Minnesota Geospatial Advisory Council

Road Centerline Data Standard

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Table of Contents

About the GAC

The mission of the Minnesota Geospatial Advisory Council (GAC) is to act as a coordinating body for the Minnesota geospatial community. The GAC is authorized by legislation passed in 2009 and reauthorized in 2014 Minnesota Statutes (16E.30, subd. 8). It represents a cross-section of organizations that include city, county, regional, state, federal and tribal governments as well as education, business, and nonprofit sectors.

As part of this mission, the GAC works with the Minnesota geospatial community to define and adopt standards needed by the community. GAC standards are developed and proposed by geospatial community subject matter experts. The GAC's Standards Committee administers a process to ensure community-wide public review and input for any proposed standards.

The GAC does not mandate or enforce standards. It offers the standards as a resource to the community. Organizations may choose to adopt the standards and require their use internally.

Introduction

Roads are critical not only for us to get from point A to point B but also for distributing the goods and services we need, including those provided by the government. Therefore, those digital representations of roads known as road centerlines are a core geospatial infrastructure dataset for Minnesota. They are useful for many types of analysis, mapping and application development in areas as diverse as emergency response, transportation planning and geolocation.

Purpose of this Standard

The purpose of this standard is to provide a single, commonly accepted set of attribute specifications (field name, type, length, and order) for transferring and aggregating road centerline data in Minnesota for a wide variety of purposes. It is intended to be used when data are being transferred between organizations. Its use will improve the ability to share data resources by reducing incompatibilities when acquiring, processing, and disseminating road centerline data.

Applicability

Data producers may have unique methods, definitions, and criteria for capture and storage of road centerline data that satisfy their own business requirements. This standard seeks to establish attribute specifications for data exchange purposes. It does not attempt to define internal data capture or storage specifications for data producers, though some may find benefit in storing data in this format. Specific organizations within the state may choose to adopt this standard and require compliance with it.

Sources of this Standard

The data specifications for this standard are derived from two main areas of effort, the Metro Regional Centerline Cooperative (MRCC) as well as the Next Generation 9-1-1 (NG9-1-1) Road Centerline Standard. The former (MRCC) is a joint project created by the seven metro counties (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington), Metropolitan Emergency Services Board (MESB) and the MetroGIS/Metropolitan Council. The latter was produced by the NG9-1-1 Geospatial Standards Workgroup and was drawn from the National Emergency Number Association (NENA) geospatial data standards, Federal Geographic Data Committee (FGDC) United States Thoroughfare, Landmark, and Postal Address Data Standard and other sources. The two efforts ran in parallel for several years until it was decided in late 2017 to merge them into one path. Version 0.5 of the Minnesota Road Centerline Standard (MRCS) described in this document is a combination of MRCC v. 1.7 and version 0.2 of the NG9-1-1 Road Centerline Standard.

Compliance Notes

Organizations in Minnesota are encouraged to adopt and comply with this standard for purposes of data exchange. Some data producing organizations choosing to comply with the standard collect all data included in the standard. Other such organizations collect only some of the data and may choose to work toward full compliance over time. A road centerline dataset that fully complies with this standard will consist of geospatial line features with all attribute fields specified in this standard. It will also comply with the inclusion, mixed case, abbreviation and domain specifications of this standard.

Inclusion

Inclusion is a term used to explain the requirement for a field to be populated in a dataset to comply with the standard. Three types of inclusion are possible: Mandatory, Conditional, and Optional.

Mandatory

Field must be populated for each record to be fully compliant with the standard. Null values are not allowed.

Example: Street Name is a Mandatory field in this standard. If Street Name values are missing, the dataset does not comply with the Road Centerline Standard.

Conditional

Field must be populated with a non-null value for each record that is applicable to the feature or for which a specified condition exists.

Example: Pre Directional is a conditional field in this standard. A roadway "West Seventh Street" has a Pre Directional of "West". The Pre Directional field applies to this feature. All road centerline segments for this street are required to have the Pre Directional field populated, but not the Post Directional field.

Optional

Field is not required to be populated.

Mixed Case

Per the Federal Geographic Data Committee (FGDC) address data standards and the [Minnesota Address Point Data Standard](), all data elements in Sections 3 and 4 of this standard will use a mixed case format. Some end users may desire an ALL CAPS format for a specific purpose. Data may be converted to ALL CAPS by end users if desired. It is more difficult to automatically convert ALL CAPS back to mixed case. Note: The National Emergency Numbering Association (NENA) standard also uses mixed case for many of its data registries (e.g. street name pre and post types).

