TMC Forum / TISA Specification

TMC Location Table Requirements

Version 10

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TISA

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Document Control Sheet

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Version history

version	date	Changes
01	01-07-2003	Original document of 31-10-2002 changed to TMC Forum document layout - title changed
02	08-03-2005	Subdivision in structural and semantic checks. All checks revised.
03	22-03-2005	Altered check L05
04	25-05-2005	Added S100, S101
05	19-09-2006	Added checks for interrupts road
06	11-06-2007	Added checks for Specification “Coding of link roads”
07	10-07-2007	Update document after review by LTRT and add checks for the Specifications “Coding of parking POIs”, “Coding of inter-rupted roads” and “Coding of other POIs”.
08	04-09-2007	Addition of specified Area, Linear and Point location categories types and subtypes.
09	05-09-2007	Added origin of specified Area, Linear and Point location categories types and sub-types.
10	24-12-2007	Removal of Linear type “split road” as it is not an official defined TMC Forum Linear type.

2 Preamble - TMC Forum / TISA Specification

The TMC protocol, event lists and location referencing rules are described in the ALERT-C standard [1,2,3], also called TMC standard. Although the TMC building is firmly constructed and has good foundations, at the same time technology evolves. To meet the need to incorporate new developments, ideas and requirements, a use case procedure has been created. TISA members can propose additions to and corrections of the TMC standard by submitting a filled-in *Use case request form* (available at the private part of the TMC Forum web site). Additions may range from complete new features to small extensions of existing features. The TISA Technical & Standardisation Committee will discuss received use cases, and schedule use cases for discussion and solution in dedicated task forces, dependent on interest and resource availability of other interested members.

Once a solution for a use case has been created, it cannot be immediately incorporated in the TMC standard. Standards have their specific, rather slow life cycles, and a standard is only renewed every two or three years. Therefore the instrument of the TMC Forum / TISA Specification (TMCFS) has been created. The solution for a use case will be drafted in a formal, standard-like way, and be put in a document called TMCFS, based on a dedicated template. Any TMCFS will be formally discussed and approved by the TISA Technical and Standardisation Committee. TMCFS documents will be registered by TISA, and be available at the TMC Forum web site. They have the status of a TMC Forum / TISA standard. As soon as a new version of a part of the TMC standard starts being prepared, relevant existing TMCFSs will be incorporated in the new draft of the standard. As soon as the new draft version of the standard has become a formal standard, the incorporated TMCFSs will be rendered inoperative, and removed from the register.

3 Introduction

3.1 Scope

This document describes the minimum requirements for the certification of a TMC location table.

3.2 Definitions

Standard refers to the TMC Forum Standard Env ISO-14819-3:2001.

A *location dataset* is a collection of location definitions belonging to the same location table.

A *location database* is a set of location datasets. Usually, a location database contains one location dataset.

Administrative areas include areas of the following types: continent, country group, country, order n area (n = 1..5).

Other areas include areas of the following types: water area, fuzzy area, application region.

4 Structural Checks

These checks ensure that the structure of the TMC Location Table Exchange Format is correct.

4.1 Table SUBTYPES

No	Importance	Compliance Item	Requirement
S1	Warning	valid CLASS	The field CLASS shall contain ‘A’, ‘L’, or ‘P’.
S2	Warning	valid TYPE	The field TYPE shall contain the number of a valid type of the class defined in CLASS (see appendix A for the complete list).
S3	Warning	valid SUBTYPE	The field SUBTYPE shall contain the number of a valid subtype of the type defined in TYPE (see appendix A for the complete list).

4.2 Table LANGUAGES

No	Importance	Compliance Item	Requirement
S4	Warning	different CID	The field CID should contain the same value as the CID of the imported location dataset.
S5	Major	unique LID	The field LID shall contain a unique value for each entry in this table.
S6	Warning	non-empty LANGUAGE	The field LANGUAGE shall not be empty.

