MINNESOTA

Road Centerline Standard

Alignment Document

Published 6/19/2018

This 'alignment document' version of the proposed Road Centerline Standard (MRCS v. 0.5) contains the stakeholder input collected during the 60-day public input period (Monday, April 9, 2018 through Friday, June 8, 2018).

Note: *Stakeholder comments that refer to a specific attribute are listed beneath that attribute in the document. Stakeholder comments relevant to the advance of the standard that do not reference a specific attribute, are found in Appendix B.*

Minnesota Road Centerline Standard v. 0.5

Alignment Document

Published June 19, 2018

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1. Identification Elements

1.1 Object ID

Database Name	OBJECT_ID		
Data Type	Object ID	**Inclusion**	Mandatory
Width	<NA>	**Domain**	
Examples	**4578**, **137**		
Description	An Esri-specific numeric identifier for the road centerline. This field is created and populated automatically upon insertion of data into ArcGIS.		

>> Mark Kotz (Metropolitan Council)

Element 1.1 – Object ID. *Is this really required by the standard? None of our other standards include this Esri-specific element. If we are including it, we are effectively saying that one must have Esri software to deal with this state standard. I think we want to instead be software agnostic on this data standard as we have deliberately been on all other data standards.*

>> Jim Krumrie (MnGeo)

- *Remove 1.1 Object ID from schema*
- *Element is not generic to GIS but is Esri-specific.*
- *Value in element changes when its feature is edited reducing element's usefulness as an ID.*
- *The 1.3 Feature Unique ID element precludes the need for this ID.*
- *Element is not in Minnesota Address Points Standard (MAPS) v 1.1.*

1.2 Route ID

Database Name	ROUTE_ID		
Data Type	Text	**Inclusion**	Conditional
Width	16	**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).		

>> Vic Barnett (Ramsey County)

Element 1.2 – Route ID: In this standard, Element 2.3 is Directional Route ID: What is the purpose of maintaining a directional route ID field? If there is a Route ID attribute and a route direction attribute, you have the directional route ID already in the data.

>> Mark Kotz (Metropolitan Council)

Element 1.2 – Route ID - *I think this element needs clarity.*

It seems to only apply to certain roads, is that correct? How would a data producer find out what MnDOT uses for route names and which roads have them? Also, it seems like calling it "a unique identifier for the road centerline" is technically incorrect. That gives the impression that it is unique for each segment, but it seems to be unique to the collection of segments that apply to a road name, right?

What is permissible in the 10-character "GGGGGGGGGG: GNIS ID" portion of the element? Can a data creator us the GNIS CTU code? If the jurisdiction they want to enter is a county, are they expected to use the GNIS ID for the county when the actual state and federal standard for a county code is not the GNIS ID but a different format of ID? Are they supposed to find a GNIS ID for state of MN or a particular federal agency (e.g. a road maintained by US DOT or US forest service?) I think more explanation is needed with several examples.

Also, for CTUs, the 10-character code does not comply with the state CTU standard which specifies an 8-character code.

>>> Jim Krumrie (MnGEO)
Change width of 1.2 Route ID from *16* to *18* to accommodate MnDOT's format

*Format is **SSGGGGGGGGGGNNNNAD** (18 characters) where: SS is route jurisdiction (e.g. '01' = Interstate, '02' = U.S. Highway, '07' = County Road); GGGGGGGGGG is GNIS ID for route jurisdiction - left padded with zeros (e.g. 0002395345); NNNN is designated route number (e.g. 0694); A is character for directional routes (e.g. W for I35W, - for none); D is route direction of travel vs. mileage (e.g. D = decreasing, I = increasing).*

1.3 Feature Unique ID

Database Name	UNIQUE_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 centerline. A GUID is a 36-character unique identifier generated using a standardized process to ensure a minimum probability of duplication.		

>> Mark Kotz (Metropolitan Council)
Element 1.3 – Feature Unique ID*: Consider making the following change for clarity "A Globally Unique Identifier (GUID) for the road ~~centerline~~ segment." Or something similar*

2. Linear Reference Elements

2.1 Route System

Database Name	ROUTE_SYS		
Data Type	Text	**Inclusion**	Mandatory
Width	2	**Domain**	St MnDOT Route System
Examples	**10** (Municipal Street), **23** (Airport Road)		
Description	Primary Route System designator based on MnDOT's routing system.		

>> Caitlin Christenson, Stevens County, (May 11, 2018)

Element 2.1 MnDOT Route System

Domain values: CODE(S):

08 = Township Road

09 = Township

"What is the difference between the two?"

>> Mark Kotz (Metropolitan Council)

***Element 2.1**: In the domain for this element codes 08 and 09 have the same value of Township Road. Is that right?*

>> Adam Gardner (City of St. Paul)

The domains 2.1 St MnDOT Route System and 6.1 St MnDOT Prefix do not appear significantly different. The omission of "trunk highway" seems to be an oversight since it is a state-legislated designation and is pertinent to our current data.

>> Jim Krumrie (MnGeo)

*Remove **2.1 Route System,** 2.2 Route Direction and 2.3 Directional Route ID from schema; these elements are redundant with Element 1.2 Route ID:*

- *Elements 2.1 and 2.2 are components of 1.2 (i.e. SS and D in #2's format above).*
- *Element 2.3 is same as 1.2.*

If 2.1 Route System is not removed, then its inclusion should be changed from mandatory to conditional. Most counties do not have this MnDOT-specific data.

2.2 Route Direction

Database Name	ROUTE_DIR		
Data Type	Text	**Inclusion**	TBD (To be determined)
Width	1	**Domain**	St Route Direction
Examples	**I** (increasing), **D** (decreasing)		
Description	MnDOT indicator of whether route direction increases or decreases with mileage.		

>> Mark Kotz (Metropolitan Council)

***Element 2.2**: Is the wording on this correct? How does a direction increase? Isn't it the mileage that increases? Should it say "MnDOT indicator of whether route mileage ~~direction~~ increases or decreases with direction ~~mileage~~."*

>> Jim Krumrie (MnGeo)

*Remove 2.1 Route System, **2.2 Route Direction** and 2.3 Directional Route ID from schema; these elements are redundant with Element 1.2 Route ID:*

- *Elements 2.1 and 2.2 are components of 1.2 (i.e. SS and D in #2's format above).*
- *Element 2.3 is same as 1.2.*

If 2.1 Route System is not removed, then its inclusion should be changed from mandatory to conditional. Most counties do not have this MnDOT-specific data.

2.3 Directional Route ID

Database Name	DIR_RTE_ID		
Data Type	Text	**Inclusion**	TBD (To be determined)
Width	32	**Domain**	
Examples	**1000023953450696-I**, **1000023953450696-D**		
Description	Concatenation of ROUTE_ID and ROUTE_DIR fields.		

>> Vic Barnett (Ramsey County)

Element 2.3 – Route ID: *In this standard, Element 1.2 is Route ID: What is the purpose of maintaining a directional route ID field? If there is a Route ID attribute and a route direction attribute, you have the directional route ID already in the data.*

>> Mark Kotz (Metropolitan Council)

Element 2.3*: Based on the description for the Route ID element, the route direction info is already included, but this element seems to assume that it is not and needs to be included with this element. So… something is inconsistent between those two elements.*

>> Jim Krumrie (MnGeo)

Remove 2.1 Route System, 2.2 Route Direction and ***2.3 Directional Route ID*** *from schema; these elements are redundant with Element 1.2 Route ID:*

- *Elements 2.1 and 2.2 are components of 1.2 (i.e. SS and D in #2's format above).*
- *Element 2.3 is same as 1.2.*

If 2.1 Route System is not removed, then its inclusion should be changed from mandatory to conditional. Most counties do not have this MnDOT-specific data.

2.4 Local to State

Database Name	LOC_STATE		
Data Type	Text	**Inclusion**	TBD (To be determined)
Width	10	**Domain**	St Local To State
Examples	**Same**, **Reverse**		
Description	The relative direction of the road centerline as depicted locally compared to its state depiction. If state shows road going same direction as local depiction then "Same"; otherwise, "Reverse".		

2.5 Primary Status

Database Name	PRIME_STAT		
Data Type	Text	**Inclusion**	TBD (To be determined)
Width	10	**Domain**	St Primary Status
Examples	**Primary**, **Secondary**		
Description	MnDOT's primary/secondary classification for the road centerline.		

>> Jim Krumrie (MnGeo)

Change inclusions for 2.4 Route Direction and 2.5 Primary Status from *TBD (To be determined)* to a proper type (e.g. *Optional, Conditional, Mandatory*)

The proper type will need to be determined by MnDOT with recognition that most counties do not have this data.

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		

>> No comment received on this attribute

3.2 Street Name Pre Directional

Database Name	ST_PRE_DIR		
Data Type	Text	**Inclusion**	Conditional
Width	9	**Domain**	Street Directional
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.		

