Road Network File, Reference Guide, 2016



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The following symbols are used in Statistics Canada publications:

- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero
- 0s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- p preliminary
- r revised
- x suppressed to meet the confidentiality requirements of the Statistics Act
- E use with caution
- F too unreliable to be published
- * significantly different from reference category (p < 0.05)

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Road Network File, Reference Guide, Census year 2016

This reference guide is intended for users of the Road Network File. The guide provides an overview of the file, the general methodology used in its creation, and important technical information.

What's new?

- The 2016 Census Road Network File contains information such as street arc unique identifier, street name, type, direction, address range and class. It also includes the unique identifier, name and type for each side of a street arc (where applicable) for the following geographic levels:
 - o province or territory
 - o census subdivision
 - o census metropolitan area or census agglomeration
- The 2016 Road Network File includes updates to the road network that were made using the following provincially sourced data:
 - o the province of Prince Edward Island
 - o the province of New Brunswick
 - o the province of Nova Scotia
 - o the province of Quebec
 - o the province of Ontario for thirty-five census divisions: Stormont, Dundas and Glengarry (3501), Prescott and Russell (3502), Leeds and Grenville (3507), Lanark (3509), Frontenac (3510), Lennox and Addington (3511), Hasting (3512), Prince Edward (3513), Northumberland (3514), Peterborough (3515), Kawartha Lakes (3516), Durham (3518), York (3519), Dufferin (3522), Wellington (3523), Niagara (3526), Perth (3531), Chatham-Kent (3536), Essex (3537), Lambton (3538), Huron (3540), Muskoka (3544), Haliburton (3546), Renfrew (3547), Nipissing (3548), Parry Sound (3549), Manitoulin (3551), Sudbury (3552), Greater Sudbury / Grand Sudbury (3553), Timiskaming (3554), Cochrane (3556), Algoma (3557), Thunder Bay (3558), Rainy River (3559) and Kenora (3560)
 - o the province of Alberta
 - o the province of British Columbia.

These efforts have improved the representation of the road network.

1. About this guide

This reference guide does not provide details on specific software packages that are available for use with the 2016 Census Road Network File. Users are advised to contact the appropriate software vendor for information.

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2. Overview

The 2016 Census Road Network File depicts the digital road line coverage for Canada and contains information such as street arc unique identifier (UID), name, type, direction, address range, rank and class. It also includes the UID, name and type for each side of a street arc (where applicable) for the following geographic levels:

- province or territory
- census subdivision
- · census metropolitan area or census agglomeration.

The 2016 Census Road Network File is available as a national file.

How to cite this guide

Road Network File, Reference Guide, Second edition, 2016 Census. Statistics Canada Catalogue no. 92-500-G.

How to cite this product

Road Network File, 2016 Census. Statistics Canada Catalogue no. 92-500-X.

3. About this product

Purpose of the product

The purpose of the 2016 Census Road Network File is to provide a framework for mapping and spatial analysis. It also supports Geographic Information System (GIS) applications used for land use and demographic studies, and for social, economic and market research.

The 2016 Census Road Network File is positionally consistent with the 2016 Census geography boundary files, which provide additional reference for mapping.

The 2016 Census Road Network File should be used in conjunction with the 2016 suite of geography products.

Definitions and concepts

Geographic terms and concepts are briefly defined in the *Dictionary, Census of Population, 2016*. http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/index-eng.cfm

Content

The 2016 Census Road Network File contains street arcs depicting the national road network and includes attribute information such as street arc unique identifier, name, type, direction, address range, rank and class. It also includes the unique identifier (UID), name and type for each side of a street arc (where applicable) for the following geographic levels:

- · province or territory
- · census subdivision
- · census metropolitan area or census agglomeration.

General methodology

The National Geographic Database (NGD) is a joint Statistics Canada–Elections Canada initiative to develop and maintain a national road network database that serves the needs of both organizations. The objective of the NGD is to continually improve the quality and currency of road network coverage using updates from provinces, territories and local sources. The source file used to create the Road Network File resides in Statistics Canada's Spatial Data Infrastructure and was derived directly from data stored on the NGD.

Creation of the 2016 Census Road Network File

The Road Network File was created from a source file consisting of all streets, highways and other road segments maintained in Statistics Canada's Spatial Data Infrastructure (SDI). A copy of the source file in its original format was created to facilitate geoprocessing (e.g., joins, modifications and verification operations). Additional attribute information (i.e., province or territory, census metropolitan area and census subdivision attributes) was then joined to the spatial component at the road segment level (see Table 4.1). The resulting file, containing both the spatial content and the attribute content, was verified against the source file maintained in the SDI.

