Minnesota Geospatial Advisory Council

Road Centerline Data Standard

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Table of Contents

About the GAC 3
Introduction 3
Purpose of this Standard 3
Applicability 3
Sources of this Standard 3
Compliance Notes 4
Inclusion 4
Mixed Case 4
Abbreviations 4
Domains 5
Right and Left Sides of Road Centerlines 5
Database Summary Table 6
Data Element Details 8
1. Identification Elements 8
2. Linear Reference Elements 9
3. Geocoding Elements 10
4. Geocoding Side Feature Elements 13
5. Routing Elements 17
6. Cartography Elements 18
7. 911 Elements 19
8. Data Maintenance Elements 22
9. Business Elements 23
Appendix A: MN GAC Road Centerline Data Standard Schema 24
Appendix B: MN GAC Standards Domains 24
Appendix C: MN GAC Standards Lookup Tables 24

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. Four types of inclusion are possible: Mandatory, Conditional, If Available, 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 database does not comply with the Road Centerline Standard.

Conditional

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

If Available

Field must be populated if the data exists in the data provider's database.

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 schema 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.

Database Summary Table

Element Number	Element Name	Database Field Name	Field Type	Field Width	Inclusion	Domain Name
1 – Identification Elements						
1.1	Road Segment Unique Identifier	ROADSEG_ID	Text	36	Mandatory	
1.2	Route ID	ROUTE_ID	Text	18	Optional	
2 – Linear Reference Elements						
2.1	Route System	ROUTE_SYS	Text	2	Mandatory	RouteSystem
2.2	Route Direction	ROUTE_DIR	Text	1	Optional	RouteDirection
2.3	Local to State	LOC_STATE	Text	10	Optional	LocalToState
2.4	Primary Status	PRIME_STAT	Text	10	Conditional	PrimaryStatus
3 – Geocoding Elements						
3.1	Street Name Pre Modifier	ST_PRE_MOD	Text	15	Conditional	
3.2	Street Name Pre Directional	ST_PRE_DIR	Text	9	Conditional	StreetDirectional
3.3	Street Name Pre Type	ST_PRE_TYP	Text	35	Conditional	StreetPreType
3.4	Street Name Pre Separator	ST_PRE_SEP	Text	20	Conditional	StreetPreSeparator
3.5	Street Name	ST_NAME	Text	60	Mandatory	
3.6	Street Name Post Type	ST_POS_TYP	Text	15	Conditional	StreetPostType
3.7	Street Name Post Directional	ST_POS_DIR	Text	9	Conditional	StreetDirectional
3.8	Street Name Post Modifier	ST_POS_MOD	Text	15	Conditional	
3.9	Street Name Full	ST_CONCAT	Text	150	Optional	
3.10	Alternate Street Name 1	ST_NAME_A1	Text	150	Conditional	
3.11	Alt1 Legitimate MSAG Value	A1_MSAG_V	Text	7	Conditional	AltValidMSAG
3.12	Alternate Street Name 2	ST_NAME_A2	Text	150	Conditional	
3.13	Alt2 Legitimate MSAG Value	A2_MSAG_V	Text	7	Conditional	AltValidMSAG
3.14	Alternate Street Name 3	ST_NAME_A3	Text	150	Conditional	
3.15	Alt 3 Legitimate MSAG Value	A3_MSAG_V	Text	7	Conditional	AltValidMSAG
4 – Geocoding Side Feature Elements						
4.1	Left From Address	ADD_FR_L	Integer	Long	Mandatory	
4.2	Left To Address	ADD_TO_L	Integer	Long	Mandatory	
4.3	Right From Address	ADD_FR_R	Integer	Long	Mandatory	
4.4	Right To Address	ADD_TO_R	Integer	Long	Mandatory	
4.5	Left Parity	PARITY_L	Text	4	Mandatory	Parity
4.6	Right Parity	PARITY_R	Text	4	Mandatory	Parity
4.7	Left Zip Code	ZIP_L	Text	5	Mandatory	
4.8	Right Zip Code	ZIP_R	Text	5	Mandatory	
4.9	Left CTU Name	CTU_NAME_L	Text	100	Mandatory	CTUName
4.10	Right CTU Name	CTU_NAME_R	Text	100	Mandatory	CTUName
4.11	Left CTU Code	CTU_ID_L	Text	8	Mandatory	CTUIDText
4.12	Right CTU Code	CTU_ID_R	Text	8	Mandatory	CTUIDText
4.13	Left Postal Community Name	POSTCOMM_L	Text	40	Optional	
4.14	Right Postal Community Name	POSTCOMM_R	Text	40	Optional	
4.15	Left County Code	CO_CODE_L	Text	5	Mandatory	CountyCode
4.16	Right County Code	CO_CODE_R	Text	5	Mandatory	CountyCode
4.17	Left County Name	CO_NAME_L	Text	40	Mandatory	CountyName
4.18	Right County Name	CO_NAME_R	Text	40	Mandatory	CountyName
4.19	Left State Code	STATE_L	Text	2	Mandatory	StateCode
4.20	Right State Code	STATE_R	Text	2	Mandatory	StateCode

