnetic Strength Data

This field describes data for the geomagnetic strength and declination.

The value in each bit is represented as follows:

Item	Representation	Unit
Strength data	Signed	100 (nT)
Declination data	Signed	0.1 (degree)

(8) Declination Data

For declination data, the true north is represented as 0 (degree), westward declination is represented with a plus sign, and eastward declination is represented with a minus sign. The true south is + 180 (degree).

South	←→	West	←→	North	←→	East	←→	South
180 °	to	90 °	to	0 °	to	-90 °	to	-179.9 °

(9) Offset to Route Guidance Data Frame

The location of the route guidance data frame is described in this field. When no actual data exists, FFFFFFFF (16) is assigned to this field.

(10) Size of Route Guidance Data Frame

The size of the route guidance data frame is described in this field. When FFFFFFFF (16) is assigned to the field, the value is insignificant.

(11) Number of Regions for Route Planning Data

This field describes the number of route planning data of corresponding level or of the lowest level. The route planning data is contained in the region which is built up based on the parcel.

(12) Region Number for Route Planning Data

name [Region Number for Route Planning Data]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	I:	Level Number	(12-1)	a
2	2	2	N	Region Number	(12-2)	a

(12-1) Level Number

No.	bit	Description
1	15 to 10	The level of region number for the route planning data. The value range between -31 and +31. "-32" is assigned to "null". –32 is assigned to dummy region management record.
2	9 to 0	(RESERVED)

(12-2) Region Number

Region number is used for reference to route planning data.

(13) Adjacent Parcel Address Information

Adjacent parcel address information is placed in the sequence of the upper, upper right, right, lower right, lower, lower left, left, upper left. When this information exists, specify settings for the 8 directions. The lengths of adjacent sides of upper, right, lower, and left parcels are the same with those of the target parcel. For adjacent parcels at the upper right, lower right, lower left, and upper left, each parcel is counted as one parcel even if it is divided.

When a adjacent parcel is divided, the sequence in which the divided adjacent parcels are handled is ascending order based on the left ahead coordinate on each side.

When there are multiple adjacent parcels on a side and some of the parcels are divided, the management information is handled on the assumption that all the adjacent parcels on the side are divided.

When a adjacent parcel is divided, the identification as a divided parcel is described in the address information for divided parcel management.

name [Adjacent Parcel Address Information]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	B1		A Sequence of Adjacent Parcel Address Information		a
2	O1	B2		A Sequence of Adjacent Divided Parcel Information		c

A adjacent parcel can be divided up to 16.

The representation of the adjacent parcel address information when adjacent parcels smaller than the target parcel (divided parcels) are represented is different from that when adjacent parcels that are the same size with the parcel or larger than the parcel (adjacent parcels not divided) are represented.

name [Adjacent Parcel Address Information] (No Adjacent Parcels Divided)

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	4	DSA	Offset to Adjacent Main Map Data Frame	(13-1)	b
2	4	2	BS	Size of Adjacent Main Map Data Frame	(13-2)	b

(13-1) Offset to Adjacent Main Map Data Frame

This field describes the storage location of the main map data frame (parcel). When there are no adjacent parcels, FFFFFFFF (16) is assigned to this field. When there are no adjacent parcels, the information about size is insignificant.

(13-2) Size of Adjacent Main Map Data Frame

This field describes the size of the main map data frame (parcel). When FFFFFFFF (16) is assigned to the address indicated above, the information about the size is insignificant.

When adjacent parcels are divided, 0000 (16) is assigned to the size. In this case, the meaning of the offset (4 bytes) is changed as follows:

name [Adjacent Parcel Address Information] (Adjacent Parcels Divided)

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	D	Offset Address to Adjacent Divided Parcel Information	(13-3)	a
2	2	2	N:N: :N	Adjacent Divided Parcel Information	(13-4)	a
3	4	2	BS	Size of Adjacent Main Map Data Frame(fixed at 0)	(13-2)	a

When adjacent parcels are divided, the location where the parcel management information for purposes of management of divisions is stored and the number of divisions are indicated. (See below.)

(13-3) Offset Address to Adjacent Divided Parcel Information

This field describes the address at the beginning of the adjacent parcel division information using the offset from the beginning of the main map data frame.

(13-4) Adjacent Divided Parcel Information

No.	bit	Description
1	15 to 12	Number of Divided Parcels in Y-axis (Latitudinal) Direction / Number of Regular Parcels minus 1
2	11 to 8	Number of Divided Parcels in X-axis (Longitudinal) Direction / Number of Regular Parcels minus 1
3	7 to 4	(RESERVED)
4	3 to 0	Number of Adjacent Parcels: Indicates the number of parcels adjoining to the sides of the target parcel minus 1.

When a adjacent parcel is an integrated parcel, 0 is assigned to both the number of divisions in the X-axis direction/regular parcel and the number of divisions in the Y-axis direction/regular parcel

When any of the parcels diagonally placed (at the upper right, lower right, lower left, and upper left) are divided, normalized values are assigned to both the number of divisions in the X-axis direction/regular parcel and the number of divisions in the Y-axis direction/regular parcel. However, the number of adjacent parcels is set to 1, thus 0 is specified.

name [Adjacent Parcel Division Information]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	B1		A Sequence of Adjacent Parcel Address Information		

There are records for adjacent parcel division information corresponding to the number of adjacent parcels divided.

The sequence is the same with that for the adjacent parcel address information.