The file was verified for spatial and attribute content, translated into French and English, and appropriately named according to the file naming convention http://www.statcan.gc.ca/pub/92-500-g/92-500-g2016001-eng.htm#b1. Final data processing consisted in converting the file using FME® (Safe Software) into the following file formats supported by Geographic Information System (GIS) software: ArcGIS® (.shp), Geography Markup Language (.gml) and MapInfo® (.tab).

The ArcGIS®, Geography Markup Language and MapInfo® files were compressed into WinZip® files (file extension .zip) and made available for download from the Statistics Canada website.

Limitations

Statistics Canada maintains Road Network File information to support the census and other Statistics Canada activities. The relative position of road network features is important in maps created for reference purposes; therefore, relative positional accuracy takes precedence over absolute positional accuracy. The Road Network

File does not contain street information required for route optimization. For example, data on one-way streets, dead ends and other street obstacles are not included in the Road Network File. Consequently, this file is not recommended for engineering applications, emergency dispatching services, surveying or legal applications.

The Road Network File contains road arcs with address ranges sourced from field observation or administrative data sources, with imputed address ranges, or without address ranges.

The limitations of the Road Network File should be recognized for uses other than the mapping, analysis and retrieval of Statistics Canada data.

The positional accuracy of the file does not support cadastral, surveying, digitizing or engineering applications.

Comparisons to other products/versions

Differences between the 2016 Census Road Network File and previous versions of the Road Network File include the following:

- The 2016 Census Road Network File contains additional roads, street names, address ranges and road classes.
- The 2016 Census Road Network File is compatible with the suite of 2016 Census geography products.
- The 2016 Census Road Network File does not necessarily follow the 2011 Census boundaries.
- The 2016 Census Road Network File includes updates to the road network that were made using the following provincially sourced data:
 - o the province of Prince Edward Island (2013)
 - o the province of New Brunswick (2014-2015)
 - o the province of Nova Scotia (2013-2014)
 - o the province of Quebec (2014-2015)
 - o the province of Ontario (2010-2014)
 - o the province of Alberta (2013-2014)
 - o the province of British Columbia (2009).

There was a continuing alignment for all provinces. These efforts have improved the representation of the road network.

Using with other products

When considering whether to use the 2016 Census Road Network File, users should be aware of its compatibility or incompatibility with files available from other sources. Such files may not be consistent with Statistics Canada files.

Reference date

The geographic reference date is a date determined by Statistics Canada to finalize the geographic framework for which statistical data are collected, tabulated and reported. For the 2016 Census, the geographic reference date is January 1, 2016.

4. Technical specifications

Record layout and data descriptions

The following table identifies and briefly describes selected attributes that make up the 2016 Census Road Network File.

Table 4.1 Census Road Network File record layout

Attribute name	Data type	Description
NGD_UID	Character (10)	Unique identifier of the arc
NAME	Character (50)	Street name associated with the arc
TYPE	Character (6)	Street type associated with the arc
DIR	Character (2)	Street direction associated with the arc
AFL_VAL	Character (9)	Civic address found on the left-hand side of the arc at the FROM node
ATL_VAL	Character (9)	Civic address found on the left-hand side of the arc at the TO node
AFR_VAL	Character (9)	Civic address found on the right-hand side of the arc at the FROM node
ATR_VAL	Character (9)	Civic address found on the right-hand side of the arc at the TO node
CSDUID_L	Character (7)	Uniquely identifies a census subdivision (composed of the 2-digit province or territory unique identifier followed by the 2-digit census division code and the 3-digit census subdivision code), left-hand side of arc
CSDNAME_L	Character (100)	Census subdivision name, left-hand side of arc
CSDTYPE_L	Character (3)	Census subdivisions are classified according to designations adopted by provincial/territorial or federal authorities, left-hand side of arc
CSDUID_R	Character (7)	Uniquely identifies a census subdivision (composed of the 2-digit province or territory unique identifier followed by the 2-digit census division code and the 3-digit census subdivision code), right-hand side of arc
CSDNAME_R	Character (100)	Census subdivision name, right-hand side of arc
CSDTYPE_R	Character (3)	Census subdivisions are classified according to designations adopted by provincial/territorial or federal authorities, right-hand side of arc
CMAUID_L	Character (3)	Uniquely identifies a census metropolitan area/census agglomeration, left-hand side of arc
CMANAME_L	Character (100)	Census metropolitan area or census agglomeration name, left-hand side of arc
CMATYPE_L	Character (1)	Census metropolitan area or census agglomeration type, left-hand side of arc
CMAUID_R	Character (3)	Uniquely identifies a census metropolitan area/census agglomeration, right-hand side of arc
CMANAME_R	Character (100)	Census metropolitan area or census agglomeration name, right-hand side of arc
CMATYPE_R	Character (1)	Census metropolitan area or census agglomeration type, right-hand side of arc
PRUID_L	Character (2)	Uniquely identifies a province or territory, left-hand side of arc
PRNAME_L	Character (100)	Province or territory name, left-hand side of arc
PRUID_R	Character (2)	Uniquely identifies a province or territory, right-hand side of arc
PRNAME_R	Character (100)	Province or territory name, right-hand side of arc
RANK	Character (1)	A 1-digit code that identifies the rank of road segments.
CLASS	Character (2)	Identifies the different types of street features.