Element Number	Element Name	Database Field Name	Field Type	Field Width	Inclusion	Domain Name
5 – Routing Elements						
5.1	Elevation From	ELEV_FROM	Integer	Short	Mandatory	ElevationToFrom
5.2	Elevation To	ELEV_TO	Integer	Short	Mandatory	ElevationToFrom
5.3	One Way	ONEWAY	Text	1	Mandatory	OneWay
5.4	Impedance Speed	SPEED_IMP	Integer	Short	If Available	
5.5	Emergency Access	EMERG_ACC	Text	10	Conditional	YesNoUnknown
5.6	Routing Speed	ROUTESPEED	Integer	Short	Mandatory	
6 – Cartography Elements						
6.1	Route Number	ROUTE_NUM	Text	5	Conditional	
7 – 911 Elements						
7.1	911 GIS Point-of-Contact	GIS911POC	Text	75	Mandatory	GIS911POC
7.2	Left Emergency Service Number	ESN_L	Text	5	Mandatory	ESN
7.3	Right Emergency Service Number	ESN_R	Text	5	Mandatory	ESN
7.4	Left MSAG Community Name	MSAG_C_L	Text	30	Mandatory	MSAGCommunity
7.5	Right MSAG Community Name	MSAG_C_R	Text	30	Mandatory	MSAGCommunity
7.6	Left PSAP Code	PSAP_L	Text	5	Mandatory	PSAPCode
7.7	Right PSAP Code	PSAP_R	Text	5	Mandatory	PSAPCode
7.8	Validation Left	VALID_L	Text	10	Conditional	YesNoUnknown
7.9	Validation Right	VALID_R	Text	10	Conditional	YesNoUnknown
7.10	911 Validation Error	VERROR_911	Text	10	Optional	YesNoUnknown
8 – Data Maintenance Elements						
8.1	Lifecycle Status	STATUS	Text	20	Optional	LifecycleStatusRoad
8.2	Effective Date	EFF_DATE	Date	Default	Conditional	
8.3	Retired Date	RET_DATE	Date	Default	Conditional	
8.4	Editing Organization	EDIT_ORG	Text	40	Optional	
8.5	Edit Date	EDIT_DATE	Date	Default	Mandatory	
9 – Business Elements						
9.1	Functional Class - Federal	FUNCLS_FED	Text	1	Optional	FunctionalClassFederal
9.2	Functional Class - Metro	FUNCLS_MET	Text	3	Optional	FunctionalClassMetro
9.3	Surface Type	SURF_TYPE	Text	32	Mandatory	SurfaceType
9.4	Number of Lanes	NUM_LANES	Integer	Short	Optional	
9.4	Comments	COMMENTS	Text	254	Conditional	

Data Element Details

1. Identification Elements

1.1 Road Segment Unique ID

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 SSGGGGGGGGGGNNNNAD where: SS: route jurisdiction (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 (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 Alt1 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 Alt2 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 Alt3 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 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 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 with the word "Township" appended (e.g. Akron Township) and all cities be spelled without 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 left side of the road centerline are physically located. **Note:** This standard requires all townships be spelled with the word "Township" appended (e.g. Akron Township) and all cities be spelled without 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) of addresses on the left side of the road centerline. **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) of addresses on the right side of the road centerline. **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.		

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.		

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 reside. **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 reside. **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 reside.		

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 reside.		

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-letter USPS or ANSI alphabetic abbreviation of the US state in which the addresses on the left side of the road centerline reside. **Note:** This standard is 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-letter USPS or ANSI alphabetic abbreviation of the US state in which the addresses on the right side of the road centerline reside. **Note:** This standard is 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**	If Available
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.		

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. This is typically a county GIS department or Public Safety Answering Point (PSAP). 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. This element may use all uppercase value.		

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 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.		

7.5 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.		

7.6 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.		

7.7 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.		

7.8 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.		

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**	Conditional
Width	Default	**Domain**	
Examples	**10/12/2001**, **03/24/1998**		
Description	The earliest date on which the road segment is known to exist. **Note:** This is a conditional element. It must be populated for new road segments and where the data exists to populate it for existing roads. However, many cities and counties do not have data indicating when older roads first came into existence. In such cases, the field is not required to be populated.		

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).		

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'), **4th 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.