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Government of Ontario

Information & Technology Standards

Government of Ontario IT Standard (GO-ITS)

GO-ITS Number 29

Ontario Road Network (ORN) Data Standard for Road Geometry and Attributes

Version 2.0

Status: Approved

Prepared for the Information Technology Standards Council (ITSC) under the delegated authority of the Management Board of Cabinet

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Template Info

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Document History (including ITSC and ARB approval dates)

Date	Summary
2003-07-16	IT Standards Council endorsement of GO-ITS 29 *Ontario Road Network (ORN) Data Standard for Road Geometry and Attributes*. Draft endorsed to proceed to ARB.
2003-08-12	Architecture Review Board approval of GO-ITS 29 Version 1.4
2009-08-19	IT Standards Council endorsement of GO-ITS 29 Version 2.0
2009-08-27	Architecture Review Board approval of GO-ITS 29 Version 2.0

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1. Foreword

Government of Ontario Information Technology Standards (GO-ITS) are the official publications on the guidelines, preferred practices, standards and technical reports adopted by the Information Technology Standards Council (ITSC) under delegated authority of the Management Board of Cabinet (MBC). These publications support the responsibilities of the Ministry of Government Services (MGS) for coordinating standardization of Information & Information Technology (I&IT) in the Government of Ontario. Publications that set new or revised standards provide enterprise architecture guidance, policy guidance and administrative information for their implementation. In particular, GO-ITS describe where the application of a standard is mandatory and specify any qualifications governing the implementation of standards.

2. Introduction

2.1. Background and Purpose

Land Information Ontario (LIO) has collaborated with municipalities, provincial ministries and the federal government to develop a geospatial database for Ontario's roads called the Ontario Road Network (ORN).

The ORN is a standard province-wide geo-referenced database that features information on the province's municipal roads, provincial highways and resource access roads. Contributing partners currently include:

- Municipal Government
- Provincial Government
- Federal Government

Provincial and federal partners are committed to contribute funding and/or data in order to maintain the ORN. Municipal governments, as the authoritative source of street names and addresses are assisting in the maintenance of the ORN.

The overall objective of the ORN is to build and maintain a common road database that can be shared across all levels of government and easily accessed by the broader public sector. The ORN was developed in response to increasing public and private sector demands for reliable information on Ontario's road infrastructure.

LIO has invested heavily in building business and technical models to efficiently maintain the ORN.

2.2. Scope

2.2.1. In Scope

The ORN is a fundamental data set that forms part of the foundation of the land information infrastructure for the Province of Ontario. The overall objective of ORN is to build and maintain a common road database that is shareable across all levels of government and accessible to the broader public sector. It is the combined efforts of three levels of government working to respond to increasing public and private sector demands for reliable information on Ontario's road infrastructure.

Currently the Ontario Road Network (ORN) is available is a linear referenced dataset (LRS) called the ORN LRS (ORN Road Net Element) and is used by Provincial Ministries, Federal Agencies, and Municipalities across Ontario.

ORN LRS model redevelopment involved a variety of changes including additions and deletions based on the original ORN data model. The following is a summary of the modifications made during the redevelopment of the ORN LRS:

- Adopted a Simple Data Class
- A flattened Data Model structure that joins the Business Table and Master Table
- Removal of the Geographic Unit Type (GUT) Number Association.
- Removal of EXTERNAL_ID and EXPIRY_DATETIME
- Removal of Source Comp Tables for Events and Linear Event Element Tables
- Removal of Location Accuracy Codes
- Removal of Driven Distance Measures
- Renaming of Unique Identifiers
- Addition of Metadata Fields
- Removal of National UUID's
- Removal of External Identifiers
- Addition of a Junction Table
- Addition of a Length field and Road Element Type
- Redesign of Street Name tables

- Redesign of Address table
- Removal of Crossings
- Removal of Reference Points
- Removal of Road Restrictions
- Redesign of Road Surface
- Redesign of Route Name and Numbers
- Removal of Speed Restrictions
- Redesign of Toll Roads
- Removal of Actual House Number
- Support for island or remote addressing not accessible by road.
- Addition of a Place Name field

To support partner organizations/stakeholders the existing ORN_LRS was enhanced in order to:

1. Maintain and improve the essential functionality of ORN
2. Simplify and streamline the model so that it is more efficient and easier for end-users to navigate through the tables and understand how to join up tables.
3. Conform to the requirements of Natural Resource Canada's National Road Network (NRN) v2.0 Model. For more information and NRN v2.0 specifications visit http://www.geobase.ca.

For more information regarding the data model refer to the ORN Road Net Element Standard NRVIS Interchange Format (SNIF) Report or contact lio@ontario.ca.

2.2.2. Out of Scope

The development of client/user applications and data support mechanisms using the ORN LRS was considered out of scope.

Applicability Statements

2.2.3. Organization

Government of Ontario IT Standards and Enterprise Solutions and Services apply (are mandatory) for use by all ministries/clusters and to all former Schedule I and IV provincial government agencies under their present classification (Advisory, Regulatory, Adjudicative, Operational Service, Operational Enterprise, Trust or Crown Foundation) according to the current agency classification system.

Additionally, this applies to any other new or existing agencies designated by Management Board of Cabinet as being subject to such publications, i.e. the GO-ITS publications and enterprise solutions and services - and particularly applies to Advisory, Regulatory, and Adjudicative Agencies (see also procurement link, OPS paragraph). Further included is any agency which, under the terms of its Memorandum of Understanding with its responsible Minister, is required to satisfy the mandatory requirements set out in any of the Management Board of Cabinet Directives (cf. Operational Service, Operational Enterprise, Trust, or Crown Foundation Agencies). As new GO-IT standards are approved, they are deemed mandatory on a go-forward basis (Go-forward basis means at the next available project development or procurement opportunity).

When implementing or adopting any Government of Ontario IT standards or IT standards updates, ministries and I&IT Cluster must follow their organization's pre-approved policies and practices for ensuring that adequate change control, change management and risk mitigation mechanisms are in place and employed.
For the purposes of this document, any reference to ministries or the Government includes applicable agencies.

2.3. Requirements Levels

Within this document, certain wording conventions are followed. There are precise requirements and obligations associated with the following terms:

Must	This word, or the terms "REQUIRED" or "SHALL", means that the statement is an absolute requirement.
Should	This word, or the adjective "RECOMMENDED", means that there may exist valid reasons in particular circumstances to ignore the recommendation, but the full implications (e.g., business functionality, security, cost) must be understood and carefully weighed before

2.3.1. Other Applicability

Land Information Ontario (LIO) is a provincial initiative that supports the province-wide sharing of geographic data. LIO provides centralized access to data through a number of tools and services:

LIO Warehouse
The LIO Warehouse is a web-accessible database that stores geographic data containing almost 30 million land features from across the province. The data ranges from administrative boundaries to transportation arteries to land ownership information to the location of underground wells and satellite imagery. Registered users are assigned a username and password so they can extract data from the LIO Warehouse.

Data Exchange
To access data from LIO's Warehouse, users must become members of the Ontario Geospatial Data Exchange. The Data Exchange allows organizations to access and share geographic data under a single legal agreement. Membership in the Data Exchange is free and available to a wide variety of organizations.

Data Directory
The Ontario Land Information Directory is a searchable catalogue of the province's geographic data holdings. Users can create and publish descriptions of their data to the directory so it can be discovered on the Internet.

Internet Mapping
LIO's Make a Map application allows users to make their own topographic map of any area in the province. Users can select which data layers they want to feature on their map. The application also has the ability to draw on real-time web map services to display geographic data from sources across the world.

In addition to providing these tools and services, LIO manages provincial data sets such as the Ontario Road Network, the Ontario Parcel database and the Ontario Trail Network. LIO also works with partners to acquire high resolution digital imagery across the province.

LIO develops and maintains georeferencing standards and tools to ensure that public sector organizations are consistently referencing their geographic data holdings to a single modern referencing system that is GPS compatible and used by the majority of GIS users.

For more information contact

Land Information Ontario (LIO)
Ministry of Natural Resources
P.O. Box 7000
300 Water Street
Peterborough, Ontario
K9J 8M5
Phone: (705) 755-1878
Email: lio@ontario.ca

Geographic Data File (GDF) Compliance

The ORN adopted the GDF due to the following; it is ISO compliant, has a robust data dictionary, supports easy communication and data exchange between partner agencies (through the handling and management of Unique Id's), offers strong Linear Referencing System (LRS) functionality, is expandable to meet specific business needs and is vendor neutral.