Abbreviations

Per the Federal Geographic Data Committee (FGDC) address data standards and the [Minnesota Address Point Data Standard](), all data elements in Sections 3 and 4 of this standard must be spelled out unless specifically defined otherwise in the field description. This is done to remove ambiguity. The FGDC standard provides the example of "N W Jones Tr." Is it "Northwest Jones Tr" "Noble Wimberly Jones Tr" or "North William Jones Tr"? Does Tr stand for Terrace, Trail, or Trace? This is also done because standardized lists of abbreviations are bound to be incomplete. A few examples of street types missing from [the USPS list]() include: Alcove, Close, Connector, Downs, Exchange, and Promenade. Note: The NENA standard does not use abbreviations for many of its data registries (e.g. street name pre and post types).

Domains

Several domain tables accompany this standard in a [spreadsheet available at this link](#). To comply with this standard, a road centerline dataset must use the codes from specified domains but does not need to include the domain tables with the data. If a local value exists that is not included in a domain (e.g. a street type), it may be submitted to the Minnesota Geospatial Advisory Council, [Standards Committee](#) to be included in the domain. Domains will be updated on a periodic basis, as needed. The date of the most recent change to each domain table will be included in the main table of the schema spreadsheet.

Right and Left Sides of Road Centerlines

As linear features, road centerlines have both right and left sides. While this may be obvious, what is not so obvious is which side is considered *right* and which is considered *left.* For Road Centerlines these are determined by the direction of digitization of the centerline arc. That is, as one faces in the direction that the road centerline was digitized.

Data Element Details

Appendix A: MN GAC Road Centerline Data Standard Schema

Appendix A is a spreadsheet available at this link showing the schema for this standard. It includes all the data elements in the standard, with field name, type, width and other important information about each data element.

1. Identification Elements

1.1 Road Segment Unique Identifier

Database Name	ROADSEG_ID		
Data Type	Text	Inclusion	Mandatory
Width	36	Domain	
Examples	9FEC7F25-3943-403F-AFE7-17205DA59CE5, BE529DB3-D879-476F-B3CA-FF4E9B32A36B		
Description	A Globally Unique Identifier (GUID) for the road segment. A GUID is a 36-character unique identifier generated using a standardized process to ensure a minimum probability of duplication.		

1.2 Route ID

Database Name	ROUTE_ID		
Data Type	Text	Inclusion	Optional
Width	18	Domain	
Examples	1000023953450694WI, 1000023953727125-D		
Description	A unique identifier for the road centerline based on MnDOT's route naming system. The identifier has the format of SSGGGGGGGGGGGGGNNNNAD where: SS: route jurisdiction (This uses the RouteSystem domain e.g. '01' = Interstate, '02' = U.S. Highway, '07' = County Road); GGGGGGGGGG: GNIS ID for route jurisdiction - left padded with zeros (e.g. 0002395345); NNNN: designated route number (e.g. 0694); A: character for directional routes (e.g. W for I35W, - for none); D: route direction of travel vs. mileage (This uses the RouteDirection domain e.g. D = decreasing, I = increasing).		

2. Linear Reference Elements

2.1 Route System

Database Name	ROUTE_SYS		
Data Type	Text	Inclusion	Mandatory
Width	2	Domain	RouteSystem
Examples	10 (Municipal Street), 23 (Airport Road)		
Description	Primary Route System designator based on MnDOT's routing system. This indicates what jurisdiction owns the road.		

2.2 Route Direction

Database Name	ROUTE_DIR		
Data Type	Text	Inclusion	Optional
Width	1	Domain	RouteDirection
Examples	I (increasing), D (decreasing)		
Description	MnDOT indicator of whether route mileage increases or decreases with direction. Most routes mileage typically increases W to E or S to N.		

2.3 Local to State

Database Name	LOC_STATE		
Data Type	Text	Inclusion	Optional
Width	10	Domain	LocalToState
Examples	Same, Reverse		
Description	The relative direction of the road centerline as depicted in local data compared to its depiction in MnDOT data. If MnDOT shows road going same direction as local depiction then "Same"; otherwise, "Reverse".		

2.4 Primary Status

Database Name	PRIME_STAT		
Data Type	Text	Inclusion	Conditional
Width	10	Domain	PrimaryStatus
Examples	Primary, Secondary		
Description	MnDOT's primary/secondary classification for the road centerline. When multiple routes are coincident upon a centerline only one route may be primary. Any number can be secondary. There must be a primary route for every centerline. Secondary routes only exist where routes run coincident. The primary route will carry the attributes of the pavement. Secondary route(s) only carry route specific information, not pavement info. The element must be populated where multiple coincident or stacked segments are used.		

3. Geocoding Elements

3.1 Street Name Pre Modifier

Database Name	ST_PRE_MOD		
Data Type	Text	Inclusion	Conditional
Width	15	Domain	
Examples	Old North First Street, Alternate North Avenue B		
Description	A word or phrase that precedes and modifies the Street Name, but is separated from it by a Street Name Pre Type or a Street Name Pre Directional or both		

3.2 Street Name Pre Directional

Database Name	ST_PRE_DIR		
Data Type	Text	Inclusion	Conditional
Width	9	Domain	StreetDirectional
Examples	North Main Street		
Description	A word preceding the Street Name that indicates the direction or position of the thoroughfare relative to an arbitrary starting point or line, or the sector where it is located. Note: Do not use words that are part of the street name as a directional. For example, in North Shore Drive, "North" would be part of the street name if it is a drive named for the North Shore as opposed to the northern section of Shore Drive.		