Attribute domain values

Representation of unknown or no value

The null value is used to represent missing or non-existent values for a street's name, type, direction and address range.

The null value is also used for geographic area unique identifiers, names and types to indicate that a geographic area is outside Canada.

Street type

This value indicates the street type associated with the arc.

Table 4.2 Street type

Туре	Description
N/A	not applicable
< Null >	no type
ABBEY	Abbey (E)
ACCESS	Access (E)
ACRES	Acres (E)
AIRE	Aire (E)
ALLEY	Alley (E)
ALLÉE	Allée (F)
AUT	Autoroute (F)
AV	Avenue (F)
AVE	Avenue (E)
BAY	Bay (E)
BEACH	Beach (E)
BEND	Bend (E)
BLOC	Bloc (F)
BLOCK	Block (E)
BLVD	Boulevard (E)
BOUL	Boulevard (F)
BOURG	Bourg (F)
BRGE	Barrage (F)
BROOK	Brook (E)
BYPASS	By-pass (E)
BYWAY	Byway (E)
C	Centre (F)
CAMPUS	Campus (E)
CAPE	Cape (E)
CAR	Carré (F)
CARREF	Carrefour (F)
CDS	Cul-de-sac (E)
CERCLE	Cercle (F)
СН	Chemin (F)
CHASE	Chase (E)
CIR	Circle (E)
CIRCT	Circuit (F)

Table 4.2 (continued) Street type

COMMON Common (E) CONC Concession (E) COTE Cote (P) COUR Cour (F) COUR Cours (F) COVE Cove (E) CRES Crescent (E) CREST Corner (E) CRIVE Crost (E) CROIT Crot (E) CROIS Crossing (E) CROSS Crossing (E) CRSSDD Crossing (E) CRT Court (E) CIT Court (E) CIT Court (E) CIT Court (E) CRD Crossing (E) DELL Dell (C) DESSTE Dessaria (F) DELL Dell (E) DESSTE Deversion (E) DOWINS Deversion (E) DOWINS Drive (E) DRPASS Drive (E) ECH Echangeur (F) ECH Echangeur (F) ECH Echangeur (F) ECH Echangeur (F) <t< th=""><th>Туре</th><th>Description</th></t<>	Туре	Description
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FRONT Front (E) FSR Forest service road (E) FWY Freeway (E) GATE Gate (E) GDNS Gardens (E) GLADE Glade (E)	FIELD	Field (E)
FSR Forest service road (E) FWY Freeway (E) GATE Gate (E) GDNS Gardens (E) GLADE Glade (E)	FOREST	Forest (E)
FWY Freeway (E) GATE Gate (E) GDNS Gardens (E) GLADE Glade (E)	FRONT	Front (E)
GATE Gate (E) GDNS Gardens (E) GLADE Glade (E)	FSR	Forest service road (E)
GDNS Gardens (E) GLADE Glade (E)	FWY	Freeway (E)
GLADE Glade (E)	GATE	Gate (E)
	GDNS	Gardens (E)
GLEN Glen (E)	GLADE	Glade (E)
	GLEN	Glen (E)

Table 4.2 (continued) Street type

Туре	Description
GREEN	Green (E)
GRNDS	Grounds (E)
GROVE	Grove (E)
HARBR	Harbour (E)
HAVEN	Haven (E)
HEATH	Heath (E)
HGHLDS	Highlands (E)
HILL	Hill (E)
HOLLOW	Hollow (E)
HTS	Heights (E)
HWY	Highway (E)
ÎLE	Île (F)
IMP	Impasse (F)
INLET	Inlet (E)
ISLAND	Island (E)
KEY	Key (E)
KNOLL	Knoll (E)
LANDNG	Landing (E)
LANE	Lane (E)
LANEWY	Laneway (E)
LINE	Line (E)
LINK	Link (E)
LKOUT	Lookout (E)
LMTS	Limits (E)
LOOP	Loop (E)
MALL	Mall (E)
MANOR	Manor (E)
MAZE	Maze (E)
MEADOW	Meadow (E)
MEWS	Mews (E)
MONTÉE	Montée (F)
MOOR	Moor (E)
MOUNT	Mount (E)
MTN	Mountain (E)
ORCH	Orchard (E)
PARADE	Parade (E)
PARC	Parc (F)
PASS	Passage (E)
PATH	Path (E)

