7. Appendices

Appendix A (Normative): XSD Schemas

The Address Standard XML Schema Definition is broken into 2 parts. The first part contains element definitions and corresponds to Part One of the Standard. The second part contains the Address Class definitions and corresponds to Part Two of the Standard.

addr_type.xsd

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema targetNamespace="addr_type"
   xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:addr_type="addr_type"
   xmlns:gml="http://schemas.opengis.net/gml/3.2.1">

   <!--
      Draft Address Standard, version 0.4.3 being prepared and tested
by a
      Working Group coordinated by URISA and NENA and the Census Bureau
for
      submittal to the FGDC.
   -->

   <!--

      During the initial draft period the rddl can be found at

      http://www.urisa.org/files/addr_std/0.4.3/addr_type.xsd

   -->

   <xsd:import namespace="http://schemas.opengis.net/gml/3.2.1"
      schemaLocation="gml.xsd">
      <xsd:annotation>
         <xsd:documentation>
            GML 3.2.1 from OpenGeospatial Consortium
         </xsd:documentation>
      </xsd:annotation>
   </xsd:import>

   <xsd:simpleType name="version_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The ID for this version
            of the Address Standard.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:token">
         <xsd:enumeration value='0.4.3' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="Separator_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
```

```
A word, phrase, or symbol used as a separator between components of a
complex element or class. The Separator Element is required for
Intersection Addresses and for Two Number Address Ranges, and it may be
used in constructing a Complete Street Name.
</xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="CornerOf_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            A directional word describing a corner formed by the
intersection of two thoroughfares.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:simpleType name="ElementSequenceNumber_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The order in which the
            elements of a Complete Subaddress,
            Complete Landmark Name, or Complete Place Name should be
written.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:integer" />
   </xsd:simpleType>


   <xsd:simpleType name="GNISFeatureID_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            "A permanent, unique
            number assigned to a geographic feature for the
            sole purpose of uniquely identifying that feature as a
record in any
            information system database, dataset, file, or document and
for
            distinguishing it from all other feature records so
identified. The
            number is assigned sequentially (highest existing number
plus one)
            to
            new records as they are created in the Geographic Names
Information
            System."

            Definition Source Geographic Names Project, USGS, 523
            National Center,
            Reston, VA 20192-0523, as posted August 25, 2009 at:
            http://geonames.usgs.gov/domestic/metadata.htm "Feature
Identifier"
```

```
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:integer" />
   </xsd:simpleType>

   <xsd:complexType name="AddressNumberPrefix_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en"> The portion of the Complete
Address Number which precedes the Address Number itself.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:simpleContent>

         <xsd:extension base="xsd:string">
            <xsd:attribute name="Separator"
type="addr_type:Separator_type" />
         </xsd:extension>
      </xsd:simpleContent>

   </xsd:complexType>



   <xsd:simpleType name="AddressNumber_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">The numeric identifier for a
land parcel, house, building or other location along a thoroughfare or
within a community.



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. The Address Number must be converted to a characterString when it is
combined with the prefix and suffix into a Complete Address Number.
3. Some addresses may contain letters, fractions, hyphens, decimals and
other non-integer content within the Complete Address Number. Those
non-integer elements should 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, if the New York City
hyphenated address 194-03 ½ 50th Avenue, New York, NY 11365 were to be
parsed rather than represented as a Complete Address Number:
---the Address Number Prefix would be "194-" (including the hyphen),
---the Address Number would be 3 (converted to "03" (text) in
constructing the Complete Address Number),
---and the Address Number Suffix would be "1/2".
4. Special care should be taken with records where the Address Number
is 0 (zero). Occasionally zero is issued as a valid address number
(e.g. Zero Prince Street, Alexandria, VA 22314) or it can be imputed
```

```
(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")). More often,
though, zero is shown because the Address Number is either missing or
non-existent, and null value has been converted to zero.
5. Address Numbers vs. Address "Letters". In rare instances,
thoroughfare addresses may be identified by letters instead of numbers
(for example, "A" Main Street, "B" Main Street, "C" Main Street, "AA"
Main Street, "AB" Main Street, etc.) A few thousand such cases have
been verified in Puerto Rico, and others may be found elsewhere. In
such cases, the letter(s) cannot be treated as an Address Number,
because an Address Number must be an integer. The letter(s) also cannot
be an Address Number Prefix or Address Number Suffix, because neither
of those can be created except in conjunction with an Address Number.
Instead, the letter(s) should be treated a Subaddress Identifier in an
Unnumbered Thoroughfare Address. (For example: Complete Street Name =
"Calle Sanchez", Complete Subaddress Identifier = "AB", Complete Place
Name = "Mayaguez" State Name = "PR"). As an alternative, the address
may be classified in the General Address Class and treated accordingly.
</xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string">

         <xsd:pattern value='[0-9]+' />

      </xsd:restriction>

   </xsd:simpleType>



   <xsd:complexType name="AddressNumberSuffix_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">The portion of the Complete
Address Number which follows the Address Number itself.

1. This element is not found in most Complete Address Numbers. When
found, it should be separated from the Address Number so that the
Address Number can be maintained as an integer for sorting and quality
control tests.
2. Informally an Address Number and Address Number Suffix may be
written with or without a space between them. Within this standard, the
default assumption is that an empty space separates elements unless
stated otherwise. The Attached Element can be used to indicate where
the assumed space between the Address Number and Address Number Suffix
has been omitted within an address file (see Attached Element for
additional notes).
3. If a hyphen appears between the Address Number and the Address
Number Suffix, the hyphen is included in the Address Number Suffix.
4. When milepost Complete Address Numbers include decimal fractions,
the integer portion of the milepost number is treated as the Address
Number, and the fraction (including the decimal point) is treated as an
Address Number Suffix. (See Complete Address Number for additional
notes on milepost address numbers.) </xsd:documentation>
```

```
      </xsd:annotation>

      <xsd:simpleContent>

         <xsd:extension base="xsd:string">

            <xsd:attribute name="Separator"
type="addr_type:Separator_type" />
         </xsd:extension>
      </xsd:simpleContent>
   </xsd:complexType>


   <!-- StreetName Content -->




   <xsd:complexType name="StreetNamePreModifier_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">A word or phrase in a
Complete Street Name that
1. Precedes and modifies the Street Name, but is separated from it by a
Street Name Pre Type or a Street Name Pre Directional or both, or
2. Is placed outside the Street Name so that the Street Name can be
used in creating a sorted (alphabetical or alphanumeric) list of street
names. </xsd:documentation>

      </xsd:annotation>

      <xsd:simpleContent>

         <xsd:extension base="xsd:string">

            <xsd:attribute name="Separator"
type="addr_type:Separator_type"></xsd:attribute>
         </xsd:extension>
      </xsd:simpleContent>
   </xsd:complexType>

   <xsd:complexType name="StreetNamePreDirectional_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">A word preceding the Street
Name that indicates the direction or position of the thoroughfare
relative to an arbitrary starting point or line, or the sector where it
is located. </xsd:documentation>

      </xsd:annotation>

      <xsd:simpleContent>
```

```
         <xsd:extension base="xsd:string">

            <xsd:attribute name="Separator"
type="addr_type:Separator_type"></xsd:attribute>
         </xsd:extension>
      </xsd:simpleContent>
   </xsd:complexType>

   <xsd:complexType name="StreetNamePreType_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">A word or phrase that
precedes the Street Name and identifies a type of thoroughfare in a
Complete Street Name. </xsd:documentation>
      </xsd:annotation>
      <xsd:simpleContent>
         <xsd:extension base="xsd:string">
            <xsd:attribute name="Separator"
               type="addr_type:Separator_type">
            </xsd:attribute>
         </xsd:extension>
      </xsd:simpleContent>
   </xsd:complexType>

   <xsd:simpleType name="StreetName_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            Official name of a

            street as assigned by a local

            governing authority, or an alternate

            (alias) name that

            is used and recognized, excluding street types,

            directionals, and modifiers.


            1. Each jurisdiction should establish

            its own list of

            street names and use it as a domain of values to

            validate addresses. Alternate and Official names are

            distinguished by

            the address attribute "Alias Status

            Attribute"
```

```
            2. Local addressing
            authorities are urged to follow
            consistent internal street naming
            practices, and to
            resolve internal street name inconsistencies,
            especially
            for numbered streets ("Twentieth" or "20th" ?), internal
            capitalization ("McIntyre" or "Mcintyre" ?), hyphens,
            and
            apostrophes.

            3. If alternate or abbreviated versions of street names
            are needed for a specialized purpose such as mailing or
            emergency
            dispatch, they can be created in views or
            export routines.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>


   <xsd:complexType name="StreetNamePostModifier_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">A word or phrase in a
Complete Street Name that follows and modifies the Street Name, but is
separated from it by a Street Name Post Type or a Street Name Post
Directional or both. </xsd:documentation>
      </xsd:annotation>
      <xsd:simpleContent>
         <xsd:extension base="xsd:string">
```

```
            <xsd:attribute name="Separator"
type="addr_type:Separator_type"></xsd:attribute>
         </xsd:extension>
      </xsd:simpleContent>
   </xsd:complexType>

   <xsd:complexType name="StreetNamePostDirectional_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">A word preceding the Street
Name that indicates the direction or position of the thoroughfare
relative to an arbitrary starting point or line, or the sector where it
is located. </xsd:documentation>
      </xsd:annotation>
      <xsd:simpleContent>
         <xsd:extension base="xsd:string">
            <xsd:attribute name="Separator"
type="addr_type:Separator_type"></xsd:attribute>
         </xsd:extension>
      </xsd:simpleContent>
   </xsd:complexType>

   <xsd:complexType name="StreetNamePostType_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">A word or phrase that follows
the Street Name and identifies a type of thoroughfare in a Complete
Street Name. </xsd:documentation>
      </xsd:annotation>
      <xsd:simpleContent>
         <xsd:extension base="xsd:string">
            <xsd:attribute name="Separator"
               type="addr_type:Separator_type">
            </xsd:attribute>
            <xsd:attribute name="NewAttribute"
type="xsd:string"></xsd:attribute>
         </xsd:extension>
      </xsd:simpleContent>
   </xsd:complexType>


   <!-- Occupancy Types -->

   <xsd:simpleType name="SubaddressComponentOrder_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The order in which
            SubaddressType and
            SubaddressIdentifier appear within an
            SubaddressElement when expressed as text. "Apartment 7"
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:integer">
         <xsd:enumeration value="1">
            <xsd:annotation>
               <xsd:documentation>SubaddressType first, then
SubaddressIdentifier
                  (or: SubaddressElement does not include an
SubaddressType).
```

```
                  Example: "Floor 7"</xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="2">
            <xsd:annotation>
               <xsd:documentation>SubaddressIdentifier first, then
SubaddressType.
                  Example: "Empire Room"</xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="3">
            <xsd:annotation>
               <xsd:documentation>Order is not known or unstated.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="SubaddressType_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            This is a modifier to
            the SubaddressIdentifier element and this
            cannot exist without it.
            The type of structure (when
            several structures are found at the same
            address), e.g.,
            Apartment, Tower, Block. Used with Building
            Identifier
            to designate one of several structures at a given site.
            Fits within the general USPS definition of a "secondary
            address
            designator" and EPA definitions of "secondary
            address identifier"
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:simpleType name="SubaddressIdentifier_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The letters, numbers,
            words or combination thereof used
            to distinguish one structure from
            another when several
            occur at the same address.

            Used with
            SubaddressType to designate one of several
            structures at a given
            site. Fits within the USPS
            definition of a "secondary address
            designator" and the
            general EPA definition of "secondary address
            identifier"
```

```
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>


   <xsd:complexType name="SubaddressElement_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            A single combination of
            SubaddressType and
            SubaddressIdentifier (or, in some cases, a
            SubaddressIdentifier alone), which, alone or in
            combination with
            other SubaddressElements, distinguishes
            one subaddress within or
            between structures from another
            when several occur within the same
            feature. See
            CompleteSubaddress for a definition of "subaddress."
         </xsd:documentation>
      </xsd:annotation>
      <xsd:sequence>
         <xsd:element name="SubaddressType"
type="addr_type:SubaddressType_type"
            maxOccurs="1" minOccurs="0" />
         <xsd:element name="SubaddressIdentifier"
type="addr_type:SubaddressIdentifier_type"
            maxOccurs="1" minOccurs="1" />
      </xsd:sequence>
      <xsd:attribute name="ElementSequenceNumber"
         type="addr_type:ElementSequenceNumber_type" />
      <xsd:attribute name="SubaddressComponentOrder"
         type="addr_type:SubaddressComponentOrder_type" />
      <xsd:attribute name="Separator" type="addr_type:Separator_type"
/>
      <xsd:attribute name="GNISFeatureID"
type="addr_type:GNISFeatureID_type"></xsd:attribute>
   </xsd:complexType>

   <!-- Landmark Name Type -->

   <xsd:complexType name="LandmarkName_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The name by which a
            prominent feature is publicly known.

            Landmarks usually have a street
            address. A landmark name
            does not imply official historic landmark
            status, but
            simply a commonly used name that substitutes for an
            address number and street name in identifying the
            location of a
            specific building or feature. Generally
            the use of a landmark's
```

```
            street address is preferable
            because it is unambiguous. All landmark
            names should be
            cross-referenced to a street address or other
            coordinate
            location.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:simpleContent>
         <xsd:extension base="xsd:string">
            <xsd:attribute name="ElementSequenceNumber"
               type="addr_type:ElementSequenceNumber_type" />
            <xsd:attribute name="GNISFeatureID"
type="addr_type:GNISFeatureID_type" />
         </xsd:extension>
      </xsd:simpleContent>
   </xsd:complexType>

   <!-- Area and Zone Elements -->



   <xsd:simpleType name="CommunityPlaceName_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            A named area, sector,

            or development that is not an

            incorporated municipality or other

            governmental unit,

            such as a neighborhood in a city, or a rural

            settlement

            in unincorporated area. Often called "urbanization" in

            Puerto Rican addressing usage.


            1. "Urbanizacion", commonly used in

            urban areas of

            Puerto Rico, is an important part of the address.

            Street

            names and address ranges are often repeated in a city,

            especially where a city has annexed older towns; they
```

```
            are
            distinguished by their urbanizacion or community
            name.

            2. Certain
            other words can be used in place of
            "urbanizacion": extenciones,
            mansiones, reparto, villa,
            parque, jardine, altura, alturas, colinas,
            estancias,
            extension, quintas, sector, terraza, villa, villas.

            3. For
            more information on Puerto Rican addressing
            conventions, see USPS
            Publication 28 Section 29, and
            USPS "Addressing Standards for Puerto
            Rico and the
            Virgin Islands".
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.+' />
      </xsd:restriction>
   </xsd:simpleType>


   <xsd:simpleType name="PlaceNameType_type">
      <xsd:restriction base="xsd:string">
         <xsd:enumeration value="USPSCommunity">
            <xsd:annotation>
```

```
            <xsd:documentation xml:lang="en">
               The name given by the
               U.S. Postal Service to the
               post office from which mail is delivered
               to the
               address. In many places this will be different
               from the name
               of the municipality in which the
               address is physically located.

               The
               name given by the U.S. Postal Service to the
               post office from which
               mail is delivered to the
               address. In many places this will be
               different
               from the name of the incorporated municipality
               in which
               the address is physically located.
            </xsd:documentation>
         </xsd:annotation>
      </xsd:enumeration>
      <xsd:enumeration value="MunicipalJurisdiction">
         <xsd:annotation>
            <xsd:documentation xml:lang="en">
               The name of the
               municipality (city, township, or
               other non-county local government)
               in which the
               address is physically located. In many places
               this will
               be different than the city name used
               by the U.S. Postal Service.

               Required by most local governments for tax and
               services
               determinations. This will be null for
               addresses in unincorporated
               portions of
               counties.
            </xsd:documentation>
         </xsd:annotation>
      </xsd:enumeration>
      <xsd:enumeration value="County">
         <xsd:annotation>
            <xsd:documentation xml:lang="en">
               The primary
               administrative subdivision of a
               state in the United States.
            </xsd:documentation>
         </xsd:annotation>
      </xsd:enumeration>
      <xsd:pattern value=".+"></xsd:pattern>
   </xsd:restriction>
</xsd:simpleType>
```

```
   <xsd:simpleType name="StateName_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The primary legal
            subdivision of the United States,
            represented by its two letter USPS
            abbreviation.

            This is the only element stored in abbreviated form.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:token">
         <!-- "US State and The District of Columbia"  Abbreviations --
>
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="ZipCode_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            A five-digit code that
            identifies a specific pseudo
            geographic delivery area. ZIP Codes can
            represent an
            area within a state, an area that crosses state
            boundaries (unusual condition) or a single building or
            company that
```

```
            has a very high mail volume. "ZIP" is an
            acronym for Zone Improvement
            Plan. Zero pad from the
            left to fill the range as in 01776.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='[0-9]{5}' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="ZipPlus4_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            A four-digit extension
            of the five-digit Zip Code that
            identifies a portion of a carrier
            route for USPS mail
            delivery. Zero pad from the left to fill the
            range as in
            0030.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='[0-9]{4}' />
      </xsd:restriction>
   </xsd:simpleType>
```

```
   <xsd:simpleType name="CountryName_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The name of the country in which the address is located.

            1.Although the scope of this
            standard is restricted to US addresses, this item 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. ISO 3166-1
            official short English names are
            specified because they are familiar and concise, and
because ISO 3166-1
            is specified in the UPU address standard. 3. The names can
            be found at:
            http://www.iso.org/iso/en/prods-services/iso3166ma/02iso-
3166-code-lists/list-en1.html
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:simpleType name="USPSBoxType_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            A box used for receipt
            of USPS mail. The box may be
            located in the post office lobby (e.g. PO
            Box), on the
```

```
            customer's premises or other USPS authorized place (e.g.
            rural route box).
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="USPSBoxId_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The numbers or letters
            distinguishing one box from
            another within a post office. May include
            slash, hyphen
            or period.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:complexType name="USPSBox_type">
      <xsd:annotation>
         <xsd:documentation>A container for the receipt of USPS mail
uniquely
```

```
            identified by the combination of a USPS Box Type and a USPS
Box ID.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:sequence>
         <xsd:element name="USPSBoxType"
type="addr_type:USPSBoxType_type"
            maxOccurs="1" minOccurs="1" />

         <xsd:element name="USPSBoxId" type="addr_type:USPSBoxId_type"

            maxOccurs="1" minOccurs="1" />

      </xsd:sequence>

   </xsd:complexType>


   <xsd:simpleType name="USPSBoxGroupType_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            A collection of postal

            boxes served from a single

            distribution point.


            This group includes

            rural routes, highway contract

            routes, postal service centers,

            overseas military common

            mail rooms and military unit numbers.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string">

         <xsd:pattern value='.*' />

      </xsd:restriction>

   </xsd:simpleType>
```

```
   <xsd:simpleType name="USPSBoxGroupId_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The numbers or letters
            distinguishing one group of boxes
            from another within a distribution
            point. May include
            hyphen, slash or period.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>


   <xsd:complexType name="USPSRoute_type">
      <xsd:sequence>
         <xsd:element name="USPSBoxGroupType"
type="addr_type:USPSBoxGroupType_type"
            maxOccurs="1" minOccurs="1" />
         <xsd:element name="USPSBoxGroupId"
type="addr_type:USPSBoxGroupId_type"
            maxOccurs="1" minOccurs="1" />
      </xsd:sequence>
   </xsd:complexType>
   <xsd:complexType name="USPSAddress_type">
      <xsd:sequence>
         <xsd:element name="USPSRoute" type="addr_type:USPSRoute_type"
            maxOccurs="1" minOccurs="1" />
         <xsd:element name="USPSBox" type="addr_type:USPSBox_type"
            maxOccurs="1" minOccurs="1" />
```

```
      </xsd:sequence>
   </xsd:complexType>

   <xsd:simpleType name="USPSGeneralDeliveryPoint_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            A central point where

            mail may be picked up by the

            addressee. Two values are permitted:

            "General Delivery"

            (for post offices), and ship's names (for overseas

            military addresses).

         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string">

         <xsd:pattern value='.*' />

      </xsd:restriction>

   </xsd:simpleType>


   <xsd:simpleType name="AddressAuthorityIdentifiertype_old">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            A Concatenation of

            codes found in FIPS 5-2, 6-4, and

            55-3 data guides, with a locally

            defined code that MUST

            be defined in the metadata. The general format

            is

            (expressed as regular expressions)

            [0-9]{2}[0-9]{3}[0-9]{5}[0-9]{4}.
```

```
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>



   <!-- Locational type -->


   <xsd:simpleType name="AddressXCoordinate_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The X coordinate of the
            address location.</xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:double" />
   </xsd:simpleType>


   <xsd:simpleType name="AddressYCoordinate_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The Y coordinate of the
            address location.</xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:double" />
   </xsd:simpleType>


   <xsd:simpleType name="AddressLongitude_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
```

```
            The longitude
            coordinate of the address location, noted
            in decimal degrees. For
            point and polygon features,
            coordinate pairs typically locate the
            point of
            assignment: a centroid point, a point locating the entry
            to a
            property, etc.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:double" />
   </xsd:simpleType>

   <xsd:simpleType name="AddressLatitude_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The latitude coordinate
            of the address location, noted
            in decimal degrees. For point and
            polygon features,
            coordinate pairs typically locate the point of
            assignment: a centroid point, a point locating the entry
            to a
            property, etc.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:double" />
```

```
   </xsd:simpleType>


   <xsd:simpleType name="LocationUSNG_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The USNG or US National
            Grid is an alphanumeric
            reference system that overlays the Universal
            Transverse
            Mercator (UTM) numerical coordinate system. A USNG
            coordinate consists of three parts, the:

            1. Grid Zone Designation
            (GZD) for worldwide unique
            geoaddresses (two digits plus one letter,
            developed from
            the UTM system).

            2. 100,000-meter Square Identification
            for regional
            areas (two letters).

