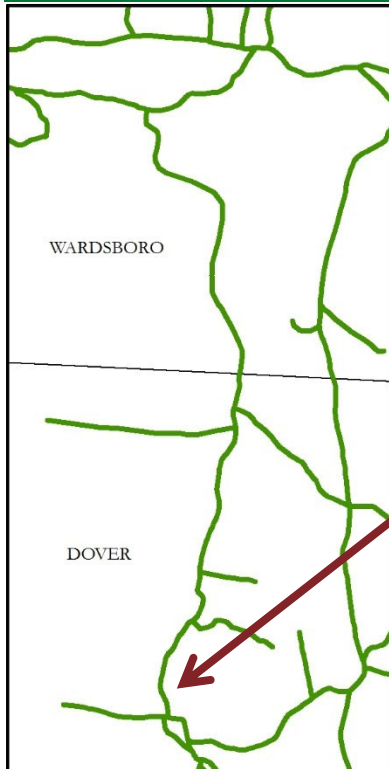


VTrans Road Centerline Spatial Data User Guide

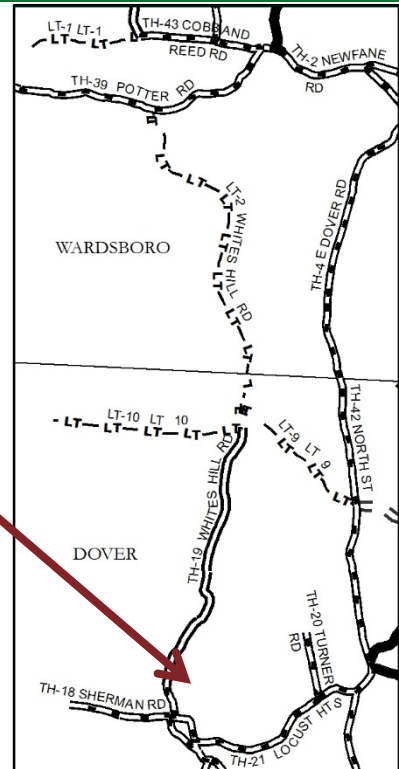
May 2020



Mapping Section
Policy, Planning and Intermodal Development Division
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<https://vtrans.vermont.gov/planning/maps>



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Read the metadata.

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INTRODUCTION

The Vermont Agency of Transportation (VTrans) Road Centerline data layer contains all town and state highways, as well as many private roads. This dataset goes by various names depending on the organization and its storage within the organization. Some of the names include: All Roads, TransRoad_RDS, Trans_RDS, rdsmall (roads - master - all), and VT Road Centerline.

User Guide Background

This User Guide is a reincarnation of the “VGIS Handbook Part 2 – Standards Section G Road Centerline Spatial Data Standard” version 2005. Much of the introductory narrative of this version is heavily borrowed from the 2005 Standard which was initiated by the Vermont Center for Geographic Information (VCGI). The original purpose of the VCGI standard was to draft a document which would be used as a frame of reference for the coordinated maintenance of a single “master” road centerline data layer.

Background of the Road Centerline Data Set

The original road centerline data set was digitized by Greenhorne & O’Mara Inc. in 1991-1992. Many subsequent updates were made by Regional Planning Commissions (RPC’s), their contractors, and VCGI who was the steward of the data layer between 1992 and 2004. They were responsible for coordinating update efforts and for quality control. In 2004, VTrans became the steward and has taken over the update and maintenance of the road centerline data layer.

Another statewide road centerline data layer was created in February 1996 when the Vermont E911 program enhanced the original road centerline data with road names and address range information.

Over the years, two “master” road centerline data layers have evolved, one especially designed for E911 functional needs and another one configured for Vermont Agency of Transportation (VTrans) needs.

For many years, the two organizations have been working toward returning to the concept of one single “master” road centerline data layer, but for practical, everyday needs, it continues to be more effective for each agency to maintain the separate layers with certain fields coordinated between the two.

The VTrans’ data layer has been revised to match "Official" highway mileage. It is the most reliable source for official VTrans road class (AOTCLASS) information. However, this layer may not include every private road, and the road name information may not match perfectly with the E911 roads data layer. The E911 centerline layer maintained by VT's E911 Board includes all private roads and generally more reliable road name and address information.

In 2013, the two organizations synchronized the schema between the two data layers with some fields being primarily E911 fields and others being VTrans fields. The fields that are E911's have not been fully populated in the VTrans data releases since 2013. The agency maintaining each field is identified in the data dictionary section of the user guide and in appendices A and B.

VTRANS ROAD CENTERLINE SPATIAL DATA USER GUIDE

In 2017, VTrans removed many of the E911 specific fields from the road centerline data layer, as many of these fields were not being maintained and were null. This has streamlined the data, but VTrans retains the SEGMENTID field that allows for a linkage with the E911 road data, where conflation has occurred.

Release Notes – 2020-05-01

Primary cut of 2020 road centerlines with updates from the 2020 Mileage Certificates plus other updates completed since 2019-12-31. This dataset will be used to generate the official 2020 Town Highway Maps. The data has been internally QA/QC'd by the VTrans Mapping Section and posted on the Vermont Open Geodata Portal at <http://geodata.vermont.gov/datasets/VTrans::vt-road-centerline>. Due to software limitations, field attribute details are not included in the Esri metadata associated with this release. Field attribute details are available in the "VTrans Road Centerline Spatial Data User Guide" available online through the Vermont Open Geodata Portal (<http://geodata.vermont.gov/datasets/VTrans::vt-road-centerline>), the VTrans Mapping Section website (https://vtransmaps.vermont.gov/Maps/Publications/VTrans_Road_Centerline_User_Guide_20200501.pdf), or by contacting the VTrans Mapping Section. Contact Person: Johnathan Croft. Editing VTrans personnel: Sara Moulton, Michael Trunzo, and Kerry Alley.

Fields removed or renamed

(none were removed or renamed)

Fields added

(none were added)

Terminology

The following terminology is used in this user guide:

Road	An open public or private way for the passage of persons and vehicles
Road segment	Portion of a road defined by a beginning and ending point (node).
Arc	A representation of a line in the GIS software defined by a beginning and ending point (node)
Feature tracking	Tracking of changes to individual features in the data layer, i.e., road segments.
Node	The beginning or ending point of a line.
Divided highway	“A multi-lane facility with a curbed or positive barrier median, or a median that is at least 4 feet in width.” ¹
FHWA	“Federal Highway Administration (FHWA) provides stewardship over the construction, maintenance and preservation of the Nation’s highways, bridges and tunnels. FHWA also conducts research and provides technical assistance to state and local agencies in an effort to improve safety, mobility, and livability, and encourage innovation.” ²

HPMS	“The HPMS is a national level highway information system that includes data on the extent, condition, performance, use and operating characteristics of the nation’s highways.” ³
------	--

Source

1. “HPMS Field Manual Appendix B. Glossary.” *Federal Highway Administration*, Dec. 2016, <https://www.fhwa.dot.gov/policyinformation/hpms/fieldmanual/page11.cfm>.
2. “What We Do.” *Home | Federal Highway Administration*, Federal Highway Administration, www.fhwa.dot.gov/.
3. Office of Highway Policy Information. “Highway Performance Monitoring System (HPMS).” *Federal Highway Administration*, 22 Feb. 2018, <https://www.fhwa.dot.gov/policyinformation/hpms.cfm>.

DATA DESIGN AND MODEL

The road centerline data model has been developed and is maintained within an Esri ArcGIS geodatabase data model. This polyline data layer is stored in a relational database with a table that contains a series of fields, as well as the binary geometry objects.

Model Features

Road Feature: A digital representation of a “real world” entity called a “road”. A road feature is defined by “road segments” and road segments have uniform attributes. They are represented by a line (arc) composed of a series of vertices. The beginning and ending point of a road segment is defined by a “node”. The nodes are virtual features and are not physical points in the data layer. VTrans has built an intersection data layer that leverages the representation of the nodes from the road centerline data layer. VTrans does not include non-linear geometry, true curves, or Bezier curves in the road centerline data, as these features break several linear referencing operations in a resultant data product.

Each road segment has a unique identifier statewide that is composed of the following: (FIPS8 + ARCID = FAID). Other attributes associated with road segments are outlined in the “Attribute Coding Scheme” section of this user guide. Figure 1 illustrates the relationships between road segments.

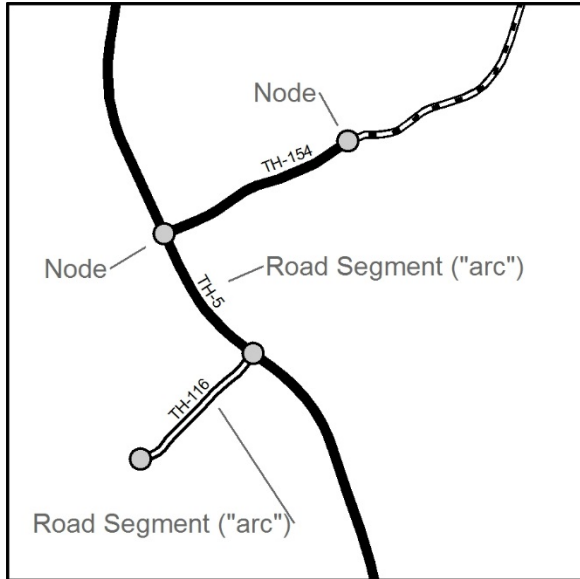


Figure 1

Units and Coordinate System

The data layer is in the Vermont State Plane Coordinate System based on the North American Datum (NAD) of 1983. The coordinates are stored in meters. This is the standard data coordinate system used by VCGI.

Details

NAD_1983_StatePlane_Vermont_FIPS_4400
WKID: 32145 Authority: EPSG

Projection: Transverse_Mercator
False_Easting: 500000.0
False_Northing: 0.0
Central_Meridian: -72.5
Scale_Factor: 0.9999642857142858
Latitude_Of_Origin: 42.5
Linear Unit: Meter (1.0)

Geographic Coordinate System: GCS_North_American_1983
Angular Unit: Degree (0.0174532925199433)
Prime Meridian: Greenwich (0.0)
Datum: D_North_American_1983
Spheroid: GRS_1980
Semimajor Axis: 6378137.0
Semiminor Axis: 6356752.314140356
Inverse Flattening: 298.257222101

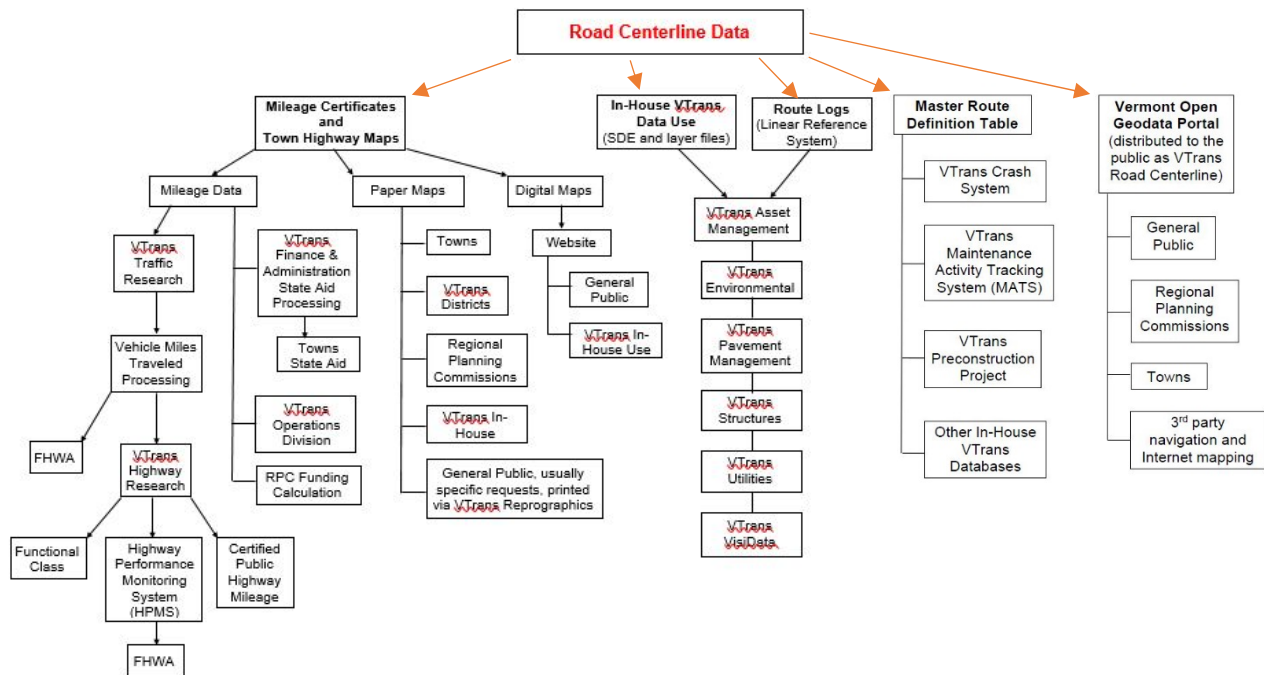
According to Vermont statute, the Vermont Coordinate System 1983 will be the sole system for projects commenced after January 1, 2000.