>> No comment received on this attribute

3.3 Street Name Pre Type

Database Name	ST_PRE_TYP		
Data Type	Text	**Inclusion**	Conditional
Width	35	**Domain**	Street Pre Type
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.		

>> No comment received on this attribute

3.4 Street Name Pre Separator

Database Name	ST_PRE_SEP		
Data Type	Text	**Inclusion**	Conditional
Width	20	**Domain**	
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.		

>> No comment received on this attribute

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.		

>> No comment received on this attribute

3.6 Street Name Post Type

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

>> No comment received on this attribute

3.7 Street Name Post Directional

Database Name	ST_POS_DIR		
Data Type	Text	**Inclusion**	Conditional
Width	9	**Domain**	Street Directional
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.		

>> No comment received on this attribute

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.		

>> No comment received on this attribute

3.9 Street Name Full

Database Name	ST_CONCAT		
Data Type	Text	**Inclusion**	Mandatory
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.		

>> Jim Krumrie (MnGeo)

Remove 3.9 Street Name Full from schema

- *The element is composed of elements 3.1 to 3.8 and therefore redundant.*
- *A user may add and populate their own concatenated field if necessary.*

3.10 Alternate Street Name1

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.		

>> No comment received on this attribute

3.11 Alt1 Legitimate MSAG Value

Database Name	A1_MSAG_V		
Data Type	Text	**Inclusion**	Conditional
Width	1	**Domain**	Alt Valid MSAG
Examples	**L** (Left), **B** (Both), **R** (Right), **N** (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).		

>> Mark Kotz (Metropolitan Council)

Is there some specific reason why codes (L, B, R, N) are used in this element instead of the actual values left, both, right, neither? In general, the full value should be used where values are short like this and there is no defined purpose for using a code.

3.12 Alternate Street Name2

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.		

>> No comment received on this attribute

3.13 Alt2 Legitimate MSAG Value

Database Name	A2_MSAG_V		
Data Type	Text	**Inclusion**	Conditional
Width	1	**Domain**	Alt Valid MSAG
Examples	**L** (Left), **B** (Both), **R** (Right), **N** (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).		

>> Mark Kotz (Metropolitan Council)

Is there some specific reason why codes (L, B, R, N) are used in this element instead of the actual values left, both, right, neither? In general, the full value should be used where values are short like this and there is no defined purpose for using a code.

3.14 Alternate Street Name3

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.		

>> No comment received on this attribute

3.15 Alt3 Legitimate MSAG Value

Database Name	A3_MSAG_V		
Data Type	Text	**Inclusion**	Conditional
Width	1	**Domain**	Alt Valid MSAG
Examples	**L** (Left), **B** (Both), **R** (Right), **N** (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).		

>> Mark Kotz (Metropolitan Council)

Is there some specific reason why codes (L, B, R, N) are used in this element instead of the actual values left, both, right, neither? In general, the full value should be used where values are short like this and there is no defined purpose for using a code.

4. Geocoding Side Features

4.1 Left From Address

Database Name	ADR_FR_L		
Data Type	Long Integer	**Inclusion**	Mandatory
Width	10	**Domain**	
Examples	**100** - 178, **37** - 55		
Description	The first actual address number in the range of address numbers on the left side of the road centerline.		

>> Jim Krumrie (MnGeo)

Remove the word "actual" from the descriptions of

4.1 Left From Address, 4.2 Left To Address,

4.3 Right From Address and 4.4 Right To Address

The NG9-1-1 GIS Standards Workgroup believes these elements should be allowed to contain either actual or theoretical address numbers because both types are used by counties throughout the state;

Add the following text to the end of each of the descriptions of Elements 4.1 through 4.4:

"Note: Number may be either actual (i.e. based upon actual addresses along the road centerline) or theoretical (i.e. one that allows no gaps between adjacent address ranges)."

4.2 Left To Address

Database Name	ADR_TO_L		
Data Type	Long Integer	**Inclusion**	Mandatory
Width	10	**Domain**	
Examples	100 - **178**, 37 - **55**		
Description	The last actual address number in the range of address numbers on the left side of the road centerline.		

>> Mark Sloan (Clay County): *Shouldn't the right and left side of road be based upon the address range instead of digitization direction? Small numbers at beginning of road, and larger numbers at the far end? That way your left and rights would be consistent along a length of road. Perhaps a sentence encouraging digitization in the direction of the address range would be helpful.*

>> Jolinda Stapleton (City of Roseville): *The only comment I have is the confusion with the right and left sides of the road centerline. I do see the notes regarding that this is determined by the direction the centerline was digitized. Who is going to be the initial source for all the data? If a county happens to digitize from the north to the south and then their neighboring county digitized from the south to the north, then how would this data "meet up" at county boundaries? If there are standards or common practices on how a centerline should be digitized, then I suggest including that information.*

>> Jim Krumrie (MnGeo): *Since it appears that the state's address ranges are a mix of actual and theoretical types I will recommend that the Subcommittee remove the word "actual" from the descriptions of the address range fields (i.e. ADR_FR_L, ADR_FR_L, ADR_FR_L, ADR_FR_L; p 14 of MRCS).*

>> Please refer also to Appendix C of this document, beginning on page 43

4.3 Right From Address

Database Name	ADR_FR_R		
Data Type	Long Integer	**Inclusion**	Mandatory
Width	10	**Domain**	
Examples	**101** - 179, **38** - 56		
Description	The first actual address number in the range of address numbers on the right side of the road centerline.		

>> See also notes attached to 4.1

4.4 Right To Address

Database Name	ADR_TO_R		
Data Type	Long Integer	**Inclusion**	Mandatory
Width	10	**Domain**	
Examples	101 - **179**, 38 - **56**		
Description	The last actual address number in the range of address numbers on the right side of the road centerline.		

>> See also notes attached to 4.1

>> Vic Barnett (Ramsey County)

Elements 4.1-4.4 Geocoding Address Ranges. The description for all these elements needs some tweaking. It is not preferable to mandate actual address numbers. Rather it is preferable for data producers to maintain exhaustive address ranges. In addition, it is appropriate to use zero address ranges for connecting segments in places intersections with divided roads, roads on a bridge or overpass, turn lanes, etc. Lastly clarify that address ranges are relative to the direction of the digitized arc.

4.5 Left ZIP Code

Database Name	ZIP_L		
Data Type	Text	**Inclusion**	Mandatory
Width	5	**Domain**	
Examples	**56301**, **55068**		
Description	A system of 5-digit codes that are used to identify the individual Post Office or metropolitan area delivery station associated with addresses on the left side of the road centerline.		

4.6 Right ZIP Code

Database Name	ZIP_R		
Data Type	Text	**Inclusion**	Mandatory
Width	5	**Domain**	
Examples	**55409**, **55321**		
Description	A system of 5-digit codes that are used to identify the individual Post Office or metropolitan area delivery station associated with addresses on the right side of the road centerline.		

>> Mark Kotz (Metropolitan Council)

4.5 and 4.6: *Since ZIP codes are a well know entity, could we shorten the definition to something like this:* ~~*A system of 5-digit codes that are used to identify the individual Post Office or metropolitan area delivery station associated with addresses*~~ *The ZIP code on the left side of the road centerline.*

>> Jim Krumrie (MnGeo)

Change inclusions for **4.5 Left Zip Code** and **4.6 Right Zip Code**
from *Mandatory* to *Conditional*

- Many counties in Greater Minnesota do not have zip codes in their road centerline data.
- Zip codes are not necessary for geocoding as long as county names (elements 4.13 Left County Name and 4.14 Right County Name) are present.
    - County names are much easier to obtain.
    - County names are generally more accurate due to zip codes changing frequently and the fact that zip codes, unlike counties, are not true area features (i.e. polygons).

4.7 Left CTU Code

Database Name	CTU_ID_L		
Data Type	Text	**Inclusion**	Mandatory
Width	8	**Domain**	CTU ID Text
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 state CTU Identifier Codes Standard.		

>> Chelsey Bagent (Swift County)

The value for code 02394473 needs to be ***DeGraff*** (without a space).

>> Jim Krumrie (MnGeo)

Change inclusions for **4.7 Left CTU Code,** 4.8 Right CTU Code, 4.11 Left County Code and 4.12 Right County Code from *Mandatory* to *Conditional* or *Optional*

These elements are essentially coded duplicates of elements 4.9, 4.10, 4.13 and 4.14, respectively, and the latter are already mandatory.

4.8 Right CTU Code

Database Name	CTU_ID_R		
Data Type	Text	**Inclusion**	Mandatory
Width	8	**Domain**	CTU ID Text
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 state CTU Identifier Codes Standard.		