3.3 Street Name Pre Type

Database Name	ST_PRE_TYP		
Data Type	Text	Inclusion	Conditional
Width	35	Domain	StreetPreType
Examples	County Road 14, Interstate 94, Avenue of the Stars		
Description	A word or phrase that precedes the Street Name element and identifies a type of thoroughfare in a complete street name.		

3.4 Street Name Pre Separator

Database Name	ST_PRE_SEP		
Data Type	Text	Inclusion	Conditional
Width	20	Domain	StreetPreSeparator
Examples	Avenue of the Stars		
Description	If a Complete Street Name includes a prepositional phrase between a Street Name Pre Type and a Street Name, the prepositional phrase is treated as a separator.		

3.5 Street Name

Database Name	ST_NAME		
Data Type	Text	Inclusion	Mandatory
Width	60	Domain	
Examples	Central Street Southwest, County Road 7		
Description	The portion of the complete street name that identifies the particular thoroughfare. For numbered streets (e.g. Third Street, 3rd Street), use the format and spelling as defined by each official local address authority. For street name formats like 2nd, 3rd and 4th, use lower case letters.		

3.6 Street Name Post Type

Database Name	ST_POS_TYP		
Data Type	Text	Inclusion	Conditional
Width	15	Domain	StreetPostType
Examples	1234 Central **Street** Southwest		
Description	A word or phrase that follows the Street Name and identifies a type of thoroughfare.		

3.7 Street Name Post Directional

Database Name	ST_POS_DIR		
Data Type	Text	Inclusion	Conditional
Width	9	Domain	StreetDirectional
Examples	1234 Cherry Street **North**		
Description	A word following the Street Name that indicates the direction or position of the thoroughfare relative to an arbitrary starting point or line, or the sector where it is located.		

3.8 Street Name Post Modifier

Database Name	ST_POS_MOD		
Data Type	Text	Inclusion	Conditional
Width	15	Domain	
Examples	1230 Central Avenue **Extension**		
Description	A word or phrase that follows and modifies the Street Name, but is separated from it by a Street Name Post Type or a Street Name Post Directional or both.		

3.9 Street Name Full

Database Name	ST_CONCAT		
Data Type	Text	Inclusion	Optional
Width	150	Domain	
Examples	**Northeast 1234 Smith Avenue**		
Description	Official complete name of the road centerline as assigned by the local address authority. It is equivalent to the concatenation of all other street name fields (3.1 to 3.8) with appropriate spacing. This field may be populated or overwritten by data aggregators.		

3.10 Alternate Street Name 1

Database Name	ST_NAME_A1		
Data Type	Text	Inclusion	Conditional
Width	150	Domain	
Examples	**United States Highway 13** is primary alternate name for **200th Street West**		
Description	The primary alternate or alias name for the road centerline.		

3.11 Alt 1 Legitimate MSAG Value

Database Name	A1_MSAG_V		
Data Type	Text	Inclusion	Conditional
Width	7	Domain	AltValidMSAG
Examples	**Left, Both, Right, Neither**		
Description	The side(s) of the road centerline on which the Alternate Street Name 1 is a valid entry in the relevant Master Street Address Guide (MSAG).		

3.12 Alternate Street Name 2

Database Name	ST_NAME_A2		
Data Type	Text	Inclusion	Conditional
Width	150	Domain	
Examples	United States Highway 13 is a secondary alternate name for County Road 66		
Description	The secondary alternate or alias name for the road centerline.		

3.13 Alt 2 Legitimate MSAG Value

Database Name	A2_MSAG_V		
Data Type	Text	Inclusion	Conditional
Width	7	Domain	AltValidMSAG
Examples	Left, Both, Right, Neither		
Description	The side(s) of the road centerline on which the Alternate Street Name 2 is a valid entry in the relevant Master Street Address Guide (MSAG).		

3.14 Alternate Street Name 3

Database Name	ST_NAME_A3		
Data Type	Text	Inclusion	Conditional
Width	150	Domain	
Examples	United States Highway 13 is a tertiary alternate name for Vermillion River Trail		
Description	The tertiary alternate or alias name for the road centerline.		

3.15 Alt 3 Legitimate MSAG Value

Database Name	A3_MSAG_V		
Data Type	Text	Inclusion	Conditional
Width	7	Domain	AltValidMSAG
Examples	Left, Both, Right, Neither		
Description	The side(s) of the road centerline on which the Alternate Street Name 3 is a valid entry in the relevant Master Street Address Guide (MSAG).		