            3. Grid Coordinates for local areas
            (always an even
            number of digits between 2 and 10 depending upon
            precision necessary to uniquely identify the location).
            Look to
            www.fgdc.gov/standards/status/usng.html for a
            normative definition.
```

```
            Adapted from US National Grid, FDGC-STD-011-2001, Section
3.3

         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string">

         <xsd:pattern value='.*' />

      </xsd:restriction>

   </xsd:simpleType>

   <xsd:simpleType name="AddressElevation_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">Distance of the address
            in specified units above or below a vertical datum, as
defined by a
            specified coordinate reference system. </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:double" />
   </xsd:simpleType>

   <xsd:simpleType name="AddressZLevel_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            Floor or level of the

            structure. The lowest level of a building is 1, and
ascending

            numbers are assigned in order to each higher level.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string">

         <xsd:pattern value='.*' />

      </xsd:restriction>

   </xsd:simpleType>



   <xsd:simpleType name="AddressCoordinateReferenceSystemID_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">A name or number which,
```

```
            along with the Address Coordinate Reference System
Authority,
            identifies the coordinate reference system to which Address
X
            Coordinate and Address Y Coordinate. Address Latitude and
Address
            Longitude, US National Grid Coordinate, or Address
Elevation values
            are referenced. </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:integer" />
   </xsd:simpleType>

   <xsd:simpleType
name="AddressCoordinateReferenceSystemAuthority_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The Authority that
            assigns the unique Address Coordinate Reference System ID
(number or
            name) to the Address Coordinate Reference System to which
the
            Address X Coordinate and Address Y Coordinate, Address
Latitude and
            Address Longitude, US National Grid Coordinate, or Address
Elevation
            are referenced. </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:complexType name="AddressCoordinateReferenceSystem_type">
      <xsd:sequence>
         <xsd:element name="AddressCoordinateReferenceSystemAuthority"

type="addr_type:AddressCoordinateReferenceSystemAuthority_type" />
         <xsd:element name="AddressCoordinateReferenceSystemID"

type="addr_type:AddressCoordinateReferenceSystemID_type"></xsd:element>
      </xsd:sequence>
   </xsd:complexType>

   <!-- Non Locational Elements -->



   <xsd:simpleType name="AddressID_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">The unique

            identification number assigned to an address by the
addressing

            authority. The ID number must be unique for each address
assigned.
```

```
         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string">

         <xsd:pattern value='.*' />

      </xsd:restriction>

   </xsd:simpleType>

   <xsd:simpleType name="AddressReferenceSystemId_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">A unique identifier of
            the Address Reference System for a specified area (Address
Reference
            System Extent). </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:integer" />
   </xsd:simpleType>

   <xsd:simpleType name="AddressReferenceSystemName_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The name of the address
            system used in a specified area (Address Reference System
Extent).
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:simpleType name="AddressReferenceSystemAuthority_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The Authority that
            assigns the unique Address Coordinate Reference System ID
(number or
            name) to
            the Address Coordinate Reference System to which the
Address X
            Coordinate and Address Y
            Coordinate, Address Latitude and Address Longitude, US
National Grid
            Coordinate, or Address Elevation are referenced.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:complexType name="AddressReferenceSystemExtent_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">Boundary of the area(s)
            within which an Address Reference System is used.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:complexContent>
         <xsd:restriction base="gml:MultiSurfaceType" />
```

```
      </xsd:complexContent>
   </xsd:complexType>

   <xsd:simpleType name="AddressReferenceSystemType_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The category of address
            reference system in use. The
            type of reference system determines and
            guides the
            assignment of numbers within the Address Reference
            System
            Extent.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:enumeration value="Axial"></xsd:enumeration>
         <xsd:enumeration value="Grid"></xsd:enumeration>
         <xsd:enumeration value="Radial"></xsd:enumeration>
         <xsd:enumeration value="Linear Non-Axial"></xsd:enumeration>
         <xsd:enumeration value="Distance"></xsd:enumeration>
         <xsd:enumeration value="Area Based"></xsd:enumeration>
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:complexType name="AddressReferenceSystemRules_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The rules by which
            address numbers, street names and
            other components of a thoroughfare
            address are
            determined.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:sequence>
         <xsd:element name="AddressReferenceSystemBlockRules"
            type="addr_type:AddressReferenceSystemBlockRules_type"
minOccurs="0"
            maxOccurs="unbounded"></xsd:element>
         <xsd:element name="AddressReferenceSystemNumberingRules"
            type="addr_type:AddressReferenceSystemNumberingRules_type"
            minOccurs="0" maxOccurs="unbounded"></xsd:element>
         <xsd:element name="AddressReferenceSystemStreetNamingRules"

type="addr_type:AddressReferenceSystemStreetNamingRules_type"
            minOccurs="0" maxOccurs="unbounded"></xsd:element>
         <xsd:element

name="AddressReferenceSystemStreetTypeDirectionalAndModfierRules"

type="addr_type:AddressReferenceSystemStreetTypeDirectionalAndModifierR
ules_type"
            minOccurs="0" maxOccurs="unbounded"></xsd:element>
         <xsd:element

name="AddressReferenceSystemPlaceNameStateCountyAndZipCodeRules"
```

```
type="addr_type:AddressReferenceSystemPlaceNameStateCountryAndZipCodeRu
les_type"
            minOccurs="0" maxOccurs="unbounded"></xsd:element>
         <xsd:element name="AddressReferenceSystemSubaddressRules"
            type="addr_type:AddressReferenceSystemSubaddressRules_type"
            minOccurs="0" maxOccurs="unbounded"></xsd:element>
      </xsd:sequence>
   </xsd:complexType>

   <xsd:simpleType name="AddressReferenceSystemBlockRules_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">This element defines a
            block in an Address Reference System, and sets forth the
rules for
            block ranges and block breaks. </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:simpleType name="AddressReferenceSystemNumberingRules_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The rules for numbering
            along a thoroughfare, including parity (odd/even side
definition),
            and numbering increment distance and
value.</xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:simpleType name="AddressReferenceSystemStreetNamingRules_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The rules for the
            selection and use of street names within an Address
Reference System
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:simpleType

name="AddressReferenceSystemStreetTypeDirectionalAndModifierRules_type"
>
      <xsd:annotation>
         <xsd:documentation xml:lang="en">Rules pertaining to the
            use of street types (suffix and prefix), directionals
(prefix and
            suffix), and modifiers (prefix and suffix) of street names.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:simpleType
```

```
name="AddressReferenceSystemPlaceNameStateCountryAndZipCodeRules_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">This element contains
            rules for the use of place names, state names, country
names, and
            ZIP Codes within the jurisdiction of an Address Authority.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:simpleType name="AddressReferenceSystemSubaddressRules_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The rules that are
            applied to the addressing of areas within structures as
subaddresses
            (units, suites, apartments, spaces, etc.) within a given
Address
            Reference System</xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:complexType name="AddressReferenceSystemAxis_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The line that defines the
points of origin for address numbering along thoroughfares that
intersect it, or which are numbered in parallel to streets that
   intersect it. It may be a road, another geographic feature, or an
            imaginary line.</xsd:documentation>
      </xsd:annotation>
      <xsd:complexContent>
         <xsd:restriction base="gml:MultiCurveType">
         </xsd:restriction>
      </xsd:complexContent>
   </xsd:complexType>

   <xsd:complexType
name="AddressReferenceSystemAxisPointOfBeginning_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">Coordinate location of the
beginning point of address numbering along an Address Reference System
Axis. </xsd:documentation>
      </xsd:annotation>
      <xsd:complexContent>
         <xsd:extension base="gml:PointType"></xsd:extension>
      </xsd:complexContent>
   </xsd:complexType>

   <xsd:complexType name="AddressReferenceSystemGridAngle_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The degree to which a
specific, named address grid is tilted off a north/south or east/west
orientation.  </xsd:documentation>
      </xsd:annotation>
      <xsd:complexContent>
```

```
         <xsd:extension base="xsd:double"></xsd:extension>
      </xsd:complexContent>
   </xsd:complexType>

   <xsd:complexType
name="AddressReferenceSystemReferencePolyline_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">A street, geometric
            line, or other line used to measure address number
assignment
            intervals and ranges within an Address Reference System.
The Address
            Reference System Reference Polyline may consist of a
beginning
            point, one or more segments of a street centerline,
geographically
            identified line, such as a line of latitude or longitude, a
            land-division based line, such as a township, range, or
section
            line, or an imaginary line constructed for the purpose of
allocating
            address ranges and address numbers.</xsd:documentation>
      </xsd:annotation>
      <xsd:complexContent>
         <xsd:restriction base="gml:MultiCurveType"></xsd:restriction>
      </xsd:complexContent>
   </xsd:complexType>

   <xsd:complexType name="AddressReferenceSystemRangeBreakpoint_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">A point along a street
            or other thoroughfare within an Address Reference System
where an
            address range beginning and/or endpoint is located.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:complexContent>
         <xsd:extension base="gml:PointType">
         </xsd:extension>
      </xsd:complexContent>
   </xsd:complexType>

   <xsd:complexType name="AddressReferenceSystemRangeBreakline_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">A line connecting the
            Address Reference System Range Breakpoints with the same
value
            within an Address Reference System</xsd:documentation>
      </xsd:annotation>
      <xsd:complexContent>
         <xsd:restriction base="gml:MultiCurveType">
         </xsd:restriction>
      </xsd:complexContent>
   </xsd:complexType>

   <xsd:complexType name="AddressReferenceSystemRangePolygon_type">
      <xsd:annotation>
```

```
         <xsd:documentation xml:lang="en">A line connecting the
            Address Reference System Range Breakpoints with the same
value
            within an Address Reference System</xsd:documentation>
      </xsd:annotation>
      <xsd:complexContent>
         <xsd:restriction base="gml:MultiSurfaceType">
         </xsd:restriction>
      </xsd:complexContent>
   </xsd:complexType>

   <xsd:simpleType
name="AddressReferenceSystemReferenceDocumentCitation_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">A bibliographic
            reference to an ordinance, map, manual, or other document
in which
            the rules governing an Address Reference System are
written.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>

   <xsd:complexType name="AddressReferenceSystem_type">
      <xsd:annotation>
         <xsd:documentation>An Address Reference System is a set of
rules and
            geometries that define how addresses are
            assigned along thoroughfares and/or within a given area
(Address Reference
            System Extent).
            At minimum, an Address Reference System must specify where
Complete
            Address Number sequences
            begin and how Complete Address Numbers are assigned along
the length of
            thoroughfares governed by
            the Address Reference System within the Address Reference
System
            Extent. Address Reference Systems
            typically provide rules governing left-right parity of
Complete Address
            Numbers, assignment of Street Names
            and street types, use of directionals and quadrants, and
other aspects
            of address assignment. An Address
            Reference System that is based on axis lines, an Address
Reference System
            Axis defined for each axis used
            to define address assignment. Each Address Reference System
Axis must
            have an identified Address Reference
            System Axis Point Of Beginning. An Address Reference System
is known by
            it’s Address Reference System
```

```
            Name (required). Additional business rules for an Address
Reference
            System are described in the Address Reference
            System Rules. </xsd:documentation>
      </xsd:annotation>
      <xsd:sequence>
         <xsd:element name="AddressReferenceSystemId"
            type="addr_type:AddressReferenceSystemId_type"
maxOccurs="1"
            minOccurs="1" />
         <xsd:element name="AddressReferenceSystemName"
            type="addr_type:AddressReferenceSystemName_type"
maxOccurs="1"
            minOccurs="1" />
         <xsd:element name="AddressReferenceSystemAuthority"
            type="addr_type:AddressReferenceSystemAuthority_type"
maxOccurs="1"
            minOccurs="0" />
         <xsd:element name="AddressReferenceSystemExtent"
            type="addr_type:AddressReferenceSystemExtent_type"
maxOccurs="1"
            minOccurs="0" />
         <xsd:element name="AddressReferenceSystemType"
            type="addr_type:AddressReferenceSystemType_type"
maxOccurs="1"
            minOccurs="0" />
         <xsd:element name="AddressReferenceSystemRules"
            type="addr_type:AddressReferenceSystemRules_type"
maxOccurs="1"
            minOccurs="0" />
         <xsd:element name="AddressReferenceSystemAxis"
            type="addr_type:AddressReferenceSystemAxis_type"
maxOccurs="1"
            minOccurs="0" />
         <xsd:element name="AddressReferenceSystemAxisPointOfBeginning"

type="addr_type:AddressReferenceSystemAxisPointOfBeginning_type"
            maxOccurs="1" minOccurs="0" />
         <xsd:element name="AddressReferenceSystemReferencePolyline"

type="addr_type:AddressReferenceSystemReferencePolyline_type"
            maxOccurs="unbounded" minOccurs="0" />
         <xsd:element name="AddressReferenceSystemRangeBreakpoint"
            type="addr_type:AddressReferenceSystemRangeBreakpoint_type"
            maxOccurs="1" minOccurs="0" />
         <xsd:element name="AddressReferenceSystemRangeBreakline"
            type="addr_type:AddressReferenceSystemRangeBreakline_type"
            maxOccurs="unbounded" minOccurs="0" />
         <xsd:element
name="AddressReferenceSystemReferenceDocumentCitation"

type="addr_type:AddressReferenceSystemReferenceDocumentCitation_type"
            maxOccurs="unbounded" minOccurs="0" />
      </xsd:sequence>
   </xsd:complexType>
```

```
   <xsd:complexType name="RelatedAddressID_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The identifier of an
            address that is related to the
            identifier of another address.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:simpleContent>
         <xsd:extension base="addr_type:AddressID_type">
            <xsd:attribute name="AddressRelationType"
               type="addr_type:AddressRelationType_type" />
         </xsd:extension>
      </xsd:simpleContent>
   </xsd:complexType>

   <xsd:simpleType name="AddressRelationType_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The manner in which an
            address identified by a RelatedAddressID is related to an
address
            identified by an AddressID.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="RelatedTransportationFeatureId_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The unique identifier
            assigned (within the reference transportation base model)
to a
            transportation feature to which an address is related. see
U.S.
            Federal Geographic Data Committee, "Framework Data Content
Standard
            Part 7: Transportation base."
            "Framework Data Content Standard Part 7c: Roads."
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressTransportationFeatureId_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The unique identifier
            assigned to the particular feature that represents an
address within
            a transportation base model. see U.S. Federal Geographic
Data
            Committee, "Framework Data Content Standard Part 7:
Transportation
            base."
```

```
            "Framework Data Content Standard Part 7c: Roads."
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressTransportationFeatureType_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The type of
            transportation feature (TranFeature) used to represent an
address.
            For transportation features generally: U.S. Federal
Geographic Data
            Committee, "Framework Data Content Standard Part 7:
Transportation
            base."
            For roads features only: U.S. Federal Geographic Data
Committee,
            "Framework Data Content Standard Part 7: Transportation
base," as
            extended by "Framework Data Content Standard Part 7c:
Roads."
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressTransportationSystemAuthority_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The authority that
            maintains the transportation base model specified by the
Address
            Transportation System Name, and assigns Address
Transportation
            Feature I Ds to the features it represents.
</xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressTransportationSystemName_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The name of the
            transportation base model to which the address is related.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>
```

```
   <xsd:simpleType name="AddressParcelIdentifier_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The primary permanent
            identifier, as defined by the Address Parcel Identifier
Source, for
            a parcel that includes the land or feature identified by an
address.
            A parcel is a single cadastral unit, which is the spatial
            extent of the past, present, and future rights and
interests in real
            property.
            Definition source for parcel identifier: Adapted from FGDC,
May
            2008. Geographic Information Framework Data Content
Standard
            Part 1: Cadastral. Section 4.2.
            Definition source for parcel: FGDC, May 2008. Cadastral
Data
            Content Standard for the National Spatial Data
Infrastructure.
            Version 1.4 – Fourth Revision. p. 45. (Part 3.2 Parcel)
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressParcelIdentifierSource_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">The permanent
            identifier for the agency, organization, or jurisdiction
that
            assigns and maintains the Address Parcel Identifier.
            Definition source: FGDC, May 2008. Geographic Information
Framework Data
            Content Standard Part 1: Cadastral. Section 4.7.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressUUId_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The unique
            identification number assigned to an address
            by the addressing
            authority. The ID number must be
            unique for each address assigned by
            an addressing
            authority. This, combined with the FIPS number of the
            addressing authority, can provide a unique ID for every
            address in
            the US.
```

```
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AssociatedAddressId_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The unique
            identification number of and address related to this one.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="MailableAddress_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            Identifies whether an
            addresses receives USPS mail
            delivery (that is, the address is
            occupiable, and the
            USPS provides on-premises USPS mail
            delivery to
            it).
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
         <xsd:enumeration value="Yes">
            <xsd:annotation>
               <xsd:documentation>The USPS delivers mail to this
address.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="No">
            <xsd:annotation>
               <xsd:documentation>The USPS does not deliver mail to
this address.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Unknown">
            <xsd:annotation>
               <xsd:documentation>It is unknown whether the USPS
delivers mail to
                  this address.</xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
      </xsd:restriction>
   </xsd:simpleType>
```

```
   <xsd:simpleType name="AddressSideOfStreet_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The side of the
            transportation segment (right , left,
            both, none, unknown) on which
            the address is located.
            U.S. Federal Geographic Data Committee,
            "Framework Data
            Content Standard Part 7: Transportation base,"
            sections
            7.3.2 and B.3.6
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
         <xsd:enumeration value="right">
            <xsd:annotation>
               <xsd:documentation>
                  The address is related to the right side of the
                  street.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="left">
            <xsd:annotation>
               <xsd:documentation>
                  The address is related to the left side of the
                  street.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="both">
            <xsd:annotation>
               <xsd:documentation>
                  The address pertains to both sides of the
                  street.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="none">
            <xsd:annotation>
               <xsd:documentation>The address is not on either or both
sides of
                  the street or the concept of side of street does not
apply to the
                  address.
                  For instance an intersection address would have a
AddressSideOfStreet
                  of none.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="unknown"></xsd:enumeration>
      </xsd:restriction>
   </xsd:simpleType>
```

```
   <xsd:simpleType name="AddressRangeSide_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The side of the
            transportation segment (right , left,
            both, none, unknown) on which
            the address range applies.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
         <xsd:enumeration value="right">
            <xsd:annotation>
               <xsd:documentation>
                  The address is related to the right side of the
                  street.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="left">
            <xsd:annotation>
               <xsd:documentation>
                  The address is related to the left side of the
                  street.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="both">
            <xsd:annotation>
               <xsd:documentation>
                  The address pertains to both sides of the
                  street.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="none">
            <xsd:annotation>
               <xsd:documentation>The address is not on either or both
sides of
                  the street or the concept of side of street does not
apply to the
                  address.
                  For instance an intersection address would have a
AddressSideOfStreet
                  of none.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="unknown"></xsd:enumeration>
      </xsd:restriction>
   </xsd:simpleType>


   <xsd:simpleType name="AddressRangeParity_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The set of Address
```

```
            Number Parity values specified in the Address Reference
System
            Numbering Rules for the Address Numbers in an address
range.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
         <xsd:enumeration value="even">
            <xsd:annotation>
               <xsd:documentation>
                  All Address Numbers in the range have an Address
                  Number Parity of "even".
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="odd">
            <xsd:annotation>
               <xsd:documentation>
                  All Address Numbers in the range have an Address
                  Number Parity of "odd".
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="both">
            <xsd:annotation>
               <xsd:documentation>
                  Both even and odd Address Numbers are found in
                  the range.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="none">
            <xsd:annotation>
               <xsd:documentation>
                  No Address Number is found within the range.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="unknown">
            <xsd:annotation>
               <xsd:documentation>The parity of the Address Numbers in
the range
                  in not known. </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
      </xsd:restriction>
   </xsd:simpleType>


   <xsd:simpleType name="OfficialStatus_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            Whether the address,
            street name, landmark name, or
            place name is as given by the official
            addressing
```

```
            authority (official), or an alternate or alias (official
            or unofficial), or a verified error.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
         <xsd:enumeration value="Official">
            <xsd:annotation>
               <xsd:documentation>
                  The address or name as designated by the Address
                  Authority.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Alternate or Alias">
            <xsd:annotation>
               <xsd:documentation>
                  An alternate or alias to the official address or
                  name that is also in official or popular use.
                  The Related Address
                  ID can be used to link an
                  alternate or alias to the Address ID of
                  the
                  official address. There are two types of
                  alternate or alias
                  names, official and
                  unofficial, each of which has subtypes.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Official Alternate or Alias">
            <xsd:annotation>
               <xsd:documentation>
                  These are alternate names designated by an
                  official Address Authority.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Official Renaming Action of the
Address Authority">
            <xsd:annotation>
               <xsd:documentation>An Address Authority may replace one
address or
                  name with another, e.g. by renaming or renumbering.
The prior,
                  older address should be retained as an alias, to
provide for
                  conversion to the new address.</xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Alternates Established by an Address
Authority">
            <xsd:annotation>
               <xsd:documentation>An Address Authority may establish a
name or
                  number to be used in addition to the official address
or name. For
```

```
                  example, a state highway designation (State Highway
7) may be
                  given to a locally-named road, or a memorial name may
be applied
                  to an existing street by posting an additional sign,
while the
                  local or original name and addresses continue to be
recognized as
                  official.</xsd:documentation>
               </xsd:annotation>
            </xsd:enumeration>
            <xsd:enumeration value="Unofficial Alternate or Alias">
               <xsd:annotation>
                  <xsd:documentation>
                     These are addresses or names that are used by
                     the public or by an individual, but are not
                     recognized as official
                     by the Address Authority.
                  </xsd:documentation>
               </xsd:annotation>
            </xsd:enumeration>
            <xsd:enumeration
               value="Alternate Names Established by Colloquial Use in a
Community">
               <xsd:annotation>
                  <xsd:documentation>An address or name that is in popular
use but is
                     not the official name or an official alternate or
alias.
                  </xsd:documentation>
               </xsd:annotation>
            </xsd:enumeration>
            <xsd:enumeration value="Unofficial Alternate Names Frequently
Encountered">
               <xsd:annotation>
                  <xsd:documentation>In data processing, entry errors
occur. Such
                     errors if frequently encountered may be corrected by
a direct
                     match of the error and a substitution of a correct
name.
                  </xsd:documentation>
               </xsd:annotation>
            </xsd:enumeration>
            <xsd:enumeration
               value="Unofficial Alternate Names In Use by an Agency or
Entity">
               <xsd:annotation>
                  <xsd:documentation>For data processing efficiency,
entities often
                     create alternate names or abbreviations for internal
use. These
                     must be changed to the official form for public use
and
                     transmittal to external users.</xsd:documentation>
               </xsd:annotation>
            </xsd:enumeration>
```

```
         <xsd:enumeration value="Posted or Vanity Address">
            <xsd:annotation>
               <xsd:documentation>An address that is posted, but is not
recognized
                  by the Address Authority (e.g. a vanity address on a
building);
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Verified Invalid">
            <xsd:annotation>
               <xsd:documentation>
                  An address that has been verified as being
                  invalid, but which keeps appearing in address
                  lists. Different from
                  Unofficial Alternate Names
                  in that these addresses are known not to
                  exist.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressStartDate_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            The earliest date on

            which the address is known to

            exist.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:date" />

   </xsd:simpleType>


   <xsd:simpleType name="AddressEndDate_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            The earliest date on

            which the address is known to no

            longer be valid.
```

```
         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:date" />

   </xsd:simpleType>


   <xsd:simpleType name="DataSetID_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The locally defined ID for the DataSet.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string" />
   </xsd:simpleType>



   <xsd:simpleType name="AddressClassification_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            The type or

            classification of the address according to

            the classification

            standard.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string">

         <xsd:enumeration
value="NumberedThoroughfareAddress"></xsd:enumeration>

         <xsd:enumeration
value="IntersectionAddress"></xsd:enumeration>

         <xsd:enumeration
value="TwoNumberAddressRange"></xsd:enumeration>

         <xsd:enumeration
value="FourNumberAddressRange"></xsd:enumeration>

         <xsd:enumeration
value="UnnumberedThoroughfareAddress"></xsd:enumeration>

         <xsd:enumeration value="LandmarkAddress"></xsd:enumeration>
```

```
         <xsd:enumeration value="CommunityAddress"></xsd:enumeration>

         <xsd:enumeration
value="USPSPostalDeliveryBox"></xsd:enumeration>

         <xsd:enumeration value="USPSPostal
DeliveryRoute"></xsd:enumeration>

         <xsd:enumeration value="USPSGeneral
DeliveryOffice"></xsd:enumeration>

         <xsd:enumeration
value="GeneralAddressClass"></xsd:enumeration>

      </xsd:restriction>

   </xsd:simpleType>


   <xsd:simpleType name="AddressFeatureType_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            The type of feature

            identified by the address


            Initial list of feature types: Building

            Utility Cabinet,

            Telephone Pole, Building, Street block, street block

            face, intersection, parcel, building, entrance, unit.

            The list might

            be expanded indefinitely to include

            infrastructure and other

            features.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string">

         <xsd:pattern value='.+' />
```

```
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressLifecycle_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The Lifecycle status of
            the address.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:token">
         <xsd:enumeration value='PROPOSED' />
         <xsd:enumeration value='ACTIVE' />
         <xsd:enumeration value='RETIRED' />
         <xsd:enumeration value='TEMPORARY' />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressLifecycleStatus_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The life cycle status
            of the address.