>> Chelsey Bagent (Swift County

*The value for code 02394473 needs to be **DeGraff** (without a space).*

>> Jim Krumrie (MnGeo)

Change inclusions for 4.7 Left CTU Code, **4.8 Right CTU Code**, 4.11 Left County Code and 4.12 Right County Code from *Mandatory* to *Conditional* or *Optional*

These elements are essentially coded duplicates of elements 4.9, 4.10, 4.13 and 4.14, respectively, and the latter are already mandatory.

4.9 Left CTU Name

Database Name	CTU_NAME_L		
Data Type	Text	**Inclusion**	Mandatory
Width	100	**Domain**	CTU Name
Examples	**Akron Township**, **Minneapolis**, **Lake City**		
Description	The name of the incorporated municipality (city, township, or other local government, excluding counties) in which addresses on the left side of the road centerline are physically located. **Note:** This standard requires all CTU townships be spelled <u>with</u> the word "Township" appended (e.g. Akron Township) and all CTU 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).		

>> Chelsey Bagent (Swift County)

Both the code and value need to be updated from De Graff to DeGraff.

4.10 Right CTU Name

Database Name	CTU_NAME_R		
Data Type	Text	**Inclusion**	Mandatory
Width	100	**Domain**	CTU Name
Examples	**Akron Township**, **Minneapolis**, **Lake City**		
Description	The name of the incorporated municipality (city, township, or other local government, excluding counties) in which addresses on the left side of the road centerline are physically located. **Note:** This standard requires all CTU townships be spelled <u>with</u> the word "Township" appended (e.g. Akron Township) and all CTU 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).		

>> Chelsey Bagent (Swift County)

Both the code and value need to be updated from De Graff to DeGraff.

>> Mark Kotz (Metropolitan Council)

4.9 and 4.10: *Suggest the following tweak to the definition for increased readability. The name of the incorporated municipality (city, township, or other local government, excluding counties) in which addresses on the left side of the road centerline are physically located.*

Note: *This standard requires all ~~CTU~~ townships be spelled <u>with</u> the word "Township" appended (e.g. Akron Township) and all ~~CTU~~ 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 County Code

Database Name	CO_CODE_L		
Data Type	Text	**Inclusion**	Mandatory
Width	5	**Domain**	County Code
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 code standard; Minnesota state code standard.		

>> Mark Kotz (Metropolitan Council)

4.11 hyphenate "two-character"

>> Jim Krumrie (MnGeo)

Change inclusions for 4.7 Left CTU Code, 4.8 Right CTU Code, **4.11 Left County Code** and 4.12 Right County Code from *Mandatory* to *Conditional* or *Optional*

These elements are essentially coded duplicates of elements 4.9, 4.10, 4.13 and 4.14, respectively, and the latter are already mandatory.

Requested Domain Changes

Remove County Codes Lookup Table from domain

The FIPS values and names in the table needed by this standard are already provided in the 4.11-4.12 County Code and 4.13-4.14 County Name domains, respectively.

4.12 Right County Code

Database Name	CO_CODE_R		
Data Type	Text	**Inclusion**	Mandatory
Width	5	**Domain**	County Code
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 code standard; Minnesota state code standard.		

>> Mark Kotz (Metropolitan Council)

4.12 hyphenate "two-character"

>> Jim Krumrie (MnGeo)

Change inclusions for 4.7 Left CTU Code, 4.8 Right CTU Code, **4.11 Left County Code** and 4.12 Right County Code from *Mandatory* to *Conditional* or *Optional*

These elements are essentially coded duplicates of elements 4.9, 4.10, 4.13 and 4.14, respectively, and the latter are already mandatory.

4.13 Left County Name

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

>> No comment received on this attribute

4.14 Right County Name

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

>> No comment received on this attribute

4.15 Left State Code

Database Name	STATE_L		
Data Type	Text	**Inclusion**	Mandatory
Width	2	**Domain**	State Code
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 code standard.		

>> No comment received on this attribute

4.16 Right State Code

Database Name	STATE_R		
Data Type	Text	**Inclusion**	Mandatory
Width	2	**Domain**	State Code
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 code standard.		

>> No comment received on this attribute

4.17 Left Parity

Database Name	PARITY_L		
Data Type	Text	**Inclusion**	Mandatory
Width	1	**Domain**	St Parity
Examples	**O** (Odd), **Z** (Zero Address)		
Description	The even or odd property for address numbers on the left side of the road centerline.		

4.18 Right Parity

Database Name	PARITY_R		
Data Type	Text	**Inclusion**	Mandatory
Width	1	**Domain**	St Parity
Examples	**E** (Even), **B** (Both)		
Description	The even or odd property for address numbers on the right side of the road centerline.		

>> Mark Sloan (Clay County):
Putting the Left Parity and Right Parity next to From and To addresses would also make it easier for data entry.

>> Caitlin Christenson (Stevens County)
"I thought zero addresses aren't valid"

>> Vic Barnett (Ramsey County)
Elements 4.17-4.18 Parity - I would recommend making Parity an optional field. Statewide I do not think this is a critical field and could easily be optional.

>> Mark Kotz (Metropolitan Council)
***4.17 and 4.18**: Is there some specific reason why codes (O, E, B, Z) are used in this element instead of the actual values Odd, Even, Both, Zero Address? In general, the full value should be used where values are short like this and there is no defined purpose for using a code.*

4.19 Left Postal Community Name

Database Name	POSTCOMM_L		
Data Type	Text	**Inclusion**	Optional
Width	40	**Domain**	Postal Communities
Examples	**Alexandria**, **Golden Valley**		
Description	A 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 the default 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 default city name for this ZIP Code is Duluth. USPS recognized and default city names for a given zip code can be found using this USPS form.		

4.20 Right Postal Community Name

Database Name	POSTCOMM_R		
Data Type	Text	**Inclusion**	Optional
Width	40	**Domain**	Postal Communities
Examples	**New Germany**, **Taunton**		
Description	A 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 the default 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 default city name for this ZIP Code is Duluth. USPS recognized and default city names for a given zip code can be found using this USPS form.		

>> Mark Sloan (Clay County): *Wouldn't it be easier to use if 4.19 and 4.20 Postal Community Names were nearer to 4.5 and 4.6 the zip codes? Having 4.15 and 4.16 state codes in the middle of those also makes it difficult to use. Perhaps they should be in the same order as the Addressing Standard: Zip, CTU name, CTU code, Postal Community Name, County Code, County Name, and State. The more the standards match each other, the easier they are for data producers to use.*

>> Mark Kotz (Metropolitan Council). 4.19 and 4.20: *I see that these elements have a domain for postal community name. For the address point standard we do not have a domain. My vague recollection is that we chose not to include a domain because we did not know of the resources that would actively maintain it. I think we should synch up the two standards an have a domain in both or neither.*

5. Routing Elements

5.1 Elevation From

Database Name	ELEV_FROM		
Data Type	Text	**Inclusion**	Mandatory
Width	2	**Domain**	St Elevation
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.		

>> Mark Kotz (Metropolitan Council). ***5.1 through 5.6*** *uber picky comment: all inclusion values have an unnecessary tab after them in the word doc. These could be deleted.*

5.2 Elevation To

Database Name	ELEV_TO		
Data Type	Text	**Inclusion**	Mandatory
Width	2	**Domain**	St Elevation
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.		

>> Jim Krumrie (MnGeo)

Change inclusions for 5.1 Elevation From and 5.2 Elevation To from Mandatory to Conditional

- *Most counties in Greater Minnesota do not have this data.*
- *The Metro area has much more need for this type of data than Greater Minnesota (i.e. more multi-level intersections).*

5.3 One Way

Database Name	ONEWAY		
Data Type	Text	**Inclusion**	Mandatory
Width	1	**Domain**	St One Way
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.		

>> Vic Barnett (Ramsey County)

Elements 5.3 and 5.6: It makes no sense for one-way code to be mandatory and speed limit Conditional. Either this data set can be used for creating a routable network or not. If routable, you need both attributes, if not routable you do not need either. Recommend making both attributes either Optional or Mandatory.

5.4 Impedance Speed

Database Name	SPEED_IMP		
Data Type	Short Integer	**Inclusion**	Conditional
Width	**4**	**Domain**	
Examples	**65**, **80**		
Description	The maximum possible safe speed in miles per hour (MPH) at which the road centerline could carry an emergency service vehicle or the impedance value used for controlling Computer Aided Dispatch.		

>> Vic Barnett (Ramsey County)

Element 5.4 Impedance Speed - Recommend removing this from a statewide standard, if a county has a business need for this, it be maintained internally. The original business needs for this attribute are to control unit recommendations in a computer aided dispatch system and eliminate unnecessary turns in driving directions derived from a network data set that does not use turn penalties. This means it is only relevant to a county's internal use. In a statewide data set, one would always use "Speed Limit", for setting up a routable network.