4. Geocoding Side Feature Elements

4.1 Left From Address

Database Name	ADD_FR_L		
Data Type	Integer	Inclusion	Mandatory
Width	Long	Domain	
Examples	100 - 178, 37 - 55		
Description	The first address number in the range of address numbers on the left side of the road centerline. (Note: address ranges may be actual or theoretical)		

4.2 Left To Address

Database Name	ADD_TO_L		
Data Type	Integer	Inclusion	Mandatory
Width	Long	Domain	
Examples	100 - 178, 37 - 55		
Description	The last address number in the range of address numbers on the left side of the road centerline. (Note: address ranges may be actual or theoretical)		

4.3 Right From Address

Database Name	ADD_FR_R		
Data Type	Integer	Inclusion	Mandatory
Width	Long	Domain	
Examples	101 - 179, 38 - 56		
Description	The first address number in the range of address numbers on the right side of the road centerline. (Note: address ranges may be actual or theoretical)		

4.4 Right To Address

Database Name	ADD_TO_R		
Data Type	Integer	Inclusion	Mandatory
Width	Long	Domain	
Examples	101 - 179, 38 - 56		
Description	The last address number in the range of address numbers on the right side of the road centerline. (Note: address ranges may be actual or theoretical)		

4.5 Left Parity

Database Name	PARITY_L		
Data Type	Text	Inclusion	Mandatory
Width	4	Domain	Parity
Examples	Odd, Even, Both, Zero (Zero Address)		
Description	The even or odd property for address numbers on the left side of the road centerline.		

4.6 Right Parity

Database Name	PARITY_R		
Data Type	Text	Inclusion	Mandatory
Width	4	Domain	Parity
Examples	Odd, Even, Both, Zero (Zero Address)		
Description	The even or odd property for address numbers on the right side of the road centerline.		

4.7 Left ZIP Code

Database Name	ZIP_L		
Data Type	Text	Inclusion	Mandatory
Width	5	Domain	
Examples	**56301**, **55068**		
Description	The ZIP code for addresses on the left side of the road centerline.		

4.8 Right ZIP Code

Database Name	ZIP_R		
Data Type	Text	Inclusion	Mandatory
Width	5	Domain	
Examples	**55409**, **55321**		
Description	The ZIP code for addresses on the right side of the road centerline.		

4.9 Left CTU Name

Database Name	CTU_NAME_L		
Data Type	Text	Inclusion	Mandatory
Width	100	Domain	CTUName
Examples	**Akron Township**, **Minneapolis**, **Lake City**		
Description	The name of the city, township or unorganized territory (CTU) in which addresses on the left side of the road centerline are physically located. **Note:** This standard requires all townships be spelled <u>with</u> the word "Township" appended (e.g. Akron Township) and all cities be spelled <u>without</u> the word "city" (e.g. ~~City of~~ Minneapolis, Minneapolis ~~(city)~~) unless it is normally part of its name (e.g. Lake City).		

4.10 Right CTU Name

Database Name	CTU_NAME_R		
Data Type	Text	Inclusion	Mandatory
Width	100	Domain	CTUName
Examples	**Akron Township**, **Minneapolis**, **Lake City**		
Description	The name of the city, township or unorganized territory (CTU) in which addresses on the right side of the road centerline are physically located. **Note:** This standard requires all townships be spelled <u>with</u> the word "Township" appended (e.g. Akron Township) and all cities be spelled <u>without</u> the word "city" (e.g. ~~City of~~ Minneapolis, Minneapolis ~~(city)~~) unless it is normally part of its name (e.g. Lake City).		

4.11 Left CTU Code

Database Name	CTU_ID_L		
Data Type	Text	Inclusion	Mandatory
Width	8	Domain	CTUIDText
Examples	**02393894** (Aitkin), **00663402** (Albert Lea Township)		
Description	The official Federal Geographic Names Information Systems unique identifier code for the city, township or unorganized territory (CTU) in which addresses on the left side of the road centerline are physically located. **Note**: This field follows the GNIS Feature ID Text Format of the Minnesota [CTU ID Standard]().		

4.12 Right CTU Code

Database Name	CTU_ID_R		
Data Type	Text	Inclusion	Mandatory
Width	8	Domain	CTUIDText
Examples	00666077 (Zumbrota Township), 02397370 (Woodland)		
Description	The official Federal Geographic Names Information Systems unique identifier code for the city, township or unorganized territory (CTU) in which addresses on the right side of the road centerline are physically located. **Note**: This field follows the GNIS Feature ID Text Format of the Minnesota CTU ID_Standard.		

4.13 Left Postal Community Name

Database Name	POSTCOMM_L		
Data Type	Text	Inclusion	Optional
Width	40	Domain	
Examples	Alexandria, Golden Valley		
Description	Any city name recognized by the USPS as valid for the ZIP Code of the addresses on the left side of the road centerline. **Note**: The USPS recognizes one or more city names as being valid for each ZIP Code. It also designates one of the city names as preferred or recommended for the ZIP Code and asks for it to be used "whenever possible". In many places this will be different than the name of the city or township in which the address is physically located. For example, addresses within the cities of Hermantown and Proctor use the ZIP Code of 55810, but the USPS preferred city name for this ZIP Code is Duluth. USPS recognized and preferred city names for a given zip code can be found using this USPS form. A lookup table accompanies this standard that provides the preferred USPS city name for each ZIP Code.		