         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:token">
         <xsd:enumeration value="Potential">
            <xsd:annotation>
```

```
            <xsd:documentation>
               Address falls within a theoretical range, but
               has never been used.
            </xsd:documentation>
         </xsd:annotation>
      </xsd:enumeration>
      <xsd:enumeration value="Proposed">
         <xsd:annotation>
            <xsd:documentation>
               Application pending for use of this address
               (e.g., address tentatively issued for
               subdivision plat that is not
               yet fully
               approved).
            </xsd:documentation>
         </xsd:annotation>
      </xsd:enumeration>
      <xsd:enumeration value="Active">
         <xsd:annotation>
            <xsd:documentation>
               Address has been issued and is in use.
            </xsd:documentation>
         </xsd:annotation>
      </xsd:enumeration>
      <xsd:enumeration value="Retired">
         <xsd:annotation>
            <xsd:documentation>
               Address was issued, but is now obsolete (e.g.
```

```
                street name has been changed), building was

                demolished, etc.

             </xsd:documentation>

          </xsd:annotation>

       </xsd:enumeration>

    </xsd:restriction>

 </xsd:simpleType>



 <xsd:simpleType name="AddressOfficialStatus_type">

    <xsd:annotation>

       <xsd:documentation xml:lang="en">

          Whether the address is

          as given by the official

          addressing authority (official), or an

          unofficial

          variant or equivalent of it (alias).

       </xsd:documentation>

    </xsd:annotation>

    <xsd:restriction base="xsd:token">
       <xsd:enumeration value="Official">
          <xsd:annotation>
             <xsd:documentation>
                The address or name as designated by the
                addressing authority.
             </xsd:documentation>
          </xsd:annotation>
       </xsd:enumeration>

       <xsd:enumeration value="Alternate Name">

          <xsd:annotation>

             <xsd:documentation>

                In any of the address classes described in 2.2,

                the collective name element may have another
```

```
            acceptable form. Some
            alternate names may be
            conditional, on attempt, i.e. if the alias
            resolves the address no further alternate names
            should be
            considered. Other alternate names are
            always applied, such as
            official renamings. All
            alternate names carry a limit of
            applicability
            and a timeframe of applicability. The limit of
            applicability may be a limit to a single zipcode,
            a naming
            authorities boundary, such as city or
            county limits, or a range of
            address numbers
            with such a boundary.
         </xsd:documentation>
      </xsd:annotation>
   </xsd:enumeration>
   <xsd:enumeration value="Alternate Renamed">
      <xsd:annotation>
         <xsd:documentation>
            Upon official renaming of an address, or
            renumbering of an address, or a series of
            addresses, the prior,
            older address will occur
            in address lists for a period of time and
```

```
                a
                conversion to current names or current addresses
                will need to be
                provided. Such an entity may
                match a single address or a range of
                addresses.
            </xsd:documentation>
        </xsd:annotation>
    </xsd:enumeration>
    <xsd:enumeration value="Alternate Authority Name">
        <xsd:annotation>
            <xsd:documentation>
                The alternate name is established by a separate,
                or the same, naming authority. Such names may
                apply to any address
                class, including landmarks.
                Such names would be established by
                naming
                authorities with a geographically larger area of
                responsibility, containing all or part of a
                naming authority with a
                smaller region, such as
                a state name overlaying a county name or a
                county name overlaying a city or town name.
                Examples would be a
                state highway designation
                (State Highway 7) overlaid upon locally
                named
                roads or a memorial highway overlaid on local
```

```
            road names or
            state highway names.
         </xsd:documentation>
      </xsd:annotation>
   </xsd:enumeration>
   <xsd:enumeration value="Alternate Colloquial Name">
      <xsd:annotation>
         <xsd:documentation>
            Local communities hold on to address names much
            longer than do regional agencies. A community
            may use a colloquial
            address name as much as 30
            years after that name has either expired
            or is
            no longer salient. This entry provides a
            conversion to a
            current name.
         </xsd:documentation>
      </xsd:annotation>
   </xsd:enumeration>
   <xsd:enumeration value="Unofficial Alternate Name">
      <xsd:annotation>
         <xsd:documentation>
            In data processing, entry errors occur. Such
            errors if frequently encountered may be
            corrected by a direct match
            of the error and a
            substitution to a current name.
```

```
            </xsd:documentation>
         </xsd:annotation>
      </xsd:enumeration>
      <xsd:enumeration value="Unofficial Agencys Name">
         <xsd:annotation>
            <xsd:documentation>
               For data processing efficiency, entities often
               create alternate names for internal use. When
               such alternate names
               are exposed to other
               entities they need to be resolved to a current
               name.
            </xsd:documentation>
         </xsd:annotation>
      </xsd:enumeration>
      <xsd:enumeration value="Posted Address">
         <xsd:annotation>
            <xsd:documentation>
               Address is posted, but not recognized by
               addressing authority (e.g. vanity address on a
               building).
            </xsd:documentation>
         </xsd:annotation>
      </xsd:enumeration>
      <xsd:enumeration value="Verified Invalid">
         <xsd:annotation>
            <xsd:documentation>
               Address is verified as being invalid, but keeps
               appearing in address lists. Different from
```

```
                Unofficial Altername

                Names in that these are

                known not to exist; Address has been issued

                and

                is in use.

             </xsd:documentation>

          </xsd:annotation>

       </xsd:enumeration>

       <xsd:pattern value=".+"></xsd:pattern>
   </xsd:restriction>

</xsd:simpleType>


<xsd:simpleType name="AddressAnomalyStatus_type">

   <xsd:annotation>

      <xsd:documentation xml:lang="en">

         A status flag, or an

         explanatory note, for an address

         that is not correct according to the

         address schema in

         which it is located, but is nonetheless a valid

         address.

         This field may be used to identify the type of anomaly

         (e.g.

         wrong parity, out of sequence, out of range, etc.)

         rather than simply

         whether or not it is anomalous. Local

         jurisdictions may create

         specific categories for

         anomalies.
```

```
         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string"></xsd:restriction>

   </xsd:simpleType>

   <xsd:simpleType name="AddressRangeSpan_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            Whether an address
            range covers part of a transportation
            segment, one segment, multiple
            segments, or the entire
            thoroughfare within the Address Reference
            System Extent.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:enumeration value="Partial Segment"></xsd:enumeration>
         <xsd:enumeration value="Single Segment"></xsd:enumeration>
         <xsd:enumeration value="Multi Segment"></xsd:enumeration>
         <xsd:enumeration value="Entire Street"></xsd:enumeration>
         <xsd:enumeration value="Unknown"></xsd:enumeration>
         <xsd:pattern value=".+"></xsd:pattern>
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressRangeDirectionality_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            Whether the low
            Complete Address Number of an address range is closer to
the
            from-node or the to-node of the transportation segment(s)
that the
            range is related to.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:enumeration value="With">
            <xsd:annotation>
               <xsd:documentation>The low address is nearer the from
node; numbers
                  ascend toward the to node.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Against">
            <xsd:annotation>
               <xsd:documentation>The low address is nearer the to
node; numbers
                  descend toward the to node.
               </xsd:documentation>
            </xsd:annotation>
```

```
         </xsd:enumeration>
         <xsd:enumeration value="With-Against">
            <xsd:annotation>
               <xsd:documentation>The numbers run in opposite
directions on either
                  side of the street. The low number on the left side
is nearer the
                  from node. The low number on the right side is nearer
the to node.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Against-With">
            <xsd:annotation>
               <xsd:documentation>The numbers run in opposite
directions on either
                  side of the street. The low number on the left side
is nearer the
                  to node. The low number on the right side is nearer
the from node.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Null">
            <xsd:annotation>
               <xsd:documentation>The address range has null values for
the high
                  and low Complete Address Numbers.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="NA">
            <xsd:annotation>
               <xsd:documentation>Does not apply (transportation
segment
                  directionality is inconsistent within the range).
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Unknown">
            <xsd:annotation>
               <xsd:documentation>The address range directionality is
not known.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressRangeType_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">This attribute states
            whether an address range (either a Two Number Address Range
or a
            Four Number Address Range) is actual or potential.
         </xsd:documentation>
      </xsd:annotation>
```

```
      <xsd:restriction base="xsd:string">
         <xsd:enumeration value="Actual">
            <xsd:annotation>
               <xsd:documentation>
                  The low and high CompleteAddressNumbers are
                  numbers that have been assigned and are in use
                  along the addressed
                  feature.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Potential">
            <xsd:annotation>
               <xsd:documentation>
                  The low and high CompleteAddressNumbers are
                  numbers that would be assigned if all possible
                  numbers were in use
                  along the addressed feature,
                  and there were no gaps between the
                  range and its
                  preceding and following ranges.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Unknown">
            <xsd:annotation>
               <xsd:documentation>
                  The relationship between the low and high
                  CompleteAddressNumbers and the addressed feature
                  is unknown.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
      </xsd:restriction>
   </xsd:simpleType>


   <xsd:simpleType name="LocationDescription_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            A text description

            providing more detail on how to

            identify or find the addressed

            feature.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string"></xsd:restriction>
```

```
</xsd:simpleType>


<xsd:simpleType name="AddressNumberParity_type">
   <xsd:annotation>
      <xsd:documentation xml:lang="en"> The property of an
         Address Number with respect to being odd or even.
         "A relation between a pair of integers: if both integers
         are odd or
         both are even they have the same parity; if
         one is odd and the other
         is even they have different
         parity."
      </xsd:documentation>
   </xsd:annotation>
   <xsd:restriction base="xsd:token">
      <xsd:enumeration value="Even" />
      <xsd:enumeration value="Odd" />
   </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="AttachedElement_type">
   <xsd:annotation>
      <xsd:documentation xml:lang="en">
         This attribute
         identifies when two or more Complete
         Address Number elements or two
         or more Complete Street
         Name elements have been combined without a
         space
         separating them.
      </xsd:documentation>
   </xsd:annotation>
   <xsd:restriction base="xsd:string">
      <xsd:enumeration value="Attached">
         <xsd:annotation>
            <xsd:documentation>
               The elements inside the CompleteAddressNumber or
               CompleteStreetName are attached and need special
               parsing rules.
```

```
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value="Not Attached"></xsd:enumeration>
         <xsd:enumeration value="Unknown"></xsd:enumeration>
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressNumberSide_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            "The Concept of Left
            and Right sides of a feature that a Number Range Applies
to.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:token">
         <xsd:enumeration value="Left" />
         <xsd:enumeration value="Right" />
         <xsd:enumeration value="Unknown" />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:simpleType name="AddressNumberBounds_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            "The Concept of Low or
            High of numbers participating in a Number Range Applies to.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:token">
         <xsd:enumeration value="Low" />
         <xsd:enumeration value="High" />
         <xsd:enumeration value="Unknown" />
      </xsd:restriction>
   </xsd:simpleType>

   <xsd:complexType name="StreetNameGroup">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            A geographic area where

            the street names conform to a

            theme. For example, some neighborhoods

            feature streets

            named for birds, US presidents or trees. A subset of

            the

            complete street name domain applies to this area.
```

```
         </xsd:documentation>

      </xsd:annotation>
      <xsd:complexContent>
         <xsd:extension base="gml:MultiSurfaceType">
            <xsd:attribute name="name"
type="xsd:string"></xsd:attribute>
         </xsd:extension>
      </xsd:complexContent>

   </xsd:complexType>



   <xsd:simpleType name="AddressSchemeName_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            Name of the address

            scheme that operates over a

            specified area, i.e.: mountain addresses,

            plains

            addresses.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string">

         <xsd:pattern value='.*' />

      </xsd:restriction>

   </xsd:simpleType>



   <xsd:simpleType name="AddressSchemeDescription_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            A description of an

            Address Scheme that includes

            business rules about parity, naming

            conventions, and
```

```
            other matters concerning the assignment and

            maintenance

            of an addressing scheme.


            This element may refer to an

            address ordinance, Standard

            Operating Procedures manual or other

            external document

            wherein the rules for addresses in a given scheme

            are

            written.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string">

         <xsd:pattern value='.*' />

      </xsd:restriction>

   </xsd:simpleType>


   <!-- add  axes name as an attribute  -->
   <!-- change data type to GML::Point -->
   <xsd:complexType name="AddressSchemeOrigin_type ">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            Location where the

            address axes meet.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:complexContent>

         <xsd:extension base="gml:PointType">
```

```
            <xsd:attribute name="OriginValue"
type="xsd:int"></xsd:attribute>
            <xsd:attribute name="AxisId"
type="xsd:string"></xsd:attribute>
         </xsd:extension>
      </xsd:complexContent>
   </xsd:complexType>

   <xsd:complexType name="AddressSchemeAxes_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            Address axes define the

            boundaries between adjoining

            zones in address schema. Those zones may

            be quadrants

            (northwest, northeast, southeast, southwest) or other

            geographic divisions. Lowest address numbers occur

            nearest an axis.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:complexContent>
         <xsd:extension base="gml:MultiCurveType">

            <xsd:attribute name="AxisId"
type="xsd:string"></xsd:attribute>
         </xsd:extension>
      </xsd:complexContent>

   </xsd:complexType>



   <xsd:complexType name="AddressSchemeExtent_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            Boundary of the area

            over which an address schema

            is used when assigning addresses.

         </xsd:documentation>
```

```
      </xsd:annotation>

      <xsd:complexContent>
         <xsd:extension base="gml:MultiSurfaceType" />
      </xsd:complexContent>
   </xsd:complexType>


   <xsd:simpleType name="AddressDirectSource_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            Source from whom the

            data provider obtained the address,

            or with whom the data provider

            validated the address.

            Important if the data provider did not obtain

            the

            address directly from the local authority.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string">

         <xsd:pattern value='.*' />

      </xsd:restriction>

   </xsd:simpleType>


   <xsd:simpleType name="AddressAuthority_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            The authority (e.g.,

            municipality, county) that created

            or has jurisdiction over the

            creation of an address.
```

```
            The addressing authority may or may not be
            the same as
            the physical or postal jurisdiction noted for the
            address.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>
   <xsd:simpleType name="AddressAuthorityIdentifier_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The FIPS or GNIs code
            for the authority (e.g.,
            municipality, county) that created or has
            jurisdiction
            over the creation of an address.

            The addressing authority
            may or may not be the same as
            the physical or postal jurisdiction
            noted for the
            address.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:string">
```

```
         <xsd:pattern value='.*' />
      </xsd:restriction>
   </xsd:simpleType>
   <!-- Complex Types -->



   <xsd:simpleType name="Action_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            An action command for
            incremental datasets. Add
            indicates that the information is new.
            DELETE indicates
            that the information is to be removed.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:token">
         <xsd:enumeration value='ADD' />
         <xsd:enumeration value='DELETE' />
      </xsd:restriction>
   </xsd:simpleType>



   <xsd:simpleType name="DeliveryAddressType_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            Whether the Delivery Address includes or excludes the
Complete Subaddress.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:restriction base="xsd:token">
         <xsd:enumeration value='SubAddress Included'>
            <xsd:annotation>
               <xsd:documentation>The Delivery Address includes the
Complete
                  Subaddress (if any) </xsd:documentation>
```

```
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value='SubAddres Excluded'>
            <xsd:annotation>
               <xsd:documentation>The Delivery Address includes the
Complete
                  Subaddress (if any) </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
         <xsd:enumeration value='Unstated'>
            <xsd:annotation>
               <xsd:documentation>Not stated/no information (default
value)
               </xsd:documentation>
            </xsd:annotation>
         </xsd:enumeration>
      </xsd:restriction>
   </xsd:simpleType>

   <!--  Complex Elements -->

   <xsd:complexType name="DeliveryAddress_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            The entire address, unparsed, except for the Place Name,
State Name,
            Zip Code, Zip Plus 4, Country Name, and, optionally,
            Complete Subaddress elements.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:simpleContent>
         <xsd:extension base="xsd:string">
            <xsd:attribute name="DeliveryAddressType"
               type="addr_type:DeliveryAddressType_type" />
         </xsd:extension>
      </xsd:simpleContent>
   </xsd:complexType>


   <xsd:simpleType name="PlaceStateZip_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            The unparsed

            accumulation of Postal City, State, and

            ZIPCode elements.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:restriction base="xsd:string">
```

```
         <xsd:pattern value='.*' />

      </xsd:restriction>

   </xsd:simpleType>



   <xsd:complexType name="FeatureOccupancy_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            This element is defined
            solely for use with the General
            Address class, which is constructed
            to accommodate and
            mix addresses of all types (e.g., a general postal
            mailing list or contact list). Place Name, State Name,
            Zip Code, and
            Zip Plus 4, which appear in all address
            classes, are kept separate
            from the rest of the address.
            No longer a parsed datatype. Content
            still represents it
            as such.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:simpleContent>
         <xsd:extension base="xsd:string"></xsd:extension>
      </xsd:simpleContent>
   </xsd:complexType>


   <xsd:complexType name="GeneralAddress_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            This element is defined

            solely for use with the General

            Address class, which is constructed

            to accommodate and

            mix addresses of all types (e.g., a general postal

            mailing list or contact list). Place Name, State Name,

            Zip Code, and

            Zip Plus 4, which appear in all address

            classes, are kept separate

            from the rest of the address.
```

```
            No longer a parsed datatype. Content

            still represents it

            as such.

         </xsd:documentation>

      </xsd:annotation>
      <xsd:simpleContent>

         <xsd:extension base="xsd:string" />
      </xsd:simpleContent>

   </xsd:complexType>

   <!--        -->

   <xsd:complexType name="LocationXY_type">

      <xsd:sequence>

         <xsd:element name="X" type="addr_type:AddressXCoordinate_type"

            minOccurs="1" maxOccurs="1" />

         <xsd:element name="Y" type="addr_type:AddressYCoordinate_type"

            minOccurs="1" maxOccurs="1" />

      </xsd:sequence>

   </xsd:complexType>



   <xsd:complexType name="LocationLongLat_type">

      <xsd:sequence>

         <xsd:element name="Longitude"
type="addr_type:AddressLongitude_type"

            minOccurs="1" maxOccurs="1" />

         <xsd:element name="Latitude"
type="addr_type:AddressLatitude_type"

            minOccurs="1" maxOccurs="1" />

      </xsd:sequence>

   </xsd:complexType>
```

```
   <xsd:complexType name="Location_type">

      <xsd:sequence>

         <xsd:element name="USNGCoordinate"
type="addr_type:LocationUSNG_type"

            minOccurs="0" maxOccurs="1" />

         <xsd:element name="LongLat"
type="addr_type:LocationLongLat_type"

            minOccurs="0" maxOccurs="1" />

         <xsd:element name="XYCoordinate"
type="addr_type:LocationXY_type"

            minOccurs="0" maxOccurs="1" />

         <xsd:element name="AdressZLevel"
type="addr_type:AddressZLevel_type"

            minOccurs="0" maxOccurs="1" />

      </xsd:sequence>

   </xsd:complexType>



   <xsd:complexType name="CompleteStreetName_type">

      <xsd:sequence>

         <xsd:element name="StreetNamePreModifier"
type="addr_type:StreetNamePreModifier_type"

            minOccurs="0" maxOccurs="1" />

         <xsd:element name="StreetNamePreDirectional"
type="addr_type:StreetNamePreDirectional_type"

            minOccurs="0" maxOccurs="1" />

         <xsd:element name="StreetNamePreType"
type="addr_type:StreetNamePreType_type"

            minOccurs="0" maxOccurs="1" />

         <xsd:element name="StreetName"
type="addr_type:StreetName_type"

            minOccurs="1" maxOccurs="1" />

         <xsd:element name="StreetNamePostType"
type="addr_type:StreetNamePreType_type"
```

```
            minOccurs="0" maxOccurs="1" />

         <xsd:element name="StreetNamePostDirectional"
type="addr_type:StreetNamePreDirectional_type"

            minOccurs="0" maxOccurs="1" />

         <xsd:element name="StreetNamePostModifier"
type="addr_type:StreetNamePreModifier_type"

            minOccurs="0" maxOccurs="1" />

      </xsd:sequence>
      <xsd:attribute name="AttachedElement"
type="addr_type:AttachedElement_type" />

   </xsd:complexType>

   <xsd:group name="CompleteStreetName_group">
      <xsd:sequence>
         <xsd:element name="StreetNamePreModifier"
type="addr_type:StreetNamePreModifier_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="StreetNamePreDirectional"
type="addr_type:StreetNamePreDirectional_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="StreetNamePreType"
type="addr_type:StreetNamePreType_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="StreetName"
type="addr_type:StreetName_type"
            minOccurs="1" maxOccurs="1" />
         <xsd:element name="StreetNamePostType"
type="addr_type:StreetNamePreType_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="StreetNamePostDirectional"
type="addr_type:StreetNamePreDirectional_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="StreetNamePostModifier"
type="addr_type:StreetNamePreModifier_type"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
   </xsd:group>


   <xsd:group name="CompleteAddressNumber_group">

        <xsd:annotation>

          <xsd:documentation>The portion of the Complete Address
Number which follows the Address Number itself.

1. The Address Number element is required to compose a Complete Address
Number. The other elements are optional.
2. The Address Number must be converted from integer to characterString
when constructing the Complete Address Number.
```

3. The great majority of Complete Address Numbers are simple integers. Infrequently the integer is followed by an alphanumeric Address Number Suffix, typically a letter or a fraction. Even more rarely the integer is preceded by an alphanumeric Address Number Prefix. In addition to the typical numbering format, four special-case formats are found in the United States: Milepost addresses, grid-style address numbers, hyphenated address numbers, and other Address Number Prefix letters or symbols.
4. Milepost Complete Address Numbers (Example: "Milepost 240"). Road mileposts are sometimes used to specify locations along highways and similar roads. Mileposts are often used to locate, for example, crash sites, emergency call boxes, bridge locations, inspection stations, roadside rest stops, railroad crossings, highway exits, park and campground entrances, RV parks, and truck stops. Milepost addresses should be parsed as follows:
---"Milepost" (or equivalent word or phrase, such as "kilometer" or 'Mile Marker") is an Address Number Prefix
---The milepost number (integer part only) is an Address Number
---Tenths, if given, are an Address Number Suffix, including the decimal point.
---The road name or highway route number is a Complete Street Name, and parsed accordingly
Note that, in Puerto Rico, road measurements are given in kilometers (km), which are sometimes divided into hectometers (hm).
5. Grid-style Complete Address Numbers (Example: "N89W16758"). In certain communities in and around southern Wisconsin, Complete Address Numbers include a map grid cell reference preceding the Address Number. In the examples above, "N89W16758" should be read as "North 89, West 167, Address Number 58". "W63N645" should be read as "West 63, North, Address Number 645." The north and west values specify a locally-defined map grid cell with which the address is located. Local knowledge is needed to know when the grid reference stops and the Address Number begins.
6. Hyphenated Complete Address Numbers (Example: "5-5415"). In some areas (notably certain parts of New York City, southern California, and Hawaii), Complete Address Numbers often include hyphens. Hyphenated Complete Address Numbers should not be confused with Two Number Address Ranges. The former is a single Complete Address Number while the latter includes two Complete Address Numbers.
7. Hyphenated Complete Address Numbers can be parsed so that the number indicating the site or structure is the Address Number, and the remainder (including the hyphen) is the Address Number Prefix or Address Number Suffix.
8. In New York City, hyphenated Complete Address Numbers (the recommended format for storing complete address numbers in New York City) follow a more complex set of rules. The number to the left of the hyphen indicates the "block" (conceptually--the number does not always change at street intersections and sometimes it changes within a single block face). The number to the right of the hyphen indicates the site or house number within the "block". If the Address Number is less than ten, it is written with a leading zero, as in 194-03 1/2 above. Additional leading zeros may be added to either number to provide for correct sorting if the entire Complete Address Number is treated as a characterString with the hyphen included. Within the address standard, these numbers can be constructed and parsed as follows:
a. The left-side number (194) and the hyphen form the Address Number Prefix element (text), with leading zeros shown if needed.