VTRANS ROAD CENTERLINE SPATIAL DATA USER GUIDE

Vermont Statutes Annotated, Title 1 General Provisions, Chapter 17 Vermont Coordinate System
(<http://legislature.vermont.gov/statutes/chapter/01/017>).

Most Often Used Fields

The road centerline data layer is used in a variety of ways and is the foundation for many derivative products, as diagrammed in the illustration below. Because the road centerline dataset is designed for such a variety of purposes, some fields are “more used” than others depending on the application. Probably the two fields that are “the” most used are AOTCLASS and AOTMILES.



Here are some of the other fields and the context in which they are most often used.

Behind the scenes use - data maintenance

FAID (a concatenation of FIPS8 and ARCID)
UPDACT
LOCMETH
SRCORG
ARCMILES

For production of the town highway maps

AOTCLASS
RTNAME
RTNUMBER_N
SURFACETYPE

CTCODE

UA

CTUA (a combination of CTCODE and UA)

AOTMILES

CERTYEAR

NUTS

PENT

Other map production

TOWNGEOID

RDFLNAME

RPCCLASS

Federal Reporting

NHS

FUNCL

TWN_LR

ETE_LR

Urban_Code

FED_AID

Facility_Type

Ownership

More detail about all the fields can be found in the appendices.

Associating External Information to the Data Layer

More detailed information about the specific fields referenced in this section can be found in the data dictionary section of the user guide.

Unique Feature Identifier:

Each road segment (arc) has a unique identifier, FAID (a concatenation of FIPS8 + ARCID).

These ID's are primarily designed for feature tracking linkage to internal VTrans data to support the Town Highway Map production, and quality control. However, users can potentially associate attribute information to specific arcs via this feature.

Pros:

User only needs FAID (or FIPS8 + ARCID) in their database

Does not require address matching or linear referencing software

Cons:

The user must re-fresh their database as features are modified and retired

Does not allow user to locate point events

User can only associate information along the entire length of the road segment with the assigned ARCID.

VTRANS ROAD CENTERLINE SPATIAL DATA USER GUIDE

Unique Road Name:

Many road segments (arcs) have a road name identifier codes. There are two fields in the data that hold this data, RDNAME and GEONAMEID. RDNAME is maintained by VTrans and generally is equal to E911's GEONAMEID field. VTrans generally defers to E911 in the identification of road names.

Two other fields are associated with road names, RDFLNAME (road full name) and PRIMARYNAME. Here is how the four name fields relate to each other:

number identifier: VTrans RDNAME = E911 GEONAMEID

text identifier: VTrans RDFLNAME = E911 PRIMARYNAME

MAINTENANCE REQUIREMENTS

This section defines data maintenance requirements.

In brief, updates include the following:

- All attributes must be assigned valid values as described in the attribute coding scheme section of this user guide.
- Attribute updates do not need to be recorded, but the change may be noticed by the editor tracking system
- When data topology is modified (by adding, deleting, splitting or joining arcs), the action will be recorded in a 1-character “update action” field (UPDACT).

General Assumptions

Maintenance is based on the following general assumptions:

Data Management

VTrans is the current data manager for the road centerline data and has responsibility for assuring the data are updated in a consistent manner. Most references to VTrans in the user guide are for convenience and should read ‘data management coordinator’ (which could change in the future).

Unique Version of the Current Data

At any given time there will be only one copy of the current data upon which updates are performed. VTrans is in charge of the master data set.

Topology Standard

All updates must preserve proper topology: no overlapping arcs, no unnecessary pseudo nodes, no un-snapped nodes, and no improper dangles. Unlike some topology models, this one includes nodes at not-at-grade intersections.

Tracking Updates

The FAID is a unique feature identifier assigned to each arc in the road centerline dataset. The UPDACT field is coded by VTrans in order to identify changes made to the feature (arc/road segment). This allows VTrans to document specific changes made to the data layer, including additions, splits, merged arcs and moved arcs. The FAID is also used for quality control.

Modifications to the arc topology are tracked via the UPDACT field. To enable this process, data developers must record any changes made to the arc topology in the UPDACT field with the following codes:

UPDACT	Action
A	Added arc (i.e., a new arc)
M	Moved arc (by reshaping the arc, moving a node, moving or deleting a vertex, or other action altering the shape of the arc).
S	Split arc (both new arcs are coded ‘S’)
U	Unsplit arcs (originally 2 or more arcs)

Due the sheer volume of arcs that are moved to improve the geometry to the most recent high resolution orthophotography from originally digitized arcs from the 1990's, "M" is reserved for major moves of a road segment where a true highway realignment has occurred. Cartographic alignments are not being tracked using the "M" code in the UPDACT at this time.

Note that for S (split) and U (unsplit), the locations of the vertices are unchanged. The shapes (and combined lengths) of the arcs remain the same, but nodes have been added, removed or moved along the arcs.

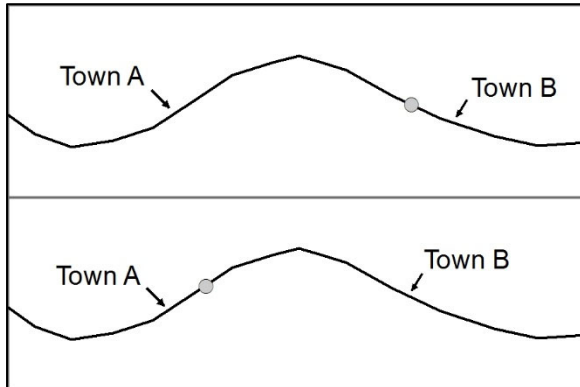


Figure 2

Moving a pseudo node is sometimes required to modify the location where an attribute changes. For example, in Figure 2 a pseudo node needed to be moved to change the location of a town boundary. All of the attributes for the two arcs remain the same; only the location of the pseudo node has changed. This entails splitting and unsplitting the two arcs, and therefore would be coded as 'S' or 'U'.

Sometimes an arc may be modified more than once, in which case either of the appropriate UPDACT codes can be assigned. For example, an arc might be reshaped and then split. In such a case, the arcs could be coded with an 'S' (split). Although it is not critical, it is preferable for the 'S' (split) code to take precedence over the 'M' code. Likewise, 'A' (added arc) takes precedence of other codes, so that if an added arc is later split, the UPDACT code should remain 'A'. Routine cartographic realignments or subtle changes are generally not coded as a 'M' (move).

The coding hierarchy is outlined below:

UPDACT Hierarchy

1. A (Addition)
2. S (Split)
3. U (Unsplit)
4. M (Move)

It is not necessary to record changes to attributes.

Quality Control Procedures

VTrans has developed quality control (QC) procedures for checking road attributes and topology errors.

These procedures include:

- Checks for invalid attribute values.
- Incorrect topology: intersecting arcs errors, unnecessary pseudo nodes, un-snapped nodes, improper dangles, and short arcs.
- Checks for illogical combinations of attribute values (i.e., a gravel interstate highway).
- Mileage checks against the town mileage totals by class from the Mileage Certificates.

Attributes: Some Special Cases

Several road attributes are discussed below regarding the update process.

FIPS8 – TOWNGEOID - CTCODE and UA

The FIPS8, TOWNGEOID, and CTCODE codes identify the town to which each arc belongs, according to VTrans highway maps. The UA code is used to identify villages and urban compacts below the FIPS8 – TOWNGEOID – CTCODE level. Agreement with VTrans highway maps is often based on the shape of the road, or on measured distances on the VTrans maps. Therefore, the FIPS8-TOWNGEOID-CTCODE/UA coding may not agree perfectly with the VCGI BNDHASH or other town boundary layers. VTrans Mapping works in conjunction with E911 and VCGI on improving the accuracy of the town boundary data, but there are several areas that remain ambiguous and have not been well defined, creating mismatch with the road centerline arcs and the town boundaries.

ARCID - FAID

The ARCID is unique within each town, hence the concatenation of FIPS8 and ARCID constitute a statewide-unique number for each arc into the field FAID (**F**IPS8 + **A**RCID + **I**dentifier). The FAID is used for reporting errors, for quality control, for tracking modifications to the data, and linkage to other data layers used in the production of the Town Highway Maps or VTrans Mapping Section work flows.

- Several actions warrant special consideration for the ARCID / FAID:
- New arcs will be assigned new, unique ARCID / FAID codes by the data developer, such that the codes are unique to their towns. ARCID will never be reused.
- If the FIPS8 code of an arc is changed (putting the arc into a new town), then the ARCID must be modified so that it is unique within the arc's new town. *Care must be taken to assure that unique ARCID / FAID codes are maintained when editing near a town boundary.*
- When an arc is split, both arcs will be assigned new ARCID / FAID's. The FAID is retired, as it represents an arc that no longer exists and the 2 new segments gain new FAID values that are the next in sequence.

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- When two (or more) arcs are joined, the resulting arc will be assigned a new ARCID / FAID.

New ARCID codes should be added in sequential order, starting with the next available ARCID (1 more than the current maximum for the given town). ARCID's will never be reused.

AOTCLASS

The AOTCLASS field contains the “official” highway classification as assigned by VTrans. The classification of town highways is defined in Vermont State Statutes in 19 V.S.A. § 302 (<https://legislature.vermont.gov/statutes/section/19/003/00302>, see also Appendix G). VTrans Mapping annually receives Mileage Certificates that include classification and mileage changes, which prompts updates to the road centerline data layer.

LOCMETH

When roads are added, or if they are reshaped based on new information, the LOCMETH field must record the method used to capture the information. The location method provides insight to the accuracy of how the centerline has been derived and rendered in the data.

UPDATENOTES

While not required, characteristics of some edits are recorded in the UPDATENOTES field to provide additional insight into an edit on a road segment.

RDNAME & RDFLNAME

Road names assigned to arcs via the RDNAME/RDFLNAME fields must be based on “official” E911 information. VTrans will attempt to maintain synchronization with E911 roads data (excluding address range). Occasionally, VTrans receives information from the town regarding a road name before it shows up in the E911 data. In these instances, the road name is recoded in the RDFLNAME field and 999999 is recorded in the RDNAME field. The PRIMARYNAME and GEONAMEID are conflated from E911 data, as well as the other alias names.

APPENDIX A

ATTRIBUTE CODING SCHEME

NOTE: The numeric indexing for each attribute corresponds to the order in which that field appears in the dataset's attribute table. Reference tables for the attributes appear in the appendices.

1 – OBJECTID

Maintained by: Esri

Type: Object ID

Required: True

Editable: False

Description: Sequential unique whole numbers that are automatically generated.

2 – SEGMENTID

Maintained by: E911

Type: Long Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 10

Description: A unique numeric value assigned by the software for each feature. This attribute has been conflated from the E911 road centerline data, allowing for VTrans and E911 to link the two road centerline data layers and validate attributes.

3 - ARCID

Maintained by: VTrans

Type: Long Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 10

Description: The ARCID is a unique arc identifier within each municipality (town, city, grant or gore). When combined with the FIPS8 code, this provides a unique arc identifier statewide. A redefined item, FAID contains both FIPS8 and ARCID within the road centerline dataset. The ARCID can be used for error reporting, and is used to aid in quality control of updated data.

- New arcs must be assigned ARCIDs unique to their towns.
- When an arc is split, both arcs will be assigned new ARCIDs.
- When two (or more) arcs are joined, the resulting arc will be assigned a new ARCID.
- If the FIPS8 code of an arc is changed (putting the arc into a new town), then the ARCID must be modified to make it unique with the arc's new town. *Care must be taken to assure that unique ARCID codes are maintained when editing near a town boundary.*

The ARCID is not changed when an arc is only moved or reshaped.

New ARCID codes should be added in sequential order, starting with the next available ARCID (1 more than the current maximum for the given town). ARCIDs will never be reused.