4.3 Table NAMES

No	Importance	Compliance Item	Requirement
S7	Warning	different CID	The field CID should contain the same value as the CID of the imported location dataset.
S8	Major	referential integrity with LANGUAGES	The field LID shall contain the LID value of an entry in the table LANGUAGES. **Applies only to LT Exchange Format 05.**
S9	Warning	same LID	The field LID shall be equal for all entries in the table NAMES. **Applies only to LT Exchange Format 05.**
S10	Major	unique NID	The field NID shall contain a unique value for each entry in this table.
S11	Warning	non-empty NAME	The field NAME shall not be empty.

4.4 Table NAMETRANSLATIONS

No	Importance	Compliance Item	Requirement
S12	Warning	different CID	The field CID should contain the same value as the CID of the imported location dataset.
S13	Major	referential integrity with LANGUAGES	The field LID shall contain the LID value of an entry in the table LANGUAGES.
S14	Major	referential integrity with NAMES	The field NID shall contain the NID value of an entry in the table LANGUAGES.
S15	Major	uniqe LID/NID	Every combination of values from the fields LID and NID shall be unique
S16	Warning	non-empty NTRANSLATION	The field NTRANSLATION shall not be empty.

4.5 Table SUBTYPETRANSLATIONS

No	Importance	Compliance Item	Requirement
S17	Warning	different CID	The field CID should contain the same value as the CID of the imported location dataset.
S18	Major	referential integrity with LANGUAGES	The field LID shall contain the LID value of an entry in the table LANGUAGES.
S19	Warning	valid CLASS	The field CLASS shall contain ‘A’, ‘L’, or ‘P’.
S20	Warning	valid TYPE	The field TYPE shall contain the number of a valid type of the class defined in CLASS.
S21	Warning	valid SUBTYPE	The field SUBTYPE shall contain the number of a valid subtype of the type defined in TYPE
S22	Warning	non-empty STRANSLATION	The field STRANSLATION shall not be empty.

4.6 Table ADMINISTRATIVEAREA

No	Importance	Compliance Item	Requirement
S23	Warning	different CID	The field CID should contain the same value as the CID of the imported location dataset.
S24	Warning	different TABCD	The field TABCD should contain the same value as the TABCD of the imported location dataset.
S25	Major	unique LCD	The field LCD shall contain a unique value that has not yet been used to define any location in the same location dataset.
S26	Warning	valid CLASS	The field CLASS shall contain ‘A’.
S27	Warning	valid TYPE	The field TYPE shall contain the number of a valid

No	Importance	Compliance Item	Requirement
			area type.
S28	Warning	valid SUBTYPE	The field SUBTYPE shall contain the number of a valid subtype of the type defined in TYPE
S29	Warning	referential integrity with NAMES	The field NID shall be equal to the NID of an entry in the table NAMES.
S30	Major	referential integrity with ADMINISTRATIVEAREA	If present, the value of POL_LCD shall be the LCD of a administrative area in the same location dataset.

4.7 Table OTHERAREAS

No	Importance	Compliance Item	Requirement
S31	Warning	different CID	The field CID should contain the same value as the CID of the imported location dataset.
S32	Warning	different TABCD	The field TABCD should contain the same value as the TABCD of the imported location dataset.
S33	Major	unique LCD	The field LCD shall contain a unique value that has not yet been used to define any location in the same location dataset.
S34	Warning	valid CLASS	The field CLASS shall contain ‘A’.
S35	Warning	valid TYPE	The field TYPE shall contain the number of a valid area type.
S36	Warning	valid SUBTYPE	The field SUBTYPE shall contain the number of a valid subtype of the type defined in TYPE
S37	Warning	referential integrity with NAMES	The field NID shall be equal to the NID of an entry in the table NAMES.
S38	Major	referential integrity with ADMINISTRATIVEAREA	If present, the value of POL_LCD shall be the LCD of a administrative area in the same location dataset.