```
b. The right-side number (3) is the Address Number (integer), converted
to a characterString with the leading zero(s) added (03) upon
conversion to Complete Address Number.
c. The suffix, if any (such as the "1/2" in 194-03 1/2), is an Address
Number Suffix.
9. Other Address Number Prefix Letters or Symbols. In Puerto Rico,
Address Numbers are commonly preceded by an Address Number Prefix
letter (e.g. "A 19"). In Portland, OR, negative Address Numbers have
been assigned in an area along the west bank of the Willamette River.
The minus sign is represented as a leading zero ("0121" and "121" are
two different Complete Address Numbers). In such cases the leading zero
should be treated as an Address Number Prefix.
10. Zero as a Complete Address Number. Special care should be taken
with records where the Address Number is 0 (zero). Occasionally zero is
issued as a valid address number (e.g. 0 Prince Street, Alexandria, VA
22314) or it can be imputed (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"). More often, though, the Address Number is either missing or
non-existent, and null value has been converted to zero.
11. Address Numbers vs. Address "Letters". In rare instances,
thoroughfare addresses may be identified by letters instead of numbers
(for example, "A" Main Street, "B" Main Street, "C" Main Street, "AA"
Main Street, "AB" Main Street, etc.) A few thousand such cases have
been verified in Puerto Rico, and others may be found elsewhere. In
such cases, the letter(s) cannot be treated as an Address Number,
because an Address Number must be an integer. The letter(s) also cannot
be an Address Number Prefix or Address Number Suffix, because neither
of those can be created except in conjunction with an Address Number.
Instead, the letter(s) should be treated a Subaddress Identifier in an
Unnumbered Thoroughfare Address. (For example: Complete Street Name =
"Calle Sanchez", Complete Subaddress Identifier = "AB", Complete Place
Name = "Mayaguez" State Name = "PR"). As an alternative, the address
may be classified in the General Address Class and treated accordingly.
</xsd:documentation>

        </xsd:annotation>

        <xsd:sequence>

         <xsd:element name="AddressNumberPrefix"
type="addr_type:AddressNumberPrefix_type"

            minOccurs="0" maxOccurs="1" />

         <xsd:element name="AddressNumber"
type="addr_type:AddressNumber_type"

            minOccurs="1" maxOccurs="1" />

         <xsd:element name="AddressNumberSuffix"
type="addr_type:AddressNumberSuffix_type"

            minOccurs="0" maxOccurs="1" />

      </xsd:sequence>

   </xsd:group>
```

```
   <xsd:complexType name="CompleteAddressNumber_type">

      <xsd:sequence>

         <xsd:element name="AddressNumberPrefix"
type="addr_type:AddressNumberPrefix_type"

            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressNumber"
type="addr_type:AddressNumber_type"
            minOccurs="1" maxOccurs="1" />
         <xsd:element name="AddressNumberSuffix"
type="addr_type:AddressNumberSuffix_type"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
      <xsd:attribute name="AddressNumberParity"
type="addr_type:AddressNumberParity_type" />
      <xsd:attribute name="AttachedElement"
type="addr_type:AttachedElement_type" />
   </xsd:complexType>

   <xsd:complexType name="AddressNumberRange_type">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            { Complete Address

            Number (low)*} + { Separator Element

            *} + { Complete Address Number

            (high)*} A set of two

            address numbers, separated by a "Separator",

            representing the low and high numbers of an address

            range. An address

            number range element should be

            accompanied by an Address Range Type

            Attribute that

            describes the type of range presented in this element.

         </xsd:documentation>

      </xsd:annotation>

      <xsd:sequence>
```

```
         <xsd:element name="CompleteAddressNumber"
type="addr_type:CompleteAddressNumber_type"

            minOccurs="2" maxOccurs="2" />

      </xsd:sequence>

      <xsd:attribute name="Separator" type="addr_type:Separator_type"
/>

      <xsd:attribute name="Parity"
type="addr_type:AddressNumberParity_type" />

      <xsd:attribute name="Side"
type="addr_type:AddressNumberSide_type" />

   </xsd:complexType>



   <xsd:complexType name="PlaceName_type">

      <xsd:simpleContent>

         <xsd:extension base="xsd:string">

            <xsd:attribute name="PlaceNameType"
type="addr_type:PlaceNameType_type" />
            <xsd:attribute name="ElementSequenceNumber"
               type="addr_type:ElementSequenceNumber_type" />
            <xsd:attribute name="GNISFeatureID"
type="addr_type:GNISFeatureID_type" />
         </xsd:extension>
      </xsd:simpleContent>
   </xsd:complexType>

   <xsd:complexType name="CompleteSubaddress_type">

      <xsd:sequence>

         <xsd:element name="SubaddressElement"
type="addr_type:SubaddressElement_type"

            minOccurs="1" maxOccurs="unbounded" />

      </xsd:sequence>

   </xsd:complexType>

   <xsd:complexType name="CompleteLandmarkName_type">
      <xsd:sequence>
         <xsd:element name="LandmarkName"
type="addr_type:LandmarkName_type"
            minOccurs="1" maxOccurs="unbounded" />
      </xsd:sequence>
      <xsd:attribute name="Separator" type="addr_type:Separator_type"
/>
```

```
   </xsd:complexType>

   <xsd:complexType name="CompletePlaceName_type">
      <xsd:sequence>
         <xsd:element name="PlaceName" type="addr_type:PlaceName_type"
            minOccurs="1" maxOccurs="unbounded" />
      </xsd:sequence>
      <xsd:attribute name="Separator" type="addr_type:Separator_type"
/>
   </xsd:complexType>


   <!-- Supporting Information -->



   <xsd:group name="AddressAttributes_group">

      <xsd:annotation>

         <xsd:documentation xml:lang="en">

            Support information and record level metadata for each
Address

         </xsd:documentation>

      </xsd:annotation>

      <xsd:sequence>

         <xsd:element name="AddressId" type="addr_type:AddressID_type"

            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressAuthority"
type="addr_type:AddressAuthority_type"
            minOccurs="0" maxOccurs="1" />

         <xsd:element name="RelatedAddressId"
type="addr_type:AssociatedAddressId_type"

            minOccurs="0" maxOccurs="unbounded" />

         <xsd:element name="AddressXCoordinate"
type="addr_type:AddressXCoordinate_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressYCoordinate"
type="addr_type:AddressYCoordinate_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressLongitude"
type="addr_type:AddressLongitude_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressLatitude"
type="addr_type:AddressLatitude_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="USNationalGridCoordinate"
type="addr_type:LocationUSNG_type"
```

```
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressElevation"
type="addr_type:AddressElevation_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressCoordinateReferenceSystem"
type="addr_type:AddressCoordinateReferenceSystem_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressParcelIdentifierSource"
type="addr_type:AddressParcelIdentifierSource_type"
            minOccurs="0" maxOccurs="unbounded" />
         <xsd:element name="AddressParcelIdentifier"
type="addr_type:AddressParcelIdentifier_type"
            minOccurs="0" maxOccurs="unbounded" />

         <xsd:element name="AddressTransportationSystemName"
type="addr_type:AddressTransportationSystemName_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressTransportationSystemAuthority"
type="addr_type:AddressTransportationSystemAuthority_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressTransportationFeatureType"
type="addr_type:AddressTransportationFeatureType_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressTransportationFeatureID"
type="addr_type:AssociatedAddressId_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="RelatedTransportationFeatureID"
type="addr_type:AssociatedAddressId_type"
            minOccurs="0" maxOccurs="unbounded" />

         <xsd:element name="AddressRangeType"
type="addr_type:AddressRangeType_type"
            minOccurs="0" maxOccurs="2" />
         <xsd:element name="AddressRangeParity"
type="addr_type:AddressRangeParity_type"
            minOccurs="0" maxOccurs="2" />
         <xsd:element name="AddressRangeDirectionality"
type="addr_type:AddressRangeDirectionality_type"
            minOccurs="0" maxOccurs="2" />
         <xsd:element name="AddressRangeSpan"
type="addr_type:AddressRangeSpan_type"
            minOccurs="0" maxOccurs="unbounded" />

         <xsd:element name="AddressClassification"
type="addr_type:AddressClassification_type"
             maxOccurs="1" minOccurs="0"/>
         <xsd:element name="AddressFeatureType"
type="addr_type:AddressFeatureType_type"
            minOccurs="0" maxOccurs="unbounded" />
         <xsd:element name="AddressLifecycleStatus"
type="addr_type:AddressLifecycleStatus_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="OfficialStatus"
type="addr_type:OfficialStatus_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressAnomalyStatus"
type="addr_type:AddressAnomalyStatus_type"
```

```
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressSideOfStreet"
type="addr_type:AddressSideOfStreet_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="AddressZLevel"
type="addr_type:AddressZLevel_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="LocationDescription"
type="addr_type:LocationDescription_type"
            minOccurs="0" maxOccurs="1" />
         <xsd:element name="MailableAddress"
type="addr_type:MailableAddress_type"
            minOccurs="0" maxOccurs="1" />


         <xsd:element name="AddressStartDate"
type="addr_type:AddressStartDate_type"

            minOccurs="0" maxOccurs="1" />

         <xsd:element name="AddressEndDate"
type="addr_type:AddressEndDate_type"

            minOccurs="0" maxOccurs="1" />

         <xsd:element name="DataSetID" type="addr_type:DataSetID_type"

            minOccurs="0" maxOccurs="1" />


         <xsd:element name="AddressReferenceSystemId"
type="addr_type:AddressReferenceSystemId_type"
            minOccurs="0" maxOccurs="1" />

         <xsd:element name="AddressReferenceSystemAuthority"
type="addr_type:AddressReferenceSystemAuthority_type"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>

   </xsd:group>



   <!--  End Content Types -->



   <!-- Begin Utility Groups -->

   <xsd:group name="ZipCode_group">
      <xsd:sequence>
         <xsd:element name="ZipCode" type="addr_type:ZipCode_type"
            minOccurs="1" maxOccurs="1" />
         <xsd:element name="ZipPlus4" type="addr_type:ZipPlus4_type"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
   </xsd:group>
```

```
   <xsd:group name="PlaceStateZip_group">
      <xsd:choice>
         <xsd:sequence>
            <xsd:element name="CompletePlaceName"
               type="addr_type:CompletePlaceName_type" minOccurs="1"
               maxOccurs="1" />
            <xsd:element name="StateName"
               type="addr_type:StateName_type" minOccurs="1"
maxOccurs="1" />
            <xsd:group ref="addr_type:ZipCode_group" minOccurs="0"
               maxOccurs="1" />
            <xsd:element name="CountryName"
               type="addr_type:CountryName_type" maxOccurs="1"
minOccurs="0" />
         </xsd:sequence>
         <xsd:element name="PlaceStateZip"
type="addr_type:PlaceStateZip_type" maxOccurs="unbounded"
minOccurs="1"/>
      </xsd:choice>
   </xsd:group>


   <!--  End Utility Groups -->

</xsd:schema>
```

addr.xsd

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema targetNamespace="addr"
   xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:addr="addr"
   xmlns:addr_type="addr_type"
   xmlns:gml="http://opengeospatial.net/gml">

   <!--
      Draft Address Standard, version 0.4.3 being prepared and tested
by a
      Working Group coordinated by URISA and NENA and the Census Bureau
for
      submittal to the FGDC.
   -->
   <!--
      During the initial draft period the rddl can be found at
      http://www.urisa.org/files/addr_std/0.4.3/addr.xsd
   -->

   <xsd:import namespace="addr_type" schemaLocation="addr_type.xsd">
      <xsd:annotation>
         <xsd:documentation>
            Base types form the AddressStandard
```

```
         </xsd:documentation>
      </xsd:annotation>
   </xsd:import>


   <!-- Begin Support Groups -->
   <xsd:group name="IntersectionAddress_StreetName_group">
      <xsd:sequence>
         <xsd:element name="SeparatorElement"
            type="addr_type:Separator_type" maxOccurs="1" minOccurs="1"
/>
         <xsd:element name="CompleteStreetName"
            type="addr_type:CompleteStreetName_type" maxOccurs="1"
            minOccurs="1" />
      </xsd:sequence>
   </xsd:group>

   <!-- Begin Base Class Types -->

   <!-- Thoroughfare Addresses  -->

   <xsd:complexType name="NumberedThoroughfareAddress_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">Defining Characteristics:
   1. Addresses of this class must include a Complete Address Number
and a Complete Street Name.
   2. In addition, all thoroughfare, landmark, and postal addresses
must include a Place Name and a State Name. A Zip Code is recommended
but not mandatory.    </xsd:documentation>
      </xsd:annotation>
      <xsd:sequence>
         <xsd:choice>
            <xsd:element name="CompleteLandmarkName"
               type="addr_type:CompleteLandmarkName_type" minOccurs="0"
               maxOccurs="1" />
            <xsd:element name="CompletePlaceName"
               type="addr_type:CompletePlaceName_type" minOccurs="0"
               maxOccurs="1" />
         </xsd:choice>
         <xsd:element name="CompleteAddressNumber"
            type="addr_type:CompleteAddressNumber_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:element name="CompleteStreetName"
            type="addr_type:CompleteStreetName_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:element name="CompleteSubaddress"
            type="addr_type:CompleteSubaddress_type" minOccurs="0"
            maxOccurs="1" />
         <xsd:group ref="addr_type:PlaceStateZip_group" minOccurs="0"
            maxOccurs="unbounded" />
         <xsd:group ref="addr_type:AddressAttributes_group"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
      <xsd:attribute name="action" type="addr_type:Action_type"
         use="optional" />
   </xsd:complexType>
```

```
   <xsd:complexType name="IntersectionAddress_type">
         <xsd:annotation>
            <xsd:documentation>Defining Characteristics:
   1. An address of this class must include two or more Complete Street
Names, each separated by a Separator Element.
   2. In addition, all thoroughfare, landmark, and postal addresses
must include a Place Name and a State Name. A Zip Code is recommended
but not mandatory.

         </xsd:documentation>
         </xsd:annotation>
         <xsd:sequence>
         <xsd:choice>
            <xsd:element name="CompleteLandmarkName"
               type="addr_type:CompleteLandmarkName_type" minOccurs="0"
               maxOccurs="1" />
            <xsd:element name="CompletePlaceName"
               type="addr_type:CompletePlaceName_type" minOccurs="0"
               maxOccurs="1" />
         </xsd:choice>
         <xsd:element name="CornerOf" type="addr_type:CornerOf_type"
minOccurs="0"
             maxOccurs="1"></xsd:element>
         <xsd:element name="CompleteStreetName"
            type="addr_type:CompleteStreetName_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:group ref="addr:IntersectionAddress_StreetName_group"
            minOccurs="1" maxOccurs="unbounded" />
         <xsd:group ref="addr_type:PlaceStateZip_group" minOccurs="1"
            maxOccurs="1" />
         <xsd:group ref="addr_type:AddressAttributes_group"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
      <xsd:attribute name="action" type="addr_type:Action_type"
         use="optional" />
   </xsd:complexType>

   <xsd:complexType name="TwoNumberAddressRange_type">
         <xsd:annotation>
            <xsd:documentation>Defining Characteristics
   1. Addresses of this class must include two Complete Address Numbers
separated by a hyphen. The first Complete Address Number must be less
than or equal to the second.
   2. The two Complete Address Numbers must be followed by a Complete
Street Name.
   3. In addition, all thoroughfare, landmark, and postal addresses
must include a Place Name and a State Name. A Zip Code is recommended
but not mandatory.
         </xsd:documentation>
         </xsd:annotation>
         <xsd:sequence>
         <xsd:choice>
            <xsd:element name="CompleteLandmarkName"
               type="addr_type:CompleteLandmarkName_type" minOccurs="0"
               maxOccurs="1" />
            <xsd:element name="CompletePlaceName"
```

```
               type="addr_type:CompletePlaceName_type" minOccurs="0"
               maxOccurs="1" />
         </xsd:choice>
         <xsd:element name="CompleteAddressNumber"
            type="addr_type:CompleteAddressNumber_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:element name="SeparatorElement"
            type="addr_type:Separator_type" maxOccurs="1" minOccurs="1"
/>
         <xsd:element name="CompleteAddressNumber"
            type="addr_type:CompleteAddressNumber_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:element name="CompleteStreetName"
            type="addr_type:CompleteStreetName_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:group ref="addr_type:PlaceStateZip_group" minOccurs="1"
            maxOccurs="unbounded" />
         <xsd:group ref="addr_type:AddressAttributes_group"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
      <xsd:attribute name="action" type="addr_type:Action_type"
         use="optional" />
   </xsd:complexType>

   <xsd:complexType name="FourNumberAddressRange_type">
      <xsd:annotation>
         <xsd:documentation>Defining Characteristics:
   1. Addresses of this class must include four Complete Address
Numbers, representing respectively the left low, left high, right low,
and right high four Complete Address Numbers for the block or
transportation segment(s), followed by a Complete Street Name.
   2. In addition, all thoroughfare, landmark, and postal addresses
must include a Place Name and a State Name. A Zip Code is recommended
but not mandatory.
   3. The Four Number Address Range syntax follows the structure
established by the U.S. Census Bureau for TIGER/Line file street
segment address ranges (see
http://www.census.gov/geo/www/tiger/tgrshp2008/TGRSHP08.pdf ("All Lines
Shapefile" attribute table layout)). </xsd:documentation>
      </xsd:annotation>
      <xsd:sequence>
         <xsd:choice>
            <xsd:element name="CompleteLandmarkName"
               type="addr_type:CompleteLandmarkName_type" minOccurs="0"
               maxOccurs="1" />
            <xsd:element name="CompletePlaceName"
               type="addr_type:CompletePlaceName_type" minOccurs="0"
               maxOccurs="1" />
         </xsd:choice>
         <xsd:element name="CompleteAddressNumber"
            type="addr_type:CompleteAddressNumber_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:element name="SeparatorElement"
            type="addr_type:Separator_type" maxOccurs="1" minOccurs="1"
/>
         <xsd:element name="CompleteAddressNumber"
            type="addr_type:CompleteAddressNumber_type" minOccurs="1"
```

```
            maxOccurs="1" />

         <xsd:element name="CompleteAddressNumber"
            type="addr_type:CompleteAddressNumber_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:element name="SeparatorElement"
            type="addr_type:Separator_type" maxOccurs="1" minOccurs="1"
/>
         <xsd:element name="CompleteAddressNumber"
            type="addr_type:CompleteAddressNumber_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:element name="CompleteStreetName"
            type="addr_type:CompleteStreetName_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:group ref="addr_type:PlaceStateZip_group" minOccurs="1"
            maxOccurs="1" />
         <xsd:group ref="addr_type:AddressAttributes_group"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
      <xsd:attribute name="action" type="addr_type:Action_type"
         use="optional" />
   </xsd:complexType>

   <xsd:complexType name="UnnumberedThoroughfareAddress_type">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">Defining Characteristics:
   1. Addresses of this class must contain a Complete Street Name with
no Complete Address Number preceding it.
   2. In addition, all thoroughfare, landmark, and postal addresses
must include a Place Name and a State Name. A Zip Code is recommended
but not mandatory. </xsd:documentation>
      </xsd:annotation>
      <xsd:sequence>
         <xsd:choice>
            <xsd:element name="CompleteLandmarkName"
               type="addr_type:CompleteLandmarkName_type" minOccurs="0"
               maxOccurs="1" />
            <xsd:element name="CompletePlaceName"
               type="addr_type:CompletePlaceName_type" minOccurs="0"
               maxOccurs="1" />
         </xsd:choice>
         <xsd:element name="CompleteStreetName"
            type="addr_type:CompleteStreetName_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:element name="CompleteSubaddress"
            type="addr_type:CompleteSubaddress_type" minOccurs="0"
            maxOccurs="1" />
         <xsd:group ref="addr_type:PlaceStateZip_group" minOccurs="1"
            maxOccurs="1" />
         <xsd:group ref="addr_type:AddressAttributes_group"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
      <xsd:attribute name="action" type="addr_type:Action_type"
         use="optional" />
   </xsd:complexType>

   <!-- Landmark Address Classes -->
```

```
   <xsd:complexType name="LandmarkAddress_type">
        <xsd:annotation>
           <xsd:documentation>Defining Characteristics:
   1. Addresses of this class must include a Complete Landmark Name,
with no Complete Address Number preceding it and no Complete Street
Name following it.
   2. In addition, all thoroughfare, landmark, and postal addresses
must include a Place Name and a State Name. A Zip Code is recommended
but not mandatory. </xsd:documentation>
        </xsd:annotation>
        <xsd:sequence>
         <xsd:element name="CompleteLandmarkName"
            type="addr_type:CompleteLandmarkName_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:element name="CompleteSubaddress"
            type="addr_type:CompleteSubaddress_type" minOccurs="0"
            maxOccurs="1" />
         <xsd:group ref="addr_type:PlaceStateZip_group" minOccurs="1"
            maxOccurs="1" />
         <xsd:group ref="addr_type:AddressAttributes_group"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
      <xsd:attribute name="action" type="addr_type:Action_type"
         use="optional" />
   </xsd:complexType>

   <xsd:complexType name="CommunityAddress_type">
      <xsd:annotation>
         <xsd:documentation>Defining Characteristics:
   1. Addresses of this class must include a Complete Address Number
followed by a Complete Landmark Name or a Complete Place Name, and they
must not include a Complete Street Name.
   2. In addition, all thoroughfare, landmark, and postal addresses
must include a Place Name and a State Name. A Zip Code is recommended
but not mandatory. </xsd:documentation>
      </xsd:annotation>
      <xsd:sequence>
         <xsd:element name="CompleteAddressNumber"
            type="addr_type:CompleteAddressNumber_type" minOccurs="1"
            maxOccurs="1" />
         <xsd:choice>
            <xsd:element name="CompleteLandmarkName"
               type="addr_type:CompleteLandmarkName_type" minOccurs="1"
               maxOccurs="1" />
            <xsd:element name="CompletePlaceName"
               type="addr_type:CompletePlaceName_type" minOccurs="1"
               maxOccurs="1" />
         </xsd:choice>
         <xsd:element name="CompleteSubaddress"
            type="addr_type:CompleteSubaddress_type" minOccurs="0"
            maxOccurs="1" />
         <xsd:group ref="addr_type:PlaceStateZip_group" minOccurs="1"
            maxOccurs="1" />
         <xsd:group ref="addr_type:AddressAttributes_group"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
```

```
      <xsd:attribute name="action" type="addr_type:Action_type"
         use="optional" />
   </xsd:complexType>

   <!-- Postal Delivery Address Classes -->
   <xsd:complexType name="USPSPostalDeliveryBox_type">
        <xsd:annotation>
           <xsd:documentation>Defining Characteristics:
   1. Addresses of this class must include a USPS Box in the required
format, and must not include a USPS Route.
   2. In addition, all thoroughfare, landmark, and postal addresses
must include a Place Name and a State Name. A Zip Code is recommended
but not mandatory. </xsd:documentation>
        </xsd:annotation>
        <xsd:sequence>
         <xsd:element name="USPSBox" type="addr_type:USPSBox_type"
            minOccurs="1" maxOccurs="1" />
         <xsd:element name="CompleteSubaddress"
            type="addr_type:CompleteSubaddress_type" minOccurs="0"
            maxOccurs="1" />
         <xsd:group ref="addr_type:PlaceStateZip_group" minOccurs="1"
            maxOccurs="1" />
         <xsd:group ref="addr_type:AddressAttributes_group"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
      <xsd:attribute name="action" type="addr_type:Action_type"
         use="optional" />
   </xsd:complexType>

   <xsd:complexType name="USPSPostalDeliveryRoute_type">
        <xsd:annotation>
           <xsd:documentation>Defining Characteristics:
   1. Addresses of this class must include a USPS Address in the
specified RR or HC or overseas military delivery format.
   2. In addition, all thoroughfare, landmark, and postal addresses
must include a Place Name and a State Name. A Zip Code is recommended
but not mandatory. </xsd:documentation>
        </xsd:annotation>
        <xsd:sequence>
         <xsd:element name="USPSAddress"
            type="addr_type:USPSAddress_type" minOccurs="1"
maxOccurs="1" />
         <xsd:group ref="addr_type:PlaceStateZip_group" minOccurs="1"
            maxOccurs="1" />

         <xsd:group ref="addr_type:AddressAttributes_group"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
      <xsd:attribute name="action" type="addr_type:Action_type"
         use="optional" />
   </xsd:complexType>

   <xsd:complexType name="USPSGeneralDeliveryOffice_type">
        <xsd:annotation>
           <xsd:documentation>Defining Characteristics:
   1. Addresses of this class must include a USPSGeneral Delivery Point
in the specified format.
```

```
   2. In addition, all thoroughfare, landmark, and postal addresses
must include a Place Name and a State Name. A Zip Code is recommended
but not mandatory. </xsd:documentation>
        </xsd:annotation>
        <xsd:sequence>
         <xsd:element name="USPSGeneralDeliveryPoint"
            type="addr_type:USPSGeneralDeliveryPoint_type" />
         <xsd:group ref="addr_type:PlaceStateZip_group" minOccurs="1"
            maxOccurs="1" />
         <xsd:group ref="addr_type:AddressAttributes_group"
            minOccurs="0" maxOccurs="1" />
      </xsd:sequence>
      <xsd:attribute name="action" type="addr_type:Action_type"
         use="optional" />
   </xsd:complexType>

   <xsd:complexType name="GeneralAddressClass_type">
        <xsd:annotation>
           <xsd:documentation>Defining Characteristic:
  In addresses of this class the Delivery Address must be unparsed
(except that in Types 2 and 3 the Complete Subaddress may be separated
from the rest of the Delivery Address) and may contain thoroughfare,
landmark, or postal syntaxes. This class may also include addresses
that do not conform to any of the thoroughfare, landmark, or postal
classes, including non-U.S. addresses. </xsd:documentation>
        </xsd:annotation>
        <xsd:choice>
         <xsd:element name="GeneralAddress"
            type="addr_type:GeneralAddress_type" />
         <xsd:sequence>
            <xsd:element name="USPSGeneralDeliveryPoint"
               type="addr_type:USPSGeneralDeliveryPoint_type" />
            <xsd:group ref="addr_type:PlaceStateZip_group"
               minOccurs="1" maxOccurs="1" />
            <xsd:group ref="addr_type:AddressAttributes_group"
               minOccurs="0" maxOccurs="1" />
         </xsd:sequence>
      </xsd:choice>
      <xsd:attribute name="action" type="addr_type:Action_type" />
   </xsd:complexType>

   <xsd:group name="AddressCollection_group">
      <xsd:annotation>
         <xsd:documentation>
            The Single Choice Union of all Address Types
         </xsd:documentation>
      </xsd:annotation>
      <xsd:choice>
         <xsd:element name="NumberedThoroughfareAddress"
            type="addr:NumberedThoroughfareAddress_type" minOccurs="0"
            maxOccurs="unbounded" />
         <xsd:element name="IntersectionAddress"
            type="addr:IntersectionAddress_type" minOccurs="0"
            maxOccurs="unbounded" />
         <xsd:element name="TwoNumberAddressRange"
            type="addr:TwoNumberAddressRange_type" minOccurs="0"
            maxOccurs="unbounded" />
```

```
         <xsd:element name="FourNumberAddressRange"
            type="addr:FourNumberAddressRange_type" minOccurs="0"
            maxOccurs="unbounded" />
         <xsd:element name="UnnumberedThoroughfareAddress"
            type="addr:UnnumberedThoroughfareAddress_type"
minOccurs="0"
            maxOccurs="unbounded" />

         <xsd:element name="LandmarkAddress"
            type="addr:LandmarkAddress_type" minOccurs="0"
            maxOccurs="unbounded" />
         <xsd:element name="CommunityAddress"
            type="addr:CommunityAddress_type" minOccurs="0"
            maxOccurs="unbounded" />

         <xsd:element name="USPSPostalDeliveryBox"
            type="addr:USPSPostalDeliveryBox_type" minOccurs="0"
            maxOccurs="unbounded" />
         <xsd:element name="USPSPostalDeliveryRoute"
            type="addr:USPSPostalDeliveryRoute_type" minOccurs="0"
            maxOccurs="unbounded" />
         <xsd:element name="USPSGeneralDeliveryOffice"
            type="addr:USPSGeneralDeliveryOffice_type" minOccurs="0"
            maxOccurs="unbounded" />

         <xsd:element name="GeneralAddressClass"
            type="addr:GeneralAddressClass_type" minOccurs="0"
            maxOccurs="unbounded" />

         <xsd:element name="AddressReferenceSystem"
            type="addr_type:AddressReferenceSystem_type" minOccurs="0"
            maxOccurs="unbounded" />
      </xsd:choice>
   </xsd:group>

   <!-- End Complex Types -->

   <!-- Wrapper collecting a set of addresses -->
   <xsd:element name="AddressCollection">
      <xsd:complexType mixed="false">
         <xsd:choice minOccurs="1" maxOccurs="unbounded">
            <xsd:group ref="addr:AddressCollection_group" />
         </xsd:choice>
         <xsd:attribute name="version" type="addr_type:version_type"
            use="required" />
      </xsd:complexType>
   </xsd:element>
</xsd:schema>
```

