

8.6 Shape Data Frame

name [Shape Data Frame]

| No. | offset | Data length | Data type | Item name | Remarks | Classification |
|-----|--------|-------------|-----------|---------------------------|---------|----------------|
| 1 | 0 | B1 | | Shape Distribution Header | | b |
| 2 | O1 | B2 | | Shape Data List | | |

8.6.1 Shape Distribution Header

name [Shape Distribution Header]

| No. | offset | Data length | Data type | Item name | Remarks | Classification |
|-----|--------|-------------|-----------|---|---------|----------------|
| 1 | 0 | 2 | SWS | Size of the Shape Distribution Header | | a |
| 2 | 2 | 2 | N | Number of Shape Data Management Information items | | a |
| 3 | 4 | | | A Sequence of Shape Data Management Information | | b |

8.6.1.1 Shape Data Management Information

name [Shape Data Management Information]

| No. | offset | Data length | Data type | Item name | Remarks | Classification |
|-----|--------|-------------|-----------|---|---------|----------------|
| 1 | 0 | 2 | D | Offset to the Shape Data List | (1) | a |
| 2 | 2 | 2 | N | Number of Shape Data Management Information Items | (2) | a |

(1) Offset to the Shape Data List

This field describes the displacement from the beginning of the shape data frame to the beginning of the shape data list.

(2) Number of Shape Detail Data Records

This field describes the total number of detailed shape data records constituting the shape data list. If there is no entity, the size is 0.

8.6.2 Shape Data List

name [Shape Data List]

| No. | offset | Data length | Data type | Item name | Remarks | Classification |
|-----|--------|-------------|-----------|---|---------|----------------|
| 1 | 0 | B1 | | A Sequence of Detailed Shape Data Records | | |

8.6.2.1 Detailed Shape Data Record

name [Detailed Shape Data Record]

| No. | offset | Data length | Data type | Item name | Remarks | Classification |
|-----|--------|-------------|-----------|--|---------|----------------|
| 1 | 0 | 2 | B:N | Shape Classification + Number of Offset Coordinate Records | (1) | a |
| 2 | 2 | B1 | | Element Point Coordinate Information | | a |
| 3 | O1 | B2 | | A Sequence of Height Information Records | | c |
| 4 | O2 | 2 | N | Building Height | | c |

(1) Shape Classification + Number of Offset Coordinate Records

| No. | bit | Description | | | |
|-----|----------|-------------------------------------|-------|-------|------------|
| 1 | 15 to 14 | Shape Classification | bit15 | bit14 | Meaning |
| | | | 0 | 0 | (RESERVED) |
| | | | 0 | 1 | Line data |
| | | | 1 | 0 | Area data |
| | | | 1 | 1 | (RESERVED) |
| 2 | 13 to 11 | (RESERVED) | | | |
| 3 | 10 to 0 | Number of Offset Coordinate Records | | | |

8.6.2.1.1 Element Point Coordinate Information

name [Element Point Coordinate Information]

| No. | offset | Data length | Data type | Item name | Remarks | Classification |
|-----|--------|-------------|-----------|---|---------|----------------|
| 1 | 0 | 2 | N:I | Start Point X-coordinate Offset | (1) | a |
| 2 | 2 | 2 | B:B:I | Start Point Y-coordinate Offset | (4) | a |
| 3 | 4 | B1 | | A Sequence of Offset Coordinate Records | | a |

(1) Start Point X-coordinate Offset

| No. | bit | Description |
|-----|----------|-------------------------------------|
| 1 | 15 to 13 | Multiplication Constant (2) |
| 2 | 12 to 0 | Start Point X-coordinate Offset (3) |

(2) Multiplication Constant

The n-th power of 2 is multiplied by an X coordinate offset and Y coordinate offset. n in the n-th power of 2 is the multiplication constant. ($0 < n < 7$: where, n is an integer.)

(3) Start Point X-coordinate Offset

This field describes the offset for representing the integer part in which the normalized coordinate in the parcel is multiplied by 4096.

It indicates the offset from the normalized coordinate position of the node record (node in the link string data record in the road data) for accommodating the relevant guidance data to the relevant start point X coordinate position. The value can be between -4096 and +4095.