5.5 Emergency Access

Database Name	EMERG_ACC		
Data Type	Text	**Inclusion**	Conditional
Width	10	**Domain**	Yes No Unknown
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.		

>> No comment received on this attribute

5.6 Speed Limit

Database Name	SPEEDLIMIT		
Data Type	Short Integer	**Inclusion**	Conditional
Width	3	**Domain**	
Examples	**35**, **65**		
Description	Posted traffic speed limit in miles per hour (MPH) for the road centerline.		

>> Vic Barnett (Ramsey County)

Elements 5.3 and 5.6: It makes no sense for one-way code to be mandatory and speed limit Conditional. Either this data set can be used for creating a routable network or not. If routable, you need both attributes, if not routable you do not need either. Recommend making both attributes either Optional or Mandatory.

6. Cartography Elements

6.1 Route Name

Database Name	ROUTE_NAME		
Data Type	Text	**Inclusion**	Conditional
Width	30	**Domain**	St MnDOT Prefix
Examples	**CSAH** (County-State Aid Highway), **CON** (Connector (Ramp))		
Description	The primary Route Name designator for the road centerline based on MnDOT's routing system. Used mainly for map labelling.		

>> Caitlin Christenson (Stevens County)

T = Township Road

UT = Township Road

"Is one paved vs. unpaved?"

(Note: UT represents 'Unorganized Township')

>> Vic Barnett (Ramsey County)

Element 6.1 Route Name - This field as described does not represent route name. Recommend changing the name to Route System Abbreviation, if this attribute is kept at all. I am not sure why we would want this as an attribute. Why not provide a look up table instead of a domain for those interested in this attribute; that way it can always be calculated from route system and route ID.

>> Adam Gardner (City of St. Paul)

The domains 2.1 St MnDOT Route System and 6.1 St MnDOT Prefix do not appear significantly different. The omission of "trunk highway" seems to be an oversight since it is a state-legislated designation and is pertinent to our current data.

6.2 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. Enhanced9-1-1/NextGen9-1-1 Elements

7.1 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 to5-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.		

>> Mark Kotz (Metropolitan Council)

Element 7.1: *Add a space. "A 3 to5-character numeric code"*

7.2 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.		

>> Chelsea Bagent (Swift County)

There have been quite a few additions to the Swift County ESN list (ELT). Please review the attached list and add anything that is missing to the domain.

Note: An Excel document containing Swift County ESN data was provided by Ms. Bagent as part of her comments;

7.3 Left MSAG Community Name

Database Name	MSAG_C_L		
Data Type	Text	**Inclusion**	Mandatory
Width	30	**Domain**	MSAG Community
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.		

>> Chelsey Bagent (Swift County)

Both the code and value need to be updated from De Graff to DeGraff.

7.4 Right MSAG Community Name

Database Name	MSAG_C_R		
Data Type	Text	**Inclusion**	Mandatory
Width	30	**Domain**	MSAG Community
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.		

>> Chelsey Bagent (Swift County)

Both the code and value need to be updated from De Graff to DeGraff.

7.5 Left PSAP Code

Database Name	PSAP_L		
Data Type	Text	**Inclusion**	Mandatory
Width	5	**Domain**	PSAP Code
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.		

>> No comment received on this attribute

7.6 Right PSAP Code

Database Name	PSAP_R		
Data Type	Text	**Inclusion**	Mandatory
Width	5	**Domain**	PSAP Code
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.		

>> No comment received on this attribute

7.7 911 Validation Error

Database Name	VERROR_911		
Data Type	Text	**Inclusion**	Optional
Width	10	**Domain**	Yes No Unknown
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.		

>> Chelsea Bagent (Swift County)

Will there ever be a reference list of VERROR_911 situations that should/can be marked as Yes? Or will these situations only be determined as state validation checks are run and we work through the fall out?

8. Maintenance Elements

8.1 Lifecycle Status

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

>> Adam Gardner (City of St. Paul)

The full build-out of the template and the domain values are really helpful for consistency, but the values are left up to interpretation without defining them. For example, in the LifeCycleStatus domain, we can make assumptions about the difference between a "planned" versus a "proposed" feature, but an additional field in the documentation that defines these values would be especially helpful. Extend this documentation across all domains.

There are some areas of Saint Paul where public right of way is platted, however roads have not been constructed. The inclusion of "Not Built" in the Lifecycle Status domain suggests that we would need to add centerlines for these areas. Similarly, the inclusion of alleys in multiple domains suggests the inclusion of alleys, which we track separately with a completely different set of attributes, and the same for bicycle and pedestrian infrastructure.

>> Jim Krumrie (MnGeo)

Change width of 8.1 Lifecycle Status from 20 to 10; to make it jibe with MAPS v. 1.1 Element 7.1 Lifecycle Status

8.2 Effective Data

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

>> No comment received on this attribute

8.3 Retired Date

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

>> No comment received on this attribute

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).		

>> No comment received on this attribute

8.5 Edited Date

Database Name	EDITED_DT		
Data Type	Date	Inclusion	Mandatory
Width		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).		

>> Adam Gardner (City of St Paul)

It is unclear whether the ArcGIS-standard versioning field *last_edited_date* would pair with *EDITED_DT*.

8.6 Source of Data

Database Name	SOURCE		
Data Type	Text	**Inclusion**	Optional
Width	75	**Domain**	Source
Examples	**Crow Wing**, **Red Lake Nation**		
Description	Source from whom the data provider obtained the road centerline, or with whom the data provider validated the road centerline.		

>> Jim Krumrie (MnGeo)

Change Element Name (and Data Field Name) of 8.6 Source of Data (SOURCE) to PSAP Data Source (PSAP_SRC)

- *Although the element's name, data field name and definition are same as that of 7.4 Source of Data (SOURCE) in MAPS v 1.1 the different examples used show a different intent. Keeping the element and data field names the same may cause confusion for those using both standards.*
- *MRCS v 0.5 includes domain 8.6 Source which MAPS v 1.1 does not.*

9. Business Elements

9.1 Functional Class - Federal

Database Name	FCLASS_FED		
Data Type	Text	**Inclusion**	Optional
Width	1	**Domain**	FClass - Federal
Examples	**1** (Principal Arterial – Interstate), **6** (Minor Collector)		
Description	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.		

9.2 Functional Class - Metro

Database Name	FCLASS_MET		
Data Type	Text	**Inclusion**	Optional
Width	3	**Domain**	FClass - Metro
Examples	**100** (Principal Arterial – Other Freeways (OFE)), **310** (Major Collector)		
Description	Metropolitan Council maintained functional classification for roads within the Twin Cities Metropolitan Planning Organization (MPO) Area.		

>> Adam Gardner (City of St. Paul)

Saint Paul's centerlines are a product from the original TLG/NCompass dataset, which we have adapted to our own purposes. It is a reasonable assumption that we are not the only jurisdiction who may be interested in a transition template from that specific original data product into a new standard. Things like functional class would be of particular relevance here to adapt our data values into the new schema; The centerline data that the City uses currently is derived from The Lawrence Group's dataset prior to becoming NCompass Technologies. As such, many of our centerline attribute fields are adaptable, even if they do not perfectly fit the proposed schema. The functional class (F_CLASS) is a good example of this.

>> Jon Hoekenga (Metropolitan Council):

It is my opinion that the functional class attributes (FCLASS_FED, FCLASS_MET) should be removed from the standard.

Reasoning:

1. *Functional classifications maintained by agencies other than cities/counties who supply all the other attributes.*
2. *Maintaining this information may complicate workflows. Additional rules would need to be documented making it clear which attributes centerline stewards are required to populate, and update processes would need to incorporate functional class updates from non-centerline producing agencies before validation/aggregation.*
3. *Removing functional class fields simplifies the standard*

Potential Solution:

1. *Agencies who maintain functional class classifications can post the data as a related table or a derivative layer along with all the other potential value added classifications maintained by other agencies (e.g. lane number, lane widths, plow info, etc..)*

9.3 Surface Type

Database Name	SURF_TYPE		
Data Type	Text	**Inclusion**	Optional
Width	32	**Domain**	Surf Type
Examples	**Gravel**, **Unpaved Other/Unknown**		
Description	Type of road surface.		

>> Gary Elsner (Mn Department of Agriculture)

Consider adding a 'Minimum Maintenance Road' value to the domain;

>> Adam Gardner (City of St. Paul)

The Surface field is directly corollary [to our existing data] but does not include the full range of values that we currently track, such as: Aggregate; Brick; and Oiled.

9.4 Road Class

Database Name	ROADCLASS		
Data Type	Text	**Inclusion**	Optional
Width	15	**Domain**	Road Class
Examples	**S1630** (Ramp), **S1200** (Secondary Road)		
Description	The general description of the type of road. The Road Classifications are derived from the US Census MAF/TIGER Feature Classification Codes (MTFCC).		