Appendix B (Informative): Examples of Exchange Packages

Address exchange packages can be simple, complex and anywhere in between. For clarity each of the Address Classes are shown here in a complete exchange package for reference and review.

Thoroughfare Address Classes

Numbered Thoroughfare Address

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <NumberedThoroughfareAddress>
  <CompleteAddressNumber>
   <AddressNumber>123</AddressNumber>
  </CompleteAddressNumber>
  <CompleteStreetName>
   <StreetName>Main</StreetName>
   <StreetNamePostType>Street</StreetNamePostType>
  </CompleteStreetName>
  <CompletePlaceName>
   <PlaceName>Buffalo Lake</PlaceName>
  </CompletePlaceName>
  <StateName>MN</StateName>
  <ZipCode>55314</ZipCode>
  </NumberedThoroughfareAddress>
 </addr:AddressCollection>
```

Intersection Address

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <IntersectionAddress>
  <CompleteStreetName>
   <StreetName>Boardwalk</StreetName>
  </CompleteStreetName>
  <SeparatorElement>and</SeparatorElement>
  <CompleteStreetName>
```

```
   <StreetName>Park</StreetName>
   <StreetNamePostType>Place</StreetNamePostType>
  </CompleteStreetName>
  <CompletePlaceName>
   <PlaceName>Atlantic City</PlaceName>
  </CompletePlaceName>
  <StateName>NJ</StateName>
  </IntersectionAddress>
 </addr:AddressCollection>
```

Two Number Address Range

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <TwoNumberAddressRange>
  <CompleteAddressNumber>
   <AddressNumber>401</AddressNumber>
  </CompleteAddressNumber>
  <SeparatorElement>-</SeparatorElement>
  <CompleteAddressNumber>
   <AddressNumber>418</AddressNumber>
  </CompleteAddressNumber>
  <CompleteStreetName>
   <StreetName>Green</StreetName>
   <StreetNamePostType>Street</StreetNamePostType>
  </CompleteStreetName>
  <CompletePlaceName>
   <PlaceName>Flint</PlaceName>
  </CompletePlaceName>
  <StateName>MI</StateName>
  <ZipCode>48503</ZipCode>
  </TwoNumberAddressRange>
 </addr:AddressCollection>
```

Four Number Address Range

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <FourNumberAddressRange>
  <CompleteAddressNumber>
   <AddressNumber>1900</AddressNumber>
```

```
  </CompleteAddressNumber>
  <SeparatorElement>-</SeparatorElement>
  <CompleteAddressNumber>
   <AddressNumber>1908</AddressNumber>
  </CompleteAddressNumber>
  <CompleteAddressNumber>
   <AddressNumber>1901</AddressNumber>
  </CompleteAddressNumber>
  <SeparatorElement>-</SeparatorElement>
  <CompleteAddressNumber>
   <AddressNumber>1909</AddressNumber>
  </CompleteAddressNumber>
  <CompleteStreetName>
   <StreetName>Bear</StreetName>
   <StreetNamePostType>court</StreetNamePostType>
  </CompleteStreetName>
  <CompletePlaceName>
   <PlaceName>Fort Collins</PlaceName>
  </CompletePlaceName>
  <StateName>CO</StateName>
  <ZipCode>80525</ZipCode>
  </FourNumberAddressRange>
 </addr:AddressCollection>
```

Unnumbered Thoroughfare Address

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <UnnumberedThoroughfareAddress>
  <CompleteStreetName>
   <StreetName>Fagaima</StreetName>
   <StreetNamePostType>Road</StreetNamePostType>
  </CompleteStreetName>
  <CompletePlaceName>
   <PlaceName>Nu'uli</PlaceName>
  </CompletePlaceName>
  <StateName>AS</StateName>
  <ZipCode>96799</ZipCode>
  </UnnumberedThoroughfareAddress>
 </addr:AddressCollection>
```

Landmark Address Classes

Landmark Address

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
```

```
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <LandmarkAddress>
  <CompleteLandmarkName>
   <LandmarkName>Condominium Garden Hills Plaza</LandmarkName>
  </CompleteLandmarkName>
  <CompleteSubaddress>
   <SubaddressElement SubaddressComponentOrder="1">
   <SubaddressType>Torre</SubaddressType>
   <SubaddressIdentifier>2</SubaddressIdentifier>
   </SubaddressElement>
   <SubaddressElement>
   <SubaddressType>Apartamento</SubaddressType>
   <SubaddressIdentifier>905</SubaddressIdentifier>
   </SubaddressElement>
  </CompleteSubaddress>
  <CompletePlaceName>
   <PlaceName>Mayaguez</PlaceName>
  </CompletePlaceName>
  <StateName>PR</StateName>
  <ZipCode>00608</ZipCode>
  <ZipPlus4>1233</ZipPlus4>
  </LandmarkAddress>
 </addr:AddressCollection>
```

Community Address

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <CommunityAddress>
  <CompleteAddressNumber>
   <AddressNumberPrefix>A</AddressNumberPrefix>
   <AddressNumber>17</AddressNumber>
  </CompleteAddressNumber>
  <CompleteLandmarkName>
   <LandmarkName>Jardine Fagota</LandmarkName>
  </CompleteLandmarkName>
  <CompletePlaceName>
   <PlaceName>Ponce</PlaceName>
  </CompletePlaceName>
  <StateName>PR</StateName>
  <ZipCode>00731</ZipCode>
  </CommunityAddress>
 </addr:AddressCollection>
```

Postal Delivery Address Classes

USPS Postal Delivery Box

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <USPSPostalDeliveryBox>
  <USPSBox>
   <USPSBoxType>PO BOX</USPSBoxType>
   <USPSBoxId>159753</USPSBoxId>
  </USPSBox>
  <CompleteSubaddress>
   <SubaddressElement>
   <SubaddressType>PMB</SubaddressType>
   <SubaddressIdentifier>3571</SubaddressIdentifier>
   </SubaddressElement>
  </CompleteSubaddress>
  <CompletePlaceName>
   <PlaceName>Herndon</PlaceName>
  </CompletePlaceName>
  <StateName>VA</StateName>
  <ZipCode>22071</ZipCode>
  </USPSPostalDeliveryBox>
 </addr:AddressCollection>
```

USPS Postal Delivery Route

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <USPSPostalDeliveryRoute>
  <USPSAddress>
   <USPSRoute>
   <USPSBoxGroupType>RR</USPSBoxGroupType>
   <USPSBoxGroupId>2</USPSBoxGroupId>
   </USPSRoute>
   <USPSBox>
   <USPSBoxType>Box</USPSBoxType>
   <USPSBoxId>18</USPSBoxId>
   </USPSBox>
  </USPSAddress>
  <CompletePlaceName>
   <PlaceName>Largo</PlaceName>
```

```
  </CompletePlaceName>
  <StateName>FL</StateName>
  <ZipCode>33777</ZipCode>
  </USPSPostalDeliveryRoute>
 </addr:AddressCollection>
```

USPS General Delivery Office

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <USPSGeneralDeliveryOffice>
  <USPSGeneralDeliveryPoint>General Delivery</USPSGeneralDeliveryPoint>
  <CompletePlaceName>
   <PlaceName>Tampa</PlaceName>
  </CompletePlaceName>
  <StateName>FL</StateName>
  <ZipCode>33602</ZipCode>
  <ZipPlus4>9999</ZipPlus4>
  </USPSGeneralDeliveryOffice>
 </addr:AddressCollection>
```

General Address Class

General Address Type 1

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <GeneralAddressClass>123 Main Street, Apt 1, Ames, IA
50010</GeneralAddressClass>
 </addr:AddressCollection>
```

General Address Type 2

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
```

```
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <GeneralAddressClass>
   <DeliveryAddress>123 Main Street, Apt 1</DeliveryAddress>
  </GeneralAddressClass>
 </addr:AddressCollection>
```

