TeleNav UniDB Specification

# History

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Revised By | Changes |
| V0.1 | 2016-12-16 | Wu Ligang | Initial version |
|  |  |  |  |
|  |  |  |  |

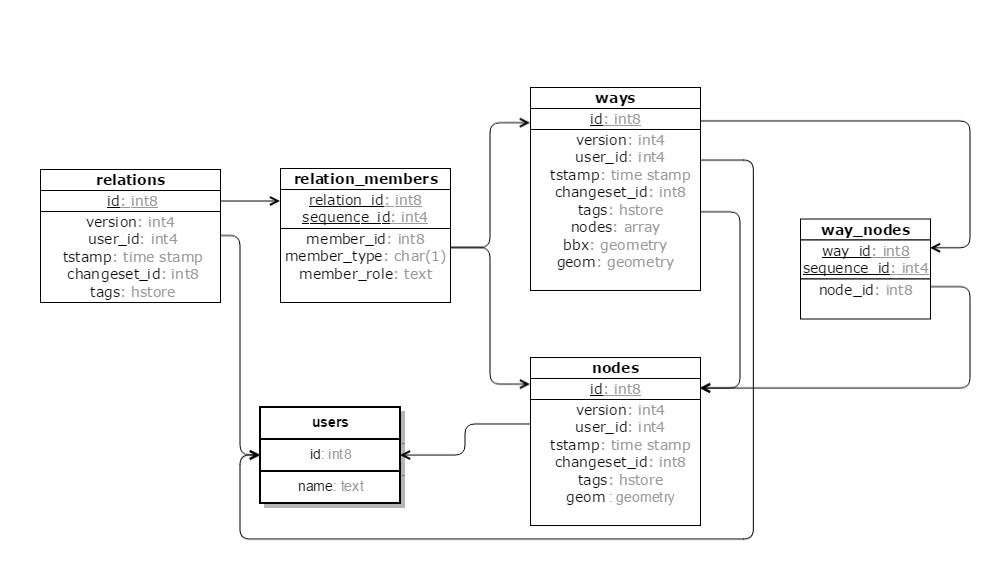
# Introduction

## UniDB

TeleNav UniDB is a Postgis based database. It is an extension of [pgsnapshot](http://wiki.openstreetmap.org/wiki/Databases_and_data_access_APIs%23pgsnapshot) schema, which is a modified and simplified version of the main [Open Street Map](http://wiki.openstreetmap.org/wiki/Main_Page)(OSM) DB schema which provides a number of useful geographic information system(GIS) data features, including generating geometries and storing tags in a single hstore column for easier use and indexing.

It’s used for TeleNav exchange data storage and management, and with powerful capability of spatial indexing and query.

Below is the schema of UniDB.



## PBF

PBF is just a simple dump and compression of UniDB by [Osmosis](http://wiki.openstreetmap.org/wiki/Osmosis). There is no business logic in this conversion.

PBF Format ("Protocolbuffer Binary Format") is primarily intended as an alternative to the XML format. It is about half of the size of a gzipped planet and about 30% smaller than a bzipped planet. It is also about 5x faster to write than a gzipped planet and 6x faster to read than a gzipped planet. The format was designed to support future extensibility and flexibility.

# Basic Concepts

TBD

# UniDB Tables

## nodes

|  |  |  |
| --- | --- | --- |
| **Field** | **Type** | **Description** |
| ***id*** | int 64 | Unique node id, primary key. |
| ***version*** | int 32 | Version number of the node |
| ***user\_id*** | int 32 | User id of the node, foreign key |
| ***tstamp*** | timestamp | Time stamp of creating the node |
| ***changeset\_id*** | int 64 | Changeset id of the node |
| ***tags*** | hstore | Key/value attributes of the node |
| ***geom*** | Geometry | Node geometry |

## ways

|  |  |  |
| --- | --- | --- |
| **Field** | **Type** | **Description** |
| ***id*** | int 64 | Unique way id, primary key. |
| ***version*** | int 32 | Version number of the way |
| ***user\_id*** | int 32 | User id of the way, foreign key |
| ***tstamp*** | timestamp | Time stamp of creating the way |
| ***changeset\_id*** | int 64 | Changeset id of the way |
| ***tags*** | hstore | Key/value attributes of the way |
| ***nodes*** | int 64 array | The id list of endpoint and shape points of the way |
| ***bbox*** | Geometry | Bounding box of the way |
| ***linestring*** | Geometry | The geometry of the way |

## way\_nodes

|  |  |  |
| --- | --- | --- |
| **Field** | **Type** | **Description** |
| ***way\_id*** | int 64 | Way id, foreign key |
| ***node\_id*** | int 64 | Node id, foreign key |
| ***sequence\_id*** | int 32 | The sequence of node on the way, starting from 0 |

## relations

|  |  |  |
| --- | --- | --- |
| **Field** | **Type** | **Description** |
| ***id*** | int 64 | Unique node id, primary key. |
| ***version*** | int 32 | Version number of the relation |
| ***user\_id*** | int 32 | User id of the relation, foreign key |
| ***tstamp*** | timestamp | Time stamp of creating the relation |
| ***changeset\_id*** | int 64 | Changeset id of the relation |
| ***tags*** | hstore | Key/value attributes of the relation |

## relation\_members

|  |  |  |
| --- | --- | --- |
| **Field** | **Type** | **Description** |
| ***relation\_id*** | int 64 | Relation id, foreign key |
| ***member\_id*** | int 64 | Member id, foreign key |
| ***member\_type*** | char(1) | Member types, refer to 10.3 Relation Member Types |
| ***member\_role*** | text | Member roles, refer to 10.4 Relation Member Roles |
| ***sequence\_id*** | int 32 | The sequence of the member associated with the relation, starting from 0 |

## users

|  |  |  |
| --- | --- | --- |
| **Field** | **Type** | **Description** |
| ***id*** | int 32 | User id, primary key. |
| ***name*** | text | User name |

# UniDB Features

Map data features are in different UniDB tables, below table list the relations between UniDB features & UniDB tables.

|  |  |  |  |
| --- | --- | --- | --- |
| **Category** | **Features** | **UniDB Table** | **Description** |
| ***Point*** | ***Address Point*** | nodes |  |
| ***Annotation*** | nodes |  |
| ***Admin Center*** | nodes |  |
| ***City Center*** | nodes |  |
| ***Zip Center*** | nodes |  |
| ***Natural Guidance Node*** | nodes |  |
| ***Safety Camera Node*** | nodes |  |
| ***Line*** | ***Road and Ferry*** | ways |  |
| ***Cartographic Line*** | ways |  |
| ***Area*** | ***Area (Multi Polygon)*** | relations |  |
| ***Relations*** | ***3d Landmark*** | relations |  |
| ***Admin*** | relations |  |
| ***Zone*** | relations |  |
| ***Gate*** | relations |  |
| ***Toll Booth*** | relations |  |
| ***Bifurcation*** | relations |  |
| ***Construction*** | relations |  |
| ***Divided Junction*** | relations |  |
| ***GJV*** | relations |  |
| ***Go Straight*** | relations |  |
| ***Junction View*** | relations |  |
| ***One Way*** | relations |  |
| ***Restriction*** | relations |  |
| ***Safety Camera*** | relations |  |
| ***Signpost*** | relations |  |
| ***Traffic Sign*** | relations |  |
| ***Traffic Signal*** | relations |  |
| ***Truck Max Speed*** | relations |  |
| ***Grade Separation*** | relations |  |
| ***ADAS Node*** | relations |  |
| ***ADAS Max Speed*** | relations |  |
| ***Dir Slope*** | relations |  |

# Point Features

## Address Point

### Arrival Point

It’s also known as navigation point, which is the geometry column of UniDB table ***nodes***. If the arrival point is not available, the value of arrival point will be invalid value lat/lon **(90,180).**

### Display Point

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***addr:display\_lat*** | N | [***-90,90***] | The latitude of display location |
| ***addr:display\_lon*** | N | [***-180,180***] | The longitude of display location |

### Arrival Link

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***addr:arrival\_link\_id*** | N |  | The id of drive-to link for the point address. |
| ***addr:arrival\_side*** | N | ***L/R*** | Arrival side indicates on which side of the arrival link the point address is located. It’s always associated with address link id  ***L***: left side of the arrival link  ***R***: right side of the arrival link |

### Address Link

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***link\_id*** | N |  | The id of addressable link for the point address.  It allows retrieval of destination input related information; it enables the retrieval of Street Name, Administrative coding, Postal Code, and Zone applicable to the Point Address. |
| ***addr:side*** | N | ***L/R*** | Side indicates which side of the address link is associated with the Point Address. It’s always associated with address link id.  ***L***: left side of the address link  ***R***: right side of the address link |

### House Number

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***addr:housenumber:<lang>*** | Y |  | The house number of the address point.  The house numbers for different language might be different. For example, No. 60 (English) vs 6号(Chinese). |
| ***addr:housenumber:<lang>:trans:<trans\_lang>*** | N |  | The house number translation for specified language <***lang***> .  The language of the translation is <***trans\_lang***>.  For example, the translation of Chinese house number *6 号* is 6 Hao. |

### Building Name

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***addr:housename:<lang>*** | N |  | The building name of the address point. |
| ***addr:housename:<lang>:trans:<trans\_lang>*** | N |  | The building name translation for specified language <***lang***> .  The language of the translation is <***trans\_lang***>.  For example, the translation of Chinese building name *家属院*is Jia Shu Yuan. |

### Street Names

The street names of address link, refer to names of road and ferry in 7.1.8 Names.

### Admins

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***<lx>:name:<lang>*** | N | User defined | The admin name of certain level (***lx***) in specified language of the address point.  ***lx*** is the level of the admin, refer to 9.1 Admin Level.  **At present, it’s Korea new address point only attribute**. |

### Country Code

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***iso*** | Y |  | ISO 3166-1 alpha-3 country code, refer to [ISO\_3166-1\_alpha-3](https://en.wikipedia.org/wiki/ISO_3166-1_alpha-3) |

### Other Attribute

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***addr:enhanced*** | N | ***yes/no*** | ***addr:enhanced*** identifies if the Point Address has been verified or if the Point Address has been generated automatically.  ***addr:enhanced = yes*** is published for Point Addresses from a trusted source and/or has been field verified.  ***addr:enhanced = no*** is published only for Point Addresses generated from POI data. This is a future enhancement for which details will be provided at a later stage.  As default, If the verification status is unknown, the key is unavailable. |
| ***addr:type*** | N | ***[1~9]*** | ***addr:type*** the address type, it identifies the type of the house number range assigned to the Point Address. Address Type is used in conjunction with Street Name and Address range for destination selection. Address Type has a similar meaning as the Address Type coded at Road Link level for an address range. |
|  |  | ***1 (Default)*** | Address Type = 1 (Base) is assigned to an Address structure that is most commonly used. |
|  |  | ***2*** | Address Type = 2 (City) is assigned to an Address assigned by the city government. |
|  |  | ***3*** | Address Type = 3 (Commercial) is assigned to an Address applicable to a commercial establishment. |
|  |  | ***4*** | Address Type = 4 (County) is assigned to an Address assigned by the county government. |
|  |  | ***6*** | Address Type = 6 (Old) is assigned to an Address representing an old address structure. |
| ***type*** | Y | ***address\_point*** | TeleNav defined type for address point, identifies it’s an address point record. |

## Annotation

### Feature Type

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| Administrative (refer to <http://wiki.openstreetmap.org/wiki/Key:place> for more types) | | | |
| ***place*** | N | ***country*** | country annotation |
| ***place*** | N | ***state*** | state annotation |
| ***place*** | N | ***province*** | province annotation |
| ***place*** | N | ***city*** | city annotation |
| ***place*** | N | ***county*** | county annotation |
| ***place*** | N | ***neighbourhood*** | neighbourhood |
| ***place*** | N | ***hamlet*** | hamlet, including town, village  ***place=hamlet, sub\_category=town***: town  ***place=hamlet, sub\_category=village***: village |
| ***place*** | N | ***town*** | town, see ***place=hamlet*** |
| ***place*** | N | ***village*** | village, see ***place=hamlet*** |
| Other places(Refer to [place](http://wiki.openstreetmap.org/wiki/Key:place) & [natural](http://wiki.openstreetmap.org/wiki/Key:natural) for more types) | | | |
| ***place*** | N | ***continent*** | One of the seven continents: Africa, Antarctica, Asia, Australia, Europe, North America, South America |
| ***place*** | N | ***island*** | Island, ***sensitive=Y*** indicates it’s a sensitive island for censorship. |
| ***natural*** | N | ***ocean*** | Ocean |
| ***natural*** | N | ***bay*** | Bay |

### Names

Refer to 10.5 Names for details.

