NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard

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Prepared by:
National Emergency Number Association (NENA) Core Services Committee, Data Structures Subcommittee, Civic Location Data Exchange Work Group

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The National Emergency Number Association (NENA) Core Service Committee, Data Structures Subcommittee, Civic Location Data Exchange Format Working Group developed this document.

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1 Executive Overview

1.1 The NENA NG9-1-1 United States CLDXF Standard

NENA Core Services Committee, Data Structures Subcommittee, Civic Location Data eXchange Format Working Group (CLDXF WG) has created the *Next Generation 9-1-1 (NG9-1-1) Civic Location Data eXchange Format (CLDXF) Standard* as one component of a larger suite of Next Generation 9-1-1 (NG9-1-1) standards. The NG9-1-1 standards are intended to provide a common and mutually-understood means for Public Safety Answering Points (PSAPs) to exchange 9-1-1 call location information. This document defines the civic location data elements that will be used to support the NENA compliant Next Generation systems, databases, call routing, call handling, and related processes.

The CLDXF document was developed to:

1. Provide a definitive set of core civic location data elements that support emergency call routing and dispatch (Section 3).
2. Map a profile between Presence Information Data Format-Location Object [1] (PIDF-LO) and those same NENA core civic location data elements (Section 3 and Appendix B).
3. Map those civic location data elements to the corresponding Federal Geographic Data Committee, United States Thoroughfare, Landmark, and Postal Address Data Standard, Document Number FGDC-STD-016-2011 [8] set of data elements, which was sponsored by the Urban and Regional Information Systems Association (URISA) and the National Emergency Number Association (NENA) (Appendix A).
4. Provide illustrative examples of address parsing (Appendix C).

The NENA NG9-1-1 CLDXF standard supports the exchange of United States civic location address information about 9-1-1 calls, both within the US and internationally. The NENA NG9-1-1 CLDXF standard covers civic location addresses within the United States, including its outlying territories and possessions. The NENA NG9-1-1 CLDXF standard defines the detailed data elements needed for address data exchange. As a data exchange standard, the NENA NG9-1-1 CLDXF is not intended to support civic location address data management. It is assumed that address information will be transmitted call by call, as part of the call record, and that any local address data repository would be external to the call information. Therefore the standard does not provide for an address identifier, address metadata, or address data quality tests.

NENA has developed the NG9-1-1 standards within the framework of the Internet Engineering Task Force (IETF) internet standards. CLDXF is the United States profile of IETF PIDF-LO, and it uses the PIDF-LO XML (Extensible Markup Language) schema, extended to include US-specific elements (see section 1.2).

Concurrently with the WG's development of the CLDXF, the Address Standard Working Group (ASWG), sponsored by the Urban and Regional Information Systems Association (URISA), the National Emergency Number Association (NENA) and the U.S. Census Bureau, developed an address data standard for the U.S. Federal Geographic Data Committee (FGDC). On February 10, 2011, the FGDC endorsed the United States Thoroughfare, Landmark, and Postal Address Data Standard, document number FGDC-STD-016-2011[8] . The maintenance authority is the United States Census Bureau. This document is intended to meet the diverse address data management requirements for local address administration, postal and package delivery, emergency response and general navigation, administrative recordkeeping, and address data aggregation. The FGDC standard defines address data content, attributes, and metadata; address classes; address data quality tests; and an XSD (XML Schema Definition) for address data exchange. The CLDXF WG has worked closely with the ASWG to prepare a profile of the NENA and FGDC standards that details the precise relationship between them. That profile is given in Appendix A of this document.

The remainder of this document presents the standard in six sections and three Appendices:

- Section 1: Executive Overview
- Section 2: Introduction
- Section 3: Civic Location Address Data Elements
- Section 4: NENA Registry System Consideration
- Section 5: References
- Section 6: Previous Acknowledgements
- Appendix A (Normative): FGDC-NENA Profile
- Appendix B (Informative): Cross Reference of CLDXF, PIDF-LO and FGDC Data Elements
- Appendix C (Informative): Examples of Address Parsing

Note on FGDC Standard Revisions in 2013-2014: In June 2013, while the CLDXF standard was in final committee review, the Address Standard Working Group, under the auspices of the Census Bureau and with the sponsorship of URISA and NENA, announced that it would reconvene to revise the FGDC address standard. The process is expected to extend well into 2014. Upon conclusion of the FGDC revisions, the CLDXF WG will make parallel revisions to the CLDXF standard or to Appendix A, as appropriate.

NOTE: This document is a United States standard. Future activities will develop an equivalent for Canada.

1.2 NENA NG9-1-1 CLDXF as a Profile of IETF PIDF-LO

To support information exchange across national boundaries, the NG9-1-1 civic location address is generated in the IETF Presence Information Data Format – Location Object (PIDF-LO)

civicAddress type, as defined in IETF RFCs 4119 [1] and 5139 [3] . The NENA NG9-1-1 CLDXF is the United States profile of the IETF PIDF-LO civic address standard.

As such, the NENA NG9-1-1 CLDXF Standard establishes the relationship between itself and the PIDF-LO civic address standard. Each CLDXF data element description names its corresponding IETF element, and each CLDXF element definition alters the IETF element definition only by narrowing it to make it US-specific.

In addition, the NENA NG9-1-1 CLDXF standard restricts IETF PIDF-LO civic address standard by exclusion of the following PIDF-LO elements:

- A6 - Street (group of streets below the neighborhood level): Not used in the United States
- ADDCODE - Address Code: Not used in NG9-1-1 CLDXF
- POBOX - Post Office Box: Not used in NG9-1-1 CLDXF
- RDSEC - Road section: Not found in US addresses
- RDBR - Road Branch: Not found in US addresses
- RDSUBBR - Road sub-branch: Not found in US addresses

1.3 Background on the IETF PIDF-LO Standard

The Internet Engineering Task Force is a global, open, volunteer organization dedicated to making "the Internet work better by producing high quality, relevant technical documents that influence the way people design, use, and manage the Internet" (quoted from the IETF mission statement).The IETF Geographic Location/Privacy (GEOPRIV) working group creates standards for location including the necessary mechanisms to protect the privacy of location information. Recognizing that there were no available standards that could be used to specify a location anywhere in the world suitable for a wide variety of applications, including emergency calling on the Internet, GEOPRIV undertook to create an XML-based location data structure. The IETF work builds on a more general XML data structure used to provide "presence" information — information about a person's current state. The Presence Information Data Format (PIDF), defined by RFC 3863[1] , is the generalized data structure and the extensions to specify the location of "PRESENTITY" (i.e., target person or device) is PIDF-LO, defined by RFC 4119 [1] , extended by RFCs 5139 [3] and 5491 **Error! Reference source not found.**. PIDF-LO can specify location accurately in any country: the fields in the structure designed to cover the full range of addresses found all over the world. For any given country, the IETF suggests a document be created to define how the PIDF-LO fields are used to describe location in that country. This document fulfills that role for addresses in the United States.

The PIDF-LO data structure is used within the IETF to support conveyance of location in emergency calls. NENA has chosen to base its Next Generation 9-1-1 emergency calling architecture on the IETF architecture, which means that location information associated with a call to 9-1-1 will arrive in PIDF-LO form, and PIDF-LO is the data structure used to pass call and incident location among entities in the NG9-1-1 system.

2 Introduction

2.1 Operational Impacts Summary

This standard describes a data exchange format. 9-1-1 Authorities that use a different format internally will be required to use the data format outlined in this document for data exchange.

NG9-1-1 allows for special characters and upper/lower case as legally established by the Local Addressing Authority. It is the responsibility of GIS, CAD, RMS and other software vendors to accommodate special characters and allow for case sensitive entries in *Street Name* and other address elements. (This does not imply that all user interfaces must be case sensitive or that systems which compare locations must be case sensitive. For example a call taker typing in an address may not need to type correct case; however, a provisioning interface in a GIS system for entering a new address must follow the case specified by the local addressing authority.)

In order to prevent confusion or ambiguity, all data element values shall be fully spelled out except for the *Country* and *State* elements. No abbreviations are recognized for any other CLDXF data element. This may mean creating a program to convert an internal format to the national standard, or processing data through a conversion program hosted by some other entity.

2.2 Technical Impacts Summary

CLDXF is a profile of IETF PIDF-LO and uses the IETF PIDF-LO XML schema, extended to include US-specific elements.

2.3 Security Impacts Summary

While this document is only concerned with the form of the data, and how interchange between CLDXF, PIDF-LO and FGDC data is accomplished, readers of this document should consider how privacy of location will be implemented in systems that reference this document.

Guidelines as outlined in NENA 75-001, Security for Next Generation 9-1-1 (NG-SEC), [17] [17] shall be adhered to where applicable.

2.4 Document Terminology

The terms "shall", "must", "mandatory", and "required" are used throughout this document to indicate normative requirements and to differentiate from those parameters that are recommendations. Recommendations are identified by the words "should", "may", "desirable" or "preferable".

2.5 Reason for Issue/Reissue

NENA reserves the right to modify this document. Upon revision, the reason(s) will be provided in the table below.

Doc #	Approval Date	Reason For Changes
NENA-STA-004	03/23/2014	Initial Document

2.6 Recommendation for Additional Development Work

This is the first edition of this document. NENA will coordinate with the IETF, FGDC and United States Census Bureau to ensure that the three address standards are kept consistent. Canadian NENA members have indicated a desire to create a Canadian standard when this document is approved.

2.7 Date Compliance

All systems that are associated with the 9-1-1 process shall be designed and engineered to ensure that no detrimental impact, or other noticeable impact of any kind, will occur as a result of a date/time change up to 30 years subsequent to the manufacture of the system. This shall include embedded application, computer based or any other type application.

To ensure true compliance, the manufacturer shall upon request, provide verifiable test results to an industry-acceptable test plan such as Telcordia GR-2945 or equivalent.

2.8 Anticipated Timeline

As this is a major change to the 9-1-1 system, adoption of this standard will take several years. Experience with the immediately prior major change to 9-1-1 (i.e., Phase II wireless) suggests that unless consensus among government agencies at the local, state and federal levels, as well as carriers, vendors and other service providers is reached, implementation for the majority of PSAPs could take a decade.

Data exchange formats may change as new or modified data elements are identified. Vendors and governmental agencies are expected to make updates as required by this document.

2.9 Cost Factors

If a 9-1-1 Authority chooses not to change its local data formats, funds will be needed to develop software capable of converting the local format to the standard data exchange format. As an alternative, the 9-1-1 Authority may contract with a service provider to complete this task.

To provide for consistency with PIDF-LO, the *United States Thoroughfare, Landmark and Postal Address Data Standard,* and other possible data formats, CLDXF defines the individual address data elements that comprise an address. This may cause inconsistencies with other formats, which may entail costs to modify internal formats or to create conversion programs. The use of this standard may impact Customer Premise Equipment (CPE), Computer Aided Dispatch (CAD), E2 wireless interface, PSAP to ALI Message (PAM), among other systems. The cost

impact may be negative, due to the cost of conversion or data export programs; or positive, due to efficiencies realized from standardization; or negligible.

2.10 Cost Recovery Considerations

Normal business practices are assumed to be the cost recovery mechanism.

2.11 Additional Impacts (non-cost related)

This is an address data exchange standard. It does not impose any restrictions on how address data is handled internally within any agency. Implementation of the standard will require the modification or creation of programs to export address data to CLDXF format, or to import address data from CLDXF format.

2.12 Intellectual Property Rights Policy

NENA takes no position regarding the validity or scope of any Intellectual Property Rights or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; nor does it represent that it has made any independent effort to identify any such rights.

Consistent with the NENA IPR Policy, available at www.nena.org/ipr, NENA invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights that may cover technology that may be required to implement this standard.

Please address the information to:

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2.13 Acronyms/Abbreviations, Terms and Definitions; Formatting Convention for CLDXF and Other Element Names

Some acronyms/abbreviations, terms and definitions used in this document may have not yet been included in the Master Glossary. After initial approval of this document, they will be included. See NENA-ADM-000, NENA Master Glossary of 9-1-1 Terminology [15] for a complete listing of terms used in NENA documents. All acronyms used in this document are listed below, along with any new or updated terms and definitions.

The table below does not include the 2- to 4-letter XML element names used in PIDF-LO to denote each PIDF-LO element. These XML element names are given in CLDXF Section 3, at the beginning of each element description, and they are also listed in Appendix B.

CLDXF element names are formatted in italics and title case throughout this document (e.g., *Country; State; County; Incorporated Municipality,* etc.). FGDC and PIDF-LO element names are capitalized, but not italicized. When element name words are used in their generic sense, normal font and capitalization are used.

Throughout this document, the phrase "*Street Name*" alone refers to the CLDXF or FGDC element. The phrase "complete street name' indicates the full name of a street as it would appear on a sign, map, or listing (that is, the several elements of the name concatenated together, usually with a space between each element). As an example, "North Main Street" would be a complete street name, and "Main" would be the *Street Name* element within that complete street name.

The following Acronyms are used in this document:		
Acronym	**Description**	** (N)ew (U)pdate
9-1-1 SSP	9-1-1 System Service Provider	
ALI	Automatic Location Identification	
ANSI	American National Standards Institute	
ASWG	Address Standard Working Group	N
CAD	Computer Aided Dispatch	
CLDXF	Civic Location Data Exchange Format	N
CPE	Customer Premise Equipment	
DMM	Domestic Mail Manual	N
FGDC	Federal Geographic Data Committee	
FIPS	Federal Information Processing Standard	N
Geopriv	Geolocation and Privacy	
GIS	Geographic Information System	
GNIS	Geographic Names Information System	N
IANA	Internet Assigned Number Authority	
IETF	Internet Engineering Task Force	
INCITS	International Committee for Information Technology Standards	N
IPR	Intellectual Property Rights	N

The following Acronyms are used in this document:		
ISO	International Standards Organization	N
NENA	National Emergency Number Association	
NG9-1-1	Next Generation 9-1-1	
NRS	NENA Registry System	
PAM	PSAP to ALI Message	
PIDF-LO	Presence Information Data Format-Location Object	
PSAP	Public Safety Answering Point	
RFC	Request for Comments	
RMS	Records Management System	
SCDD	Subcommittee on Cultural and Demographic Data	N
URL	Uniform Resource Locator	
URISA	Urban and Regional Information Systems Association	
US	United States	N
USPS	United States Postal Service	
WG	Working Group	
XSD	XML Schema Definition	
XML	eXtensible Markup Language	
ZIP Code	Zone Improvement Plan Code	N

The following Terms and Definitions are used in this document:		
Term	**Definition**	**** (N)ew (U)pdate**
E2	A proprietary protocol interworking specification that is titled, Real Time ALI Exchange Interface Agreement – Issue 6.1, authored by AT&T and Pacific Bell, March 25, 1995.	N
PAM	A defacto standard protocol interworking specification that is titled, Real Time ALI Exchange Interface Agreement – Issue 6.1, authored by AT&T and Pacific Bell, March 25, 1995 and updated to support wireless in version 6.2, November 20, 2002.	N
Country	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital letters. http://www.iso.org/iso/country_codes/iso_3166_code_lists/country_names_and_code_elements.htm	N
State	The name of a state or state equivalent, represented by the two-letter abbreviation given in USPS Publication 28, Appendix B. A state is a primary governmental division of the United States. http://pe.usps.gov/cpim/ftp/pubs/Pub28/Pub28.pdf	N
County	The name of county or county-equivalent where the address is located. A county (or its equivalent) is the primary legal division of a state or territory. Restricted to the names of counties and county equivalents. A complete list is maintained by the U.S. Census Bureau as National Standard Codes (ANSI INCITS 31-2009), Federal Information Processing Series (FIPS), available at: http://www.census.gov/geo/reference/codes/countylookup.html	N
Incorporated Municipality	The name of the incorporated municipality or other general-purpose local governmental unit (if any) where the address is located.	N
Unincorporated	The name of an unincorporated community, either	N

The following Terms and Definitions are used in this document:		
Term	**Definition**	**** (N)ew (U)pdate**
Community	within an incorporated municipality or in an unincorporated portion of a county, or both, where the address is located.	
Neighborhood Community	The name of an unincorporated neighborhood, subdivision or area, either within an incorporated municipality or in an unincorporated portion of a county or both, where the address is located.	N
Postal Community Name	A city name for the ZIP Code of an address, as given in the USPS City State file.	N
Postal Code	A system of 5-digit codes that identifies the individual USPS Post Office or metropolitan area delivery station associated with an address, which may optionally be enhanced by four additional digits that identify a specific range of USPS delivery addresses.	N
Street Name Pre Modifier	A word or phrase that: Precedes and modifies the Street Name element, but is separated from it by a Street Name Pre Type or a Street Name Pre Directional or both, or is placed outside the Street Name element so that the Street Name element can be used in creating a sorted (alphabetical or alphanumeric) list of complete street names.	N
Street Name Pre Directional	A word preceding the *Street Name* element that indicates the direction taken by the street from an arbitrary starting point or line, or the sector where it is located.	N
Street Name Pre Type	A word or phrase that precedes the *Street Name* element and identifies a type of thoroughfare in a complete street name.	N
Street Name Pre	A preposition or prepositional phrase between the *Street Name Pre Type* and the *Street Name*. This	N

The following Terms and Definitions are used in this document:		
Term	**Definition**	**** (N)ew (U)pdate**
Type Separator	element is defined in CLDXF as a US specific extension of PIDF-LO per RFC6848.	
Street Name	The element of the complete street name that identifies the particular street (as opposed to any street types, directionals, and modifiers).	N
Street Name Post Type	A word or phrase that follows the *Street Name* element and identifies a type of thoroughfare in a complete street name.	N
Street Name Post Directional	A word following the *Street Name* element that indicates the direction taken by the street from an arbitrary starting point or line, or the sector where it is located.	N
Street Name Post Modifier	A word or phrase that follows and modifies the Street Name element.	N
Address Number Prefix	An extension of the *Address Number* that precedes it and further identifies a location along a thoroughfare or within a defined area.	N
Address Number	The numeric identifier of a location along a thoroughfare or within a defined community.	N
Address Number Suffix	An extension of the *Address Number* that follows it and further identifies a location along a thoroughfare or within a defined area.	N
Milepost	A distance travelled along a route such as a road or highway, typically indicated by a milepost sign. There is typically a post or other marker indicating the distance in miles/kilometers from or to a given point.	N
Landmark Name Part	The name or collection of names by which a prominent feature is publicly known. This element is defined in CLDXF as a US specific extension of PIDF-LO per RFC6848.	N
Complete	The name by which a prominent feature is publicly	N

The following Terms and Definitions are used in this document:		
Term	**Definition**	**** (N)ew (U)pdate**
Landmark Name	known. The *Complete Landmark Name* for a CLDXF record is composed of the *Landmark Name Parts* in that record.	
Building	One among a group of buildings that have the same address number and complete street name.	N
Additional Location Information	A part of a subaddress that is not a building, floor, unit, room, or seat.	N
Floor	A floor, story, or level within a building.	N
Unit	A group or suite of rooms within a building that are under common ownership or tenancy, typically having a common primary entrance.	N
Room	A single room within a building.	N
Seat	A place where a person might sit within a building.	N
Place Type	The type of feature identified by the address adapted from "Location Types Registry" (IETF RFC 4589 [4]). http://www.iana.org/assignments/location-type-registry/location-type-registry.xml	N

2.14 Trademark Acknowledgements

The following trademarks are owned by the United States Postal Service: U.S. Postal Service®, United States Post Office®, United States Postal Service®, USPS®, ZIP + 4®, ZIP Code™, ZIP™

3 Civic Location Address Data Elements

3.1 Introduction

Section 3 defines and describes each CLDXF element. The elements are presented in six groups, each preceded by a brief explanatory note:

1. Country, State, and Place Name elements
2. Street Name elements
3. Address Number elements
4. Landmark Name elements
5. Subaddress elements
6. Address Descriptor

Each element description includes nine sections:

1. CLDXF name and PIDF-LO name – The name of the CLDXF element, followed, in parentheses, by the two- to four-letter PIDF-LO element name. (The PIDF-LO name is the XML tag for the element within CLDXF records).
2. Definition – The definition or meaning of the element.
3. Definition source – The source of the definition ("New" indicates that the definition is original).
4. Examples – Illustrative examples of the element.
5. Data type – Whether the element is text or integer.
6. Domain of values – The range or set of values (if any) to which the element is restricted.
7. Mandatory/Conditional/Optional – Whether the element is required, conditionally required, or optional in a CLDXF record.
8. Minimum, maximum number of occurrences – The minimum and maximum number of times the element may occur in a CLDXF record.
9. Notes – Notes and comments giving additional explanation about the element.

3.2 Country, State and Place Name Elements

3.2.1 Introductory Note on Country, State, and Place Name Elements

Place names denote areas within which individual street addresses and landmarks are found. Although place names may seem as simple as "city-state-zip", within the United States using place names sometimes creates confusion. Place names give the general location of an incident, and are often needed to distinguish between identical complete street name and address number combinations in a given area.

Confusion arises because, within the United States, there are three processes for creating place names: legislative, postal, and unofficial. Each system is independent of the others, and all three are useful and sometimes necessary to locate an address. To provide for all three processes, the CLDXF includes eight place name elements:

- Legislative: *Country, State, County, Incorporated Municipality*
- Postal: *Postal Community Name, Postal Code*
- Unofficial: *Unincorporated Community, Neighborhood Community*

The *Country, State, County,* and *Incorporated Municipality* elements (the four elements for legislated place names) must be filled in for every address record. The *Postal Community Name* and *Postal Code* are optional, but strongly recommended if the address is in a USPS service area.

Unofficial place names are optional, but should be used if they exist. Incorporated municipalities, unincorporated areas, and postal delivery areas can be quite extensive, and often contain duplicate complete street names and address ranges. In these cases, unofficial place names may be useful or necessary in specifying more precisely where an address is located, and in differentiating between similar addresses in the same general area.