>> Vic Barnett (Ramsey County)

Element 9.4 Road Class (TIGER): What is the business need of this?

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 entered into this field.		

>> No comment received on this attribute

Appendix A - 911 Standards Work Group: Requested Domain Changes

The following changes to the domains in the proposed MRCS v. 0.5 were advanced by the 911 Standards Work Group"

1. **Remove County Codes Lookup Table**

The FIPS values and names in the table needed by this standard are already provided in the 4.11-4.12 County Code and 4.13-4.14 County Name domains, respectively.

2. **Remove 2.1 St MnDOT Route System and 2.2 St Route Direction Domains**

If elements 2.1 Route System and 2.2 Route Direction are removed as requested in #3 above then these domains are no longer necessary.

3. **Change the wording in Note #1 of the 4.7-4.8 CTU ID Text domain**

Replace the words "Legal CTU Name" with "CTU Name" to accurately reflect the change in the 4.9-4.10 domain name.

4. **Change the 4.7-4.8 CTU ID Text, 4.9-4.10 CTU Name and 4.19-4.20 Postal Communities domains:**

Mower County requested "Le Roy" and "Le Roy Township" be corrected to "Leroy" and "Leroy Township", respectively.

5. **Change the wording in Note #1 of the 4.9-4.10 CTU Name domain**

Replace the words "CTU GNIS Codes" with "CTU ID Text" to accurately reflect the change in the 4.7-4.8 domain name.

6. **Change either 4.11-4.12 County Code or 4.13-4.14 County Name domain**

The former includes counties outside of Minnesota while the latter does not. They should include the same counties.

7. **Change the 6.1 St MnDOT Prefix domain**

The "T" and "UT" codes both have the value "Township Road". Each value should be unique.

8. **Add note to domain 7.1-7.2 ESN**

Note should explain that only metro ESNs are included but that there is a zero code and value placeholder for Greater Minnesota ESNs. The reason being ESNs are currently unique only in the metro but not throughout the state.

9. **Change the 7.5-7.6 PSAP Code domain**
    - Olmsted County PSAP requested its code be changed to “R/OLM” and value to “Rochester/Olmsted PSAP”.
    - Remove “~~Sheriffs Office~~” from Pine County PSAP’s value.

10. **Change the 8.1 Lifecycle Status domain to match 7.1 Lifecycle Status domain of MAPS v 1.1**

Reduce the domain choices to: *Active*, *Proposed*, and *Retired* to make the domains consistent.

Appendix B: Additional comments collected during the public review that are not related to a specific attribute in the proposed Minnesota Road Centerline Standard

Comments Received:

>> Alan Laumeyer, Goodhue County

Goodhue County will update our road centerline data set to the proposed standard. The soon to be available script, to help automate the process of data aggregation and standardization, will be useful and contribute to the formation of the necessary attribute fields in the road centerline data set. A valuable assistance tool for the data authors. Please let us know when this script will be available.

>> Andrew Andrusko, Minnesota Department of Transportation

I write to you today as the steward of railroad GIS data for the Minnesota Department of Transportation (MnDOT). I wanted to provide my comments concerning the proposed draft Road Centerline Standard version 0.5.

Railroad data standards and GIS topology are different than the current system used for roadway networks. Where possible we are working with our partners internal to MnDOT as well as other governing bodies such as local, regional, federal, tribal, and railroads to improve coordination between the various data needed surrounding railroad lines and crossings.

I wanted to ensure that the standards committee is made aware that MnDOT Office of Freight and Commercial Vehicle Operations is working with the MnDOT Office of Transportation System Management and the Minnesota Department of Information Technology services (MNIT) to transition our current GIS data to an updated standard based on higher accuracy field collected data. This process will take approximately 2 years to complete. Once completed the precision of the data, particularly with respect to the railroad line work as well as the railroad at-grade crossings will be significantly higher than it currently is today.

Additionally, as part of the process of updating our railroad data we currently utilize roadway GIS data to calibrate our existing data. For each railroad grade crossing location, we need to consume roadway characteristics to provide reliable information to our state Railroad Inspectors and Railroad Coordination Project Managers. As a result of this need, we are currently working to develop a new transfer process with MNIT that will link the roadway data entered in MnDOT's data warehouse concerning the Linear Referencing System as well other key feature classes to a new information system that our office has developed to track, maintain and manage railroad at-grade crossings for public safety. This new system is called BlackCat Rail and will be our system of record for railroad grade crossings. In summary, these data are linked together.

For these reasons I also wanted to communicate our support for your work toward standardization of roadway GIS data. This work will assist us in ensuring that our closely related railroad GIS data is able to be maintained with greater accuracy in the future.

>> Vic Barnett, Ramsey County

Overall, this standard contains useful data elements however; the standards committee should review the proposed standard one attribute at a time. From what I see the use of Mandatory, Conditional, or Optional, is completely arbitrary. Second, I think the committee could remove several attributes because they contain redundant information.

>> Mark Kotz, Metropolitan Council

Inclusion: The standard references two types of conditional situations:

1. Conditional - If Applicable (Mandatory if applicable)
2. Conditional - If Available (Mandatory if available)

However, the data elements that have a conditional inclusion status, just say "conditional" and do not distinguish between the two. The standard must specify which type of conditional it is. See the parcel data transfer standard for examples.

>> Duane Anderson, City of Woodbury

We recently began using an asset management package that will allow us to inventory, inspect, and maintain the City's streets and due to the quality of the Road Centerline layer offered by Washington County, we opted to use their layer as an inventory starting point. However, in reviewing said layer's fields, we found that a couple of operationally critical fields were not available. They are:

- **Snow Plow Route**
    - You may not want to open Pandora's box, but there isn't a County or City that wouldn't use this – locally
- **Material Cover Type / Recipe**
    - With all of the road rehab activity going on, this has become VERY important
    - The layer includes a field called Surface Type, but because it refers to a domain, I was worried that it really meant Gravel, Asphalt, Concrete, etc. rather than actual material cover mix/recipe.

>> Keith Anderson, LOGIS

Excellent job. Please consider discussion on a three letter lower case prefix to all Domain Names. (mrcRoad_Class, mrcYesNoUnknown) etc. This will allow ease in locating domain names specifically used for the MRCS dataset in systems that may store all of their domain names in a common location.

>> Ashley Ignatius, MPCA

These are my 3 unofficial comments/questions – no formal reply necessary.

1) Canada. What do we do when a road enters/exits Canada? Is it possible that the Left/Right Postal Community Name or Left/Right State Code or Left/Right MSAG Community Name could actually be in Canada/Canadian? – If yes – I couldn't tell if that was an option.
2) Lifecycle Status – that is of the line itself – not the road, correct? Will changes be tracked? If edits are made to improve the geometry of the road, will it be a new feature and the old feature will be retired? Or will that edited road with improved geometry just remain active. I think "not built" for the STATUS of the road centerline might be confusing.
3) Will this dataset be compatible with Open Street Map?

>> Kitty Hurley, MnDNR

Mandatory inclusion fields: It's somewhat difficult to read which fields are mandatory and which ones aren't without reading the standards document in its entirety. As a consumer I'd like to be able to identify the mandatory fields more readily. Could Mandatory be shown in all caps (e.g. Mandatory → MANDATORY), within the Standard (PDF) and Schema spreadsheet (XLSX) documents? It might also be useful to add in a question to the FAQ document (PDF) as well, such as "In the proposed standard, what are the mandatory elements for the Minnesota Road Centerlines dataset?" with a list of the element number, element name, data field name, type, and width. For example:

In the proposed standard, what are the mandatory elements for the Minnesota Road Centerlines dataset?

Element number	Element name	Data field name	Type	Width
1.1	Object ID	OBJECT_ID	Object ID	<NA>
1.3	Feature Unique ID	UNIQUE_ID	Text	36
2.1	Route System	ROUTE_SYS	Text	2

Overall the standard is fantastic; the visuals are great, and it didn't take too long to understand and get through all of the documents. Thank you again for putting together this fantastic standard and resources for the Minnesota professional community!

>> Gary Elsner, Minnesota Dept. of Agriculture

I would be a user of this data, I don't create this type of data. As I reviewed it, I found it would be helpful to know a little more than I do.

1. Is the street centerline, the centerline of each lane regardless of the # of lanes? I assume it is.

2. Curious about the decision to include attributes for things that could be derived from other layers. Some of these (states and counties) have static boundaries, others like zip code areas (and with them perhaps zip code names), CTU, etc. can and do change, sometimes often. The standard doesn't address attribute maintenance directly but for these types of things, it may need to. If you store these, then there becomes a currency question on them – i.e. do they match the current layer they are based on and/or when were the road attributes updated relative to the layers the attributes are based on?

   Along this line, if you are attributing roads relative to political boundaries did you consider including tribal boundaries? If you are storing attributes for road relationship to other government/municipal areas, this seems like a logical inclusion.