In summary, any data updates must maintain unique ARCIDs within each municipality.

4 – PD

Maintained by: E911

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 10

Description: Prefix road direction, previously named PRE.DIR; incompletely populated in this release.

Field values:

E = East

N = North

NE = Northeast

NW = Northwest

S = South

SE = Southeast

SW = Southwest

W = West

5 – PT

Maintained by: E911

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 10

Description: Prefix type; incompletely populated in this release.

6 – SN

Maintained by: E911

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 80

Description: Street name; incompletely populated in this release.

7 – ST

Maintained by: E911

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 10

Description: Street type; incompletely populated in this release.

8 – SD

Maintained by: E911

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 10

Description: Street direction; incompletely populated in this release.

Field values:

E = East

N = North

S = South

W = West

9 – GEONAMEID

Maintained by: E911

Type: Long Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 10

Description: Geo Name ID number; incompletely populated in this release.

10 – PRIMARYNAME

Maintained by: E911

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 100

Description: Full primary road segment name; incompletely populated in this release.

11 – ALIAS1

Maintained by: E911

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 60

Description: Alternate road name 1; incompletely populated in this release.

12 – ALIAS2

Maintained by: E911

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 60

Description: Alternate road name 2; incompletely populated in this release.

13 – ALIAS3

Maintained by: E911

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 60

Description: Alternate road name 3; incompletely populated in this release.

14 – ALIAS4

Maintained by: E911

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 60

Description: Alternate road name 4; incompletely populated in this release.

15 – ALIAS5

Maintained by: E911

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 60

Description: Alternate road name 5; incompletely populated in this release.

16 - SURFACETYPE

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: SurfaceType
Type: CodedValue
Merge policy: DefaultValue
Split policy: Duplicate

Precision: 5

Description: The surface type of the road; previously named SURFACE.

Note: The surface type for some highways has not been reviewed or updated since the development of the road centerline data layer in the 1990's and is based off the last field inventory to be performed on the highway. Surface types may have changed since this point, either being upgraded through maintenance or downgraded. VTrans seeks input regarding the quality and content of the surface type of the highway network.

Field values:

1 = Paved

A road whose surface is bituminous concrete or other treated surface such as cement concrete, bricks, or cobblestone.

2 = Gravel

A graded and drained road, the surface of which consists of gravel, broken stone, slag, slate and shale or other similar fragmental material coarser than sand. A gravel highway as applied to Town highways is defined as a highway having a gravel base and widths sufficient to provide reasonable transportation facilities at all times of the year, according to the classification of the highway.

3 = Soil or graded and drained earth

A road which has been improved to provide more adequate traffic service by the addition of sand, coarse loam or light course of gravel, but not in sufficient amount to prevent a break-through in the spring, or a road of natural earth, aligned and graded to permit reasonably convenient use by motor vehicles.

5 = Unimproved/primitive

An earth road consisting of the natural ground and which is maintained in a condition of bare passability, or an unimproved road on which there appears to be no public maintenance and which may or may not be traveled or passable.

6 = Impassable or untraveled

A public highway in a primitive condition on which there appears to be no public travel and which is not maintained.

9 = Unknown

17 – ONEWAY

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: 'N'

Domain: Oneway

Length: 1

Description: One-way street; completely populated in this release.

Field values:

N = Not a one-way street.

X = One-way street in opposite direction of arc.

Y = One-way street in direction of arc.

18 – RTNAME

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 12

Description: The RTNAME town highway number/name corresponds to the official number on the VTrans highway maps with an added prefix (ex: "I-89", "VT-12A", "TH-3", "US-4", etc.). State and federal numbers will be unique for that highway for the entire state, while town-numbered highways will only be unique for that town. RTNAME = '-' is used for a blank (no data) value. The RTNAME field must not be empty. Where a route has two route numbers (as shown on road signs), the more local number (and prefix) is used - for example, a route having both a State route number and a town route number is assigned the town route number (as shown on the VTrans highway maps). The RTNAME field is not the same as RDNAME or ETE_LR. The RDNAME field refers to the road's common name (defined by the E911 GEONAMEID field) - for example, Main Street may be considered Town Highway 5 (TH-5) by VTrans. In this situation the RTNAME would be "TH-5" and the RDNAME value would be 12519 (which is "Main Street" in the E911 data set). However, the same road could also be classified as "Vermont Route 12" (VT-12). In this case, the ETE_LR field would be populated with "V012".

Field values:

Alt US- = US Alternate Route

BR I- = Interstate Business Route

BR US- = US Business Route

BSp I- = Interstate Business Spur

BSp US- = US Business Spur

Hist US- = Historic US Route

Hist VT- = Vermont Numbered Route – Historic Route

I- = Interstate

NF- = National Forest Highway

NSH- = Named State Highway

Old U.S.- = Old US Route

Old VT- = Vermont Numbered Route – Old Route

S- = Other State Highway special case

SF- = Department of Forests, Parks, and Recreation Highway

TH- = Town Highway

US- = US Route

VT- = Vermont Numbered Route

- = No Route Name has been assigned

19 – RTNUMBER

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 4

Description: This field is related to the RTNAME field. Everything after the dash "-" in the RTNAME field is transferred to this field. It should always match RTNAME. Previously known as RTNO. A hyphen ("-") is used for unassigned route numbers.

20 – HWYSIGN

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 12

Description: The HWYSIGN corresponds to how the road is signed in the field by VTrans, with an added prefix (ex: "I-89", "VT-12A", "TH-3", "US-4", etc.). State and federal numbers will be unique for that highway for the entire state, while town-numbered highways will only be unique for that town. HWYSIGN = '-' is used for a blank (no data) value. The HWYSIGN field must not be empty. The HWYSIGN field is not the same as RTNAME. HWYSIGN should be consistent with how the road is signed by VTrans in the field. RTNAME should be consistent with how the road is marked on the official VTrans Town Highway Maps. These don't always match.

Field values:

Alt US- = US Alternate Route

BR I- = Interstate Business Route

BR US- = US Business Route

BSp I- = Interstate Business Spur

BSp US- = US Business Spur

Hist US- = Historic US Route

Hist VT- = Vermont Numbered Route – Historic Route

I- = Interstate

NF- = National Forest Highway

NSH- = Named State Highway

Old US- = Old US Route

Old VT- = Vermont Numbered Route – Old Route

S- = Other State Highway special case

SF- = Dept. of Forests, Parks and Recreation Highway

TH- = Town Highway

US- = US Route

VT- = Vermont Numbered Route

- = No Route Name has been assigned

21 – RPCCLASS

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 5

Description: The RPCCLASS item indicates the road class, generally as shown on official VTrans highway maps. However, updates to the roads data have changed some road RPCCLASS codes based on local and/or regional review; therefore, in some cases the RPCCLASS values may not agree with current VTrans highway maps.

NOTE: This field is for the convenience of end-users only. Changes made to this field by end-users are unofficial and may not be maintained in the roads data layer. RPCCLASS may be reset to equal

AOTCLASS whenever AOTCLASS is updated. Two attributes for road class are therefore used: the RPCCLASS code, which can be modified as needed for regional/local mapping, and the AOTCLASS code, which maintains agreement with the VTrans town highway maps. Comparison of the RPCCLASS and AOTCLASS attributes will help to identify roads needing class updates by VTrans. All arcs must be assigned RPCCLASS and AOTCLASS codes. In addition to the road class, the RPCCLASS field is used to indicate the road 'type' (as for codes 11 to 19). Although this road type is not technically the road class, it is convenient to embed the 'type' information in the RPCCLASS code for generating maps with lookup tables. These 'type' codes are needed for state routes and class 1 and 2 town highways, as well as for interstates and US routes. (See also AOTCLASS for specific code descriptions.)

22 – AOTCLASS

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: 9

Domain: AOTClass

Type: CodedValue

Merge policy: DefaultValue

Split policy: Duplicate

Precision: 5

Description: This item will hold the official VTrans road class from the VTrans highway maps (see also the description for RPCCLASS). All arcs must be assigned an AOTCLASS code. AOTCLASS generally uses the same codes as the RPCCLASS field, except for codes 8 and 9 - some RPCs use 8 to identify private roads not generally used by the public and 9 to identify private roads in general use by the public, while VTrans uses 8 to identify private roads not shown on the Town Highway Maps (most private roads) and 9 to identify private roads shown on the Town Highway Maps. These are usually short connectors between public highways or roads such as the Mount Mansfield Toll Road. VTrans follows a statutory process to define and reclassify town highways based on information provided from each town on their annual Mileage Certificate. This certificate is a record of total mileage in each classification of highway. Any changes require proper documentation and following of the statutory process. VTrans will make corrections based on the formal documentation, but cannot alter classification without justification. Act 178 of 2006 formally added class 4 and legal trail mileage to the Mileage Certificates, prompting the need to distinguish between formally approved legal trails. VTrans has added the class of 70 for legal trails that have yet to be approved, and leaving class 7 for those legal trails that have been approved by Selectboards. See Appendix G for more information about the definitions and classifications of town highway classifications 1-4, provisional class 3 town highway, legal trail, pent road, and discontinued highway.

Field values:

- 1 = Town Highway Class 1 – undivided
- 2 = Town Highway Class 2 – undivided
- 3 = Town Highway Class 3 – undivided
- 4 = Town Highway Class 4 – undivided
- 5 = State Forest Highway
- 6 = National Forest Highway
- 7 = Legal trail
- 8 = Private road – no-show
- 9 = Private road
- 10 = Driveway
- 11 = Town Highway Class 1 – northbound
- 12 = Town Highway Class 1 – southbound
- 13 = Town Highway Class 1 – eastbound
- 14 = Town Highway Class 1 – westbound
- 15 = Town Highway Class 1 – on/off-ramp
- 16 = Town Highway Class 1 – emergency U-turn

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- 17 = Town Highway Class 1 – rest area
- 19 = Town Highway Class 1 – other
- 20 = County Highway - undivided
- 21 = Town Highway Class 2 – northbound
- 22 = Town Highway Class 2 – southbound
- 23 = Town Highway Class 2 – eastbound
- 24 = Town Highway Class 2 – westbound
- 25 = Town Highway Class 2 – on/off-ramp
- 26 = Town Highway Class 2 – emergency U-turn
- 27 = Town Highway Class 2 – rest area
- 29 = Town Highway Class 2 – other
- 30 = State Highway – undivided
- 31 = State Highway – northbound
- 32 = State Highway – southbound
- 33 = State Highway – eastbound
- 34 = State Highway – westbound
- 35 = State Highway – on/off-ramp
- 36 = State Highway – emergency U-turn
- 37 = State Highway – rest area
- 39 = State Highway – other
- 40 = US Highway – undivided
- 41 = US Highway – northbound
- 42 = US Highway – southbound
- 43 = US Highway – eastbound
- 44 = US Highway – westbound
- 45 = US Highway – on/off-ramp
- 46 = US Highway – emergency U-turn
- 47 = US Highway – rest area
- 49 = US Highway – other
- 50 = Interstate Highway – undivided (not currently used)
- 51 = Interstate Highway – northbound
- 52 = Interstate Highway – southbound
- 53 = Interstate Highway – eastbound
- 54 = Interstate Highway – westbound
- 55 = Interstate Highway – on/off-ramp
- 56 = Interstate Highway – emergency U-turn
- 57 = Interstate Highway – rest area
- 59 = Interstate Highway – other
- 60 = US Government Highway
- 65 = Ferry
- 70 = Unconfirmed legal trail
- 71 = Unidentified corridor
- 80 = Proposed Highway – unknown class
- 81 = Proposed Town Highway Class 1
- 82 = Proposed Town Highway Class 2
- 83 = Proposed Town Highway Class 3
- 84 = Proposed State Highway
- 85 = Proposed US Highway
- 86 = Proposed Interstate Highway
- 87 = Proposed Interstate Highway – ramp
- 88 = Proposed non-Interstate Highway – ramp
- 89 = Proposed private road
- 91 = New – class unknown
- 92 = Military – no public access
- 93 = Public – class unknown
- 95 = Class under review

96 = Discontinued road
97 = Discontinued – now private
98 = Not a road
99 = Unknown

23 – NUTS

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: 'N'

Domain: N/A

Length: 1

Description: Sections of highway deemed "Not Up To Standard"; in short, sections of highway that do not meet Class 3 standards at the time of inventory and are functionally classified as Class 4, but legally still Class 3. . The standard used for class 3 town highways is defined in Vermont State Statutes in 19 V.S.A. § 302(a)(3)(B), (<https://legislature.vermont.gov/statutes/section/19/003/00302>). See Appendix G for more information.