Legislative places are created by law. Because they create taxing and police jurisdictions, they are well-documented and precisely mapped. Every address in the United States lies within a state, county, and, within a county, either within an incorporated municipality, or within the unincorporated portion of the county. The four elements for legislative place names are:

- *Country* (e.g., "US") – The two-letter abbreviation for the country, as given in ISO 3166-1 standard [10] .
- *State* (e.g., "WA") – The two-letter abbreviation for the state (or territory, or federal district) given in USPS Publication [11] , Appendix B, standard.
- *County* (e.g. "King") – The name of the county (or equivalent thereof—terms and forms of government vary greatly among the states and territories), as given in the official list maintained by the U.S. Census Bureau.
- *Incorporated Municipality* (e.g. "Seattle") – The name of a city, town, or other incorporated local government (if any). For addresses in unincorporated areas, enter "unincorporated" for this element.

Postal places are denoted by the *Postal Community Name* and *Postal Code* elements. Within the US, the USPS has sole authority to recognize *Postal Community Names* and assign their corresponding ZIP Codes. The USPS assigns and changes them as needed for efficient mail delivery, without regard to county or incorporated city boundaries. Thus postal places are assumed to include a different set of addresses than legislative places, even if the postal and legislative place names are the same. In addition:

1. The USPS City State File is the authoritative register of US postal place names and their associated ZIP Codes. The USPS City State File often recognizes multiple place names for a given ZIP Code. In all cases, one name is preferred (the "actual city" name in USPS terminology) and the other(s) are acceptable ("other acceptable cities" in USPS terminology). Both the preferred and acceptable names may be used within CLDXF.
2. Strictly speaking postal communities are not areas, but collections of delivery points; the

USPS has never defined ZIP code "boundaries".

3. Either the five-digit ZIP Code or the nine-digit ZIP+4 may be given for the *Postal Code* element.

Unofficial place names include the hamlets, neighborhoods, subdivisions, shopping districts, crossroads, and other locales within large municipalities and unincorporated areas. These place names come into existence through informal usage and recognition. The places have no precise definition in US place name geography, they have no general powers of government, and they are not controlled or registered by any authority. Their definition and boundary are often imprecise. Nevertheless unofficial place names can be useful and necessary in locating an address, because incorporated municipalities, unincorporated areas, and postal delivery areas can be quite extensive and often contain duplicate complete street names and address ranges. Unofficial place names should be included whenever they might be helpful in getting first responders to the right place faster. The CLDXF therefore includes two elements for unofficial place names:

1. *Unincorporated Community* (e.g. "Manhattan", a borough in New York City) – for areas on the scale of a community, ward, borough, village, hamlet, etc. or larger.
2. *Neighborhood Community* (e.g. "Cypress Meadows" a subdivision near Tampa) – for areas smaller than an *Unincorporated Community*, on the scale of a neighborhood or small shopping district.

3.2.2 Country

3.2.2.1 **CLDXF name (PIDF-LO name):** *Country* (Country).

3.2.2.2 Definition: The name of a country represented by its two-letter ISO 3166-1 [10] English country alpha-2 code elements in capital letters.

3.2.2.3 **Definition source:** ISO 3166-1[10] , and IETF RFC 5139[3] Section 3.3.

3.2.2.4 **Examples:** US, CA, MX.

3.2.2.5 **Data type:** Text.

3.2.2.6 Domain of values: Restricted to ISO 3166-1 English country ISO 3166-1-alpha-2 code elements [10] .

3.2.2.7 Mandatory/conditional/optional: Mandatory. Every address must include a *Country* element because CLDXF is a United States profile of the PIDF-LO standard and *Country* is required by that standard.

3.2.2.8 **Minimum, maximum number of occurrences:** One, One.

3.2.2.9 **Notes:**

1. Although the scope of CLDXF is restricted to US addresses, the *Country* element is included for two reasons: to facilitate reconciliation with address standards of other nations, and to accommodate files which mix addresses from the US and other countries.
2. There are several standards for country names. The IETF PIDF-LO (the international standard for which CLDXF is the United States profile) accepts ISO 3166-1 [10] as the standard for representing country names.
3. ISO 3166-1 [10] provides several representations of country names. PIDF-LO and CLDXF recognize only the 2-letter abbreviations (ISO 3166-1-alpha-2). CLDXF section 6.1.2 gives a complete reference for ISO 3166-1 and states where the abbreviations may be found.
4. ISO 3166-1[10] is protected by ISO copyright. The ISO states, "The ... the alpha-2 codes are made available by ISO at no charge for internal use and non-commercial purposes."
5. Users of the CLDXF must be aware that some two-letter country name abbreviations are identical to some two-letter state abbreviations (e.g., CA = Canada and California; CO = Colombia and Colorado).

3.2.3 State

3.2.3.1 **CLDXF name (PIDF-LO name):** *State* (A1).

3.2.3.2 **Definition:** The name of a state or state equivalent, represented by the two-letter abbreviation given in USPS Publication 28 [11] , Appendix B. A state is a primary governmental division of the United States.

3.2.3.3 **Definition source:** Adapted from IETF RFC 4119[2] , 4776 [5] , and 5139 [3] ; and from FGDC Framework Data Content Standard [18] Part 5: Governmental Unit and Other Geographic Area Boundaries, Table 13.

3.2.3.4 **Examples:** VA, WA, GU, PR.

3.2.3.5 **Data type:** Text.

3.2.3.6 **Domain of values:** Restricted to the two-letter state and possession abbreviations given in USPS Publication 28 [11] , Appendix B.

3.2.3.7 **Mandatory/conditional/optional:** Mandatory. Every address must include the *State*.

3.2.3.8 **Minimum, maximum number of occurrences:** One, One.

3.2.3.9 **Notes:**

1. USPS Publication 28 [11] , Appendix B provides standard abbreviations for the fifty US states, DC, and the five US territories (PR, VI, GU, MP, and AS).
2. ISO 3166-2 includes the same abbreviations as USPS Publication 28 [11] , Appendix B, and in addition one more: "UM" (nine minor uninhabited islands owned by the US). The difference is of no significance for the purposes of this standard.
3. The revision note in IETF RFC 5139[3] (Feb. 2008), Section 3.4, states, "In the absence of a country-specific guide on how to use the A-series of elements, the second part of the ISO 3166-2 code [ISO.3166-2] for a country subdivision SHOULD be used...". USPS Publication 28 [11] , Appendix B, is a US-specific guide on how to use the A1 elements. (see 5.1.2 below for a complete reference)
4. Special note on Washington, DC addresses. For Washington, DC addresses, enter the State, County, and Incorporated Municipality names as follows: State = “DC” or “District of Columbia”; County = “District of Columbia”; Incorporated Municipality = “Washington” (Source: U.S. Census National Standard Codes (ANSI INCITS 31-2009), Federal Information Processing Series (FIPS) [9] and USGS GNIS).

3.2.4 County

3.2.4.1 **CLDXF name (PIDF-LO name):** *County* (A2).

3.2.4.2 **Definition:** The name of county or county-equivalent where the address is located. A county (or its equivalent) is the primary legal division of a state or territory.

3.2.4.3 **Definition source:** Adapted from IETF RFC 4119[2] updated by 5139 [3] , and from FGDC Framework Data Content Standard [18] Part 5: Governmental Unit and Other Geographic Area Boundaries, Table 13.

3.2.4.4 **Examples:** Winston County, Cook County, Orleans Parish, Fairbanks North Star Borough, Falls Church City (an independent Virginia city treated as the equivalent of a county).

3.2.4.5 **Data type:** Text.

3.2.4.6 **Domain of values:** Restricted to the names of counties and county equivalents. A complete list is maintained by the U.S. Census Bureau as National Standard Codes (ANSI INCITS 31-2009), Federal Information Processing Series (FIPS).

3.2.4.7 **Mandatory/conditional/optional:** Mandatory. Every address must include the county or county-equivalent.

3.2.4.8 **Minimum, maximum number of occurrences:** One, One.

3.2.4.9 Notes:

1. The county name or county equivalent name indicates location, not jurisdiction. Many counties include federal, state, tribal, and other lands within which county government powers, including powers to name roads and assign address numbers, may be limited or superseded by other government bodies. Indicating who has what jurisdiction at a given address is well beyond the scope or intent of this standard.
2. County equivalents include parishes (LA), boroughs and census areas (AK), federal district (DC), independent cities (VA, MD, MO, NV), municipios (PR), and districts (AS, GU, MP, VI).
3. The Census list in National Standard Codes (ANSI INCITS 31-2009), Federal Information Processing Series (FIPS) [9] is authoritative. Many governments have a popular name and a legal name (e.g., "Allegheny County" vs. "County of Allegheny"). For CLDXF records, enter the county name as given in the ANSI INCITS 31:2009 [9] standard.
4. Special note on Washington, DC addresses. For Washington, DC addresses, enter the *State*, *County*, and *Incorporated Municipality* names as follows: *State* = “DC” or “District of Columbia”; *County* = “District of Columbia”; *Incorporated Municipality* =

"Washington" (Source: U.S. Census National Standard Codes (ANSI INCITS 31-2009), Federal Information Processing Series (FIPS) [9] , and USGS GNIS).

5. Special note on New York City and its counties and boroughs. New York City is one city comprised of five counties and five boroughs. The counties and boroughs have identical boundaries and, in two cases, the same name, but they are distinct units of government with different purposes and powers. For CLDXF records, place "New York" in the *Incorporated Municipality* element. Enter the county name (New York, Kings, Queens, Bronx, or Richmond) in the *County* element. The borough name, if given, must be placed in the *Unincorporated Community* element.

3.2.5 Incorporated Municipality

3.2.5.1 **CLDXF name (PIDF-LO name):** *Incorporated Municipality* (A3).

3.2.5.2 **Definition:** The name of the incorporated municipality or other general-purpose local governmental unit (if any) where the address is located.

3.2.5.3 **Definition source:** Adapted from IETF RFC 4119[2] as updated by 5139 [3] ; and the FGDC United States Thoroughfare, Landmark, and Postal Address Data Standard [8] " (sections 2.2.6.1 and 2.3.8.4).

3.2.5.4 **Examples:** Haleyville, Chicago, Tampa, Dallas

3.2.5.5 **Data type:** Text.

3.2.5.6 **Domain of values:** There is no single controlling registry or authority of these names. The Geographic Names Information System (GNIS) attempts to include and standardize the names of all populated places and incorporated local governments, but it cannot be relied on as an exhaustive or authoritative domain of values. GNIS can be accessed at: http://geonames.usgs.gov/domestic/index.html.

3.2.5.7 **Mandatory/conditional/optional:** Mandatory. Enter the municipality name (if the address is within an incorporated local government), or "Unincorporated" (if the address is not within an incorporated local government), or "Unknown".

3.2.5.8 **Minimum, maximum number of occurrences:** One, One.

3.2.5.9 Notes:

1. An Incorporated Municipality is defined by its boundaries. Within the United States, incorporated local governments are known by a variety of terms: municipality, city, borough, town, village, township, minor civil division, corporation, consolidated government, metropolitan government, and unified government, among others. Local government types and terminologies vary substantially from state to state, but the distinctions are not particularly significant in constructing addresses. Incorporated municipalities are general purpose governments having legislative, taxation and police powers.
2. Addresses in unincorporated portions of counties have no municipal place name by definition. If the address is in an unincorporated part of a county, put “Unincorporated” in this element. If the status is not known, enter “Unknown”.
3. The boundaries of an Incorporated Municipality are set by legislative authorities. These municipality boundaries often differ from postal delivery (ZIP Code) areas. Therefore the

Incorporated Municipality name may differ from the *Postal Community Name* (PCN) for historical or practical reasons.

4. Many governments are known by a popular/common name and a legal name (e.g., "Saint Paul" vs. "City of Saint Paul"). To encourage uniformity between different uses of municipal names, it is strongly recommended the local authority create a local domain of municipality names.
5. If the area is an incorporated Borough or Township then that fact should be reflected in the data element; e.g., Hanover Borough, Hanover Township.
6. Special note on Washington, DC addresses. For Washington, DC addresses, enter the *State*, *County*, and *Incorporated Municipality* names as follows: *State* = "DC" or "District of Columbia"; *County* = "District of Columbia"; *Incorporated Municipality* = "Washington" (Source: U.S. Census National Standard Codes (ANSI INCITS 31-2009), Federal Information Processing Series (FIPS) [9] , and USGS GNIS).
7. Special note on New York City and its counties and boroughs. New York City is one city comprised of five counties and five boroughs. The counties and boroughs have identical boundaries and, in two cases, the same name, but they are distinct units of government with different purposes and powers. For CLDXF records, place "New York" in the *Incorporated Municipality* element. Enter the county name (New York, Kings, Queens, Bronx, or Richmond) in the *County* element. The borough name, if given, must be placed in the *Unincorporated Community* element.

3.2.6 Unincorporated Community

3.2.6.1 **CLDXF name (PIDF-LO name):** *Unincorporated Community* (A4).

3.2.6.2 **Definition:** The name of an unincorporated community, either within an incorporated municipality or in an unincorporated portion of a county, or both, where the address is located.

3.2.6.3 **Definition source:** Adapted from IETF RFC 4119[2] as updated by 5139 [3] .

3.2.6.4 Examples:

- 14th Ward (a ward in the incorporated municipality of Pittsburgh, PA);
- Urbanizacion Los Pinos (Puerto Rican urbanization);
- Manhattan (borough of New York City);
- Harlem (unincorporated community in Manhattan borough of New York City)
- Poquito Valley (residential area and road improvement district in unincorporated Yavapai County, AZ);
- Climax (an unincorporated community and a school district in Guilford County, NC);
- Deep River (a drainage basin partially covering the incorporated municipalities of High Point and Jamestown in Guilford County, NC)

3.2.6.5 **Data type:** Text.

3.2.6.6 **Domain of values:** None.

3.2.6.7 **Mandatory/conditional/optional:** Optional.

3.2.6.8 **Minimum, maximum number of occurrences:** Zero, One.

3.2.6.9 Notes:

1. Incorporated municipalities, and unincorporated portions of counties, often cover such large areas that addresses cannot be readily located within them. Unincorporated place names are used informally to indicate more precisely where an address is located. The CLDXF includes two elements for unincorporated place names: *Unincorporated Community* and *Neighborhood Community*. Either or both may be used.

2. Unincorporated Communities comprise a wide variety of settlements within the United States. Because they may be unofficial, their definition and boundary are often imprecise. If an *Unincorporated Community* does not have a precise, mapped boundary, this data element must not be used for address validation unless some description or rule is given for determining whether an address is in the community or not.
3. The *Unincorporated Community* and *Neighborhood Community* differ in the relative scale of the place they name. An *Unincorporated Community* has the scale of a community, ward, borough, village, hamlet, etc. or larger. A *Neighborhood Community* has the scale of a subdivision or small commercial area. Where both elements apply to an address, the *Unincorporated Community* often encloses the *Neighborhood Community*.
4. This distinction provides general guidance, but cases of similar size and partial overlap are easily found. Because the elements themselves have no precise definition in U.S. place name geography, no hard and fast distinction can be made between them. Address authorities and PSAPs should use these elements to indicate as clearly as possible where addresses are located, especially when duplicate complete street names and address ranges occur within the area.
5. The difference between an *Unincorporated Community* and a Landmark Name is not always clear and distinct. As a general principle, a Landmark Name is under a single use or ownership or control, while an *Unincorporated Community* is not. Thus an *Unincorporated Community* generally includes numerous separate addresses, while a Landmark Name, even if it covers an extensive area, might be considered to be a single "master address" (often containing multiple subordinate addresses). These general principles apply to most cases and are useful as general distinctions, but exceptions and marginal cases are easily found.
6. Special note on New York City and its counties and boroughs. New York City is one city comprised of five counties and five boroughs. The counties and boroughs have identical boundaries and, in two cases, the same name, but they are distinct units of government with different purposes and powers. For CLDXF records, place “New York” in the *Incorporated Municipality* element. Enter the county name (New York, Kings, Queens, Bronx, or Richmond) in the *County* element. The borough name, if given, must be placed in the *Unincorporated Community* element.
7. Local authorities may wish to compile a list of locally-recognized unincorporated communities for their convenience. Whether to do so, and if so what names to include, are implementation matters to be decided locally.

3.2.7 Neighborhood Community

3.2.7.1 **CLDXF name (PIDF-LO name):** Neighborhood Community (A5).

3.2.7.2 **Definition:** The name of an unincorporated neighborhood, subdivision or area, either within an incorporated municipality or in an unincorporated portion of a county or both, where the address is located.

3.2.7.3 **Definition source:** Adapted from IETF RFC 4119[2] as updated by 5139 [3] .

3.2.7.4 **Examples:** Cypress Meadows Subdivision; Northdale (an area in Tampa that is not incorporated); East Harlem (an area in New York City)

3.2.7.5 **Data type:** Text.

3.2.7.6 **Domain of values:** None.

3.2.7.7 **Mandatory/conditional/optional:** Optional.

3.2.7.8 **Minimum, maximum number of occurrences:** Zero, One.

3.2.7.9 **Notes:**

1. Incorporated municipalities, and unincorporated portions of counties, often cover such large areas that addresses cannot be readily located within them. Unincorporated place names are used informally to indicate more precisely where an address is located. The CLDXF includes two elements for unincorporated place names: *Neighborhood Community* and *Unincorporated Community*. Either or both may be used.
2. Neighborhood communities comprise a wide variety of settlements within the United States. Because they are unofficial, their definition and boundary are often imprecise. If a *Neighborhood Community* does not have a precise, mapped boundary, this data element must not be used for address validation unless some description or rule is given for determining whether an address is in the community.
3. The *Neighborhood Community* and *Unincorporated Community* differ in the relative scale of the place they name. A *Neighborhood Community* usually has the scale of a subdivision or small commercial area. An *Unincorporated Community* has the scale of a community, ward, borough, village, hamlet, etc. or larger. Where both elements apply to an address, the *Neighborhood Community* is often enclosed within the *Unincorporated Community*.
4. This distinction provides general guidance, but cases of similar size and partial overlap are easily found. Because the elements themselves have no precise definition in U.S. place name geography, no hard and fast distinction can be made between them. Address authorities and PSAPs should use these elements to indicate as clearly as possible where

addresses are located, especially when duplicate complete street names and address ranges occur within the area.

5. The difference between a *Neighborhood Community* and a Landmark Name is not always clear and distinct. As a general principle, a landmark is under a single use or ownership or control, while Neighborhood Communities are not. Thus a Neighborhood Community generally includes numerous separate addresses, while a landmark, even if it covers an extensive area, might be considered to be a single "master address" (often containing multiple subordinate addresses). These general principles apply to most cases and are useful as general distinctions, but exceptions and marginal cases are easily found.
6. Local authorities may wish to compile a list of locally-recognized Neighborhood Communities for their convenience. Whether to do so, and if so what names to include, are implementation matters to be decided locally.

3.2.8 Postal Community Name

3.2.8.1 **CLDXF name (PIDF-LO name):** *Postal Community Name* (PCN).

3.2.8.2 **Definition:** A city name for the ZIP Code of an address, as given in the USPS City State file.

3.2.8.3 **Definition source:** Adapted from FGDC "United States Thoroughfare, Landmark, and Postal Address Data Standard [8] (sections 2.2.6.1 and 2.3.8.4).

3.2.8.4 **Examples:** Stanton (a post office name in KY); Bowen (a town name shown in the USPS database for KY served by the Stanton PO).

3.2.8.5 **Data type:** Text.

3.2.8.6 **Domain of values:** Restricted to city names given in the USPS City State File for a given ZIP Code.

3.2.8.7 **Mandatory/conditional/optional:** Optional, but strongly recommended if the address is in a USPS service area, especially where the incorporated municipality name is "unincorporated" or "unknown".

3.2.8.8 **Minimum, maximum number of occurrences:** Zero, One.

3.2.8.9 **Notes:**

1. The *Postal Community Name* is the name of the post office from which mail is delivered to the address, or another city name for that ZIP Code that is recognized in the USPS City State file.
2. The USPS City State File assigns a city name to each ZIP Code, and also lists additional city names that are acceptable for postal delivery. The preferred/actual city or acceptable/other acceptable city names for a ZIP can be found via the USPS ZIP Code Lookup service's "Find AllCities in a ZIP Code" tab at http://zip4.usps.com/zip4/citytown.jsp.
3. User may also request a USPS City State File by ZIP Code at https://www.usps.com/business/address-information-systems.htm.

3.2.9 Postal Code

3.2.9.1 **CLDXF name (PIDF-LO name):** *Postal Code* (PC).

3.2.9.2 **Definition:** A system of 5-digit codes that identifies the individual USPS Post Office or metropolitan area delivery station associated with an address, which may optionally be enhanced by four additional digits that identify a specific range of USPS delivery addresses.

3.2.9.3 **Definition source:** Adapted from USPS, "Quick Service Guide 800 [19] : Glossary of Postal Terms and Abbreviations in the Domestic Mail Manual (DMM)." (See 5.1.3 below for a complete reference.)

3.2.9.4 **Examples:** 02109 (ZIP Code for Boston, MA); 02109-0001 (portion of a 02109 carrier route).

3.2.9.5 **Data type:** Text.

3.2.9.6 **Domain of values:** Defined by the USPS.

3.2.9.7 **Mandatory/conditional/optional:** Optional, but strongly recommended if the USPS has assigned a ZIP Code to the address.

3.2.9.8 **Minimum, maximum number of occurrences:** Zero, One.

3.2.9.9 **Notes:**

1. The five-digit ZIP Code or the nine-digit ZIP+4 may be given. If the 9-digit ZIP+4 is given, then a hyphen must be placed between the 5-digit and 4-digit components; e.g., 33624-1283, with no spaces before or after the hyphen.
2. Strictly speaking a ZIP Code is not an area but a set of USPS delivery points served from the same post office or metropolitan delivery station. Delivery points with the same ZIP Code can encompass a single building that has a very high mail volume; a portion of a city; all or parts of several municipalities; or even portions of more than one county (and, in a few cases, more than one state).
3. ZIP Codes are assigned to an address by the USPS and the USPS can change the ZIP Code assignment at any time.