### Admins

N/A

### Other Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***capital*** | N | ***yes/no*** | ***capital*** indicates if the city annotation is capital |
|  |  | ***yes*** | indicates the city annotation is capital |
|  |  | ***no****(Default)* | indicates the city annotation is not capital |
| ***capital\_order1*** | N | ***yes/no*** | ***capital\_order1*** indicates if the city annotation is state or province capital |
|  |  | ***yes*** | indicates the city annotation is state or province capital |
| ***no****(Default)* | indicates the city annotation is not state or province capital |
| ***area*** | N | *<user defined>* | The area of the place. (Only available for place=country), unit is square meter. |

## City Center

### Feature Type

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***place*** | Y | ***city/***  ***neighbourhood/***  ***hamlet*** | The extent of the city center, in the hierarchy based on area, population, etc. |
| ***sub\_category*** | N | ***village/town*** | Sub category info, aiming to complete city center type info in association with ‘***place***’.  This attribute only exists when ‘***place***’ is ‘***hamlet.***’ |

### Names

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***name:<lang>*** | Y |  | The name of the city center in specified language. |
| ***name:<lang>:name\_type*** | Y | ***B/E/S*** | The name type of the name in specified language of the city center.  **By far, this attribute only exists in nav2 data.** |
|  |  | ***B*** | Base name |
| ***E*** | Exonym |
| ***S*** | Synonym |
| ***name:<lang>:phonetics:***  ***<phonetic language code>:***  ***<transcription method>*** | N |  | The phonetics of the name in specified language and transcription method of the city center.  **By far, this attribute only exists in nav2 data.** |
| ***name:<lang>:trans:***  ***<transliteration type>*** | N |  | The name in specified language and transliteration type of the city center. |
| ***alt\_name:<lang>*** | N |  | The alternative name of the city center in specified language.  **By far, this attribute only exists in nav2 data.** |
| ***alt\_name:<lang>:name\_type*** | N | ***B/E/S*** | The name type of the alternative name in specified language of the city center.  **By far, this attribute only exists in nav2 data.** |
|  |  | ***B*** | Base name |
| ***E*** | Exonym |
| ***S*** | Synonym |
| ***alt\_name:<lang>:phonetics:***  ***<phonetic language code>:***  ***<transcription method>*** | N |  | The phonetics of the alternative name in specified language and transcription method of the city center.  **By far, this attribute only exists in nav2 data.** |
| ***alt\_name:<lang>:trans:***  ***<transliteration type>*** | N |  | The alternative name in specified language and transliteration type of the city center.  **By far, this attribute only exists in nav2 data.** |
| ***short\_name:<lang>*** | N |  | The short name of the city center in specified language. |
| ***short\_name:<lang>:***  ***name\_type*** | N |  | The name type of the short name in specified language of the city center.  **By far, this attribute only exists in nav2 data.** |
| ***short\_name:<lang>:trans:***  ***<transliteration type>*** | N |  | The short name in specified language and transliteration type of the city center. |

### Admins

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***l<x>*** | Y |  | The ***l<x>*** key has a corresponding admin code value. As the ***<x>*** gets bigger, the hierarchy which the admin code stands for gets deeper. Usually from country level to neighborhood level or hamlet level, etc. |

### Country Code

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***iso*** | Y |  | ISO 3166-1 alpha-3 country code, refer to [ISO\_3166-1\_alpha-3](https://en.wikipedia.org/wiki/ISO_3166-1_alpha-3) |

### Capitals

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***capital*** | N | ***yes*** | Indicating this city center is a capital of a country. |
| ***capital\_order1*** | N | ***yes*** | Indicating this city center is a capital of a province. |
| ***capital\_order8*** | N | ***yes*** | Indicating this city center is a “地级市”. |

### Population

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***population*** | N |  | Population of this city center. |

### Admin Level

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***admin\_level*** | Y | ***[L3, L7]*** | Measuring the administrative scale of the city center. The extent of the city center decreases progressively from ***L3*** to ***L7***. |
|  |  | ***L3*** | Level of “地级市” |
| ***L4*** | Level of “县级市” |
| ***L5*** | Level of “镇” |
| ***L6*** | Level of “街道” |
| ***L7*** | Level of “村” |
| ***cat\_id*** | Y |  | The category id, indicating administrative scale, much like ‘***admin\_level***’, the difference is ‘***cat\_id***’ is an enumerative value extracted directly from vendor data, while ‘***admin\_level***’ is a result from mapping. |

### Other Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***customized\_id*** | N |  | Id from table ***nodes***, this attribute exists only when this city center is a  province capital.  **By far, this attribute only exists in nav2 data.** |
| ***link\_count*** | N |  | Number of links (navigable and non-navigable) directly associated with the published administrative hierarchy.  **By far, this attribute only exists in nav2 data.** |
| ***link\_id*** | N |  | Permanent identifier of the link on which the POI is located.  **By far, this attribute only exists in nav2 data.** |
| ***needpoint*** | N | no | Indicating whether this city center needs a bound annotation. |
| ***poi\_id*** | N |  | Poi id of corresponding poi of this city center in poi table.  **By far, this attribute only exists in autonavi data.** |
| ***postal\_code*** | N |  | Postal code of the city center.  **By far, this attribute only exists in nav2 data.** |
| ***scale\_mask*** | N |  | Indicate a display level on which the city center should not be displayed  due to censorship requirement.  **By far, this attribute only exists in autonavi data.** |
| ***street\_name*** | N |  | Full street name of link where the POI is located.  **By far, this attribute only exists in nav2 data.** |

## Admin Center

The admin centers are actually those city centers (see 6.3) with substantial administrative importance, so their keys are mostly copied from city centers as well as values. Only new id and type key are granted in Unidb to distinguish them with their original city centers. All the key specifications can be referred to the ***city center*** segment.

By far, the admin centers are all in ***city*** level. No ***neighborhood*** or ***hamlet*** level.

## Zip Center

### Feature Type

### Zip Code

### Admins

### Country Code

### Other Attributes

## Natural Guidance Node

### Guidance Point

It’s also known as navigation point, which is the geometry column of UniDB table ***nodes***.

|  |  |
| --- | --- |
| **Value** | **Description** |
| [***-90,90***] | Latitude of Guidance Point |
| [***-180,180***] | Longitude of Guidance Point |

### Natural Guidance Link

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***link\_id*** | N |  | The id of the link that is associated with natural guidance point. |
| ***side*** | N | ***L/R/B*** | SIDE indicates the side of the link that the natural guidance point is located.  ***L – Left***: left side of the link relative to the reference node.  ***R – Right***: right side of the link relative to the reference node.  ***B – Both***: both sides of the link. |

### Guidance Node Preposition

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***preposition:<lang>*** | N |  | ***Preposition*** is an attribute published for the Guidance Point and defines the language specific preposition required for generation of direction specific manoeuvre guidance through a junction.  *For example: 前面(chi), 后面(chi), before the (eng), past the(eng),after the(eng), at the(eng), Bei der(ger), Prima della (ita)* |
| ***preposition: <lang>:phonetics:###*** | N |  | It indicates the phonetics info of the natural guidance point’s preposition. |

### Guidance Node Position

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***position:<lang>*** | N |  | ***Position*** is a sub-attribute of the Preposition and defines the Preposition relative to the Name.  *For example:* *position:chi, position:eng, position:fre, position:ger, position:spa, position:ita* |

### Guidance Node Name

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***name:<lang>*** | N |  | ***Name*** is a textual description of the related Natural Guidance Node. |
| ***name: <lang>:phonetics:###*** | N |  | It indicates the phonetics info of the ***name***. |

## Safety Camera Node

### Camera Type & ID

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | | **Description** |
| ***cam\_type*** | Y | <*see below* > | | ***cam\_type*** Indicates which type of camera is present. |
| ***cam\_type\_id*** | Y | *<see below >* | | ***cam\_type\_id*** indicates the id of camera type |
|  |  | ***cam\_id*** | ***cam\_type\_id*** |  |
|  |  | ***1*** | ***Speed*** |  |
|  |  | ***2*** | ***RedLight*** |  |
|  |  | ***8*** | ***BusLane*** |  |
|  |  | ***16*** | ***RedLightAndSpeed*** |  |
|  |  | ***17*** | ***SectionStart*** |  |
|  |  | ***18*** | ***SectionEnd*** |  |
|  |  | ***19*** | ***Distance*** |  |
|  |  | ***20*** | ***NoLRTurns*** | Original form CN NAV2 |
|  |  | ***999*** | ***Other*** | Original form CN NAV2 |
|  |  | ***101*** | ***BeginingPointOfLaneAndSpeedingViolationBlock*** | Original form HERE Korea |
|  |  | ***102*** | ***ExclusiveBusLaneAndSpeedingViolation*** | Original form HERE Korea |
|  |  | ***103*** | ***ExclusiveBusLaneViolation*** | Original form HERE Korea |
|  |  | ***104*** | ***InformationGathering*** | Original form HERE Korea |
|  |  | ***105*** | ***LoadingViolation*** | Original form HERE Korea |
|  |  | ***106*** | ***NoPassingEnforcement*** | Original form HERE Korea |
|  |  | ***107*** | ***OtherViolation*** | Original form HERE Korea |
|  |  | ***108*** | ***OverloadingViolation*** | Original form HERE Korea |
|  |  | ***109*** | ***ParkingViolation*** | Original form HERE Korea |
|  |  | ***110*** | ***ShoulderLaneEnforcement*** | Original form HERE Korea |

### Category Name & ID

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | | **Description** |
| ***cat\_name*** | N | <*see below* > | | ***cat\_name*** HERE defined category name for safety camera product. |
| ***cat\_id*** | N | *<see below >* | | ***cat\_id*** HERE defined category id for safety camera product |
|  |  | ***cat\_id*** | ***cat\_name*** |  |
|  |  | ***9701*** | ***Camera*** | Indicates the presence of a camera |
|  |  | ***9702*** | ***Blackspot*** | Indicates that the location has been identified as a high-risk area for road traffic accidents |
|  |  | ***9703*** | ***SchoolZone*** | A school zone is a circular area of 250m in radius positioned around the centre of a primary or secondary school that has a reduced speed limit area during school hours.  These areas will have a School Zone sign (R4-8) and a Speed Limit Area sign (R4-10) on the roads surrounding the school. |
|  |  | ***9704*** | ***Railway*** | The intersection of a railway crossing and a road when a railway line crosses a vehicular thoroughfare |
|  |  | ***9705*** | ***CheckSpeed*** | Locations where the speed limit drops to a lower speed at the entrance to a country town located on a major road |
|  |  | ***9721*** | ***SchoolPoint*** | Identifies either a start or end point of a school zone |

### Country Code

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***iso*** | Y |  | ISO 3166-1 alpha-3 country code, refer to [ISO\_3166-1\_alpha-3](https://en.wikipedia.org/wiki/ISO_3166-1_alpha-3) |

### Link Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***link\_id*** | Y | <user defined> | The id of associated link for the safety camera. |
| ***side\_of\_st*** | Y | ***L/R*** | ***side\_of\_st*** indicates which side of the link is associated with the safety camera node |
|  |  | ***L*** | Left side of the link |
| ***R*** | Right side of the link |
| ***driving\_dir*** | Y | ***[0~360)*** | Indicates the heading of the road the camera is associated with, i.e. the compass heading of the road.  [Points\_of\_the\_compass](https://en.wikipedia.org/wiki/Points_of_the_compass)  [罗盘方向](https://zh.wikipedia.org/wiki/%E7%BD%97%E7%9B%98%E6%96%B9%E4%BD%8D) |
| ***link\_heading*** | N | ***T/F/B*** | Provides the orientation of the camera in reference to the associated map link.  • When the camera’s focus is on traffic in the direction of the reference node, LinkHeading(T) is published. • When the camera’s focus is on traffic in the direction from the reference node, LinkHeading(F) is published. • When the camera’s focus is on traffic in both directions, LinkHeading(B) is published. • When LinkHeading is unknown this attribute is not published. |
|  |  | ***T*** | **T** - Toward Reference Node |
| ***F*** | **F** - From Reference Node |
| ***B*** | **B** - Both Directions |