4.8 Table ROADS

No	Importance	Compliance Item	Requirement
S39	Warning	different CID	The field CID should contain the same value as the CID of the imported location dataset.
S40	Warning	different TABCD	The field TABCD should contain the same value as the TABCD of the imported location dataset.
S41	Major	unique LCD	The field LCD shall contain a unique value that has not yet been used to define any location in the same location dataset.
S42	Warning	valid CLASS	The field CLASS shall contain ‘A’.

No	Importance	Compliance Item	Requirement
S43	Warning	valid TYPE	The field TYPE shall contain the number of a valid area type.
S44	Warning	valid SUBTYPE	The field SUBTYPE shall contain the number of a valid subtype of the type defined in TYPE
S45	Warning	referential integrity with NAMES	The field RNID shall be equal to the NID of an entry in the table NAMES.
S46	Warning	referential integrity with NAMES	The field N1ID shall be equal to the NID of an entry in the table NAMES.
S47	Warning	referential integrity with NAMES	The field N2ID shall be equal to the NID of an entry in the table NAMES.
S48	Major	referential integrity with ADMINISTRATIVEAREA	If present, the value of POL_LCD shall be the LCD of a administrative area in the same location dataset.

4.9 Table SEGMENTS

No	Importance	Compliance Item	Requirement
S49	Warning	different CID	The field CID should contain the same value as the CID of the imported location dataset.
S50	Warning	different TABCD	The field TABCD should contain the same value as the TABCD of the imported location dataset.
S51	Major	unique LCD	The field LCD shall contain a unique value that has not yet been used to define any location in the same location dataset.
S52	Warning	valid CLASS	The field CLASS shall contain ‘A’.
S53	Warning	valid TYPE	The field TYPE shall contain the number of a valid area type.
S54	Warning	valid SUBTYPE	The field SUBTYPE shall contain the number of a valid subtype of the type defined in TYPE
S55	Warning	referential integrity with NAMES	The field RNID shall be equal to the NID of an entry in the table NAMES.
S56	Warning	referential integrity with NAMES	The field N1ID shall be equal to the NID of an entry in the table NAMES.
S57	Warning	referential integrity with NAMES	The field N2ID shall be equal to the NID of an entry in the table NAMES.
S58	Major	referential integrity with ADMINISTRATIVEAREA	If present, the value of POL_LCD shall be the LCD of a administrative area in the same location dataset.
S59	Major	referential integrity with ROADS	If present, the value of ROA_LCD shall be the LCD of a road in the same location dataset.
S60	Major	referential integrity with	If present, the value of SEG_LCD shall be the LCD of

No	Importance	Compliance Item	Requirement
		SEGMENTS	a segment in the same location dataset.

4.10 Table SOFFSETS

No	Importance	Compliance Item	Requirement
S61	Warning	different CID	The field CID should contain the same value as the CID of the imported location dataset.
S62	Warning	different TABCD	The field TABCD should contain the same value as the TABCD of the imported location dataset.
S63	Minor	referential integrity with SEGMENTS	The value of LCD shall be the LCD of a segment in the same location dataset.
S64	Minor	referential integrity with SEGMENTS	If present, the value of NEG_OFF_LCD shall be the LCD of a segment in the same location dataset.
S65	Minor	referential integrity with SEGMENTS	If present, the value of POS_OFF_LCD shall be the LCD of a segment in the same location dataset.

4.11 Table POINTS

No	Importance	Compliance Item	Requirement
S66	Warning	different CID	The field CID should contain the same value as the CID of the imported location dataset.
S67	Warning	different TABCD	The field TABCD should contain the same value as the TABCD of the imported location dataset.
S68	Major	unique LCD	The field LCD shall contain a unique value that has not yet been used to define any location in the same location dataset.
S69	Warning	valid CLASS	The field CLASS shall contain ‘A’.
S70	Warning	valid TYPE	The field TYPE shall contain the number of a valid area type.
S71	Warning	valid SUBTYPE	The field SUBTYPE shall contain the number of a valid subtype of the type defined in TYPE
S72	Warning	referential integrity with NAMES	The field RNID shall be equal to the NID of an entry in the table NAMES.
S73	Warning	referential integrity with NAMES	The field N1ID shall be equal to the NID of an entry in the table NAMES.
S74	Warning	referential integrity with NAMES	The field N2ID shall be equal to the NID of an entry in the table NAMES.
S75	Major	referential integrity with ADMINISTRATIVEAREA	If present, the value of POL_LCD shall be the LCD of a administrative area in the same location dataset.