Table 4.2 (continued) Street type

Pines (E) PK Park (E) PKY Park (W) PKY Park (W) PKY Park (W) PLAC Place (E) PLACE Place (F) PLAT Plateau (E) PLAT Plateau (E) POINTE Pointe (E) POINTE Point (E) POINTE Pointe (E) POWAY Pointe (E) PUTWAY Pathway (E) PUT Provide (E) PUT Quay (E) PAMP Ramp (E) PAMP	Туре	Description
Park (E) Parkway (E) Par	PEAK	Peak (E)
FY Parkey (S) PL Place (E) PLACE Place (F) PLAT Platau (E) PLATA Platau (E) PLATA Platau (E) PONTE Point (E) PORT Port (E) PROM Promenate (F) PTWAY Pathway (C) PTT Private (E) DUA Quai (F) DUAY Quai (F) DUAY Quai (F) DUAY Quai (F) DUAY Rang (F) DUA Rang (F) DUA <td>PINES</td> <td>Pines (E)</td>	PINES	Pines (E)
Place (E) Place (F) PLACE Place (F) PLAT Placea (E) PLAZA Placea (E) PODRITE Polit (E) PROM Pomenade (F) PT Polit (E) PTWAY Pathway (C) PTWY Printe (S) DUAY Quay (E) DUAY Quay (E) DAMP Rang (F) DAMP Rang (F) DED Rod (E) REACH Reach (E) REACH Rea	PK	Park (E)
Place (F) PLAT Plateau (E) PLAZA Plateau (E) PODITE Point (E) PODIT Port (E) PROM Promenade (F) PT Point (E) PTWAY Point (E) PUT Private (E) DUAI Quai (F) DUAIY Quay (E) RAMP Ramp (E) RAMP Rang (F) RAD Road (E) REACH Road (E) REACH Road (E) REACH Road (F) REACH Road (F) <td< td=""><td>PKY</td><td>Parkway (E)</td></td<>	PKY	Parkway (E)
PLAZA Plaza (E) PLAZA Plaza (E) PONTE Polite (E) PORTA Port (E) PORTA Ponteade (F) PT Point (E) PTWAY Pathway (E) PTWAY Private (E) DUAY Quai (F) DUAY Quay (E) PAMPE Rang (F) PAMPE Road (E) PROPE Road (E)	PL	Place (E)
Para (E) POINTE Point (E) POINTE Point (E) POINTE Point (E) POINTE Point (E) PROM Point (E) POINTE	PLACE	Place (F)
Point (E) PORT Port (E) PROM Promenade (F) PT Point (E) PTWAY Private (E) DUAY Quay (E) PAMP Ramp (E) PAMP Ramp (E) PAMP Rand	PLAT	Plateau (E)
PORT Port (E) PROMM Promenade (F) PT Point (E) PTWAY Pathway (E) PVT Private (E) DUAI Quai (F) DUAI Quay (E) DUAIY Quay (E) DAMP Ramp (E) DAMP Ramp (E) DAMP Road (E) BADE Road (E) B	PLAZA	Plaza (E)
ROM Promenade (F) FT Point (E) PTWAY Pathway (E) VT Private (F) NUA Qual (F) NUAY Quay (E) NAMP Ramp (E) NAMG Rang (F) NAMG Road (E) NAMG </td <td>POINTE</td> <td>Pointe (E)</td>	POINTE	Pointe (E)
TY Point (E) TWAY Pathway (E) TYT Private (E) DUAI Quai (F) DUAIY Quay (E) AMP Ramp (E) AMRG Road (E) DD Road (E) DDPT Rond point (F) BEACH Reach (E) BIG Ridge (E) BISE Ridge (E) BISE Route (F) BISE Route (F) BIOUTE Rule	PORT	Port (E)
TWAY Pathway (E) VT Private (E) MAI Qual (F) MAIY Quay (E) AMP Ramp (E) AMG Rang (F) DD Road (E) DDPT Rond point (F) EACH Reach (E) IB Range (E) IBSE Ruelle (F) IBUSE Ruelle (F) IBUSE Route (F) IBUS Route (F) IBUS Route (F) IBUS Ruelle (F) IBUS Rue (F)	ROM	Promenade (F)
AVT Quai (F) AUAY Quay (E) AMAP Ramp (E) AMAG Rang (F) ADD T Road (E) ADD T Rond point (F) AEACH Reach (E) AG Range (E) AUDE Rise (E) AUDE Rise (E) AUDE Route (F) AUDE Route (F) AUDE Route (E) AUDE Route (E) <t< td=""><td>- Т</td><td>Point (E)</td></t<>	- Т	Point (E)
QUAI QUAI (F) QUAY QUAY (E) AMP Ramp (E) AMG Rang (F) ADD Road (E) ADPT Rond point (F) AEACH Reach (E) AG Range (E) ADGE Ridge (E) AULE Ruelle (F) ADUTE Route (F) ADUTE Row (E) ATTORWY Row (E) ATTORWY Right of way (E) AULE Rue (F) AULE Rue (F) ATTORWY Right of way (E) AULE Rue (F) AULE Section (E) AULE Section (E) <td>TWAY</td> <td>Pathway (E)</td>	TWAY	Pathway (E)