4.14 Right Postal Community Name

Database Name	POSTCOMM_R		
Data Type	Text	Inclusion	Optional
Width	40	Domain	
Examples	New Germany, Taunton		
Description	Any city name recognized by the USPS as valid for the ZIP Code of the addresses on the right side of the road centerline. **Note**: The USPS recognizes one or more city names as being valid for each ZIP Code. It also designates one of the city names as preferred or recommended for the ZIP Code and asks for it to be used "whenever possible". In many places this will be different than the name of the city or township in which the address is physically located. For example, addresses within the cities of Hermantown and Proctor use the ZIP Code of 55810, but the USPS preferred city name for this ZIP Code is Duluth. USPS recognized and preferred city names for a given zip code can be found using this USPS form. A lookup table accompanies this standard that provides the preferred USPS city name for each ZIP Code.		

4.15 Left County Code

Database Name	CO_CODE_L		
Data Type	Text	Inclusion	Mandatory
Width	5	Domain	CountyCode
Examples	27053 (Hennepin), 27091 (Martin)		
Description	The combination of the two-character state numeric code and the three-character county code in which the addresses on the left side of the road centerline are physically located. **Note**: Both state and county codes are national and state approved standards: Minnesota County ID Standard; Minnesota State ID Standard.		

4.16 Right County Code

Database Name	CO_CODE_R		
Data Type	Text	Inclusion	Mandatory
Width	5	Domain	CountyCode
Examples	27069 (Kittson), 27173 (Yellow Medicine)		
Description	The combination of the two-character state numeric code and the three-character county code in which the addresses on the right side of the road centerline are physically located. **Note**: Both state and county codes are national and state approved standards: Minnesota County ID Standard; Minnesota State ID Standard.		

4.17 Left County Name

Database Name	CO_NAME_L		
Data Type	Text	Inclusion	Mandatory
Width	40	Domain	CountyName
Examples	Chippewa, Rice		
Description	The county in which the addresses on the left side of the road centerline are physically located.		

4.18 Right County Name

Database Name	CO_NAME_R		
Data Type	Text	Inclusion	Mandatory
Width	40	Domain	CountyName
Examples	Mahnomen, Cook		
Description	The county in which the addresses on the right side of the road centerline are physically located.		

4.19 Left State Code

Database Name	STATE_L		
Data Type	Text	Inclusion	Mandatory
Width	2	Domain	StateCode
Examples	MN (Minnesota), IA (Iowa)		
Description	The two-character code of the state in which the addresses on the left side of the road centerline are physically located. This will always be "MN" for Minnesota and in compliance with the Minnesota State ID Standard.		

4.20 Right State Code

Database Name	STATE_R		
Data Type	Text	Inclusion	Mandatory
Width	2	Domain	StateCode
Examples	SD (South Dakota), WI (Wisconsin)		
Description	The two-character code of the state in which the addresses on the right side of the road centerline are physically located. This will always be "MN" for Minnesota and in compliance with the Minnesota State ID Standard.		

5. Routing Elements

5.1 Elevation From

Database Name	ELEV_FROM		
Data Type	Integer	Inclusion	Mandatory
Width	Short	Domain	ElevationToFrom
Examples	-2 (starting node is 2 levels below grade), 0 (starting node is at grade)		
Description	The vertical position, relative to grade (ground level), of the starting (FROM) node of the road centerline. It is used to identify which other road centerlines in an underpass/overpass situation connect to the given node for routing purposes.		

5.2 Elevation To

Database Name	ELEV_TO		
Data Type	Integer	Inclusion	Mandatory
Width	Short	Domain	ElevationToFrom
Examples	1 (ending node is 1 level above grade), 5 (ending node is 5 levels above grade)		
Description	The vertical position, relative to grade (ground level), of the ending (TO) node of the road centerline. It is used to identify which other road centerlines in an underpass/overpass situation connect to the given node for routing purposes.		

5.3 One Way

Database Name	ONEWAY		
Data Type	Text	Inclusion	Mandatory
Width	1	Domain	OneWay
Examples	T (To Point Against Arc), F (From Point With Arc), B (Both), N (Non-routable)		
Description	The direction of traffic movement in relation to the FROM and TO nodes (i.e. direction of digitization) of the road centerline.		

5.4 Impedance Speed

Database Name	SPEED_IMP		
Data Type	Integer	Inclusion	Optional
Width	Short	Domain	
Examples	65, 80		
Description	A speed limit parameter in miles per hour that may be used in transportation modeling to force a specific result. Example: A fire department prefers response from a particular station to a particular address. A CAD system recommends units based on fastest ETA. Adjusting the impedance speed will select the desired station.		