3.3 Street Name Elements

3.3.1 Introductory Note on Street Name Elements and Street Name Parsing

The CLDXF standard requires that complete street names be parsed into their component simple elements. This section of the CLDXF defines and describes the eight simple elements needed for parsing any complete street name in the U.S. Each word or phrase of a complete street name fits into one of the elements. When the elements are reassembled in order, the complete street name is reconstructed. If each element is correct, then the complete street name will also be correct.

This approach greatly simplifies data validation and organization, and the use of consistent, common elements fosters address data exchange between PSAPs and other entities. Parsing is essential for complete street name data maintenance and quality control, and for defining and applying local street naming rules consistently. Usually, local street naming authorities will provide PSAPs with the official list of complete street names and how they are parsed, but if no local authority maintains a parsed list of complete street names the PSAP may have to do the parsing.

Each of the eight element descriptions includes a definition, examples, and notes with more detailed explanations. The eight elements are:

1. *Street Name Pre Modifier* (e.g., "Alternate" in Alternate Route 8)
2. *Street Name Pre Directional* (e.g., "North" in North Fairfax Drive)
3. *Street Name Pre Type* (e.g., "Avenue" in Avenue A; "County Route" in County Route 88)
4. *Street Name Pre Type Separator* (e.g., "of the" in Avenue of the Americas)
5. *Street Name* (e.g., "Fairfax" in North Fairfax Avenue)
6. *Street Name Post Type* (e.g., "Avenue" in North Fairfax Avenue)
7. *Street Name Post Directional* (e.g., "East" in Seventh Street East)
8. *Street Name Post Modifier* (e.g., "Extended" in East End Avenue Extended)

Every complete street name must have a Street Name element; all the other elements are optional. (No complete street name is likely to include all eight elements.)

Most complete street names are simple and straightforward to parse—they include only a *Street Name* element, a *Street Name Post Type*, and perhaps a directional word before or after. However, a few complete street names are more complex or ambiguous, and no set parsing rules can parse all complete street names unambiguously. Directional words and *Street Name Pre Type/Post Type* words are frequently used as or in the *Street Name* element ("West Virginia Avenue"; "Court Place"). Some complete street names are inherently ambiguous (e.g. "East North Broadway") or unusually complex ("Flaming Gorge Alternate Loop Road 2"; "US 2/County Road 424 Cutoff"; "North White River Parkway East Drive"). Deciding which words and phrases of the complete street name go in which data elements may require human judgment and local knowledge.

Each of the eight elements is described in more detail in the *United States Thoroughfare, Landmark, and Postal Address Data Standard*, document number FGDC-STD-016-2011[8] , (section 2.2.2). Section 2.2.2.9 of that standard provides a more detailed discussion of complete street name parsing principles and rules.

Prior NENA address data standards have followed the USPS Publication 28 [11] postal addressing standard, which includes only four street name elements: predirectional, street name, suffix, and postdirectional. These four elements suffice for parsing most but not all U.S. complete street names. For the exceptions—names that include a *Street Name Pre Modifier, Street Name Pre Type, Street Name Pretype Separator,* or *Street Name Post Modifier* —the USPS parsing procedure is simply to combine those words and phrases into the *Street Name* element, along with any directional or suffix words in between. The USPS procedure therefore does not provide for logically consistent parsing of similar words. For example:

1. "Street" is a suffix in "Birch Street", but it is part of the street name element in "Birch Street Extended".
2. "Avenue" is a suffix in "D Avenue", but it is part of the street name element in "Avenue D".
3. "North" is a predirectional in "North First Street", but it is part of the street name element in "Old North First Street".

The simplified USPS street name elements suffice for USPS purposes, but USPS purposes differ, in two fundamental respects, from NG9-1-1 purposes:

1. The USPS standard specifies how to standardize addresses for matching against the USPS master list of postal addresses to determine if they are valid for mail delivery. NG9-1-1 call records include non-mailable addresses as well as mailable addresses.
2. To format addresses for mailing labels, the USPS standard specifies how to abbreviate and compress address components so that the addresses do not exceed 40 characters per line. NG9-1-1 call records are stored in databases, so line length and typographical formatting is irrelevant. Abbreviations and word compression lose information, and conflict with NG9-1-1 needs for complete, correct, unambiguous address data.

The larger set of street name elements supports a systematic, logically consistent method for parsing complete street names. Parsing helps to isolate and correct errors within complete street names. Local street naming authorities (usually not the PSAPs) can create local lists of values for each element to trap errors and standardize values on entry. This in turn prevents duplication of names and misassignments, misspellings, case differences, syntax differences, and other variations that hinder maintenance of an authoritative street name list. This in turn benefits all of the parties that create, validate, organize, and exchange address data:

1. Software vendors have one single list of street name elements that works consistently nationwide.

2. Local address authorities (usually not PSAPs) can simplify data entry and validation, which helps to ensure consistent application of street naming rules over time.
3. PSAPS (and other downstream users) get cleaner data from the local addressing authorities, and PSAPS can apply the same lists and data validation in their NG9-1-1 operations.
4. NG9-1-1 record exchange is simplified by use of common elements that are consistently defined and used. NG9-1-1 allows calls to be answered out of area where knowledge of local data conventions may not be understood.
5. Similarly, data aggregators such as regional, state, and federal agencies; utilities and telcos; and private firms, have a single set of elements in which to combine data from multiple sources.

3.3.2 Street Name Pre Modifier

3.3.2.1 **CLDXF name (PIDF-LO name):** *Street Name Pre Modifier* (PRM).

3.3.2.2 **Definition:** A word or phrase that:

- Precedes and modifies the *Street Name* element, but is separated from it by a *Street Name Pre Type* or a *Street Name Pre Directional* or both, **or**
- Is placed outside the *Street Name* element so that the *Street Name* element can be used in creating a sorted (alphabetical or alphanumeric) list of complete street names.

3.3.2.3 **Definition source:** Adapted from IETF RFC 4119[2] , as updated by RFC 5139[3] and RFC 6848 [7] ; and the "FGDC United States Thoroughfare, Landmark, and Postal Address Data Standard [8] " (section 2.2.2.1).

3.3.2.4 Examples:

- "Old" in Old North First Street ("Old" is a *Street Name Pre Modifier* because the *Street Name Pre Directional* "North" separates "Old" from the *Street Name* "First", and the *Street Name Post Type "*Street*".*);
- "Alternate" in Alternate Route 8 (because "Route" separates "Alternate" from the *Street Name* element);
- "Southwest" in Southwest North Globe Avenue (because only the last directional word is placed in the *Street Name Pre Directional*)
- "The" in The Croft Lane (if the local authority wishes to have only "Croft" in the *Street Name* element for listing purposes)

3.3.2.5 **Data type:** Text.

3.3.2.6 **Domain of values:** None.

3.3.2.7 **Mandatory/conditional/optional:** Conditional. A *Street Name* is required before a *Street Name Pre Modifier* can be given.

3.3.2.8 **Minimum, maximum number of occurrences:** Zero, One.

3.3.2.9 **Notes:**

1. A *Street Name Pre Modifier* precedes and modifies a *Street Name* element, but is separated from the *Street Name* element by a *Street Name Pre Type* or a *Street Name Pre Directional*

or both. Any word or phrase of a complete street name that precedes the *Street Name Pre Directional* (or that precedes the *Street Name Pre Type* if the complete street name has no *Street Name Pre Directional*) comprises the *Street Name Pre Modifier*.

2. In addition, words such as "The" and "Old" may be parsed as *Street Name Pre Modifiers* when they precede the *Street Name* element but are excluded from it so that the Street Name will be placed properly in a sorted alphanumeric list. For example, if "The Oaks Drive" should be listed as "Oaks Drive, The", then "The" may be parsed as a *Street Name Pre Modifier*. If, on the other hand, it should be listed as "The Oaks Drive", then "The" may be included in the *Street Name* element.
3. If a complete street name includes two or more consecutive directional words preceding the *Street Name* element (e.g., Northwest East 14th Street), the last directional word is parsed as a *Street Name Pre Directional*, and the preceding directional words are parsed as the *Street Name Pre Modifier*.
4. For numbered (or, occasionally, lettered) jurisdictional routes (e.g. "Kentucky State Highway 67"), the jurisdiction name and the administrative type of road are included with the type word in the *Street Name Pre Type*. They are not treated as *Street Name Pre Modifiers*. Thus for the preceding example, *Street Name Pre Type* = "Kentucky State Highway"; and *Street Name* = "67". See *Street Name Pre Type* (Section 3.3.4) for a more complete discussion.

3.3.3 Street Name Pre Directional

3.3.3.1 **CLDXF name (PIDF-LO name):** *Street Name Pre Directional* (PRD).

3.3.3.2 **Definition:** A word preceding the *Street Name* element that indicates the direction taken by the street from an arbitrary starting point or line, or the sector where it is located.

3.3.3.3 **Definition source:** FGDC "United States Thoroughfare, Landmark, and Postal Address Data Standard" [8] (section 2.2.2.2).

3.3.3.4 **Examples:**

- 'North' in North Fairfax Drive
- 'South' in South Main Street

3.3.3.5 **Data type:** Text.

3.3.3.6 **Domain of values:** North, Northeast, Northwest, South, Southeast, Southwest, East, West or equivalent words in other languages.

3.3.3.7 **Mandatory/conditional/optional:** Conditional. A primary *Street Name* is required before a *Street Name Pre Directional* can be given.

3.3.3.8 **Minimum, maximum number of occurrences:** Zero, One.

3.3.3.9 **Notes:**

1. A *Street Name Pre Directional* is a word preceding the *Street Name* element that indicates the direction or position of the thoroughfare relative to an arbitrary starting point or line, or the sector where it is located.
2. A complete street name may include a *Street Name Pre Directional*, a Street Name Post Directional, neither, or both.
3. Full spelling (North, Northeast, Northwest, South, Southeast, Southwest, East, West) for data exchange is required to avoid ambiguity.
4. Directional words are often used as or in the *Street Name* element (e.g. North Avenue, West Virginia Avenue). Whether a directional value is placed in the *Street Name Pre Directional* or the *Street Name* element cannot always be discerned from the complete street name itself. Sometimes the proper parsing has to be inferred from the context of the complete street name, or checked with the street naming authority. For example, if West Virginia Avenue is named for the state of West Virginia, then "West" is part of the *Street Name* element. However, if at some point the street changes names and become East

Virginia Avenue, then perhaps "Virginia" is the *Street Name*, and "East" and "West" are *Street Name Pre Directional*.

5. Occasionally two directional words occur together in or before the *Street Name* element (e.g. "East North Avenue", "West South 9th Street", “North West Ridge Road”). Only one of them can be the *Street Name Pre Directional*. The other one might be part of the *Street Name* element, or it might be a *Street Name Pre Modifier*.

3.3.4 Street Name Pre Type

3.3.4.1 **CLDXF name (PIDF-LO name):** *Street Name Pre Type* (STP)

3.3.4.2 **Definition:** A word or phrase that precedes the *Street Name* element and identifies a type of thoroughfare in a complete street name.

3.3.4.3 **Definition source:** Adapted from IETF RFC 6848 [7] , Specifying Civic Address Extensions in the Presence Information Data Format Location Object (PIDF-LO) [7] ; and the FGDC "United States Thoroughfare, Landmark, and Postal Address Data Standard" [8] (section 2.2.2.3).

3.3.4.4 **Examples:**

- "Avenue" in Avenue A;
- "Calle" in Calle 1;
- "Boulevard" in Boulevard of the Allies;
- "Rhode Island Route" in Rhode Island Route 4;
- "County Road" in County Road 18;
- "United States Highway" in United States Highway 10;
- "Interstate" in Interstate 95.

3.3.4.5 **Data type:** Text.

3.3.4.6 **Domain of values:** Restricted to values found in the "NENA Registry of Street Name Pre Types and Street Name Post Types" or combinations thereof (see CLDXF Section 4.1).

3.3.4.7 **Mandatory/conditional/optional:** Conditional. A *Street Name* is required before a *Street Name Pre Type* can be given.

3.3.4.8 **Minimum, maximum number of occurrences:** Zero, One.

3.3.4.9 **Notes:**

1. A *Street Name Pre Type* is a word or phrase that precedes the *Street Name* element and identifies a type of thoroughfare in a complete street name. In English-language complete street name, most *Street Name Pre Type* words are also found as *Street Name Post Types*.

2. A complete street name usually includes either a *Street Name Pre Type* or a *Street Name Post Type*. Occasionally, complete street names have neither ("Broadway") or both ("Avenue C Loop").
3. Street Name Pre Types must be spelled out in full for data exchange. No abbreviations are recognized within this standard.
4. In English-language complete street names, *Street Name Pre Types* are less common than *Street Name Post Types*. *Street Name Pre Types* are more common in Spanish-, Italian- and French-language complete street names.
5. For numbered (or, occasionally, lettered) jurisdictional routes, the *Street Name Pre Type* includes the type word as well as the jurisdiction name and the administrative type of road. The following examples show the parsing of jurisdictional route names:

    * Highway 101: *Street Name Pre Type* = "Highway"; *Street Name* = "101"
    * County Road 88: *Street Name Pre Type* = "County Road"; *Street Name* = "88"
    * Rhode Island Route 4: *Street Name Pre Type* = "Rhode Island Route"; *Street Name* = "4"
    * Texas Ranch-to-Market Road 2398: *Street Name Pre Type* = "Texas Ranch-to-Market Road"; *Street Name* = "2398"
    * Summit County Road XX: *Street Name Pre Type* = "Summit County Road"; *Street Name* = "XX"
    * United States Highway 99: *Street Name Pre Type* = "United States Highway"; *Street Name* = "99".

6. NENA maintains a list of known Street Name Pre Types in the “NENA Registry of Street Name Pre Types and Street Name Post Types” [4.1]. Anyone finding additional Street Name Pre Types may propose them for inclusion in the registry. This may be done by sending an email to NENA at nrs@nena.org. Indicate you want to add a new value to the “NENA Registry of Street Name Pre Types and Street Name Post Types,” and give the suggested new value and an example of its usage.
7. Where a state name is used in a *Street Name Pre Type* as shown above, it must be written out in full rather than abbreviated. Similarly the words "United States" must be written out for all "US" routes and highways. The word "County" or "State" used in county or state routes must also be written out in full.
8. Occasionally two or more type words occur together before the *Street Name* element (e.g., Bypass Highway 22). All of the words are placed in the Street Name Pre Type, unless the local address authority has included any of them in Street Name element. If the two type words are not part of the Street Name element and are not separated from each other by a directional word or other word, they are all placed in the Street Name Pre Type.

3.3.5 Street Name Pre Type Separator

3.3.5.1 **CLDXF name (PIDF-LO name):** *Street Name Pre Type Separator* (STPS). This element is defined in CLDXF as a US specific extension of PIDF-LO per RFC6848 [7] .

3.3.5.2 **Definition:** A preposition or prepositional phrase between the *Street Name Pre Type* and the *Street Name*.

3.3.5.3 **Definition source:** Adapted from the FGDC "United States Thoroughfare, Landmark, and Postal Address Data Standard" [8] (section 2.2.2.4).

3.3.5.4 **Examples:**

- "of the" in Avenue of the Americas
- "at" in Avenue at Port Imperial
- "de las" in Alameda de las Pulgas
- "des" in Rue des Etoiles
- "in the" in Circle in the Woods
- "to the" in Road to the Ruins

3.3.5.5 **Data type:** Text.

3.3.5.6 **Domain of values:** Restricted to values found in the "NENA Registry of Street Name Pre Type Separators" [4.2].

3.3.5.7 **Mandatory/conditional/optional:** Conditional. A *Street Name Pre Type* must be given before a *Street Name Pre Type Separator* is permitted.

3.3.5.8 **Minimum, maximum number of occurrences:** Zero, One.

3.3.5.9 **Notes:**

1. If a prepositional phrase appears between the *Street Name Pre Type* and the *Street Name* elements, the prepositional phrase is a *Street Name Pre Type Separator*.
2. *Street Name Pre Type Separators* are rare in English-language street names, but they are common in Spanish- , Italian- and French-language names.
3. NENA maintains a Street Name Pre Type Separator Registry. Anyone who finds additional *Street Name Pre Type Separators* in U.S. street names may propose them for inclusion in

the registry. This may be done by sending an email to NENA at nrs@nena.org. Indicate you want to add a new value to the "NENA Registry of Street Name Pre Type Separators," give the suggested new value and an example of its usage.

4. This data element is not part of the base PIDF-LO described in RFC 5139[3] . It is a US-specific extension of PIDF-LO. Procedures for defining and including local extensions to the PIDF-LO schema are given in RFC 6848 [7] . The following sample XML record shows how the *Street Name Pre Type Separator* is added to the PIDF-LO XSD and included in a CLDXF record.

```
<?xml version="1.0" encoding="UTF-8"?>
<civicAddress xml:lang="en-US"
xmlns="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"
xmlns:can="urn:nena:xml:ns:pidf:nenaCivicAddr"
xmlns:cae="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr:ext"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:nena:xml:ns:pidf:nenaCivicAddr nenaCivicAddr.xsd">
        <country>US</country>
        <A1>PA</A1>
        <A2>Allegheny</A2>
        <A3>Pittsburgh</A3>
        <RD>Allies</RD>
        <HNO>100</HNO>
        <cae:STP>Boulevard</cae:STP>
        <can:STPS>of the</can:STPS>
        </civicAddress>
```

3.3.6 Street Name

3.3.6.1 **CLDXF name (PIDF-LO name):** *Street Name* (RD).

3.3.6.2 **Definition:** The element of the complete street name that identifies the particular street (as opposed to any street types, directionals, and modifiers).

3.3.6.3 **Definition source:** Adapted from FGDC "United States Thoroughfare, Landmark, and Postal Address Data Standard" [8] (section 2.2.2.5).

3.3.6.4 **Examples:**

- "Fairfax" in North Fairfax Avenue
- "Q" in Avenue Q

3.3.6.5 **Data type:** Text.

3.3.6.6 **Domain of values:** None.

3.3.6.7 **Mandatory/conditional/optional:** Conditional. A *Street Name* is required except for landmarks that have no street address (e.g. United States Capitol Building, Brooklyn Bridge), in which case a Landmark Name is required.

3.3.6.8 **Minimum, maximum number of occurrences:** Zero, One.

3.3.6.9 **Notes:**

1. The *Street Name* may be the official name of a street as assigned by a local governing authority, or an alternate (alias) name that is used and recognized.
2. Street names are usually given to roads carrying vehicular traffic, but they may also be given to walkways, boardwalks, trails, rivers, rail lines and other thoroughfares along which address numbers may be assigned or mileposts placed.
3. Either an *Address Number* or a *Milepost* (or both) should be provided with a *Street Name*, unless none have been assigned along a road. Examples:
   - 12005 County Road 88
   - Milepost 12, County Road 88 (Where *Milepost* = Milepost 12 and *Street Name Pre Type* = County Road and *Street Name* = 88)
   - Milepost 12, 12005 County Road 88 (Meaning: *Address Number* 12005 is found at *Milepost* 12 on County Road 88)

- County Road 88 (No *Address Number* or *Milepost*--permitted only if no address numbers have been assigned along County Road 88, and mileposts are unmarked or unknown)

4. Inconsistent *Street Name* spellings are common, especially as to:
   - Internal capitalization: MacIntyre, McIntyre, Mc Intyre, Mcintyre
   - Apostrophes: Smiths Lane, Smith's Lane
   - Spaces and hyphens: Boston Providence Highway; Boston-Providence Highway
   - Numbered streets: Third Street, 3rd Street, 3 Street

5. Inconsistent spellings should be resolved by reference to official records of the street naming authority, or written records of guidance from the street naming authority.

3.3.7 Street Name Post Type

3.3.7.1 **CLDXF name (PIDF-LO name):** Street Name Post Type (STS).

3.3.7.2 **Definition:** A word or phrase that follows the Street Name element and identifies a type of thoroughfare in a complete street name.

3.3.7.3 **Definition source:** Adapted from IETF RFC 4776 [5] (Section 3.4); and the FGDC "United States Thoroughfare, Landmark, and Postal Address Data Standard" [8] (section 2.2.2.6).

3.3.7.4 **Examples:**

- "Avenue" in North Fairfax Avenue
- "Street" in E Street

3.3.7.5 **Data type:** Text.

3.3.7.6 **Domain of values:** Restricted to values found in the "NENA Registry of Street Name Pre Types and Street Name Post Types" or combinations thereof (see CLDXF Section4.1).

3.3.7.7 **Mandatory/conditional/optional:** Conditional. A Street Name is required before a Street Name Post Type can be given.

3.3.7.8 **Minimum, maximum number of occurrences:** Zero, One.

3.3.7.9 **Notes:**

1. A *Street Name Post Type* is a word or phrase that follows the *Street Name* element and identifies a type of thoroughfare in a complete street name. In English-language complete street names, many *Street Name Post Type* words are also found as *Street Name Pre Types*.
2. A complete street name usually includes either a *Street Name Pre Type* or a *Street Name Post Type*. Occasionally, complete street names have neither ("Broadway") or both ("Avenue C Loop"). "Avenue C Loop" is parsed as follows: Avenue = *Street Name Pre Type*; C = *Street Name*; Loop = *Street Name Post Type*.
3. *Street Name Post Types* must be spelled out in full for data exchange. No abbreviations are recognized within this standard.
4. *Street Name Post Type* words are often used as or in the *Street Name* element (e.g. "Park Lane Circle"). Whether a *Street Name Post Type* value is better placed in the *Street Name Post Type* or the *Street Name* element cannot always be discerned from the complete street name itself. Sometimes the proper parsing has to be inferred from the context of the complete street name, or checked with the street naming authority.

5. Occasionally, two or more type words occur together after the *Street Name* element (e.g., "Tenth Street Bypass"). All of the words are placed in the *Street Name Post Type*, unless the local address authority has included any of them in the *Street Name* element. If the type words are not part of the *Street Name* element and are not separated from each other by a directional word or other word, they are all placed in the *Street Name Post Type*.
6. NENA maintains a registry of known *Street Name Post Types* in the "NENA Registry of Street Name Pre Types and Street Name Post Types" [4.1]. Anyone finding additional *Street Name Post Types* may propose them for inclusion in the registry. This may be done by sending an email to NENA at nrs@nena.org. Indicate you want to add a new value to the "NENA Registry of Street Name Pre Types and Street Name Post Types," and give the suggested new value and an example of its usage.