3. I would consider adding a field/attribute for # of lanes; also, as a road type, consider adding "Minimum Maintenance Road" to the domain.

>> Adam Gardner, City of St. Paul

Saint Paul Public Works and the Office of Technology and Communication have reviewed the proposed Minnesota Road Centerline Standard, and offer the following review:

The centerline data that the City uses currently is derived from The Lawrence Group's dataset prior to becoming NCompass Technologies. As such, many of our centerline attribute fields are adaptable, even if they do not perfectly fit the proposed schema. The functional class (*F_CLASS*) is a good example of this.

Some fields may require significant effort to convert or create to be compliant with the proposed schema, such as: *One Way*; Elevation From/To; and *Route ID*.

The *Surface* field is directly corollary but does not include the full range of values that we currently track, such as: Aggregate; Brick; and Oiled.

Some of the mandatory fields that we do not currently track would be easy enough to produce and maintain. The bulk of section 4 is a good example of this.

The domains *2.1 St MnDOT Route System* and *6.1 St MnDOT Prefix* do not appear significantly different. The omission of "*trunk highway*" seems to be an oversight since it is a state-legislated designation and is pertinent to our current data.

There are some areas of Saint Paul where public right of way is platted, however roads have not been constructed. The inclusion of "*Not Built*" in the *Lifecycle Status* domain suggests that we would need to add centerlines for these areas. Similarly, the inclusion of alleys in multiple domains suggests the inclusion of alleys, which we track separately with a completely different set of attributes, and the same for bicycle and pedestrian infrastructure.

It is our understanding that the inclusion of additional fields would not be problematic for compliance with the proposed standard. We would likely do this for fields that we use for additional purposes such as assessments (*ROWCLASS*, *STP_CLASS*), street maintenance and operations (*BASE*), and interoperability with our asset management systems (*CMMSPARENT*, *CMMSID*, *CMMSCHGREQ*).

It is unclear whether the ArcGIS-standard versioning field "*last_edited_date"* would pair with *EDITED_DT*.

>> Chelsey Bagent, Swift County

Am I correct in assuming that if an update/submission is made for an RCL domain that is also made for the corresponding domain of the other layers (i.e. ADP and ESB)?

- Abbreviations
    - This will cause us to maintain multiple road name fields, because we need the abbreviated directional and street types for internal systems and purposes.

- Domains
    - Does adhering to the domains without having domain tables, mean that the fields need to be populated with the domains code attributes or with the domain value attributes?
        - I am assuming it is the code that is meant to be used in attribution, but I think this should be clarified in the document.
    - I sent an email of domain attributes that need to be updated/submitted to the Standards Committee Chair.
    - It would be helpful to add some of the extra info to the domain tabs that were in the ADP schema doc.
        - Such as CO_CODE & CO_NAME on the CTU ID Text tab to help determine the correct CTU code when a community name appears in multiple counties.
    - It would be helpful if explanations for the street elevations were added to the domain tab.

- Data Element Details
    - Will there be a verification process in place to determine that there are not duplicate UNIQUE_IDs between datasets?
    - More explanation/description/resources need to be given for the MnDOT fields.
        - Ex: What is the definition of route direction? How do you know if it increases or decreases?

        - Ex: Where do you get the GNIS ID for route jurisdiction?
        - Ex: How do you determine the state depiction of road centerline direction?
        - Ex: What are the definitions of primary and secondary?
    - All of our road ranges are theoretical, and we have no plans of updating them to be actual ranges.
        - The road range field descriptions need to be updated to include theoretical ranges. . .or. . .a second group of range fields should be added to the standard that are for theoretical ranges.
        - Including theoretical ranges in the data sharing standard is necessary for us because the optimal use of surrounding county data sets for 9-1-1 purposes happens when they include theoretical ranges. I believe that this would be true for most other counties in the area as well.
        - If specific actual road range fields need to be included in the standard then they need to be Optional not Mandatory, because that is not how our data (nor many other counties data) is maintained.
    - The description for the parity fields should include what is meant by "both".
    - The description for the elevation fields are somewhat vague and should include a more thorough explanation &/or examples.
    - The description for the one-way field could use a more thorough explanation &/or examples.
    - Will there ever be a reference list of VERROR_911 situations that should/can be marked as Yes? Or will these situations only be determined as state validation checks are run and we work through the fallout?
    - The descriptions for the functional class fields need to have more thorough explanations &/or examples.

- Sample Dataset
    - The sample dataset has a field name of OBJECTID but the documents show OBJECT_ID
    - The sample dataset accompanying the finalized standards should include attribute examples for all of the fields.

Appendix C: 911 Standards Work Group Email Discussion (5/18/18 through 6/1/2018) on the use and inclusion of theoretical vs. actual (Assigned) addresses in the MRCS v. 0.5

MARK VOLZ, LYON COUNTY (5/18/2018, 2:46 PM)

I have been reconsidering if it is useful to maintain both an actual and theoretical address range. My e-mail crashed so I cannot find who should receive these comments. Jim, it looks like Geoff did not completely answer your question *"it would just be updated in one place in our schema rather than be carried in two place[s]".* Perhaps he is referring to not wanting to maintain both the theoretical address range and the actual address range as the two places.

Anyways, here are my thoughts:

- I strongly recommend removing the requirement that roads must use actual address ranges for ADR_F_L, ADR_TO_L, ADR_FR_R, and ADR_TO_R. By default, organizations should just use what they already have for ranges. Forcing one style or the other might be met with resistance or delays.
    - I do not know how to populate actual address ranges for blocks that do not have any address.
- I am having my doubts that it is useful to maintain both the actual and theoretical address ranges. Lately I have been wondering if having fewer attributes is better as it decreases the chance of data entry errors.
    - Each address range type has pros and cons. There are some benefits of having both, but probably not enough to require both styles.
    - I personally think it is best to have a mixed format of address ranges. Actual ranges could be used in the cities, and theoretical in rural areas. This way the address range style matches the format used to assign 9-1-1 addresses.
- I disagree with you about adding an attribute to indicate if the address range uses theoretical or actual ranges. I personally the address ranges could be explained in metadata. In addition, I think this would mainly benefit data aggregators, not individual counties.
    - If we must add this attribute, then it should be optional.

JIM KUMRIE – MNGEO (5/21/2018, 10:56 A.M.)
Hello, here is another item that I re-offer for your discussion: The MRCS, as it stands, requires that the address number range fields (ADR_FR_L, ADR_TO_L, ADR_FR_R and ADR_TO_R) be **actual** address numbers as found on the street. Although we as a workgroup decided last summer to keep both actual and **theoretical** address number range fields (i.e. all numbers used without gaps between blocks), when we joined our road centerline (RCL) standard with MRCC's (Metro Regional Centerline Cooperative's) the theoretical fields were dropped.

However, my MnGeo colleagues and I have found that many counties in Greater Minnesota use theoretical address number ranges in at least their rural (i.e. township) areas and use actual address number ranges only within their cities, if at all. I talked with Mark Volz of Lyon County about this and he said it would be extremely difficult for counties such as his to switch to all actual address numbers and didn't know how one would populate the actual address number range fields for RCLs that had no addresses.

There are pros and cons for both types of address number and, of course, what works in the Metro may not work in Greater Minnesota (and vice versa). Therefore, I propose we request one of the following changes to the MRCS for accommodating both types:

1. Add the four, theoretical address number range fields back in (T_ADR_FR_L, T_ADR_TO_L, T_ADR_FR_R and T_ADR_TO_R).

2. Allow the existing address number range fields (ADR_FR_L, ADR_TO_L, ADR_FR_R and ADR_TO_R) to contain either actual or theoretical numbers but indicate which type is being used for a given RCL by adding an Address Range Type field (from FGDC 2.3.5.1; domain=actual, theoretical, unknown).

3. Allow either type of address number in the existing address number range fields like #2 but indicate which types are used where only in the RCL metadata.

Personally, I prefer #2 while Mark [Volz] prefers #3. What do you all think?

MATT GOODMAN – SAINT LOUIS COUNTY (5/21/2018, 11:06 AM)
For those who are using 'actual' ranges: are their MSAGs also sliced-up into blocks, leaving gaps where there are actual addressing gaps? Won't these 'actual' ranges cause problems when trying to sync/compare/generate GIS-generated MSAGs? In any case, #2 in Jim's list is the most explicit handling of the issue. #3 is OK, but the metadata in a statewide aggregated dataset would just have to say "could be theoretical or could be actual", since the source data would be mixed.

VIC BARNETT – RAMSEY COUNTY (5/21/2018, 11:08 A.M.)
So, the field is called actual addresses, but it is not that in the MRCC. Best practice is to use exhaustive address ranges. But you really want addresses to and from, actual or exhaustive, it is really up to what is best for business needs of the data producer.