Contact VTrans for more information.

Field values:

N = The highway is not "Not Up To Standard" (The highway meets Class 3 or better standards).

Y = The highway is "Not Up To Standard" (The highway does NOT meet Class 3 standards).

24 – NHS

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: 0

Domain: N/A

Precision: 5

Description: National Highway System designation, as defined by FHWA.

NOTE: The Intermodal Connector is a new addition. Several of this type of highway exist within Vermont, primarily connections of the NHS to bus stations, airports and railroad stations.

Field values:

0 = Not on NHS

1 = NHS – Interstate

2 = ISTE A High-Priority Corridor

3 = Non-Interstate STRAHNET

4 = STRAHNET Connector

5 = ISTE A High-Priority Corridor/Non-Interstate STRAHNET

6 = ISTE A High-Priority/STRAHNET Connector

7 = NHS – Principal Arterial

8 = NHS – Intermodal Connector

10 = NHS MAP-21 Principal Connector

25 – FUNCL

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 5

Description: Functional Class Code. Functional classification codes are based on a federal classification system in use by VTrans. In earlier releases of TransRoad_RDS, functional classes were distinguished between rural and transportation-defined urban areas (8 in Vermont). This required road arcs to be split at the rural/urban boundaries. The current functional classification codes eliminated separate urban and rural classifications (please note the rural, small urban, and urbanized area designation is kept as a separate item, see the attribute Urban_Code). The Urban Collectors default to Major Collectors. In Vermont, there has previously not been a road functionally classified as both "urban" and "minor collector." In the upcoming functional classification review prompted by the coding changes, VTrans will evaluate roadways based on the 2013 edition of the Federal Highway Administration's "Highway Functional Classification Concepts, Criteria, and Procedures," likely resulting in roadways functionally classified as minor collectors within the identified urban areas.

The boundaries of the Urbanized Area and the Small Urban Areas (Census Urban Clusters with population >5,000 as specified by the Federal Highway Administration) were adjusted for transportation planning purposes in a collaborative process between VTrans and the appropriate regional planning partners. The adjusted urban area encompasses the entire urban area (of population >5,000) defined by the Census Bureau, in a single, contiguous entity, and is designed to include areas outside municipal boundaries that have urban characteristics with residential, commercial, industrial or national defense land uses consistent with or related to the development patterns of the Census-defined boundary. The adjusted urban area is also inclusive of large traffic generators near the urban area, and is designed so that its physical location can be easily discerned in the field based on physical characteristics such as roads, railroads, utility lines and water features. Lastly, the adjusted urban area was then evaluated for feature irregularities to minimize confusion. Information from the VTrans Highway Safety Data Unit has been incorporated into this dataset.

NOTE: There have been several new additions and alterations which have been made to the functionally classed highways that were not reflected in the previous series of Federal Urban Area Maps or the Functional Class Map of the State of Vermont. These maps were updated in 2016 using the updated Functional Class road centerline data.

Field values:

0 = Not part of Functional Classification System

1 = Interstate

2 = Principal Arterial – other freeways and expressways

3 = Principal Arterial – other

4 = Minor Arterial

5 = Major Collector

6 = Minor Collector

7 = Local

26 – TWN_LR

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 15

Description: Town-based linear reference code used to generate the town-based Linear Reference System data layer. The TWN_LR is related to the ETE_LR field but also includes the CTCODE. For example, the TWN_LR value for VT Route 12 in Montpelier is V012-1211 (ETE_LR = V012, CTCODE = 1211).

As of the May 2018 release, Local Road TWN_LR codes are now included for arcs with FUNCL = 7 and AOTMILES <> 0 (Generally CL3 or CL2 Town Highways). In 2012, the Federal Highway Administration (FHWA) announced the requirement for State Departments of Transportation to submit a Linear Reference System (LRS) that included all public roads as part of their Highway Performance Monitoring System (HPMS) submittal. Prior to this, the requirement for an LRS applied only to highways that were Federal Aid routes. The new requirement is referred to as the All Road Network of Linear Referenced Data (ARNOLD).
(https://www.fhwa.dot.gov/policyinformation/hpms/documents/arnold_reference_manual_2014.pdf)

27 – ETE_LR

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 11

Description: Previously known as LR_ETE. It is used to identify "routed" roads, and is assigned by VTrans. This item contains an "end-to-end" LRS identifier used to identify routed roads. The ETE_LR can be broken down into the following components (or redefined items):

- Route Type

Field values:

A = Alternate Route

B = Business Route

I = Interstate

N = Named State Highway

S = Special Route: a town highway that is a major or minor collector, or is an urban route

U = US Route

V = VT Signed Route

- Route Number

The numeric portion of the highway number (three digits), right-justified in characters 2-4. For Named State Highways, Major Collectors, and Urban Collectors, four-digit codes are used (in characters 2 -5).

- Route # Modifier

Used for a letter or special modifier, if needed. Named State Highways, Major Collectors, and Urban Collectors retain their full four-digit codes in common usage. For these, the Highway Number and Modifier are combined to form a four-digit highway number. For the three separate sections of Alternate US 5, the modifiers (1 to 3) are:

A0051 = Alternate US 5, St. Johnsbury

A0052 = Alternate US 5, Newport

A0053 = Alternate US 5, Derby

Valid Highway # Modifier characters include:

[letter] = highway letter (e.g., the 'A' in Highway 2A)

[digit] = special cases (e.g., Alternate US 5); digit for a Named State Highway, Major, or Urban Collector

[blank] = cases where no modifier is needed and no subsequent components are needed for the ETE_LR

[dash] = cases where no modifier is needed but other ETE_LR components follow

- Direction

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The direction character is included only if the highway is divided. However, it is NOT used for northbound or eastbound mainline routes. The direction character is used only with northbound or eastbound approaches, connectors, jughandles, ramps, and spurs.

Field values:

' ' = [blank] = undivided route with no subsequent ETE_LR components
E = eastbound (for divided routes)
N = northbound (for divided routes)
S = southbound (for divided routes)
W = westbound (for divided routes)

Examples:

I089 = I-89, northbound lane
I089-S = I-89, southbound lane
U002 = US-2, undivided portions
U002-W = US-2, westbound portions (where divided)
V003-NA020 = VT 3, approach 20 (approaches generally use the same direction as the parent road)

- Subtype

This field describes sections of road that are not on the main line, yet have defined lengths recognized by the Agency.

Field values:

' ' = [blank] = no subtype
A = approach
C = connector
F = facilities/rest areas, turnouts, access roads
J = jughandle
R = ramp
S = spur

- Numeric ID

The ID number represents different things according to the subtype. Approaches and jughandles are numbered (initially) in ascending order from the start of the parent route in the primary direction. Numbers will increment by multiples of ten (ex: 10, 20, 30, 40, etc.). Gaps are left between numbers for future construction. For ramps and spurs, the number refers to the exit number for the parent route. A few ramps exit at locations that have no exit number; these have zeros in this field. Where no ID is required in this field, blanks are used.

- Alpha ID

This letter identifies ramps and spurs, as taken from the route logs (except for two ramps at I-91's Exit 2, which were named A/B and C/D on the route logs. These have been renamed 'E' and 'F', respectively.) Where no ID is required in this field, a blank space is used.

Examples:

U004 = US-4 eastbound, divided highway
U004-W = US-4 westbound, divided highway
V100-NA002 = VT-100, Approach #2
B004-WJ001 = Business Route US-4 westbound, Jughandle #1
I089-SR009A = I-89 southbound, Exit 9 ramp

28 – CTCODE

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 4

Description: County-Town code based on values defined by the Vermont Agency of Transportation, VTrans. The CTCODE is comprised of the first two digits representing the County and the last two digits representing the Town in alphabetical order within the County. The counties are numbered sequentially starting with Addison County (01) and ending with Windsor County (14). Each town is then numbered sequentially within each county, producing a unique CTCODE. The county-town code identifies the municipality in which each road falls. The CTCODE is evident on reference markers in the field, which include the CTCODE, route identifier and mile marker.

NOTE: The order of towns like Saint Albans (aka St. Albans) and Saint Johnsbury (aka St. Johnsbury) is based on the unabbreviated names - for example, in Caledonia County the CTCODE order for Saint Johnsbury places it between Ryegate and Sheffield (0310 Ryegate, 0311 Saint Johnsbury, 0312 Sheffield).

NOTE: The CTCODE system was implemented before the Town of Sherburne changed its name to Killington - the name was changed, but the CTCODE was not (its CTCODE remained 1121, between 1120 Rutland Town and 1122 Shrewsbury).

See Appendix D for CTCODE list.

29 – UA

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: 0

Domain: N/A

Precision: 5

Description: VTrans Urban Area Code. The Urban Area code identifies villages and other urbanized areas within the Minor Civil Divisions specified by the FIPS8 codes. The codes include 'urban compacts' having separate VTrans Town Highway Maps. The one-digit code is used in conjunction with the FIPS8 code to uniquely identify each urban area.

NOTE: Several villages have been merged with towns and the villages no longer exist. For mapping purposes, these villages may have become 'urban compacts' or are no longer mapped separately.

See Appendix E for the codes and Appendix F for the list of political divisions.

30 – CTUA

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 6

Description: CTCODE with UA Code, unique to all towns and Urban Areas in Vermont. See also Appendices D, E, and F.

31 – CERTCODE

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 6

Description: Similar to CTUA, but unique only to the Mileage Certificates and towns that are autonomous for Highways. Urban Compacts and Villages not incorporated for highways carry the Town code. See also Appendices D, E, and F.

32 – ARCMILES

Maintained by: VTrans

Type: Double

Required: False

Editable: True

Nullable: True

Default: N/A

Precision: 38

Scale: 8

Length: 8

Description: Calculated mileage based on Arc attribute [Shape.STLength()] * 0.0006213712). The ARCMILES item indicates the mileage on each segment of road. ARCMILES is the primary basis for the RDNAME route system measurements. The ARCMILES item is necessary for rebuilding or remeasuring the RDNAME route system. The ARCMILES field is simply the product of the LENGTH * 0.0006213712. It is not intended to reflect or duplicate actual or official VTrans mileage.

33 – AOTMILES

Maintained by: VTrans

Type: Double

Required: False

Editable: True

Nullable: True

Default: N/A

Precision: 38

Scale: 8

Length: 8

Description: The AOTMILES field indicates the "official" VTrans mileage on each segment of public highway. This includes all sections that are noted with mileage annotation on the Town Highway Map series. The AOTMILES are only for State Routes and Town Highways that are Class 1, 2, 3 or 4, and Legal Trails. If there is a mileage on the Town Highway Map, AOTMILES should be coded. The VTrans Mapping Unit uses AOTMILES to generate the mileage summaries and listings that are shown on the Town Highway Maps, prompting the need for accurate and complete mileage information. AOTMILES are rounded to the nearest 100th of a mile on Town Highways and 1000th of a mile on State Highways.

34 – AOTMILES_CALC

Maintained by: VTrans

Type: Double

Required: False

Editable: True

Nullable: True

Default: N/A

Precision: 38

Scale: 8

Length: 8

Description: Used internally by VTrans to prorate AOTMILES across specific road segments while editing. Not for use outside of the Highway Mapping System.

35 – UPDACT

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 1

Description: Used for flagging the type of update made to an arc.

Field values:

A = Added arc (i.e., a new arc)

M = Moved arc (by reshaping the arc, moving a node, moving or deleting a vertex, or other action altering the shape of the arc)

S = Split arc (both new arcs are coded 'S')

U = Unsplit arc (originally 2 or more arcs)

NOTE: For S (split) and U (unsplit), the locations of the vertices may be unchanged. The shapes (and combined lengths) of the arcs may remain the same, but nodes may have been added, removed or moved along the arcs.

Moving a pseudo node is sometimes required to modify the location where an attribute changes. For example, a pseudo node will need to be changed in response to a change in the location of a town boundary. All the attributes for the two arcs remain the same; only the location of the pseudo node has changed. This would entail splitting and unsplitting the two arcs, and therefore would be coded as 'S' and 'U'.

Sometimes an arc may be modified more than once, in which case either of the appropriate UPDACT codes can be assigned. For example, an arc might be reshaped and then split. In such a case, the arcs could be coded with either an 'M' (moved) or an 'S' (split). Although it is not critical, it is preferable for the 'M' (moved) code to take precedence over the 'S' and 'U' codes (which don't alter the locations of vertices). Likewise, 'A' (added arc) takes precedence over the other codes, so that if an added arc is later split, the UPDACT code should remain 'A'.