No	Importance	Compliance Item	Requirement
S76	Major	referential integrity with OTHERAREAS	If present, the value of OTH_LCD shall be the LCD of a administrative area in the same location dataset.
S77	Major	referential integrity with ROADS	If present, the value of ROA_LCD shall be the LCD of a road in the same location dataset.
S78	Major	referential integrity with SEGMENTS	If present, the value of SEG_LCD shall be the LCD of a segment in the same location dataset.
S79	Warning	extra attributes: existence	Extra attributes (INPOS, INNEG, OUTPOS, OUTNEG, PRESENTPOS, PRESENTNEG) shall be either all empty or all filled in for a specific point.
S80	Warning	extra attributes: values	Allowed values for extra attributes (INPOS, INNEG, OUTPOS, OUTNEG, PRESENTPOS, PRESENTNEG) are 0 and 1
S81	Major	coordinates: format	If present, the values of the fields XCOORD and YCOORD shall comply with format defined in the standard chap. 4.3.8.
S82	Major	coordinates: full existence	if XCOORD or YCOORD is not empty, then both fields shall not be empty (Each point shall have a longitude and a latitude when coordinates are defined).
S83	Major	urban attribute: existence	URBAN attribute shall be filled in.
S84	Major	urban attribute: value	Allowed values for URBAN attribute are 0 and 1.
S100	Warning	duplicate linear reference	Either one of the fields SEG_LCD and ROA_LCD should be empty.
S101	Warning	duplicate area reference	Either one of the fields POL_LCD and OTH_LCD should be empty.
S102	Major	INTERRUPTSROAD vs. offsets	Points with a value different from 0 (or empty) in the column “InterruptsRoad” (table POINTS, Location Table Exchange Format) shall have a positive or a negative offset to another point but not both.
S103	Major	First and last point vs. INTERRUPTSROAD	The field “InterruptsRoad” (table POINTS, Location Table Exchange Format) shall be 0 or empty for the first or last point location of a road.
S104	Major	INTERRUPTSROAD	If a field of the column “INTERRUPTSROAD” has a value 0 then no empty fields are allowed for this column.

4.12 Table POFFSETS

No	Importance	Compliance Item	Requirement
S85	Warning	different CID	The field CID should contain the same value as the CID of the imported location dataset.
S86	Warning	different TABCD	The field TABCD should contain the same value as

No	Importance	Compliance Item	Requirement
			the TABCD of the imported location dataset.
S87	Minor	referential integrity with POINT	The value of LCD shall be the LCD of a point in the same location dataset.
S88	Minor	referential integrity with POINT	If present, the value of NEG_OFF_LCD shall be the LCD of a point in the same location dataset.
S89	Minor	referential integrity with POINT	If present, the value of POS_OFF_LCD shall be the LCD of a point in the same location dataset.

4.13 Table INTERSECTION

No	Importance	Compliance Item	Requirement
S90	Warning	different CID	The field CID should contain the same value as the CID of the imported location dataset.
S91	Warning	different TABCD	The field TABCD should contain the same value as the TABCD of the imported location dataset.
S92	Minor	referential integrity with POINT	The value of LCD shall be the LCD of a point in the same location dataset.
S93	Warning	different INT_CID	Intersections with different countries / tables are not supported.
S94	Warning	different INT_TABCD	Intersections with different countries / tables are not supported.
S95	Minor	referential integrity with POINT	The value of INT_LCD shall be the LCD of a point in the same location dataset.
S96	Major	unique LCD	The value of LCD shall be unique. (An intersection reference value cannot be used more than once as intersection code).
S97	Major	unique INT_LCD	The value of INT_LCD shall be unique. (An intersection reference value cannot be used more than once as intersection code).
S98	Major	different LCD / INT_LCD	The values of LCD and INT_LCD shall be different. (A intersection shall not refer to itself).
S99	Major	cyclic order	The intersection references belonging to the same intersection shall comply with a cyclic order.