5.5 Emergency Access

Database Name	EMERG_ACC		
Data Type	Text	Inclusion	Conditional
Width	10	Domain	YesNoUnknown
Examples	Yes, Unknown, No		
Description	Whether the road centerline would be used in a routing model for emergency vehicles. This does not include routing models for public or commercial use.		

5.6 Routing Speed

Database Name	ROUTESPEED		
Data Type	Integer	Inclusion	Mandatory
Width	Short	Domain	
Examples	35, 65		
Description	The posted or estimated speed limit in miles per hour (MPH) for the road segment for purposes of routing. Where no speed limit is posted or where speed limit information is not available, MN Statute 169.14 Subd. 2 may be used as guidance in estimating a speed limit.		

6. Cartography Elements

6.1 Route Number

Database Name	ROUTE_NUM		
Data Type	Text	Inclusion	Conditional
Width	5	Domain	
Examples	65, 35W		
Description	The primary Route Number designator (with optional letters) for the road centerline based on MnDOT's routing system. Used mainly for map labelling.		

6.2 Road Cartographic Class

Database Name	CARTOCLASS		
Data Type	Text	Inclusion	Optional
Width	15	Domain	RoadCartoClass
Examples	Freeway, Secondary, Local		
Description	The road classification for cartographic symbology purposes.		

7. 911 Elements

7.1 911 GIS Point-of-Contact

Database Name	GIS911POC		
Data Type	Text	Inclusion	Mandatory
Width	75	Domain	GIS911POC
Examples			
Description	The entity responsible for submitting Geographic Information System (GIS) data to the State of Minnesota to be used for NG9-1-1 service for a specified area. In its County 9-1-1 Plan, which is submitted to the Minnesota Department of Public Safety, a county must specify the 9-1-1 GIS Authority/Authorities for each of the required NG9-1-1 datasets that encompass the county's geographic area. Tribal governments have their own authority similar to counties. Entities acting on behalf of a county or tribal government for the submission of GIS data will be attributed with the county or tribal government as the GIS911POC. This element may use all uppercase value. In practical terms, the GIS911POC attribute is useful for identification of the submitter of a geospatial feature to a dataset aggregated from multiple data sources.		

7.2 Left Emergency Service Number

Database Name	ESN_L		
Data Type	Text	Inclusion	Mandatory
Width	5	Domain	ESN
Examples	26 (Washington County Sheriff's Office), 1011 (Isanti County Sheriff's Office)		
Description	A 3 to 5-character numeric code that identifies a single Emergency Service Zone (ESZ) for addresses on the left side of the road centerline. ESNs are included in the MSAG for a given Public Safety Answering Point (PSAP) and represent unique combinations of individual fire, law, emergency medical response, and other emergency agencies. **Note:** There should be no leading zeros in the code.		

7.3 Right Emergency Service Number

Database Name	ESN_R		
Data Type	Text	Inclusion	Mandatory
Width	5	Domain	ESN
Examples	233 (Carver County Sheriff's Office), 1046 (University of Minnesota Police Department)		
Description	A 3 to 5-character numeric code that identifies a single Emergency Service Zone (ESZ) for addresses on the right side of the road centerline. ESNs are included in the MSAG for a given Public Safety Answering Point (PSAP) and represent unique combinations of individual fire, law, emergency medical response, and other emergency agencies. **Note:** There should be no leading zeros in the code.		

7.4 Left PSAP Code

Database Name	PSAP_L		
Data Type	Text	Inclusion	Mandatory
Width	5	Domain	PSAPCode
Examples	DOUG (Douglas County PSAP), WINX (Winona County PSAP)		
Description	The 4 to 5-character Public Safety Answering Point (PSAP) identifier code from the ELT/ALI display for the addresses on the left side of the road centerline.		

7.5 Right PSAP Code

Database Name	PSAP_R		
Data Type	Text	Inclusion	Mandatory
Width	5	Domain	PSAPCode
Examples	KITT (Kittson County Sheriff's Office), MPLS (Minneapolis Emergency Communications)		
Description	The 4 to 5-character Public Safety Answering Point (PSAP) identifier code from the ELT/ALI display for the addresses on the right side of the road centerline.		

7.6 Left MSAG Community Name

Database Name	MSAG_C_L		
Data Type	Text	Inclusion	Mandatory
Width	30	Domain	MSAGCommunity
Examples	Bayport, Wakefield Twp		
Description	The Community name associated with the addresses on the left side of the road centerline as given in the Master Street Address Guide (MSAG) used for 9-1-1 purposes. This may or may not be the same as the Municipal Jurisdiction Name or the Postal Community Name.		

7.7 Right MSAG Community Name

Database Name	MSAG_C_R		
Data Type	Text	Inclusion	Mandatory
Width	30	Domain	MSAGCommunity
Examples	Mahtomedi, Odessa		
Description	The Community name associated with the addresses on the right side of the road centerline as given in the Master Street Address Guide (MSAG) used for 9-1-1 purposes. This may or may not be the same as the Municipal Jurisdiction Name or the Postal Community Name.		