1. A
2. M
3. S
4. U

It is not necessary to record changes to attributes.

36 – LOCMETH

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 5

Description: Method used to locate/digitize a road segment (arc). Many Class 4 roads, legal trails, and other roads are difficult to locate with confidence on the orthophotos. For such roads, a road clearly visible on the orthophoto may have been digitized and assigned a value equal to 2 due to the uncertainty of it was the correct road. Code 4 was not in use at the beginning of the original digitizing contract. For northern

parts of the state [approximately north of northing STP meters 216000], roads not appearing on the orthophotos may have been given a value equal to 2. Use of the digital orthophotos is improving the accuracy of the road centerlines and any roads not clearly visible on the paper orthophotos may be moved to match the digital orthophotos. If this process is performed, the LOCMETH will be altered to reflect the new location method. (Please refer to SRCORG for the organization making the location alteration or addition.)

Field values:

- 1 = Visible on and digitized from a 1:5000 orthophoto (or better, as documented in the update record) with good degree of certainty as to location and correct RTNO (now known as RTNUMBER) attribute.
- 2 = Road not clearly visible on the orthophoto, but it appears that it probably was there at the time the photo was taken. Location estimated from the AOT maps, adjoining roads, and land features.
- 3 = Not clearly visible on the orthophoto; location estimated from State Forest maps.
- 4 = No indication of the road on the orthophoto; apparently a new road built since the orthophoto was taken. Location estimated from VTrans maps.
- 5 = Road centerlines drafted onto orthophotos from engineering drawings and the like.
- 6 = Invisible on the orthophoto, but located based on town or other local knowledge of the area.
- 7 = Digitized centerline of the parcel (tax map) road right-of-way.
- 8 = Screen digitized from drafting by town officials onto maps of approximately 1:15000 to 1:20000 scale.
- 9 = Coordinates captured via a GPS device utilizing "dead reckoning" with typical horizontal accuracy within five meters.

37 – SRCORG

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 5

Description: Organization/project which created/updated a road segment (arc). This attribute identifies the organization or project which digitized an arc. When a road arc is digitized, moved, or reshaped, the SRCORG code should be updated. The SRCORG codes will serve as a record of "who did it". VTrans currently updates the SRCORG field with a code of 26 for each altered arc. This includes arcs moved to match the orthophotos, splits due to new roads, or unsplit due to same attribution. LOCMETH and UPDACT can also be viewed to give pedigree or tracking of the latest changes to an arc.

Field values:

- 1 = VCGI, original data (assigned Sept 1993)
- 2 = VCGI, updated location
- 10 = Addison County Regional Planning Commission
- 11 = Bennington County Regional Commission
- 12 = Central Vermont Regional Planning Commission
- 13 = Chittenden County Regional Planning Commission
- 14 = Northwest Regional Planning Commission
- 15 = Lamoille County Planning Commission
- 16 = Northeast Vermont Development Association
- 17 = Rutland Regional Planning Commission
- 18 = Southern Windsor Regional Planning Commission (or its contractor)
- 19 = Two Rivers-Ottawaquechee Regional Planning Commission
- 20 = Upper Valley-Lake Sunapee Regional Planning Commission
- 21 = Windham Regional Commission
- 22 = microData

- 23 = Incorporated from municipal updates
- 24 = E911 GIS database development project (1996)
- 25 = IVS Highway Mapping System Project
- 26 = VTrans Highway Mapping System updates

38 – SCENICHWY

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: 0

Domain: N/A

Precision: 5

Description: Highways officially designated as "Scenic Highways" by VTrans or municipalities. Previously known as SCENIC. The ability to designate a Scenic Highway is defined in Vermont Statute and documented on the Mileage Certificates. The VTrans Mapping Section maintains the official listing of Scenic Highways within the State of Vermont.

NOTE: There have been some sections of Town Highway in Norwich that have been designated as Scenic Highway, but are not coded due to the Selectboard's request not to map or distribute information regarding the highway's locations. Due to this request, the coding for SCENIC is incomplete in the Town of Norwich.

Field values:

- 0 = Not designated as Scenic Highway
- 1 = Designated as Scenic Highway by local municipality
- 2 = Designated as Scenic Highway by VTrans

39 – SCENICBYWAY

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: 0

Domain: N/A

Precision: 5

Description: Designated Scenic Byways.

Field values:

- 0 = Not a scenic byway
- 100 = Connecticut River Scenic Byway
- 200 = Lake Champlain Byway
- 300 = Molly Stark Trail: A Byway Through the Green Mountains
- 400 = Mad River Byway
- 500 = Stone Valley Byway
- 600 = Green Mountain Byway
- 700 = The Crossroad of Vermont
- 800 = Scenic Route 100 Byway
- 900 = The Shires of Vermont Byway
- 1000 = Northeast Kingdom Byway

40 – FORMER_RTNAME

Maintained by: VTrans

Type: String
Required: False
Editable: True
Nullable: True
Default: N/A
Domain: N/A
Length: 12

Description: Former Town Highway Number or Route Number for an arc. This is used primarily on Class 2 transfers, reclassifications of town highways to or from legal trails, or discontinuance of highways.

41 – PROVISIONALYEAR

Maintained by: VTrans
Type: Short Integer
Required: False
Editable: True
Nullable: True
Default: 0
Domain: N/A
Precision: 5

Description: Year a provisional highway is added to the VTrans Town Highway Map, based on information supplied by the town as part of the Certificate of Highway Mileage process. According to Vermont Statute, 19 V.S.A. § 302. Classification of town highways (a)(3)(C), a highway not meeting the minimum standards for a class 3 town highway may be reclassified as a provisional class 3 highway if within five years of the determination, it will meet all class 3 highway standards.

Null values are allowed in this field.

42 – ANCIENROADYEAR

Maintained by: VTrans
Type: Short Integer
Required: False
Editable: True
Nullable: True
Default: 0
Domain: N/A
Precision: 5

Description: Year a road that was considered an ancient road was added or most recently modified based on a change prompted by the Certificate of Highway Mileage process. This relates to Act 178 of 2006 and Act 158 of 2008 which sunset on July 1, 2015.

43 – TRUCKROUTE

Maintained by: VTrans
Type: Short Integer
Required: False
Editable: True
Nullable: True
Default: N/A
Domain: N/A
Precision: 5

Description: Designated Truck Routes. These designations identified which routes allowed up to 72-foot long trucks with no permits required. These designations are now obsolete, but remain in the data for historical purposes. Please consult the Vermont Department of Motor Vehicles for current rules, routes, and permitting for commercial trucking.

Field values:

- 0 = Not a truck route
- 100 = National Network – Limited Access (no overall length limit)
- 200 = Brattleboro VT-9 between I-91 and New Hampshire
- 300 = Truck Network, 72-foot limit (no permit)
- 400 = US-4, Permit Required
- 500 = Urban Avoidance Route, Part of Truck Network, 72-foot limit (no permit)
- 600 = Network – Limited Access (no overall length limit)

44 – SPEEDLIMIT

Maintained by: VTrans

Type: Double

Required: False

Editable: True

Nullable: True

Default: N/A

Precision: 38

Scale: 8

Length: 8

Description: Speed limit. Currently a place holder for future use.

45 – ROADCLOSED

Maintained by: E911

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: Road_Closed

Length: 15

Description: Road Closed status. Currently a placeholder for future use; incompletely populated in this release.

Field values:

- Closed = Road closed
- Closed_AVO = Road closed – passage restricted to authorized vehicles only
- Closed_LTO = Road closed – passage restricted to local traffic only
- Closed_W = Road closed for winter
- Normal_SR = Normal service requested
- Open = Road open
- Open_CD = Road open with construction delays
- Open_R = Road open with restrictions

46 – ISVISIBLE

Maintained by: VTrans

Type: Long Integer

Required: False

Editable: True

Nullable: True

Default: 1

Domain: N/A

Precision: 10

Description: Flag used by the Highway Mapping System for cartographic purposes.

Field values:

0 = Not visible

1 = Visible

47 – CERTYEAR

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: 0

Domain: N/A

Precision: 5

Description: Year an arc was altered due to a change reflected on the Certificate of Highway Mileage.

48 – GlobalID

Maintained by: Esri

Type: Global ID

Required: True

Editable: False

Nullable: False

Description: Globally Unique Identifier or GUID; not defined in this release.

49 – FIPS8

Maintained by: VTrans

Type: Long Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 10

Description: Municipality (town, city, gore, grant) FIPS code. The FIPS8 code identifies the municipality in which each road falls, as shown on the VTrans Town Highway Maps. The FIPS8 code is a modified version of FIPS6 (as listed in the Geographic Area Codes Standard of the VGIS Handbook). FIPS8 includes the FIPS state code (for example: 50 for Vermont) + FIPS6. VTrans makes adjustments to the FIPS8 coding based on the best available information at its disposal. VTrans maintains its own version of the town boundaries, called townindex and townindex_arc. These data layers are sent to VCGI for review and inclusion of any pertinent changes into BNDHASH.

50 – RTNUMBER_N

Maintained by: VTrans

Type: Double

Required: False

Editable: True

Nullable: True

Default: 0

Precision: 38

Scale: 8

Description: Similar to RTNUMBER, but in numeric format. Previously known as RTNO_N. It is used to have public highway listings display in numeric order instead of text order - for example, a listing based on

RTNUMBER would be ordered as 1, 10, 11, 2, 20, 21, while a listing based on RTNUMBER_N would be ordered as 1, 2, 10, 11, 20, 21. The letter suffix in routes is assigned a decimal value.

Examples:

100A = 100.10
100B = 100.20
100C = 100.30
US-ALT5 = 5.9
ALT VT-100 = 100.9

51 – RDNAME

Maintained by: VTrans

Type: Long Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 10

Description: Road name code. Road names are stored as an integer code, referencing look-up table RDS.RDNAMEs. An integer code is used to minimize the space required in the road centerline attribute table. Each named road will have a unique RDNAME value and should reflect the "official" road name from E911, but there may have been some roads that either did not match in automated evaluation, or were missed. Users should generally turn to the E911\RDS data layer when they need "official" road name information and use the Trans_Road_RDS as a secondary name source. The current equivalent of RDNAME in E911RDS is GEONAMEID. Because GEONAMEID is incompletely populated in this release, VTrans continues its use of RDNAME until the VTrans and E911 road centerline data sets are merged. A value of 99999999 indicates that the RDNAME entered by VTrans is more correct than the E911 PRIMARYNAME for the arc at the time the arc was added or modified.

52 – RDFLNAME

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 30

Description: Full road name. VTrans has put an effort forward to correct the TransRoad_RDS data layer to reflect the "official" road names from E911, but there may have been some roads that either did not match in automated evaluation, or were missed. The E911 data should still be used as the "official" source and the Trans_Road_RDS as a secondary name source.

NOTE: There currently isn't a reliable mechanism for maintenance of this item. Users should generally turn to the EmergencyE911_RDS data layer when they need "official" road name information. The current equivalent of RDFLNAME in E911RDS is PRIMARYNAME, but because PRIMARYNAME is incompletely populated in this release, VTrans will continue its use of RDFLNAME until the VTrans and E911 road centerline data sets are merged.

52 – ISVISIBLE_UC

Maintained by: VTrans

Type: Long Integer

Required: False

Editable: True

Nullable: True

Default: 0

Domain: N/A

Precision: 10

Description: Flag used by the VTrans Highway Mapping System for cartographic purposes.

Field values:

0 = Not visible

1 = Visible

54 – FUNCL_OLD

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 5

Description: Old Functional Class Code. These functional classification codes were used in the FUNCL field in data releases prior to 2015 and are based on a federal classification system in use by VTrans. Functional classes distinguish between rural and transportation-defined urban areas (8 in Vermont).

Therefore, proper assignment of this attribute requires that road arcs be split at the rural/urban boundaries.

NOTE: See FUNCL for the current Functional Classification codes.

Field values:

0 = Not part of Functional Classification System

1 = Principal arterial – Interstate

2 = Rural principal arterial

4 = Rural principal arterial – other (not other freeway); not a standard federal code

6 = Rural minor arterial

7 = Rural major collector

8 = Rural minor collector

9 = Rural local

11 = Urban principal arterial – Interstate

12 = Urban principal arterial – other freeway

14 = Urban principal arterial – other

16 = Urban minor arterial

17 = Urban collector

19 = Urban local

55 – Urban_Code

Maintained by: VTrans

Type: Long Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 10

Description: Census urban code.