The ORN LRS features are based on an ISO standard (ISO 14825:2004), entitled Intelligent Transportations Systems, Geographic Data Files (GDF) Overall Data Specification, Published 19/03/04. ISO 14825:2004 specifies the conceptual and logical data model and the exchange format for geographic databases for Intelligent Transportation System (ITS) applications. It includes a specification of features, attributes and relationships, a specification of how these contents shall be represented, and how information can be specified (metadata).

The focus of this International Standard is on ITS applications and it emphasizes road and road-related information. ITS applications, however, also require information in addition to road and road-related information. Since implementation of the ORN, GDF has progressed at the ISO level to stage 60.60 (International Standard Published).

The ORN has implemented a subset of the GDF standard specifically to deal with transportation and structures (bridges, dams and tunnels). The full suite of GDF includes the management of road hardware (signage) as well as other related thematic layers.

Linear Referencing System (LRS) Approach

The ORN Road Element is a Linear Reference System (LRS) data set and includes attribute information such as: official street, names, alternate street names, street address ranges, road class, direction and municipality. Other attributes such as, blocked passage, toll points, junctions, direction, jurisdiction, structure, road surface, route names and numbers, number of lanes and speed limit make the ORN Road Element a good data set for analysis and routing. A LRS defines road segment attribute information by the linear distance from a defined location such as an intersection. This allows attribute values and feature location changes along a road network to be represented as a linear event such as address range.

ORN as a Standard

The ORN road geometry, its related tabular data and the structure of those attributes form this Government of Ontario Information Technology Standards (GO-ITS) document. The direct benefits of the ORN as a standard include:

- A reduction in government duplication. All three levels of government are working together to create, maintain and share a standard provincial centreline database for Ontario.
- Effective and efficient delivery of a wide range of road-based services such as police, fire and ambulance emergency vehicle dispatch, school bus routing and natural resource management.
- Municipal access to the ORN for use in the development of Geographic Information Systems (GIS) and Web-based applications that promote economic development and tourism.
- Economic benefits as the private sector creates new products and services, such as GIS applications and location-based services that are based on ORN data.

National and Provincial Core

The ORN is composed of a group of attributes called the "National Core" that fulfill the needs of the National Road Network (NRN). These attributes include: National Street Names, Address Ranges, Road Class, Pavement Status, Number of Lanes, Road and Exit Numbers, Barriers and Structures, and Ferry Routes. In order to meet provincial requirements and to contribute to Natural Resource Canada's National Road Network (NRN), LIO, Natural Resource Canada's and multiple municipal, provincial and federal partners jointly developed specifications for a provincial road centreline database. For more information visit www.geobase.ca

In addition to the "National Core", a "Provincial Core" of attributes is required to fulfill the requirements of a provincial product and includes street Naming (Official and Alternate), Jurisdiction, Speed Restrictions, and One-way Streets.

Partnerships

In partnership with LIO, Natural Resource Canada collected centreline co-ordinates of the traveled portion of the roadway for 130,000 km of accessible and operational roads across the province in 2001. Proposed roads, roads under construction and roads under seasonal repair (widening, re-surfacing and alteration of a road course) are not included in the ORN. Data collected included:

- Roads wide enough for two vehicles to safely pass.
- Roads with a street name and civic addresses.
- Roads with a posted road name, highway number etc.

On divided highways or roads separated by a median or physical barrier, a centreline was collected for each direction of traffic. Roads separated by a difference in grade were not segmented. The ORN is currently maintained by the road authorities in Ontario.

Municipal Roads: In Ontario, municipalities are responsible for approving new roads and assigning or changing road names and addresses. As a result, data sharing agreements are being developed with municipalities in order to build the relational and technical infrastructure required to maintain the ORN for those roads for which they are responsible.

Provincial Highways: The Ministry of Transportation (MTO) is responsible for building and maintaining provincial highways across Ontario. Updated geometry and attributes will flow from MTO for those provincial highways and ferry routes.

Resource /Recreation Roads: The Ministry of Natural Resources (MNR) is responsible for managing resources and activities on Crown Lands including resource roads constructed and used by a variety of operators licensed to conduct business on Crown Lands. MNR will provide updated geometry and attributes for resource roads which it and /or forest industry is responsible for maintaining and operating.

In partnership with LIO, three levels of government contributed their road networks and associated attributes to form the ORN in 2001. The ORN is currently maintained by the road authorities in Ontario including Ontario Municipalities, Ministry of Transportation, and Ministry of Natural Resources. The ORN attributes are subsequently managed independently as events on top of the unique geometry. In the ORN, there are two types of events:

Point events: Are referenced, using a Linear Referencing Method (LRM) that is based on referencing its point location to the nearest 'from junction'. Point events are attributes of the ORN that may occur at specific (x, y) co-ordinate locations along the road element. Examples of point events include:

- Tollbooths (Physical, Hybrid or Virtual)
- Blocked Passages (Permanent or Removable)

Linear Events: Attributes of the ORN that occur between two fixed (x, y) co-ordinate locations. Examples of linear events include:

- Pavement Status (Paved or Unpaved)
- Number of Lanes
- National Road Class
- Street Name
- Addressing Ranges
- Jurisdiction
- Speed Restrictions
- Structures (Bridges, Dams or Tunnels)

The ORN enforces additional constraints on the linear events based on whether an event:

- Is mandatory or optional.
- Can overlap or is non-overlapping.

ORN linear events may be a portion of a road element, all of the road element or even span multiple road elements. The following ORN events will be treated as an attribute of the road element. They will always span the entire length of the road element, and subsequently will not be managed as an event.

- Direction of Traffic Flow
- Road Element Type
- Toll Road Indicator
- Exit Number
- Creation Date
- Revision Date
- Acquisition Type

Ferry connections have a limited number of events that can be associated to them. These are:

- Route Number
- Route Name
- National Road Class
- Road Restrictions

The ORN Road Element is currently available for download from the LIO Warehouse and is available at no cost. It can be acquired through the Ontario Geospatial Data Exchange or through an Unrestricted Use License. For more information regarding access to the Ontario Road Network contact LIO directly at lio@ontario.ca.

2.4. Contact Information

2.4.1. Roles and Responsibilities

Provide the following information:

Accountable Role Definition

The individual ultimately is accountable for the process of developing this standard. There must be exactly one accountable role identified. The accountable person also signs off as the initial approver of the proposed standard before it is submitted for formal approval to ITSC and ARB. (Note: in the OPS this role is at a CIO/Chief or other senior executive level)

Accountable Role:
Title: Larissa Mathewson-Brake, Director, Mapping & Information Resources Branch
Ministry: Natural Resources and Forestry
Division: Corporate Management & Information

Responsible Role Definition
The organization responsible for the development of this standard, There may be more than one responsible organization identified if it is a partnership/joint effort. (Note: the responsible organization provides the resource(s) to develop the standard)

Responsible Organization:
Ministry/Cluster: Natural Resources and Forestry/Land and Resources I+IT Cluster
Division: Corporate Management & Information
Branch: Mapping & Information Resources

Support Role Definition
The support role is the resource(s) to whom the responsibility for actually completing the work and developing the standard has been assigned. There may be more than one support role identified. If there is more than one support role identified, the following contact information must be provided for each of them. If there is more than one support role, the first role identified should be that of the editor – the resource responsible for coordinating the overall effort.

Support Role (Editor):
Ministry/Cluster: Natural Resources and Forestry/Land and Resources I+IT Cluster (LRC)
Division: Corporate Management & Information
Branch: Mapping & Information Resources
Section: Mapping & Geomatics Services Section
Job Title: Project Manager
Name: Steve Damaia
Email: pmu@ontario.ca

Consulted
Please indicate who was consulted as part of the development of this standard. Include individuals (by role and organization) and committees, councils and/or working groups. (Note: consulted means those whose opinions are sought, generally characterized by two-way communications such as workshops):

Organization Consulted (Ministry/Cluster)	Division	Branch	Date
Agriculture and Food	Food Safety and Environment	Environmental Management	June 18, 2008
Community Safety and Corrections	Ontario Provincial Police	Information Technology	December 12, 2008
Education	Community Services I&IT Cluster	Technology & Business Solutions	February 5, 2008
Energy and Infrastructure	Infrastructure Policy and Planning Division	Infrastructure Economics and Finance Branch	February 5, 2008
Environment	Operations Division	EMRB/Strategic Projects and Planning	January 17, 2008
Health and Long Term Care	Health Services I&IT Cluster	IT Service Management Branch	February 21 2008
Northern Development and Mines	Information and Information Technology	Business Solutions Services	January 9, 2008
Municipal Affairs and Housing	Community Services and I&IT Cluster	Technology and Business Solution Branch	January 7, 2008
Transportation	Provincial Highway Management	Highway Standards	December 12, 2007