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AMP Ramp (E) ANG Rang (F) IDP Road (E) IDPT Rond point (F) IEACH Reach (E) IG Range (E) IDGE Ridge (E) ISE Ruele (F) IDUTE Route (F) IDUTE Route (F) IDUTE Route (F) IDE Ruele (F) IDE Rue (F) IDUTE Rue (F)	UAI	Quai (F)
ANG Rang (F) ID Road (E) IDFT Rond point (F) IEACH Reach (E) IG Range (E) IDGE Ridge (E) ISISE Rise (E) ILLE Ruelle (F) IOUTE Route (F) IOUTE Route (F) ITTOFWY Right of way (E) IUL Rue (F) IUL Section (E) IUL Section (E)<	NUAY	Quay (E)
ROD Road (E) ROPT Rond point (F) REACH Reach (E) REACH Range (E) RIDGE Ridge (E) RISE Rise (E) RILE Ruelle (F) ROUTE Route (F) ROW Route (E) RTE Route (E) RUS Rue (F) RUS Rue (F) </td <td>NAMP</td> <td>Ramp (E)</td>	NAMP	Ramp (E)
ADPT Rond point (F) AEACH Reach (E) AEACH Range (E) AEACH Ridge (E) AEACH Ridge (E) AEACH Ridge (E) AEACH Ruelle (F) AEACH Ruelle (F) AEACH Route (F) AEACH Route (F) AEACH Ruel (F) <td>MANG</td> <td>Rang (F)</td>	MANG	Rang (F)
SEACH Reach (E) SIG Range (E) RIDGE Ridge (E) RISE Rise (E) RILE Ruelle (F) ROUTE Route (F) ROW Row (E) RTE Route (E) RTOFWY Right of way (E) RUE Rue (F) RUIS Ruisseau (F) RUN Run (E) SECTIN Section (E) SENT Sentier (F) SIDERD Sideroad (E) STORD Square (E) STORD Street (E) STROLL Stroll (E)	RD	Road (E)
Rige Rige Ended Ridge Ended Ridge Ended Ridge Ended Ridge Ended Ridge Ended Ended Ridge Ended E	RDPT	Rond point (F)
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Rise (E) Ruelle (F)	G	Range (E)
LE Ruelle (F) DOUTE Route (F) DOW Row (E) TE Route (E) TOFWY Right of way (E) ULE Rue (F) UUS Ruisseau (F) UN Run (E) ECTN Section (E) ENT Sentier (F) IDERD Sideroad (E) Q Square (E) TT Street (E) TROLL Stroll (E)	IDGE	Ridge (E)
OUTE Route (F) OW Row (E) TTE Route (E) TTOFWY Right of way (E) UE Rue (F) UIS Ruisseau (F) UN Run (E) ECTN Section (E) ENT Sentier (F) IDERD Sideroad (E) Q Square (E) T Street (E) TROLL Stroll (E)	ISE	Rise (E)
10W Row (E) 1TE Route (E) 1TOFWY Right of way (E) 1UE Rue (F) 1UIS Ruisseau (F) 1UN Run (E) 1ECTN Section (E) 1EINT Sentier (F) 1EIDERD Sideroad (E) 1CQ Square (E) 1CT Street (E) 1CT Street (E) 1CT Stroll (E)	ILE	Ruelle (F)
RTE RTOFWY RIGHT of way (E) RUE RUE RUS RUN RUN RUN RUN RECTN SECTN SECTN SIGNOR SEQUE SIGNOR	ROUTE	Route (F)
RTOFWY Right of way (E) RUE Rue (F) RUIS Ruisseau (F) RUN Run (E) SECTN Section (E) SENT Sentier (F) SIDERD Sideroad (E) SQ Square (E) ST Street (E) STROLL Stroll (E)	ROW	Row (E)
RUE Rue (F) RUIS Ruisseau (F) RUN Run (E) SECTN Section (E) SENT Sentier (F) SIDERD Sideroad (E) SQ Square (E) ST Street (E) STROLL Stroll (E)	RTE	Route (E)
RUIS Ruisseau (F) RUN Run (E) SECTN Section (E) SENT Sentier (F) SIDERD Sideroad (E) SQ Square (E) ST Street (E) STROLL Stroll (E)	RTOFWY	Right of way (E)
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SECTN Section (E) SENT Sentier (F) SIDERD Sideroad (E) SQ Square (E) ST Street (E) STROLL Stroll (E)	RUIS	Ruisseau (F)
SENT Sentier (F) SIDERD Sideroad (E) SQ Square (E) ST Street (E) STROLL Stroll (E)	RUN	Run (E)
SIDERD Sideroad (E) SQ Square (E) ST Street (E) STROLL Stroll (E)	DECTN	Section (E)
Square (E) Street (E) STROLL Stroll (E)	ENT	Sentier (F)
STROLL Street (E) Stroll (E)	SIDERD	Sideroad (E)
STROLL Stroll (E)	GQ	Square (E)
	ST	Street (E)
SUBDIV Subdivision (E)	STROLL	Stroll (E)
	SUBDIV	Subdivision (E)