### Max Speed

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***maxspeed*** | N | <user defined> | ***maxspeed*** indicates the maximum legal speed for vehicles to travel. Speed Limit values apply only when applicable to autos (not autos with trailers or any other configuration). |
| ***speed\_unit*** | N | ***K/M*** | The unit of max speed |
|  |  | ***K*** | Kilometers per hour |
|  |  | ***M*** | Miles per hour |

### Other Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***type*** | Y | ***safety\_camera\_node*** | TeleNav defined type for safety camera node, identifies it’s an safety camera node record. |
| ***fixture\_status*** | N | *<see below>* | Indicates which type of camera is present |
|  |  | ***Permanent*** | ***Permanent*** is published when a camera is permanently installed. Permanent is the default value. |
| ***PreAnnounced*** | ***PreAnnounced*** is published when a location is commonly used for non-permanent cameras. Use of cameras at these locations must be pre-announced by law. |
| ***Mobile*** | ***Mobile*** is published when a location is commonly used for non-permanent cameras. There is no legal requirement to pre-announce use of cameras at these locations |
| ***Trial*** | ***Trial*** is published when a camera is being introduced or tested and is not live in issuing infringements. |
| ***Decommissioned*** | ***Decommissioned*** is published when camera hardware may still be on site and not removed, camera is not actively issuing infringements. |
| ***Obsolete*** | ***Obsolete*** is published when camera hardware is old, rusted, not maintained and is no longer active. |
| ***Expired*** | ***Expired*** is published for all cameras that have been in D status for 12 months, indicating that they are no longer to be exported on the Decommissioned & Obsolete list. |
| ***school\_point\_type*** | N | ***start/end*** | Identifies whether a school point is a start or end point. Default is empty. |
|  |  | ***start*** | indicates the school point is a start of school point |
| ***end*** | indicates the school point is an end of school point |
| ***school\_point*** | N | ***yes/no*** | ***school\_point*** indicates whether school points are published in relation to the school zone, only available when the category is school zone |
| ***angle*** | N | ***[0~360, 999]*** | ***angle*** indicates the clockwise angle betweenthe shooting direction and north direction. (摄像头拍摄方向与正北方向顺时针的夹角). |
|  |  | ***0*** | Uninvestigated |
|  |  | ***(0,360]*** | Camera angle |
|  |  | ***999*** | Unknown even after manual check |

## POI

### POI Types

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***railway*** | N | ***subway\_extrance*** | refer to [railway=subway\_entrance](http://wiki.openstreetmap.org/wiki/Tag:railway%3Dsubway_entrance) |

### Names

Please refer to 10.5 Names for details

### Country Code

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***iso*** | N |  | ISO 3166-1 alpha-3 country code, refer to [ISO\_3166-1\_alpha-3](https://en.wikipedia.org/wiki/ISO_3166-1_alpha-3) |

### Link Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***link\_id*** | Y | <user defined> | The id of associated link for the safety camera. |
| ***side\_of\_st*** | Y | ***L/R*** | ***side\_of\_st*** indicates which side of the link is associated with the safety camera node |
|  |  | ***L*** | Left side of the link |
| ***R*** | Right side of the link |

### Other Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
|  |  |  |  |

# Line Features

## Road & Ferry

### Functional Class

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***functional\_class*** | Y | [***1,5***] | ***functional\_class*** is the hierarchical classification of a road network. |
|  |  | ***1*** | **First Class Road**. These roads allow for high volume, maximum speed traffic movement between and through major metropolitan areas. There are very few, if any, speed changes. Access to the road is usually controlled. |
| ***2*** | **Second Class Roads**. These roads are used to channel traffic to Main Roads for travel between and through cities in the shortest amount of time. There are very few, if any, speed changes. |
| ***3*** | **Third Class Roads**. These roads interconnect First Class Roads and provide a high volume of traffic movement at a lower level of mobility than First Class Roads. |
| ***4*** | **Fourth Class Roads**. These roads provide for a high volume of traffic movement at moderate speeds between neighborhoods. These roads connect with higher Priority to collect and distribute traffic between neighborhoods. |
| ***5***  (Default) | **Fifth Class Roads**. These roads’ volume and traffic movements are below the level of any Functional Class |

### Road Type

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***rt*** | Y | [***0,15***] | ***rt*** presents the road type, identifies certain aspects of the physical form that a road takes. |
|  |  | ***0*** | Freeway class road (1)  i.e. Highway |
| ***1*** | Freeway class road (2)  i.e. Urban highway |
| ***2*** | Highway class road ( > 91KPH)  i.e. National road |
| ***3*** | Throughway class road (51-90 KPH)  I.e. Main district road |
| ***4*** | Local road class road (31-50 KPH)  i.e. Prefectural road |
|  |  | ***5*** | Frontage road |
|  |  | ***6*** | Very low speed road ( < 30 KPH) |
|  |  | ***7*** | Private road  This attribute identifies Road Elements and Ferry Connections which are both private and do not allow through traffic.  Ownership identifies roads not maintained by an organization responsible for maintenance of public roads. |
|  |  | ***8*** | Walkway  In Europe, this literally means pedestrians only. However, in North America, this may represent pedestrians and/or bicycles. |
|  |  | ***9***(Default) | Non-navigable road |
|  |  | ***10*** | Ship Ferry route |
|  |  | ***11*** | Train Ferry route |
|  |  | ***12*** | Public vehicle only road |
|  |  | ***13*** | Cycle way  Only available for bicycle, not for other vehicle and pedestrian |
|  |  | ***14*** | Layout (规划路线) |
|  |  | ***15*** | Road for Authorities |

### Road Sub Type

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***rst*** | Y | [***0,13***] | ***rst*** represents the road sub type. |
|  |  | ***0*** | Traffic Circle / Roundabout |
| ***1***(Default) | Main road  (no separation between two-way traffic) link  AND  One line per road |
| ***2*** | Main road  (separation between two-way traffic) link  Highway, toll road, vehicle-only road, and road with its two ways separated by a considerable distance (either horizontally or vertically)  Or  Multiple digitised with one line per direction of traffic instead of one line per road and |
| ***3*** | Connection road (line between main roads) link  Link connecting main roads of usually the same class at a junction of a highway, etc.    左右转，调头专用道(单线化道路)    Case1:路口RDCODE=10  Case2: 匝道上的调头专用道RDCODE=30 |
| ***4*** | Link within the intersection  Indicates that a road segment should not be viewed as an individual piece of road but as part of the intersection. A separate guidance manoeuvre should not exist for this segment. |
|  |  | ***5*** | Ramp  Link mutually connecting two-level crossing roads |
|  |  | ***6*** | Service road running alongside a main road.  Road that is usually parallel to the side of a main road |
|  |  | ***7*** | Road in undefined Traffic Square Internal  Undefined Traffic Square Internal refers to the Road Elements inside of an Unstructured Traffic Square which is a paved area where a car can travel, but there are no legally defined traffic paths. A car is not limited to driving on the Undefined Traffic Square Internal Road Elements. The car can drive in any pattern in the Unstructured Traffic Square. NAVTEQ includes generalized paths so that real road segments retain connectivity, but systems should recognize that if the GPS signal isn't matching to these Road Elements, it does not mean the car is off route. Instead it should wait until the car reaches a real Road Element again before determining its status as on/off route |
|  |  | ***8*** | Functional Special Road |
|  |  | ***9*** | Overbridge(vehicle)  即跨线桥或者立交 |
|  |  | ***10*** | Underpass(vehicle)  地下道（车） |
|  |  | ***11*** | Tunnel |
|  |  | ***12*** | Bridge |
|  |  | ***13*** | Entrance / Exit to / from a Car Park |

### Speed Category

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***speed\_cat*** | N | [***1,8***] | ***speed\_cat*** classifies the general speed trend of a road based on posted or legal speed and is provided to enhance route calculation and the timing of route guidance.  It’s not mandatory for ferry. |
|  |  | ***1*** | > 130 km/h |
| ***2*** | 101-130 km/h |
| ***3*** | 91-100 km/h |
| ***4*** | 71-90 km/h |
| ***5*** | 51-70 km/h |
| ***6*** | 31-50 km/h |
| ***7*** | 11-30 km/h |
| ***8*** | <11 km/h |
| ***sc*** | N | [***1,16***] | ***sc*** classifies the speed of a road based on TXD (TeleNav Exchange Data) format speed classification.  It’s not mandatory for ferry. |
|  |  | ***1*** | >130 km/h |
|  |  | ***2*** | 111-130 km/h |
|  |  | ***3*** | 91 - 110 km/h |
|  |  | ***4*** | 90 km/h |
|  |  | ***5*** | 80 km/h |
|  |  | ***6*** | 70 km/h |
|  |  | ***7*** | 60 km/h |
|  |  | ***8*** | 55 km/h |
|  |  | ***9*** | 50 km/h |
|  |  | ***10*** | 45 km/h |
|  |  | ***11*** | 40 km/h |
|  |  | ***12*** | 35 km/h |
|  |  | ***13*** | 30 km/h |
|  |  | ***14*** | 20 km/h |
|  |  | ***15*** | 10 km/h |
|  |  | ***16*** | 5 km/h |

### Direction of Traffic (Oneway)

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***oneway*** | N | ***yes/no/-1*** | ***oneway*** indicate the travel direction of traffic flow |
|  |  | ***yes*** | Open in positive direction |
| ***no*** | Open in both direction |
| ***-1*** | Open in negative direction |

### Highway

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***highway*** | N | ***<****see*[***Key:highway***](http://wiki.openstreetmap.org/wiki/Key:highway)***>*** | The main key used for identifying any kind of road, street or path. |
| ***route*** | N | ***ferry*** | Indicate the link is ferry. If the ferry is pedestrian ferry, ***foot=yes*** will be assigned to the link, and other vehicles are assigned ***no.*** |

### Vehicle Access

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***<***Refer to 10.2 Vehicles Types***>*** | N | ***yes/no*** | ***<vehicle>***=***yes/no*** indicates if the vehicle is allowed to access the road. |

### Names

Please refer to 10.5 Names for details

### Address

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***name:addr***  ***name:addr\_1***  ***name:chi:addr***  ***name:chi:addr\_1*** |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

### Admins

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***lx:left*** | N | <User defined> | The id of left admin for specific level ***lx***, see details of ***lx*** in10.1TeleNav Admin Level. |
| ***lx\_m:left*** | N | <User defined> | The id of (m+1)th left admin for specific level ***lx***, when there are multiple admin for same level |
| ***lx:right*** | N | <User defined> | The id of right admin for specific level ***lx***, see details of ***lx*** in10.1TeleNav Admin Level. |
| ***lx\_m:right*** | N | <User defined> | The id of (m+1)th right admin for specific level ***lx***, when there are multiple admin for same level |

### Lane Information

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***lanes*** | N | <user defined> | Indicates the total number of all lanes on a link across all travel directions. Lane Feature related attributes can only be correctly interpreted in combination with Physical Number of Lanes |
| ***lanes:forward*** | N | <user defined> | Number of lanes in forward direction.  Lanes that are not used as the main driving path are not counted. The following are examples:   * Shoulder Lanes (Emergency lanes) * Ramp Transition Lanes * Turn Lanes at intersection * Parking lanes at the side of the road * Bus/Taxi/Truck lanes * … |
| ***lanes:backward*** | N | <user defined> | Number of lanes in backward direction. Lanes that are not used as the main driving path are not counted. |
| ***divider:lanes*** | N | <see below> | (The counting of lane index is from right to left)  Lane divider of each lanes. e.g. |
|  | 0 | No Divider |
|  | 1 | Interrupted Line with Long Lines |
|  | 2 | Double Solid Line |
|  | 3 | Single Solid Line |
|  | 4 | Combination of Single Solid & Interrupted Line |
|  | 5 | Combination of an Interrupted and a Solid Line |
|  | 6 | Interrupted Line with Short Lines |
|  | 7 | Shaded Area Marking |
|  | 8 | Dashed Blocks |
|  | 9 | Physical Divider <3Mwide |
|  | 10 | Double Dashed Lines |
|  | 11 | No Divider Marker |
|  | 12 | Crossing Alert |
|  | 13 | Center Turn Lane |
|  | 15 | Toll Booth |
|  | 1 (default) | Default |
| ***turn:lanes*** |  |  |  |
| ***type:lanes*** |  |  |  |
| ***oneway:lanes*** |  |  |  |
| ***lane\_cat*** |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