Committee/Working Group Consulted	Date
ORN Working and Technical Group/Base Data Infrastructure	2008/2009
Elections Canada/Statistics Canada	March 26, 2008
Elections Ontario	May 26, 2008
Natural Resources Canada	April 16, 2008
Ontario Realty Corporation	June 23, 2008
City of Toronto	June 18, 2008

Informed
Please indicate who was informed during the development of this standard. Include individuals (by role and organization) and committees, councils and/or working groups.
(Note: informed means those who are kept up-to-date on progress, generally characterized by one-way communication such as presentations):

Organization Consulted (Ministry/Cluster)	Division	Branch	Date
Land Resources Cluster	Business Solutions Services	GIS Data Services	2008/2009
Land Resources Cluster	Business Solutions Services	GIS Data Technology	2008/2009
Land Resources Cluster	Business Solutions Services	GIS Enterprise Systems	2008/2009

Committee/Working Group Consulted	Date
ORN Working and Technical Group/Base Data Infrastructure	2008/2009
Elections Canada/Statistics Canada	2008/2009
Natural Resources Canada	2008/2009

2.5. Recommended Versioning and/or Change Management

Changes (i.e. all revisions, updates, versioning) to the standard require authorization from the "responsible" organization. Once a determination has been made by the responsible organization to proceed with changes, the Standards Section, Technology Adoption Branch, OCCTO, will coordinate and provide assistance with respect to the approvals process. The approval process for changes to standards will be determined based on the degree and impact of the change. The degree and impact of changes fall into one of two categories:

Minor changes *- requiring communication to stakeholders. No presentations required. No ITSC or ARB approvals required. Changes are noted in the "Document History" section of the standard;*

Major changes *- requiring a presentation to ITSC for approval and ARB for approval (Note: ARB reserves the right to delegate their approval to ITSC)*

Below are guidelines for differentiating between minor and major changes:

Major:

- represents a major version change to one or more specifications
- impacts procurement
- requires configuration changes to current solutions
- impacts other standards
- responds to legislative, policy or procurement changes

Minor:

- represents incremental version changes to one or more specifications
- does not impact procurement (other than informational)
- does not require configuration changes to current solutions
- does not impact other standards
- is not related to legislative, policy, or procurement changes

2.6. Publication Details

All approved Government of Ontario IT Standards (GO-ITS) are published on the ITSC Intranet web site. Please indicate with a checkmark below if this standard is also to be published on the public, GO-ITS Internet Site.

Standard to be published on both the OPS Intranet and the GO-ITS Internet web site (available to the public, vendors etc.)	√ Yes

2.7. Compliance Requirements

The ORN is a horizontal initiative which reduces government duplication, i.e. all three levels of government working in the creation, maintenance and sharing of a common and standard road centreline database across Ontario. The ORN is the authoritative source of roads data for the OPS

The ORN Road Element is a Linear Reference System (LRS) data set and includes attribute information such as: official street names, alternate street names, street address ranges, road class, direction and municipality. Other attributes such as blocked passage, toll points, junctions, direction, jurisdiction, structure, road surface, route names and numbers, number of lanes and speed limit make the ORN Road Element a good data set for analysis and routing. For more information regarding the data model and data standards refer to the ORN Road Net Element Standard NRVIS Interchange Format (SNIF) Report.

The remodelled ORN LRS was released on May 4, 2009. The ORN Road Element is currently available for download from the LIO Warehouse and is available at no cost. It can be acquired through the Ontario Geospatial Data Exchange or through an Unrestricted Use License. For more information regarding access to the Ontario Road Network contact LIO directly at lio@ontario.ca.

Class Word:

Some table column names in the current version of the standard document are not fully conforming to the data naming standard as stated in GO-ITS 56.3 – Information Modeling Standard.

As an intermediate solution, the CLASS WORD column has been added to each data table in the current version to suggest the proper class word that should be used in an effort to better align with the data naming standard in GO-ITS 56.3.

This standard document will be updated with fully compliant table column names in the next release

Date Information:

Standard date columns are shown in the data model diagram of the ORN Road Net Element Standard NRVIS Interchange Format (SNIF) Report. The dates are not included in this document in order to reduce duplication. The format for date attribute columns is yyyy-mm-dd-hh:mm:ss.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
CREATION_DATE	Date		Yes	Date
REVISION_DATE	Date		Yes	Date
EFFECTIVE_DATETIME	Date		Yes	Date
EXPIRY_DATETIME	Date		No	Date
EXT_EFFECTIVE_DATETIME	Date		Yes	Date
EXT_EXPIRY_DATETIME	Date		No	Date

CREATION_DATE AND REVISION DATE are system dates provided when a user downloads the ORN Road Element from the LIO Warehouse. All tables contain EFFECTIVE_DATETIME and EXPIRY_DATETIME. All tables except lookup tables also contain EXT_EFFECTIVE_DATETIME and EXT_EXPIRY_DATETIME.

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2.8. ORN Data Schema

2.8.1. Table Name: ORN_ACQUISITION_TECHNIQUE_LIST

List of valid acquisition techniques.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
ACQUISITION_TECHNIQUE	Character	25	Yes	Code
ACQUISITION_TECHNIQUE_DESCR	Character	100	Yes	Description
NRN_ACQUISITIONTECHNIQUE	Number	3,0	No	Number

Column Name: ACQUISITION_TECHNIQUE
The data source or technique used to create or revise the road net element.

Column Name: ACQUISITION_TECHNIQUE_DESCR
A description of the acquisition technique.

Column Name: NRN_ACQUISITIONTECHNIQUE
Acquisition technique assigned to support the National Road Network (NRN).

2.8.2. Table Name: ORN_ADDRESS_INFO

The essential components of a street address. Address information is collected and stored relating to left or right side of the street or road element. Addressing is collected and maintained by an authoritative source such as the municipality, county or region for the purposes of assisting in the delivery of "911" services. Addresses are typically directly related to road names, but there are cases where an address does not directly link to a road and the address information is linked to a road net element attribute called road element type - virtual road, i.e. properties where access is across water bodies (islands) or along shorelines not accessed by road.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_MEASURE	Number	9,3	Yes	Length
TO_MEASURE	Number	9,3	Yes	Length
ELEMENT_ORDER_NUMBER	Number	5,0	Yes	Identifier
FIRST_HOUSE_NUMBER	Number	7,0	No	Number
LAST_HOUSE_NUMBER	Number	7,0	No	Number
HOUSE_NUMBER_STRUCTURE	Character	10	No	Code
STREET_SIDE	Character	10	No	Code
FULL_STREET_NAME	Character	100	Yes	Name
ORIGINAL_STREET_NAME	Character	100	No	Name
STANDARD_MUNICIPALITY	Character	100	Yes	Name
ORIGINAL_MUNICIPALITY	Character	100	Yes	Name
AGENCY_NAME	Character	100	No	Name

Column Name: FROM_MEASURE
The location of the beginning of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: TO_MEASURE
The location of the end of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: ELEMENT_ORDER_NUMBER
A sequential number starting at 1 for each event, which determines the order in which the event records combine to form the address range.

Column Name: FIRST_HOUSE_NUMBER
The first house number of an address range.

Column Name: LAST_HOUSE_NUMBER
The last house number of an address range.

Column Name: HOUSE_NUMBER_STRUCTURE
The type of address numbering method that is applied to an address information event.
See ORN_HOUSE_NUM_STRUCTURE_LIST in Appendix for a list of valid values.

Column Name: STREET_SIDE
The side of the street for which the addressing applies. The street side is determined by the traversal from the "From Measure" to the "To Measure" of the road element.
See ORN_STREET_SIDE_LIST in Appendix for list of valid values.

Column Name: FULL_STREET_NAME
Derived from the individual street name components where present, namely directional prefix, street type prefix, street name body, street type suffix and directional suffix and is stored in upper case text.

Column Name: ORIGINAL_STREET_NAME
The street name provided by source agencies, which is stored as is regardless of spelling or abbreviations.

Column Name: STANDARD_MUNICIPALITY
Standardized municipality names as maintained by the Ministry of Municipal Affairs and Housing (MMAH), and Official Indian Reserve Names as maintained by the Federal Government.
See table ORN_STANDARD_MUNICIPALITY_LIST in Appendix for list of valid values.

Column Name: ORIGINAL_MUNICIPALITY
The municipality name provided by source agencies, which is stored as is, regardless of spelling or abbreviations. It may contain former municipality names or may contain local municipal names such towns or village names.