(4) Start Point Y-coordinate Offset

| No. | Bit | Description | | |
|-----|---------|---------------------------------------|-------|------------------------------|
| 1 | 15 | Height Information Existence Flag (5) | bit15 | Meaning |
| | | | 0 | No height information |
| | | | 1 | Height information available |
| 2 | 14 | Building Height Existence Flag (6) | bit14 | Meaning |
| | | | 0 | No height information |
| | | | 1 | Height information available |
| 3 | 13 | (RESERVED) | | |
| 4 | 12 to 0 | Start Point Y-coordinate Offset (7) | | |

(5) Height Information Existence Flag

This field describes the height information setting status in the applicable building and facility data.

(6) Building Height Existence Flag

This field describes the building height setting status in the applicable building and facility data.

(7) Start Point Y-coordinate Offset

This field describes the offset for representing the integer part in which the normalized coordinate in the parcel is multiplied by 4096.

It indicates the offset from the normalized coordinate position of the node record (node in the link string data record in the road data) for containing the relevant guidance data to the relevant start Y coordinate position. The value can be between -4096 and +4095.

8.6.2.1.1.1 Offset Coordinate Record

name [Offset Coordinate Record]

| No. | Offset | Data length | Data type | Item name | Remarks | Classification |
|-----|--------|-------------|-----------|---------------------|---------|----------------|
| 1 | 0 | 1 | I | X-coordinate Offset | (1) | a |
| 2 | 1 | 1 | I | Y-coordinate Offset | (2) | a |

(1) X-coordinate Offset

This field describes the offset from the X coordinate of the preceding element point to the X coordinate of the relevant element point.

(2) Y-coordinate Offset

This field describes the offset from the Y-coordinate of the preceding element point to the Y-coordinate of the relevant element point.

To obtain an X coordinate or Y-coordinate offset, the following offset is divided by the n-th power of 2 (n is the multiplication constant): the offset for the integer part in which the normalized coordinate in the parcel was multiplied by 4096. The value can be between -128 and 127. For the area data, the coordinates of the data string start point and data string end point are assumed to be the same. Therefore, the following results: $\Delta X1 + \Delta 2 + \dots + \Delta Xp = 0$, $\Delta Y1 + \Delta Y2 + \dots + \Delta Yp = 0$.

If the shape classification is line data, and the X coordinate and Y-coordinate offsets are both 00(16), the line segment representation is suspended as far as the X coordinate and Y-coordinate offsets accommodated next. (Specification of displaying the split of a single line data item)

8.6.2.1.2 Height Information Record

This record exists only when the height information existence flag indicates that height information is available.

name [Height Information Record]

| No. | Offset | Data length | Data type | Item name | Remarks | Classification |
|-----|--------|-------------|-----------|---------------------------|---------|----------------|
| 1 | 0 | 2 | :N | Altitude Information Size | (1) | a |
| 2 | 2 | 2 | :N | Altitude Information | (3) | a |

(1) Altitude Information Size

| No. | bit | Description |
|-----|----------|--|
| 1 | 15 to 12 | (RESERVED) |
| 2 | 11 to 0 | Number of Consecutive Element Points (2) |

(2) Number of Consecutive Element Points

This field describes the number of elements having the same altitude information in the element point group in which the elements are sequentially associated with each other from the start point of the element points. Therefore, the total number of consecutive element points is the same as the number of element points constituting an item of building or facility data (number of offset coordinate records + 1). The value can be between 1 and 4094.

(3) Altitude Information

| No. | Bit | Description |
|-----|----------|--------------------|
| 1 | 15 to 14 | (RESERVED) |
| 2 | 13 to 0 | Altitude Value (4) |

(4) Altitude Value

The offset is 4096 and represents a range from -4095 to +12287. The units are meters. Therefore, the value obtained by adding 4096 meters to the actual altitude is accommodated in the field.

8.6.2.1.3 Building Height

This value exists only when the building height existence flag indicates that the building height is available. The building and facility heights are represented with the relative heights from the plane figure composed of element point coordinate information. The offset is 4096 and represents a range between -4095 and +12287. The units are meters. Therefore, the value obtained by adding 4096 meters to the actual building height is accommodated in the field.

| No. | Bit | Description |
|-----|----------|-----------------|
| 1 | 15 to 14 | (RESERVED) |
| 2 | 13 to 0 | Relative Height |