### TMC

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***tmcid*** | N | ***<user defined>*** | ***tmcid***  defines TMC codes, separated by ‘|’ if multiple TMC codes. |

### Traffic Pattern/History Speed

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***spd\_id:f/spd\_id:t*** | N | ***<user defined>*** | ***spd\_id:f/spd\_id:t*** indicates the historic speed pattern id in forward/backward direction. |
| ***Spd\_kph:f/spd\_kph:t*** | N | ***<user defined>*** | ***spd\_kph:f/spd\_kph:t*** defines the reference speedused forhistoric speed calculation in forward/backward direction.  Usually, it’s the max speed of historic speed. |

### Speed Limit

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***maxspeed*** | N | <user defined> |  |
| ***maxspeed:forward*** | N |  |  |
| ***maxspeed:backward*** | N |  |  |
| ***maxspeed***  ***maxspeed:backward***  ***maxspeed:backward:conditional***  ***maxspeed:forward***  ***maxspeed:forward:conditional*** |  |  |  |
|  |  |  |  |

### Time Zone

### Other Simple Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***priority\_road*** | N | ***yes/no*** | ***priority\_road*** defines road stretches that have signs indicating priority on the road. On these roads all traffic has priority over the traffic on the incoming roads.  Default ***no***. |
| ***access\_id*** | N | <user defined> | HERE defined id for vehicle access. **(Don’t use it).** |
| ***Coverage\_indicator*** | N | <user defined> | Is an HERE attribute to a navigable link or to a cartographic feature that indicates a product level corresponding to the inclusion of database features, verification, and completeness for a particular feature in the database. Coverage Indicator provides a refinement to the existing Prime, Complete, Network, City-to-City, and Base attribution. **(Don’t use it)**. |
| ***Delivery*** | N |  |  |
| ***adas:driving\_side*** | Y | ***L/R*** | This attribute identifies the legal driving side in a country/area. This attribute is critical for route calculation and route guidance. |
|  | ***L*** | Legal driving side is left |
|  | ***R*** | Legal driving side is right |
| ***bridge*** | N | ***yes/no*** | ***bridge*** Indicates if the link is bridge |
| ***controlled\_access*** | N | ***yes/no*** | ***controlled\_access*** identifies roads with limited entrances and exits that allow uninterrupted high speed traffic flow. These roads constitute the interstate/freeway network in the U.S. and the motorway network in Europe. |
| ***Divider*** | N | ***½/A/L/N*** | identifies the presence of a legal or physical divider preventing specific  manoeuvres  1 = Reference node and link  2 = Non reference node and link  A = Both nodes and link  L = Link only  N = No divider |
| ***divider\_legal*** | N | ***Y/N*** | N = No legal divider  Y = Legal divider |
| ***elevated\_road*** | N | ***yes/no*** | identifies the presence of elevated road. |
| ***entrance\_exit*** |  |  |  |
| ***form\_way*** |  |  |  |
| ***frontage*** |  |  |  |
| ***fc*** |  |  |  |
| ***grade\_cat*** |  |  |  |
| ***in\_process\_data*** |  |  |  |
| ***intersection\_cat*** |  |  |  |
| ***iso*** |  |  |  |
| ***junction*** |  |  |  |
| ***limited\_access\_road*** |  |  |  |
| ***low\_mobility*** |  |  |  |
| ***multi\_digitized*** |  |  |  |
| ***overpass***  ***overpass\_underpass***  ***pedestrian\_preferred***  ***poi\_access***  ***postal\_code:left***  ***postal\_code:right***  ***railway:begin\_node***  ***railway:end\_node***  ***ramp***  ***sc***  ***source:maxspeed***  ***speed\_cat***  ***speed\_unit***  ***status\_id***  ***stop:begin\_node***  ***stop:end\_node***  ***surface***  ***taxi***  ***timezone:left***  ***timezone:right***  ***tmcid***  ***toll***  ***tollcost\_id***  ***toll:access\_through\_traffic:conditional***  ***toll:bus:conditional***  ***toll:delivery:conditional***  ***toll:emergency:conditional***  ***toll:foot:conditional***  ***toll:hov:conditional***  ***toll:motorcar:conditional***  ***toll:motorcycle:conditional***  ***toll:taxi:conditional***  ***toll:truck:conditional***  ***traffic\_signal:begin\_node***  ***traffic\_signal:end\_node***  ***truck***  ***tunnel***  ***turn:lanes***  ***type:lanes***  ***underpass***  ***vss\_id:backward***  ***vss\_id:forward***  ***zlevel:nonref***  ***zlevel:ref*** |  |  |  |
|  |  |  |  |
| ***road\_class*** |  |  |  |

### ADAS

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***adas:bua*** | N | ***yes/no*** | Indicates if the link belongs to built-up area. |
| ***adas:chs*** | N | <user defined> | The curvature, heading and slope value on the road coordinates. |
| ***adas:complex\_intersection*** | N | ***yes/no*** | Indicates if the intersection belongs to below situations.  Intersection Category = 1 (Intersection Internal) This value indicates that a road segment should not be viewed as an individual piece of road but as part of the intersection. A separate guidance manoeuvre should not exist for this segment. For example, if making a u-turn in Example A, the driver should receive the instruction to "make the u-turn" and not "turn left, turn left". Intersection Category = 2 (Manoeuvre) This value indicates that only one command should be given despite the fact that two Junctions occur – one at each end of the turn lane. It is only necessary to state "turn right" near the beginning of the manoeuvre because generally at the end the driver does not have a choice in direction. See Example B. Intersection Category = 3 (Indescribable) This value indicates a manoeuvre that cannot be explained in one command or at all. A graphic may be needed to illustrate the turn. In these situations a driver may need to go right to make a left turn. See Example C . |
| ***adas:divided\_road*** | N | ***yes/no*** | identifies the presence of a legal or physical divider preventing specific  manoeuvres. |
| ***adas:form\_of\_way*** | N | <see description> |  |
| ***adas:regional\_code*** | N | ***0…32766*** | For a given Country Code, specifies region of a country where vehicle is currently positioned.  **0** : stands for unknown,  **32767**: means N/A  All other values are based on ISO 3166-2 with the code mapping scheme. Refer to ADASIS\_Specification for the code mapping schema. |
| ***adas:route\_type*** | N | [***0 ~ 1024***] | Bit-coded field; if bit is set, the corresponding Route number is assigned  to the road  Bit 0: Street with no Route number  Bit 1: Route number type 1  Bit 2: Route number type 2  Bit 3: Route number type 3  Bit 4: Route number type 4  Bit 5: Route number type 5  Bit 6: Route number type 6  Bit 7: Reserved (set to 0)  Bit 8: Reserved (set to 0)  Bit 9: Reserved (set to 0) |
| ***adas:special\_maxspeed*** |  |  |  |
| ***adas:special\_maxspeed:backward*** |  |  |  |
| ***adas:special\_maxspeed:forward*** |  |  |  |
| ***adas:special\_maxspeed:time*** |  |  |  |
| ***adas:special\_maxspeed:type*** |  |  |  |
| ***adas:urban*** |  |  |  |

## Cartographic Line Feature

### Feature Type

### Names

### Admins

### Other Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***tunnel*** | N | ***yes/no*** | Indicates the subway is underground or overground.  ***tunnel=yes*** for underground sections.  ***tunnel=no*** for overground sections (note that it is useful to set this to dispel any ambiguity in the case of railway=subway ways)  refer to <http://wiki.openstreetmap.org/wiki/Tag:railway%3Dsubway> |
|  |  |  |  |
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|  |  |  |  |
|  |  |  |  |

# Area Features

### Feature Type

### Admins

### Names

### Other Attributes

# Relation Features

## 3d Landmark

|  |  |  |  |
| --- | --- | --- | --- |
| Key | Mandatory | Value | Description |
| type | Y | 3d\_landmark |  |
| name:<lang> | N | *User defined* | The official name for the specified language <lang>. |
| file\_path | N | *User defined* | Obtain the file path for multimedia information |
| alt\_name:<lang> | N | *User defined* | The alternate name for the specified language <lang>. |
| anchor\_point | N | *User defined* | Compare all coordinates and select the most south and west node as the anchor point. |
| name:<lang>:owner | N | *V* | COMPLEX(only HERE) |
| alt\_name:<lang>:owner | N | *V* | COMPLEX(only HERE) |
| name:<lang>:name\_type | N | *B* | BASE NAME(only HERE) |
| alt\_name:<lang>:name\_type | N | *B* | BASE NAME(only HERE) |
| 3d\_landmark\_model\_light:file\_name | N | User defined | Obtain file names for multimedia information:3D LANDMARK MODEL LIGHT(only HERE) |
| 3d\_landmark\_model\_standard:file\_name | N | User defined | Obtain file names for multimedia information:3D LANDMARK MODEL STANDARD |
| condition\_id | N | *User defined* | (Only AutoNavi) |
| lm\_id | N | *User defined* | (Only AutoNavi) |
| model\_ang | N | *User defined* | (Only AutoNavi) |
| model\_type | N | *User defined* | (Only AutoNavi) |
| name | N | *User defined* | (Only AutoNavi) |

### Names

Official Name

|  |  |  |  |
| --- | --- | --- | --- |
| Key | Mandatory | Value | Description |
| name:<lang> | N | *User defined* | The official name for the specified language <lang>. |
| name:<lang>:owner | N | *V* | COMPLEX |
| name:<lang>:name\_type | N | *B* | BASE NAME |

Alternate Name

|  |  |  |  |
| --- | --- | --- | --- |
| Key | Mandatory | Value | Description |
| alt\_name:<lang> | N | *User defined* | The alternate name for the specified language <lang>. |
| alt\_name:<lang>:owner | N | *V* | COMPLEX |
| alt\_name:<lang>:name\_type | N | *B* | BASE NAME |

### Files

|  |  |  |  |
| --- | --- | --- | --- |
| Key | Mandatory | Value | Description |
| file\_path | N | *User defined* | Obtain the file path for multimedia information |
| 3d\_landmark\_model\_light:file\_name | N | User defined | Obtain file names for multimedia information:3D LANDMARK MODEL LIGHT |
| 3d\_landmark\_model\_standard:file\_name | N | User defined | Obtain file names for multimedia information:3D LANDMARK MODEL STANDARD |

### Anchor point

|  |  |  |  |
| --- | --- | --- | --- |
| Key | Mandatory | Value | Description |
| anchor\_point | N | *User defined* | Compare all coordinates and select the most south and west node as the anchor point. |

### Other Attributes

### Members (TODO)

## Admin

### Admin Level

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***admin\_level*** | Y | [***L1,L2,L3,L4***] | ***admin\_level*** is the hierarchical classification of administrative relation. |
|  |  | ***L1*** | **Level One**. Country level administrative hierarchy. |
| ***L2*** | **Level Two**. Province or State level administrative hierarchy. |
| ***L3*** | **Level Three**. City level administrative hierarchy. |
| ***L4*** | **Level Four**. County or district level administrative hierarchy. |

### Admin Type

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***admin\_type*** | Y | [***1111,1112,1113,1119,3110,3120***] | ***admin\_type*** |
|  |  | ***1111*** | **Country**. |
| ***1112*** | **Province/State**. |
| ***1113*** | **Sub State**. |
| ***1119*** | **City**. |
| ***3110*** | **County/District/Local City.** |
| ***3120*** | **Neighborhood/Zone.** |

### Admin Order

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***admin\_order*** | Y | [***Capital, Order 1, Order 2,***  ***Order 3,Order 4, Order 5,***  ***Order 6, Order 7, Order 8***] | ***admin\_type*** |
|  |  | ***Capital*** | **Country Capital**. |
| ***Order 1*** |  |
| ***Order 2*** |  |
| ***Order 3*** |  |
| ***Order 4*** |  |
| ***Order 5*** |  |
| ***Order 6*** |  |
| ***Order 7*** |  |
| ***Order 8*** |  |

### Country Code

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***iso*** | Y |  | ISO 3166-1 alpha-3 country code, refer to [ISO\_3166-1\_alpha-3](https://en.wikipedia.org/wiki/ISO_3166-1_alpha-3) |

### Names

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***name*** | Y | User defined | Default name, usually it’s the primary name of the feature |
| ***name:<lang>*** | N | User defined | The official name for the specified language <***lang***>. |
| ***name:<lang>:phonetics*** | N | User defined | Phonetics for the specified language <***lang***>. |
| ***name:<lang>:owner*** | N | User defined |  |
| ***name:<lang>:name\_type*** | N | User defined |  |
| ***alt\_name:<lang>*** | N | User defined | Alias name for the specified language <***lang***>. |
|  |  |  |  |

### Other Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***Iso\_state*** | N |  | Refer to the country standard (wikipedia) here:  <http://en.wikipedia.org/wiki/ISO_3166-1>  Refer to the state standard (wikipedia) here:  <http://en.wikipedia.org/wiki/ISO_3166-2> |
| ***dst\_end\_day*** | N |  |  |
| ***dst\_end\_month*** | N |  |  |
| ***dst\_end\_time*** | N |  |  |
| ***dst\_end\_weekday*** | N |  |  |
| ***dst\_start\_day*** | N |  |  |
| ***dst\_start\_month*** | N |  |  |
| ***dst\_start\_time*** | N |  |  |
| ***dst\_start\_weekday*** | N |  |  |
| ***timezone*** | N |  |  |
| ***ad\_char*** | N |  |  |
|  |  |  |  |

### Members (TODO)

## Zone

### Names

Refer to *10.5 Names* for details.