3.3.8 Street Name Post Directional

3.3.8.1 **CLDXF name (PIDF-LO name):** *Street Name Post Directional* (POD).

3.3.8.2 **Definition:** A word following the *Street Name* element that indicates the direction taken by the street from an arbitrary starting point or line, or the sector where it is located.

3.3.8.3 **Definition source:** FGDC "United States Thoroughfare, Landmark, and Postal Address Data Standard" [8] (section 2.2.2.7).

3.3.8.4 **Examples:**

- 'East' in Seventh Street East
- 'Northeast' in Ingraham Street Northeast

3.3.8.5 **Data type:** Text.

3.3.8.6 **Domain of values:** North, Northeast, Northwest, South, Southeast, Southwest, East, West or equivalent words in other languages.

3.3.8.7 **Mandatory/conditional/optional:** Conditional. A *Street Name* is required before a *Street Name Post Directional* can be given.

3.3.8.8 **Minimum, maximum number of occurrences:** Zero, One.

3.3.8.9 **Notes:**

1. A *Street Name Post Directional* is a word following the *Street Name* element that indicates the direction or position of the thoroughfare relative to an arbitrary starting point or line, or the sector where it is located.
2. A complete street name may include a *Street Name Pre Directional*, a Street Name Post Directional, neither, or both.
3. Full spelling (North, Northeast, Northwest, South, Southeast, Southwest, East, West) for data exchange is required to avoid ambiguity.
4. Directional words are often used as or in the *Street Name* element (e.g. "Avenue North"). Whether a directional word value is placed in the *Street Name Post Directional* or the *Street Name* element cannot always be discerned from the complete street name itself. Sometimes the proper parsing has to be inferred from the context of the complete street name, or checked with the street naming authority.
5. Occasionally two directional words occur together in or after the *Street Name* element (e.g. "Boulevard South Southwest", "Pharr Court South Northeast"). Only one of them can be

the Street Name Post Directional. The other one might be part of the *Street Name* element, or it might be a *Street Name Post Modifier*:

- "Boulevard South Southwest" might be parsed as follows:
  Boulevard = *Street Name Pre Type*;
  South = *Street Name* (directional word used as a *Street Name*);
  Southwest = *Street Name Post Directional.*

- "Pharr Court South Northeast" can be parsed as follows:
  Pharr = *Street Name*;
  Court = *Street Name Post Type*;
  South = *Street Name Post Directional*;
  Northeast = *Street Name Post Modifier*.

3.3.9 Street Name Post Modifier

3.3.9.1 **CLDXF name (PIDF-LO name):** *Street Name Post Modifier* (POM).

3.3.9.2 **Definition:** A word or phrase that follows and modifies the *Street Name* element, but is separated from it by a *Street Name Post Type* or a *Street Name Post Directional* or both.

3.3.9.3 **Definition source:** Adapted from IETF RFC 4776 [5] (Section 3.4); and the FGDC "United States Thoroughfare, Landmark, and Postal Address Data Standard" [8] (section 2.2.2.8).

3.3.9.4 Examples:

- "Extended" in East End Avenue Extended ("Extended" is a *Street Name Post Modifier* because the *Street Name Post Type* "Avenue" separates "Extended" from the *Street Name* "East End". In this case, "East End" has been designated as the *Street Name* by the local naming authority; "East" is not a *Street Name Pre Directional*.)
- "Extension" in Market Street North Extension (because "North" separates "Extension" from the *Street Name Post Type*.)
- "Northwest" in Pharr Court South Northwest (because only the first directional word is placed in the *Street Name Post Directional*.)
- "Number 2" in Banner Fork Road Number 2 (because "Road" separates "Number 2" from the *Street Name*.)
- "northbound" in Interstate Highway 5 northbound (because "northbound" indicates direction of travel on a limited-access divided highway.)

3.3.9.5 **Data type:** Text.

3.3.9.6 **Domain of values:** None.

3.3.9.7 **Mandatory/conditional/optional:** Conditional. A *Street Name* is required before a *Street Name Post Modifier* can be given.

3.3.9.8 **Minimum, maximum number of occurrences:** Zero, One.

3.3.9.9 **Notes:**

1. A *Street Name Post Modifier* follows and modifies a *Street Name*, but is separated from the *Street Name* by a *Street Name Post Type* or a *Street Name Post Directional* or both.

2. If a complete street name includes two or more consecutive directional words following the *Street Name* element, the first is parsed as a Street Name Post Directional, and the rest are parsed as the *Street Name Post Modifier*.
3. For limited-access divided highways only, if the official road name does not include direction of travel, the *Street Name Post Modifier* may be used to give the direction of travel so as to indicate which side of the highway the location refers to. Travel direction shall be given as "northbound", "eastbound", "southbound", or "westbound", without capitalization and including the suffix "bound", to clearly indicate that the word is not part of the official road name. **This is the only case in which the CLDXF record may include in the street name elements a word that is not part of the official street name.**

3.4 Address Number Elements

3.4.1 Introductory Note on Address Number Elements

Address numbers indicate, by sequence and parity, where along a thoroughfare the numbered feature is found. In the CLDXF, address numbers are broken into three component elements: *Address Number Prefix*, *Address Number*, and *Address Number Suffix*. A fourth element, *Milepost*, may be given in place of or in addition to the address number.

The *Address Number* element is defined as an integer to support address sorting, parity (even/odd) definition, and in/out of address range tests. An *Address Number* is required before an *Address Number Suffix* or *Address Number Prefix* can be given.

Many jurisdictions include some address numbers with alphanumeric extensions (e.g., “123 A”; “123-A”, “123 1/2”). The extensions (“A”, “-A”, “1/2”) are *Address Number Suffixes*. The *Address Number Suffix* includes the hyphen and any other special characters, if present.

In a few parts of the United States, alphanumeric extensions precede the *Address Number* (e.g., “A” in A100; “5-” in 5-143; “194-0” in 194-03; “N89W167” in N89W16758; “0” in 0121). In these cases, the letters, numbers, and hyphens that precede the *Address Number* integer all comprise an *Address Number Prefix*. (See the *Address Number Prefix* description and notes for details of the particular numbering systems that use prefixes.)

Milepost numbers are most useful for specifying locations along interstate highways, recreational trails, and other routes where addressed features are not found, as well as along sparsely populated stretches of county, state, federal, and other routes where milepost signs are posted. *Milepost* numbers may be given in place of or in addition to *Address Numbers* (if address numbers have been assigned along the route.) The element includes both the word and the numeric value (“Milepost 43”; “Mile Marker 231.5”).

3.4.2 Address Number Prefix

3.4.2.1 **CLDXF name (PIDF-LO name):** *Address Number Prefix* (HNP).

3.4.2.2 **Definition:** An extension of the *Address Number* that precedes it and further identifies a location along a thoroughfare or within a defined area.

3.4.2.3 **Definition source:** Adapted from IETF RFC 6848 [7] , Specifying Civic Address Extensions in the Presence Information Data Format Location Object (PIDF-LO) [7] ; and FGDC "United States Thoroughfare, Landmark, and Postal Address Data Standard" [8] (section 2.2.1.1).

3.4.2.4 **Examples:**

- "A" in A19 Calle 117, Toa Alta, PR
- "0" in 0123 Southwest Whitaker St, Portland OR
- "5-" in 5-5415 Kuhio Highway, Hanalei, HI 96714
- "194-" 194-13 50th Avenue, New York, NY 11365
- "194-0" in 194-03 1/2 50th Avenue, New York, NY 11365
- "N89W167" in N89W16758 Appleton Avenue, Menomonee Falls, WI 53051
- "W63N" in W63N 645 Washington Avenue, Cedarburg, WI 53012

3.4.2.5 **Data type:** Text.

3.4.2.6 **Domain of values:** None.

3.4.2.7 **Mandatory/conditional/optional:** Conditional. An *Address Number* is required before an *Address Number Prefix* can be given.

3.4.2.8 **Minimum, maximum number of occurrences:** Zero, One.

3.4.2.9 **Notes:**

1. *Address Number Prefix* (HNP in PIDF) contains any alpha-numeric characters that precede an *Address Number*. It contains all punctuation preceding the integer *Address Number*, including spaces, if any. In some jurisdictions, a leading zero is used in an *Address*

Number. Where there are leading zeros, they are included in the *Address Number Prefix* and not in the *Address Number*.

2. Most addresses do not include an *Address Number Prefix*. When found, the *Address Number Prefix* must be separated from the *Address Number* so that the *Address Number* can be maintained as an integer for sorting and quality control tests.
3. *Address Number Prefixes* are known to be used in five unusual address numbering systems in the United States: Puerto Rico; a neighborhood in Portland Oregon; certain parts of Hawaii; Queens and other areas of New York City; and certain counties and municipalities in Wisconsin and northern Illinois. (Other cases may also be found). The following notes explain each of the five in turn.
    a. Puerto Rico (example: “A”). In Puerto Rico, *Address Numbers* are often preceded by a letter (e.g. “A” in A 19 Calle 11). The letter must be treated as an *Address Number Prefix*.
    b. Portland, OR (example: “0”). In Portland, OR, negative *Address Numbers* have been assigned in an area along the west bank of the Willamette River. By local practice, the minus sign is represented as a leading zero. ("0123 South Whitaker" and "123 South Whitaker" would be two completely different addresses). The leading zero must be treated as an *Address Number Prefix*.
    c. Hawaii (example: “5-”). In certain parts of Hawaii, a number and a hyphen precede the *Address Number*. (The number before the hyphen indicates the taxing district responsible for maintaining the road.) The number and the hyphen must be treated as an *Address Number Prefix*.
    d. Queens Borough and nearby areas in New York City (examples: “194-”, “194-0”). Address numbers are hyphenated in most of Queens Borough and some nearby areas of New York City. The number to the left of the hyphen indicates the "block" (in theory—the number does not always change at street intersections and sometimes it changes within a single block). The number to the right of the hyphen indicates the site or house number within the "block". Thus 194-13 50th Street would occur on 50th Street just after it intersects 194th Avenue. If the site or house number is less than ten, it is written with a leading zero, as in 194-03 1/2 above in the examples in section 3.4.2.4. Within the CLDXF, these numbers can be constructed and parsed as follows:
        - The left-side number (194), the hyphen and the leading 0, if any, form the *Address Number Prefix*.
        - The right-side number (13 or 3 in the examples above) is the *Address Number*.
        - The suffix, if any (such as the "1/2" in 194-03 1/2), is an *Address Number Suffix*.

e. Wisconsin and Northern Illinois (examples: “N89W167”; “W63N”). A number of communities and counties in Wisconsin and northern Illinois prefix their *Address Numbers* with map grid cell references. In the examples above:
   - "N89W16758" is read as "North 89, West 167, *Address Number* 58".
   - "W63N645" is read as "West 63, North, *Address Number* 645."

   The north and west values specify a locally-defined map grid cell within which the address is located. The grid cell reference must be treated as an *Address Number Prefix*. Local knowledge may be needed to know when the grid reference stops and the *Address Number* begins.

3.4.3 Address Number

3.4.3.1 **CLDXF name (PIDF-LO name):** *Address Number* (HNO).

3.4.3.2 **Definition:** The numeric identifier of a location along a thoroughfare or within a defined community.

3.4.3.3 **Definition source:** Adapted from FGDC "United States Thoroughfare, Landmark, and Postal Address Data Standard" [8] (section 2.2.1.2).

3.4.3.4 **Examples:**

- "123" in 123 Main Street;
- "119" in 119 1/2 Elm Street;
- "3001" in N6W2 3001 Bluemound Road

3.4.3.5 **Data type:** Integer.

3.4.3.6 **Domain of values:** None.

3.4.3.7 **Mandatory/conditional/optional:** Conditional. A *Street Name* is required before an *Address Number* can be given.

3.4.3.8 **Minimum, maximum number of occurrences:** Zero, One.

3.4.3.9 **Notes:**

1. The *Address Number* is defined as an integer to support address sorting, parity (even/odd) definition, and in/out of address range tests.
2. If an address includes a *Street Name*, it must also include an *Address Number*, unless no *Address Numbers* have been assigned along that street.
3. Some *Address Numbers* may be preceded or followed by letters, fractions, hyphens, decimals and other non-integer content. Those non-integer elements must be placed in the *Address Number Prefix* if they appear before the *Address Number* or in the *Address Number Suffix* if they follow the *Address Number*. For example, the New York City hyphenated address 194-03 ½ 50th Avenue, New York, NY 11365 would be parsed as follows:
    i. The *Address Number Prefix* would be "194-0",
    ii. the *Address Number* would be 3,
    iii. and the *Address Number Suffix* would be "1/2".

4. Zero should not be used to indicate there is no *Address Number*. Occasionally zero is issued as a valid *Address Number* (e.g. 0 Prince Street, Alexandria, VA 22314) or it can be inferred (e.g. 1/2 Fifth Avenue, New York, NY 10003 (for which the *Address Number* would be 0 and the *Address Number Suffix* would be "1/2")). To indicate “NO VALUE,” the element is omitted from the XML.

3.4.4 Address Number Suffix

3.4.4.1 **CLDXF name (PIDF-LO name):** *Address Number Suffix* (HNS).

3.4.4.2 **Definition:** An extension of the *Address Number* that follows it and further identifies a location along a thoroughfare or within a defined area.

3.4.4.3 **Definition source:** Adapted from FGDC "United States Thoroughfare, Landmark, and Postal Address Data Standard" [8] (section 2.2.1.3).

3.4.4.4 **Examples:**

- "1/2" in 119 1/2 Elm Street
- " A" in 123 A Main Street
- "A" in 123A Main Street
- "-A" in 123-A Main Street

3.4.4.5 **Data type:** Text.

3.4.4.6 **Domain of values:** None.

3.4.4.7 **Mandatory/conditional/optional: Conditional.** An *Address Number* is required before an *Address Number Suffix* can be given.

3.4.4.8 **Minimum, maximum number of occurrences:** Zero, One.

3.4.4.9 **Notes:**

1. Most addresses do not include an *Address Number Suffix*. When found, the *Address Number Suffix* must be separated from the *Address Number* so that the *Address Number* can be maintained as an integer for sorting and quality control tests.
2. *Address Number Suffix* (HNS in PIDF) contains any alpha-numeric characters that follow the *Address Number*, including non-integer notation (such as 1/2). It includes all punctuation following the integer *Address Number*, including spaces, if any.

3.4.5 Milepost

3.4.5.1 **CLDXF name (PIDF-LO name):** *Milepost* (MP).

3.4.5.2 **Definition:** A distance travelled along a route such as a road or highway, typically indicated by a milepost sign. There is typically a post or other marker indicating the distance in miles/kilometers from or to a given point.

3.4.5.3 **Definition source:** Adapted from IETF RFC 6848 [7] , Specifying Civic Address Extensions in the Presence Information Data Format Location Object (PIDF-LO).

3.4.5.4 Examples:

- "Milepost 1303" in Milepost 1303, Alaska Highway
- "Km 2.7" in Km 2.7, Carretera 175, Barrio San Antonio, Caguas, Puerto Rico 00725
- "Mile Marker 12" in Mile Marker 12, 12005 County Road 88
- “Station 122” in Station 122, Upper Tampa Bay Trail

3.4.5.5 **Data type:** Text.

3.4.5.6 **Domain of values:** None.

3.4.5.7 **Mandatory/conditional/optional:** Conditional. A *Street Name* is required before a *Milepost* can be given.

3.4.5.8 **Minimum, maximum number of occurrences:** Zero, One.

3.4.5.9 **Notes:**

1. An address may include a *Milepost* with or without an *Address Number*. If they are given together, it means that the Address Number occurs at the Milepost. Examples:
   - *Milepost* with no *Address Number*: "Milepost 12, County Road 88"
   - *Milepost* with *Address Number*: "Milepost 12, 12005 County Road 88" (Meaning: *Address Number* 12005 is found at Milepost 12 on County Road 88).

3.5 Landmark Name Elements

3.5.1 Introductory Note on Landmark Name

A *Landmark Name* specifies a location by naming it. The name by itself does not relate the landmark to any street system or coordinate reference system and therefore provides no information about where to find the feature. Addresses therefore often include both a *Landmark Name* and a street address.

Within the CLDXF, a *Landmark Name* may be given either in place of, or in addition to, a street address. Thus both of the following addresses are acceptable within CLDXF:

1. United States Capitol Building, Washington, DC (includes a *Landmark Name* with no street address)
2. The White House, 1600 Pennsylvania Avenue NW, Washington, DC 20500 (includes both a *Landmark Name* and a street address)

The differences between a *Landmark Name*, *Unincorporated Community*, *Neighborhood Community*, and *Building* are not always clear and distinct. The explanatory notes for each element provide some guidance in deciding which names should be assigned to which elements.

The CLDXF includes two landmark name elements: *Landmark Name Part*, and *Complete Landmark Name.* Within a CLDXF record, *Landmark Name Part* may occur multiple times, while *Complete Landmark Name* may occur only once. When a landmark is denoted by multiple names in a series (such as “University of South Florida” and “Sun Dome”, an arena on the university campus), the *Landmark Name Part* element holds the separate individual names, and the *Complete Landmark Name* holds the complete combination. The *Landmark Name Part* element also allows specification of the order in which the separate names should be combined into the complete name.

3.5.2 Landmark Name Part

3.5.2.1 **CLDXF name (PIDF-LO name):** *Landmark Name Part* (LMKP). This element is defined in CLDXF as a US specific extension of PIDF-LO per RFC6848 [7] .

3.5.2.2 **Definition:** The name or collection of names by which a prominent feature is publicly known. [See notes in 2.3.1.9 for additional details.]

3.5.2.3 **Definition source:** Adapted from "NENA Master Glossary of 9-1-1 Terminology" [15] (definition of "Landmark location").

3.5.2.4 **Examples:**

- Empire State Building
- The New York Public Library
- The Alamo
- South Central High School
- Kirkwood Mall
- Ohio State University
- Derby Hall (a part of Ohio State University Derby Hall)
- University of South Florida
- Sun Dome (a part of University of South Florida Sun Dome)

3.5.2.5 **Data type:** A complex element with two components: (1) the name, which is text and (2) the order, which is integer.

3.5.2.6 **Domain of values:** For the name, None. For order, restricted to positive integers in the range 1..n, where n is the number of LMKPs in the PIDF (so if there are 4 LMKPs in a PIDF, order must be 1..4). 1 is leftmost, n is rightmost.

3.5.2.7 **Mandatory/conditional/optional:** Conditional. A *Landmark Name Part* is optional unless the landmark has no corresponding street address (e.g. United States Capitol Building), in which case a *Landmark Name Part* is required.

3.5.2.8 **Minimum, maximum number of occurrences:** Zero, Unlimited.

3.5.2.9 **Notes:**

1. Landmark names are given to both natural and manmade features. In general, names of natural landmarks are not used in addresses and are therefore excluded from the scope of this standard.
2. The distinction between the *Landmark Name Part* element and *Building* element is not always clear. In general, if a building is identified by a name that is unique within the community, the name should be placed in the Landmark Name element (e.g. "Empire State Building"; "Derby Hall"). If a building is identified by a number or letter that distinguishes it from others at the same address, the identifier should be placed in the *Building* element (e.g., "Terminal 3" in John F. Kennedy International Airport, Terminal 3; "Building A" in 456 Oak Street, Building A, Apartment 206).
3. Most named landmarks that are used as addresses are also designated by one or more thoroughfare addresses. A *Landmark Name Part* can be associated with a thoroughfare address simply by including it in the record with the corresponding address number and street name elements.
4. Landmark names often denote extensive areas, which may contain smaller named landmarks (e.g. individual buildings within a college campus). In such cases, the area denoted by one *Landmark Name Part* may contain multiple subordinate areas denoted by other *Landmark Name Parts*. The *Landmark Name Part* is provided for use when multiple names together are used to identify a landmark, and the data provider desires to show the separate names within one record.
    - *Examples:*
        - *LMK = State University of New York at Buffalo North Campus Ellicott Complex Red Jacket Quadrangle*
        - *LMKP = State University of New York at Buffalo*
        - *LMKP = North Campus*
        - *LMKP = Ellicott Complex*
        - *LMKP = Red Jacket Quadrangle*

5. Because landmarks are sometimes identified by multiple names in combination, a *Landmark Name Part* (LMKP) may occur multiple times in one CLDXF record. In this respect the *Landmark Name Part* (LMKP) differs from the *Complete Landmark Name* (LMK), which can occur only once in a CLDXF record.
6. A *Landmark Name Part* is converted to a *Complete Landmark Name* by copying or concatenation. If there is only a single *Landmark Name Part* in a CLDXF record, it must be copied directly into the *Complete Landmark Name*. If there are multiple *Landmark Name Parts* in a CLDXF record, they are concatenated together and the result is copied

into the *Complete Landmark Name*. The "order" attribute of the *Landmark Name Part* (LMKP), if used, specifies the order in which the names should be concatenated.

7. The following example shows a *Complete Landmark Name* (LMK) and a *Landmark Name Part* in one CLDXF record:

```
<?xml version="1.0" encoding="UTF-8"?>
<civicAddress xml:lang="en-US"
xmlns="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"
xmlns:can="urn:nena:xml:ns:pidf:nenaCivicAddr"
xmlns:cae="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr:ext"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:nena:xml:ns:pidf:nenaCivicAddr nenaCivicAddr.xsd">
 <country>US</country>
        <A1>FL</A1>
        <A2>Hillsborough</A2>
        <A3>Tampa</A3>
        <RD>USF Bull Run</RD>
        <STS>Drive</STS>
        <HNO>12500</HNO>
        <LMK>University of South Florida Sun Dome</LMK>
        <can:LMKP name='University of South Florida' order='1'/>
        <can:LMKP name='Sun Dome' order='2'/>
              </civicAddress>
```

8. "Landmark name", as used in this standard, does not imply any officially-designated historic landmark status, nor is it restricted to features having such status.
9. A local authority might wish to compile a list of locally-recognized *Landmark Name Parts* used as addresses for their convenience. Whether to do so, and if so what names to include, are implementation matters to be decided locally.