5 Semantic Checks

These checks ensure the compliance of the data with the standard.

5.1 Area Locations

No	Importance	Compliance Item	Requirement
A1	Major	mandatory first name	Each area shall have a first name.
A2	Minor	upward reference of continent	An area of type *continent* shall not refer to another area.
A3	Minor	mandatory upward reference	Each area except areas of type *continent* and *other area* shall have an upward reference to another area.
A4	Minor	upward reference of country / country group	An upward reference of a *country* or *country group* shall be either a *continent* or a *country group*.
A5	Major	upward reference of order 1 area	An upward reference of an *order 1 area* shall be a *country*.
A6	Major	upward reference of order n area (n > 1)	An upward reference of an *order n area* (n > 1) shall be a *country* or an *order m area* (1 <= m < n). The upward reference shall meet the conditions stated in table 1.
A7	Major	upward reference of other area	If present, the upward reference of an *other area* shall be an *administrative area*.

Table 1: Details for compliance item A6

An area of a type specified in the first column shall refer to an area of a type specified in the first row if the conditions specified in the intersecting field are met.

	Country	Order 1	Order 2	Order 3	Order 4
Order 2	does not contain any order 1 areas	always	never	never	never
Order 3	does not contain any order 1/2 areas	does not contain any order 2 areas	always	never	never
Order 4	does not contain any order 1/2/3 areas	does not contain any order 2/3 areas	does not contain any order 3 areas	always	never
Order 5	does not contain any order 1/2/3/4 areas	does not contain any order 2/3/4 areas	does not contain any order 3/4 areas	does not contain any order 4 areas	always

5.2 Linear Locations

No	Importance	Compliance Item	Requirement
L1	Major	mandatory road name or number	A *road*, *ring road*, *order 1/2 segment* shall have a road number or a road name (or both).
L2	Minor	mandatory road name	An *urban street* shall have a road name.
L3	Minor	different road name and number	The road name and road number of a *road*, *ring road*, *order 1/2 segment* shall be different (if both exist).
L4	Major	road number not allowed	A *link road, urban street* or *vehicular link* shall not have a road number.
L5	Warning	name may not contain road number	For a *road, ring road, order 1/2, urban street, or vehicular link,* the road number should not be part of the road name or first name.
L6	Major	mandatory first name	A *link road, road*, *vehicular link*, *order 1/2* shall have a first name.
L7	Warning	different first and second name	First name and second name should be different for *roads*, *link roads, urban streets* (if present), *vehicular links* and *order 1/2 segments*.
L8	Major	unique first names of segments	For one *road* or *ring road*, there shall be only one segment of a given order having a given first name.
L9	Major	unique second names of segments	For one *road* or *ring road*, there shall be only one segment of a given order having a given second name.
L10	Major	mandatory second name	A *link road, road*, *vehicular link*, *order 1/2 segment* shall have a second name.
L11	Minor	second name not allowed	A *ring road* shall not have a second name.
L12	Major	mandatory area reference	A *link road, road*, *ring road* or *urban street* shall have an area reference.
L13	Major	mandatory linear reference	A*n order 1/2 segment* shall have a linear reference.
L14	Major	linear reference of order 1 segment	A linear reference of an *order 1 segment* or shall be a *road* or *ring road*.
L15	Major	linear reference of order 2 segment	A linear reference of an *order 2 segment* shall be an *order 1 segment*.
L16	Major	linear reference and offsets	Two *order 1 segments* shall belong to the same *road* or *ring road* (i.e. have the same linear reference) if they are linked via negative and positive offsets.
L17	Major	linear reference and offsets	Two *order 2 segments* shall belong to the same *road* or *ring road* (i.e. have linear references having the same linear reference) if they are linked via negative and positive offsets.