Example for Defining Adjacent Parcel Address:

The following shows an example when the adjacent parcel at the right is divided into 4 x 4 and the parcel at the lower right is divided into 2 x 2 to the target parcel:

```
Adjacent parcel address information {
        Adjacent parcel address information for upper side (no adjacent parcel divided){
                Upper side parcel address {
                        Offset (4 bytes)
                        Size (2 bytes)
                  }
        }
        Adjacent parcel address information for upper right side (no adjacent parcel divided){
                Upper right parcel address {   }
        }
        Adjacent parcel address information for right side (adjacent parcel divided){
        Offset address to adjacent parcel division information (2 bytes)
                Adjacent parcel division information (2 bytes)
                Size = 0 (2 bytes)
        }
        Adjacent parcel address information for lower right side (adjacent parcel divided){   }
        Adjacent parcel address information for lower side (no adjacent parcel divided){   }
        Adjacent parcel address information for lower left side (no adjacent parcel divided){
        Adjacent parcel address information for left side (no adjacent parcel divided){   }
        Adjacent parcel address information for upper left side (no adjacent parcel divided){   }
        Adjacent parcel division information {
                for (the number of adjacent parcels at right side) {
                        Adjacent parcel address information(no adjacent parcel divided)
                }
                for (the number of parcels at lower right) {    • • • fixed at 1
                        Adjacent parcel address information (no adjacent parcel divided)
                }
        }
}
```

Conceptual Schema of Adjacent Parcels

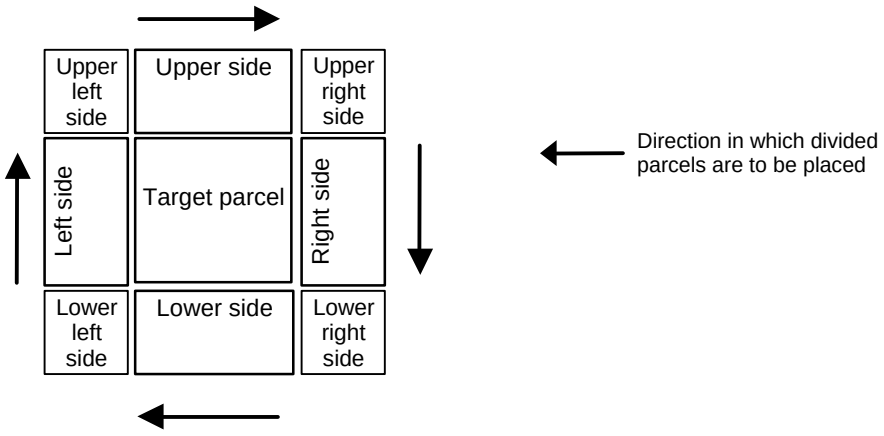

Figure 7-3 Conceptual Scheme of Adjacent Parcels

Example of Adjacent Parcel Address Information for Parcels Divided/Integrated:

When the target parcel (indicated in gray), lower left parcel, left parcel, and upper left parcel are made up of integrated 4 regular parcels, the parcel at the lower side of the right side of the target parcel is divided, and other parcels are regular parcels as indicated in the figure below:

- For the upper side and lower side, define address information for the two divided parcels.
- For the right side, define address information for the four divided parcels. (Virtually divide the upper parcel corresponding to the lower parcels divided.)
- For the left side, define address information for the adjacent integrated parcel.
- For the upper right side and lower right side, define address information for the regular parcel adjacent the target parcel respectively.
- For the lower left side and upper left side, define address information for the integrated parcel adjacent the target parcel respectively.

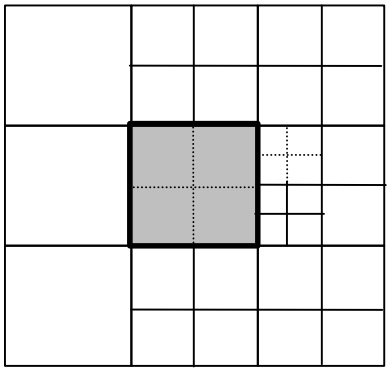

Figure 7-4 Adjacent Divided/Integrated Parcels

(14) Left Ahead Parcel ID

The left ahead longitude and latitude for the parcel is represented by PID when the parcel is a regular parcel or integrated parcel.

When the parcel is a divided parcel, the left ahead longitude and latitude for the regular parcel including the parcel is represented by PID.

(15) Extension (Main Map Distribution Header)

When a value described for the size of the main map distribution header is larger than that specified in the specification, the additional space can be used as an extended field.

How to expand fields is specified by the expansion method defined separately.

7.1.2 Basic and Extended Data Frame Management Record

name [Main Map Data Frame Management Record]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	4	D	Offset to Main Map Data Frame	(1)	b
2	4	2	SWS	Size of Main Map Data Frame	(2)	b

(1) Offset to Main Map Data Frame

This field describes the displacement from the beginning of the main map data frame to the beginning of a data frame.

(2) Size of Main Map Data Frame

This field describes the size of a data frame. When the data frame contains no actual data, 0000 (16) is assigned to this field.

7.1.3 Main Map Basic Data Frame

name [Main Map Basic Data Frame]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	B1	M	Road Data Frame		c
2		B2	M	Background Data Frame		c
3		B3	M	Name Data Frame		c
4		B4		Additional Data A Frame		c
5		B5		Additional Data B Frame		c

The actual sequence of data frames is determined by META.

7.1.4 Main Map Extended Data Frame

name [Main Map Extended Data Frame]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1		B1	M	Infra-link Data Frame	31.3	c

7.1.4.1 Main Map Extended Data

name [Main Map Extended Data]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	12	N	User ID		a
2	12	4	N	Data ID Code		a
3	16	B1		A Sequence of Extended Data		c

This section describes about the general format. For the detailed specifications of each extended field, see the related section.