3.5.3 Complete Landmark Name

3.5.3.1 **CLDXF name (PIDF-LO name):** *Complete Landmark Name* (LMK).

3.5.3.2 **Definition:** The name by which a prominent feature is publicly known. [The *Complete Landmark Name* for a CLDXF record is composed of the *Landmark Name Parts* in that record. See notes in 3.5.3.9 for additional details.]

3.5.3.3 **Definition source:** Adapted from "NENA Master Glossary of 9-1-1 Terminology" [15] (definition of "Landmark location").

3.5.3.4 **Examples:**

- Empire State Building
- The New York Public Library
- The Alamo
- South Central High School
- Kirkwood Mall
- Ohio State University Derby Hall
- Derby Hall
- University of South Florida Sun Dome
- Sun Dome
- State University of New York at Buffalo North Campus Ellicott Complex Red Jacket Quadrangle

3.5.3.5 **Data type:** Text.

3.5.3.6 **Domain of values:** None.

3.5.3.7 **Mandatory/conditional/optional:** Conditional. A *Complete Landmark Name* is required if one or more *Landmark Name Parts* are given. A *Landmark Name Part* is required before a *Complete Landmark Name* can be given.

3.5.3.8 **Minimum, maximum number of occurrences:** Zero, One.

3.5.3.9 **Notes:**

1. The *Complete Landmark Name* (LMK) conforms to the PIDF-LO LMK element in that it can occur only once in a CLDXF record. In that respect *Complete Landmark Name* (LMK) differs from the *Landmark Name Part* (LMKP) element, which can occur any number of times in a single CLDXF record.
2. A *Complete Landmark Name* is created from its corresponding *Landmark Name Part(s)* by copying or concatenation. If there is only a single *Landmark Name Part* in a CLDXF record, it is copied directly into the *Complete Landmark Name*. If there are multiple *Landmark Name Parts* in a CLDXF record, they are concatenated together, and the result is copied into the *Complete Landmark Name.*

3.6 Subaddress Elements

3.6.1 Introductory Note on Subaddresses

Subaddresses occur within a wide variety of residential and commercial buildings, from single basement apartments to multi-structure office parks, as well as countless specialized structures such as airports, piers, warehouses, manufacturing plants, parking garages, and stadiums. The CLDXF follows the PIDF-LO in providing a structured set of six elements to hold subaddress information: *Building*, *Floor*, *Unit*, *Room*, *Seat*, and *Additional Location Information*. This hierarchy has some limitations: not all site and building subaddress components fit easily into this set of six elements, and the elements can be difficult to distinguish in practice.

Although the IETF does not make recommendations on the contents of these fields, NENA recommends a type and identifier be included. Each element has notes describing its usage.

3.6.2 Building

3.6.2.1 **CLDXF name (PIDF-LO name):** *Building* (BLD).

3.6.2.2 **Definition:** One among a group of buildings that have the same address number and complete street name.

3.6.2.3 **Definition source:** New.

3.6.2.4 **Examples:**

- "Terminal 3" in John F. Kennedy International Airport, Terminal 3;
- "Building A" in 456 Oak Street, Building A, Apartment 206

3.6.2.5 **Data type:** Text.

3.6.2.6 **Domain of values:** None.

3.6.2.7 **Mandatory/conditional/optional:** Optional.

3.6.2.8 **Minimum, maximum number of occurrences:** Zero, One.

3.6.2.9 **Notes:**

1. Subaddress elements typically include both a “type” word (such as “building” or “terminal”) and an identifier (a specific name or number). Include both the type word, the identifier in this element and any separating characters or spaces.
2. The type word may precede or follow the identifier (“Terminal 3” vs. “International Terminal”). Either order is acceptable; local usage should be followed. In some cases no type word is used.
3. Complete words are always used for data exchange.
4. The distinction between the *Landmark Name* element and *Building* element is not always clear. In general, if a building is identified by a number or letter that distinguishes it from others at the same address, the identifier should be placed in the *Building* element (e.g., "Terminal 3" in John F. Kennedy International Airport, Terminal 3; "Building A" in 456 Oak Street, Building A, Apartment 206). If a building is identified by a name that is unique within the community, the name should be placed in the *Landmark Name* element (e.g. "Empire State Building"; "Ohio State University, Derby Hall").

3.6.3 Additional Location Information

3.6.3.1 **CLDXF name (PIDF-LO name):** *Additional Location Information* (LOC).

3.6.3.2 **Definition:** A part of a subaddress that is not a building, floor, unit, room, or seat.

3.6.3.3 **Definition source:** Adapted from IETF RFC 4119[2] and 4776 [5] (Section 3.4).

3.6.3.4 **Examples:**

- "West Wing" in 1600 Pennsylvania Avenue NW, West Wing
- "Wing 7" in U.S. Department of Agriculture South Building, 1400 Independence Avenue, Wing 7
- "Concourse B" in Seattle-Tacoma Airport Main Terminal, Concourse B
- "Corridor 5" in U.S. Department of Commerce Building, 1401 Constitution Avenue NW, Corridor 5
- "Loading Dock" in 1601 Terminal Street, Loading Dock

3.6.3.5 **Data type:** Text.

3.6.3.6 **Domain of values:** None.

3.6.3.7 **Mandatory/conditional/optional:** Optional.

3.6.3.8 **Minimum, maximum number of occurrences:** Zero, One.

3.6.3.9 **Notes:**

1. Subaddress data that does not fit in the *Building*, *Floor*, *Unit*, *Room* or *Seat* elements may be placed in the additional location element.
2. This element "is an unstructured string specifying additional information about the location, such as the part of a building or other unstructured information" (IETF RFC 4776 [5] , section 3.4).
3. Subaddress elements typically include both a "type" word (such as "wing" or "corridor") and an identifier (a specific name or number). Include both the type word, the identifier in this element and any separating characters or spaces.
4. The type word may precede or follow the identifier ("West Wing" vs. "Wing 7"). Either order is acceptable; local usage should be followed. In some cases no type word is used (e.g., "Loading Dock").

5. Complete words are always used for data exchange.

3.6.4 Floor

3.6.4.1 **CLDXF name (PIDF-LO name):** *Floor* (FLR).

3.6.4.2 **Definition:** A floor, story, or level within a building.

3.6.4.3 **Definition source:** Adapted from IETF RFC 4119[2] .

3.6.4.4 **Examples:**

- "Floor 5" in 800 Jefferson Street, Floor 5
- "5th Floor" in 800 Jefferson Street, 5th Floor
- "Mezzanine" in 800 Jefferson Street, Mezzanine

3.6.4.5 **Data type:** Text.

3.6.4.6 **Domain of values:** None.

3.6.4.7 **Mandatory/conditional/optional:** Optional.

3.6.4.8 **Minimum, maximum number of occurrences:** Zero, One.

3.6.4.9 **Notes:**

1. Subaddress elements typically include both a "type" word (such as "floor" or "level") and an identifier (a specific name or number). Include both the type word, the identifier in this element and any separating characters or spaces.
2. The type word may precede or follow the identifier ("5th Floor" vs. "Floor 5"). Either order is acceptable; local usage should be followed. In some cases no type word is used (e.g. "Mezzanine").
3. Complete words are always used for data exchange.

3.6.5 Unit

3.6.5.1 **CLDXF name (PIDF-LO name):** *Unit* (UNIT).

3.6.5.2 **Definition:** A group or suite of rooms within a building that are under common ownership or tenancy, typically having a common primary entrance.

3.6.5.3 **Definition source:** Adapted from IETF RFC 4776 [5] .

3.6.5.4 **Examples:**

- "Apartment 12" in 422 Via Casitas, Apartment 12
- "Suite 3103" in 4300 Flamingo Avenue, Suite 3103
- "Presidential Suite" in 3100 Tropicana Boulevard, Presidential Suite
- "Penthouse" in 5850 Fifth Avenue, Penthouse

3.6.5.5 **Data type:** Text.

3.6.5.6 **Domain of values:** None.

3.6.5.7 **Mandatory/conditional/optional:** Optional.

3.6.5.8 **Minimum, maximum number of occurrences:** Zero, One.

3.6.5.9 **Notes:**

1. The *Unit* element identifies a group of rooms within a building. The *Room* element identifies a single room within a building or unit.
2. Subaddress elements typically include both a "type" word (such as "suite" or "unit") and an identifier (a specific name or number). Include both the type word, the identifier in this element and any separating characters or spaces.
3. The type word may precede or follow the identifier ("Suite 3103" vs. "Presidential Suite"). Either order is acceptable; local usage should be followed. In some cases no type word is used (e.g. "Penthouse").
4. Complete words are always used for data exchange.

3.6.6 Room

3.6.6.1 **CLDXF name (PIDF-LO name):** *Room* (ROOM).

3.6.6.2 **Definition:** A single room within a building.

3.6.6.3 **Definition source:** Adapted from IETF RFC 4776 [5] (Section 3.4).

3.6.6.4 **Examples:**

- "Room 450F" in 1440 Market St., Room 450F
- “Room 137” in 123 Main Street, Room 137
- “Cayuga Room” in 125 High Street, Cayuga Room
- “Rear” in 3850 Maple Street, Rear
- “Lobby” in 1200 Main Street, Lobby

3.6.6.5 **Data type:** Text.

3.6.6.6 **Domain of values:** None.

3.6.6.7 **Mandatory/conditional/optional:** Optional.

3.6.6.8 **Minimum, maximum number of occurrences:** Zero, One.

3.6.6.9 **Notes:**

1. The *Room* element identifies a single room within a building or unit. The *Unit* element identifies a group of rooms within a building.
2. Subaddress elements sometimes include both a “type” word (such as “room” or “office”) and an identifier (a specific name or number). Include both the type word, the identifier in this element and any separating characters or spaces.
3. The type word may precede or follow the identifier (“Room 137” vs. “Cayuga Room”). Either order is acceptable; local usage should be followed. In some cases no type word is used (e.g. “Rear”).
4. Complete words are always used for data exchange.

3.6.7 Seat

3.6.7.1 **CLDXF name (PIDF-LO name):** *Seat* (SEAT).

3.6.7.2 **Definition:** A place where a person might sit within a building.

3.6.7.3 **Definition source:** Adapted from IETF RFC 4776 [5] (Section 3.4).

3.6.7.4 **Examples:**

- "Cubicle 23" in 2500 Seventh Street, Room 105, Cubicle 23
- "Registration Desk" in Grand Hotel, 1101 Madison Street, Registration Desk
- "Seat T19" Studio Theater, Seat T19

3.6.7.5 **Data type:** Text.

3.6.7.6 **Domain of values:** None.

3.6.7.7 **Mandatory/conditional/optional:** Optional.

3.6.7.8 **Minimum, maximum number of occurrences:** Zero, One.

3.6.7.9 **Notes:**

1. The *Seat* element "designates a place where a person might sit, such as a seat in a stadium or theater, or a cubicle in an open-plan office or a booth in a trade show" (IETF RFC 4776 [5] , section 3.4).
2. Subaddress elements typically include both a "type" word (such as "seat" or "desk") and an identifier (a specific name or number). Include both the type word, the identifier in this element and any separating characters or spaces.
3. The type word may precede or follow the identifier ("Registration Desk" vs. "Desk 17"). Either order is acceptable; local usage should be followed. In some cases no type word is used.
4. Complete words are always used for data exchange.

3.7 Address Descriptor

3.7.1 Introductory Note on *Place Type*

The *Place Type* may be used to indicate the type of feature indicated by an address. Identifying the type of feature present at a particular address is often valuable to emergency responders and therefore *Place Type* is included in CLDXF as an optional element. Acceptable terms are listed in a PIDF-LO registry. The *Place Type* element notes explain where to find the registry, how to propose new terms for inclusion in the registry, and some of its limitations.

3.7.2 Place Type

3.7.2.1 **CLDXF name (PIDF-LO name):** *Place Type* (PLC).

3.7.2.2 **Definition:** The type of feature identified by the address.

3.7.2.3 **Definition source:** Adapted from "Location Types Registry" (IETF RFC 4589 [4]).

3.7.2.4 **Examples:** Airport, arena, bank, hospital, hotel, government, industrial, library, office, parking, warehouse, water, etc.

3.7.2.5 **Data type:** Text.

3.7.2.6 **Domain of values:** Restricted to terms listed in "Location Types Registry" (IETF RFC 4589 [4]).

3.7.2.7 **Mandatory/conditional/optional:** Optional.

3.7.2.8 **Minimum, maximum number of occurrences:** Zero, One.

3.7.2.9 **Notes:**

1. The *Place Type* element is not part of the address. It is an attribute of the address.
2. Allowable values are restricted to terms listed in the IETF Location Types Registry. The registry is posted at: http://www.iana.org/assignments/location-type-registry/location-type-registry.xml
3. The IETF Location Types Registry is intended to provide a standard set of categories and terms for "describing the types of places a human or end system might be found." The registry is intended for use with other types of locations in addition to addresses, such as mobile computing environments, so it includes *Place Type* terms that do not pertain to address features, such as "airplane," "bicycle," "automobile," "truck," "bus," "watercraft", and "underway" (a vehicle in motion).
4. The IETF Location Types Registry provides (as of March 2012) 44 terms, with informal definitions and examples. However the terms are neither exclusive nor exhaustive (that is, the terms overlap with each other to an undefined extent, and they do not cover all possible types). No data model or principles of classification are given, so users have little guidance on how to handle ambiguous cases, or when a new term is needed.
5. The NENA CLDXF Working Group considered creating an exhaustive, exclusive, systematic, formally-defined set of *Place Type* categories, but concluded that no such classification system could be created. The relevant categories depend on the purpose of the classifier. For example, firefighters may classify according to the structural characteristics of a building (low-rise/high-rise; wood-frame, steel-frame, brick, etc.),

while police may classify according to the nature of the activities occurring at an address (residential vs. office; bar vs. restaurant; big-box retail vs. convenience store; etc.), and emergency medics, telephone service providers, other utilities, city planners, social service providers, and others all may have other concerns and points of view. Clearly no single system can meet all of these purposes when each purpose implies a different logical basis for defining categories. A set of categories that suits one purpose will be ambiguous or incomplete when used for a different purpose.

6. CLDXF users who find existing terms in the IETF Location Types Registry to be inadequate for their purpose may propose additional terms for inclusion in the registry. This may be done by sending an email to the Internet Assigned Numbers Authority (IANA) at iana@iana.org. Indicate you want to add a new value to Location Types Registry as defined by RFC 4589[4] . Give suggested token (an enumerated value; i.e., airplane, bar, etc.) and description. For additional examples see RFC 4589 [4] or the actual registry.
7. Often, one address may contain multiple *Place Types* (e.g., "restaurant" and "bar"), or is used to identify several types of features (e.g., parcel, building, building entrance, utility meter, utility pole, incident location, etc.) that occur at the same location. Per RFC 5139[3] , which defines *Place Type*, a CLDXF record may contain only one *Place Type* value. If multiple values apply, consider the purpose for which the record was created, and pick the one value that best indicates the type of feature for that purpose.

4 NENA Registry System (NRS) Consideration

This section defines two new registries to be created by NRS.[16]

4.1 NENA Registry of Street Name Pre Types and Street Name Post Types

This registry lists known values for *Street Name Pre Types* and *Street Name Post Types*. A *Street Name Pre Type* or a *Street Name Post Type* may consist of any value, or any combination of values, found in this registry.

4.1.1 Name

The name of this registry is the "*Street Name Pre Types* and *Street Name Post Types"*.

The ID of this registry is "StreetNamePrePostTypes*"*.

4.1.2 Information required to create a new value

A new entry to the NENA Registry of *Street Name Pre Types* and *Street Name Post Types* requires an explanation of when and how the new entry will be used.

4.1.3 Management Policy

Addition of a new entry requires an expert review as defined in NENA 71-001. This expert should allow any value for which a valid *Street Name Pre Type* and *Street Name Post Type* exists and which conforms to the definition of CLDXF sections 3.3.4 and/or 3.3.7.

4.1.4 Content

Each entry in this registry contains:

- A value (word or phrase) that may be used, alone or in combination with other entries, as *Street Name Pre Types* or *Street Name Post Types.*
- Source – The name or agency which added the value.

4.1.5 Initial Values

For initial values, see USPS Publication 28 [11] , Appendix C1 as published on the date that the CLDXF is adopted.

4.2 NENA Registry of Street Name Pre Type Separators

This registry lists known values for *Street Name Pre Type Separators.* The Street Name Pre Type Separator is defined in CLDXF section 3.3.5.This document creates a new NENA namespace for NENA defined extensions to PIDF-LO, and registers the schema for this namespace.

4.2.1 Name

The name of this registry is "*Street Name Pre Type Separators*".

The ID of this registry is "*StreetNamePreTypeSeparators*".

4.2.2 Information Required to Create a New Value

A new entry to this registry requires an explanation of when and how the new entry will be used.

4.2.3 Management Policy

Addition of a new entry requires an expert review as defined in NENA 71-001. This expert should allow any value for which a valid street name exists and which conforms to the definition of *Street Name Pre Type Separator* given in CLDXF Section 3.3.5.

4.2.4 Content

This registry contains a listing of all words or phrases that may be used as *Street Name Pre Type Separators*.

4.2.5 Initial Values (Section 3.3.5)

- of the
- at
- de las
- des
- in the
- to the

4.3 NENA CivicAddr Namespace Registration

This document registers the category "pidf" in the urn:nena:xml:ns registry.

This document registers the name "nenaCivicAddr" in the "pidf" category.

The full name of this namespace is urn:nena:xml:ns:pidf:nenaCivicAddr

4.3.1 XML Schema Registration

The following schema is registered to the namespace:

```
<?xml version="1.0"?>
```

```
<xs:schema xmlns:can="urn:nena:xml:ns:pidf:nenaCivicAddr"
xmlns:ca="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"
xmlns:cae="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr:ext"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:nena:xml:ns:pidf:nenaCivicAddr" elementFormDefault="qualified">
<xs:import namespace="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"
schemaLocation="civicAddress.xsd"/>
<xs:import namespace="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr:ext"
schemaLocation="civicAddressExt.xsd"/>
<xs:import namespace="http://www.w3.org/XML/1998/namespace"
schemaLocation="http://www.w3.org/2001/xml.xsd"/>
<xs:annotation>
<xs:appinfo source="urn:nena:xml:ns:pidf:nenaCivicAddr">
        NENA Civic Address extensions for PIDF-LO
      </xs:appinfo>
<xs:documentation>
This schema defines two North American extensions to PIDF-LO, one that adds a
separator between a Street Type Prefix and a Street Name, and another that adds a
component part of a complete Landmark name.  The latter contains an order field
to compose the complete Landmark Name from the component parts.
</xs:documentation>
</xs:annotation>
<xs:element name="STPS" type="ca:caType"/>
<!-- Street Type Prefix Separator -->
<xs:element name="LMKP" type="can:LmkpType"/>
<xs:complexType name="LmkpType">
<xs:complexContent>
<xs:restriction base="xs:anyType">
<xs:sequence>
<xs:any namespace="##any" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
</xs:sequence>
<xs:attribute name="name" type="xs:token" use="required"/>
<xs:attribute name="order" type="xs:integer" use="required"/>
<xs:attribute ref="xml:lang" use="optional"/>
<xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:restriction>
</xs:complexContent>
</xs:complexType>
</xs:schema>
```

CivicAddress.xsd

```
<?xml version="1.0"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:ca="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"
targetNamespace="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"
elementFormDefault="qualified" attributeFormDefault="unqualified">
<xs:import namespace="http://www.w3.org/XML/1998/namespace"
schemaLocation="http://www.w3.org/2001/xml.xsd"/>
<xs:simpleType name="iso3166a2">
<xs:restriction base="xs:token">
<xs:pattern value="[A-Z]{2}"/>
</xs:restriction>
</xs:simpleType>
<xs:complexType name="caType">
<xs:simpleContent>
<xs:extension base="xs:token">
<xs:attribute ref="xml:lang" use="optional"/>
</xs:extension>
</xs:simpleContent>
</xs:complexType>
<xs:element name="civicAddress" type="ca:civicAddress"/>
<xs:complexType name="civicAddress">
<xs:sequence>
<xs:element name="country" type="ca:iso3166a2" minOccurs="0"/>
<xs:element name="A1" type="ca:caType" minOccurs="0"/>
<xs:element name="A2" type="ca:caType" minOccurs="0"/>
<xs:element name="A3" type="ca:caType" minOccurs="0"/>
<xs:element name="A4" type="ca:caType" minOccurs="0"/>
<xs:element name="A5" type="ca:caType" minOccurs="0"/>
<xs:element name="A6" type="ca:caType" minOccurs="0"/>
<xs:element name="PRM" type="ca:caType" minOccurs="0"/>
<xs:element name="PRD" type="ca:caType" minOccurs="0"/>
<xs:element name="RD" type="ca:caType" minOccurs="0"/>
<xs:element name="STS" type="ca:caType" minOccurs="0"/>
<xs:element name="POD" type="ca:caType" minOccurs="0"/>
<xs:element name="POM" type="ca:caType" minOccurs="0"/>
<xs:element name="RDSEC" type="ca:caType" minOccurs="0"/>
<xs:element name="RDBR" type="ca:caType" minOccurs="0"/>
<xs:element name="RDSUBBR" type="ca:caType" minOccurs="0"/>
<xs:element name="HNO" type="ca:caType" minOccurs="0"/>
```

```
<xs:element name="HNS" type="ca:caType" minOccurs="0"/>
<xs:element name="LMK" type="ca:caType" minOccurs="0"/>
<xs:element name="LOC" type="ca:caType" minOccurs="0"/>
<xs:element name="FLR" type="ca:caType" minOccurs="0"/>
<xs:element name="NAM" type="ca:caType" minOccurs="0"/>
<xs:element name="PC" type="ca:caType" minOccurs="0"/>
<xs:element name="BLD" type="ca:caType" minOccurs="0"/>
<xs:element name="UNIT" type="ca:caType" minOccurs="0"/>
<xs:element name="ROOM" type="ca:caType" minOccurs="0"/>
<xs:element name="SEAT" type="ca:caType" minOccurs="0"/>
<xs:element name="PLC" type="xs:token" minOccurs="0"/>
<xs:element name="PCN" type="ca:caType" minOccurs="0"/>
<xs:element name="POBOX" type="ca:caType" minOccurs="0"/>
<xs:element name="ADDCODE" type="ca:caType" minOccurs="0"/>
<xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
</xs:sequence>
<xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>
</xs:schema>
```