Column Name: AGENCY_NAME
The name of the agency.
See table ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

2.8.3. Table Name: ORN_AGENCY_NAME_LIST

The name of the source agency providing geometry or attribute information. This is represented by either a Municipal Name, a Provincial Ministry ,i.e. Ministry of Health, Ministry of Transport or the Ministry of Natural Resources, or a Federal Agency, i.e. Natural Resources Canada or Statistics and Elections Canada, and is subject to change.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
AGENCY_NAME	Character	100	Yes	Name
AGENCY_TYPE	Character	10	Yes	Name
AGENCY_DESCR	Character	250	Yes	Description

Column Name: AGENCY_NAME
The name of the agency.

Column Name: AGENCY_TYPE
The type of agency.

Column Name: AGENCY_DESCR
A description of agency.

2.8.4. Table Name: ORN_AGENCY_TYPE_LIST

List of valid agency types.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
AGENCY_TYPE	Character	10	Yes	Name
AGENCY_TYPE_DESCRIPTION	Character	35	Yes	Description
NRN_ACQUISITIONPROVIDER	Number	3	No	Number

Column Name: AGENCY_TYPE
The type of agency.

Column Name: AGENCY_TYPE_DESCRIPTION
A description of the type of agency.

Column Name: NRN_ACQUISITIONPROVIDER
Acquisition provider assigned to support the National Road Network (NRN).

2.8.5. Table Name: ORN_ALTERNATE_STREET_NAME

An event identifying an alternate street name and may be associated with a bilingual name. A language code shall be used to specify the applied language which resides in the Street_Name_Parsed Table.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_MEASURE	Number	9,3	Yes	Length
TO_MEASURE	Number	9,3	Yes	Length
FULLSTREET_NAME	Character	100	Yes	Name
AGENCY_NAME	Character	100	No	Name

Column Name: FROM_MEASURE
The location of the beginning of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: TO_MEASURE
The location of the end of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: FULL_STREET_NAME
This attribute is derived from the individual street name components where present, namely directional prefix, street type prefix, street name body, street type suffix and directional suffix and is stored in upper case text.

Column Name: AGENCY_NAME
The name of the agency.
See ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

2.8.6. Table Name: ORN_BLOCKED_PASSAGE

A point event on a road element identifying the existence of an access barrier or an obstruction, either man-made or natural, which controls or limits access to a road element.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
AT_MEASURE	Number	9,3	Yes	Length
BLOCKED_PASSAGE_TYPE	Character	10	Yes	Indicator
AGENCY_NAME	Character	100	No	Name
NATIONAL_UUID	Character	32	Yes	Identifier

Column Name: AT_MEASURE
At measure represents a location or point of interest along a linear feature. At measure is expressed as a distance in metres from the beginning of the road net element.This measure is related to planimetric distance not actual driven distance

Column Name: BLOCKED_PASSAGE_TYPE
A man-made or natural barrier or access restriction placed on a road element to control or limit access along a particular section of the road network.
See ORN_BLOCKED_PASSAGE_TYPE_LIST in Appendix for list of valid values.

Column Name: AGENCY_NAME
The name of the agency.
See ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

Column Name: NATIONAL_UUID
A unique national identifier assigned to ORN_ Blocked_Passage that is required to support the National Road Network (NRN).

2.8.7. Table Name: ORN_BLOCKED_PASSAGE_TYPE_LIST

List of valid blocked passage types.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
BLOCKED_PASSAGE_TYPE	Character	10	Yes	Indicator
BLOCKED_PASSAGE_DESCR	Character	750	Yes	Description
NRN_BLOCKEDPASSAGETYPE	Number	3,0	No	Number

Column Name: BLOCKED_PASSAGE_TYPE
The type of man-made or natural barrier or access restriction placed on a road element to control or limit access to a road net element.

Column Name: BLOCKED_PASSAGE_TYPE_DESCR
A description of the blocked passage type.

Column Name: NRN_BLOCKEDPASSAGETYPE
Blocked passage type assigned to support the National Road Network(NRN).

2.8.8. Table Name: ORN_DIR_OF_TRAFFIC_FLOW_LIST

List of valid direction of traffic flows.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
DIRECTION_OF_TRAFFIC_FLOW	Character	8	Yes	Indicator
DIR_OF_TRAFFIC_FLOW_DESCR	Character	100	Yes	Description
NRN_DIRECTIONOFTRAFFICFLOW	Number	3,0	No	Number

**Column Name: DIRECTION_OF_TRAFFIC_FLOW **
The direction(s) of vehicular or motor traffic flow. All road elements must have a direction of traffic flow assigned.

Column Name: DIR_OF_TRAFFIC_FLOW_DESCR
A description of the direction of traffic flow.

Column Name: NRN_DIRECTIONTRAFFICFLOW
Direction of traffic flow assigned to support the National Road Network (NRN).

2.8.9. Table Name: ORN_HOUSE_NUMBER_STRUCTURE_LIST

List of valid house number structures.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
HOUSE_NUMBER_STRUCTURE	Character	10	Yes	Code
HOUSE_NUMBER_STRUCTURE_DESCR	Character	500	Yes	Description
NRN_HOUSENUMBERSTRUCTURE	Number	3,0	No	Number

Column Name: HOUSE_NUMBER_STRUCTURE
The type of house or property numbering system that is applied to the address range.

Column Name: HOUSE_NUMBER_STRUCTURE_DESCR
A description of the house number structure.

Column Name: NRN_HOUSENUMBERSTRUCTURE
A house number structure assigned to support the National Road Network (NRN).

2.8.10. Table Name: ORN_JUNCTION

A unique national identifier assigned to a road net element, junction and selected event data such as Toll Point, Blocked Passage and Structure which are required to support the National Road Network (NRN).

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
LATITUDE_DECIMAL_DEGREES	Number	10,7	Yes	Latitude
LONGITUDE_DECIMAL_DEGREES	Number	10,7	Yes	Longitude
JUNCTION_TYPE	Character	15	Yes	Code
EXIT_NUMBER	Character	10	No	Name
NATIONAL_UUID	Character	32	Yes	Identifier

Column Name: LATITUDE_DECIMAL_DEGREES
The latitude in decimal degrees.

Column Name: LONGITUDE_DECIMAL_DEGREES
The longitude in decimal degrees.

Column Name: JUNCTION_TYPE
The classification of a junction is based on the valency of the junction. The number of road elements or ferry connections joining at a junction is termed the valency of a junction.
See table ORN_JUNCTION_TYPE_LIST in Appendix for list of valid values

Column Name: EXIT_NUMBER
The number of an exit on or off a freeway, expressway or highway, assigned by an administrating body and represented by a valid number or character.

Column Name: NATIONAL_UUID
A unique national identifier assigned to ORN_JUNCTION that is required to support the National Road Network(NRN).

2.8.11. Table Name: ORN_JUNCTION_TYPE_LIST

A list of valid junction types.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
JUNCTION_TYPE	Character	15	Yes	Code
JUNCTION_TYPE_DESCR	Character	100	Yes	Description
NRN_JUNCTIONTYPE	Number	3,0	No	Number

Column Name: JUNCTION_TYPE
The classification of a junction is based on the valency of the junction. The number of road elements or ferry connections joining at a junction is termed the valency of a junction.
See ORN_JUNCTION_TYPE_LIST in Appendix for list of valid values.

Column Name: JUNCTION_TYPE_DESCR
A description of the junction type.

Column Name: NRN_JUNCTIONTYPE
Junction type assigned to support the National Road Network (NRN).

2.8.12. Table Name: ORN_JURISDICTION

Identifies jurisdictional or custodianship responsibility of the road..

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_MEASURE	Number	9,3	Yes	Length
TO_MEASURE	Number	9,3	Yes	Length
STREET_SIDE	Character	10	Yes	Indicator
JURISDICTION	Character	80	Yes	Name
AGENCY_NAME	Character	100	No	Name

Column Name: FROM_MEASURE
The location of the beginning of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: TO_MEASURE
The location of the end of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: STREET_SIDE
The side of the street for which the addressing applies. The street side is determined by the direction of the traversal from the "From Measure" to the "To Measure" of the road element.
See table ORN_STREET_SIDE_LIST in Appendix for list of valid values.

Column Name: JURISDICTION
An indication of who has the jurisdictional, or custodianship responsibility for a road net element. The custodian would have the responsibility to ensure maintenance occurs, but is not necessarily the one who undertakes the maintenance directly.

Column Name: AGENCY_NAME
The name of the agency.
See ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

2.8.13. Table Name: ORN_JURISDICTION_LIST

List of valid road jurisdictions as maintained by Municipality, Provincial Ministries, and Federal Agencies and is subject to change. Jurisdiction may be based on street side.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
JURISDICTION	Character	80	Yes	Name

Column Name: JURISDICTION
An indication of who has the jurisdictional, or custodianship responsibility for a road net element. The custodian would have the responsibility to ensure maintenance occurs, but is not necessarily the one who undertakes the maintenance directly.