### Zone Type

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***zone\_type*** | Y | <*see below*> | This attribute identifies the Zone type. |
|  |  | ***PA*** | Postal Area (Zone Type = ***PA***)  Postal Zones are assigned to areas the postal service designates for mail delivery. They reflect names of incorporated cities, military bases, unincorporated communities, or such entities as O’Hare Airport. |
|  |  | ***KA*** | Known As (Zone Type = ***KA/KD***)  The Known As Zones identify what most end-users feel is the “place” name, regardless of whether or not it is the true administrative name  ***KA*** indicates that the Zone name should be used in conjunction with the city or settlement name since that is what is commonly used as the area’s name  ***KD*** indicates that the Zone name should NOT be used when displaying or returning the name back to the user. In the KD situation, the Zone name is not used since the boundaries for it may not be clear |
|  |  | ***KD*** | See above ***KA***. |
|  |  | ***NB*** | Neighbourhood (Zone Type = ***NB***)  A community within a larger city, town, or suburban area. Typically, a neighbourhood is officially recognised by the municipality and can have one or more of the following: central meeting place, library, school, and/or fire and safety POIs. |
|  |  | ***GC*** | Greater City (Zone Type = ***GC***)  • A Greater City Zone is a zone that defines a metropolitan area that may encompass multiple municipalities. Greater City Zones can be used to enhance destination selection. Greater City Zones are applied to all links that define the metropolitan area. |
|  |  | ***TA*** | Traffic Area (Zone Type = ***TA***)  Unlike the other Zone Types, the TMC Area Zone is not intended for destination input or other geocoding related functionality. TMC Area Zone is only used to associate TMC Area coding to navigable links. |

### Country Code

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***iso*** | Y |  | ISO 3166-1 alpha-3 country code, refer to [ISO\_3166-1\_alpha-3](https://en.wikipedia.org/wiki/ISO_3166-1_alpha-3) |

### Admins

Refer to *10.1 TeleNav Admin Level* for details.

### Other Attribute

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***type*** | Y | ***zone*** | TeleNav defined type for zone area, identifies it’s an zone relation record. |
| ***admin\_level*** | Y | *refer to*  *10.1TeleNav Admin Level* | The TeleNav defined admin level for zone area. |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***-1*** | ***R*** | ***-1*** | Dummy relation member for zone type, which is required by Ngx. |

## Gate

|  |  |  |  |
| --- | --- | --- | --- |
| Key | Mandatory | Value | Description |
| type | Y | barrier |  |
| barrier | Y | *gate* |  |
| gate\_type | Y | Key Required/Permission Required/Emergency Vehicle Access |  |
|  |  | Key Required | indicates that a key is required to access the gate |
| Permission Required | indicates that permission is required to access the gate |
| Emergency Vehicle Access | indicates only emergency vehicles can access the gate |
| applicable\_to | Y | *motorcar/bus/taxi/hov/foot/truck/delivery/emergency/access\_through\_traffic/motorcycle* | Access Characteristics |
|  |  | motorcar | Indicates if automobiles are involved in the Access Characteristics. |
| bus | Indicates if buses are involved in the Access Characteristics. |
| taxi | Indicates if taxis are involved in the Access Characteristics. |
| hov | Indicates if carpools are involved in the Access Characteristics. |
| foot | Indicates if pedestrians are involved in the Access Characteristics. |
| truck | Indicates if trucks are involved in the Access Characteristics. |
| delivery | Indicates if deliveries are involved in the Access Characteristics. |
| emergency | Indicates if emergency vehicles are involved in the Access Characteristics. |
| access\_through\_traffic | Indicates if through traffic (residents only) is involved in the Access Characteristics. |
| motorcycle | Indication if motorcycles are involved in the Access Characteristics. |
| time | N | *User defined* | stores time syntax information in GDF 3.0 representation. |

### Gate Type

|  |  |  |  |
| --- | --- | --- | --- |
| Key | Mandatory | Value | Description |
| gate\_type | Y | Key Required/Permission Required/Emergency Vehicle Access |  |
|  |  | Key Required | indicates that a key is required to access the gate |
| Permission Required | indicates that permission is required to access the gate |
| Emergency Vehicle Access | indicates only emergency vehicles can access the gate |

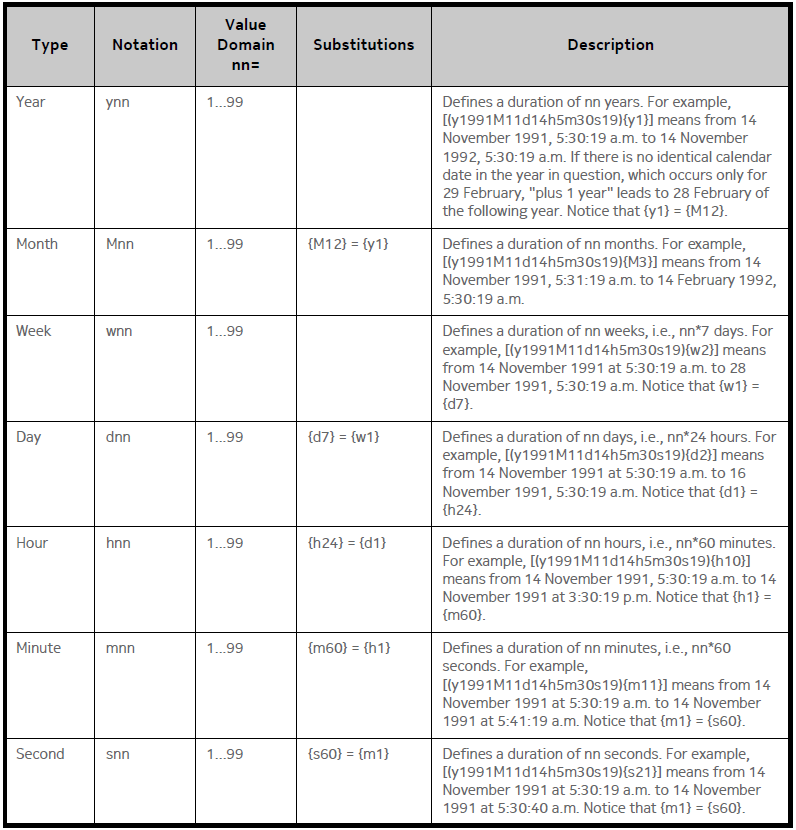
### Vehicles

|  |  |  |  |
| --- | --- | --- | --- |
| Key | Mandatory | Value | Description |
| applicable\_to | Y | *motorcar/bus/taxi/hov/foot/truck/delivery/emergency/access\_through\_traffic/motorcycle* | Access Characteristics |
|  |  | motorcar | Indicates if automobiles are involved in the Access Characteristics. |
| bus | Indicates if buses are involved in the Access Characteristics. |
| taxi | Indicates if taxis are involved in the Access Characteristics. |
| hov | Indicates if carpools are involved in the Access Characteristics. |
| foot | Indicates if pedestrians are involved in the Access Characteristics. |
| truck | Indicates if trucks are involved in the Access Characteristics. |
| delivery | Indicates if deliveries are involved in the Access Characteristics. |
| emergency | Indicates if emergency vehicles are involved in the Access Characteristics. |
| access\_through\_traffic | Indicates if through traffic (residents only) is involved in the Access Characteristics. |
| motorcycle | Indication if motorcycles are involved in the Access Characteristics. |

### Time

The syntax specified in this section enables the description of intervals by means of a set of symbols representing the time interval units: year, month, week, day, hour, minute and second. Attached to a starting date, the interval constitutes a basic Time Domain. Without a starting date, it just indicates a duration.

The symbol is composed of an interval type code which indicates a particular time interval unit (e.g., y for year), and up to 2 digits, which are designated for the time interval values. If the very first time type code is preceded by a minus sign, it means that the duration is counted in the reverse order. The following table lists time interval unit types, their notation, valid values and substitutions.



Since Time Domains can be considered as a set of the smallest time unit described here, the second, Time Domains may also be combined with set operations, such as:

Union of sets notation: +

Intersection of sets notation: \*

Subtraction of sets notation: -

### Detailed case about time gate between Global and CN

|  |  |  |  |
| --- | --- | --- | --- |
| Gate type | Validity Period | Global | CN |
| routing mode – **without** key/permission or emergency vehicle | routing mode – **with** key/permission or emergency vehicle |
| Key Access | In Time | 1 | 3 |
| Key Access | Out Time | 3 | 1 |
| Key Access | Non Time | 3 | 3 |
| Permission Required | In Time | 1 | 3 |
| Permission Required | Out Time | 3 | 1 |
| Permission Required | Non Time | 3 | 3 |
| Emergency Gate | In Time | 1 | 1 |
| Emergency Gate | Out Time | 3 | 1 |
| Emergency Gate | Non Time | 3 | 1 |

Case:

CN: 32.109031,118.914860

484197782000;1;1;"1970-01-02 00:00:00";1;""time"=>"[(h9m30){h12}]", "type"=>"barrier", "barrier"=>"gate", "gate\_type"=>"Permission Required", "condition\_id"=>"484197782", "applicable\_to"=>"access\_through\_traffic;motorcar;bus;taxi;hov;foot;truck;delivery;emergency;motorcycle""



TWN: 23.69417,120.53815

720299767000;1;1;"1970-01-02 00:00:00";1;""time"=>"[(h0){h6}]", "type"=>"barrier", "barrier"=>"gate", "gate\_type"=>"Permission Required", "condition\_id"=>"720299767", "applicable\_to"=>"access\_through\_traffic;motorcar;bus;taxi;hov;foot;truck;delivery;emergency;motorcycle""



## Toll Booth

|  |  |  |  |
| --- | --- | --- | --- |
| Key | Mandatory | Value | Description |
| type | Y | barrier |  |
| barrier | Y | *toll\_booth* |  |
| fixed\_fee | N | yes | if it has been verified that a fixed fee is required in order to pass through(Only HERE) |
| obtain\_ticket | N | yes | if it has been verified that a ticket must be obtained at the Toll Structure(Only HERE) |
| pay\_ticket | N | yes | if it has been verified that payment is required based on the travelled distance between the Toll Structure where the ticket was obtained and the Toll Structure at which the toll road is exited |
| electronic | N | yes | •if it has been verified that automatic controls exist that automatically record the beginning and end of the stretch of toll road that has been travelled. SeeFigure 6-11. Payment is calculated based on the travelled distance between the entry and exit point. For example, 407 ETR - Greater Toronto area. Toll is collected by using transponders or through scanning the license plate for vehicles without a transponder. Another example is the German Toll Collect system for Trucks. Toll is collected by payment through the internet, cash payment at designated Toll Terminals or through an on-board unit. •if it has been verified that automatic controls exist that automatically record vehicles entering a toll zone in the centre of a city. Payment is determined by scanning the license plate. This is typical for the London and Stockholm Congestion Zones. |
| condition\_id |  |  | CONDITION\_ID can be used to identify Lane NavStrand in RDF\_LANE\_NAV\_STRAND. An associated Lane NavStrand defines the contiguous connected strand of lanes involved in the condition. |
| applicable\_to | Y | *motorcar/bus/taxi/hov/foot/truck/delivery/emergency/access\_through\_traffic/motorcycle* | Access Characteristics |
|  |  | motorcar | Indicates if automobiles are involved in the Access Characteristics. |
| bus | Indicates if buses are involved in the Access Characteristics. |
| taxi | Indicates if taxis are involved in the Access Characteristics. |
| hov | Indicates if carpools are involved in the Access Characteristics. |
| foot | Indicates if pedestrians are involved in the Access Characteristics. |
| truck | Indicates if trucks are involved in the Access Characteristics. |
| delivery | Indicates if deliveries are involved in the Access Characteristics. |
| emergency | Indicates if emergency vehicles are involved in the Access Characteristics. |
| access\_through\_traffic | Indicates if through traffic (residents only) is involved in the Access Characteristics. |
| motorcycle | Indication if motorcycles are involved in the Access Characteristics. |
| payment | N | payment:<type> |  |
|  |  | payment:cash | Is payment possible using Cash |
| payment:debit\_cards | Is payment possible using Bank Card |
| payment:credit\_cards | Is payment possible using Credit Card |
| payment:pay\_pass | Is payment possible using Pass |
| payment:transponder | Is payment possible using Transponder |
| payment:video | Is payment possible using Video |
| payment:exact\_cash | Is payment possible using Exact Cash |
| payment:fuel\_card | Is payment possible using Travel Card |
| gate\_info | N | *User defined* | (Only AutoNavi) |
| image\_id | N | *User defined* | (Only AutoNavi) |
| toll\_id | N | *User defined* | (Only AutoNavi) |

### Names

Refer to 10.5 Names for details.