BRAD ANDERSON - CITY OF MOORHEAD (5/21/2018, 11:51 A.M.)
I agree with Matt and Vic, best practice is to use full-exhaustive ranges, and how would the MSAG look broken into separate block segments with gaps? When we began building (private sector) commercial road centerlines in the early 1990's, if you did not apply the full-exhaustive range for each centerline you would probably get fired. It was the industry standard.

I found many centerline segments for Moorhead had attempted to show actual ranges, but the maintenance \ workflow was not efficient because almost every address validation error I received from the PSAP were house numbers that did not place within the shortened 'actual' ranges. I apply the full range to each segment. In the future, 'staff-time-money' willing, I would like to research the actual address ranges and begin maintaining them.

MARK VOLZ – LYON COUNTY (05/21/2018, 1:04 PM)
It sounds like we should definitely remove the requirement for the actual or shortened address ranges (101-116) from the roads as it seems that the fully exhaustive ranges type (100-199) is the norm and best practice. So my question is should we or can we require fully exhaustive ranges? Beyond best practice, is there any need for full ranges such as for MSAG generation? If we allow either range type are there enough exceptions to justify another attribute to specify if an range is fully exhaustive vs a shortened range? Similar to Brad, where the actual range is the basis for address assignment I might be interested in maintaining the full exhaustive range as well as the shortened address

range. Perhaps we should consider including both range types in the road centerline?

ROSS HOFFMANN – LAKE COUNTY (05/21/2018, 2:06 PM)
I'm not sure if I'm understanding this correctly, but actual ranges would be basing ranges on addressed properties that are present and what their numbers are versus computed or theoretical ranges for each road segment, correct?

JIM KUMRIE – MNGEO (05/21/2018, 2:34 PM)
According to the FGDC:

"2. Actual ranges give the lowest and highest Complete Address Numbers that have been assigned and are in use along the addressed feature, excluding any addresses that are anomalies, especially with regard to parity or sequence."

"3. Potential (or theoretical) ranges include all the numbers that could be assigned along the addressed feature based on the Address Reference System Numbering Rules. Potential ranges permit no numbering gaps between the range and its preceding and following ranges. Potential ranges are equal to or broader than actual ranges." (p 139, FGDC Document Number FGDC-STD-016-2011)

Sorry that that wasn't made clear before. I will leave answers to Mark's questions below up to the group. Thanx again.

JIM KRUMRIE – MNGEO (5/29/2018, 5:03 PM)
Thanx to everyone who contributed to this discussion. Based on your feedback I will submit the following requested changes to the MRCS for the public review:

1. The existing address number range fields (ADR_FR_L, ADR_TO_L, ADR_FR_R and ADR_TO_R) should permit either *actual* or *theoretical* address ranges.
    a. The examples for these fields should be changed to reflect these two types (MRCS v 0.5, p 14):
        ADR_FR_L: **37** – 55, **100** – 198
        ADR_TO_L: 37 – **55**, 100 – **198**
        ADR_FR_R: **38** – 56, **101** – 199
        ADR_TO_R: 38 – **56**, 101 – **199**

    b. The descriptions for these fields should be changed to the following (in MRCS v 0.5, p 14):

"The first (last) actual or theoretical address number in the range of address numbers on the left (right) side of the road centerline.
Note: *Actual* address ranges are composed of the highest and lowest address numbers actually assigned along the road centerline. *Theoretical* (potential) address ranges include the highest and lowest address numbers that would be assigned if no numbering gaps were permitted between the ranges of the centerline and preceding or following ranges (e.g. 100 – 198 if preceding range is 2 – 98 and following range is 200 – 298)."

2. An **Address Range Type** field (ADRRANGTYP, Text, Width: 11, Conditional) should be added to the schema along with an *Address Range Type* domain including the values: *Actual, Theoretical* and *Unknown*.

My reasoning: Nearly everyone said they didn't think that the address range number fields should require *actual* address ranges only. Therefore, I decided to request changing the existing fields to allow either address range type. Although a couple folks had mentioned that it might be helpful to include both types of address range fields it didn't seem like a very common or urgent need at this point. Perhaps in the future this could be revisited after the MRCS is used for a while.

Finally, although it is possible to use metadata to describe the address range types used in individual county datasets, Matt's point about that information becoming overly diluted in a statewide dataset made sense. Therefore, I decided to request adding the Address Range Type (ADRRANGTYP) field although it would be conditional since it does not seem to be absolutely necessary like a mandatory field but still useful provided a county has that information.

VIC BARNETT - RAMSEY COUNTY (5/30/2018, 11:21 A.M.)
Thank you for sending this out. I suggest leaving out an **Address Range Type field.** Keep in mind this data set is a gift from the counties to the state. My thought is; If you ask for too much beyond what in within a County's business needs, you may end up with nothing;

TODD LUSK – DAKOTA COUNTY (5/30/2018, 11:40 AM)
I don't think it hurts to ask for it, however, I might be worth considering making it an "Optional" field. I don't think we would have an issue with populating such a field as it's pretty straightforward for us. We almost suggested something similar when the MRCC was being developed. Our belief is that having a dataset with two different "range" fields populated doesn't make the data useable "out-of-the-box". Someone would have to create their own "range" fields, then copy the appropriate data from the appropriate column for each county, into them before building any kind of address locator.

ROSS HOFFMANN – LAKE COUNTY (5/30/2018, 11:56 AM)
I'm a little out of my depth here, but why not make Range Type field default to 'Theoretical' out of the box since, from the previous discussion, sounds like most ranges are theoretical. Or if that's too strict, default to 'Unknown'.

VIC BARNETT - RAMSEY COUNTY (5/30/2018, 12:26 PM)
I guess I am missing something, if you are not using exhaustive address ranges, the range that is covered should work for building an address locator that will capture all actual ranges, including any Utility addresses like cross boxes or traffic signal boxes.

MARK VOLZ – LYON COUNTY (5/30/2018, 3:00 PM)
Like Vic I wonder if we are asking too much to have each county verify if each segment they use is actual or theoretical. I think it would take just as much work to populate the range type as it would be to populate both the theoretical and actual ranges.

Perhaps we need the following:
Range Type 1 (ADR_FR_L, ADR_TO_L, ADR_FR_R, ADR_TO_R). Required. Assumed to be a theoretical address, but not enforced unless range type 2 is populated. If range type 2 is populated, then this must field must have theoretical addresses.

Range Type 2 (ADR_FR_L2, ADR_TO_L2, ADR_FR_R2, ADR_TO_R2). Optional. Actual address ranges.

This would give counties the option of only needing to supply one range type, not go through the process of verifying which range type they use, and if they so choose to have both theoretical and actual ranges then they can use consistent field names across the state?

JIM KRUMRIE – MNGEO (5/31/2018, 10:12 AM)
I guess I'm confused with your response, Mark. If counties have enough info to fill in both sets of address range fields wouldn't they be able to fill in the address range type field (which would also be less work)? Remember that an *optional* field obligates a county to populate it only if they have the data already. Only *mandatory* fields require a county to obtain and provide the data regardless. That being said, Todd's suggestion of making the address range type field *optional* (i.e. county's choice to obtain or provide) may have some merit and I will look into this further.

Vic, to your point about the dataset being a "gift": Actually, this is a collaborative endeavor and we at the state are very grateful for the cooperation of Minnesota's county/PSAPs. However, being collaborative it means that county/PSAPs also benefit in terms of having a single Spatial Interface (SI) to submit their data to for a statewide NG9-1-1 system. Otherwise, it would be up to each to spend (potentially) millions of dollars to build their own NG9-1-1 system.

MATT GOODMAN – ST. LOUIS COUNTY (5/31/2018, 2:54 PM)
Sorry – not trying to belabor this question/discussion, but…I'm curious: what is the *business need* for *knowing* whether the ranges are theoretical vs. actual? In other words, could we just have a single set (of 4) address range fields and *not* worry about whether the data stored in them is theoretical vs. 'actual'? I scrolled all the way down in this thread and re-read Jim's original question, but I don't think it state's *why we care* whether it's one or the other.

> **Is there a reason we're concerned about which are used, or can we just allow either type?** Both will serve geocoding purposes and address validation for NG9-1-1 systems (knowing that each has strengths/weaknesses and the local GIS authority will use what works best for them, in their scenario).

The *only* potential critical issue I can imagine is the eventual construction of a GIS-derived MSAG. I suppose it's entirely possible that it would not be problematic, to have a separate MSAG record for each block where 'actual' ranges are used in the GIS…maybe that's not a problem. It would certainly make a larger MSAG. But, if this type of overly-segmented MSAG *would be* an issue (for example: if the state wants to compare the GIS-derived MSAG with the legacy MSAG, they would be vastly different)....then that's the one scenario where I would concede we probably want/need a field to denote whether the address ranges given are 'continuous' vs. 'actual'. Ultimately, I would prefer to avoid having this sort of 'meta'- field, denoting what type of data exists in other fields.