Table 4.2 (concluded)

Street type

Туре	Description
TERR	Terrace (E)
THICK	Thicket (E)
TLINE	Townline (E)
TOWERS	Towers (E)
TRACE	Trace (E)
TRAIL	Trail (E)
TRNABT	Turnabout (E)
TRUNK	Trunk (E)
TSSE	Terrasse (F)
VALE	Vale (E)
VIA	Via (E)
VIEW	View (E)
VILLAS	Villas (E)
VILLGE	Village (E)
VISTA	Vista (E)
VOIE	Voie (F)
WALK	Walk (E)
WAY	Way (E)
WHARF	Wharf (E)
WOOD	Wood (E)
WYND	Wynd (E)

Street direction

Street direction can be used in conjunction with street name and type to identify common street elements (e.g., Elm ST S, versus Elm ST W or Elm ST). Street direction has no relation to the direction in which the street arc was digitized.

Table 4.3 Street direction

Street direction	Street description
< Nulle >	no type
E	East / Est
N	North / Nord
NE	North East / Nord-est
NO	Nord-ouest
NW	North West
0	Ouest
S	South / Sud
SE	South East / Sud-est
SO	Sud-ouest
SW	South West
W	West

CSDTYPE_L and CSDTYPE_R

Census subdivisions are classified according to designations adopted by provincial, territorial or federal authorities. The geographic reference date associated with the assignment of CSDTYPE_L and CSDTYPE_R is January 1, 2016.

Table 4.4 Census subdivision types

Gensus subulvision types	
CSDTYPE	CSD description
C	City / Cité
CC	Chartered community
CG	Community government
CN	Crown colony / Colonie de la couronne
СОМ	Community
СТ	Canton (municipalité de)
CU	Cantons unis (municipalité de)
CV	City / Ville
CY	City
DM	District municipality
HAM	Hamlet
ID	Improvement district
IGD	Indian government district
IM	Island municipality
IRI	Indian reserve / Réserve indienne
LGD	Local government district
LOT	Township and royalty
M	Municipality / Municipalité
MD	Municipal district
MÉ	Municipalité
MU	Municipality
NH	Northern hamlet
NL NL	Nisga'a land
NO	Unorganized / Non organisé
NV	Northern village
P	Parish / Paroisse (municipalité de)
PE	Paroisse (municipalité de)
RCR	Rural community / Communauté rurale
RDA	Regional district electoral area
RGM	Regional municipality
RM	Rural municipality
RV	Resort village
S-É	Indian settlement / Établissement indien
SA	Special area
	,

Table 4.4 Census subdivision types (concluded)

Subdivision of county municipality / Subdivision municipalité de comté Settlement / Établissement Settlement Self-government / Autonomie gouvernementale Specialized municipality Subdivision of unorganized / Subdivision non organisée Summer village
Settlement Self-government / Autonomie gouvernementale Specialized municipality Subdivision of unorganized / Subdivision non organisée
Self-government / Autonomie gouvernementale Specialized municipality Subdivision of unorganized / Subdivision non organisée
Specialized municipality Subdivision of unorganized / Subdivision non organisée
Subdivision of unorganized / Subdivision non organisée
Summer village
Julilliei villaye
Town
Terres réservées aux Cris
Terre inuite
Terres réservées aux Naskapis
Teslin land
Township
Town / Ville
Ville
Village cri
Village naskapi
Village
Village nordique

CMATYPE_L and CMATYPE_R

Census metropolitan area or census agglomeration.

Table 4.5 Census metropolitan area or census agglomeration type

CMA or CA type	Description
В	Census metropolitan area (CMA)
D	Census agglomeration (CA) that is not tracted
K	Census agglomeration (CA) that is tracted
< Null >	not applicable (outside of CMA or CA)

PRUID_L and PRUID_R

These values uniquely identify a province or territory. The geographic reference date associated with the assignment of PRUID_L and PRUID_R is January 1, 2016.