### Payment Type

|  |  |  |  |
| --- | --- | --- | --- |
| Key | Mandatory | Value | Description |
| payment | N | payment:<type> |  |
|  |  | payment:cash | Is payment possible using Cash |
| payment:debit\_cards | Is payment possible using Bank Card |
| payment:credit\_cards | Is payment possible using Credit Card |
| payment:pay\_pass | Is payment possible using Pass |
| payment:transponder | Is payment possible using Transponder |
| payment:video | Is payment possible using Video |
| payment:exact\_cash | Is payment possible using Exact Cash |
| payment:fuel\_card | Is payment possible using Travel Card |

### Structure Type

### Toll Gate Types

### Vehicles

### Other Attribute

### Members

## Bifurcation

### Vehicles

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***Applicable\_to*** | Y | Refer to *10.2 Vehicles Types* | Indicates the vehicles involved with the traffic sign. |

### Other Attribute

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***type*** | Y | [bifurcation] | Type to identify bifurcation |
| ***bifurcation\_conditions*** | N |  | Conditions of bifurcation |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | The from link associated with the bifurcation |
| ***1*** | ***N*** | ***via*** | The though point of the bifurcation. The bifurcation only takes effect on the direction when driving along the link ***from*** to the link ***to*** and go though the ***via*** point. |
| ***2*** | ***W*** | ***to*** | The to link associated with the bifurcation |

## Construction

### Vehicles

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***Applicable\_to*** | Y | Refer to *10.2 Vehicles Types* | Indicates the vehicles involved with the traffic sign. |

### Other Attribute

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***type*** | Y | [bifurcation] | Type to identify bifurcation |
| ***Condition\_id*** | N |  | Condition\_id for construction |
| ***time*** | N |  | Time restriction of construction |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | The link associated with the construction |
| ***1*** | ***N*** | ***via*** | The from node of the link. |

## Divided Junction

### Type

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***type*** | Y | ***divided\_junction\_*** | TeleNav defined type for divided junction, identifies it’s a divided junction relation record. |

### Other Attribute

N/A

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | The ***from*** link associated with the divided junction. |
| ***1*** | ***N*** | ***via*** | The node of divided junction. |
| ***2*** | ***W*** | ***to*** | The ***to*** link associated with the divided junction. |

## GJV

|  |  |  |  |
| --- | --- | --- | --- |
| Key | Mandatory | Value | Description |
| type | Y | gjv |  |
| iso | Y |  |  |
| side | Y |  |  |
|  |  | *L* | left |
| *M* | middle |
| *R* | right |
| gms\_svg | N | *User defined* | The 2DGS SVG file represents the layers and sub-layers for 2D Generalized Sign(2DGS). |
| file\_name | N | *User defined* | The 2DGJ SVG file represents the layers and sub-layers for 2D Generalized Junctions (2DGJ). |
| sign\_dest | Y | *User defined* | destination lane,if not have data '-1' |
| gms\_template | N | BIF\_A\_L/BIF\_A\_R/EXIT\_A/EXIT\_A\_L/EXIT\_A\_R/EXIT\_B/EXIT\_B\_L/EXIT\_B\_R/EXIT\_C/EXIT\_C\_R/EXIT\_C\_L/SON\_A/SON\_B | please see "2D Generalized Junctions and 2D Generalized Signs User Manual.pdf" |

### Other Attribute (TODO)

### Members (TODO)

## Go Straight

### Go straight

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***type*** | Y | go\_straight | Indicates go straight relation type. Go Straight identifies the main path relationship among two or more continuous roads when a road splits into some roads. |
| applicable\_to | Y | Refer to *10.2 Vehicles Types* | The vehicle type of go straight relation. |
| Condition\_id | N |  | The raw condition id in RDF. |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | The start link associated with go straight. |
| ***1*** | ***N*** | ***via*** | The destination point of the go straight. |
| ***2*** | ***W*** | ***to*** | The end link associated with go straight. |

### Notes

Go straight was not available in Autonavi data.

## Junction View

***Junction View*** condition is a link-node-link condition used for associating images (background image for a junction and arrow overlay image) to the road network. It ties an image representation of a junction and arrow overlays to the corresponding road geometry so that an application is able to display the ***Junction View*** image for this junction with the appropriate arrow overlay prior to the desired maneuver.

### Files

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***jv\_file\_name(\_<x>)*** | N |  | The junction view associating image name. Since there might be more than one image connected to the same junction view, ***<x>*** suggests the  sequential order number of the image. |
| ***jv\_file\_name(\_<x>):type*** | N |  | An integer value suggesting the map feature type of the junction view associating image. Since there might be more than one image connected to the same junction view, ***<x>*** suggests the sequential order number of the image. |

### Anchor point

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***cross\_maat\_id*** | N |  | The identifier of the anchor point in ‘***RoadCrossMaat***’ table from vendor data. Only when this junction is generated from ‘***RoadCrossMaat***’ table will this attribute exists. See reference of ‘***RoadCrossMaat***’ in “AutoNavi Exchange Format” specification.  **This attribute only exists in autonavi data.** |
| ***condition\_id*** | N |  | The identifier of the anchor point in ‘***RDF\_CONDITION***’ table from vendor  data. See reference of ‘***RDF\_CONDITION***’ in “RDF Reference Manual V2016” specification.  **This attribute only exists in nav2 data.** |
| ***hwd\_id*** | N |  | The identifier of the anchor point in ‘***HighwayDouble***’ table from vendor  data. Only when this junction is generated from ‘***HighwayDouble***’ table will this attribute exists. See reference of ‘***HighwayDouble***’ in “AutoNavi Exchange Format” specification.  **This attribute only exists in autonavi data.** |
| ***hws\_id*** | N |  | The identifier of the anchor point in ‘***HighwaySingle***’ table from vendor  data. Only when this junction is generated from ‘***HighwaySingle***’ table will this attribute exists. See reference of ‘***HighwaySingle***’ in “AutoNavi Exchange Format” specification.  **This attribute only exists in autonavi data.** |
| ***node\_maat\_id*** | N |  | The identifier of the anchor point in ‘***RoadNodeMaat***’ table from vendor data. Only when this junction is generated from ‘***RoadNodeMaat***’ table will this attribute exists. See reference of ‘***RoadNodeMaat***’ in “AutoNavi Exchange Format” specification.  **This attribute only exists in autonavi data.** |
| ***rfsp\_id*** | N |  | The identifier of the anchor point in ‘***RoadFurnitureSignPost***’ table from vendor data. Only when this junction is generated from ‘***RoadFurnitureSignPost***’ table will this attribute exists. See reference of ‘***RoadFurnitureSignPost***’ in “AutoNavi Exchange Format” specification.  **This attribute only exists in autonavi data.** |

### Other Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***jv\_highway*** | N | ***single/double*** | Indicating whether the image of junction view belongs to “**高速单一分歧图**”(Highway Single Bifurcation Bitmap Information) or “**高速连续分歧图**”( Highway Successive Bifurcation Bitmap Point Information). See references of ‘***HighwaySingle***’ and ‘***HighwayDouble***’ in “AutoNavi Exchange Format” specification.  **This attribute only exists in autonavi data.** |

### Members (TODO)

TODO

## One Way

### One way

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***type*** | Y | oneway | Indicates oneway relation type. |
| time | N |  | The effective time domain of oneway relation. |
| onway | Y | yes/no/-1 | Indicates the effective direction. |
|  |  | yes | Oneway was effective for positive direction of link. |
| no | Oneway was effective for both direction of link. |
| -1 | Oneway was effective for negative direction of link. |
| applicable\_to | Y | Refer to *10.2 Vehicles Types* | The effective vehicle type of oneway relation. |
| Condition\_id | N |  | The raw condition id in RDF. |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | The link associated with oneway. |
| ***1*** | ***N*** | ***via*** | The destination point of the oneway. |

## Restriction

### Restriction

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***type*** | Y | restriction | Indicates restriction relation type. |

### RDM Type

Restricted Driving Manoeuvre (RDM) describes a manoeuvre from one link to another that is prohibited. The Restricted Driving Manoeuvre condition is used to prevent a vehicle from making a prohibited manoeuvre, resulting in more accurate route calculation. RDM type indicates the type of restricted driving manoeuvre(RDM).

|  |  |  |  |
| --- | --- | --- | --- |
| Key | Mandatory | Value | Description |
| rdm\_type | N | 1 | Legal Restricted Driving manoeuvre (RDM is legally not allowed). |
| 2 | Physical Restricted Driving manoeuvre (RDM is physically not possible). |
| 3 | Logical Restricted Driving manoeuvre (RDM is logically not allowed). |

### Restriction Type

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| restriction | Y | access | It described roads which have seasonal condition change. Only two relation members were “from” and “via”. |
| hov | It described roads which have HOV lanes. No relation members were available. |
| access;hov | It describes roads which have both seasonal condition and HOV lanes. No relation members were available. |
| no\_left\_turn | Left turn restriction for the start navigable link. |
| no\_right\_turn | Right turn restriction for the start navigable link. |
| no\_u\_turn | U turn restriction for the start navigable link. |
| no\_straight\_on | Straight on restriction for the start navigable link. |

### Vehicles

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| applicable\_to | Y | Refer to *10.2 Vehicles Types* | The vehicle type of this restriction. |

### Other Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| time | N |  | Indicates the restriction effective time. |
| condition\_id | N |  | Unique ID for the condition of rdf\_condition in RDF(HERE). |
| hov | N | designated | Indicates road has hov lane access restriction.  (It was paired with relations.tags->’restriction’=’hov’. Similar keys was relations.tags->’hov:minumum’ and relations.tags->’hov:access:<vehicle>’.) |
| hov:access:<vehicle> | N | yes | Indicates the vehicle type of HOV restriction.  (Refer to *10.2 Vehicles Types*) |
| hov:minimum | N |  | Indicates the minimum passengers. |
| Hov:toll | N | yes | Indication if payment of a fee allows for using the HOV  lane(s). |
| pdm\_type | N |  | Indicates the type of permitted driving manoeuvre (PDM). PDM conditions indicate if a U-turn is allowed in areas where administrative wide U- turn restrictions exist. |
|  |  | 1 | Legal |
| Maatid\_cross/maatid\_node | N |  | The maat\_id of roadcrossmaat in AXF; The maat\_id of roadnodemaat in AXF (Autonavi). |
| seasonal | N | yes | Indicates road has seasonal access restriction.  (It was paired with relations.tags->’restriction’=’access’.) |
| Road\_id | N |  | The road\_id of start link in roadsegment table (Autonavi). |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | The start link associated with restriction. |
| ***1*** | ***N*** | ***via*** | The destination point of the restriction. |
| ***2*** | ***W*** | ***to*** | The end link associated with restriction. |

## Safety Camera

### Camera Type & ID

Refer to 6.7.1 Camera Type & ID for details.

### Category Name & ID

Refer to 6.7.2 Category Name & ID for details.

### Country Code

Refer to 6.7.3 Country Code for details.

### Link Attributes

Refer to 6.7.4 Link Attributes for details.

### Max Speed

Refer to 6.7.5 Max Speed for details.