CivicAddressExt.xsd

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:ca="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:cae="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr:ext"
targetNamespace="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr:ext"
elementFormDefault="qualified" attributeFormDefault="unqualified">
<xs:import namespace="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"
schemaLocation="civicAddress.xsd"/>
<!-- Post Number -->
<xs:element name="PN" type="ca:caType"/>
<!-- Milepost -->
<xs:element name="MP" type="ca:caType"/>
<!-- Street-Type prefix -->
<xs:element name="STP" type="ca:caType"/>
<!-- House Number Prefix -->
<xs:element name="HNP" type="ca:caType"/>
</xs:schema>
```

4.3.2 IANA Registration of Street Name Pre Type Separator (STPS)

NRS is requested to register *Street Name Pre Type Separator (*STPS) in the IANA Civic Address Registry with the following template content:

Local Name: STPS
Description: Separator between the existing Street Type Prefix (STP) and the Road Name (RD) elements.
Contact: The NENA Registry System (nrs-admin@nena.org).
Specification: NENA STA-XXX (replace with NENA STA number)
Schema: urn:nena:xml:schema:pidf:nenaCivicAddr

4.3.3 IANA Registration of Landmark Name Part (LMKP)

NRS is requested to register *Landmark Name Part* (LMKP) in the IANA Civic Address Registry with the following template content:

Local Name: LMKP
Description: Component part of a Complete Landmark Name.
Contact: The NENA Registry System (nrs-admin@nena.org).
Specification: NENA STA-XXX (replace with NENA STA number)
Schema: urn:nena:xml:schema:pidf:nenaCivicAddr

5 References

5.1 Normative References

5.1.1 IETF RFCs

[1] Presence Information Data Format (PIDF), H. Sugano, S. Fujimoto, G. Klyne, A. Bateman, W. Carr, J. Peterson, Internet Engineering Task Force, RFC 3863, http://www.rfc-editor.org/rfc/rfc3863.txt.

[2] A Presence-based GEOPRIV Location Object Format, J. Peterson, Internet Engineering Task Force, RFC 4119, http://tools.ietf.org/html/rfc4119.

[3] Revised Civic Location Format for Presence Information Data Format Location Object (PIDF-LO), M. Thomson, J. Winterbottom, Internet Engineering Task Force, RFC 5139, http://tools.ietf.org/html/rfc5139.

[4] Location Types Registry, H. Schulzrinne, H. Tschofenig, Internet Engineering Task Force, RFC 4589, http://tools.ietf.org/rfc/rfc4589.txt.

[5] Dynamic Host Configuration Protocol (DHCPv4 and DHCPv6) Option for Civic Addresses Configuration Information, H. Schulzrinne, Internet Engineering Task Force, RFC 4776, http://tools.ietf.org/html/rfc4776.

[6] LoST: A Location-to-Service Translation Protocol, T. Hardie, A. Newton, H. Schulzrinne, H. Tschofenig, Internet Engineering Task Force, RFC 5222, http://tools.ietf.org/html/rfc5222.

[7] Specifying Civic Address Extensions in the Presence Information Data Format Location Object (PIDF-LO). J. Winterbottom, M. Thompson, R. Barns, B. Rosen, R. George, January 2013, Internet Engineering Task Force, "RFC 6848, http://tools.ietf.org/html/rfc6848.
Updates RFC 4776 [5] and RFC 5222 [6] .

5.2 Other Normative References

[8] U.S. Federal Geographic Data Committee. 'United States Thoroughfare, Landmark, and Postal Address Data Standard.' FGDC-STD-016-2011 (Endorsed February 9, 2011). Posted at: http://www.fgdc.gov/standards/standards_publications/

[9] U.S. Census Bureau, ***2009 County ANSI Code Lookup***. Retrieved from http://www.census.gov/geo/reference/codes/countylookup.html. (July 13,2013)
Cited in: *County*

[10] International Standards Organization. "ISO 3166-1: Codes for the representation of names of countries and their subdivisions -- Part 1: Country codes". As posted on the ISO webpage captioned "ISO 3166-1: English country names and code elements" (http://www.iso.org/iso/country_codes/iso_3166_code_lists/country_names_and_code_elements.htm).
Cited in: *Country*

[11] U.S. Postal Service (USPS). "Postal Addressing Standards." Publication 28, July 2008.
Posted at: http://pe.usps.gov/cpim/ftp/pubs/Pub28/Pub28.pdf
Cited in: *State* (3.2.3), *Postal Community Name* (3.2.8), *Street Direction* (3.3.3), *Street Name Pre Type* (3.3.4), and *Street Name Post Type* (3.3.7).

5.3 Informative References

5.3.1 Related NENA Standards

[12] National Emergency Number Association. "NENA Functional and Interface Standards for Next Generation 9-1-1." NENA Standard Number 08-002 v1.
Posted at: http://www.nena.org/?page=FuncIntrface_NG911

[13] National Emergency Number Association. " Detailed Functional and Interface Standards for the NENA i3 Solution." NENA Standard Number 08-003 v1.
Posted at: http://www.nena.org/default.asp?page=i3_Stage3

[14] National Emergency Number Association. "NENA Standard Data Formats for ALI Data Exchange & GIS Mapping." NENA-02-010 v9.
Posted at: http://www.nena.org/general/custom.asp?page=DataFormats

[15] National Emergency Number Association. "NENA Master Glossary of 9-1-1 Terminology." NENA Standard Number ADM-000.17.
Posted at: http://www.nena.org/?page=Glossary

[16] National Emergency Number Association. “NENA Registry System (NRS) Standard.” NENA Standard Number 70-001 v1.
Posted at: http://www.nena.org/general/custom.asp?page=nena_registry_system

[17] National Emergency Number Association. "Security for Next Generation 9-1-1 (NG-SEC)." NENA Standard Number 75-001 v1.
Posted at: http://www.nena.org/general/custom.asp?page=NG911_Security

5.3.2 Other Informative References

[18] U.S. Federal Geographic Data Committee. "Geographic Information Framework Data Content Standard Part 5: Governmental Unit and Other Geographic Area Boundaries." May 2008. FGDC-STD-014.5-2008
Posted at: http://www.fgdc.gov/standards/standards_publications

[19] U.S. Postal Service (USPS). "Quick Service Guide 800: Glossary of Postal Terms and Abbreviations in the DMM." September 8, 2009
Posted at: http://pe.usps.com/text/qsg300/Q800.htm
Cited in: *Postal Code*

[20] NENA Registry System. http://technet.nena.org/nrs/registry/_registries.xml

5.3.3 Trademark Acknowledgement

The following trademarks are owned by the U.S. Postal Service®, United States Post Office®, United States Postal Service®, USPS®, ZIP + 4®, ZIP Code™, ZIP™

6 Previous Acknowledgments

None. This is Version 1 of the Standard.

Appendix A (Normative): FGDC-NENA Profile

Profile Reconciling the FGDC United States Thoroughfare, Landmark, and Postal Address Data Standard and the NENA Next Generation 9-1-1 (NG9-1-1) Civic Location Data Exchange Format (CLDXF) Standard

TABLE OF CONTENTS

1 Summary

A profile provides, for a particular application of a base standard, either a restricted subset of the standard, or a limited extension of a standard that does not contradict the base standard, or both (see ISO 19106 for a formal definition and description).

This profile reconciles two address data standards:

1. The U.S. Federal Geographic Data Committee (FGDC) United States Thoroughfare, Landmark, and Postal Address Data Standard [8] , and

2. The National Emergency Number Association (NENA) Next Generation 9-1-1 (NG9-1-1) Civic Location Data Exchange Format (CLDXF) Standard, the United States profile of the IETF PIDF-LO civic address standard (See Section 1.2 of the above Standard).

Because they were drafted for different purposes, the standards differ in certain details. This profile is intended to facilitate and standardize the conversion of address data from FGDC conformance to CLDXF conformance and vice versa. Specifically the profile:

1. States the equivalencies between FGDC and CLDXF elements, and notes any discrepancies in their definition or construction (Profile Section 7)

2. States which FGDC parts, classes, elements, attributes and values are excluded from the CLDXF and therefore from the profile (Profile Section 8).

3. Describes a procedure for transforming FGDC address elements to their CLDXF equivalents, and vice versa (Profile Section 9).

4. Briefly describes two tests for conformance to the profile (Profile Section 10).

2 Background, Purpose and Authorship

Purpose of the FGDC Address Data Standard. The U.S. Federal Geographic Data Committee (FGDC) United States Thoroughfare, Landmark, and Postal Address Data Standard [8] has been created to provide one standard that meets the diverse address data management requirements for local address administration, postal and package delivery, emergency response (and navigation generally), administrative recordkeeping, and address data aggregation.

Purpose of the NENA NG9-1-1 CLDXF Standard. The National Emergency Number Association (NENA) Next Generation 9-1-1 (NG9-1-1) Civic Location Data Exchange Format (CLDXF) Standard supports the exchange of United States civic location address information about 9-1-1 calls.

Need to Reconcile the Standards. Because they were drafted for different purposes, the standards differ in certain details. Address administrators and 9-1-1 administrators often have reason to exchange address data. This profile is intended to facilitate and standardize the conversion of address data from FGDC conformance to CLDXF conformance and vice versa. Specifically the profile:

1. States the equivalencies between FGDC and CLDXF elements, and notes any discrepancies in definition or construction (Section 7)

2. States which FGDC parts, classes, elements, attributes and values are excluded from the CLDXF (Section 8).

3. Provides detailed instructions for converting FGDC address elements to their CLDXF equivalents, and vice versa (Section 9).

4. Briefly describes two tests for conformance to the profile (Section 10).

Address data that conform to either base standard shall, when transformed according to the procedures described in Section 9.1 or 9.2 of this profile, yield address data that conform to the other base standard.

Authorship. This profile was drafted jointly by the working groups that created the two base standards.

3 Normative Reference to Base Standards

This profile reconciles two base standards:

1. U.S. Federal Geographic Data Committee. "United States Street, Landmark, and Postal Address Data Standard." FGDC-STD-016-2011[8] , February 10, 2011
2. National Emergency Number Association. "NENA Next Generation 9-1-1 (NG9-1-1) Civic Location Data Exchange Format (CLDXF) Standard." NENA Core Services Committee, Data Structures Subcommittee, Civic Location Data eXchange Format Working Group (CLDXF WG). NENA-STA-004, March 23, 2014 http://www.nena.org/default.asp?page=NG911CLDXF

4 Maintenance Authority for the Profile

The Census Bureau will maintain this profile under the auspices of its duties as theme lead for the FGDC Subcommittee on Cultural and Demographic Data (SCDD), ensuring that the profile is revisited on the 5-year schedule as stipulated, or updating and revising as necessary.

The Census Bureau will seek assistance as needed from the NENA Core Services Committee, Data Structures Subcommittee, Civic Location Data eXchange Format Working Group (CLDXF WG) to ensure that the profile is changed as needed to reflect the two base standards.

Direct any questions to:

1. Census: Chief, Geography Division, U.S. Bureau of the Census.
2. NENA: (Email): commleadership@nena.org or, (Phone:) 202-466-4911 or, (Mail:) National Emergency Number Association, 1700 Diagonal Road, Suite 500, Alexandria, VA 22314-2846

5 Applicable Context of the Profile

This profile sets forth the relationship between the two base standards cited in Section 3 of Appendix A of this standard, and describes how to alter address data that conform to one base standard so that they conform to the other.

6 Community of Interest for the Profile

This profile will be of interest to address administrators, 9-1-1 administrators, and others interested in the relation between the base standards or in altering address data that conform to one base standard so that they conform to the other.

7 Discrepancies, Reconciliation, and Comparability of Data Elements in the FGDC Address Standard and the NENA NG9-1-1 CLDXF Standard

7.1 Introduction

Section 7 lists each FGDC address data element name, followed by the name of the equivalent NENA NG9-1-1 CLDXF element name, and (in parentheses) the corresponding PIDF-LO element name. For each FGDC-CLDXF pair, it gives:

- Discrepancies, if any.
- Examples of the element in FGDC and CLDXF form.
- How the discrepancies can be reconciled
- How the two elements differ, if at all, in definition and construction.

Section 9 describes procedures for converting FGDC elements to their CLDXF equivalents, and vice versa.

7.2 Country, State, Place Name, and Postal Code Elements

7.2.1 Country Name / *Country* (Country)

- **Discrepancy:** FGDC recognizes ISO 3166-1 short English names, two-letter abbreviations, and three-letter abbreviations. CLDXF recognizes ISO 3166-1 [10] two-letter abbreviations only.
- **Example: FGDC:** Canada, CA, CAN; **CLDXF:** CA

- **Reconciliation:** Follow ISO 3166-1 mapping of short English names and three-letter abbreviations to ISO 3166-1 [10] two-letter abbreviations.
- **FGDC-CLDXF Comparability:** Identical, if ISO 3166-1 short English names and three-letter abbreviations are mapped to ISO 3166-1 [10] two-letter abbreviations.

7.2.2 State Name / *State* (A1)

- **FGDC-NENA Discrepancy:** FGDC recognizes state names spelled out in full, as well as the two-letter state abbreviations. NENA permits the state abbreviations only.
- **Example: FGDC:** VA or Virginia; **CLDXF:** VA
- **Reconciliation:** Map names to abbreviations as given USPS Publication 28 [11] , Appendix B.
- **FGDC-NENA Comparability:** Identical, if abbreviations are mapped to names.

7.2.3 Place Name / *County* (A2)

- **Discrepancy:** The FGDC *Place Name* element includes all place names that fit in any of five CLDXF place name elements: *County*, *Incorporated Municipality*, *Unincorporated Community*, *Neighborhood Community*, and *Postal Community Name*. Place names that do not fit one of the five CLDXF categories are excluded from CLDXF. FGDC Place Names may be differentiated by the Place Name Type attribute. A county name would have an FGDC Place Name Type = "County" or equivalent.
- **Example: FGDC:** Winston (= Place Name); **CLDXF:** Winston
- **Reconciliation:** Within the FGDC standard, use the Place Name Type attribute to identify county names and to distinguish them from other types of Place Names.
- **FGDC-NENA Comparability:** CLDXF *County* is a subset of FGDC Place Names. The FDGC Place Names in the subset may be identified by giving them a Place Name Type of "County" or equivalent.

7.2.4 Place Name / *Incorporated Municipality* (A3)

- **Discrepancy:** The FGDC Place Name element includes place names that fit in any of the five CLDXF place name elements: *County, Incorporated Municipality, Unincorporated Community, Neighborhood Community,* and *Postal Community Name*. Place names that do not fit one of the five CLDXF categories are excluded from CLDXF. FGDC Place Names may be differentiated by the Place Name Type attribute. A municipality name would have an FGDC Place Name Type = "Municipal" or equivalent.
- **Example: FGDC:** Haleyville (= Place Name); **CLDXF:** Haleyville

- **Reconciliation:** Within the FGDC standard, use the Place Name Type attribute to identify municipality names and to distinguish them from other types of Place Names.
- **FGDC-NENA Comparability:** CLDXF *Incorporated Municipality* names are a subset of FGDC Place Names. The FDGC Place Names in the subset may be identified by giving them a Place Name Type of "Municipal" or equivalent.

7.2.5 Place Name / *Unincorporated Community* (A4)

- **Discrepancy:** The FGDC Place Name element includes place names that fit in any of the five CLDXF place name elements: *County, Incorporated Municipality, Unincorporated Community, Neighborhood Community,* and *Postal Community Name.* Place names that do not fit one of the five CLDXF categories are excluded from CLDXF. FGDC Place Names may be differentiated by the Place Name Type attribute. An *Unincorporated Community* name would have an FGDC Place Name Type that corresponds to the CLDXF *Unincorporated Community* element.
- **Example: FGDC:** Manhattan (= Place Name)**; CLDXF:** Manhattan
- **Reconciliation:** Within the FGDC standard, use the Place Name Type attribute to identify *Unincorporated Community* names and to distinguish them from other types of Place Names.
- **FGDC-NENA Comparability:** CLDXF *Unincorporated Community* names are a subset of FGDC Place Names. The FDGC Place Names in the subset may be identified by giving them an FGDC Place Name Type that corresponds to the CLDXF *Unincorporated Community* element.

7.2.6 Place Name / *Neighborhood Community* (A5)

- **Discrepancy:** The FGDC Place Name element includes place names that fit in any of five CLDXF place name elements: *County, Incorporated Municipality, Unincorporated Community, Neighborhood Community,* and *Postal Community Name*. Place names that do not fit one of the five CLDXF categories are excluded from CLDXF. FGDC Place Names may be differentiated by the Place Name Type attribute. A *Neighborhood Community* name would have an FGDC Place Name Type that corresponds to the CLDXF *Neighborhood Community* element.
- **Example: FGDC:** Fort Totten (= Place Name); **CLDXF:** Fort Totten
- **Reconciliation:** Within the FGDC standard, use the Place Name Type attribute to identify *Neighborhood Community* names and to distinguish them from other types of Place Names.
- **FGDC-CLDXF Comparability:** CLDXF *Neighborhood Community* names are a subset of FGDC Place Names. The FDGC Place Names in the subset may be identified by giving

them an FGDC Place Name Type that corresponds to the CLDXF *Neighborhood Community* element.

7.2.7 Place Name / *Postal Community Name* (PCN)

- **Discrepancy:** The FGDC Place Name element includes all types of place names that fit within five CLDXF place name elements: *County, Incorporated Municipality, Unincorporated Community, Neighborhood Community,* and *Postal Community Name*. Place names that do not fit one of the five CLDXF categories are excluded from CLDXF. FGDC Place Names may be differentiated by the Place Name Type attribute. A *Postal Community Name* would have an FGDC Place Name Type = "USPS" or equivalent.
- **Example: FGDC:** Stanton (= Place Name); **CLDXF:** Stanton
- **Reconciliation:** Within the FGDC standard, use the Place Name Type attribute to identify CLDXF *Postal Community Names* and to distinguish them from other types of Place Names.
- **FGDC-NENA Comparability:** CLDXF *Postal Community Names* are a subset of FGDC Place Names. The FDGC Place Names in the subset may be identified by giving them a Place Name Type of "USPS" or equivalent.

7.2.8 ZIP Code, ZIP+4 / *Postal Code* (PC)

- **Discrepancy:** The FGDC standard provides separate elements for the five-digit ZIP Code and the four-digit ZIP+4 extension. The CLDXF *Postal Code* may contain the five-digit ZIP Code or the nine-digit ZIP+4 Code.
- **Example: FGDC:** 99901; 99901-6431 (ZIP Code = 99901; ZIP+4 = 6431) **CLDXF:** 99901 or 99901-6431
- **Reconciliation:** Separate ZIP Code and ZIP+4 within the FGDC standard. In CLDXF, combine them in the *Postal Code* element, placing a hyphen between them.
- **FGDC-NENA Comparability:** Identical for five-digit ZIP Codes. Identical for nine-digit ZIP+4, provided the five-digit code and the four-digit extension are separated within the FDGC standard and combined within the CLDXF standard.

7.3 Street Name Elements

7.3.1 Street Name Pre Modifier / *Street Name Pre Modifier* (PRM)

- **Discrepancy:** None.
- **Example: FGDC:** "Old" in Old North First Street; **CLDXF:** "Old" in Old North First Street

- **FGDC-NENA Comparability:** Identical.

7.3.2 Street Name Pre Directional / *Street Name Pre Directional* (PRD)

- **Discrepancy:** None.
- **Example: FGDC:** "North" in North Fairfax Drive ; **CLDXF:** 'North' in North Fairfax Drive
- **FGDC-NENA Comparability:** Identical.

7.3.3 Street Name Pre Type / *Street Name Pre Type* (STP)

- **Discrepancies:** None
- **Examples:**
    1. **FGDC:** "Avenue" in Avenue A; **CLDXF:** "Avenue" in Avenue A
- **FGDC-NENA Comparability:** Identical

7.3.4 Separator Element/ *Street Name Pre Type Separator* (STPS)

- **Discrepancy:** The FGDC Separator Element has three subtypes: street name pretype separators, intersection street name separators, and address range separators. The street name pretype separator is the only one that can occur within a complete street name within the FGDC standard. The CLDXF *Street Name Pretype Separator* is identical to the FGDC street name pretype separator.
- **Example: FGDC:** "of the" in Avenue of the Americas; **CLDXF:** "of the" in Avenue of the Americas
- **FGDC-NENA Comparability:** Identical, for FGDC Separator Elements that occur within FGDC Complete Street Names.

7.3.5 Street Name / *Street Name* (RD)

- **Discrepancy:** None.
- **Example: FGDC:** "Fairfax" in North Fairfax Avenue; **CLDXF:** "Fairfax" in North Fairfax Avenue
- **FGDC-NENA Comparability:** Identical.

7.3.6 Street Name Post Type / *Street Name Post Type* (STS)

- **Discrepancy:** None
- **Example: FGDC:** "Avenue" in North Fairfax Avenue; **CLDXF:** "Avenue" in North

Fairfax Avenue

- **FGDC-NENA Comparability:** Identical

7.3.7 Street Name Post Directional / *Street Name Post Directional* (POD)

- **Discrepancy:** None.
- **Example: FGDC:** "East" in Seventh Street East; **CLDXF:** 'East' in Seventh Street East
- **FGDC-NENA Comparability:** Identical.

7.3.8 Street Name Post Modifier / *Street Name Post Modifier* (POM)

- **Discrepancy:** None, except that CLDXF permits the use "northbound", "southbound", "eastbound", or "westbound" to indicate side of road (direction of travel) on limited-access divided highways when they are not part of the official complete street name.
- **Example:**
  - **FGDC:** "Extended" in East End Avenue Extended; **CLDXF:** "Extended" in East End Avenue Extended
  - **CLDXF:** "northbound" in Interstate Highway 5 northbound; **FGDC:** Interstate Highway 5
- **Reconciliation:** Where "northbound", "southbound", "eastbound", or "westbound" appear in CLDXF records, omit them from the corresponding FGDC record.