Table 4.6 Provinces and territories

PRUID	Province or territory name
10	Newfoundland and Labrador / Terre-Neuve-et-Labrador
11	Prince Edward Island / Île-du-Prince-Édouard
12	Nova Scotia / Nouvelle-Écosse
13	New Brunswick / Nouveau-Brunswick
24	Quebec / Québec
35	Ontario
46	Manitoba
47	Saskatchewan
48	Alberta
59	British Columbia / Colombie-Britannique
60	Yukon
61	Northwest Territories / Territoires du Nord-Ouest
62	Nunavut
< Null >	not applicable (outside of Canada)

RANK

Rank is a value assigned to a street arc to facilitate the selection of streets.

Table 4.7 Rank

Street rank code	Street rank description	
1	Trans-Canada Highway	
2	National Highway System (not rank 1)	
3	Major Highway (not rank 1 or 2)	
4	Secondary Highway, Major Street (not rank 1, 2, or 3)	
5	All other streets (not rank 1, 2, 3, or 4)	

CLASS

The street class code identifies the different types of street features within the 2016 Census Road Network File.

Table 4.8 Street class code

Street class code	Street class description
10	Highway
11	Expressway
12	Primary highway
13	Secondary highway
20	Road
21	Arterial
22	Collector
23	Local
24	Alley/Lane/Utility
25	Connector/Ramp
26	Reserve/Trail
27	Rapid transit
28	Planned
29	Strata
30	Bridge/Tunnel
90, 95	Unknown

Software formats

The 2016 Census Road Network File is available for download from the Statistics Canada website in the following formats:

• ArcGIS®

File extension: .shp

Geography Markup Language (GML) 3.1.1

File extension: .gml

MapInfo[®]

File extension: .tab

File extension and accented character information

The ArcGIS®, Geography Markup Language and MapInfo® files are compressed into WinZip® files (file extension .zip).

An XML schema file (.xsd) is included to describe and validate the structure and content of the .gml files.

The 2016 Census Road Network File contains attributes with accented characters. They were successfully tested on the desktop versions of ArcGIS® 10.2.2, MapInfo 12.0® and FME Data Inspector 2015.1.

Geographic representation

The 2016 Census Road Network File is available on the Statistics Canada website in the following geographic representation:

• Projection: Lambert conformal conic

• False easting: 6200000.000000

• False northing: 3000000.000000

Central meridian: -91.866667

• Standard parallel 1: 49.000000

Standard parallel 2: 77.000000

Latitude of origin: 63.390675

Linear unit: metre (1.000000)

• Datum: North American 1983 (NAD83)

• Prime meridian: Greenwich

Angular unit: degreeSpheroid: GRS 1980.

The North American Datum of 1983 (NAD83) is an adjustment of the 1927 datum that reflects the higher accuracy of geodetic surveying.

Users of the 2016 Census Road Network File can transform the file into the representation that best satisfies their needs, knowing the effects of these representations on angles, areas, distances and direction. Users have the option to choose the best projection in concert with the map's objectives.

File naming convention

Spatial product file names follow a file naming convention. The geographic area and code, file type, geographic reference date, software type and language are embedded within the file name. Standardizing the names of the files facilitates the storage of compressed files, all of which have the extension .zip.

Each file name has 13 characters. All letters are in lower case to maintain consistency.

First character: projection of file

I - projection in Lambert conformal conic

Next three characters: primary geographic level of file

rnf - road network file

Next three numbers: geographic code of coverage

• 000 - Canada

Next character: file type

• r - road network file

Next two numbers: geographic reference date

The geographic reference date is a date determined by Statistics Canada for the purpose of finalizing the geographic framework for which census data are collected, tabulated and reported. For the 2016 Census, the geographic reference date is January 1, 2016.

16 - geographic reference date is 2016

Next character: file format

- a ArcGIS[®] (.shp)
- g Geography Markup Language (.gml)
- m MapInfo® (.tab)

Final two characters: language

- _e English
- f French

5. Data quality

Spatial data quality elements provide information on the fitness- for- use of a spatial database by describing why, when and how the data were created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements reporting on the lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated.

Lineage

Lineage describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files.

The National Geographic Database (NGD) is a joint Statistics Canada–Elections Canada initiative to develop and maintain a spatial database that serves the needs of both organizations. The objective of the NGD is to continually improve the quality and currency of spatial coverage using updates from provinces, territories and local sources. The source files used to create the Road Network File reside in Statistics Canada's Spatial Data Infrastructure (SDI) and were derived directly from data stored on the NGD.

The data in the 2016 Census Road Network File were derived from the SDI environment based on a copy of the NGD that contains the road network in Canada, as well as street attributes (name, type, direction, address range, rank and class).

The files were verified for their spatial and attribute content, translated into French and English, and appropriately named according to the file naming convention. The geographic area unique identifier, name and type, and the relationships between the various geographic levels, are found in the SDI.

Final data processing consisted in converting the file using FME® (Safe Software) into the following GIS file formats: ArcGIS® (.shp), Geography Markup Language (.gml) and MapInfo® (.tab).