No	Importance	Compliance Item	Requirement
L18	Warning	offsets, first and second name	When two *order 1/2 segments* are linked together by negative and positive offsets, the second name of the first segment shall be identical to the first name of the second segment; this is not required for two segments that bound an interruption in an interrupted road, i.e. for which the positive offset field of the last point location of the first segment, and the negative offset field of the first point location of the second segment are empty, and the respective offset values are represented in the field "InterruptsRoad".
L19	Major	offsets and type	Two *order 1/2 segments* that are linked together by negative and positive offsets shall have the same type.
L20	Warning	linear reference and offsets	All segments on a road or order 1 segment shall be connected by negative and positive offsets.
L21	Major	offset consistency	The segment to which a segment refers by its positive offset shall refer back to that segment by its negative offset, and vice versa.
L22	Major	offsets on ring roads	Every segment of a ring road shall have a negative and a positive offset.
L23	Major	distinct offsets	Negative and positive offsets of a segment shall be different.
L24	Major	road name not allowed	A *link road* shall not contain a road name.
L25	Major	offsets not allowed	A *link road* shall not contain a negative or positive offset.
L26	Major	linear reference not allowed	A *link road* shall not have a linear reference.

5.3 Point Locations

No	Importance	Compliance Item	Requirement
P1	Major	distinct on same road	At least one of these five items should be different for two different *junction* points belonging to the same *road*/*ring-road*/*urban street*/*vehicular link*: subtype, junction number, road name, first name, second name.
P2	Major	distinct on same road	(Sub)type or first name should be different for two different points of type *intermediate* or *other landmark* belonging to the same road/ring-road/urban street/vehicular link.
P3	Major	first name	A point of type *intermediate point* or *other landmark point* shall have a first name.
P4	Warning	different first and second	A point of type *junction* shall have different first and

No	Importance	Compliance Item	Requirement
		name	second names (if they exist)
P5	Major	first and second name, junction number, road name	A point of type *junction* shall have any of the following properties: junction number, road name, first name or second name.
P6	Major	mandatory area reference	Each point shall have an area reference.
P7	Warning	locally lowest area reference	If a point refers to an administrative area, it should be an administrative area of the lowest possible order. (i.e. the area reference of a point shall not be referenced by any administrative areas).
P8	Warning	consistent area and linear reference	The area referenced upward by the linear reference (directly or indirectly) of a point shall be the same as the area referenced by the point or an ancestor thereof.
P9	Major	mandatory linear reference	A point shall have a linear reference. **Exception**: a *parking POI point* and *other POI point* shall not have a linear reference.
P10	Warning	locally lowest linear reference	The linear reference of a point shall refer to the lowest order linear possible at this point (i.e. the linear reference of a point shall not be referenced by any linear location).
P11	Warning	mandatory coordinates	Each point shall have WGS 84 coordinates.
P12	Major	same coordinates	Points of type "junction" which are part of the same intersection shall have the same coordinates.
P13	Major	linear reference of intersection	The points located at the same intersection shall have distinct linear references (both direct and indirect to roads/ring roads).
P14	Major	distinct offsets	Negative and positive offsets of a point shall be different.
P15	Major	consistent linear reference and offsets	Two points on *roads*/*ring roads* shall belong to the same *road*/*ring road* (directly or indirectly) if they are linked via negative and positive offsets.
P16	Major	consistent linear reference and offsets	Two points on *urban streets*/*vehicular links* shall belong to the same *urban street*/*vehicular link* if they are linked via negative and positive offsets.
P17	Major	consistent linear reference and offsets	Two points with different linear references shall only be linked via their offsets if their linear references are linked.
P18	Major	linked points	All non-isolated points on a road or segment shall be connected by negative and positive offsets, with the following exception: point locations that bound the two ends of the road that are disconnected through the interruption; the positive or negative offset to the point location at the other side of the interruption is described in the field “Inter-