2.8.14. Table Name: ORN_NUMBER_OF_LANES

A linear event indicating the number of lanes.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_MEASURE	Number	9,3	Yes	Length
TO_MEASURE	Number	9,3	Yes	Length
NUMBER_OF_LANES	Number	2,0	Yes	Quantity
AGENCY_NAME	Character	100	No	Name

Column Name: FROM_MEASURE
The location of the beginning of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: TO_MEASURE
The location of the end of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: ORN_NUMBER_OF_LANES
The number of lanes of a road.

Column Name: AGENCY_NAME
The name of the agency.
See ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

2.8.15. Table Name: ORN_OFFICIAL_LANGUAGE_LIST

A list of valid Official Languages – official language code.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
OFFICIAL_LANGUAGE	Character	3	Yes	Indicator
OFFICIAL_LANGUAGE_DESCR	Character	10	Yes	Description
NRN_OFFICIALLANGUAGE	Number	3,0	No	Number

Column Name: OFFICIAL_LANGUAGE
A code identifying the official language.

Column Name: OFFICIAL_LANGUAGE_DESCR
A description of the official language.

Column Name: NRN_OFFICIALLANGUAGE
Official language assigned to support the National Road Network (NRN).

2.8.16. Table Name: ORN_OFFICIAL_STREET_NAME

An event identifying an official street name and may be associated with a bilingual name. A language code shall be used to specify the applied language which resides in the Street_Name_Parsed Table.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_MEASURE	Number	9,3	Yes	Length
TO_MEASURE	Number	9,3	Yes	Length
FULL_STREET_NAME	Character	100	Yes	Name
AGENCY_NAME	Character	100	No	Name

Column Name: FROM_MEASURE
The location of the beginning of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: TO_MEASURE
The location of the end of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: ORN_FULL_STREET_NAME
This attribute is derived from the individual street name components where present, namely directional prefix, street type prefix, street name body, street type suffix and directional suffix and is stored in upper case text.

Column Name: AGENCY_NAME
The name of the agency.
See table ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

2.8.17. Table Name: ORN_PAVEMENT_STATUS_LIST

List of valid road surface types.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
PAVEMENT_STATUS	Character	10	Yes	Indicator
PAVEMENT_STATUS_DESCR	Character	100	Yes	Description
NRN_PAVEMENTSTATUS	Number	3,0	No	Number

Column Name: PAVEMENT_STATUS
The surface type of a road element.

Column Name: PAVEMENT_STATUS_DESCR
A description of the surface type.

Column Name: NRN_PAVEMENTSTATUS
Pavement status assigned to support the National Road Network (NRN).

2.8.18. Table Name: ORN_ROAD_CLASS

A linear event identifying the class of road based on a functional classification schema.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_MEASURE	Number	9,3	Yes	Length
TO_MEASURE	Number	9,3	Yes	Length
ROAD_CLASS	Character	25	Yes	Name
AGENCY_NAME	Character	100	No	Name

Column Name: FROM_MEASURE
The location of the beginning of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: TO_MEASURE
The location of the end of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: ROAD_CLASS
The classification of a road.
See ORN_ROAD_CLASS_LIST in Appendix for list of valid values.

Column Name: AGENCY_NAME
The name of the agency.
See table ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

2.8.19. Table Name: ORN_ROAD_CLASS_LIST

A list of valid road classes

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
ROAD_CLASS	Character	25	Yes	Code
ROAD_CLASS_DESCR	Character	250	Yes	Description
NRN_ROADCLASS	Number	3,0	No	Number

Column Name: ROAD_CLASS
The classification of a road.

Column Name: ROAD_CLASS_DESCR
A description of the road class.

Column Name: NRN_ROADCLASS
Road class assigned to support the National Road Network (NRN).

2.8.20. Table Name: ORN_ROAD_ELEMENT_TYPE_LIST

A list of valid road element types.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
ROAD_ELEMENT_TYPE	Character	20	Yes	Code
ROAD_ELEMENT_TYPE_DESCR	Character	750	Yes	Description

Column Name: ROAD_ELEMENT_TYPE
An attribute describing the type of road element.
See ORN_ROAD_ELEMENT_LIST in Appendix for a list of valid values.

Column Name; ROAD_ELEMENT_TYPE_DESCR
A description of the road element type.

2.8.21. Table Name: ORN_ROAD_NET_ELEMENT

The basic centreline of road network features, which forms the spatial network of roads, composed of three types of road net elements, road element, ferry connection and virtual road. The ORN is segmented at real-world intersections or junctions on the ground and road net elements are bound by a junction on each end, except for cul-de-sacs where there is only one junction. Where there are grade-separated crossings, the bisecting road elements do not share a junction. If a junction is present at the location of the grade separation, it is either connected to the lower set of road elements or to the higher but never to both. Proposed roads and roads under construction are not are not represented in the ORN. Turning lanes separated by a median longer than 10 metres in length are represented in the ORN.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_JUNCTION_ID	Number	13,0	Yes	Identifier
TO_JUNCTION_ID	Number	13,0	Yes	Identifier
ROAD_ABSOLUTE_ACCURACY	Number	7,2	Yes	Number
NATIONAL_UUID	Character	32	Yes	Identifier
LENGTH	Number	9,3	Yes	Length
DIRECTION_OF_TRAFFIC_FLOW	Character	8	Yes	Indicator
EXIT_NUMBER	Character	10	No	Name
ROAD_ELEMENT_TYPE	Character	20	Yes	Code
TOLL_ROAD_INDICATOR	Character	3	Yes	Flag
ACQUISITION_TECHNIQUE	Character	25	Yes	Code
CREATION_DATE	Date		Yes	Date
REVISION_DATE	Date		Yes	Date

Column Name: FROM_JUNCTION_ID
The beginning junction for a road net element.

Column Name: TO_JUNCTION_ID
The end junction of a road net element.

Column Name: ROAD_ABSOLUTE_ACCURACY
A statement that identifies the positional accuracy of the ORN road geometry, in metres.

Column Name: NATIONAL_UUID
A unique national identifier assigned to ORN_ROAD_NET_ELEMENT that is required to support the National Road Network (NRN).

Column Name: LENGTH
The measured planimetric length of a road net element, in metres.

Column Name: DIRECTION_OF_TRAFFIC_FLOW
The direction of traffic flow.
See ORN_DIR_OF_TRAFFIC_FLOW_LIST in Appendix for list of valid values.

Column Name: EXIT_NUMBER
The number of an exit on or off a freeway, expressway or highway, assigned by an administrating body and represented by a valid number or character.

Column Name: ROAD_ELEMENT_TYPE
An attribute describing the type of road net element.
See ORN_ROAD_ELEMENT_TYPE_LIST in Appendix for list of valid values.

Column Name: TOLL_ROAD_INDICATOR
Indicates if the road net element is a toll road. Valid values are YES or NO.

Column Name: ACQUISITION_TECHNIQUE
The type of data source or technique used to create or revise the road net element.
See ORN_ACQUISITION_TECHNIQUE_LIST in Appendix for list of valid values.

Column Name: CREATION_DATE
The date the road net element was created.

Column Name: REVISION_DATE
The date the road net element was last revised or updated.

2.8.22. Table Name: ORN_ROAD_NET_ELEMENT_SOURCE

The source agency, Municipality, Provincial Ministry, Federal Agency or other organization that provided the road net element.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_MEASURE	Number	9,3	Yes	Length
TO_MEASURE	Number	9,3	Yes	Length
AGENCY_NAME	Character	100	No	Name
EXTERNAL_IDENT	Character	32	No	Identifier

Column Name: FROM_MEASURE
The location of the beginning of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: TO_MEASURE
The location of the end of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: AGENCY_NAME
The name of the agency.
See table ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

Column Name: EXTERNAL_IDENT
A unique identifier assigned to the source agency.

2.8.23. Table Name: ORN_ROAD_SURFACE

The surface type of a road net element.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_MEASURE	Number	9,3	Yes	Length
TO_MEASURE	Number	9,3	Yes	Length
PAVEMENT_STATUS	Character	10	Yes	Indicator
SURFACE_TYPE	Character	10	No	Code
AGENCY_NAME	Character	100	No	Name

Column Name: FROM_MEASURE
The location of the beginning of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: TO_MEASURE
The location of the end of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: PAVEMENT_STATUS
The surface type of a road net element.
See ORN_PAVEMENT_STATUS_LIST in Appendix for list of valid values.

Column Name: SURFACE_TYPE
A linear event indicating the surface type of a road net element.
See ORN_SURFACE_TYPE_LIST in Appendix for list of valid values.