### Other Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***type*** | Y | ***safety\_camera*** | TeleNav defined type for safety camera relation, identifies it’s an safety camera relation record. |

Refer to 6.7.6 Other Attributes for the details of other attributes.

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | The link associated with the safety camera. |
| ***1*** | ***N*** | ***via*** | From node of the associated link. |
| ***2*** | ***N*** | ***SC*** | The location node of safety camera |

## Signpost

### Sign Names

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***type*** | Y | signpost | Indicates signpost relation type. |
| sign\_text\_t:<language\_code> | N |  | Indicates signpost information (descriptive names) is a specific destination beyond where the ramp ends (Towards). |
| sign\_text\_b:<language\_code> | N |  | Indicates signpost information (descriptive names) is a specific destination at the end of a ramp(Branch). |
| sign\_route\_t: <language\_code> | N |  | Indicates signpost information (route number) is a specific destination beyond where the ramp ends (Towards). |
| sign\_route\_b:<language\_code> | N |  | Indicates signpost information (route number) is a specific destination at the end of a ramp (Branch). |
| ref:<language\_code> |  |  | Exit Number identifies sign text that is an exit. |
| Sign\_text\_t:<language\_code>:placename | N |  | Indicates the descriptive name was place name. Autonavi special. |
| maatid\_cross/ maatid\_node | N |  | The maat\_id of roadcrossmaat in AXF. /The maat\_id of roadnodemaat in AXF. |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | The start link associated with signpost. |
| ***1*** | ***W*** | ***to*** | The end link associated with signpost. |

## Traffic Sign

### Sign Type

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***traffic\_sign*** | Y | <traffic sign values below> | ***traffic\_sign*** identifies the type of warning sign. |
|  |  | ***begin\_overtaking*** | Start of No Overtaking |
| ***end\_overtaking*** | End of No Overtaking |
| ***protected\_overtaking\_extra\_lane*** | Protected Overtaking – extra lane |
| ***protected\_overtaking\_extra\_lane\_right\_side*** | Protected Overtake – extra lane right side |
| ***protected\_overtaking\_extra\_lane\_left\_side*** | Protected Overtake – extra lane left side |
| ***lane\_merge\_right*** | Lane Merging From The Right |
| ***lane\_merge\_left*** | Lane Merging From The Left |
| ***lane\_merge\_center*** | Lane Merge Center |
| ***railway\_crossing\_protected*** | Railway Crossing Protected |
| ***railway\_crossing\_unprotected*** | Railway Crossing Unprotected |
| ***road\_narrows*** | Road Narrows |
| ***sharp\_curve\_left*** | Sharp Curve Left |
| ***sharp\_curve\_right*** | Sharp Curve Right |
| ***winding\_road\_starting\_left*** | Winding Road starting Left |
| ***winding\_road\_starting\_right*** | Winding Road starting Right |
| ***begin\_overtaking\_trucks*** | Start of No Overtaking Trucks |
| ***end\_overtaking\_trucks*** | End of No Overtaking Trucks |
| ***steep\_hill\_upwards*** | Steep Hill Upwards |
| ***steep\_hill\_downwards*** | Steep Hill Downwards |
| ***stop*** | Stop Sign |
| ***lateral\_wind*** | Lateral Wind |
| ***general\_warning\_sign*** | General Warning |
| ***risk\_of\_grounding*** | Risk of Grounding |
| ***general\_curve*** | General Curve |
| ***end\_of\_all\_restrictions*** | End of all Restrictions |
| ***general\_hill*** | General Hill |
| ***animal\_crossing*** | Animal Crossing |
| ***icy\_conditions*** | Icy Conditions |
| ***slippery\_road*** | Slippery Road |
| ***falling\_rocks*** | Falling Rocks |
| ***school\_zone*** | School Zone |
| ***tramway\_crossing*** | Tramway Crossing |
| ***congestion\_hazard*** | Congestion Hazard |
| ***accident\_hazard*** | Accident Hazard |
| ***priority\_over\_oncoming\_traffic*** | Priority over oncoming traffic |
| ***yield\_to\_oncoming\_traffic*** | Yield to oncoming traffic |
| ***crossing\_with\_priority\_from\_right*** | Crossing with Priority from the Right |
| ***pedestrian\_crossing*** | Pedestrian Crossing |
| ***yield*** | Yield |
| ***double\_hairpin*** | Double Hairpin  (43…52, China specific ) |
| ***triple\_hairpin*** | Triple Hairpin |
| ***embankment*** | Embankment |
| ***two\_way\_traffic*** | Two-way Traffic |
| ***urban\_area*** | Urban Area |
| ***hump\_bridge*** | Hump Bridge |
| ***uneven\_road*** | Uneven Road |
| ***flood\_area*** | Flood Area |
| ***obstacle*** | Obstacle |
| ***horn\_sign*** | Horn Sign |
| ***begin\_no\_engine\_brake*** | No Engine Break |
| ***end\_no\_engine\_brake*** | End of No Engine Break |
| ***no\_idling*** | No Idling |
| ***truck\_roll\_over*** | Truck Rollover |
| ***begin\_low\_gear*** | Low Gear |
| ***end\_low\_gear*** | End of Low Gear |
| ***bicycle\_crossing*** | Bicycle Crossing |
| ***yield\_to\_bicycles*** | Yield to Bicycles |
| ***traffic\_sign:type*** | N | ***regulatory/informative/warning*** | ***traffic\_sign:type*** is traffic sign category, which identifies the main sign category to which the sign belongs. |
|  |  | ***regulatory*** | Regulatory Sign is applied when the Traffic Sign indicates a regulation. |
| ***informative*** | Informative Sign is applied when the Traffic Sign indicates information to alert the driver. |
| ***warning*** | Warning Sign is applied when the Traffic Sign indicates a warning. |
| ***traffic\_sign:*** ***priority*** | N | ***yes/no*** | ***traffic\_sign:*** ***priority*** identifies the priority sign, it can be used to group Traffic Signs related to Priority |

### Location

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***location*** | N | ***Left/Right/Overhead/Uncaptured*** | identifies the location of a given Traffic Light/Sign |
|  |  | ***Left*** | Left side |
| ***Right*** | Right side |
| ***Overhead*** | Overhead |
| ***Uncaptured*** | It’s not captured by vendor. |

### Vehicles

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***applicable\_to*** | N | Refer to *10.2 Vehicles Types* | Indicates the vehicles involved with the traffic sign. |

### Other Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***length:<lang>*** | N |  |  |
| ***prewarning:<lang>*** | N |  |  |
| ***validity:<lang>*** | N |  |  |
| ***incline*** | N | User defined | provides values visible on the sign related to specific Sign Types |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | The link associated with the traffic sign |
| ***1*** | ***N*** | ***via*** | The destination point of the traffic sign. The traffic sign only take effect on the direction when driving along the link ***from*** to the point ***via*** if traffic sign ***location*** is not available. |

## Traffic Signal

### Location

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***location*** | N | ***Left/Right/Overhead/Uncaptured*** | identifies the location of a given Traffic Light/Sign |
|  |  | ***Left*** | Left side |
| ***Right*** | Right side |
| ***Overhead*** | Overhead |
| ***Uncaptured*** | It’s not captured by vendor. |

### Vehicles

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***applicable\_to*** | N | Refer to *10.2 Vehicles Types* | Indicates the vehicles involved with the traffic sign. |

### Other Attribute

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***type*** | Y | ***traffic\_signals*** | TeleNav defined type for traffic signal, identifies it’s an traffic signal record. |
| ***condition\_id*** | N | <*user defined*> | HERE condition relation id (HERE only). |
| ***node\_id*** | N | <*user defined*> | AutoNavi traffic sign node id (AutoNavi only). |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | The link associated with the traffic signal |
| ***1*** | ***N*** | ***via*** | The destination point of the traffic signal. The traffic signals only take effect on the direction when driving along the link ***from*** to the point ***via*** if traffic signals ***location*** is not available. |

## Truck Max Speed

### Speed

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***maxspeed:truck*** | N | <*user defined*> | The max speed applied for both directions. |
| ***maxspeed:truck:forward*** | N | <*user defined*> | The max speed applied for positive direction. |
| ***maxspeed:truck:backward*** | N | <*user defined*> | The max speed applied for negative direction. |
| ***maxspeed\_type*** | N | ***1/2*** | ***maxspeed\_type*** indicates if the Speed Limit is either Legal or Advisor |
|  |  | ***1*** | Legal |
| ***2*** | Advisory |
| ***truck\_speed\_type*** | N | ***1/2/3/4*** | ***truck\_speed\_type*** defines the type of speed restriction for trucks |
|  |  | ***1*** | Hazardous Material |
| ***2*** | Trailer |
| ***3*** | Weight |
| ***4*** | Weather |
| ***time\_override*** | N | ***DAWN\_TO\_DUSK/DUSK\_TO\_DAWN*** | Indication if Truck restriction is applicable Dusk to Dawn or Dawn to Dusk |
|  |  | ***DAWN\_TO\_DUSK*** | The restriction is applicable Dawn to Dusk |
| ***DUSK\_TO\_DAWN*** | The restriction is applicable Dusk to Dawn |

### Vehicles

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***applicable\_to*** | N | Refer to *10.2 Vehicles Types* | Indicates the vehicles involved with the special speed limit |

### Other Attribute

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***condition\_id*** | N | <*user defined*> | HERE condition relation id (HERE only). |
| ***weight\_dependent*** | N | <*user defined*> | ***weight\_dependent*** is used for select single-link conditions and provides the weight related to specific Transport conditions. Weight Dependent is used as a sub-attribute to specific restrictions, and is not used to model weight restrictions on roads.  ***weight\_dependent*** is specified Kilograms (kg) with precision zero. One unit of metric tons is a 1000 kg. |
| ***weather\_type*** | N | ***rain/snow/fog*** | ***weather\_type*** Indicates the type of weather condition that is affecting the transport speed limit |
|  |  | ***rain*** | indicates the transport speed limit applied for rain weather |
|  |  | ***snow*** | indicates the transport speed limit applied for snow weather |
|  |  | ***fog*** | indicates the transport speed limit applied for fog weather |
| ***hazmat\_type*** | N | <*value below*> | ***hazmat\_type*** defines the type of hazardous good(s) for which a specific link or lane is closed. |
|  |  | ***1*** | Explosives |
| ***2*** | Gas |
| ***3*** | Flammable |
| ***4*** | Flammable Solid/Combustible |
| ***5*** | Organic |
| ***6*** | Poison |
| ***7*** | Radioactive |
| ***8*** | Corrosive |
| ***9*** | Other |
| ***20*** | Any Hazardous Material |
| ***21*** | Poisonous Inhalation Hazard (Pih) |
| ***22*** | Goods Harmful For Water |
| ***23*** | Explosive And Flammable |
| ***24*** | Tunnel Category B |
| ***28*** | Tunnel Category C |
| ***32*** | Tunnel Category D |
| ***34*** | Tunnel Category E |
| ***type*** | Y | ***truck\_maxspeed*** | TeleNav defined type for truck special speed limit, identifies it’s a truck special speed limit record. |

### Members

## Grade Separation

### TBD

### Other Attribute

### Members

## ADAS Node

### CHS

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***curvature*** | N | *[***0 ~1023***]* | The encoding of curvature (1/radius) at the Node, relative to the From Link ID and To Link ID path.  For the details of curvature interpretation, please refer to spec [**ADASIS v2 Protocol Version 2.0.3.0**](https://redmine.vires.com/attachments/download/3911/200v2.0.3-D2.2-ADASIS_v2_Specification.0.pdf)**.** |
| ***heading*** | N | *[****0 ~ 255****]* | The angle between North and the road direction. |
|  |  | ***0*** | Road direction is in North direction |
| ***1*** | Road direction is in 1.417 degrees right from North direction |
| ***2 ~ 125*** | Road direction is in right from from North direction |
| ***126*** | Road direction is in 178.583 degrees right from North direction. |
| ***127*** | Road direction is in South direction |
| ***128*** | Road direction is in 178.583 degrees left (181.417 degrees right) of North direction. |
| ***129 ~ 252*** | Road direction is in left from North direction. |
| ***253*** | Road direction is in 1.417 degrees left (358.583 degrees right) from North direction. |
| ***254*** | Unknown |
| ***255*** | N/A |
| ***slope*** | N | *<user defined>* | ***slope***, in Decimal Degrees x 102, indicating the angle of slope for the sub-segment coming into the Node.  The Slope value is defined as follows:   -9000 <= SLOPE <= 9000   SLOPE = 0 indicates Horizontal (Flat)   SLOPE = 4500 indicates Upward slope.   SLOPE = -4500 indicates Downward slope. |
| ***slope\_f*** | N | *<user defined>* | ***slope\_f***, in Decimal Degrees x 102, indicating the angle of slope for the sub-segment from the From link coming into the Node. |
| ***slope\_t*** | N | *<user defined>* | ***slope\_t***, in Decimal Degrees x 102, indicating the angle of slope for the sub-segment from the node coming into the To link. |

### Other Attribute

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***type*** | Y | ***adas\_node*** | TeleNav defined type for ADAS Node, identifies it’s relation record for ADAS node. |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | The From Link associated with the ADAS node relation |
| ***1*** | ***N*** | ***via*** | The node associated with the ADAS node relation |
| ***2*** | ***W*** | ***to*** | The To Link associated with the ADAS node relation |

Note:The ***from/to*** link might be not available for ADAS node relation. If the ***from*** link is not available, the sequence no. for ***via*** node is 0, and for ***to*** link is 1.