Road information was incorporated from a variety of sources, including provincially sourced data, municipal maps and field observation. The timeliness of the NGD varies from region to region depending on the source data.

Positional accuracy

Positional accuracy refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values that are true or accepted as true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The Spatial Data Infrastructure (SDI) is not fully Global Positioning Systems (GPS)-compliant. However, every possible attempt is made to ensure that the geographic area boundaries maintained in the Spatial Data Infrastructure respect the limits of the administrative entities that they represent (e.g., provinces, territories and census subdivisions) or on which they are based (e.g., census metropolitan areas and census agglomerations). The positional accuracy of these limits is dependent upon source materials used by Statistics Canada to identify the location of limits. In addition, due to the importance placed on relative positional accuracy, the positional accuracy of other geographic data (e.g., road network data and hydrographic data) that are stored within the Spatial Data Infrastructure is considered when positioning the limits of the standard geographic areas.

Absolute positional accuracy

Absolute positional accuracy describes the degree to which the position of features in a geographic database reflects their true position on the ground (i.e., the closeness of reported coordinate values to values accepted as true).

The 2016 Census Road Network File includes updates to the road network that were made using the following provincially- sourced data:

- the province of Prince Edward Island (2013)
- the province of New Brunswick (2014-2015)
- the province of Nova Scotia (2013-2014)
- the province of Quebec (2014-2015)
- the province of Ontario (2010-2014)
- the province of Alberta (2013-2014)
- the province of British Columbia (2009).

There was a continuing alignment for all provinces. These efforts have improved the representation of the road network.

The information present in the Spatial Data Infrastructure (SDI) road layer was developed for the purposes of statistical analysis and census operations. The absolute position of roads in the SDI varies with the source files and documents used to build and maintain the database. Therefore, the road layer is not suitable for high precision measurement applications such as engineering or property transfers, nor for other uses that might require highly accurate measurements of the earth's surface.

Absolute positional accuracy is not a requirement for census processes.

Relative positional accuracy

Relative positional accuracy describes the degree to which the position of features in a geographic database reflects their true ground relationships.

For the National Geographic Database, relative positional accuracy is important. A road must appear in the its proper position relative to other roads and physical features.

Attribute accuracy

Attribute accuracy refers to the accuracy of quantitative attributes and the correctness of non-quantitative attributes. No explicit testing for attribute accuracy is done; however, results from internal operations suggest a high degree of accuracy.

Data entry during maintenance operations includes a data control process to ensure that attributes are properly associated to a specific geometric feature. This includes the association, as well as its accuracy.

As noted under the "Lineage" section, the attributes (names, types and unique identifiers) of all standard geographic areas are sourced from Statistics Canada's Spatial Data Infrastructure. The names and types of administrative standard geographic areas are updated using source materials from provincial, territorial and municipal authorities.

The class attribute is not updated on a regular basis; as such, quality checks are not performed to verify its accuracy.

Logical consistency

Logical consistency describes the fidelity of relationships encoded in the structure of the digital spatial data. For example, a street arc that does not have a street name should not have a street type.

The 2016 Census Road Network File was verified against data in the Spatial Data Infrastructure and found to be logically consistent.

Consistency with other products

The position of the arcs in the 2016 Census Road Network File is not necessarily consistent with previous editions of boundary files or road network files as a result of updates made using provincially and territorially sourced data.

Topology checks were performed with the 2016 Census Road Network File and the 2016 Census Boundary Files to measure the degree of integration in these products. The results indicated that the degree of integration was within the default tolerance parameters, as defined below:

Tolerance: 0.001 metresResolution: 0.0001 metres.

Completeness

Completeness refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a data set. It also includes information on selection criteria, definitions used, and other relevant mapping rules.

New road features have been added to the National Geographic Database to create a more complete road layer and are present in this edition of the Road Network File.

Table 5.1

Number of road features in the 2016 Census Road Network File

National level	Number of arcs	Arc length (kilometres)
Named, Full Address Range on At Least One Side	1,284,738	503,285
Named	1,857,608	777,955
Not Named	305,450	379,995
Canada	2,163,058	1,157,951

Note: arc length was calculated in Lambert conformal conic projection.

Appendices

See definitions of the geography universe from the *Dictionary, Census of Population, 2016* http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/index-eng.cfm.

See Figure 1.1 Hierarchy of standard geographic areas for dissemination, 2016 Census http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/figures/f1_1-eng.cfm in the *Dictionary, Census of Population, 2016*.

See Table 1.1 Geographic areas by province and territory, 2016 Census http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/tab/t1_1-eng.cfm in the *Dictionary, Census of Population, 2016*.

See Table 1.5 Census subdivision types by province and territory http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/tab/t1_5-eng.cfm, 2016 Census in the *Dictionary, Census of Population, 2016*.