Column Name: AGENCY_NAME
The name of the agency.
See ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

2.8.24. Table Name: ORN_ROUTE_NAME

The name attached to a road net element as defined by a Municipality, Provincial Ministry, or Federal Agency and is associated with an established and/or maintained route.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_MEASURE	Number	9,3	Yes	Length
TO_MEASURE	Number	9,3	Yes	Length
ROUTE_NAME_ENGLISH	Character	75	No	Name
ROUTE_NAME_FRENCH	Character	75	No	Name
AGENCY_NAME	Character	100	No	Name

Column Name: FROM_MEASURE
The location of the beginning of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: TO_MEASURE
The location of the end of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: ROUTE_NAME_ENGLISH
The English name that is attached to a road net element as defined by a Municipality, Provincial Ministry, or Federal Agency and is associated to an established and/or maintained route.

Column Name: ROUTE_NAME_FRENCH
The French name that is attached to a road net element as defined by a Municipality, Provincial Ministry, or Federal Agency and is associated to an established and/or maintained route.

Column Name: AGENCY_NAME
The name of the agency.
See ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

2.8.25. Table Name: ORN_ROUTE_NUMBER

The route number attached to a road net element as defined by a Municipality, Provincial Ministry, or Federal Agency and is typically associated with provincial highways, secondary highways, county roads and regional roads.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_MEASURE	Number	9,3	Yes	Length
TO_MEASURE	Number	9,3	Yes	Length
ROUTE_NUMBER	Character	5	Yes	Name
SHIELD_TYPE	Character	60	No	Code
AGENCY_NAME	Character	100	No	Name

Column Name: FROM_MEASURE
The location of the beginning of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: TO_MEASURE
The location of the end of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: ROUTE_NUMBER
The route number assigned to a road typically associated with provincial highways, secondary highways, county roads and regional roads and is represented by a numeric and/or an alpha-numeric character. A road can be assigned multiple route numbers.

Column Name: SHIELD_TYPE
The shield type assigned to a route by a road authority.
See ORN_Shield_Type_List in Appendix for list of valid values.

Column Name: AGENCY_NAME
The name of the agency.
See table ORN_AGENCY_NAME_LIST in Appendix for list of valid values

2.8.26. Table Name: ORN_SHIELD_TYPE_LIST

The shield types that may be assigned to a route by a road authority and is used for cartographic purposes.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
SHIELD_TYPE	Character	60	Yes	Code
SHIELD_TYPE_DESCR	Character	750	Yes	Description

Column Name: SHIELD_TYPE
The shield type assigned to a route by a road authority.

Column Name: SHIELD_TYPE_DESCR
A description of the shield type.

2.8.27. Table Name: ORN_SPEED_LIMIT

The maximum speed limit assigned to a road element in kilometres per hour in accordance with Municipal By-Laws or Provincial Law. In cases where a road element has more than one speed limit value, all the speed limits of the road net element are captured.

ORN_SPEED_LIMIT may consist of the following attributes:

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_MEASURE	Number	9,3	Yes	Length
TO_MEASURE	Number	9,3	Yes	Length
SPEED_LIMIT	Number	3,0	Yes	Rate
AGENCY_NAME	Character	100	No	Name

Column Name: FROM_MEASURE
The location of the beginning of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: TO_MEASURE
The location of the end of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: SPEED_LIMIT
The maximum speed limit assigned to a road element in kilometres per hour in accordance with Municipal By-Laws or Provincial Law.

Column Name: AGENCY_NAME
The name of the agency.
See ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

2.8.28. Table Name: ORN_STANDARD_MUNICIPALITY_LIST

A list of valid standard municipalities

ORN_STANDARD_MUNICIPALITY_LIST may consist of the following attributes:

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
STANDARD_MUNICIPALITY	Character	100	Yes	Name

Column Name: STANDARD_MUNICIPALITY
Standardized municipality names as maintained by the Ministry of Municipal Affairs and Housing (MMAH), and Official Indian Reserve Names and Canadian Forces Bases as maintained by the Federal Government.

2.8.29. Table Name: ORN_STREET_DIRECTION_LIST

A list of valid street directions.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
STREET_DIRECTION	Character	10	Yes	Code
OFFICIAL_LANGUAGE	Character	3	Yes	Indicator
CPC_DIRECTION_CODE	Character	2	Yes	Code
NRN_DIRECTION	Number	3,0	No	Number

Column Name: STREET_DIRECTION
The direction of the street.

Column Name: OFFICIAL_LANGUAGE
A code identifying the official language.

Column Name: CPC_DIRECTION_CODE
The short form of the street direction as defined by Canada Post Corporation (CPC).

Column Name: NRN_DIRECTION
Direction assigned to support the National Road Network (NRN).

2.8.30. Table Name: ORN_STREET_NAME_PARSED

A lookup table containing standardized and abbreviated official and alternate street names. This table also contains the official and alternate parsed components of the street name and must have a street name body, but may or may not have a directional prefix/suffix or street type prefix/suffix.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FULL_STREET_NAME	Character	100	Yes	Name
DIRECTIONAL_PREFIX	Character	10	No	Prefix
STREET_TYPE_PREFIX	Character	20	No	Prefix
STREET_NAME_BODY	Character	50	Yes	Name
STREET_TYPE_SUFFIX	Character	20	No	Suffix
DIRECTIONAL_SUFFIX	Character	10	No	Suffix
OFFICIAL_LANGUAGE	Character	3	Yes	Indicator
ABBREVIATED_STREET_NAME	Character	100	Yes	Name

Column Name: FULL_STREET_NAME
This attribute is derived from the individual street name components where present, namely directional prefix, street type prefix, street name body, street type suffix and directional suffix and is stored in upper case text.

Column Name: DIRECTIONAL_PREFIX
A geographic direction, which is part of the official or alternate street name which precedes the street name body and, if appropriate, the street type prefix.
See ORN_STREET_DIRECTION_LIST in Appendix for list of valid values.

Column Name: STREET_TYPE_PREFIX
A geographic direction, which is part of the official or alternate street name which precedes the street name body and, if appropriate, the street type prefix.
See ORN_STREET_TYPE_LIST in Appendix for list of valid values.

Column Name: STREET_NAME_BODY
The identifying named component of an official or alternate street name. A street name must have a street name body and street name body can never be abbreviated.

Column Name: STREET_NAME_SUFFIX
A part of the official or alternate street name identifying the street type which follows the street name body.
See ORN_STREET_TYPE_LIST in Appendix for list of valid values.

Column Name: DIRECTIONAL_SUFFIX
A geographic direction, which is part of the official or alternate street name which follows the street name body and, if appropriate, the street type suffix.
See ORN_STREET_DIRECTION_LIST in Appendix for list of valid values.

Column Name: OFFICIAL_LANGUAGE
A code identifying the official language.
See ORN_OFFICIAL_LANGUAGE_LIST in Appendix for list of valid values.

Column Name: ABBREVIATED_STREET_NAME
This attribute is composed of the individual street name components, where present, including directional prefix, street type prefix, street name body, street type suffix and directional suffix. Street name components are abbreviated with the exception of street name body

2.8.31. Table Name: ORN_STREET_SIDE_LIST

A list of valid street sides.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
STREET_SIDE	Character	10	Yes	Indicator
STREET_SIDE_DESCR	Character	10	Yes	Description
NRN_STREETSIDE	Number	3,0	No	Number

Column Name: STREET_SIDE
The side of the street for which the addressing or jurisdiction applies. The street side is determined by the traversal of the "From Measure" to the "To Measure" of the road element

Column Name: STREET_SIDE_DESCR
A description of the street side.

Column Name: NRN_STREETSIDE
Street side assigned to support the National Road Network (NRN).

2.8.32. Table Name: ORN_STREET_TYPE_LIST

A list of valid street sides.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
STREET_TYPE	Character	25	Yes	Description
STREET_TYPE_SHORT_FORM_ENGLISH	Character	15	No	Description
STREET_TYPE_SHORT_FORM_FRENCH	Character	15	No	Description
NRN_STREETTYPE	Number	3,0	No	Number

Column Name: STREET_TYPE
A description of the street type

Column Name: STREET_TYPE_SHORT_FORM_ENGLISH
A short form of the street type in English.

Column Name: STREET_TYPE_SHORT_FORM_FRENCH
A short form of the street type in French.

Column Name: NRN_STREETTYPE
Street type assigned to support the National Road Network (NRN).