General Address Type 3

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4" xmlns:addr="addr"
xmlns:addr_type="addr_type" xmlns:gml="http://www.opengis.net/gml"
xmlns:smil20="http://www.w3.org/2001/SMIL20/"
xmlns:smil20lang="http://www.w3.org/2001/SMIL20/Language"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="addr addr.xsd ">
  <GeneralAddressClass>
   <DeliveryAddress>123 Main Street, Apt 1</DeliveryAddress>
    <CompletePlaceName>
  <PlaceName>Ames</PlaceName>
  </CompletePlaceName>
  <StateName>IA</StateName>
  <ZipCode>50010</ZipCode>
  </GeneralAddressClass>
 </addr:AddressCollection>
```

Appendix C (Informative): Table of Element Relationships

For each address element, this appendix lists 1) whether it is simple or complex, 2) the complex elements that may include it, and 3) the component elements that may comprise it (if any).

Element Name	Element Type	Complex Elements This Element is Part Of	Element Contains These Component Elements
Address Number Prefix	Simple	Complete Address Number	
Address Number	Simple	Complete Address Numbers	
Address Number Suffix	Simple	Complete Address Number	
Complete Address Number	Complex	Delivery Address	Address Number Prefix Address Number Address Number Suffix
Street Name Pre Modifier	Simple	Complete Street Name	
Street Name Pre Directional	Simple	Complete Street Name	
Street Name Pre Type	Simple	Complete Street Name	
Separator Element	Simple	Complete Street Name	
Street Name	Simple	Complete Street Name	
Street Name Post Type	Simple	Complete Street Name	
Street Name Post Directional	Simple	Complete Street Name	
Street Name Post Modifier	Simple	Complete Street Name	
Complete Street Name	Complex	Delivery Address	Street Name Pre Modifier Street Name Pre Directional Street Name Pre Type Separator Element Street Name Street Name Post Type Street Name Post Directional Street Name Post Modifier
Corner Of	Simple	Delivery Address	
Subaddress Type	Simple	Subaddress Element	
Subaddress Identifier	Simple	Subaddress Element	
Subaddress Element	Complex	Complete Subaddress	Subaddress Type Subaddress Identifier
Complete Subaddress	Complex	Delivery Address	Subaddress Element Subaddress Type Subaddress Identifier

Element Name	Element Type	Complex Elements This Element is Part Of	Element Contains These Component Elements
Landmark Name	Simple	Complete Landmark Name	
Complete Landmark Name	Complex	Delivery Address	Landmark Name
Place Name	Simple	Complete Place Name	
Complete Place Name	Complex	Place State ZIP	Place Name
State Name	Simple	Place State ZIP	
Zip Code	Simple	Place State ZIP	
Zip Plus 4	Simple	Place State ZIP	
Country Name	Simple	Place State ZIP	
USPSBox Type	Simple	USPS Box	
USPSBox ID	Simple	USPS Box	
USPS Box	Complex	USPS Address Delivery Address	USPSBox Type USPSBox ID
USPSBox Group Type	Simple	USPS Route	
USPSBox Group ID	Simple	USPS Route	
USPS Route	Complex	USPS Address Delivery Address	USPSBox Group Type USPSBox Group ID
USPS Address	Complex	Delivery Address	USPS Route USPS Box
USPSGeneral Delivery Point	Simple	Delivery Address	
Delivery Address	Complex		Complete Address Number Complete Street Name Complete Subaddress USPS Box USPS Address USPSGeneral Delivery Point
Place State ZIP	Complex		Complete Place Name State Name Zip Code Zip Plus 4 Country Name

Appendix D (Informative): Element - Measure Index

Note: Tests followed by a "+" sign have spatial data requirements.

Element Name	Component or Subject	Simple or Complex	Measure
Address Number	Address Number	Simple	Data Type Measure
Address Number	Address Number	Simple	Spatial Domain Measure +
Address Number	Address Number	Simple	Range Domain Measure
Address Number	Address Number	Simple	Address Number Fishbones Measure +
Address Number Prefix	Address Number	Simple	Range Domain Measure
Address Number Prefix	Address Number	Simple	Spatial Domain Measure +
Address Number Prefix	Address Number	Simple	Tabular Domain Measure
Address Number Prefix	Address Number	Simple	Address Number Fishbones Measure +
Address Number Suffix	Address Number	Simple	Spatial Domain Measure +
Address Number Suffix	Address Number	Simple	Tabular Domain Measure
Address Reference System Authority	Address Reference System Elements	Simple	Tabular Domain Measure
Address Reference System Axis	Address Reference System Elements	Simple	Address Reference System Axes Point Of Beginning Measure +
Address Reference System Axis Point Of Beginning	Address Reference System Elements	Simple	Address Reference System Axes Point Of Beginning Measure +
Address Reference System ID	Address Reference System Elements	Simple	Data Type Measure
Address Reference System ID	Address Reference System Elements	Simple	Uniqueness Measure
Address Reference System Name	Address Reference System Elements	Simple	Tabular Domain Measure
Address Reference System Extent	Address Reference System Elements	Simple	Address Reference System Description
Address Reference System Type	Address Reference System Elements	Simple	Tabular Domain Measure
Address Reference System Rules	Address Reference System Elements	Complex	Address Reference System Rules Measure +
Address Reference System Block Rules	Address Reference System Elements	Simple	See Address Reference System Rules Measure.
Address Reference System Numbering Rules	Address Reference System Elements	Simple	See Address Reference System Rules Measure.
Address Reference System Street Naming Rules	Address Reference System Elements	Simple	See Address Reference System Rules Measure.
Address Reference System Street Type Directional And Modifier Rules	Address Reference System Elements	Simple	See Address Reference System Rules Measure.

Element Name	Component or Subject	Simple or Complex	Measure
Address Reference System Place Name State Country And Zip Code Rules	Address Reference System Elements	Simple	See Address Reference System Rules Measure.
Address Reference System Subaddress Rules	Address Reference System Elements	Simple	See Address Reference System Rules Measure.
Address Reference System Reference Polyline	Address Reference System Elements	Simple	See Address Reference System Rules Measure.
Address Reference System Range Breakpoint	Address Reference System Elements	Simple	See Address Reference System Rules Measure.
Address Reference System Range Breakline	Address Reference System Elements	Simple	See Address Reference System Rules Measure.
Address Reference System Range Polygon	Address Reference System Elements	Simple	See Address Reference System Rules Measure.
Address Reference System Reference Document Citation	Address Reference System Elements	Simple	None
Address Reference System	Address Reference System Elements	Complex	Address Reference System Rules Measure +
Complete Address Number	Address Number	Complex	Pattern Sequence Measure
Complete Landmark Name	Landmark Name Elements	Complex	Complex Element Sequence Number Measure
Complete Landmark Name	Landmark Name Elements	Complex	Pattern Sequence Measure
Complete Landmark Name	Landmark Name Elements	Complex	Repeated Element Uniqueness Measure
Complete Place Name	Place, State, and Country Name Elements	Complex	Complex Element Sequence Number Measure
Complete Place Name	Place, State, and Country Name Elements	Complex	Pattern Sequence Measure
Complete Place Name	Place, State, and Country Name Elements	Complex	Repeated Element Uniqueness Measure
Complete Street Name	Street Name Elements	Complex	Tabular Domain Measure
Complete Street Name	Street Name Elements	Complex	Pattern Sequence Measure
Complete Street Name	Street Name Elements	Complex	Duplicate Street Name Measure +
Complete Subaddress	Subaddress Elements	Complex	Complex Element Sequence Number Measure
Complete Subaddress	Subaddress Elements	Complex	Pattern Sequence Measure
Complete Subaddress	Subaddress Elements	Complex	Repeated Element Uniqueness Measure
Corner Of	Intersection Corner Element	Simple	Intersection Validity Measure

Element Name	Component or Subject	Simple or Complex	Measure
			Location Description Field Check Measure Tabular Domain Measure
Country Name	Place, State, and Country Name Elements	Simple	Spatial Domain Measure +
Country Name	Place, State, and Country Name Elements	Simple	Tabular Domain Measure
Delivery Address	USPS Address Lines	Simple	Pattern Sequence Measure
Landmark Name	Landmark Name Elements	Simple	Spatial Domain Measure
Landmark Name	Landmark Name Elements	Simple	Tabular Domain Measure
Landmark Name	Landmark Name Elements	Simple	Uniqueness Measure
Place Name	Place, State, and Country Name Elements	Simple	Spatial Domain Measure +
Place Name	Place, State, and Country Name Elements	Simple	Tabular Domain Measure
Place State ZIP	USPS Address Lines	Complex	Pattern Sequence Measure
Separator Element	Element	Simple	Tabular Domain Measure
State Name	Place, State, and Country Name Elements	Simple	Spatial Domain Measure +
State Name	Place, State, and Country Name Elements	Simple	Tabular Domain Measure
Street Name	Street Name Elements	Simple	Spatial Domain Measure +
Street Name	Street Name Elements	Simple	Tabular Domain Measure
Street Name Post Directional	Street Name Elements	Simple	Spatial Domain Measure +
Street Name Post Directional	Street Name Elements	Simple	Tabular Domain Measure
Street Name Post Modifier	Street Name Elements	Simple	Spatial Domain Measure +
Street Name Post Modifier	Street Name Elements	Simple	Tabular Domain Measure
Street Name Post Type	Street Name Elements	Simple	Related Element Value Measure +
Street Name Post Type	Street Name Elements	Simple	Spatial Domain Measure +

Element Name	Component or Subject	Simple or Complex	Measure
Street Name Post Type	Street Name Elements	Simple	Tabular Domain Measure
Street Name Pre Directional	Street Name Elements	Simple	Spatial Domain Measure +
Street Name Pre Directional	Street Name Elements	Simple	Tabular Domain Measure
Street Name Pre Modifier	Street Name Elements	Simple	Spatial Domain Measure +
Street Name Pre Modifier	Street Name Elements	Simple	Tabular Domain Measure
Street Name Pre Type	Street Name Elements	Simple	Related Element Value Measure
Street Name Pre Type	Street Name Elements	Simple	Spatial Domain Measure +
Street Name Pre Type	Street Name Elements	Simple	Tabular Domain Measure
Subaddress Element	Subaddress Elements	Complex	Pattern Sequence Measure
Subaddress Element	Subaddress Elements	Complex	Spatial Domain Measure +
Subaddress Identifier	Subaddress Elements	Simple	Range Domain Measure
Subaddress Identifier	Subaddress Elements	Simple	Tabular Domain Measure
Subaddress Type	Subaddress Elements	Simple	Tabular Domain Measure
USPSBox Group ID	USPS Postal Address Elements	Simple	Range Domain Measure
USPSBox Group ID	USPS Postal Address Elements	Simple	Tabular Domain Measure
USPSBox Group Type	USPS Postal Address Elements	Simple	Range Domain Measure
USPSBox Group Type	USPS Postal Address Elements	Simple	Tabular Domain Measure
USPSBox ID	USPS Postal Address Elements	Simple	Range Domain Measure
USPSBox ID	USPS Postal Address Elements	Simple	Tabular Domain Measure
USPSBox Type	USPS Postal Address Elements	Simple	Range Domain Measure
USPSBox Type	USPS Postal Address Elements	Simple	Tabular Domain Measure
USPSGeneral Delivery Point	USPS Postal Address Elements	Simple	Tabular Domain Measure
USPS Address	USPS Postal Address Elements	Complex	Pattern Sequence Measure
USPS Box	USPS Postal Address Elements	Complex	Pattern Sequence Measure
USPS Box	USPS Postal Address Elements	Complex	Tabular Domain Measure

Element Name	Component or Subject	Simple or Complex	Measure
USPS Route	USPS Postal Address Elements	Simple	Pattern Sequence Measure
USPS Route	USPS Postal Address Elements	Simple	Tabular Domain Measure
Zip Code	Place, State, and Country Name Elements	Simple	Spatial Domain Measure +
Zip Code	Place, State, and Country Name Elements	Simple	Tabular Domain Measure
Zip Plus 4	Place, State, and Country Name Elements	Simple	Related Element Value Measure
Zip Plus 4	Place, State, and Country Name Elements	Simple	Tabular Domain Measure

Appendix E (Informative): Attribute - Measure Index

Attribute Name	Component or Subject	Measure
Address Anomaly Status	Address Attributes	Tabular Domain Measure
Address Authority	Address ID	Spatial Domain Measure
Address Authority	Address ID	Tabular Domain Measure
Address Classification	Address Attributes	Pattern Sequence Measure
Address Classification	Address Attributes	Tabular Domain Measure
Address Coordinate Reference System	Address Coordinates	Pattern Sequence Measure
Address Coordinate Reference System Authority	Address Coordinates	Tabular Domain Measure
Address Coordinate Reference System ID	Address Coordinates	Related Element Value Measure
Address Coordinate Reference System ID	Address Coordinates	Tabular Domain Measure
Address Direct Source	Address Lineage Attributes	Related Element Value Measure
Address Direct Source	Address Lineage Attributes	Spatial Domain Measure
Address Direct Source	Address Lineage Attributes	Tabular Domain Measure
Address Elevation	Address Coordinates	Address Elevation Measure
Address End Date	Address Lineage Attributes	Future Date Measure
Address End Date	Address Lineage Attributes	Start End Date Order Measure
Address Feature Type	Address Attributes	Address Reference System Description
Address Feature Type	Address Attributes	Address Completeness Measure
Address Feature Type	Address Attributes	Tabular Domain Measure
Address ID	Address ID	Uniqueness Measure
Address Latitude	Address Coordinates	XYCoordinate Completeness Measure
Address Latitude	Address Coordinates	XYCoordinate Spatial Measure
Address Lifecycle Status	Address Attributes	Address Lifecycle Status Date Consistency Measure
Address Lifecycle Status	Address Attributes	Tabular Domain Measure
Address Longitude	Address Coordinates	XYCoordinate Completeness Measure
Address Longitude	Address Coordinates	XYCoordinate Spatial Measure
Address Number Parity	Element Attributes	Address Number Parity Measure
Address Parcel Identifier Source	Address Parcel IDs	Tabular Domain Measure
Address Parcel Identifier	Address Parcel IDs	Pattern Sequence Measure
Address Parcel Identifier	Address Parcel IDs	Spatial Domain Measure
Address Parcel Identifier	Address Parcel IDs	Uniqueness Measure

Address Range Directionality	Address Range Attributes	Address Range Directionality Measure
Address Range Parity	Address Range Attributes	Address Number Range Parity Consistency Measure
Address Range Side	Address Range Attributes	Address Left Right Measure
Address Range Side	Address Range Attributes	Left Right Odd Even Parity Measure
Address Range Span	Address Range Attributes	Tabular Domain Measure
Address Range Type	Address Range Attributes	Tabular Domain Measure
Address Side Of Street	Address Attributes	Address Left Right Measure
Address Relation Type	Descriptive Attributes	Tabular Domain Measure
Address Start Date	Address Lineage Attributes	Future Date Measure
Address Start Date	Address Lineage Attributes	Start End Date Order Measure
Address Transportation System Name	Address Transportation Feature IDs	Tabular Domain Measure
Address Transportation System Authority	Address Transportation Feature IDs	Tabular Domain Measure
Address Transportation Feature Type	Address Transportation Feature IDs	Address Completeness Measure
Address Transportation Feature Type	Address Transportation Feature IDs	Intersection Validity Measure
Address Transportation Feature Type	Address Transportation Feature IDs	Segment Directionality Consistency Measure
Address Transportation Feature Type	Address Transportation Feature IDs	XYCoordinate Completeness Measure
Address Transportation Feature Type	Address Transportation Feature IDs	XYCoordinate Spatial Measure
Address Transportation Feature ID	Address Transportation Feature IDs	Pattern Sequence Measure
Address Transportation Feature ID	Address Transportation Feature IDs	Uniqueness Measure
Related Transportation Feature ID	Address Transportation Feature IDs	Related Element Uniqueness Measure
Address XCoordinate	Address Coordinates	XYCoordinate Completeness Measure
Address XCoordinate	Address Coordinates	XYCoordinate Spatial Measure
Address YCoordinate	Address Coordinates	XYCoordinate Completeness Measure
Address YCoordinate	Address Coordinates	XYCoordinate Spatial Measure
Address ZLevel	Descriptive Attributes	Tabular Domain Measure
ANSIState County Code	Element Attributes	Spatial Domain Measure
ANSIState County Code	Element Attributes	Tabular Domain Measure
Attached Element	Element Attributes	Check Attached Pairs Measure
Attached Element	Element Attributes	Tabular Domain Measure
Data Set ID	Address Lineage Attributes	Related Not Null Measure

Delivery Address Type	USPS Address Lines	Delivery Address Type Subaddress Measure
Delivery Address Type	USPS Address Lines	Tabular Domain Measure
Element Sequence Number	Element Attributes	Element Sequence Number Measure
Element Sequence Number	Element Attributes	Related Element Uniqueness Measure
Element Sequence Number	Element Attributes	Uniqueness Measure
GNISFeature ID	Element Attributes	Related Not Null Measure
Location Description	Address Attributes	None
Mailable Address	Address Attributes	Related Element Value Measure
Mailable Address	Address Attributes	Tabular Domain Measure
Official Status	Descriptive Attributes	Official Status Address Authority Consistency Measure
Official Status	Descriptive Attributes	Tabular Domain Measure
Place Name Type	Element Attributes	Tabular Domain Measure
Related Address ID	Address ID	Related Element Uniqueness Measure
Related Address ID	Address ID	Related Not Null Measure
Related Address ID	Address ID	Tabular Domain Measure
Subaddress Component Order	Element Attributes	Subaddress Component Order Measure
Subaddress Component Order	Element Attributes	Tabular Domain Measure
USNational Grid Coordinate	Address Coordinates	USNG Coordinate Spatial Measure

Appendix F (Informative): Classification - Measure Index

Note: Measures followed by "+" require geospatial data.

Classification Name	Subject	Measure
Community Address	Landmark Address Classes	Pattern Sequence Measure
Community Address	Landmark Address Classes	Spatial Domain Measure +
Four Number Address Range	Thoroughfare Address Classes	Address Number Fishbones Measure +
Four Number Address Range	Thoroughfare Address Classes	Address Number Range Completeness Measure
Four Number Address Range	Thoroughfare Address Classes	Address Number Range Parity Consistency Measure
Four Number Address Range	Thoroughfare Address Classes	Address Number Range Sequence Measure
Four Number Address Range	Thoroughfare Address Classes	Left Right Odd Even Parity Measure
Four Number Address Range	Thoroughfare Address Classes	Low High Address Sequence Measure
Four Number Address Range	Thoroughfare Address Classes	Overlapping Ranges Measure
Four Number Address Range	Thoroughfare Address Classes	Pattern Sequence Measure +
Four Number Address Range	Thoroughfare Address Classes	Range Domain Measure
Four Number Address Range	Thoroughfare Address Classes	Spatial Domain Measure +
General Address Class	General Address Class	Pattern Sequence Measure
Intersection Address	Thoroughfare Address Classes	Intersection Validity Measure
Intersection Address	Thoroughfare Address Classes	Pattern Sequence Measure
Intersection Address	Thoroughfare Address Classes	Spatial Domain Measure +
Landmark Address	Landmark Address Classes	Pattern Sequence Measure
Landmark Address	Landmark Address Classes	Spatial Domain Measure +
Landmark Site Address	Thoroughfare Address Classes	Address Number Fishbones Measure
Landmark Site Address	Thoroughfare Address Classes	Address Completeness Measure
Landmark Site Address	Thoroughfare Address Classes	Left Right Odd Even Parity Measure
Landmark Site Address	Thoroughfare Address	Pattern Sequence Measure

Classification Name	Subject	Measure
	Classes	
Landmark Site Address	Thoroughfare Address Classes	Spatial Domain Measure +
Numbered Thoroughfare Address	Thoroughfare Address Classes	Address Completeness Measure
Numbered Thoroughfare Address	Thoroughfare Address Classes	Address Number Fishbones Measure +
Numbered Thoroughfare Address	Thoroughfare Address Classes	Address Left Right Measure
Numbered Thoroughfare Address	Thoroughfare Address Classes	Pattern Sequence Measure
Numbered Thoroughfare Address	Thoroughfare Address Classes	Range Domain Measure
Numbered Thoroughfare Address	Thoroughfare Address Classes	Spatial Domain Measure
Two Number Address Range	Thoroughfare Address Classes	Address Number Range Completeness Measure
Two Number Address Range	Thoroughfare Address Classes	Address Number Range Parity Consistency Measure
Two Number Address Range	Thoroughfare Address Classes	Address Number Range Sequence Measure
Two Number Address Range	Thoroughfare Address Classes	Low High Address Sequence Measure
Two Number Address Range	Thoroughfare Address Classes	Low High Address Sequence Measure
Two Number Address Range	Thoroughfare Address Classes	Overlapping Ranges Measure
Two Number Address Range	Thoroughfare Address Classes	Pattern Sequence Measure +
Two Number Address Range	Thoroughfare Address Classes	Range Domain Measure
USPSGeneral Delivery Office	Landmark Address Classes	Pattern Sequence Measure
USPSPostal Delivery Box	Postal Delivery Address Classes	Pattern Sequence Measure
USPSPostal Delivery Route	Postal Delivery Address Classes	Pattern Sequence Measure
Unnumbered Thoroughfare Address	Thoroughfare Address Classes	Address Number Fishbones Measure+
Unnumbered Thoroughfare Address	Thoroughfare Address Classes	Pattern Sequence Measure
Unnumbered Thoroughfare Address	Thoroughfare Address Classes	Spatial Domain Measure +

Appendix G (Informative): Quality Measures by Data Quality Report

Measure	Attribute (Thematic) Accuracy	Completeness	Lineage	Logical Consistency	Positional Accuracy	Temporal Accuracy
Address Completeness Measure		•				
Address Elevation Measure	•					
Address Left Right Measure				•		
Address Lifecycle Status Date Consistency Measure				•		•
Address Number Fishbones Measure				•		
Address Number Parity Measure				•		
Address Number Range Completeness Measure				•		
Address Number Range Parity Consistency Measure				•		
Address Number Range Sequence Measure				•		
Address Range Directionality Measure				•		
Address Reference System Axes Point Of Beginning Measure				•		
Address Reference System Rules Measure				•		
Check Attached Pairs Measure				•		
Complex Element Sequence Number Measure	•					

Measure	Attribute (Thematic) Accuracy	Completeness	Lineage	Logical Consistency	Positional Accuracy	Temporal Accuracy
Data Type Measure				•		
Delivery Address Type Subaddress Measure				•		
Duplicate Street Name Measure				•		
Element Sequence Number Measure	•					
Future Date Measure	•					•
Intersection Validity Measure				•		
Left Right Odd Even Parity Measure				•		
Location Description Field Check Measure			•		•	
Low High Address Sequence Measure				•		
Official Status Address Authority Consistency Measure				•		
Overlapping Ranges Measure				•		
Pattern Sequence Measure				•		
Range Domain Measure				•		
Related Element Uniqueness Measure	•					
Related Element Value Measure				•		
Related Not Null Measure				•		
Segment Directionality Consistency Measure				•		
Spatial Domain Measure					•	
Start End Date Order Measure	•					•

Measure	Attribute (Thematic) Accuracy	Completeness	Lineage	Logical Consistency	Positional Accuracy	Temporal Accuracy
Subaddress Component Order Measure	•					
Tabular Domain Measure	•					
Uniqueness Measure	•					
USNG Coordinate Spatial Measure					•	
XYCoordinate Completeness Measure				•		
XYCoordinate Spatial Measure					•	

Appendix H (Informative): Relationship of Addresses to Transportation Features and Linear Reference Locations

1. Introduction

This Appendix presents the relationship between the Address Standard and the Transportation Part (Part 7) of the Framework Data Content Standard. The Transportation Part is comprised of five sub-parts: the Transportation Base part (Part 7), and five specialized subparts: Rail, Roads, Transit, and Inland Waterways (Parts 7b through 7e). (Part 7a, Transportation - Air, was drafted but not endorsed.). The relationship is presented in three sections:

- Section H.2 sets forth the relation between addresses and transportation networks, restates the scope of the Address Standard and the transportation standard, and defines the relationship between the two standards.
- Section H.3 lists key transportation features defined in the Framework Standard Transportation Base Part and states how address classes are related to transportation features.
- Section H.4 summarizes (from Annex B of the Framework Standard Transportation Base Part) the definition of linear reference systems and their components, and shows how addresses can be expressed as linear reference locations.

2. Address Systems and Transportation Networks

Addresses are a means by which people specify the location of travel origins and destinations by reference to a transportation network. Most addresses specify locations for structures, land parcels, incidents, and infrastructure components such as poles or hydrants. None of these features are transportation segments or nodes. By relating non-transportation features to a transportation network, thoroughfare addresses enable people to locate the address using the transportation network and travel to it along network paths.

The Address Standard provides the data elements and structures—most of them non-geometric—needed to relate people's specific travel origins and destinations to the transportation network. The Address Standard also defines certain elements needed within the Transportation Standard to describe transportation features, most notably address numbers, address ranges, and street names.

The Transportation Part of the Framework Standard defines the geometric elements and structures needed to construct transportation networks, and the non-geometric attributes needed to describe them. Transportation networks show the paths of travel from origin to destination.

Transportation networks model the thoroughfares that thoroughfare addresses refer to, the particular thoroughfare segments by which individual addresses may be grouped into address ranges, the nodes that define intersections, and the left/right side by which odd/even parities are located. Numbered Thoroughfare Addresses and some ranges are typically modeled as point events (or occasionally linear events) located along the

thoroughfare segments. Intersection Addresses and most ranges correspond to nodes and segments respectively. Thus the Framework Standard Transportation Part provides the geometric elements and structures needed to relate addresses to their corresponding transportation system segments and nodes.

The Address Standard and the Transportation Part are so closely related as to be interdependent. The following principles differentiate their scopes so as to be complementary and mutually exclusive:

1. The Address Standard defines the address classes, elements and attributes, none of which are network elements and almost all of which are non-geometric, and the Transportation Part incorporates them by reference.

2. The Address Standard provides for the description of Address Reference Systems, which set forth local rules for address assignment, and form a basis for validation and quality testing of addresses. The elements of an Address Reference System may also include the following geometric components including:

    - Address Reference System Extent,
    - Address Reference System Axis,
    - Address Reference System Axis Point Of Beginning,
    - Address Reference System Reference Polyline,
    - Address Reference System Range Breakpoint,
    - Address Reference System Range Breakline, and
    - Address Reference System Range Polygon.

These geometric elements can be related to the transportation elements as nodes, segments, point events, and linear events.

1. The Transportation Part defines the geometric structures and elements needed to model thoroughfare networks, and the address standard incorporates them by reference. They include:

    - transportation networks,
    - nodes, and
    - segments;
    - point events and
    - linear events.

3. Addresses and Transportation Features

3.1 Key Transportation Feature Definitions

The Transportation Base part (Part 7, section 5) defines several terms needed to articulate the relationship between addresses and transportation features:

- Transportation system - *"set of components that allow movement of goods and people between locations"* (sec. 5.25)
- Event - *"mechanism for locating an attribute value or feature along a transportation feature."* (sec. 5.4)

- Point event - *"event that occurs at a single position along a linear feature."* (sec. 5.12)
- Linear event - *"event that occurs for an interval along the length of a feature."* (sec. 5.8)
- Transportation point (TranPoint) - *"topological connection between transportation segments."* (sec. 5.22)
- Transportation segment (TranSeg) - *"linear section of the physical transportation network."* (sec. 5.23)
- Transportation path (TranPath) - *"ordered list of whole or partial...transportation segments."* (sec. 5.21)
- Transportation segmentation model - *"set of transportation features (TranPath, TranPoint, and TranSeg) and their topological relationships which together define all possible movements through the transportation system"* (sec. 5.24)
- Transportation feature (TranFeature) - *"representation of transportation entities that include transportation segmentation model features, as well as other features relevant to transportation"* (sec. 5.20)

3.2 Representing Addresses as Transportation Features

An address can be represented within a transportation network (e.g. a road centerline model) in various ways, depending on the class of the address and how it is mapped. This subsection gives the transportation feature types that can be used to represent each address class. The feature types are defined and explained in the FGDC's "Framework Data Content Standard Part 7: Transportation." See in particular "Transportation Base," Sections 5 (Terms and Definitions) and 7 (Requirements), and "Part 7c: Roads."

3.2.1 Representation of a **Numbered Thoroughfare Address** as a Transportation Feature:

1. (If the address is mapped as a point): Point event, related to one or more transportation segments.

2. (If the address is mapped as a line or polygon): Linear event, related to one or more transportation segments.

3.2.2 Representation of an **Intersection Address** as a Transportation Feature:

1. One or more transportation points (TranPoints).

2. Note that for complex intersections, or where roads are represented as two or more centerlines, one Intersection Address may be represented by multiple TranPoints.

3.2.3 Representation of a **Two Number Address Range** as a Transportation Feature:

1. (If the range covers part of one transportation segment): Linear event, related to a transportation segment (TranSeg).

2. (If the range covers one complete transportation segment): Transportation segment (TranSeg).

3. (If the range covers more than one complete transportation segment): Transportation path (TranPath).

3.2.4 Representation of a Four Number Address Range as a Transportation Feature:

1. (If the range covers part of one transportation segment): Linear event, related to a transportation segment (TranSeg).

2. (If the range covers one complete transportation segment): Transportation segment (TranSeg).

3. (If the range covers more than one complete transportation segment): Transportation path (TranPath).

3.2.5 Representation of an **Unnumbered Thoroughfare Address** as a Transportation Feature:

1. (If the thoroughfare has only one segment): Transportation segment (TranSeg)

2. (If the thoroughfare has more than one segment): Transportation path (TranPath)

3.2.6 Representation of a **Landmark Address** as a Transportation Feature:

1. Cannot be specified within this standard. Addresses of this class have no defined relation to a transportation data model. A Landmark Address might be mapped as a point or a line or a polygon, and if represented as a polygon it might relate to zero or one or many transportation points or segments or paths.

3.2.7 Representation of a Community Address as a Transportation Feature:

1. Cannot be specified within this standard. Addresses of this class have no defined relation to a transportation data model. A Community Address might be mapped as a point or a line or a polygon, and it might relate to zero or one or many transportation points or segments or paths.

3.2.8 Representation of a USPSPostal Delivery Box as a Transportation Feature:

1. USPSPostal Delivery Box addresses have no definite relation to any transportation feature. (They could, if desired, be mapped to the post office where the box is located, and related to the post office Numbered Thoroughfare Address.)

3.2.9 Representation of a USPSPostal Delivery Route as a Transportation Feature:

1. USPSPostal Delivery Route addresses have no definite relation to any transportation feature. If the location of the delivery points were known, then Rural route and HC route addresses could be mapped as points, treated as point

events, and related to a transportation segment. Overseas military addresses have no relation to any transportation feature.

3.2.10 Representation of a **USPSGeneral Delivery Office** as a Transportation Feature:

1. A USPSGeneral Delivery Office could be mapped to a post office, or it could be said to have no relation to any transportation feature.

2. Overseas military addresses have no relation to any transportation feature.

4. Expressing Address Locations as Linear Reference Positions

Linear Reference Systems and Addresses Linear reference systems specify locations by reference to a measured distance along a route within a transportation network. Linear reference systems differ fundamentally from address reference systems and coordinate reference systems, and thus offer a third way to specify address locations. Linear reference systems are used primarily in surveying and engineering, but they are also useful in address administration. Linear referencing explicitly ties an address to a specific position along its corresponding street segment. Linear reference systems are useful in visualizing address lists and building address zone information when side of street matters. Linear referencing can therefore be useful in detecting mislocated thoroughfare addresses (out of sequence or wrong parity) and erroneous ranges.

Annex B of the Transportation Base Part provides the normative classes and types needed to define linear reference systems and specify positions along curvilinear transportation features. Annex B, Section 5, defines several terms of interest:

- Position expression - "expression used to describe a position using linear referencing and comprised of a measured value (distance expression), the curvilinear element being measured, (linear element), the method of measurement (LRM), and an optional lateral offset (offset expression)."
- Distance expression - "linear distance measured along a linear element (a component of a position expression)."
- Linear element - "underlying curvilinear element along which a linearly referenced measure is taken."
- Offset - "Optional part of a linearly referenced position expression which specifies the lateral distance left or right of the linear element being measured."

Linear Reference Locations and the Address Standard. Linear reference locations must be specified by reference to a transportation network as defined in the Transportation Part of the Framework Standard. The Transportation Part defines all the elements needed to construct the network and represent addresses within it (typically as point events). The Transportation Part also defines all the elements needed to establish and document linear reference locations, such as route, point of beginning, units of measure, method of measuring along the route, etc. Because linear reference locations can be constructed entirely within the domain of the Transportation Part of the framework standard, no linear reference attributes are provided or needed within the Address Standard.

Appendix I (Informative): Compatibility of the Address Standard with the FGDC *Geographic Information Framework Data Content Standard* for the NDSI

1. Introduction

1.1 Purpose and Structure.

This appendix assesses the compatibility of the Address Standard with the FGDC's *Geographic Information Framework Data Content Standard* (hereinafter called the "Framework Standard"). This appendix is presented in three sections:

1. Section 1 states why and how the assessment was done, and summarizes the results.
2. Section 2 provides a brief statement of the scope of each part of the framework standard, how the Address Standard is related to that part, and whether the two are consistent.
3. Section 3 shows in detail whether and to what extent the Address Standard meets the conformance tests set forth in Part Zero (Base Part) of the framework standard.

1.2 The Framework Standard and the Address Standard.

The Framework Standard *"provides interrelated thematic standards in seven data areas: cadastral, digital orthoimagery, elevation, geodetic control, governmental unit boundaries and other geographic area boundaries, hydrography, and transportation."* The seven core themes *"are considered framework data of critical importance to the spatial data infrastructure of the Nation... The standard is divided into eight parts, one for each of the seven data themes and a base document containing information common to two or more themes."* (Framework Standard Base Part, Introduction and Sec. 1.1)

Address data are used in conjunction with several of the framework themes, most notably cadastral data, and transportation data. Addresses and transportation features (especially road networks) are so closely related that their standards are interdependent. Street names form an integral part of thoroughfare addresses, and street segments and their network geometry form the basis for Address Reference Systems and their components. In addition, addresses are used by the public to identify cadastral parcels and specify their locations. Finally, addressed features have elevations; and place names within addresses are often determined by governmental boundaries.

1.3 Assessing the Compatibility of the Address Standard with the Framework Standard.

Because address data are closely tied to several framework data themes, the Address Standard should be compatible with the Framework Standard. Compatibility assessment requires two types of tests:

1. **Consistency tests,** to find whether the Address Standard is consistent with the standards for the seven data themes, and

2. **Conformity tests,** to determine whether the Address Standard conforms to the requirements set forth in the Base Part of the Framework Standard, which govern the seven thematic parts of the Framework Standard.

1.4 Consistency Tests and Results.

The consistency tests evaluate, for each thematic part, whether the part shares any classes, elements, or defined terms with the Address Standard, and if so, whether the shared classes, elements, or terms are defined and used consistently. Three outcomes are possible:

- **Unrelated** - The Framework part shares no classes, elements, or defined terms with the Address Standard.

- **Consistent** - The Framework part shares classes, elements, or defined terms with the Address Standard; and they are defined and used consistently; and the two standards are complementary and mutually exclusive in scope.

- **Inconsistent** - The Framework part shares classes, elements, or defined terms with the Address Standard, but they are not defined and used consistently, and/or the two standards overlap in scope.

The Address Standard relates to the data theme parts as follows:

- **Unrelated** - Digital Orthoimagery, Geodetic Control, and Hydrography.

- **Consistent** - Cadastral, Elevation, and Governmental Unit Boundaries and Other Geographic Area Boundaries.

- **Inconsistent** - Transportation (see I.8.2 below).

1.5 Conformity Tests and Results

Section 3 sets forth the conformance requirements given in the Framework Standard Base Part, section by section, and analyzes whether and how the Address Standard conforms to the requirements. It shows that the Address Standard conforms to all of the requirements.

1.6 Relating the Address Standard to the Framework Standard Cadastral and Transportation Parts

The close relation of address data with cadastral data and with transportation data raises the question of how the Address Standard should be related to the cadastral and transportation parts of the Framework Standard. If, for example, an address record is to be related to a land parcel record, the Address Standard should not have to reinvent or repeat the entire cadastral part in order to make use of the data found in a cadastral dataset. The Address Standard incorporates a framework approach:

1. To best serve geographic data users, the Address Standard should provide explicitly for relationships with other standards.

2. This is best done by defining a minimum set of attributes needed to relate features across different themes (e.g. an address to a parcel, or an address to a transportation feature), that is, to provide for the foreign key needed to relate address records to cadastral features or transportation features; and

3. Those key attributes should be defined by reference to the other standard.

The Content Part of the address standard includes two elements, Address Parcel Identifier Source and Address Parcel Identifier, which were created to relate addresses with parcels.

The Content Part of the Address Standard includes five attributes by which an address feature can be related to a transportation event and a transportation segment or path: Address Transportation System Name, Address Transportation System Authority, Address Transportation Feature Type, Address Transportation Feature ID, and Related Transportation Feature ID. In addition, the Content Part includes five address range attributes, so that address ranges can be properly related to the transportation segments or paths they describe: Address Range Type, Address Range Parity, Address Range Side, Address Range Directionality, and Address Range Span.

1.7 Format Note

Within this appendix, quotations from the Framework Standard are italicized and set in quotation marks.

1.8 Sources

This appendix refers to the May 2008 versions of the *Geographic Information Framework Data Content Standard* as posted on the FDGC website at: *http://www.fgdc.gov/standards/standards_publications/* . Complete citations are given in Part 6 of the Standard.

2. Relationship of the Address Standard to Each of the Eight Parts of the Geographic Information Framework Data Content Standard

2.1 Part 0: Base

2.1.1 Scope of Part 0: Base.

The Base Part provides *"A high-level view of the seven framework data themes[,] [a]n overall integrating Unified Modeling Language (UML) model that is supplemented by detail in the part for each data theme, [and] [t]erminology and other information common to two or more themes"* (Part 0, Sec 1.2).

The Base Part defines the abstract model that underlies and unifies the seven data themes. It sets forth, for the data themes, specific conformance requirements as to definitions of terms and abbreviations, UML model notation, data dictionary content and formatting,

element and attribute naming, incorporation of metadata and record identifiers, and conformance to ISO reference standards and the abstract framework data model.

2.1.2 Relation of Part 0 to Address Standard.

To be compatible with the Framework Standard, the Address Standard must meet the conformance requirements given in the Base Part, or at least not contradict them. As shown in the detailed analysis in Section 3, the Address Standard conforms to all of the requirements.

2.1.3 Conclusion

The Address Standard conforms to the Base Part.

2.2 Part 1: Cadastral

2.2.1 Scope of Part 1: Cadastral.

Part 1 *"provides the information necessary to identify the existence of parcel-level cadastral information and the source of that information."* (Part 1, Sec. 1).

Part 1 is a profile of the FGDC's *Cadastral Data Content Standard* (FGDC-STD-003). The *Cadastral Data Content Standard "contains the standardization of the definition of entities and objects related to cadastral information including survey measurements, transactions related to interests in land, general property descriptions, and boundary and corner evidence data."* (Part 1, Introduction).

2.2.2 Relation of Part 1 and the Cadastral Data Content Standard to the Address Standard.

The Address Standard is consistent with both the Cadastral Part of Framework Standard and the Cadastral Data Content Standard. The Address Standard includes two address attributes, Address Parcel Identifier and Address Parcel Identifier Source, both defined by reference to the *Cadastral Data Content Standard.* They correspond to the Parcel ID and Source Identifier (or Parcel ID Assigner) elements, respectively, in the Cadastral Part and the Cadastral Data Content Standard.

Because addresses and parcels are created and altered independently of each other, no specific address-parcel relationship can be assumed. They should be treated as independent entities, and the relationship between them should be considered, in relational database terms, as a many-to-many relationship--that is, an address can relate to any number of parcels, and a parcel can relate to any number of addresses.

The Address Parcel Identifier and the Address Parcel Identifier Source are both defined by reference to the Cadastral Standard, and they are the only parcel elements included or needed within the Address Standard. Except for those two attributes, the Address and Cadastral Standards do not share any defined terms, data elements, or data classes. All other parcel elements are defined within the Cadastral Standard and need not be repeated in the Address Standard. All address elements and classes are defined in the Address Standard and need not be repeated in the Cadastral Standard. Thus the two standards are consistent in their shared elements, and mutually exclusive and complementary in their scopes.

2.2.3 Conclusion

The Address Standard is consistent with the Framework Standard Cadastral Part.

2.3 Part 2: Digital Orthoimagery

2.3.1 Scope of Part 2: Digital Orthoimagery.

Part 2 *"specifies data content and logical structure for the description and interchange of framework digital orthoimagery. To a certain extent, it also provides guidelines for the acquisition and processing of imagery (leading toward the generation of digital orthoimagery), and specifies the documentation of those acquisition and processing steps."* (Part 2, Sec 1.1)

2.3.2 Relation of Part 2 to Address Standard.

The Address Standard does not refer to digital orthoimagery, and it does not share any defined terms, data elements, or data classes with Part 2.

2.3.3 Conclusion

The Address Standard is unrelated to the Digital Orthoimagery Part.

2.4 Part 3: Elevation

2.4.1 Scope of Part 3: Elevation.

Part 3 *"defines the geospatial data model entities and attributes that permit the exchange of digital elevation data consistent with the National Spatial Data Infrastructure's (NSDI) framework for elevation data."* (Part 3, Sec. 1).

2.4.2 Relation of Part 3 to Address Standard.

The Address Standard includes address attributes that define horizontal and vertical coordinates for address points, and the coordinate reference system to which the coordinates are referenced. The attributes are:

Horizontal: Address XCoordinate, Address YCoordinate, Address Longitude, Address Latitude, USNational Grid Coordinate

Vertical: Address Elevation

Coordinate Reference System: Address Coordinate Reference System ID, Address Coordinate Reference System Authority; Complex Element: Address Coordinate Reference System

The address attributes listed above are consistent with Part 3, and otherwise the two standards are independent and unrelated.

2.4.3 Conclusion

The Address Standard is consistent with the Elevation Part.

2.5 Part 4: Geodetic Control

2.5.1 Scope of Part 4: Geodetic Control.

Part 4 *"provides a common methodology for creating datasets of horizontal coordinate values and vertical coordinate values for geodetic control points represented by survey monuments, such as brass disks and rod marks. It provides a single data structure for relating coordinate values obtained by one geodetic survey method (for example, a classical line-of-sight traverse) with coordinate values obtained by another geodetic survey method (for example, a Global Positioning System geodetic control survey)."* (Part 4, Sec .1.2)

2.5.2 Relation of Part 4 to Address Standard.

The Address Standard does not refer to control points, and it does not share any defined terms, data elements, or data classes with Part 4.

2.5.3 Conclusion

The Address Standard is unrelated to the Geodetic Control Part.

2.6 Part 5: Governmental Units and Other Geographic Area Boundaries

2.6.1 Scope of Part 5: Governmental Units and Other Geographic Area Boundaries.

"The purpose of ...Part 5...is to establish the content requirements for the collection and interchange of governmental units and other geographic area boundary data and to facilitate the maintenance and use of that information." (Part 5, Sec 1).

The part recognizes four types of areas (definitions are quoted from Part 5, Sec.5.5):

- governmental unit - *"geographic area with legally defined boundaries established under Federal, Tribal, State, or local law, and with the authority to elect or appoint officials and raise revenues through taxes"* (Sec. 5.5.12)
- administrative unit - *"area established by rule, treaty, or regulation of a legislative, executive, or judicial governmental authority, a non-profit organization, or private industry for the execution of some function"* (Sec. 5.5.1)
- statistical unit - *"geographic area defined for the collection, tabulation, and/or publication of demographic, and/or other statistical data"* (sec. 5.5.20)
- other unit - *"geographic area that is not a governmental unit, administrative unit, or statistical unit, as defined herein, and that is not an area defined or described in other framework parts"* (Sec. 5.5.17)

2.6.2 Relation of Part 5 to Address Standard.

The Address Standard is related to the Governmental Units and other Geographic Area Boundaries Part in two ways:

1. Government unit names and other geographic area names often also serve as address Place Names, State Names, or Country Names.

2. Part 5 defines boundaries and spatial relationships. The Data Quality Part of the address standard uses spatial relationships to test whether the address is within the polygon that represents the address Place Name(s), State Name, or Country Name.

To provide for consistency of terminology:

1. The Address Standard definition of Place Name is based in part on the Framework Standard Part 5.

2. Tables 11, 13, and 15 of Part 5, which provide an extensive list of terms and definitions for various types of communities and local governments, are cited in the Address Standard Place Name notes.

3. Relevant terms from tables 11, 13, and 15 are listed in the Address Standard under Place Name as “Other Common Names for the Element.”

4. The Address Standard notes for State Name cite the definition of “state” given in Framework Standard part 5, Table 13.

5. The Address Standard definition of Country Name incorporates the definition of “country” given in Framework Standard part 5, Table 13.

The data quality tests use boundary polygons and spatial relationships in a manner consistent with the definitions of Part 5.

2.6.3 Conclusion

The Address Standard is consistent with the Governmental Units and other Geographic Area Boundaries Part.

2.7 Part 6: Hydrography

2.7.1 Scope of Part 6: Hydrography.

“The purpose of ... Part 6 ... is to establish the content requirements for the collection and interchange of hydrography features and to facilitate the maintenance and use of that information by all users of geographic information. The Hydrography part identifies and defines terminology, encoding schema, and the data components required for describing hydrographic features, along with the metadata needed for the hydrography data exchange.... The scope of this part is limited to the information regarding surface water features and hydrographic networks for the purpose of cartography and network analysis.” (Part 6, Sec. 1.1)

2.7.2 Relation of Part 6 to Address Standard.

The Address Standard does not refer to hydrography or hydrographic features, and it does not share any defined terms, data elements, or data classes with Part 6.

2.7.3 Conclusion

The Address Standard is unrelated to the Hydrography Part.

2.8 Part 7: Transportation

2.8.1 Scope of Part 7: Transportation.

Part 7 *"defines the data model for describing transportation systems components of transportation systems for five [sic] modes that compose the Transportation theme of the NSDI."* (Part 7, Sec. 1).

Part 7 is comprised of five sub-parts: the Transportation Base Part (Part 7), and Rail, Roads, Transit, and Inland Waterways (Parts 7b through 7e). (Part 7a, Transportation - Air, was drafted but not endorsed.) The Base, Roads, and Transit subparts are especially germane to the Address Standard.

2.8.2 Relation of Part 7 to Address Standard.

Addresses and transportation networks--and the standards that define them--are so closely related as to be interdependent. In particular, the thoroughfare address classes locate addresses by reference to a thoroughfare; thoroughfare networks are defined and described in the Transportation Part of the Framework Standard. Appendix H (informative) describes the interdependence and complementarity of the two standards in detail.

The Address Standard includes five elements by which an address feature can be related to a transportation event and a transportation segment or path: Address Transportation System Name, Address Transportation System Authority, Address Transportation Feature Type, Address Transportation Feature ID, and Related Transportation Feature ID.

The Address Standard includes five address range attributes, so that address ranges can be properly related to the transportation segments they describe: Address Range Type, Address Range Parity, Address Range Side, Address Range Directionality, and Address Range Span.

These elements are defined to incorporate by reference the transportation model defined in the Transportation Part, without overlapping it.

Because the Transportation Part was completed before the Address Standard was started, it overlaps with the Address Standard in certain respects. Within the Transit subpart, Annex D (Informative) describes an address extension to the transit model. The model is inconsistent with the Address Standard. In addition, the following classes, attributes, and code list values overlap and in some respects are inconsistent with elements in the Address Standard:

1. Transit, Table 1 (Data Dictionary for TransitStop) attributes: address, street side

2. Transit, Table 10(Data Dictionary for Landmark) class and attributes: Landmark, landmarkName, landmarkType, address

3. Transit, Table 11 (Data Dictionary for Facility) attributes: address

4. Roads, Table 3 (Code List for RoadLinearEventType) code list values: directionalPrefix, directionalSuffix, addressInformation, alternateNameBody, alternateNameText, alternateStreetName, alternateStreetNameBody, alternateStreetNameText, firstHouseNumber, houseNumberRange, houseNumberStructure, intermediateHouseNumber, lastHouseNumber, postalCode

2.8.3 Conclusion

The Address Standard and the Transportation Part are inconsistent. They can be made consistent by replacing or redefining Annex D and the class, attributes and values listed above with reference to the Address Standard.

3. Conformance of the Address Standard to Framework Standard Part Zero Base Part

The Framework Standard Base Part defines the abstract model that underlies and unifies the framework seven data themes. It sets forth, for the data themes, specific conformance requirements as to definitions of terms and abbreviations, UML model notation, data dictionary content and formatting, element and attribute naming, incorporation of metadata and record identifiers, and conformance to ISO reference standards and the abstract framework data model.