7.8 Validation Left

Database Name	VALID_L		
Data Type	Text	Inclusion	Conditional
Width	10	Domain	YesNoUnknown
Examples			
Description	Attribute indicates whether the primary Street name and address range on the left or right side of an RCL segment is valid for civic address validation, inclusion in a NG911 Location Validation Function (LVF), and/or inclusion in a geospatially created MSAG.		

7.9 Validation Right

Database Name	VALID_R		
Data Type	Text	Inclusion	Conditional
Width	10	Domain	YesNoUnknown
Examples			
Description	Attribute indicates whether the primary Street name and address range on the left or right side of an RCL segment is valid for civic address validation, inclusion in a NG911 Location Validation Function (LVF), and/or inclusion in a geospatially created MSAG.		

7.10 911 Validation Error

Database Name	VERROR_911		
Data Type	Text	Inclusion	Optional
Width	10	Domain	YesNoUnknown
Examples	Yes (Missing MSAG_C_L due to RCL being on county border), No, Unknown		
Description	This attribute is used as a flag to indicate a known 911 validation error that has yet to be resolved. If 'Yes" is chosen, then an explanation is required in the comments field. 'No' indicates there are no 911 validation errors for this feature. 'Unknown' indicates the feature has not been tested for 911 validation errors. Nulls are allowed for this attribute. **Note**: If 'Yes' is chosen an explanation for the error is required in the COMMENTS field.		

7.11 Legacy Street Name Pre Directional

Database Name	LST_PREDIR		
Data Type	Text	Inclusion	Conditional
Width	2	Domain	NENAStreetDirectional
Examples	SW MAIN ST (when MSAG street name is parsed Pre Direction = SW. Value would be null if MSAG is parsed with Street Name = SW MAIN ST and Pre Directional is not used in the MSAG.)		
Description	The street name pre directional field as it would appear in the MSAG, as assigned by the local addressing authority, to provide backward compatibility with legacy map displays and Computer Aided Dispatch (CAD) systems. This element should be used to reflect the same attribute parsing and spelling found in the MSAG and ensure the continuing function of existing systems. Must be populated when a need exists to reconcile the street name elements with what is used in the legacy MSAG data. NOTE: Per the NENA standard, this element is abbreviated and may use uppercase.		

7.12 Legacy Street Name

Database Name	LST_NAME		
Data Type	Text	Inclusion	Conditional
Width	75	Domain	
Examples	CENTRAL ST SW (when MSAG street name is parsed Street Name = CENTRAL, Post Type = ST, Post Direction = SW); CENTRAL ST SW (when MSAG street name is parsed with Street Name = CENTRAL ST SW and Post Type and Post Direction are not used in the MSAG)		
Description	The street name field as it would appear in the MSAG, as assigned by the local addressing authority, to provide backward compatibility with legacy map displays and Computer Aided Dispatch (CAD) systems. This element should be used to reflect the same attribute parsing and spelling found in the MSAG and ensure the continuing function of existing systems. Some MSAGs are parsed into only two elements, pre directional and street name. In this case, to maintain backward compatibility, the Legacy Street Name Type and Legacy Street Name Post Directional fields would not be populated. The street name post type and post directional would be included as part of the street name placed in the Legacy Street Name field. Must be populated when a need exists to reconcile the street name elements with what is used in the legacy MSAG data. NOTE: Per the NENA standard, this element may be abbreviated and may use uppercase.		

7.13 Legacy Street Name Type

Database Name	LST_TYPE		
Data Type	Text	Inclusion	Conditional
Width	4	Domain	
Examples	MAPLE **ST** (when MSAG street name is parsed Post Type = ST. Value would be null if MSAG is parsed with Street Name = MAPLE ST and Post Type is not used in the MSAG.)		
Description	The street name post type field as it would appear in the MSAG, as assigned by the local addressing authority, to provide backward compatibility with legacy map displays and Computer Aided Dispatch (CAD) systems. This element should be used to reflect the same attribute parsing and spelling found in the MSAG and ensure the continuing function of existing systems. Some MSAGs are parsed into only two elements, pre directional and street name. In this case, to maintain backward compatibility, the Legacy Street Name Type and Legacy Street Name Post Directional fields would not be populated. The street name post type and post directional would be included as part of the street name placed in the Legacy Street Name field. Must be populated when a need exists to reconcile the street name elements with what is used in the legacy MSAG data. NOTE: Per the NENA standard, this element is abbreviated and may use uppercase.		