- **FGDC-NENA Comparability:** Identical, except that CLDXF recognizes "northbound", "southbound", "eastbound", or "westbound" in Street Name Post Modifiers even if they are not part of the official complete street name.

7.4 Address Number Elements

7.4.1 Address Number Prefix / *Address Number Prefix* (HNP)

- **Discrepancy:** None except that FGDC Address Number Prefix includes part of the CLDXF *Milepost* element (see 7.4.4 below)
- **Example: FGDC:** "N6W2" in N6W2 3001 Bluemound Road; **CLDXF:** "N6W2" in N6W2 3001 Bluemound Road
- **Reconciliation:** Identical, if *Milepost* elements are treated separately per 7.4.4 below.

7.4.2 Address Number / *Address Number* (HNO)

- **Discrepancy:** None, except that FGDC Address Number includes part of the CLDXF *Milepost* element (see 7.4.4 below).

- **Example: FGDC:** "123" in 123 Main Street; **CLDXF:** "123" in 123 Main Street
- **FGDC-NENA Comparability:** Identical, if *Milepost* elements are treated separately per 7.4.4.

7.4.3 Address Number Suffix / *Address Number Suffix* (HNS)

- **Discrepancy:** None, except that FGDC Address Number Prefix includes part of the CLDXF *Milepost* element (see 7.4.4 below).
- **Example: FGDC:** "1/2" in 119 1/2 Elm Street; **CLDXF:** "1/2" in 119 1/2 Elm Street
- **FGDC-NENA Comparability:** Identical, if *Milepost* elements are treated separately per 7.4.4.

7.4.4 Complete Address Number / *Milepost* (MP)

- **Discrepancy:**
    1. CLDXF defines *Mileposts* as elements that are not parsed. FGDC treats them as Complete Address Numbers, and parses them as follows: "Milepost" (or equivalent term, such as Mile Marker, Kilometer, or Km) = Address Number Prefix; milepost number (integer portion) = Address Number; Milepost number (decimal portion, if any, including the decimal point) = Address Number Suffix.
    2. A *Milepost* number may be included in a CLDXF civic address record if the complete street name is the same for both (for example: "Milepost 12, 12005 County Road 88"). Under the FGDC standard, these would be treated as two separate address records. The two could be linked using the Related Address ID attribute and the Address Relation Type attribute.
- **Examples:**
    1. **CLDXF:** "Milepost 1303.5" = *Milepost*, no parsing permitted; **FGDC:** "Milepost 1303.5" = Complete Address Number, which can be parsed as follows: Address Number Prefix = "Milepost"; Address Number = 1303; *Address Number Suffix* = ".5" .
    2. **CLDXF:** "Milepost 12, 12005 County Road 88" (one record, indicating that 12005 County Road 88 is at Milepost 12); **FGDC:** FGDC standard would treat this as two separate addresses" "Milepost 12, County Road 88" and "12005 County Road 88".
- **Reconciliation:**
    1. Within FGDC format, compose milepost numbers into Complete Address

Numbers.

2. If a *Milepost* and an *Address Number* are given in the same CLDXF record, separate them into two different FGDC address records. If desired, the two records may be linked using the Related Address ID attribute and the Address Relation Type attribute.

- **FGDC-NENA Comparability:** Identical, if FGDC milepost numbers are composed into Complete Address Numbers; and, where CLDXF records provide both a *Milepost* and an *Address Number*, they are separated into two FGDC address records.

7.5 Landmark Name Element

7.5.1 Landmark Name / *Landmark Name Part* (LMKP)

- **Discrepancy:** None
- **Example:** FGDC: Sun Bowl Arena; CLDXF: Sun Bowl Arena
- **FGDC-CLDXF Comparability:** Identical. The order parameter of the CLDXF element, if given, corresponds exactly to the FGDC Element Sequence Number attribute.

7.5.2 Complete Landmark Name / *Landmark Name* (LMK)

- **Discrepancy: None**
- **Example: C**LDXF: University of South Florida Sun Bowl Arena

  FGDC: University of South Florida Sun Bowl Arena
- **FGDC-NENA Comparability:** Identical

7.6 Subaddress Elements

7.6.1 Subaddress Element / *Building* (BLD)

- **Discrepancy:** The FGDC standard defines a general-purpose Subaddress Element. It does not provide any way to classify Subaddress Elements into the CLDXF *Building, Additional Location Information*, *Floor, Unit, Room,* and *Seat* elements.
- **Example: FGDC:** "Building 1" in Langston Terrace Housing Complex, Building 1 (=SubadressElement); **CLDXF:** "Building 1" in Langston Terrace Housing Complex, Building 1
- **Reconciliation:** To bring an FGDC Subaddress Element into a CLDXF-compliant record, determine if the Subaddress Element identifies a *Building, Floor, Unit, Room,* or *Seat*, and place it in the appropriate CLDXF element. If it does not fit in any of those NENA elements, then by default it is *Additional Location Information*.

- **FGDC-NENA Comparability:** The CLDXF *Building* element is a subset of the FGDC Subaddress Element.

7.6.2 Subaddress Element / *Additional Location Information* (LOC)

- **Discrepancy:** The FGDC standard defines a general-purpose Subaddress Element. It does not provide any way to classify Subaddress Elements into the CLDXF *Building*, *Additional Location Information*, *Floor*, *Unit*, *Room*, and *Seat* elements.
- **Example: FGDC:** Pediatric Wing; **CLDXF:** Pediatric Wing
- **Reconciliation:** To bring an FGDC Subaddress Element into a CLDXF-compliant record, determine if the Subaddress Element identifies a *Building, Floor, Unit, Room, Or Seat,* and place it in the appropriate CLDXF element. If it does not fit in any of those CLDXF elements, then by default it is *Additional Location Information*.
- **FGDC-NENA Comparability:** The CLDXF *Additional Location Information* element is a subset of the FGDC Subaddress Element.

7.6.3 Subaddress Element / *Floor* (FLR)

- **Discrepancy:** The FGDC standard defines a general-purpose Subaddress Element. It does not provide any way to classify Subaddress Elements into the CLDXF *Building, Additional Location Information, Floor, Unit, Room*, and *Seat* elements.
- **Example: FGDC:** 5th Floor (=SubadressElement); **CLDXF:** 5th Floor
- **Reconciliation:** To bring an FGDC Subaddress Element into a CLDXF-compliant record, determine if the Subaddress Element identifies a *Building, Floor, Unit, Room,* or *Seat*, and place it in the appropriate CLDXF element. If it does not fit in any of those CLDXF elements, then by default it is *Additional Location Information*.
- **FGDC-NENA Comparability:** The CLDXF *Floor* element is a subset of the FGDC Subaddress Element.

7.6.4 Subaddress Element / *Unit* (UNIT)

- **Discrepancy:** The FGDC standard defines a general-purpose Subaddress Element. It does not provide any way to classify Subaddress Elements into the CLDXF *Building, Additional Location Information, Floor, Unit, Room*, and *Seat* elements.
- **Example: FGDC:** Penthouse (=SubadressElement); **CLDXF:** Penthouse
- **Reconciliation:** To bring an FGDC Subaddress Element into a CLDXF-compliant record, determine if the Subaddress Element identifies a *Building, Floor, Unit, Room,* or *Seat*, and place it in the appropriate CLDXF element. If it does not fit in any of those CLDXF elements, then by default it is *Additional Location Information*.

- **FGDC-NENA Comparability:** The CLDXF *Unit* element is a subset of the FGDC Subaddress Element.

7.6.5 Subaddress Element / *Room* (ROOM)

- **Discrepancy:** The FGDC standard defines a general-purpose Subaddress Element. It does not provide any way to classify Subaddress Elements into the CLDXF *Building, Additional Location Information, Floor, Unit, Room*, and *Seat* elements.
- **Example: FGDC:** Room 450F (=SubadressElement); **CLDXF:** Room 450F
- **Reconciliation:** To bring an FGDC Subaddress Element into a CLDXF-compliant record, determine if the Subaddress Element identifies a *Building, Floor, Unit, Room,* or *Seat*, and place it in the appropriate CLDXF element. If it does not fit in any of those CLDXF elements, then by default it is *Additional Location Information*.
- **FGDC-NENA Comparability:** The CLDXF *Room* element is a subset of the FGDC Subaddress Element.

7.6.6 Subaddress Element / *Seat* (SEAT)

- **Discrepancy:** The FGDC standard defines a general-purpose Subaddress Element. It does not provide any way to classify Subaddress Elements into the CLDXF *Building, Additional Location Information, Floor, Unit, Room*, and *Seat* elements.
- **Example: FGDC:** Cubicle 23 (=SubadressElement); **CLDXF:** Cubicle 23
- **Reconciliation:** To bring an FGDC Subaddress Element into a CLDXF-compliant record, determine if the Subaddress Element identifies a *Building, Floor, Unit, Room,* or *Seat,* and place it in the appropriate CLDXF element. If it does not fit in any of those CLDXF elements, then by default it is *Additional Location Information*.
- **FGDC-NENA Comparability:** The CLDXF *Seat* element is a subset of the FGDC Subaddress Element.

7.7 Address Descriptor

7.7.1 Address Feature Type / *Place Type* (PLC)

- **Discrepancy:** PLC is restricted to values listed in IANA “Location Types Registry" (IETF RFC 4589 [4]). http://www.iana.org/assignments/location-type-registry/location-type-registry.xml. FGDC Address Feature Type has no restrictions--any values may be defined and used.
- **Example: FGDC:** Airport, arena, bank, etc.; **CLDXF:** Airport, arena, bank, etc.
- **Reconciliation:** Within this profile, restrict the FGDC domain to values listed in "Location

Types Registry" (IETF RFC 4589 [4]). http://www.iana.org/assignments/location-type-registry/location-type-registry.xml. If other values are found in FGDC files, either add those values to the IETF registry, or declare equivalent values within the registry, or omit the values (or decline to enforce the registry).

- **FGDC-NENA Comparability:** Identical, if FGDC values are in the IETF registry.

8 Profile Restrictions and Extensions of the FGDC United States Thoroughfare, Landmark and Postal Address Data Standard and the NENA NG9-1-1 Civic Location Data Exchange Format.

The FGDC standard accommodates all NENA NG9-1-1 CLDXF data elements. The NENA standard can be reconciled to the FGDC standard with no restrictions or extensions beyond the reconciliation procedures given in Section 7 of this profile.

The NENA standard excludes certain parts, classes and elements, and restricts certain domains of values, that are included in the FGDC standard. Therefore this profile restricts the FGDC standard as described below.

8.1 Relation of FGDC Standard Parts to NG9-1-1 CLDXF Standard

8.1.1 FGDC Content Part - This profile restricts the FGDC Content Part to those FGDC elements and attributes listed in Section 7 of this profile.

8.1.2 FGDC Classification Part - This profile excludes the FGDC Classification Part; the NENA NG9-1-1 CLDXF Standard does not classify addresses. Section 8.2 lists the FGDC address classes accommodated within the NENA NG9-1-1 CLDXF.

8.1.3 FGDC Data Quality Part - This profile excludes the FGDC Data Quality Part; the NG9-1-1 CLDXF Standard does not specify data quality tests.

8.1.4 FGDC Exchange Part - This profile restricts the FGDC Address Data Exchange XSD to those FGDC elements having counterparts in the NENA NG9-1- 1 CLDXF Standard.

8.2 Relation of FGDC Address Classes to the NENA NG9-1-1 CLDXF Standard

The NENA standard does not recognize all of the address classes defined in the FGDC standard. Within this profile, FGDC address classes are included or excluded as follows:

- **INCLUDED** - Numbered Thoroughfare Address
- **EXCLUDED** - Intersection Address (NENA standard does not permit two street names in one address)
- **EXCLUDED** - Two Number Address Range (NENA standard does not permit two *Address Numbers* in one address)
- **EXCLUDED** - Four Number Address Range (NENA standard does not permit multiple *Address Numbers* in one address)

- **INCLUDED** - Unnumbered Thoroughfare Address
- **INCLUDED** - Landmark Address
- **INCLUDED** - Community Address
- **EXCLUDED** - USPS Postal Delivery Box (NENA standard does not permit PO Box identifiers in an address)
- **EXCLUDED** - USPS Postal Delivery Route (NENA standard does not permit RD, HCR, and other postal route identifiers in an address)
- **EXCLUDED** - USPS General Delivery Office (NENA standard does not permit "General Delivery" in any field of an address)
- **EXCLUDED** - General Address Class (NENA standard does not classify addresses, and it does not accommodate all addresses permitted in the General Address Class)

8.3 Profile Restrictions on FGDC Address Data Elements and Attributes

This profile restricts the FGDC address data elements and attributes to those listed in Section 7 of this profile.

8.4 Profile Restrictions on FGDC Domains of Values

The NENA standard restricts two attributes, Place Name Type and Address Feature Type, to smaller domains of values than permitted in the FGDC standard.

- **8.4.1 Place Name Type:** Within this profile, the FGDC Place Name Type domain is restricted to values that correspond to the following CLDXF elements: *County, Incorporated Municipality, Unincorporated Community, Neighborhood Community,* and *Postal Community Name.*

- **8.4.2 Address Feature Type:** Within this profile, the FGDC Address Feature Type is restricted to values listed in "Location Types Registry" (IETF RFC 4589 [4]). http://www.iana.org/assignments/location-type-registry/location-type-registry.xml.

8.5 Unique Address ID: Required in the FGDC Standard; Excluded from the NENA Standard and This Profile

The FGDC data content part requires that every address record have a unique Address ID. The CLDXF specifies address data elements, not for address data records, but for address data within 9-1-1 call records. Within CLDXF, address data is related to a Call ID, not an Address ID. The call record does not include nor can it use an Address ID. Therefore, within this profile, the FGDC standard is restricted to exclude the data content requirement for a unique Address ID.

9 Converting Address Data Between FGDC Conformance And NENA NG9-1-1 CLDXF Conformance

This section describes the procedures by which address data that conform to one base standard can be brought into conformance with the other.

9.1 Procedure for Converting FGDC-compliant Address Files into NENA NG9-1-1 CLDXF-Compliant Files

FGDC Classes Excluded. Delete from the FGDC-compliant file all addresses that are not in the following classes: Numbered Thoroughfare Address, Unnumbered Thoroughfare Address, Landmark Address, Community Address.

FGDC Elements and Attributes Excluded. From those addresses that remain, delete all elements and attributes except the following: Address Number Prefix, Address Number, Address Number Suffix; Street Name Pre Modifier, Street Name Pre Directional, Street Name Pre Type, Separator Element (if used within a Complete Street Name), Street Name, Street Name Post Type, Street Name Post Directional, Street Name Post Modifier; Landmark Name; Subaddress Element(s), Subaddress Component Order; Place Name(s), Place Name Type; State Name, ZIP Code; ZIP+4; Country Name; Address Feature Type.

FGDC Place Names Excluded. Exclude any Place Names with a Place Name Type that does not correspond to one of the following CLDXF elements: *County, Incorporated Municipality, Unincorporated Community, Neighborhood Community,* or *Postal Community Name.*

For Each Remaining Address Element and Attribute:

1. **Country Name -** Replace short English Country Names and three-letter abbreviations with their ISO 3166-1 [10] two-letter abbreviations. Copy to the CLDXF *Country* element.

2. **State Name -** If any State Names are spelled out in full, replace them with their equivalent two-letter USPS or ANSI abbreviations. Copy to the CLDXF *State* element.

3. **County Place Names -** Select all Place Names that are county names. (If the Place Names have Place Name Type attributes, select those whose Place Name Type is "County" or equivalent). Copy to the CLDXF *County* element.

4. **Municipality Place Names -** Select all Place Names that are municipality names. (If the Place Names have Place Name Type attributes, select those whose Place Name Type is "Municipality" or equivalent). Copy to the CLDXF *Incorporated Municipality* element.

5. **Community Place Names -** Select all Place Names that are *Unincorporated Community* names or *Neighborhood Community* names. (If the Place Names have Place Name Type

attributes, select those whose Place Name Type is "Community" or equivalent. Determine whether they should be copied to the CLDXF *Unincorporated Community* or *Neighborhood Community* element. Copy to the CLDXF *Unincorporated Community* or *Neighborhood Community* data element, as appropriate.

6. **USPS Place Names -** Select all Place Names that are *Postal Community Names*. (If the Place Names have Place Name Type attributes, select those whose Place Name Type is "USPS" or equivalent. Copy to the CLDXF *Postal Community Name* element.

7. **ZIP Code and ZIP+4 -** (If ZIP+4 is given; concatenate it with the ZIP Code value, placing a hyphen between them.) Copy to the CLDXF *Postal Code* element.

8. **Street Name Pre Modifier -** Copy to the CLDXF *Street Name Pre Modifier* element.

9. **Street Name Pre Directional -** Copy to the CLDXF *Street Name Pre Directional* element.

10. **Street Name Pre Type -** Copy to the CLDXF *Street Name Pre Type* element.

11. **Separator Element** (if used within a Complete Street Name) **-** Copy to the CLDXF *Street Name Pre Type Separator* element.

12. **Street Name -** Copy to the CLDXF *Street Name* element.

13. **Street Name Post Type -** Copy to the CLDXF *Street Name Post Type* element.

14. **Street Name Post Directional -** Copy to the CLDXF *Street Name Post Directional* element.

15. **Street Name Post Modifier -** Copy to the CLDXF *Street Name Post Modifier* element.

16. **Address Number Prefix -** Exclude any values that are "Milepost" or an equivalent term, and their associated Address Numbers and Address Number Suffixes. Copy all others to the CLDXF *Address Number Prefix* element.

17. **Address Number -** Exclude any Address Numbers associated with an Address Number Prefix of “Milepost” or equivalent. Copy all others to the CLDXF *Address Number* element.

18. **Address Number Suffix -** Exclude any Address Number Suffixes associated with an Address Number Prefix of “Milepost” or equivalent. Copy all others to the CLDXF

Address Number Suffix element.

19. **Milepost Number -** Determine if any of the Address Number Prefixes are "Milepost" or equivalent terms. Concatenate with the corresponding Address Number and (if present) Address Number Suffix. Copy to CLDXF *Milepost* element.

20. **Landmark Name –** Copy to CLDXF *Landmark Name Part* element. If an FGDC Element Sequence Number attributes is given for a Landmark Name, copy it to the order parameter of the corresponding *Landmark Name Part* element.

21. **Complete Landmark Name –** Copy to the CLDXF *Landmark Name* element.

22. **Subaddress Element -** Determine whether the Subaddress Element corresponds to a CLDXF *Building, Additional location information, Floor, Unit, Room,* or *Seat* element. Copy to the appropriate CLDXF element.

23. **Address Feature Type -** Exclude all values not listed in "Location Types Registry" (IETF RFC 4589 [4]). http://www.iana.org/assignments/location-type-registry/location-type-registry.xml. Copy all others to the CLDXF *Place Type* element.

9.2 Procedure for Converting NENA NG9-1-1 CLDXF-compliant Address Files into FGDC-Compliant Files

Address IDs and Address Authority. Note that, upon import to an FGDC-compliant file, each address record must have a unique Address ID. An Address Authority is also strongly recommended. These elements will not be found in the NENA NG9-1-1 CLDXF address record.

For Each CLDXF Address Element and Attribute:

1. ***Country*** - Replace the ISO 3166-1 [10] two-letter country name abbreviation with the ISO 3166-1 short English version of the country name. Copy to the FGDC Country Name element.

2. ***State*** **-** Copy to the FGDC State Name element.

3. ***County*** **-** Copy to the FGDC Place Name element, and, if desired, assign a Place Name Type = "County" or equivalent.

4. ***Incorporated Municipality*** - Copy all values except “Unincorporated” or “Unknown” to the FGDC Place Name element, and, if desired, assign a Place Name Type = "Municipality" or equivalent.

5. ***Unincorporated Community*** - Copy to the FGDC Place Name element, and, if desired, assign a Place Name Type = "Community", “Unincorporated Community”, or equivalent.

6. ***Neighborhood Community*** - Copy to the FGDC Place Name element, and, if desired, assign a Place Name Type = “Community”, “Neighborhood Community”, or equivalent.

7. ***Postal Community Name*** - Copy to the FGDC Place Name element, and, if desired, assign a Place Name Type = "USPS" or equivalent.

8. ***Postal Code*** - Determine if the record includes a five-digit or a nine-digit ZIP Code. Copy the first five digits to the FGDC ZIP Code element, and the sixth through the ninth digits (if present) to the FGDC ZIP+4 element. Drop or omit the hyphen.

9. ***Street Name Pre Modifier*** - Copy to the FGDC Street Name Pre Modifier element.

10. ***Street Name Pre Directional*** - Copy to the FGDC Street Name Pre Directional element.

11. ***Street Name Pre Type*** - Copy to the FGDC Street Name Pre Type element.

12. ***Street Name Pre Type Separator*** - Copy to the FGDC Separator Element.

13. ***Street Name*** - Copy to the FGDC Street Name element.

14. ***Street Name Post Type*** - Copy to the FGDC Street Name Post Type element.

15. ***Street Name Post Directional*** - Copy to the FGDC Street Name Post Directional element.

16. ***Street Name Post Modifier*** - Copy to the FGDC Street Name Post Modifier element, removing “northbound”, “southbound”, “eastbound”, and “westbound” if found.

17. ***Address Number Prefix*** - Copy to the FGDC Address Number Prefix element.

18. ***Address Number*** - Copy to the FGDC Address Number element.

19. ***Address Number Suffix*** - Copy to the FGDC Address Number Suffix element.

20. ***Milepost*** - Parse into the FGDC Address Number Prefix, Address Number, and (if found) Address Number Suffix elements. Copy the values to their respective FGDC elements. If the NENA record includes both a *Milepost* and an *Address Number*, place them in two