No	Importance	Compliance Item	Requirement
			ruptsRoad".
P19	Major	linear reference and positive offset	When two segments are linked, the first segment shall have one and only one point referring, through positive offset, to a point on the second segment; in case the two segments span an interruption of an interrupted road, the location code of the referred point location on the second segment shall be described in the field "InterruptsRoad", while the positive offset field shall be empty.
P20	Major	consistent offsets	The point to which a point refers by its positive offset shall refer back to that point by its negative offset, and vice versa.
P21	Major	offsets on ring roads	Every point of a ring road shall have a negative and a positive offset, except for isolated points.
P22	Major	offsets not allowed	A *link road point* shall not contain a negative or positive offset.
P23	Minor	intersection reference	A *link road point* shall have an intersection reference.
P24	Minor	road / junction number	A *parking POI point* and *other POI point* shall not have a road / junction number.
P25	Minor	second name	A *parking POI point* and *other POI point* shall not have a second name.
P26	Major	offsets	A *parking POI point* and *other POI point* shall not have a negative or positive offset.
P27	Minor	intersection reference	A *parking POI point* and *other POI point* shall not have an intersection reference.
P28	Major	linear reference and negative offset	When two segments are linked, the second segment shall have one and only one point referring, through negative offset, to a point on the first segment; in case the two segments span an interruption of an interrupted road, the location code of the referred point location on the first segment shall be described in the field "InterruptsRoad", while the negative offset field shall be empty.

5.4 All Locations

No	Importance	Compliance Item	Requirement
G1	Major	mandatory (sub)type	Each location shall have a (sub)type coming from the type and subtype list defined in the *standard*.
G2	Major	unique location code	Each location shall have a unique location code in the range 1 to 63487 within the location dataset.
G3	Warning	unique definitions	Each location definition should be unique - there should be no two different location codes with the

No	Importance	Compliance Item	Requirement
			same attributes.
G4	Major	self reference	No location shall refer to itself by any location reference (area, linear, offset, intersection).

5.5 Location Dataset

No	Importance	Compliance Item	Requirement
D1	Warning	version number	There should always be a version number for the location dataset.
D2	Major	table number	There shall be a location table number for the location dataset in the range as defined in annex B of the standard.
D3	Major	country code	There shall be a country code for the location dataset in the range as defined in annex B of the standard.

6 General Requirements

The following table lists general requirements that should be met by location tables. Note that these requirements are informal and cannot be automatially checked on a single location table / database.

Importance	Compliance Item	Requirement
Warning	version management	In case of modification of the location table, the version number should be logically increased.
Warning	location table number	Backwards compatible updates of a table should use the same location table number.
Warning	country id	Backwards compatible updates of a table should use the same country id.
Warning	type information	Type information should not be part of any name (first, second or road name). Exception: proper noun.
Warning	distance information	Distance information should not be part of any name.
Warning	character set	The character set to be used for the Location Tabe Exchange Format files is ISO-8851-1 (Latin 1).

7 References

1. ISO (2002). Traffic and traveller Information (TTI) - TTI Messages via traffic message coding - Part 1: *Coding protocol for Radio Data System - Traffic Message Channel (RDS-TMC)*, EN ISO 14819-1:2002.
2. ISO (2002). Traffic and traveller Information (TTI) - TTI Messages via traffic message coding - Part 2: *Event and information codes for Radio Data System - Traffic Message Channel (RDS-TMC)*, EN ISO 14819-2:2002.
3. ISO (2003). Traffic and traveller Information (TTI) - TTI Messages via traffic message coding - Part 3: *Location Referencing for ALERT-C*, prEN ISO 14819-3:2003.
4. TMC Forum Specification “Coding of link roads”, 15 August 2003, Jaap Koster, Emil van de Ven.
5. TMC Forum Specification “Coding of parking POIs”, 19 September 2006, Emil van de Ven, Kees Wevers.
6. TMC Forum Specification “Coding of interrupted roads”, 18 January 2007, Emil van de Ven, Kees Wevers.
7. TMC Forum Specification “Coding of other isolated POIs (except parking POIs)”, Draft version 21 May 2007, Dr. Christine Lotz, Jessica Kleine.