## ADAS Max Speed

### Speed

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***adas:special\_maxspeed*** | Y | *<user defined>* | ***adas:special\_maxspeed*** Indicates the applicable speed limit in km/hr. |
| ***special\_speed\_type*** | Y | [***1,2,3***] | ***special\_speed\_type*** Indicates a speed that exists under special circumstances |
|  |  | ***1*** | Advisory speed |
| ***2*** | Dependent speed type |
| ***~~3~~*** | ~~Speed bumps present~~ |
| ***traffic\_calming*** |  | ***yes*** | Speed bumps present |
| ***depdendent\_speed\_type*** | N | <*see below*> | ***depdendent\_speed\_type*** Indicates situations which would limit travel speed, such as weather, certain times of day, or special zones. |
|  |  | ***school*** | School |
| ***rain*** | Rain |
| ***snow*** | Snow |
| ***time*** | Time |
| ***seasonal*** | Seasonal |
| ***lane*** | Lane |
| ***fog*** | Fog |
| ***time*** | N | <*user defined*> | Time period valid for the speed limit. |

### Vehicles

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***applicable\_to*** | N | Refer to *10.2 Vehicles Types* | Indicates the vehicles involved with the special speed limit |

### Other Attribute

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***condition\_id*** | N | <*user defined*> | HERE condition relation id (HERE only). |
| ***traffic\_calming*** | N |  |  |
| ***type*** | Y | ***adas:maxspeed*** | TeleNav defined type for special speed limit, identifies it’s a special speed limit record.  Actually, it’s not an ADAS attribute, but will be used by ADAS. |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | The link associated with the special speed limit. |
| ***1*** | ***N*** | ***via*** | The destination point of the special speed limit. |

## Dir Slope

### Dir Slope

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***dir\_slope*** | Y | < dir\_slope values below> | ***dir\_slope*** is used to express the slope information between a flat road to an elevated road or an elevated road to a flat road. |
|  |  | ***0*** | 未调查 |
| ***1*** | 平面→平面（没有倾斜） |
| ***10*** | 平面→上坡 |
| ***11*** | 上坡→上坡（进入退出是同一角度） |
| ***12*** | 上坡→上坡（退出比进入要急角度） |
| ***13*** | 上坡→上坡（退出比进入要缓角度） |
| ***14*** | 下坡→上坡 |
| ***30*** | 平面→下坡 |
| ***31*** | 下坡→下坡（进入退出是同一角度） |
| ***32*** | 下坡→下坡（退出比进入要急角度） |
| ***33*** | 下坡→下坡（退出比进入要缓角度） |
| ***34*** | 上坡→下坡 |
| ***40*** | 上坡→平面 |
| ***50*** | 下坡→平面 |
| ***cross\_maat\_id*** | N |  | Indicates the MAAT\_ID in the raw data table “*RoadCrossMaat*”. |
| ***node\_maat\_id*** | N |  | Indicates the MAAT\_ID in the raw data table “*RoadNodeMaat*”. |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***from*** | Indicates the “from\_road” of the dir\_slope info. |
| ***1,2,3,~*** | ***W/N*** | ***via*** | Indicates the via members of the dir\_slope info. |
| ***~,8*** | ***W*** | ***to*** | Indicates the “to\_road” of the dir\_slope info. |

## Virtual Connection

### TBD

### Other Attribute

### Members

## Natural Guidance

Natural Guidance is a turn-by-turn experience encompassing multiple attributes and relations which details the user’s environment and context to more natural environmental and intuitive triggers.

Natural Guidance supports the ability for the end users to get route guidance instructions based on contextual elements surrounding decision points such as POIs, Cartographic Features (e.g. Woodland,Lake, Structure Footprints), and Traffic Signals & Stop Signs.

Natural Guidance associates all contextual elements that are relevant for guidance with the actual decision point. These associations are available to support route guidance when driving (or turning) over a Junction/Intersection, and also for guidance when passing an important contextual element.

Examples :

* Go past the park on your right, then turn left at Jefferson School on Aldon Street.
* Go through the traffic light and turn right before the Petrol Station.
* Continue your route passing the dome building on your right.

### Natural Guidance

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***asso\_type*** | Y | ***JG/PG*** | ***asso\_type*** identifies the type of natural guidance. |
|  |  | ***JG*** | Junction Guidance |
| ***PG*** | Passing Guidance |
| ***name:###*** | N |  | [*Language code*](#_Language_code) |
| ***name:###:name\_type*** | N | ***B/*** | ***name:###:name\_type*** identifies the type of feature name. |
|  |  | ***B*** | Official Name |
|  | Alternate Name |
| ***name:###:phonetics: ###*** | N |  | [*Phonetics language code*](#_Phonetics_language_code) |
| ***direction*** | Y | ***F/T/B*** | ***Direction*** identifies the direction to which the Feature  Association is applied. |
|  |  | ***F*** | F – From Reference to Non-Reference Node. |
| ***T*** | T – Negative direction, from Non-Reference to Reference Node. |
| ***B*** | B – Both directions  The Feature Association applicable in both directions. |
| ***visibility*** | **Y** | ***0/1/2/3*** | ***Visibility*** defines the visibility of the Feature, from the direction of the associated link.  Visibility is one of the Importance Indicator attributes that must be evaluated as a whole to classify the relevance of a feature to support route guidance. |
|  |  | ***0*** | Not Applicable |
| ***1*** | The Feature is clearly visible |
| ***2*** | The Feature is partly visible |
| ***3*** | Not Visible But Relevant For Guidance |
| ***seasonal\_dependency*** | **N** | ***Y*** | ***Seasonal Dependency*** indicates if the importance of a Feature is negatively affected during a specific time period, can be used to determine the relevance of a Feature for route guidance related to the season of the year, limited to a certain time of year. |
|  |  | ***Y*** | ***seasonal\_dependency=Y*** is published only if the seasonal conditions have a limiting impact on the importance of a Feature. |
| ***time*** | **N** | ***/*** | ***Time*** is the actual time period only when ***seasonal\_dependency=Y.*** |
| ***relative\_distance*** | **Y** | ***0/1/2*** | ***Relative Distance*** indicates the perceived distance between the feature and the guidance location. |
|  |  | ***0*** | Not Applicable |
| ***1*** | The Feature is considered relatively close to the guidance location. |
| ***2*** | The Feature is considered relatively distant from the guidance location. |
| ***calc\_importance*** | **Y** | ***1-10*** | ***Calculated Importance*** is a rating of the importance of a feature for route guidance which classifies the relevance of a specific feature to support route guidance developed based on visibility from manoeuvre considering: angle (direction), seasonal elements, permanence, and distance. |

### Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Sequence No.** | **Member Type** | **Member Role** | **Description** |
| ***0*** | ***W*** | ***AL*** | Associated Link. |
| ***1*** | ***N*** | ***BUILDING*** | Indicates the member is a building feature. |
| ***2*** | ***R*** | ***CARTO*** | Indicates the member is a carto feature. |
| ***3*** |  | ***CF*** | Indicates the member is a complex feature. |
| ***4*** |  | ***GP*** | Guidance Point |
| ***5*** |  | ***POI*** | Indicates the member is a POI feature. |
| ***……*** |  | ***RG*** | Route Guidance Point |
| ***90*** |  | ***via*** | Indicates the via members. |

# Appendix

## TeleNav Admin Level

|  |  |  |
| --- | --- | --- |
| **Admin Level** | **Description** | **Comments** |
| ***L1*** | Country |  |
| ***L2*** | Second level administrative |  |
| ***L3*** | Third Level administrative |  |
| ***L4*** | Forth level administrative |  |
| ***L5*** | Fifth level administrative |  |
| ***L6*** | Sixth level administrative |  |
| ***L7*** | Neighborhood |  |

## Vehicles Types

|  |  |  |
| --- | --- | --- |
| **Vehicle Type** | **Description** | **Comments** |
| ***motorcar*** |  |  |
| ***bus*** |  |  |
| ***taxi*** |  |  |
| ***hov*** |  |  |
| ***foot*** |  |  |
| ***truck*** |  |  |
| ***delivery*** |  |  |
| ***emergency*** |  |  |
| ***motorcycle*** |  |  |
| ***access\_through\_traffic*** | indicates if through traffic (residents only) is involved |  |
|  |  |  |

## Relation Member Types

|  |  |  |
| --- | --- | --- |
| **Admin Level** | **Description** | **Comments** |
| ***W*** | Way member |  |
| ***N*** | Node member |  |
| ***R*** | Relation member |  |

## Relation Member Roles

|  |  |  |
| --- | --- | --- |
| **Member Role** | **Description** | **Comments** |
| ***from*** | The from link or associated link for the relation |  |
| ***via*** | The via node or link for the relation |  |
| ***to*** |  |  |
| ***PART*** |  |  |
| ***country*** |  |  |
| ***order1*** |  |  |
| ***order2*** |  |  |
| ***order3*** |  |  |
| ***order4*** |  |  |
| ***order5*** |  |  |
| ***order6*** |  |  |
| ***order7*** |  |  |
| ***order8*** |  |  |
| ***inner*** |  |  |
| ***outer*** |  |  |
| ***backward*** |  |  |
| ***forward*** |  |  |
| ***gate*** |  |  |
| ***SC*** |  |  |
| ***on*** |  |  |
| ***variable\_speed\_sign*** |  |  |
| ***TS*** |  |  |
| ***toll\_booth*** |  |  |
|  |  |  |

## Names

### Name Bases

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***name*** | N | User defined | Default name, usually it’s the primary name of the feature |
| ***name:<lang>*** | N | User defined | The official name for the specified language <***lang***>. |
| ***alt\_name:<lang>*** | N | User defined | The alternative name for the specified language <***lang***>. |
| ***ref:<lang>*** | N | User defined | The route number for the specified language <***lang***>. |
| ***exit\_ref:<lang>*** | N | User defined | The exit number for the specified language <***lang***>. |
| ***short\_name:<lang>*** | N | User defined | The shortened name for the specified language <***lang***>. |
| ***name\_x:<lang>*** | N | User defined | The (***x***+1)th official name for the specified language <***lang***>.  ***x*** is index number for the name sequence, the 2nd, 3rd, …, nth name’s index is 1, 2, …, n-1. |
| ***alt\_name\_x:<lang>*** | N | User defined | The (***x***+1)th alternative name for the specified language <***lang***>. |
| ***ref\_x:<lang>*** | N | User defined | The (***x***+1)th route number for the specified language <***lang***>. |
| ***exit\_ref\_x:<lang>*** | N | User defined | The (***x***+1)th exit number for the specified language <***lang***>. |
| ***short\_name\_x:<lang>*** | N | User defined | The (***x***+1)th shortened name for the specified language <***lang***>. |
| ***<name\_type>:<lang>:is\_bridge*** | N | yes | The name was a bridge name for the specified language <***lang***>. |

### Name Phonetics

|  |  |  |  |
| --- | --- | --- | --- |
| **Key Pattern** | **Mandatory** | **Value** | **Description** |
| ***<name\_type>:<lang>:phonetics:<phonetic\_lang>:<m/s>*** | N | User defined | The official name for the specified language <***lang***>. |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Key** | **Mandatory** | **Value** | **Description** |
| ***<name\_type>:<lang>:phonetics:<phonetic\_lang>:<m/s>*** | N | User defined | The official name for the specified language <***lang***>. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
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|  |  |  |  |
|  |  |  |  |
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|  |  |  |  |

### Name Additional Attributes