Field values:

11755 = Five-digit code to uniquely identify the Census 2010 Urbanized Area (population greater than or equal to 50,000) of Burlington, VT, adjusted for transportation planning purposes by VTrans in conjunction with regional planning partners.

99998 = Small Urban area to identify the Census Urban Clusters with a population greater than or equal to 5,000 and less than 50,000, adjusted for transportation planning purposes by VTrans in conjunction with regional planning partners.

99999 = Rural areas; all areas outside the adjusted Urbanized Area and Small Urban Area boundaries, for transportation planning purposes.

56 – FAID

Maintained by: VTrans

Type: Double

Required: False

Editable: True

Nullable: True

Default: N/A

Precision: 38

Scale: 0

Description: Calculated field based on FIPS8 and ARCID. The first eight digits represent the FIPS8 value and the last four digits represent the ARCID value.

57 – FED_AID

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Length: 15

Description: The Federal Aid Number for specific highway sections that are part of the Federal Aid Highway System or functionally classed as minor collectors. This number is used by VTrans in reporting on federal aid routes.

Field values:

010-099 Arterial (rural and urban)

100-499 Rural Major Collector

500-999 Rural Minor Collector

1000-9002 Urban Collectors and Urban Minor Arterials

9420 Montpelier Junction State Highway (Major Collector)

9992 Morristown -- Alt VT-100 (Rural Minor Arterial)

9996 Newport City -- Alt-5 (Rural Minor Arterial)

The “1000-9002 Urban Collectors and Urban Minor Arterials” are organized as follows:

1000-1063 Bennington

1200-1208 North Bennington Village

1402-1408 Old Bennington Village

1608-1625 Shaftsbury

2000-2048 Brattleboro

3000-3064 Rutland City

3113 Hartford - White River Junction

3200-3222 Rutland Town

3400-3409 West Rutland

3602-3604 Mendon
3200 Proctor
3810-3825 Proctor
5000-5072 Burlington City
5100-5113 Winooski City
5202-5228 South Burlington City
5300-5312 Essex Junction Village
5300 Essex Town
5402-5414 Essex Town
5504-5514 Williston
5600-5621 Colchester
5702-5722 Shelburne
5000 Milton
5802-5816 Milton
5900-5940 Middlebury
6000-6032 Barre City
6101-6119 Barre Town
6200-6208 Berlin
6300-6303 East Montpelier
6400-6434 Montpelier City
7000-7034 St. Johnsbury
8000-8034 St. Albans City
8200-8216 St. Albans Town
9000-9002 Newport City

58 – Facility_Type

Maintained by: VTrans

Type: Short

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 5

Description: Facility_Type has been added to allow for better summary of mileage for the Federal Highway Administration's Highway Performance Monitoring System (HPMS). This field represents the operational characteristics of a highway segment, based on the definitions in the HPMS Field Manual. A copy of this manual can be found on-line at the following link:

http://www.fhwa.dot.gov/policyinformation/hpms/fieldmanual/HPMS_2014.pdf; see also

<http://www.fhwa.dot.gov/policyinformation/hpms/fieldmanual/chapter4b.cfm>.

Field values:

- 1 = One-Way Roadway – Roadway that operates with traffic moving in a single direction during non-peak period hours.
- 2 = Two-Way Roadway – Roadway that operates with traffic moving in both directions during non-peak period hours.
- 4 = Ramp – Non-mainline junction or connector facility contained within a grade-separated interchange.
- 5 = Non-Mainline – All non-mainline facilities excluding ramps.
- 6 = Non-Inventory Direction – Individual road/roads of a multi-road facility that is/are not used for determining the primary length for the facility.
- 7 = Planned/Unbuilt – Planned roadway that has yet to be constructed.

59 – Shape

Maintained by: Esri
Type: Geometry
Required: True
Editable: False
Nullable: True
Type: Line
Description: Feature geometry

60 – PENT

Maintained by: VTrans
Type: String
Required: False
Editable: True
Nullable: True
Default: N/A
Domain: N/A
Length: 1
Description: A highway or trail that is enclosed by the owner of the land during any part of the year, by erecting stiles, unlocked gates, and bars in the places designated, through permission from the governing body of the municipality and recorded in the town clerk’s office. Field added January 2018.
Field values:
Null – Not coded
N – Not designated as Pent
Y – Designated as Pent

61 – TOWNGEOID

Maintained by: VTrans
Type: String
Required: False
Editable: True
Nullable: True
Default: N/A
Domain: N/A
Length: 10
Description: Town identifying code as defined and enumerated in the Vermont Center for Geographic Information (VCGI) “VT Geographic Area Codes Standard – State, County, Town, Village, and RPC Codes.” Field added January 2018.

http://vcgi.vermont.gov/sites/vcgi/files/VT_GIS_Geographic_Area_Codes_Standard.pdf

62 – StartNodeID

Maintained by: VTrans
Type: Long Integer
Required: False
Editable: True
Nullable: True
Default: N/A
Domain: N/A
Precision: 10
Description: Integer referencing the point feature from the VTrans “Nodes” feature class that uniquely represents the location of the first vertex of the arc’s geometry. Wherever the ends of two or more arcs

intersect, those arcs will each have a StartNodeID value and/or EndNodeID value in common, depending on the direction of digitization. Loop features have StartNodeID value = EndNodeID value.

63 – EndNodeID

Maintained by: VTrans

Type: Long Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 10

Description: Integer referencing the point feature from the VTrans “Nodes” feature class that uniquely represents the location of the last vertex of the arc’s geometry. Wherever the ends of two or more arcs intersect, those arcs will each have a StartNodeID value and/or EndNodeID value in common, depending on the direction of digitization. Loop features have StartNodeID value = EndNodeID value.

64 – Ownership

Maintained by: VTrans

Type: Short Integer

Required: False

Editable: True

Nullable: True

Default: N/A

Domain: N/A

Precision: 5

Description: Type of Governmental Ownership as defined in FHWA Highway Performance Monitoring System Field Manual field 6 -

<https://www.fhwa.dot.gov/policyinformation/hpms/fieldmanual/page05.cfm#toc249159691> Field added April 2018.

Field values:

- 1 - State Highway Agency
- 2 - County Highway Agency
- 3 - Town or Township Highway Agency
- 4 - City or Municipal Highway Agency
- 11 - State Park, Forest, or Reservation Agency
- 12 - Local Park, Forest, or Reservation Agency
- 21 - Other State Agency
- 25 - Other Local Agency
- 26 - Private (other than Railroad)
- 27 - Railroad
- 31 - State Toll Authority
- 32 - Local Toll Authority
- 40 - Other Public Instrumentality (e.g. Airport, School, University)
- 50 - Indian Tribe Nation
- 60 - Other Federal Agency
- 62 - Bureau of Indian Affairs
- 63 - Bureau of Fish and Wildlife
- 64 - U.S. Forest Service
- 66 - National Park Service
- 67 - Tennessee Valley Authority
- 68 - Bureau of Land Management
- 69 - Bureau of Reclamation
- 70 - Corps of Engineers

72 - Air Force
73 - Navy/Marines
74 - Army
80 - Other
99 - Unknown

65 – created_user

Maintained by: VTrans

Type: String

Required: False

Editable: False

Nullable: True

Default: N/A

Domain: N/A

Length: 255

Description: This field records the ArcSDE geodatabase user name of the user who created the arc.

The field was originally named CREATIONUSER and was one of four fields added for editor tracking on 2016-11-18. On 2018-09-25, The field name was changed to created_user because Esri changed the default names it uses in editor tracking.

66 – created_date

Maintained by: VTrans

Type: Date

Required: False

Editable: False

Nullable: True

Default: N/A

Description: This field records the date and time the arc was created. The time is recorded in Coordinated Universal Time (UTC).

The field was originally named DATECREATED and was one of four fields added for editor tracking on 2016-11-18. On 2018-09-25, the field name was changed to created_date because Esri changed the default names it uses in editor tracking.

67 – last_edited_user

Maintained by: VTrans

Type: String

Required: False

Editable: False

Nullable: True

Default: N/A

Domain: N/A

Length: 255

Description: This field records the ArcSDE geodatabase user name of the user who last modified the record in any way.

The field was originally named LASTUSER and was one of four fields added for editor tracking on 2016-11-18. On 2018-09-25, The field name was changed to last_edited_user because Esri changed the default names it uses in editor tracking.

68 – last_edited_date

Maintained by: VTrans

Type: Date

Required: False

Editable: False

Nullable: True

Default: N/A

Description: This field records the date and time the record was modified in any way. The time is recorded in Coordinated Universal Time (UTC).

The field was originally named DATEMODIFIED and was one of four fields added for editor tracking on 2016-11-18. On 2018-09-25, the field name was changed to last_edited_date because Esri changed the default names it uses in editor tracking.

69 – UPDATENOTES

Maintained by: VTrans

Type: String

Required: False

Editable: True

Nullable: True

Default: ''

Domain: N/A

Length: 75

Description: Notes about an update to the road segment.

70 – Shape.STLength()

Maintained by: Esri

Type: Geometry

Required: True

Editable: False

Nullable: True

Geometry Type: Line

Description: Feature geometry. Automatically calculated length measurement of the arc in meters.

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APPENDIX B

FIELD ORDER – DEFAULT VALUES - DOMAINS

FIELD ORDER – numeric indexing for each attribute corresponds to the order in which that field appears in the dataset’s attribute table.

Quick reference for all attributes

Index	Field name	Maintaining agency	Type	Required	Editable	Nullable	Default	Domain
1	OBJECTID	Esri	Object ID	Y	N	N/A	N/A	N/A
2	SEGMENTID	E911	Long	N	Y	Y	N	N
3	ARCID	VTrans	Long	N	Y	Y	N	N
4	PD	E911	String	N	Y	Y	N	N
5	PT	E911	String	N	Y	Y	N	N
6	SN	E911	String	N	Y	Y	N	N
7	ST	E911	String	N	Y	Y	N	N
8	SD	E911	String	N	Y	Y	N	N
9	GEONAMEID	E911	Long	N	Y	Y	N	N
10	PRIMARYNAME	E911	String	N	Y	Y	N	N
11	ALIAS1	E911	String	N	Y	Y	N	N
12	ALIAS2	E911	String	N	Y	Y	N	N
13	ALIAS3	E911	String	N	Y	Y	N	N
14	ALIAS4	E911	String	N	Y	Y	N	N
15	ALIAS5	E911	String	N	Y	Y	N	N
16	SURFACETYPE	VTrans	Short	N	Y	Y	N	Y
17	ONEWAY	VTrans	String	N	Y	Y	Y	Y
18	RTNAME	VTrans	String	N	Y	Y	N	N
19	RTNUMBER	VTrans	String	N	Y	Y	N	N
20	HWYSIGN	VTrans	String	N	Y	Y	N	N
21	RPCCLASS	VTrans	Short	N	Y	Y	N	N
22	AOTCLASS	VTrans	Short	N	Y	Y	Y	Y
23	NUTS	VTrans	String	N	Y	Y	Y	N
24	NHS	VTrans	Short	N	Y	Y	Y	N
25	FUNCL	VTrans	Short	N	Y	Y	N	N
26	TWN_LR	VTrans	String	N	Y	Y	N	N
27	ETE_LR	VTrans	String	N	Y	Y	N	N
28	CTCODE	VTrans	String	N	Y	Y	N	N
29	UA	VTrans	Short	N	Y	Y	Y	N
30	CTUA	VTrans	String	N	Y	Y	N	N
31	CERTCODE	VTrans	String	N	Y	Y	N	N
32	ARCMILES	VTrans	Double	N	Y	Y	N	N/A
33	AOTMILES	VTrans	Double	N	Y	Y	N	N/A
34	AOTMILES_CALC	VTrans	Double	N	Y	Y	N	N/A
35	UPDACT	VTrans	String	N	Y	Y	N	N
36	LOCMETH	VTrans	Short	N	Y	Y	N	N
37	SRCORG	VTrans	Short	N	Y	Y	N	N
38	SCENICHWY	VTrans	Short	N	Y	Y	Y	N
39	SCENICBYWAY	VTrans	Short	N	Y	Y	Y	N
40	FORMER_RTNAME	VTrans	String	N	Y	Y	N	N
41	PROVISIONALYEAR	VTrans	Short	N	Y	Y	Y	N