2.8.33. Table Name: ORN_STRUCTURE

The classification of a structure, that exists on a road element and is managed as a linear event. The types are mutually exclusive.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
FROM_MEASURE	Number	9,3	Yes	Length
TO_MEASURE	Number	9,3	Yes	Length
STRUCTURE_TYPE	Character	30	Yes	Code
STRUCTURE_NAME_ENGLISH	Character	50	No	Name
STRUCTURE_NAME_FRENCH	Character	50	No	Name
AGENCY_NAME	Character	100	No	Name
NATIONAL_UUID	Character	32	Yes	Identifier

Column Name: FROM_MEASURE
The location of the beginning of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: TO_MEASURE
The location of the end of the event measured in metres from the beginning of the road element. This measure is related to planimetric distance, not actual driven distance.

Column Name: STRUCTURE_TYPE
The classification of a structure, that exists on a road element and is managed as a linear event
See ORN_STRUCTURE_TYPE_LIST in Appendix for list of valid values.

Column Name: STRUCTURE_NAME_ENGLISH
The English name provided by a Municipality, Provincial Ministry or Federal Agency. A structure has only one English name.

Column Name: STRUCTURE_NAME_FRENCH:
The French name provided by a Municipality, Provincial Ministry or Federal Agency. A structure has only one French name.

Column Name: AGENCY_NAME
The name of the agency.
See ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

Column Name: NATIONAL_UUID
A unique national identifier assigned to ORN_STRUCTURE that is required to support the National Road Network (NRN).

2.8.34. Table Name: ORN_STRUCTURE_TYPE_LIST

List of valid structure types.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
STRUCTURE_TYPE	Character	30	Yes	Code
STRUCTURE_TYPE_DESCR	Character	250	Yes	Description
NRN_STRUCTURETYPE	Number	3.0	Yes	Number

Column Name: STRUCTURE_TYPE
The classification of a structure, that exists on a road net element and is managed as a linear event

Column Name: STRUCTURE_TYPE_DESCR
A description of the structure.

Column Name:NRN_STRUCTURETYPE
Structure type assigned to support the National Road Network (NRN).

2.8.35. Table Name: ORN_SURFACE_TYPE_LIST

List of valid surface types.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
SURFACE_TYPE	Character	10	Yes	Code
SURFACE_TYPE_DESRC	Character	200	Yes	Description

Column Name: SURFACE_TYPE
A linear event indicating the surface type of a road net element.

Column Name: SURFACE_TYPE_DESCR
A description of the surface type.

2.8.36. Table Name: ORN_TOLL_POINT

A point event along a road element indicating the presence of a toll point.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
AT_MEASURE	Number	9,3	Yes	Length
TOLL_POINT_TYPE	Character	10	Yes	Indicator
AGENCY_NAME	Character	100	No	Name
NATIONAL_UUID	Character	32	Yes	Identifier

Column Name: TO_MEASURE
At measure represents a location or point of interest along a linear feature. At measure is expressed as a distance in metres from the beginning of the road net element.This measure is related to planimetric distance not actual driven distance.

Column Name: TOLL_POINT_TYPE
A point event indicating the type of toll point that may exist along a road net element.
See table ORN_TOLL_POINT_TYPE_LIST in Appendix for list of valid values.

Column Name: AGENCY_NAME
The name of the agency.
See table ORN_AGENCY_NAME_LIST in Appendix for list of valid values.

Column Name: NATIONAL_UUID
A unique national identifier assigned to a road net element, junction and selected event data such as Toll Point, Blocked Passage and Structure which are required to support the National Road Network (NRN).

2.8.37. Table Name: ORN_TOLL_POINT_TYPE_LIST

List of valid toll point types.

COLUMN NAME	TYPE	LENGTH	MANDATORY	CLASS WORD
TOLL_POINT_TYPE	Character	10	Yes	Indicator
TOLL_POINT_TYPE_DESCR	Character	250	Yes	Description
NRN_TOLLPOINTTYPE	Number	3,0	No	Number

Column Name: TOLL_POINT_TYPE
A pont event indicating the type of toll point that may exist along a road net element

Column Name: TOLL_POINT_TYPE_DECSR
A description of the toll point type.

Column Name: NRN_TOLLPOINTTYPE
Toll point type assigned to support the Natioal Road Network (NRN).

3.2.0. Appendix - Lookup Tables

These lookup tables contain descriptive values and associated codes.

Table Name: ORN_ACQUISITION_TECHNIQUE_LIST

ACQUISITION_TECHNIQUE	ACQUISITION_TECHNIQUE_DESCR	NRN_ACQUISITIONTECHNIQUE
UNKNOWN	Impossible to determine	-1
NONE	No value applies	0
OTHER	All possible values not explicitly mentioned in the domain	1
GPS	Data collected using a GPS device	2
ORTHOIMAGE	Satellite imagery ortho-rectified	3
ORTHOPHOTO	Aerial photo ortho-rectified	4
VECTOR DATA	Vector digital data	5
PAPER MAP	Conventional sources of information like maps or plans	6
FIELD COMPLETION	Information gathered from people directly in the field	7
RASTER DATA	Data resulting from a scanning process	8
DIGITAL ELEVATION MODEL	Data coming from a Digital Elevation Model (DEM)	9
AERIAL PHOTO	Aerial photography not ortho-rectified	10
RAW IMAGERY DATA	Satellite imagery not ortho-rectified	11
COMPUTED	Geometric information that has been computed (not captured)	12

Table Name: ORN_AGENCY_NAME_LIST

Click here to retrieve the list.

Table Name: ORN_BLOCKED_PASSAGE_TYPE_LIST

BLOCKED_PASSAGE_TYPE	BLOCKED_PASSAGE_TYPE_DESCR	NRN_BLOCKEDPASSAGETYPE
Permanent	An obstacle placed across a road element that has to be removed or destroyed to free the entrance to the other side of the road that it is blocking. Examples include: concrete blocks, mound of earth or culvert or bridge removed.	1
Removable	A man-made barrier designed to block the entrance to the other side of the road element. An example is a locked gate.	2

Table Name: ORN_DIR_OF_TRAFFIC_FLOW_LIST

DIRECTION_OF_TRAFFIC_FLOW	DIR_OF_TRAFFIC_FLOW_DESCR	NRN_DIRECTIONOFTRAFFICFLOW
Both	Traffic is allowed in both directions.	1
Negative	Traffic is opposite to the direction of the geometry.	3
Positive	Traffic is in the same direction as the geometry.	2

Table Name: ORN_HOUSE_NUM_STRUCTURE_LIST

HOUSE_NUMBER_STRUCTURE	HOUSE_NUMBER_STRUCTURE_DESCR	NRN_HOUSENUMBERSTRUCTURE
Even	The house numbers appear as even numbers in a sequential sorted order (ascending or descending) when moving from one end of an address information event to the other. Numeric completeness of the series is not a requirement.	1
Irregular	The house numbers do not occur in any sorted order.	4
Mixed	The house numbers are odd and even on the same side of an address information event in sequential order (ascending or descending) when moving from one end of the address information event to the other. Numeric completeness of the series is not a requirement.	3
None	No house numbers at all. There are no houses (or addressed dwellings) along a particular side of an address information event.	0
Odd	The house numbers appear as odd numbers in a sequential sorted order (ascending or descending) when moving from one end of the address information event to the other. Numeric completeness of the series is not a requirement.	2

Table Name: ORN_JUNCTION_TYPE_LIST

JUNCTION_TYPE	JUNCTION_TYPE_DESCR	NRN_JUNCTIONTYPE
Intersection	The intersection of three or more road net elements at the same grade	1
Dead End	At the end of a dead end road element or where it further continues as a virtual road	2
Ferry	The intersection of a road element and a ferry connection.	3
Boundary	The intersection of a road element or a ferry connection with a provincial or international boundary	0

Table Name: ORN_JURISDICTION_LIST

Click here to retrieve the list.