I would suggest that if there are other 'secondary' users of the statewide road dataset who are particularly interested in knowing whether ranges are actual vs. theoretical, perhaps they can determine that on their own, by conducting their own analysis. Years ago, I built model that compares road segments by...

- Name
- Coordinates of their start or end nodes
- Highest or lowest range number

The model identified instances where a road is spatially continuous (segment to segment) but has a gap in the address range numbering. Or, perhaps this is a model that the state should/can set up and run as a standard QC check anyway? (it might find some unintended gaps in address ranges) and could perhaps handle the burden of populating a meta- field denoting 'actual' vs. 'continuous'?

VIC BARNETT – RAMSEY COUNTY (5/31/2018, 3:11 PM)
Matt, you hit the nail on the head. Address ranges are address ranges, there is no THEORETICAL business need to label a range as actual or theoretical. And by theoretical, I mean exhaustive.

JIM KRUMRIE – MNGEO (6/1/2018, 9:15 AM)
Marcia, Dan wanted to know what you thought about all of this. Is an address range type field necessary for the Geo-MSAG as Matt surmises below or for some other use?

JIM KRUMRIE – MNGEO (6/1/2018, 11:03 AM)
I got your email address from Dan Ross, my boss here at MnGeo. He suggested I contact you regarding how New York state handles theoretical (i.e. potential, exhaustive) versus actual address number ranges for your road centerline features. That is, address number ranges without gaps between road centerlines (theoretical) versus those ranges that fit exactly around the addresses on each road centerline and sometime produce address number gaps between centerlines (actual). In Minnesota, we have both types. In our cities they tend to be actual while in the rural areas they are more likely to be theoretical. Does New York's road centerline data have both types? If so, do your centerline attributes have two sets of address number fields available for both types or just one that may contain either type? Finally, if your road centerline fields have room for only one set of either type do you have an Address Range Type field like FGDC 2.3.5.1 to denote its type? Any information you have re: these questions would be very helpful. Thanx much!

CHERYL BENJAMIN – NEW YORK OFFICE of IT SERVICES (JUNE 1, 2018, 11:09 AM)
In New York State we use theoretical ranges on our streets so that there is no address gap at intersections. Ending address range values for cul-de-sacs and other dead-end roads may be scaled back to the last actual address (depends on local 9-1-1 preference). At municipal boundaries though, we will show gaps in address ranges if there are true gaps. For example, it is not uncommon that when crossing from a village or city into the surrounding town, the addresses may jump from numbers in the hundreds to numbers in the thousands, so we might have an address range in a city or village end at 521/522 and the address range in the adjacent town may start at 2100/2101.

Our reason for not carrying the actual ranges is that we have statewide address points that can be used for the exact location and the ranges are the fall back if we do not yet have an address point. Since addressing is based on the mathematical interpolation, it should provide a close enough initial location. It also alleviates excessive data maintenance of two address ranges. We do not carry the "range type" as an attribute. Our current documentation about our NYS Streets and NYS Address Points data is available at:

Streets: *http://gis.ny.gov/gisdata/inventories/details.cfm?DSID=932*
Address Points: *http://gis.ny.gov/gisdata/inventories/details.cfm?DSID=921*

Note that we will be implementing a new data model this summer to more closely align with the approved NG911 GIS Data Model as the current model was based

on a 2012 draft. Once implemented, new documentation will be posted, most likely with the September quarterly release (assuming all goes well).

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MARK VOLZ – LYON COUNTY (6/1/2018, 11:25 AM)
Just out of curiosity how many counties use theoretical (exhaustive), actual, or mixed address ranges? If a major percentage of counties already use theoretical addresses, then perhaps the ones that are left might be willing to convert their ranges to fit the norm. I don't think it would be too difficult to convert actual ranges to theoretical ranges, and perhaps the state might be willing to help some counties that cannot do the work on their own. I guess in the end I think if no counties object to using theoretical ranges then there would be no need for a range type. I also agree with New York that the roads with theoretical ranges are better for MSAG generation, and verifying that every address locates, while address points are better for precise geocoding.

MARCIA BROMAN – MESB (6/1/2018, 11:28 AM)
Based on the discussions and work that the MESB has had with the NG911 vendors, there is no need for an "address range type" field in the MN centerline data that would be loaded into the ECRF/LVF or used for GIS-based MSAG creation. The schema the vendors are using on the ingest of customer GIS data does not have such a field and only accepts one set of address ranges. The GIS-based MSAG created by the vendor will use whatever ranges are submitted by the data producer. So whether the range on a specific segment or universally for the entire centerline dataset are 'actual,' 'actual + a little buffer at each end,' or fully 'theoretical-block range style' would not make a difference in the processes the NG911 vendors use.

We anticipate that the GIS-based MSAGs will look substantially different than the existing legacy MSAGs. Our understanding from the NG911 vendor about our GIS-based MSAG trial is that each centerline segment will create either one or two GIS-based MSAG entries (B, E or O). Ranges will not be grouped together to eliminate address gaps between segments. While this will greatly increase the number of GIS-based MSAG records compared to the legacy MSAG entries, this

method introduces fewer problems with interpreting the centerline data in the formation of the GIS-based MSAG.

The MESB's assessment is that the ranges in the legacy MSAG, having being developed over decades, do not consistently follow any standard and in many cases are overly broad in nature. This has led, as a result, to addresses being considered "MSAG-valid" that are truly not valid in the real world. Similarly, in most cases, the centerline ranges the MESB has seen in use in the metro area cannot be universally categorized as theoretical or actual, but only generally so. In some instances, there are good reasons for a segment to have very specific actual ranges, within an area that might generally use theoretical, or actual + a little buffer ranges on the other segments. We feel that the county data producers are in the best position to make the judgments about what ranging needs to be done on a segment. Therefore, we have always felt that a keen validation of the GIS data, including use of the 911 data, is the best approach to prepare for NG911.

For these and other reasons, rather than to attempt/plan to do a record-by-record comparison of the legacy MSAG to the new GIS-based MSAG, the MESB has been focusing on various other 911/GIS validation methods such as:

1) Making sure that all 911 ALI addresses can geocode to the centerline or, if not, that there is a specific reason why it will only geocode to an address point,
2) Making sure that there is an address point for every 911 ALI address, or, if not, there is a specific reason why,
3) Making sure that all address points can geocode to the centerline,
4) Validating that each 911 ALI address and address from each of the address points has the same PSAP call routing and ESN/ESZ assignment using the NG911 data as using the legacy 911 data. If not, understanding why.

The above validations sometimes result in going back to the county data producer and having a centerline range adjusted on specific segments. But overall, from a 911 perspective, we are not imposing or recommending a requirement on the type of address range used by the data producers. Nor from a 911 perspective of GIS-based MSAG creation or use of the datasets in the NG911 call routing/location validation platforms, do we see the need for an additional attribute for 'address range type' in the MRCS. There may be arguments for or against this type of attribute with regard to other business uses of the dataset

beyond 911, but I'm not going to touch that one with a 10-foot pole! Hope that helps.

VIC BARNETT – RAMSEY COUNTY (6/1/2018, 11:30 AM)
Sorry for the short answers and confusion on this, I honestly do not understand what the problem is. Please would you answer a couple of questions?

1) If an assigned address range covers all the addresses along a segment, what difference does it make if that range is actual or exhaustive?

2) What is the utility in knowing if a range is actual or exhaustive?

JIM KRUMRIE – MNGEO (6/1/2018, 12:23 PM)
Thanx, Marcia! I appreciate your detailed explanation. Based on your response and those of others I have received of late I have changed my mind in this respect: I will not recommend the MGAC Standards Subcommittee add an Address Range Type field to the MRCS.

Nevertheless, since it appears that the state's address ranges are a mix of actual and theoretical types I will recommend that the Subcommittee remove the word "actual" from the descriptions of the address range fields (i.e. ADR_FR_L, ADR_FR_L, ADR_FR_L, ADR_FR_L; p 14 of MRCS).

Also, I will recommend that they add the following at the end of the description for each of the address range fields for clarity:

Note: May be *actual* (i.e. based upon actual addresses along the road centerline) or *theoretical* (i.e. consisting of numbers that allow no gaps between adjacent road centerlines); it seems that these two minor changes will suffice for most county folks' expressed needs.

Thank you to all who participated in this somewhat laborious and even tendentious discussion. My intent was not to belabor or provoke unnecessarily but to thoroughly examine the issue. It seemed logical to me, at first, that if we were to permit either type of address range in the existing fields that it would be necessary to also include a field that denoted what type was being used like what is specified in FGDC 2.3.5.1. (I apologize if that was not clear) However, it became apparent to me in the discussion that most, if not all, of you disagreed with this assertion so I am willing to change my position.