records, each with the same street name elements, place names, state, and ZIP Code. If desired, link them using the FGDC Related Address ID attribute and Address Relation Type attribute.

21. ***Landmark Name Part*** – Copy to the FGDC Landmark Name element. If the order parameter is given, copy it to an FGDC Element Sequence Number attribute for the FGDC Landmark Name element.

22. ***Landmark Name*** **-** Copy to the FGDC Complete Landmark Name element.

23. ***Building*** **-** Copy to the FGDC Subaddress Element. If desired, 1. Parse the Subaddress Element into its component Subaddress Type and Subaddress Identifier, 2. Assign a Subaddress Component Order attribute to the Subaddress Element, and 3. Assign Element Sequence Number attributes to the set of Subaddress Elements associated with a given address.

24. ***Additional Location Information*** **-** Copy to the FGDC Subaddress Element. If desired, 1. Parse the Subaddress Element into its component Subaddress Type and Subaddress Identifier, 2. Assign a Subaddress Component Order attribute to the Subaddress Element, and 3. Assign Element Sequence Number attributes to the set of Subaddress Elements associated with a given address.

25. ***Floor*** **-** Copy to the FGDC Subaddress Element. If desired, 1. Parse the Subaddress Element into its component Subaddress Type and Subaddress Identifier, 2. Assign a Subaddress Component Order attribute to the Subaddress Element, and 3. Assign Element Sequence Number attributes to the set of Subaddress Elements associated with a given address.

26. ***Unit*** **-** Copy to the FGDC Subaddress Element. If desired, 1. Parse the Subaddress Element into its component Subaddress Type and Subaddress Identifier, 2. Assign a Subaddress Component Order attribute to the Subaddress Element, and 3. Assign Element Sequence Number attributes to the set of Subaddress Elements associated with a given address.

27. ***Room*** **-** Copy to the FGDC Subaddress Element. If desired, 1. Parse the Subaddress Element into its component Subaddress Type and Subaddress Identifier, 2. Assign a Subaddress Component Order attribute to the Subaddress Element, and 3. Assign Element Sequence Number attributes to the set of Subaddress Elements associated with a given address.

28. ***Seat*** **-** Copy to the FGDC Subaddress Element. If desired, 1. Parse the Subaddress Element into its component Subaddress Type and Subaddress Identifier, 2. Assign a Subaddress Component Order attribute to the Subaddress Element, and 3. Assign Element Sequence Number attributes to the set of Subaddress Elements associated with a given address.

29. ***Place Type*** **-** Copy to the FGDC Feature Type element.

10 Conformance Requirements for This Profile

Conformance is presumed for any set of address data that conforms to either base standard. Conformance can be confirmed by either of two tests:

1. Address data that conform to the FGDC standard shall, when altered according to the procedures defined in Section 9.1 of this profile, yield address data that conform to the NENA NG9-1-1 CLDXF standard.

2. Address data that conform to the NENA NG9-1-1 CLDXF standard shall, when altered according to the procedures defined in Section 9.2 of this profile, yield address data that conform to the FGDC standard.

Appendix B (Informative): Cross Reference of CLDXF, PIDF-LO and FGDC Data Elements

Section	CLDXF	PIDF-LO	FGDC	CLDXF Definition
3.2 Country, State and Place Name Elements				
3.2.2	*Country*	Country	Country Name	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital letters. http://www.iso.org/iso/country_codes/iso_3166_code_lists/country_names_and_code_elements.htm
3.2.3	*State*	A1	State Name	The name of a state or state equivalent, represented by the two-letter abbreviation given in USPS Publication 28, Appendix B. A state is a primary governmental division of the United States. http://pe.usps.gov/cpim/ftp/pubs/Pub28/Pub28.pdf
3.2.4	*County*	A2	Place Name	The name of county or county-equivalent where the address is located. A county (or its equivalent) is the primary legal division of a state or territory. Restricted to the names of counties and county equivalents. A complete list is maintained by the U.S. Census Bureau, National Standard Codes (ANSI INCITS 31:2009, Federal Information Processing Series (FIPS), available at: http://www.census.gov/geo/reference/codes/countylookup.html
3.2.5	*Incorporated Municipality*	A3	Place Name	The name of the incorporated municipality or other general-purpose local governmental unit (if any) where the address is located.
3.2.6	*Unincorporated Community*	A4	Place Name	The name of an unincorporated community, either within an incorporated municipality or in an unincorporated portion of a county, or both, where the address is located.
3.2.7	*Neighborhood Community*	A5	Place Name	The name of an unincorporated neighborhood, subdivision or area, either within an incorporated municipality or in an unincorporated portion of a county or both, where the address is located.
3.2.8	*Postal Community*	PCN	Place Name	A city name for the ZIP Code of an address, as given in the USPS City State file.

Section	CLDXF	PIDF-LO	FGDC	CLDXF Definition
	Name			
3.2.9	*Postal Code*	PC	ZIP Code, ZIP+4	A system of 5-digit codes that identifies the individual USPS Post Office or metropolitan area delivery station associated with an address, which may optionally be enhanced by four additional digits that identify a specific range of USPS delivery addresses.
3.3 Street Name Elements				
3.3.2	*Street Name Pre Modifier*	PRM	Street Name Pre-Modifier	A word or phrase that: Precedes and modifies the Street Name element, but is separated from it by a Street Name Pre Type or a Street Name Pre Directional or both, or Is placed outside the Street Name element so that the Street Name element can be used in creating a sorted (alphabetical or alphanumeric) list of complete street names.
3.3.3	*Street Name Pre Directional*	PRD	Street Name Pre Directional	A word preceding the *Street Name* that indicates the direction taken by the street from an arbitrary starting point or line, or the sector where it is located.
3.3.4	*Street Name Pre Type*	STP	Street Name Pre Type	A word or phrase that precedes the *Street Name* element and identifies a type of thoroughfare in a complete street name.
3.3.5	*Street Name Pre Type Separator*	STPS	Separator Element	A preposition or prepositional phrase between the *Street Name Pre Type* and the *Street Name*. This element is defined in CLDXF as a US specific extension of PIDF-LO per RFC6848.
3.3.6	*Street Name*	RD	Street Name	The element of the complete street name that identifies the particular street (as opposed to any street pre-types, suffixes, directionals, and modifiers).
3.3.7	*Street Name Post Type*	STS	Street Name Post Type	A word or phrase that follows the *Street Name* element and identifies a type of thoroughfare in a complete street name.
3.3.8	*Street Name Post Directional*	POD	Street Name Post Directional	A word following the *Street Name* that indicates the direction taken by the street from an arbitrary starting point or line, or the sector where it is located.

Section	CLDXF	PIDF-LO	FGDC	CLDXF Definition
3.3.9	*Street Name Post Modifier*	POM	Street Name Post Modifier	A word or phrase that follows and modifies the Street Name element, but is separated from it by a Street Name Post Type or a Street Name Post Directional or both.
3.4 Address Number Elements				
3.4.2	*Address Number Prefix*	HNP	Address Number Prefix	An extension of the *Address Number* that precedes it and further identifies a location along a thoroughfare or within a defined area.
3.4.3	*Address Number*	HNO	Address Number	The numeric identifier of a location along a thoroughfare or within a defined community.
3.4.4	*Address Number Suffix*	HNS	Address Number Suffix	An extension of the *Address Number* that follows it and further identifies a location along a thoroughfare or within a defined area.
3.4.5	*Milepost*	MP	Complete Address Number	A distance travelled along a route such as a road or highway, typically indicated by a milepost sign. There is typically a post or other marker indicating the distance in miles/kilometers from or to a given point.
3.5 *Landmark Name* Element				
3.5.2	*Landmark Name Part*	LMKP	Landmark Name	The name or collection of names by which a prominent feature is publicly known. This element is defined in CLDXF as a US specific extension of PIDF-LO per RFC6848.
3.5.3	*Complete Landmark Name*	LMK	Landmark Name	The name by which a prominent feature is publicly known. The Complete Landmark Name for a CLDXF record is composed of the Landmark Name Parts in that record.
3.6 Subaddress Elements				
3.6.2	*Building*	BLD	Subaddress Element	One among a group of buildings that have the same *Address Number* and complete street name.
3.6.3	*Additional Location Information*	LOC	Subaddress Element	A part of a subaddress that is not a *Building, Floor, Unit, Room, or Seat*.
3.6.4	*Floor*	FLR	Subaddress Element	A floor, story, or level within a building.

Section	CLDXF	PIDF-LO	FGDC	CLDXF Definition
3.6.5	*Unit*	UNIT	Subaddress Element	A group or suite of rooms within a building that are under common ownership or tenancy, typically having a common primary entrance.
3.6.6	*Room*	ROOM	Subaddress Element	A single room within a building.
3.6.7	*Seat*	SEAT	Subaddress Element	A place where a person might sit within a building.
3.7 Address Descriptor				
3.7.2	*Place Type*	PLC	Address Feature Type	The type of feature identified by the address adapted from "Location Types Registry" (IETF RFC 4589 [4]). http://www.iana.org/assignments/location-type-registry/location-type-registry.xml

Appendix C (Informative): Examples of Address Parsing

Legal *Street Name* spellings, including upper/lower case, spaces and special characters, are to be shown as created by the local street naming authority.

C1. Country, State and Place Name Data Elements

Country **ISO 3166-1 [10]**	***State*** **USPS Pub 28, [11] Appendix B**	***County*** (or County Equivalent) http://www.census.gov/geo/reference/codes/countylookup.html	***Incorporated Municipality*** **No authoritative national registry**	***Unincorporated Community*** **No authoritative national registry**	***Neighborhood Community*** **No authoritative national registry**	***Postal Community Name*** **USPS City State File**	***Postal Code*** **USPS City State File**	**Notes**
C1.1 Examples of *Incorporated Municipalities*								
US	AL	Winston County	Haleyville			Haleyville	35565	
US	LA	Orleans Parish	New Orleans			New Orleans	70119	LA parish (County-Equivalent)
US	HI	Honolulu County	Honolulu			Honolulu	96801	
US	IL	Cook County	Chicago			Chicago	60603	
US	NY	Orleans County	Albion			Albion	14411	
US	VA	Falls Church city	Falls Church			Falls Church	22042	Independent VA city (county equivalent)
US	DC	District of Columbia	Washington			Washington	20011	Federal district (state and county-equivalent)

Country **ISO 3166-1 [10]**	***State*** **USPS Pub 28, [11] Appendix B**	***County*** (or County Equivalent) http://www.census.gov/geo/reference/codes/countylookup.html	***Incorporated Municipality*** **No authoritative national registry**	***Unincorporated Community*** **No authoritative national registry**	***Neighborhood Community*** **No authoritative national registry**	***Postal Community Name*** **USPS City State File**	***Postal Code*** **USPS City State File**	**Notes**
US	PA	Luzerne County	Hanover Township			Hanover Township	18706	
US	NY	New York County	New York					
US	NY	Kings County	New York					
US	PA	Allegheny County	Pittsburgh			Pittsburgh	15221	
US	MD	Prince George's County	University Park			Hyattsville	20782	Incorporated Municipality and Postal Community Name are different
C1.2 Examples of Unincorporated Places (Not in an *Unincorporated Community* or *a Neighborhood Community)*								
US	AK	Fairbanks North Star Borough	Unincorporated			North Pole	99705	AK borough (county equivalent). Outside incorporated North Pole, AK.
US	WA	Kitsap County	Unincorporated			Poulsbo	98370	Outside incorporated Poulsbo, WA

Country **ISO 3166-1 [10]**	***State*** **USPS Pub 28, [11] Appendix B**	***County*** (or County Equivalent) http://www.census.gov/geo/reference/codes/countylookup.html	***Incorporated Municipality*** **No authoritative national registry**	***Unincorporated Community*** **No authoritative national registry**	***Neighborhood Community*** **No authoritative national registry**	***Postal Community Name*** **USPS City State File**	***Postal Code*** **USPS City State File**	**Notes**
US	CA	Marin County	Unincorporated			San Rafael	94901	Outside incorporated San Rafael, CA
C1.3 Examples of *Unincorporated Community* and *Neighborhood Community*								
US	FL	Hillsborough County	Unincorporated	Northdale	Cypress Meadows Subdivision	Tampa	33624	
US	AL	Shelby County	Unincorporated	New Hope		Birmingham	35242	
US	MS	Winston County	Unincorporated	Vernon		Louisville	39339	
US	NY	New York County	New York	Harlem	West Harlem	New York	10031	
US	NY	Bronx County	New York	Throggs Neck	Edgewater Park	Bronx	10465	
US	AK	Southeast Fairbanks Census Area	Unincorporated		Dot Lake	Dot Lake	99737	AK Census Area (county equivalent)
US	AZ	Yavapai County	Unincorporated		Poquito Valley	Prescott Valley	86315	

C2. Street Name Data Elements and Parsing Examples

Complete Street Name	***Street Name Pre Modifier***	***Street Name Pre Directional***	***Street Name Pre Type***	***Street Name Pre Type Separator***	***Street Name***	***Street Name Post Type***	***Street Name Post Directional***	***Street Name Post Modifier***
C.2.1 Examples of Uncomplicated Complete Street Names								
Main Street					Main	Street		
Broadway					Broadway			
North Fairfax Drive		North			Fairfax	Drive		
North Main Street		North			Main	Street		
Seventh Street East					Seventh	Street	East	
Cherry Street North					Cherry	Street	North	
C.2.2 Examples of Complete Street Names that Include a *Street Name Pre Type* (Including Numbered Jurisdiction Routes)								
Avenue A			Avenue		A			
Calle Aurora			Calle		Aurora			
Calle 1			Calle		1			
Avenue C Loop			Avenue		C	Loop		
Steele County Road 18			Steele County Road		18			
Rhode Island Route 4			Rhode Island Route		4			
Polk County Road 14A			Polk County Road		14A			
United States Highway 101			United States Highway		101			

Complete Street Name	***Street Name Pre Modifier***	***Street Name Pre Directional***	***Street Name Pre Type***	***Street Name Pre Type Separator***	***Street Name***	***Street Name Post Type***	***Street Name Post Directional***	***Street Name Post Modifier***
Texas Ranch-to-Market Road 2398			Texas Ranch-to-Market Road		2398			
Summit County Road 99			Summit County Road		99			
United States Highway 99			United States Highway		99			
Tiverton Township Road 20			Tiverton Township Road		357			
Utah State Route 12			Utah State Route		12			
Interstate Highway 95			Interstate Highway		95			
Interstate Highway 4			Interstate Highway		4			
Route 121			Route		121			
Kentucky State Highway 67			Kentucky State Highway		67			
C.2.3 Examples of Road Names with *Street Name Pre Type Separators*								
Boulevard of the Allies			Boulevard	of the	Allies			
Avenue of the Americas			Avenue	of the	Americas			
Avenue at Port Imperial			Avenue	at	Port Imperial			
Road to the Ruins			Road	to the	Ruins			
Circle in the Woods			Circle	in the	Woods			
Alameda de las Pulgas			Alameda	de las	Pulgas			
Rue des Etoiles			Rue	des	Etoiles			
Rue d'Armour			Rue	d'	Armour			

Complete Street Name	***Street Name Pre Modifier***	***Street Name Pre Directional***	***Street Name Pre Type***	***Street Name Pre Type Separator***	***Street Name***	***Street Name Post Type***	***Street Name Post Directional***	***Street Name Post Modifier***
C.2.4 Examples of Road Names with Multiple Street Type Words Before or After the Street Name								
Bypass Highway 22			Bypass Highway		22			
Tenth Street Bypass					Tenth	Street Bypass		
C.2.5 Examples of Road Names with *Street Name Pre Modifiers* or *Street Name Post Modifiers*								
C.2.5.1 Case 1: Road Names with Words that Modify the Street Name Element, but are Separated from it by Prefix, Suffix, or Directional Words								
East End Avenue Extended					East End	Avenue		Extended
Market Street North Extension					Market	Street	North	Extension
Banner Fork Road Number 1					Banner Fork	Road		Number 1
Bypass North Highway 22	Bypass	North	Highway		22			
Alternate North Avenue B	Alternate	North	Avenue		B			
Alternate Route 8	Alternate		Route		8			
C.2.5.2 Case 2: Road Names Preceded by "The", "Old", etc.								
Old North First Street	Old	North			First	Street		
The Croft Lane	The				Croft	Lane		
The Oaks Drive	The				Oaks	Drive		
NOTE: "The","Old", etc. may be included in the Street Name element at the discretion of the street naming authority								
C.2.5.3 Case 3: Road Names with Two Directional Words Before or After the Street Name Element								
Northwest East 14th Street	Northwest	East			14th	Street		
North East 14th Street	North	East			14th	Street		

Complete Street Name	***Street Name Pre Modifier***	***Street Name Pre Directional***	***Street Name Pre Type***	***Street Name Pre Type Separator***	***Street Name***	***Street Name Post Type***	***Street Name Post Directional***	***Street Name Post Modifier***
Pharr Court North Northeast					Pharr	Court	North	Northeast
Horizon Lane West Southeast					Horizon	Lane	West	Southeast
C.2.5.4 Use of "northbound", etc. to Show Direction of Travel on a Limited-access Highway								
Interstate Highway 5 northbound			Interstate Highway		5			northbound
Baltimore-Washington Parkway southbound					Baltimore-Washington	Parkway		southbound
C.2.6 Examples of Road Names Requiring Local Knowledge to Parse Correctly								
East West Highway					East West	Highway		
East West Highway		East			West	Highway		
NOTE: Local knowledge is needed to know whether "East" is part of the Street Name, or a Street Name Pre Directional								
Charles Lane Drive					Charles Lane	Drive		
Charles Lane Drive					Charles	Lane Drive		
NOTE: Local knowledge is needed to know whether "Lane" is part of the Street Name, or part of the Street Name Post Type								
West Virginia Avenue					West Virginia	Avenue		
West Virginia Avenue		West			Virginia	Avenue		
NOTE: Local knowledge is needed to know whether "West" is part of the Street Name, or a Street Name Pre Directional								
North Avenue Southwest		North	Avenue		Southwest			
North Avenue Southwest					North	Avenue	Southwest	

Complete Street Name	***Street Name Pre Modifier***	***Street Name Pre Directional***	***Street Name Pre Type***	***Street Name Pre Type Separator***	***Street Name***	***Street Name Post Type***	***Street Name Post Directional***	***Street Name Post Modifier***
NOTE: Local knowledge is needed to know whether the Street Name is "North" or "Southwest"								
East North Broadway		East			North Broadway			
East North Broadway	East	North			Broadway			
NOTE: Local knowledge is needed to know whether "North" is part of the Street Name element, or a Street Name Pre Directional								

C3. Address Number Data Elements

Complete Address Number	*Address Number Prefix*	*Address Number*	*Address Number Suffix*	Notes
123		123		Ordinary integer *Address Number*
210		210		Ordinary integer *Address Number*
12005		12005		Ordinary integer *Address Number*
119 ½		119	½	*Address Number* with *Address Number Suffix*
123B		123	B	*Address Number* with *Address Number Suffix*
121 E		121	E	*Address Number* with *Address Number Suffix;* includes the space
A119	A	119		*Address Number* with alphanumeric prefix (Toa Alta, Puerto Rico)
194-23	194-	23		*Address Number Prefix* with hyphen (Queens Borough, New York)
194-03	194-0	3		*Address Number Prefix* with hyphen and leading zero (Queens Borough, New York)
194-03 ½	194-0	3	½	*Address Number Prefix* with hyphen and leading zero (Queens Borough, New York); complete address number includes Address Number Suffix and space.
5-5415	5-	5415		*Address Number Prefix* with hyphen (Hanalei, HI)
0123	0	123		Leading zero as *Address Number Prefix* (found in one area of Portland, OR)
N6W23001	N6W2	3001		Map grid reference as *Address Number Prefix* (Waukesha WI)
W214N5818	W214N58	18		Map grid reference as *Address Number Prefix* (Menomonee Falls, WI)
N89W16758	N89W167	58		Map grid reference as *Address Number Prefix* (Menomonee Falls, WI)
W63N645	W63N	645		Map grid reference as *Address Number Prefix* (Cedarburg, WI)
30W221	30W	221		Map grid reference as *Address Number Prefix* (DuPage County IL)

C4. *Milepost* Data Element

Milepost 1303
Milepost 34.4
Km 2.7
Mile Marker 12
Station 122

C5. Landmark Data Element

Landmark	Landmark Name Part (LMKP)	Landmark Name Part (LMKP)	Complete Landmark Name (LMK)
Statue of Liberty	Statue of Liberty		Statue of Liberty
U. S. Capitol Building	U. S. Capitol Building		U. S. Capitol Building
Winona Park Elementary School	Winona Park Elementary School		Winona Park Elementary School
Valley Mall	Valley Mall		Valley Mall
Yosemite National Park	Yosemite National Park		Yosemite National Park
Yosemite National Park Camp Curry	Yosemite National Park	Camp Curry	Yosemite National Park Camp Curry
University of South Florida Sun Dome Arena	University of South Florida	Sun Dome Arena	University of South Florida Sun Dome Arena
Chatham College Smith Library	Chatham College	Smith Library	Chatham College Smith Library
Reed College Eliot Hall	Reed College	Eliot Hall	Reed College Eliot Hall

C6. Sub Address Data Elements

Building	***Additional Location Information* (unvalidated)**	***Floor***	***Unit***	***Room***	***Seat***	**Notes**
Building 4			Suite 10			
	Wing 7					
		Floor 6				
	Corridor Zero					
			Apartment 2D			
		Mezzanine		Room 450F		
			Penthouse			
		Basement				Represented as *Floor*
			Basement			Represented as *Unit*
Terminal A	Gate C27					
		4th floor		Empire Room		
	Corridor F	Floor 3			Cubicle 23	

C7. Address Descriptor Data Element (http://www.iana.org/assignments/location-type-registry/location-type-registry.xml)

Place Type
airport
library
place-of-worship

NOTE: Registry does not allow for spaces within terms. Must fill spaces with hyphens.