Table Name: ORN_OFFICIAL_LANGUAGE_LIST

OFFICIAL_LANGUAGE	OFFICIAL_LANGUAGE_DESCR	NRN_OFFICIALLANGUAGE
ENG	English	2
FRE	French	1

Table Name: ORN_PAVEMENT_STATUS_LIST

PAVEMENT_STATUS	PAVEMENT_STATUS_DESCR	NRN_PAVEMENTSTATUS
Paved	A road element which is paved.	1
Unpaved	A road element which is not paved.	2

Table Name: ORN_ROAD_CLASS_LIST

ROAD_CLASS	ROAD_CLASS_DESCR	NRN_ROADCLASS
Alleyway / Laneway	A low speed thoroughfare dedicated to provide access to the rear of properties.	8
Arterial	A major thoroughfare with medium to large traffic capacity	3
Collector	A minor thoroughfare mainly used to access properties and to feed traffic with right of way.	4
Expressway / Highway	A high-speed thoroughfare with a combination of controlled access and intersections at grade level.	2
Freeway	An unimpeded, high speed controlled access thoroughfare for through traffic with typically no at grade intersections, usually with no property access or direct access and which is accessed by a ramp. Pedestrians prohibited.	1
Local / Strata	A low speed thoroughfare dedicated to provide access to properties with potential public restriction, trailer parks, First Nations, strata or private estates.	6
Local / Street	A low speed thoroughfare dedicated to provide full access to the front of properties.	7
Local / Unknown	A low speed thoroughfare dedicated to provide access to the front of properties but for which the access regulations are unknown.	5
Ramp	A system of interconnecting roadways providing for the controlled movement between two or more roadways.	9
Rapid Transit	A thoroughfare restricted 24 hours a day, for the sole use of public transportation buses.	11
Resource / Recreation	A narrow passage which has as a primary function access for resources extraction and also may have a role in providing an access for the public to back country.	10
Service	A stretch of road permitting vehicles to come to a stop along a Freeway or Highway. These include weigh scales, emergency lanes, lookouts and rest areas.	12
Winter	A road that is only useable during the winter months when conditions allow for passage over lakes, rivers and wetlands.	13

Table Name: ORN_ROAD_ELEMENT_TYPE_LIST

ROAD_ELEMENT_TYPE	ROAD_ELEMENT_TYPE_DESCR
FERRY CONNECTION	The approximate route a ferry travels to transport vehicles across water and is linked to a road element by a junction
ROAD ELEMENT	The basic centreline road feature spanning from intersection to intersection, or intersection to end where there is no subsequent intersection with another road
VIRTUAL ROAD	A linear feature that is used as an address anchor for Bell 911 address information that is collected for dwellings (i.e. cottages) on islands or shorelines that are not accessible by road. These features are not actual roads and may or may not be connected to the main road network. They may be represented as straight line segments which bisect an island or follow the approximate shoreline of an island. They may also be represented as extensions of the road network crossing over land and water.

Table Name: ORN_SHIELD_TYPE_LIST

SHIELD_TYPE	SHIELD_TYPE_DESCR
PRIMARY, KINGS OR 400 SERIES HIGHWAY SHIELD	A network of highways that represents the oldest provincial highways (numbered from 3 to 148) and which are designed to connect urban centres of 2000 people or more by the shortest possible route. Also includes controlled access 400 series highways (CAH), including the Queen Elizabeth Way (QEW) that have imposed stricter access and adjacent land use controls (numbered 400 ¿ 451).
SECONDARY HIGHWAY SHIELD	A network of highways (numbered from 502 - 673) which connect smaller urban centres to each other and to the Kings Highway system. These highways often connect major traffic generators like airports, mines, quarries, saw mills, resort areas etc to the Kings Highway network. They became part of the provincial highway system in the 1950's and 1960's. The Secondary Highway System takes the place of the County or Regional Road systems in those areas of the provincial without incorporated municipalities or where the tax base was too low to afford a County Road system.
TOLL HIGHWAY SHIELD	A controlled access highway which involves the payment of a fee to travel upon. Currently, Ontario only has one toll highway, the 407ETR or Electronic Toll Route, located in the golden horseshoe.
TERTIARY HIGHWAY SHIELD	Highways which connect remote communities in Northern Ontario to the Secondary or Kings Highway network. Tertiary Highways have provincial highway numbers in the 800 series and were generally established in the 1950's and 1960's. The Ministry of Transport (MTO) is not obligated to maintain Tertiary Highways in the winter nor is MTO liable if winter maintenance is not provided. The Lieutenant Governor in Council (LGIC) can also designate a Tertiary Highway as a Resource Road. A number of the provisions of the Highway Traffic Act that apply to Kings and Secondary Highways do not apply to Tertiary Highways.
DISTRICT, COUNTY, REGIONAL OR MUNICIPAL ROAD SHIELD	Upper Tier, Lower Tier or Single Tier Municipal Roads

Table Name: ORN_STANDARD_MUNICIPALITY_LIST

Click here to retrieve this list.

Table Name: ORN_STREET_DIRECTION_LIST

STREET_DIRECTION	OFFICIAL_LANGUAGE	CPC_DIRECTION_CODE	NRN_DIRECTION
East	ENG	E	5
Est	FRE	E	6
Nord	FRE	N	2
Nord Est	FRE	NE	12
Nord Ouest	FRE	NO	10
North	ENG	N	1
North East	ENG	NE	11
North West	ENG	NW	9
Ouest	FRE	O	8
South	ENG	S	3
South East	ENG	SE	15
South West	ENG	SW	13
Sud	FRE	S	4
Sud Est	FRE	SE	16
Sud Ouest	FRE	SO	14
West	ENG	W	7

Table Name: ORN_STREET_SIDE_LIST

STREET_SIDE	STREET_SIDE_DESCR	NRN_STREETSIDE
Both	Both Sides	3
Left	Left Side	1
Right	Right Side	2

Table Name: ORN_STREET_TYPE_LIST

Click here to retrieve this list.

Table Name: ORN_STRUCTURE_TYPE_LIST

STRUCTURE_TYPE	STRUCTURE_TYPE_DESCR	NRN_STRUCTURETYPE
Bridge	Part of a road supporting the travel of motorized vehicles, built on a raised structure and serving to span an obstacle, river another road or railway, etc., yet does not have a moveable surface or a building-like cover.	1
Bridge Covered	Part of a road supporting the travel of motorized vehicles, built on a raised, covered structure and serving to span an obstacle, river, another road or railway, etc.	2
Bridge Moveable	Part of a road supporting the travel of motorized vehicles, built on a moveable, raised structure and serving to span an obstacle, river another road or railway, etc. The moveable surface allows for the passage of vessels.	3
Dam	Part of a road supporting the travel of motorized vehicles, built across a waterway or floodway to control the flow of water.	7
Tunnel	An enclosed man-made construction built to carry a transportation element through or below a natural feature or other obstruction.	5

Table Name: ORN_SURFACE_TYPE_LIST

SURFACE_TYPE	SURFACE_TYPE_DESCR
Blocks	A paved road element with a surface made of blocks such as cobblestones or interlocking pavers
Dirt	An unpaved road element, which the surface is formed by the removal of vegetation and/or by transportation movements over the road, which inhibit further growth of any vegetation
Flexible	A paved road element with a flexible surface such as asphalt or tar gravel
Gravel	An unpaved road element, which the surface has been improved by grading with gravel
Rigid	A paved road element with a rigid surface such as concrete

Table Name: ORN_TOLL_POINT_TYPE_LIST

TOLL_POINT_TYPE	TOLL_POINT_TYPE_DESCR	NRN_TOLLPOINTTYPE
Hybrid	A tollbooth along a road element, which is both physical and virtual.	3
Physical	A construction along or across a road element, where toll can be paid to employees of the organization in charge of collecting the toll or to machines involving electronic methods of payment, i.e. credit cards or bank cards.	1
Virtual	At a virtual point along a road element, toll will be charged via automatic registration of the passing vehicle by subscription or invoice.	2

3. Related Standards

3.1. Impacts to Existing Standards

Identify any Standards that reference or are referenced by this Standard and describe the impact.

GO-IT Standard	Impact	Recommended Action
GO-ITS 29: Ontario Road Network: Data Standard for Road Geometry and Attributes	Modifications to the data model impact the technical document.	Update the GO-ITS 29 with revised document.
GO-ITS 29 Appendix A - Ontario Road Network - Logical Data Model with Data Dictionary.	Modifications to the data model impact the technical document.	Removal of the GO-ITS 29 document. ORN Road Net Element data model documentation is maintained at LIO.
GO-ITS 29 Appendix B - Ontario Road Network - Physical Data Model. August 2003.	Modifications to the physical model impacted the technical document.	Removal of the GO-ITS 29 document. ORN Road Net Element data model documentation is maintained at LIO.
GO-ITS 29 Appendix C - Data Model Symbology Explanation. August 2003.	Documentation not required.	Removal of the GO-ITS 29 document.

3.2. Impacts to Existing Environment

Impacted Infrastructure	Impact	Recommended Action
Users that are currently using the ORN Road Net Element are required to migrate to using the new model.	Minimal Impact to users using the ORN Road Net Element prior to changes to the data model,	Recommend users update to the current ORN Road Net Element.

4. Appendices

4.1. Normative References

ORN Road Net Element Standard NRVIS Interchange Format (SNIF) Report

ISO14825: 2004 Intelligent Transportation Systems Geographic Data Files (GDF) – Overall Data Specification

4.2. Informative References

ORN Road Element Metadata Record

LIO Metadata Standards

ISO /TC 204