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42	ANCIENTROADYEAR	VTrans	Short	N	Y	Y	Y	N
43	TRUCKROUTE	VTrans	Short	N	Y	Y	N	N
44	SPEEDLIMIT	VTrans	Double	N	Y	Y	N	N
45	ROADCLOSED	VTrans	String	N	Y	Y	N	Y
46	ISVISIBLE	VTrans	Long	N	Y	Y	Y	N
47	CERTYEAR	VTrans	Short	N	Y	Y	Y	N
48	GlobalID	Esri	Global ID	Y	N	N	N/A	N/A
49	FIPS8	VTrans	Long	N	Y	Y	N	N
50	RTNUMBER_N	VTrans	Double	N	Y	Y	Y	N
51	RDNAME	VTrans	Long	N	Y	Y	N	N
52	RDFLNAME	VTrans	String	N	Y	Y	N	N
53	ISVISIBLE_UC	VTrans	Long	N	Y	Y	Y	N
54	FUNCL_OLD	VTrans	Short	N	Y	Y	N	N
55	Urban_Code	VTrans	Long	N	Y	Y	N	N
56	FAID	VTrans	Double	N	Y	Y	N	N
57	FED_AID	VTrans	String	N	Y	Y	N	N
58	Facility_Type	VTrans	Short	N	Y	Y	N	N
59	Shape	VTrans	Geometry	Y	N	N	N	N
60	PENT	VTrans	String	N	Y	Y	N	N
61	TOWNGEOID	VTrans	String	N	Y	Y	N	N
62	StartNodeID	VTrans	Long	N	Y	Y	N	N
63	EndNodeID	VTrans	Long	N	Y	Y	N	N
64	Ownership	VTrans	Short	N	Y	Y	N	N
65	created_user	VTrans	String	N	N	Y	N	N
66	created_date	VTrans	Date	N	N	Y	N	N
67	last_edited_user	VTrans	String	N	N	Y	N	N
68	last_edited_date	VTrans	Date	N	N	Y	N	N
69	UPDATENOTES	VTrans	String	N	Y	Y	Y	N
70	Shape.STLength()	Esri	Geometry	Y	N	Y	N/A	N

ATTRIBUTES WITH DEFAULT VALUES

Index	Field name	Default value
17	ONEWAY	N (No)
22	AOTCLASS	9 (Private)
23	NUTS	N (is not NUTS)
24	NHS	0 (not on NHS)
29	UA	0
38	SCENICHWY	0
39	SCENICBYWAY	0
41	PROVISIONALYEAR	0
42	ANCIENTROADYEAR	0
46	ISVISIBLE	1
47	CERTYEAR	0
50	RTNUMBER_N	0
53	ISVISIBLE_UC	0
69	UPDATENOTES	- (hyphen)

ATTRIBUTES WITH UNOFFICIAL DEFAULT VALUES

According to the hardcoded field definitions, the following fields are allowed to have null values, but in actual practice, the VTrans Mapping Section does not allow null values for these fields. The selection of records using SQL is made more complicated and unreliable when null values are present. In most cases below, a hyphen or 0 is used to represent an approximation of <null> or no value.

Index	Field name	Default value
16	SURFACETYPE	9 (Unknown)
18	RTNAME	- (hyphen)
19	RTNUMBER	- (hyphen)
20	HWYSIGN	- (hyphen)
21	RPCCLASS	0 (zero)
22	AOTCLASS	0 (zero)
26	TWN_LR	- (hyphen)
27	ETE_LR	- (hyphen)
50	RTNUMBER_N	0 (zero)
51	RDNAME	0 (zero)
52	RDFLNAME	- (hyphen)
53	ISVISIBLE_UC	N or 0 (zero)
69	UPDATENOTES	- (hyphen)

ATTRIBUTES WITH DOMAINS

Index	Field Name	Domain Name
16	SURFACETYPE	SurfaceType
17	ONEWAY	Oneway
22	AOTCLASS	AOTClass
45	ROADCLOSED	Road_Closed

APPENDIX C

AGENCY ASSIGNMENT OF ATTRIBUTES

ATTRIBUTES MAINTAINED BY E911

Index	Field name	Maintaining agency
2	SEGMENTID	E911
4	PD	E911
5	PT	E911
6	SN	E911
7	ST	E911
8	SD	E911
9	GEONAMEID	E911
10	PRIMARYNAME	E911
11	ALIAS1	E911
12	ALIAS2	E911
13	ALIAS3	E911
14	ALIAS4	E911
15	ALIAS5	E911
48	GlobalID	E911

ATTRIBUTES MAINTAINED BY VTRANS

Index	Field name	Maintaining agency
3	ARCID	VTrans
16	SURFACETYPE	VTrans
17	ONEWAY	VTrans
18	RTNAME	VTrans
19	RTNUMBER	VTrans
20	HWYSIGN	VTrans
21	RPCCLASS	VTrans
22	AOTCLASS	VTrans
23	NUTS	VTrans
24	NHS	VTrans
25	FUNCL	VTrans
26	TWN_LR	VTrans
27	ETE_LR	VTrans
28	CTCODE	VTrans
29	UA	VTrans
30	CTUA	VTrans
31	CERTCODE	VTrans
32	ARCMILES	VTrans
33	AOTMILES	VTrans
34	AOTMILES_CALC	VTrans
35	UPDACT	VTrans
36	LOCMETH	VTrans
37	SRCORG	VTrans
38	SCENICHWY	VTrans
39	SCENICBYWAY	VTrans
40	FORMER_RTNAME	VTrans
41	PROVISIONALYEAR	VTrans
42	ANCIENTROADYEAR	VTrans
43	TRUCKROUTE	VTrans
44	SPEEDLIMIT	VTrans
45	ROADCLOSED	VTrans
46	ISVISIBLE	VTrans
47	CERTYEAR	VTrans
49	FIPS8	VTrans
50	RTNUMBER_N	VTrans
51	RDNAME	VTrans
52	RDFLNAME	VTrans
53	ISVISIBLE_UC	VTrans
54	FUNCL_OLD	VTrans
55	Urban_Code	VTrans
56	FAID	VTrans
57	FED_AID	VTrans
58	Facility_Type	VTrans
59	Shape	VTrans

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60	PENT	VTrans
61	TOWNGEOID	VTrans
62	StartNodeID	VTrans
62	EndNodeID	VTrans
64	Ownership	VTrans
65	created_user	VTrans
66	created_date	VTrans
67	last_edited_user	VTrans
68	last_edited_date	VTrans
69	UPDATENOTES	VTrans
70	Shape.STLeqth()	VTrans

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APPENDIX D

CTCODE LIST (by county)

CTCODE TOWN

ADDISON

0101 Addison
0102 Bridport
0103 Bristol
0104 Cornwall
0105 Ferrisburgh
0106 Goshen
0107 Granville
0108 Hancock
0109 Leicester
0110 Lincoln
0111 Middlebury
0112 Monkton
0113 New Haven
0114 Orwell
0115 Panton
0116 Ripton
0117 Salisbury
0118 Shoreham
0119 Starksboro
0120 Vergennes City
0121 Waltham
0122 Weybridge
0123 Whiting

BENNINGTON

0201 Arlington
0202 Bennington
0203 Dorset
0204 Glastenbury
0205 Landgrove
0206 Manchester
0207 Peru
0208 Pownal
0209 Readsboro
0210 Rupert
0211 Sandgate
0212 Searsburg
0213 Shaftsbury
0214 Stamford
0215 Sunderland
0216 Winhall
0217 Woodford

CALEDONIA

0301 Barnet
0302 Burke
0303 Danville
0304 Groton
0305 Hardwick
0306 Kirby
0307 Lyndon
0308 Newark
0309 Peacham
0310 Ryegate
0311 St. Johnsbury
0312 Sheffield
0313 Stannard
0314 Sutton
0315 Walden
0316 Waterford
0317 Wheelock

CHITTENDEN

0401 Bolton
0402 Buels Gore
0403 Burlington City
0404 Charlotte
0405 Colchester
0406 Essex
0407 Hinesburg
0408 Huntington
0409 Jericho
0410 Milton
0411 Richmond
0412 St. George
0413 Shelburne
0414 South Burlington
City
0415 Underhill
0416 Westford
0417 Williston
0418 Winooski City

ESSEX

0501 Averill
0502 Averys Gore
0503 Bloomfield
0504 Brighton
0505 Brunswick
0506 Canaan
0507 Concord
0508 East Haven
0509 Ferdinand
0510 Granby
0511 Guildhall
0512 Lemington
0513 Lewis
0514 Lunenburg
0515 Maidstone
0516 Norton
0517 Victory
0518 Warners Grant
0519 Warren Gore

FRANKLIN

0601 Bakersfield
0602 Berkshire
0603 Enosburgh
0604 Fairfax
0605 Fairfield
0606 Fletcher
0607 Franklin
0608 Georgia
0609 Highgate
0610 Montgomery
0611 Richford
0612 St. Albans City
0613 St. Albans
0614 Sheldon
0615 Swanton

GRAND ISLE

0701 Alburgh
0702 Grand Isle
0703 Isle La Motte
0704 North Hero
0705 South Hero

LAMIOLE

0801 Belvidere
0802 Cambridge
0803 Eden
0804 Elmore
0805 Hyde Park
0806 Johnson
0807 Morristown
0808 Stowe
0809 Waterville
0810 Wolcott

ORANGE

0901 Bradford
0902 Braintree
0903 Brookfield
0904 Chelsea
0905 Corinth
0906 Fairlee
0907 Newbury
0908 Orange
0909 Randolph
0910 Strafford
0911 Thetford
0912 Topsham
0913 Tunbridge
0914 Vershire
0915 Washington
0916 West Fairlee
0917 Williamstown

NOTE: The order of towns such as Saint Albans (aka St. Albans) and Saint Johnsbury (aka St. Johnsbury) is based on the unabbreviated names - for example, in Caledonia County, the CTCODE order for Saint Johnsbury places it between Ryegate and Sheffield (0310 Ryegate, 0311 Saint Johnsbury, 0312 Sheffield).

VTRANS ROAD CENTERLINE SPATIAL DATA USER GUIDE

ORLEANS

1001 Albany
1002 Barton
1003 Brownington
1004 Charleston
1005 Coventry
1006 Craftsbury
1007 Derby
1008 Glover
1009 Greensboro
1010 Holland
1011 Irasburg
1012 Jay
1013 Lowell
1014 Morgan
1015 Newport City
1016 Newport
1017 Troy
1018 Westfield
1019 Westmore

WASHINGTON

1201 Barre City
1202 Barre
1203 Berlin
1204 Cabot
1205 Calais
1206 Duxbury
1207 East Montpelier
1208 Fayston
1209 Marshfield
1210 Middlesex
1211 Montpelier City
1212 Moretown
1213 Northfield
1214 Plainfield
1215 Roxbury
1216 Waitsfield
1217 Warren
1218 Waterbury
1219 Woodbury
1220 Worcester

WINDSOR

1401 Andover
1402 Baltimore
1403 Barnard
1404 Bethel
1405 Bridgewater
1406 Cavendish
1407 Chester
1408 Hartford
1409 Hartland
1410 Ludlow
1411 Norwich
1412 Plymouth
1413 Pomfret
1414 Reading
1415 Rochester
1416 Royalton
1417 Sharon
1418 Springfield
1419 Stockbridge
1420 Weathersfield
1421 Weston
1422 West Windsor
1423 Windsor
1424 Woodstock

RUTLAND

1101 Benson
1102 Brandon
1103 Castleton
1104 Chittenden
1105 Clarendon
1106 Danby
1107 Fair Haven
1108 Hubbardton
1109 Ira
1110 Mendon
1111 Middletown Springs
1112 Mount Holly
1113 Mount Tabor
1114 Pawlet
1115 Pittsfield
1116 Pittsford
1117 Poultney
1118 Proctor
1119 Rutland City
1120 Rutland
1121 Killington
(formerly Sherburne)
1122 Shrewsbury
1123 Sudbury
1124 Tinmouth
1125 Wallingford
1126 Wells
1127 West Haven
1128 West Rutland

WINDHAM

1301 Athens
1302 Brattleboro
1303 Brookline
1304 Dover
1305 Dummerston
1306 Grafton
1307 Guilford
1308 Halifax
1309 Jamaica
1310 Londonderry
1311 Marlboro
1312 Newfane
1313 Putney
1314 Rockingham
1315 Somerset
1316 Stratton
1317 Townshend
1318 Vernon
1319 Wardsboro
1320 Westminster
1321 Whitingham
1322 Wilmington
1323 Windham

NOTE: The CTCODE system was implemented before the town of Sherburne changed its name to Killington - the name was changed, but the CTCODE was not (its CTCODE remained 1121, between 1120 Rutland Town and 1122 Shrewsbury).