7.14 Legacy Street Name Post Directional

Database Name	LST_POSDIR		
Data Type	Text	Inclusion	Conditional
Width	2	Domain	NENAStreetDirectional
Examples	CEDAR AVE **SE** (when MSAG street name is parsed Post Direction = SE. Value would be null if MSAG is parsed with Street Name = CEDAR AVE SE and Post Directional is not used in the MSAG.)		
Description	The street name post directional field as it would appear in the MSAG, as assigned by the local addressing authority, to provide backward compatibility with legacy map displays and Computer Aided Dispatch (CAD) systems. This element should be used to reflect the same attribute parsing and spelling found in the MSAG and ensure the continuing function of existing systems. Some MSAGs are parsed into only two elements, pre directional and street name. In this case, to maintain backward compatibility, the Legacy Street Name Type and Legacy Street Name Post Directional fields would not be populated. The street name post type and post directional would be included as part of the street name placed in the Legacy Street Name field. Must be populated when a need exists to reconcile the street name elements with what is used in the legacy MSAG data. NOTE: Per the NENA standard, this element is abbreviated and may use uppercase.		

8. Data Maintenance Elements

8.1 Lifecycle Status

Database Name	STATUS		
Data Type	Text	Inclusion	Optional
Width	20	Domain	LifecycleStatusRoad
Examples	**Active**, **Planned**, **Not Built**		
Description	The lifecycle status of the road.		

8.2 Effective Date

Database Name	EFF_DATE		
Data Type	Date	Inclusion	Optional
Width	Default	Domain	
Examples	**10/12/2001**, **03/24/1998**		
Description	The earliest date on which the road segment is known to exist.		

8.3 Retired Date

Database Name	RET_DATE		
Data Type	Date	Inclusion	Conditional
Width	Default	Domain	
Examples	**06/01/2012**, **09/28/2020**		
Description	The date on which the road segment was retired from active status.		

8.4 Editing Organization

Database Name	EDIT_ORG		
Data Type	Text	Inclusion	Optional
Width	40	Domain	
Examples	**Hennepin County Survey**, **Otter Tail County GIS Department**		
Description	The organization that made the last substantial change to the data record including geospatial edits. **Note**: This is not intended to be used to identify an aggregating organization that ran a batch process to populate fields derived from existing data (e.g. populating the State Code).		

8.5 Edit Date

Database Name	EDIT_DATE		
Data Type	Date	Inclusion	Mandatory
Width	Default	Domain	
Examples	**11/27/2013**, **04/13/2014**		
Description	The date of the last substantial change to the data record including geospatial edits. **Note**: This is not intended to be used to identify the date a batch process was used to populate fields derived from existing data (e.g. populating the State Code). If the data producer does not know the edit date they may use a default date of their choosing such as 1/1/1900.		

9. Business Elements

9.1 Functional Class - Federal

Database Name	FUNCLS_FED		
Data Type	Text	Inclusion	Optional
Width	1	Domain	FunctionalClassFederal
Examples	**1** (Principal Arterial – Interstate), **6** (Minor Collector)		
Description	Federal functional classification defined as the role that any particular road or street plays in serving the flow of trips through an entire network as defined by the United States Federal Highway Administration. More information here.		

9.2 Functional Class - Metro

Database Name	FUNCLS_MET		
Data Type	Text	Inclusion	Optional
Width	3	Domain	FunctionalClassMetro
Examples	**100** (Principal Arterial), **310** (Major Collector)		
Description	Metropolitan Council maintained functional classification for roads within the Twin Cities Metropolitan Planning Organization (MPO) Area. More information here.		

9.3 Surface Type

Database Name	SURF_TYPE		
Data Type	Text	Inclusion	Mandatory
Width	32	Domain	SurfaceType
Examples	**Aggregate, Concrete, Gravel, Unknown**		
Description	Type of road surface.		

9.4 Number of Lanes

Database Name	NUM_LANES		
Data Type	Integer	Inclusion	Optional
Width	Short	Domain	
Examples	**2, 4**		
Description	Number of through lanes along segment.		

9.5 Comments

Database Name	COMMENTS		
Data Type	Text	Inclusion	Conditional
Width	254	Domain	
Examples	**Parity of address range values does not match parity attribute** (if VERROR_911 = 'Yes'), **4**[th] **alternate street name is 'Apple Street'**		
Description	A free form field for miscellaneous information that does not fit or is not appropriate in the other attribute fields. **Note:** If 911 Validation Error (7.7) = 'Yes' then an explanation for the error must be included in this field.		

Appendix A: MN GAC Road Centerline Data Standard Schema

Appendix A is a [spreadsheet available at this link](#) showing the schema for this standard. It includes all the data elements in the standard, with field name, type, width and other important information about each data element.

Appendix B: MN GAC Standards Domains

Appendix B is a [spreadsheet available at this link](#) showing all the domain tables used in Minnesota Geospatial Advisory Council standards. It includes a tab showing when each domain table was last updated.

Appendix C: MN GAC Standards Lookup Tables

Appendix C is a [spreadsheet available at this link](#) showing all the lookup tables used in Minnesota Geospatial Advisory Council standards. It includes a tab showing when each table was last updated.