Appendix A Specified Area, Linear and Point locations

The specified Area, Linear and Point location categories, types and subtypes as shown in the tables below are based on the Standard part 3 (see reference 3) added with the following additional Specifications:

- Coding of link roads (see reference 4)
- Coding of parking POIs (see reference 5)
- Coding of other isolated POIs (see reference 7)

AREATYPE	TCD	STCD	SDESC
A	1	0	continent
A	2	0	country group
A	3	0	country
A	5	0	water area
A	5	1	sea
A	5	2	lake
A	6	0	fuzzy area
A	6	1	tourist area
A	6	2	metropolitan area
A	6	3	industrial area
A	6	4	traffic area
A	6	5	meteorological area
A	6	6	carpool area
A	6	7	park and ride area
A	6	8	car park area
A	7	0	order 1 area
A	8	0	order 2 area
A	9	0	order 3 area
A	9	1	rural county
A	9	2	urban county
A	10	0	order 4 area
A	11	0	order 5 area
A	12	0	application region

LINEARTYPE	TCD	STCD	SDESC
L	1	0	road
L	1	1	motorway
L	1	2	1st class road
L	1	3	2nd class road
L	1	4	3rd class road
L	2	0	ring road
L	2	1	ring motorway
L	2	2	other ring road

L	3	0	order 1 segment
L	4	0	order 2 segment
L	5	0	urban street
L	6	0	vehicular link
L	6	1	ferry
L	6	2	vehicular rail link
L	7	0	link road

POINTTYPE	TCD	STCD	SDESC
P	1	0	junction
P	1	1	motorway intersection
P	1	2	motorway triangle
P	1	3	motorway junction
P	1	4	motorway exit
P	1	5	motorway entrance
P	1	6	flyover
P	1	7	underpass
P	1	8	roundabout
P	1	9	gyratory
P	1	10	traffic lights
P	1	11	cross-roads
P	1	12	T-junction
P	1	13	intermediate node
P	1	14	connection
P	1	15	exit
P	2	0	intermediate point
P	2	1	distance marker
P	2	2	traffic monitoring station
P	3	0	other landmark point
P	3	1	tunnel
P	3	2	bridge
P	3	3	service area
P	3	4	rest area
P	3	5	view point
P	3	6	carpool point
P	3	7	park and ride site
P	3	8	car park
P	3	9	kiosk
P	3	10	kiosk with WC
P	3	11	petrol station
P	3	12	petrol station with kiosk
P	3	13	motel
P	3	14	border/frontier
P	3	15	customs post
P	3	16	toll plaza
P	3	17	ferry terminal

P	3	18	harbour
P	3	19	square
P	3	20	fair
P	3	21	garage
P	3	22	underground garage
P	3	23	retail park
P	3	24	theme park
P	3	25	tourist attraction
P	3	26	university
P	3	27	airport
P	3	28	station
P	3	29	hospital
P	3	30	church
P	3	31	stadium
P	3	32	palace
P	3	33	castle
P	3	34	town hall
P	3	35	exhibition/convention centre
P	3	36	community
P	3	37	place name
P	3	38	dam
P	3	39	dike
P	3	40	aqueduct
P	3	41	lock
P	3	42	mountain crossing/pass
P	3	43	railroad crossing
P	3	44	wade
P	3	45	ferry
P	3	46	industrial area
P	3	47	viaduct
P	4	0	link road point
P	5	0	parking POI
P	5	1	underground parking garage
P	5	2	car park
P	5	3	parking garage
P	5	4	carpool point
P	5	5	park and ride site
P	5	6	rest area parking
P	5	7	campground
P	6	0	other isolated POI
P	6	1	airport
P	6	2	station
P	6	3	harbour
P	6	4	tunnel
P	6	5	bridge
P	6	6	ferry

P	6	7	square
P	6	8	fair
P	6	9	retail park
P	6	10	theme park
P	6	11	tourist attraction
P	6	12	stadium
P	6	13	exhibition/convention centre
P	6	14	place name