APPENDIX E

UA CODES

The 1-digit code is used in conjunction with the CTCODE code to uniquely identify each urban area.

Listed in order of CTCODE, the UA codes include:

CTCODE	UA	TOWN	CTCODE	UA	TOWN
0103	1	Bristol Urban Compact	1001	1	Albany Village
0111	1	Middlebury Urban Compact	1002	1*	Barton Village
0201	1	Arlington Urban Compact	1002	2*	Orleans Village
0202	1*	North Bennington Village	1007	1	Derby Center Village
0202	2*	Old Bennington Village	1007	2*	Derby Line Village
0202	3	Bennington Urban Compact	1017	1*	North Troy Village
0206	1*	Manchester Village	1102	1	Brandon Urban Compact
0206	2	Manchester Center Depot Urban Compact	1107	1	Fair Haven Urban Compact
0302	1	West Burke Village	1117	1*	Poultney Village
0304	1	Groton Village	1118	1	Proctor Urban Compact
0305	1	Hardwick Urban Compact	1125	1	Wallingford Urban Compact
0307	1*	Lyndonville Village	1128	1	West Rutland Urban Compact
0310	1	South Ryegate Village	1209	1	Marshfield Village
0311	1	St. Johnsbury Urban Compact	1218	1	Waterbury Village
0406	1*	Essex Junction Village	1302	1	Brattleboro Urban Compact
0406	2	Essex Center Urban Compact	1302	2	West Brattleboro Urban Compact
0409	1	Jericho Village	1312	1	Newfane Village
0410	1	Milton Urban Compact	1314	1	Bellows Falls Village
0504	1	Island Pond Urban Compact	1314	2	Saxtons River Village
0603	1*	Enosburg Falls Village	1317	1	Townshend Village
0611	1	Richford Urban Compact	1320	2	Westminster Village
0615	1*	Swanton Village	1321	1	Jacksonville Village
0701	1	Alburgh Village	1407	1	Chester-Chester Depot Urban Compact
0802	1	Cambridge Village	1408	1	White River Jct. Urban Compact
0802	2	Jeffersonville Village	1408	2	Wilder Urban Compact
0805	1	Hyde Park Village	1410	1*	Ludlow Village
0806	1	Johnson Village	1418	1	Springfield Urban Compact
0807	1	Morrisville Village	1418	2	North Springfield Urban Compact
0907	1	Newbury Village	1420	1	Perkinsville Village
0907	2*	Wells River Village	1423	1	Windsor Urban Compact
0909	1	Randolph Urban Compact	1424	1*	Woodstock Village

* These villages keep the listed UA code as part of their CERTCODE. The UA code for the other entities become 0 for their CERTCODE.

Example

ENTITY	CTCODE	UA	CTUA	CERTCODE
Bennington (town)	0202	0	0202-0	0202-0
Bennington Urban Compact	0202	3	0202-3	0202-0
North Bennington Village	0202	1	0202-1	0202-1
Old Bennington	0202	2	0202-2	0202-3

APPENDIX F

VERMONT POLITICAL DIVISIONS

<u>CATEGORIES</u>	<u>COUNT</u>
Cities	9
Towns	242
Organized	237
Unorganized	5
Incorporated Villages	40
For Highways	15
Not for Highways	22
Gores	4
<u>DELIMITED AREAS</u>	
Urban Compacts	24
Federal-Aid Urban Areas	9

<u>CITIES</u>
Barre
Burlington
Montpelier
Newport
Rutland
South Burlington
St. Albans
Vergennes
Winooski

<u>FEDERAL AID URBAN AREA</u> (population 5,000 or more)
Barre-Montpelier
Bennington
Brattleboro
Burlington
Middlebury
Rutland
St. Albans
St. Johnsbury
White River Junction

<u>URBAN COMPACTS</u> (mileage is included in main town highway map)
Arlington-East Arlington
Bennington
Brandon
Brattleboro-West Brattleboro
Bristol
Chester-Chester Depot
Essex Center
Fair Haven
Hardwick
Island Pond
Manchester Center Depot
Middlebury
Milton
North Springfield
Proctor
Randolph
Richford
Springfield
St. Johnsbury
Wallingford
West Rutland
White River Junction
Wilder
Windsor

<u>VILLAGES INCORPORATED FOR HIGHWAYS</u> (mileage separate from town)
Barton
Derby Line
Enosburg Falls
Essex Junction
Ludlow
Lyndonville
Manchester
North Bennington
North Troy
Old Bennington
Orleans
Poultney
Swanton
Wells River
Woodstock

<u>VILLAGES NOT INCORPORATED FOR HIGHWAYS</u> (mileage included with town)
Albany
Alburgh
Bellow Falls
Cambridge
Derby Center
Groton
Hyde Park
Jacksonville
Jeffersonville
Jericho
Johnson
Marshfield
Morrisville
Newbury
Newfane
Perkinsville
Saxtons River
South Ryegate
Townshend
Waterbury
West Burke
Westminster

<u>UNORGANIZED TOWNS</u>
Averill
Ferdinand
Glastenbury
Lewis
Somerset

<u>GORES</u>
Averys Gore
Buels Gore
Warners Grant
Warren Gore

APPENDIX G

TOWN HIGHWAY DEFINITIONS AND CLASSIFICATION

Excerpts from The Vermont Statutes Online

Title 19 : Highways

Chapter 003 : Town Highways

(Cite as: 19 V.S.A. § 301 and 19 V.S.A. § 302)

Online links:

<https://legislature.vermont.gov/statutes/section/19/003/00301>

<https://legislature.vermont.gov/statutes/section/19/003/00302>

§ 301. Definitions

As used in this chapter:

(1) "Discontinued highway" means a previously designated class 1, 2, 3, or 4 town highway as to which, through the process of discontinuance, all rights have been reconveyed to the adjoining landowners.

(2) "Legislative body" includes board of selectmen, aldermen, and village trustees.

(3) "Selectmen" includes village trustees and aldermen.

(4) "Pent road" is any town highway which, by written allowance of the selectmen, is enclosed and occupied by the adjoining landowner with unlocked stiles, gates, and bars in such places as the selectmen designate.

(5) "Throughway" means a highway specially designated giving traffic traveling on the throughway the right-of-way at all intersections.

(6) "Town" includes incorporated villages and cities.

(7) "Town highways" are class 1, 2, 3, and 4 highways:

(A) that the towns have authority to exclusively or cooperatively maintain; or

(B) that are maintained by the towns except for scheduled surface maintenance performed by the Agency pursuant to section 306a of this title.

(8) "Trail" means a public right-of-way which is not a highway and which:

(A) previously was a designated town highway having the same width as the designated town highway, or a lesser width if so designated; or

(B) a new public right-of-way laid out as a trail by the selectmen for the purpose of providing access to abutting properties or for recreational use. Nothing in this section shall be deemed to independently authorize the condemnation of land for recreational purposes or to affect the

authority of selectmen to reasonably regulate the uses of recreational trails. (Added 1985, No. 269 (Adj. Sess.), § 1; amended 1991, No. 47, § 1; 2009, No. 50, § 89.)

§ 302. Classification of town highways

(a) For the purposes of this section and receiving state aid, all town highways shall be categorized into one or another of the following classes:

(1) Class 1 town highways are those town highways which form the extension of a state highway route and which carry a state highway route number. The Agency shall determine which highways are to be class 1 highways.

(2) Class 2 town highways are those town highways selected as the most important highways in each town. As far as practicable they shall be selected with the purposes of securing trunk lines of improved highways from town to town and to places which by their nature have more than normal amount of traffic. The selectmen, with the approval of the agency, shall determine which highways are to be class 2 highways.

(3) Class 3 town highways:

(A) Class 3 town highways are all traveled town highways other than class 1 or 2 highways. The selectmen, after conference with a representative of the agency shall determine which highways are class 3 town highways.

(B) The minimum standards for class 3 highways are a highway negotiable under normal conditions all seasons of the year by a standard manufactured pleasure car. This would include but not be limited to sufficient surface and base, adequate drainage, and sufficient width capable to provide winter maintenance, except that based on safety considerations for the traveling public and municipal employees, the selectboard shall, by rule adopted under 24 V.S.A. chapter 59, and after following the process for providing notice and hearing in section 709 of this title, have authority to determine whether a class 3 highway, or section of highway, should be plowed and made negotiable during the winter. However, a property owner aggrieved by a decision of the selectboard may appeal to the transportation board pursuant to subdivision 5(d)(9) of this title.

(C) A highway not meeting these standards may be reclassified as a provisional class 3 highway if within five years of the determination, it will meet all class 3 highway standards.

(4) Class 4 town highways are all town highways that are not class 1, 2, or 3 town highways or unidentified corridors. The selectboard shall determine which highways are class 4 town highways.

(5) Trails shall not be considered highways and the town shall not be responsible for any maintenance including culverts and bridges. *[Identified as AOTCLASS 7 Legal Trail in the VTrans Road Centerline dataset.]*

(6) Unidentified corridors.

(7) Reclassification of unidentified corridors.

[No unidentified corridors were recorded with VTrans during the period July 1, 2010 - July 1, 2015 when they could have existed as defined in statute.]

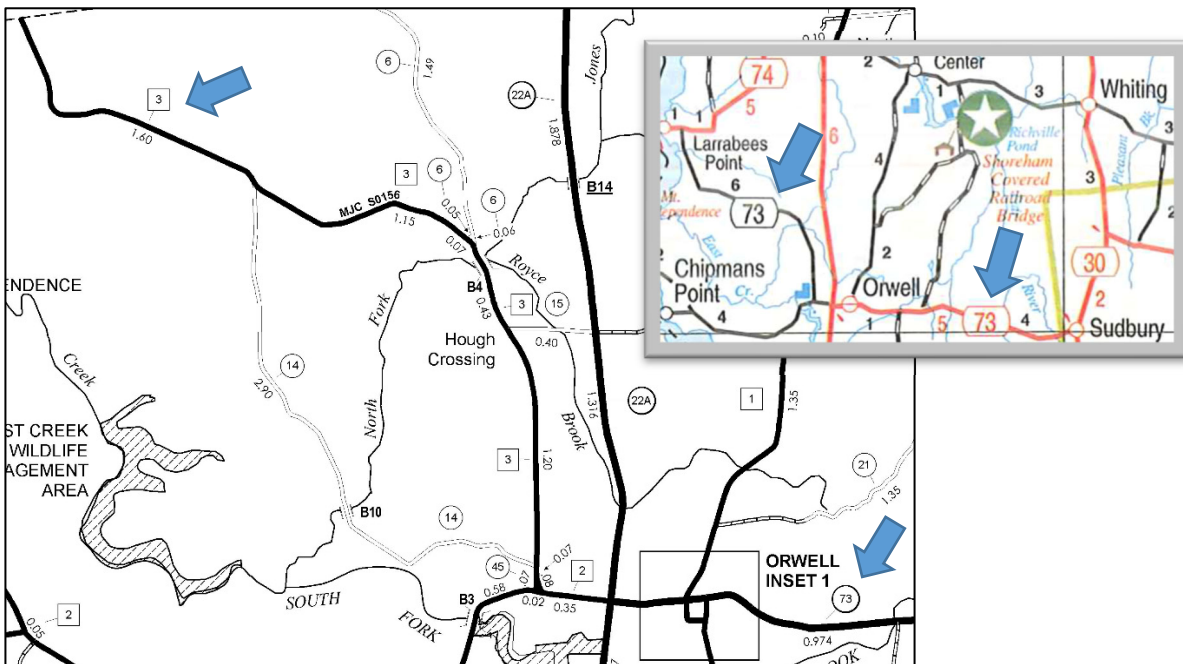
APPENDIX H

RTNAME vs HWYSIGN

The highway signs for state maintained routes are green and white (RTNAME = HWYSIGN).



The highway signs for town maintained state routes are black and white (RTNAME \neq HWYSIGN).



HWYSIGN vs. RTNAME example – VT073 in Orwell
The portion east of VT-22A is a true state route and has green/white signing in the field.
The portion west of VT-22A is a Class 2 town highway and has black-white signing in the field.

[end of document]