Section 3 sets forth the conformance requirements given in the Framework Standard Base Part, section by section, and analyzes whether and how the Address Standard conforms to the requirements. As shown below, the Address Standard conforms to all of the requirements.

3.1 Conformance to Base Part Section 1: Scope

Framework Base Part Section 1 states the scope of the Framework Standard, the Base Part and the seven data theme parts. It is descriptive; it imposes no conformance requirements that would apply to the Address Standard.

3.2 Conformance to Base Part Section 2: Conformance

Framework Base Part Section 2 states in full: *"2. Conformance. Each thematic part of the Framework Data Content Standard includes a data dictionary based on the conceptual schema presented in that part. To conform to the standard, a thematic dataset shall satisfy the requirements of the data dictionary for that theme. It shall include a value for each mandatory element, and a value for each conditional element for which the condition is true. It may contain values for any optional element. The data type of each value shall be that specified for the element in the data dictionary and the value shall lie within the domain specified for the element."*

Address Standard Conformance to Section 2: The Address Standard includes a data dictionary (the Content Part) and a conceptual schema (the XSD in the Exchange Part). The Content Part provides data types and (if applicable) domains for each elements and attribute. The Classification Part shows which elements are mandatory for each class. The Address Standard thus includes all information needed to determine whether a given dataset conforms to the standard.

3.3 Conformance to Base Part Section 3: Normative References

Framework Base Part Section 3 refers to Annex A, which lists normative references to standards that affect two or more parts of the Framework Data Content Standard. This section imposes no conformance requirements that apply to the Address Standard.

3.4 Conformance to Base Part Section 4: Maintenance Authority

Framework Base Part Section 4 states that the FGDC is the maintenance authority for the Base Part, and it provides a contact point for questions. This section imposes no conformance requirements that would apply to the Address Standard.

3.5 Conformance to Base Part Section 5: Terms and Definitions

Framework Base Part Section 5 defines terms used in the Base Part or common to two or more parts of the standard. Two of the terms are pertinent to the Address Standard:

"5.12 data content standard – standard that specifies what information is contained within a geospatial dataset and provides an application schema"

Address Standard Conformance to 5.12: The Address Standard specifies what information is contained within an address dataset and provides an address schema. Thus the Address Standard fits the definition of a data content standard.

"5.22 feature type – category of real world phenomena with common properties [ISO 19126]"

Address Standard Conformance to 5.22: Addresses are real world phenomena with common properties. The Classification Part of the Address Standard specifies the common properties of the various classes of addresses. Addresses therefore meet the definition of "feature type."

3.6 Conformance to Base Part Section 6: Symbols, Abbreviated Terms, and Notations

Framework Base Part Section 6 lists abbreviations used in the Base Part or common to two or more parts of the Framework Standard. Abbreviations used in the Address Standard are consistent with the abbreviations listed in the Base Part.

3.7 Conformance to Base Part Section 7: Requirements

3.7.1 Conformance to Base Part Subsection 7.1: Unified Modeling Language (UML) model

Framework Base Part Section 7.1 reads in full: *"7.1 Unified Modeling Language (UML) model. A data model expressed in UML is provided in each theme part in one of the following ways:*

- *Incorporated in the body text in each section that needs it*
- *Incorporated in the body text in a UML model-only section*
- *Incorporated in a normative annex and referenced in the body text*
- *Incorporated in the body text, but only at a high level or in a general way with detailed data components of the model presented in a normative annex*

"The use of UML class diagrams in the Framework Data Content Standard is an application-neutral approach to depict the inherent description of and relationships among data entities. These diagrams should neither be interpreted as requiring object-oriented implementation – methods or interfaces are not typically shown on these data classes – nor should they be interpreted as representing tables in relational databases. Instead, the UML classes should be used as the basis for translation to and from internal organization data stores and applications. UML modeling environments typically support conversion of logical UML models into implementations in various programming environments through rule-based transforms."

Address Standard Conformance to Base Part 7.1: The Data Exchange Part provides a UML model of the standard, and a complete XSD.

3.7.2 Conformance to Base Part Subsection 7.2: Dependence on ISO 19100 series of geographic information standards

Framework Base Part Section 7.2 reads in full: *"7.2 Dependence on ISO 19100 series of geographic information standards. The Framework Data Content Standard is dependent on structures and concepts from several standards in the ISO 19100 series of geographic information standards, as shown in Figure 1. Full titles for these standards are found in Annex A. The digital orthoimagery and elevation data parts also are dependent on ISO 19123. Data standards for certain transportation modes are dependent on ISO 19133. All parts have dependencies on ISO 19107, ISO 19108, ISO 19109, ISO 19111, and ISO 19115."*

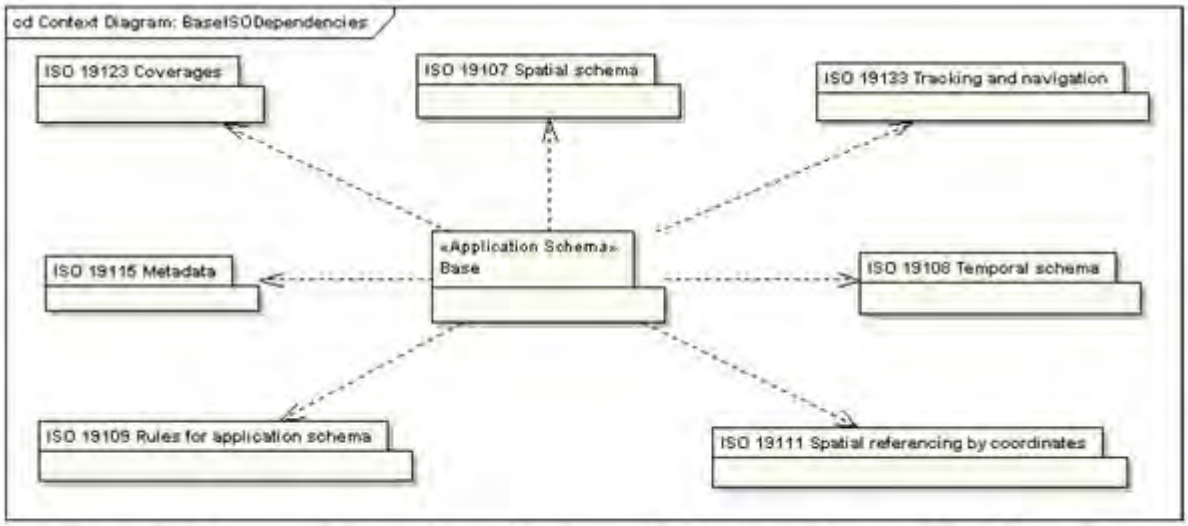

Figure 1 – Framework base dependencies on ISO series of geographic information standards

Address Standard Conformance to Base Part 7.2. The Address Standard is not directly dependent on any of the ISO 19100 series of geographic information standards, because there is no ISO 19100 standard for addresses. To the extent that the Address Standard is indirectly dependent on other ISO standards that govern the Framework Standard, conformance to this section (7.2) is shown by the conformance of the Address Standard to the Base Part of the Framework Standard.

3.7.3 Conformance to Base Part Subsection 7.3: Application schema

Framework Base Part Section 7.3 reads in full: *"7.3 Application schema. Each of the thematic Framework Data Content Standard parts includes an integrated application schema expressed in the Unified Modeling Language (UML) according to ISO 19109, Geographic information – Rules for application schema, and its normative references. The application schema specifies, as appropriate, the feature types, attribute types, attribute domain, feature relationships, spatial representation, data organization, and metadata that define the information content of a dataset.*

"The UML models included in the parts of the standard describe the common content and structures that can be exchanged between members of the geospatial community. The use of UML and abstract modeling concepts allows the standard to be technology independent but permits current and future implementation cases to be derived from the UML model.

"Whenever possible, the standard references abstract UML object types from the ISO 19100 series of standards and OGC specifications. Specialization of these classes of objects allows each theme to inherit properties and behaviors and ensure their propagation when transformed into an encoding such as XML.

"UML concepts and notation are described in Annex B." (Base Part subsection 7.3, quoted in full)

Address Standard Conformance to Base Part 7.3. The UML model and XSD provided in the Data Exchange Part express an integrated application schema that define the information content of the standard.

3.7.4 Conformance to Base Part Subsection 7.4: Data dictionary

3.7.4.1 Conformance to Base Part Subsection 7.4.1: General requirements

Framework Base Part Section 7.4.1 reads in full: *"7.4.1 General requirements. Each of the thematic Framework Data Content Standard parts contains, as appropriate, documentation of all features, attributes, and relationships and their definitions. A data dictionary table describes the characteristics of the UML model diagrams.*

"The data dictionary (see Table 1) is structured as follows:

- *Each UML model class equates to a data dictionary entity*
- *Each UML model class attribute equates to a data dictionary element*
- *Each UML model role name equates to a data dictionary element*
- *The shaded rows define entities*
- *The entities and elements within the data dictionary are defined by six attributes based on those specified in ISO/IEC 11179-3 for the description of data element concepts, that is, data elements without representation."*

Table 1 – Data dictionary table format

Line	Name/Role Name	Definition	Obligation/Condition	Maximum Occurrence	Data Type	Domain
1						
2						
3						

Address Standard Conformance to Base Part 7.4.1. The Address Standard Content Part provides a data dictionary of all the elements and attributes specified in the address standard. The dictionary provides the required information about each element and attribute, and extends the base standard by including additional items.

In the Address Standard each address data element is described by giving its:

1. Element name: The name of the element.
2. Other common names for this element: Common words or phrases having the same or similar meaning as the element name.
3. Definition: The meaning of the element.

4. Definition Source: The source of the definition. ("New" indicates that the definition is original.)
5. Data Type: Whether the element is a characterString, integer, datetime, etc.
6. Existing Standards for this Element: Other standards that govern this element (if any).
7. Domain of Values for this Element: The range or set of values (if any) to which the element is restricted.
8. Source of Values: The source (if any) for the domain of values.
9. How Defined: How the domain of values is defined.
10. Example: Illustrative examples of the element.
11. Notes/Comments: Notes and comments giving further explanation about the element.
12. XML Tag: The XML tag for the element.
13. XML Model: XML model of the element.
14. XML Example: The XML model applied to a specific example of the element.
15. XML Notes: Explanatory notes about the XML model.
16. Quality Measures: Quality tests applied to the class.
17. Quality Notes: Explanatory notes about the quality measures applied to this element.

The list above includes all the information required by the Base Part 7.4.1. Specifically:

- Name/Role Name is provided under “Element Name”
- Definition is provided under “Definition”
- Obligation/Condition is provided in the XML model
- Maximum Occurrence is provided in the XML model
- Data Type is provided under “Data Type”
- Domain is provided under “Domain of Values for this Element”

The Address Standard data dictionary includes additional information to encourage widespread and consistent use of the standard by providing clear and complete explanatory information, notes, and examples about each element and attribute. The documentation for address data elements in the Address Standard meets the requirements used by the Framework Data Standard, and provides for additional attributes.

3.7.4.2 Conformance to Base Part Subsection 7.4.2: Name/Role name

Framework Base Part Section 7.4.2 reads in full: *"7.4.2: Name/Role name. The name/role name is a label assigned to a data dictionary entity or to a data dictionary element.*

The class name begins with an upper case letter. Spaces do not appear in an entity name: instead, multiple words are concatenated, with each word starting with a capital letter (example: XnnnYmmm). Entity names are unique within a data theme.

Element names start with a lower case letter. Spaces do not appear in an element name: instead, multiple words are concatenated, with subsequent words starting with a capital letter (example: xnnnYmmm). Element names are unique within an entity. Combinations of the entity and element names (example: Dataset.name) are therefore unique within a data theme.

Role names are used to identify the roles of the classes at the ends of a model association and are preceded by the term "Role name" followed by a colon to distinguish them from other types of data dictionary elements."

Address Standard Conformance to Base Part 7.4.2. The Address Standard conforms to this section in substance, but not in form:

1. The Address Standard (specifically the content and class parts) provides unique names for every element, attribute, and class.

2. Consistent naming conventions are used for class, element, and attribute names and XML tags.

3. The Address Standard does not define any roles nor specify any role names.

3.7.4.3 Conformance to Base Part Subsection 7.4.3: Definition

Framework Base Part Section 7.4.3 reads in full: *"7.4.3: Definition. The definition is the entity or element description."*

Address Standard Conformance to Base Part 7.4.3. The Address Standard (specifically the content and class parts) includes a formal definition for every element, attribute, and class in the standard.

3.7.4.4 Conformance to Base Part Subsection 7.4.4: Obligation/Condition

Framework Base Part Section 7.4.4 reads in full:

"7.4.4.1 General

"Used only in rows that contain elements, Obligation/Condition is a descriptor indicating whether the element shall always be populated (that is, contain a value or values) or sometimes will be populated for every instance of its owning entity. If the element is a role name, then the obligation/condition shall apply to the element indicated

by the Data Type. This descriptor may have the following values: M (mandatory), C (conditional), or O (optional).

"7.4.4.2 Mandatory (M)

"Mandatory (M) indicates that the entity or element shall be populated.

"7.4.4.3 Conditional (C) "Conditional (C) specifies an electronically manageable condition under which at least one entity or element is mandatory. "Conditional" is used for one of the three following possibilities:

- *Expressing a choice between two or more options. At least one option is mandatory and must be populated*
- *Populating an entity or element if another element has been populated*
- *Populating an element if a specific value for another element has been populated.*

"To facilitate reading by humans, the specific value is used in plain text (for example, "C/not defined by encoding?"). However, the code shall be used to verify the condition in electronic user interface,

"If the answer to the condition is positive, then the entity or the element shall be populated.

"7.4.4.4 Optional (O)

"The entity or the element may be populated. Optional (O) entities and optional elements have been defined to provide a guide to those looking to fully document their data. (Use of this common set of defined elements will help promote interoperability among framework data users and producers.) Optional entities may have mandatory elements. If the optional entity is used, the mandatory elements shall be used. If an optional entity is not used, the elements contained within that entity (including mandatory elements) will also not be used. "

Address Standard Conformance to Base Part 7.4.4. Obligation/conditionality is indicated in the XML model of each element and attribute, and in syntax descriptions and XML model of each address class.

3.7.4.5 Conformance to Base Part Subsection 7.4.5: Maximum occurrence

Framework Base Part Section 7.4.5 reads in full: *"7.4.5: Maximum occurrence Used only in rows that contain elements, maximum occurrence specifies the maximum number of instances the element may have. Single occurrences are shown by "1"; unconstrained number of instances are represented by an asterisk "*". Fixed number occurrences, other than one, are allowed and will be represented by the corresponding number (that is, "2", "3" …and so on). If the element is a role name, then the maximum occurrence shall apply to the element indicated by the Data Type."*

Address Standard Conformance to Base Part 7.4.5. The XML model for each class and complex element shows the maximum occurrence for each of the elements and attributes that may comprise it.

3.7.4.6 Conformance to Base Part Subsection 7.4.6: Data type

Framework Base Part Section 7.4.6 reads in full: *"7.4.6: Data type. Specifies a set of distinct values for representing the elements (example: integer, real, CharacterString, DateTime, and Boolean). The data type attribute is also used to define stereotypes for entities and entity names for elements which are role names. These data types are generic types that do not infer an implementation."* (Base Part 7.4.6, quoted in full)

Address Standard Conformance to Base Part 7.4.6. The data type for each element and attribute is specified in its description in the Content Part. Data types are named and defined in accordance with the Code List for Data Type (see Base Part section 7.8.2.2, Table 4), except for certain address reference system elements, which are geometric. All geometric data types are defined in the Open Geospatial Consortium's "OpenGIS(R) Geography Markup Language (GML) Encoding Standard" version: 3.2.1 (see Part 6 for a complete citation).

3.7.4.7 Conformance to Subsection Base Part 7.4.7: Domain

Framework Base Part Section 7.4.7 reads in full: *"7.4.7: Domain. For an entity, the domain indicates line numbers covered by the elements of that entity in the table.*

"For an element, the domain specifies the values allowed. "Unrestricted" indicates that no restrictions are placed on the data type of the element. Code lists provide a list of potential values, although additional values can be used. Enumerations provide a non-extensible list of potential values." (Base Part 7.4.7, quoted in full)

Address Standard Conformance to Base Part 7.4.7. Domain information for each element and attribute is provided in its description in the Content Part. For address classes, no domain information is provided, because no address class has any domains.

3.7.5 Conformance to Subsection Base Part 7.5: Metadata

Framework Base Part Section 7.5 reads in full:

"7.5.1 Requirement for metadata

"All datasets shall have metadata that conforms to at least the minimal set of mandatory elements of either ISO 19115, Geographic Information – Metadata, or FGDC-STD-001-1998, Content Standard for Digital Geospatial Metadata (revised June 1988). However, more extensive metadata should be provided.

"7.5.2 Associating metadata entry with data transfer

"The mechanism used to associate a structured metadata entry with a data transfer is not explicitly declared in the Framework Data Content Standard due to possible complex dependencies on either the structure of FGDC or ISO metadata being used. It is the intention of the standard to logically insert the appropriately structured metadata from either standard wherever the class attribute "metadata" occurs. The implementation of this capability may be specified in the implementation annexes as referenced to external metadata schemas in the appropriate implementation or programming environment."

Address Standard Conformance to Base Part 7.5. The Address Standard incorporates by reference, for address data files, the FGDC"s *Content Standard for Digital Geospatial*

Metadata (CSDGM)(FGDC 1998). The Address Standard extends the CSDGM by providing attributes for record-level address metadata.

3.7.6 Conformance to Subsection Base Part 7.6: Model integration

Framework Base Part Section 7.6 reads in full: *"7.6: Model integration. The dependencies among the models specified in the thematic parts of the standard are shown in Figure 2. In Figure 2, the parenthetical text (from Transportation) means that there is a UML package called "Transportation" in which all transportation constructs reside, including Transportation Base."*

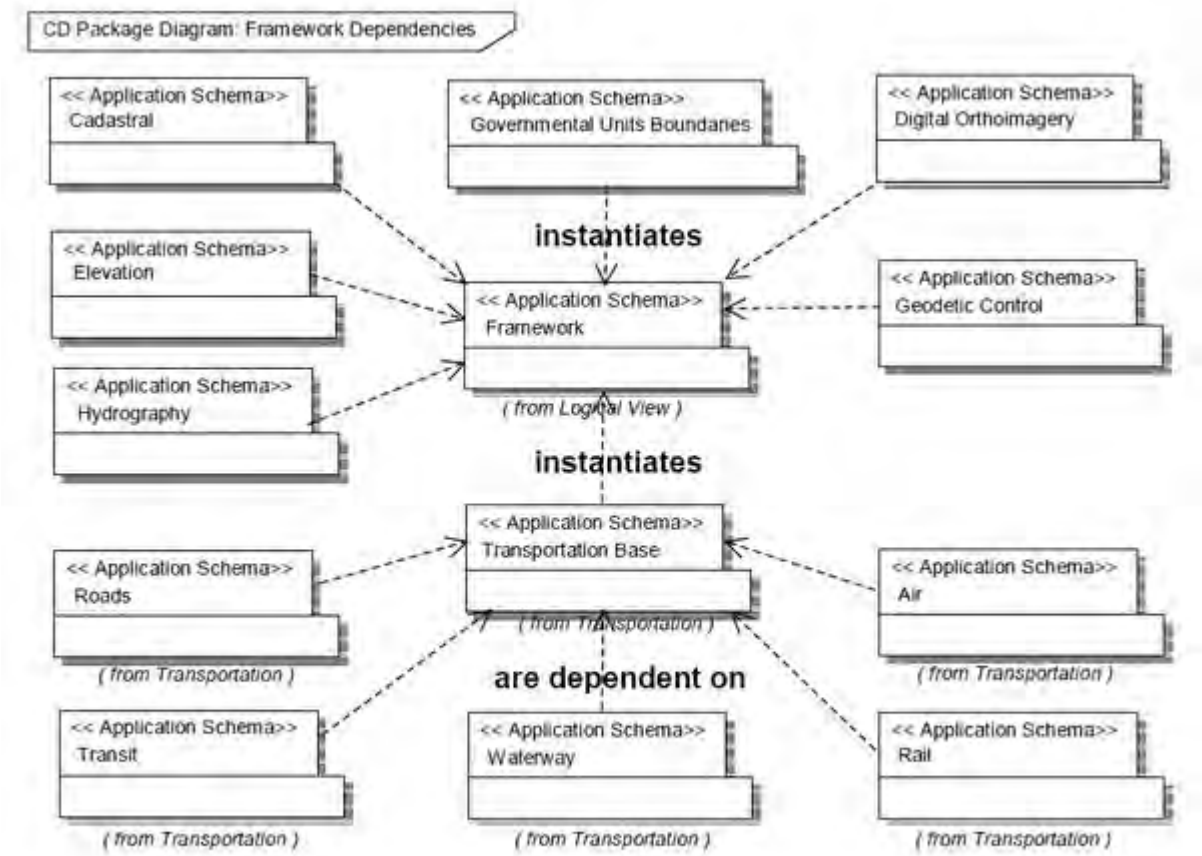

Figure 2 – Dependencies among the models specified in the thematic parts

Address Standard Conformance to Base Part 7.6. If the Address Standard were to be incorporated into the Framework Data Standard, it would be instantiated by and dependent on the Base Part. Relations between the Address Standard and the Framework data themes (especially Transportation and Cadastral themes) are described in Section 2 of this Appendix.

3.7.7 Conformance to Subsection Base Part 7.7: Establishment of identifiers

Framework Base Part Section 7.7 reads in full (omitting the footnote): *"7.7: Establishment of identifiers. Every UML class that represents a feature type includes attributes for identifier and an optional identifier authority. This construct can be used to distinguish between similar values in different datasets. Policies may be developed within a community for assigning namespaces and permanent identifiers to features and expressing equivalencies among features that have been assigned different namespaces and, therefore, different identifiers, which may be permanent. If there is no standard way to create and manage identifiers, users may develop their own schema and include its description in the dataset metadata."*

Address Standard Conformance to Base Part 7.7. The Address Standard defines an address attributes, Address ID, to serve as an address identifier, and another attribute, Address Authority, to serve as an authority identifier. Address ID may be implemented as a local ID or as a UUID.

3.7.8 Conformance to Base Part Subsection 7.8: Framework feature model and common classes

3.7.8.1 Conformance to Subsection Base Part 7.8.1: Introduction

Framework Base Part Section 7.8.1 reads in full: *"7.8.1: Introduction. The Framework Data Content Standard organizes information using the ISO General Feature Model [ISO 19109]. Features are abstractions of real-world phenomena or man-made constructs that typically have a persistent or assigned identity, such as a name or code, a location represented by a formalized geometry, and a set of other properties and relationships.*

"Each framework theme, represented by a part in the standard, documents one or more formal feature types using a logical information model (attributes, associations, conditionality) represented as class diagrams in UML. All feature types (see darker shaded classes in Figure 3) are denoted in UML using the stereotype <>. All features in every part of the standard are subclasses of this common framework Feature and thus inherit its properties as shown in the diagram. Except for identifier, all properties are optional and most of them are repeatable.

"All classes stereotyped as <> implement the Abstract class named "Feature" in the Base and inherit all of its properties. Likewise, any class stereotyped as <> implements the Abstract class of the same name in the Base and inherits its property of "metadata". Inheritance is also shown through an italicized parent classname in the upper right corner of the child class.

"The Framework Data Content Standard supports the transfer of geographic data from one party to another. A group of features, known as a feature collection, would define a transfer. Metadata may be associated with the contents of the transfer, as is done now with FGDC "dataset-level" metadata. This feature collection may include features from

one or more thematic parts of the standard, depending on the application and its requirements.

"Table 2 represents the information from Figure 3 in data dictionary format.

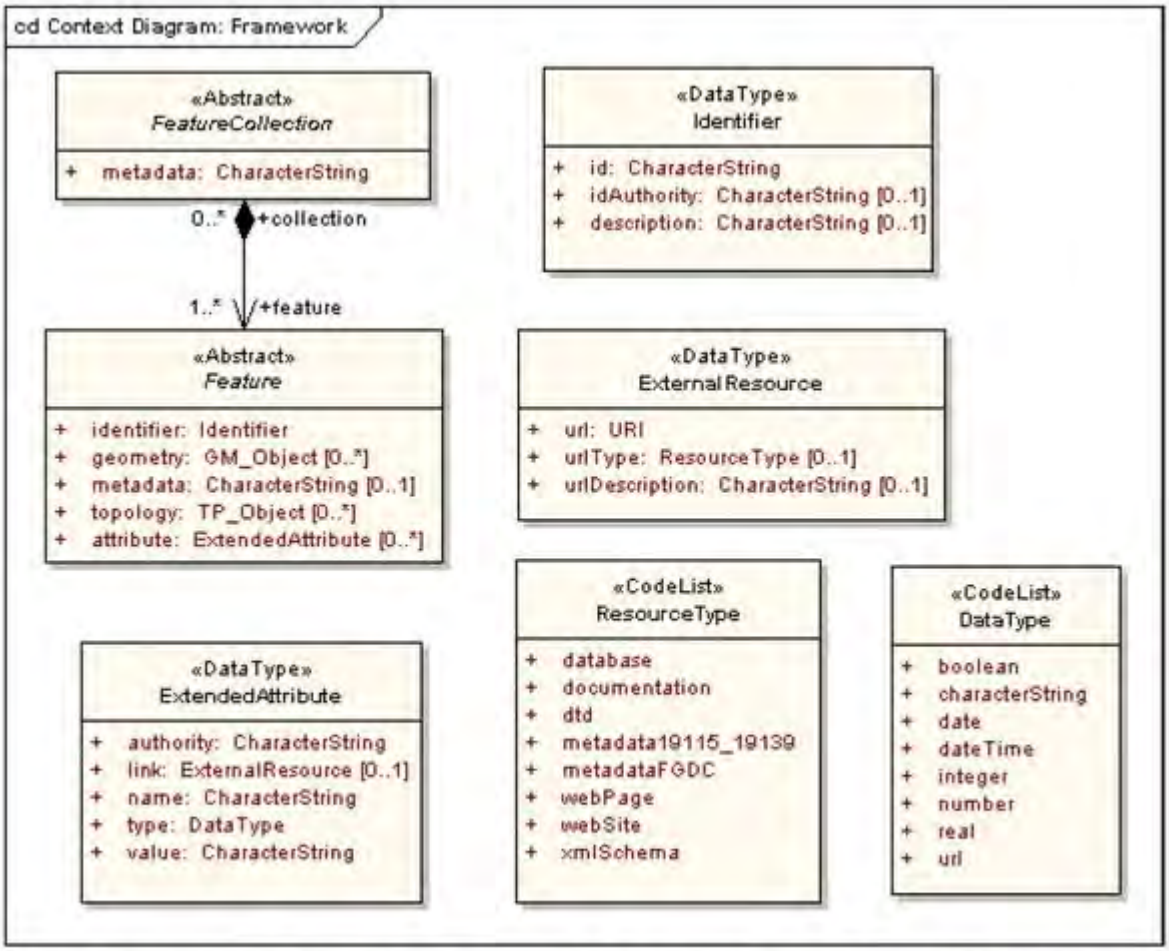

Figure 3 – The conceptual framework feature model and common classes

Table 2 – Description of common UML classes

Table 2 – Description of common UML classes

Line	Name/Role Name	Definition	Obligation/ Condition	Maximum Occurrence	Data Type	Domain
1	FeatureCollection	Aggregation of all features being transferred			<<Abstract>>	Lines 2-3
2	metadata	Structured or unstructured metadata as defined by the community of practice	M	1	CharacterString	May be text or structured metadata fragment or URI
3	Role name: feature	Features in the feature collection	M	*	<<Abstract>> Feature	Unrestricted
4	Feature	Abstraction of a real world phenomenon			<<Abstract>>	Lines 5-10
5	identifier	Label that uniquely identifies a feature, unique within the transfer	M	1	<<DataType>> Identifier	Unrestricted
6	geometry	Geometric representation of the feature	O	*	<<Type>> GM_Object	Defined in ISO 19107
7	metadata	Structured or unstructured metadata as defined by the community of practice	O	1	CharacterString	May be text or structured metadata fragment or URI
8	topology	Connectivity between one feature and another	O	*	<<Type>> TP_Object	Defined in ISO 19107
9	attribute	Producer-defined attribute for inclusion in transfer	O	*	<<DataType>> ExtendedAttribute	Unrestricted
10	Role name: collection	Collection of which this feature is a part	O	*	<<Abstract>> FeatureCollection	Unrestricted
11	Identifier	Construct to group an identifier with an authority and a description			<<DataType>>	Lines 12-14
12	id	Identification value (ID)	M	1	CharacterString	Unrestricted
13	idAuthority	Name of the issuing authority for the identifier	O	1	CharacterString	Unrestricted

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Line	Name/Role Name	Definition	Obligation/ Condition	Maximum Occurrence	Data Type	Domain
14	description	Description or qualification of the identification value within the namespace of the authority	O	1	CharacterString	Unrestricted
15	ExtendedAttribute	Property that permits the identification and transport of an unofficial feature attribute			<<DataType>>	Lines 16-20
16	authority	Name of the organization responsible for the naming of this attribute	M	1	CharacterString	Unrestricted
17	link	Identification of an external resource that provides documentation of this attribute	O	1	<<DataType>> ExternalResource	Unrestricted
18	name	Name of the attribute being transferred	M	1	CharacterString	Unrestricted
19	type	Data type of the attribute being transferred	M	1	<<CodeList>> DataType	Unrestricted
20	value	Value of the attribute being transferred	M	1	CharacterString	Constrained by the valid companion data type
21	ExternalResource	Qualified link to a network accessible object			<<DataType>>	Lines 22-24
22	url	Network accessible resource in the form of a Uniform Resource Locator (URL) or valid Uniform Resource Identifier (URI)	M	1	URI	Unrestricted
23	urlType	Classification of the information content referenced by the URL	O	1	<<CodeList>> ResourceType	Unrestricted
24	urlDescription	Additional characteristics of the URL for advice or display	O	1	CharacterString	Unrestricted

"The extensibility mechanism shown in Figure 3 (ExtendedAttribute) allows for the description and transfer of additional ad hoc data content without requiring changes or extensions to the data schema. This repeatable structure may carry one or more additional attributes and their values for use in peer-to-peer transfer of unofficial feature properties. Any feature class may incorporate this reference to the ExtendedAttribute class. The link property of ExtendedAttribute expands to a triplet of elements associated with a Uniform Resource Locator (URL) for external documentation. Some ResourceTypes are shown as a code list to characterize the information content found at the referenced URL. For Transportation parts of this standard, events provide an alternative method of extending attributes when their values are not necessarily constant for the entire length of a feature."

Address Standard Conformance to Base Part 7.8.1. The Address Standard meets this requirement. Addresses meet the definition of "feature." The Classification Part defines an abstract Address class and defines subclasses of the feature "addresses", using a logical information model. The model is presented as both a UML model and an XSD. The Standard supports both record-level and file-level metadata, and the Exchange Part provides a template for both monolithic and transactional exchanges. The data model is extensible.

3.7.8.2 Conformance to Base Part Subsection 7.8.2: Code lists

Framework Base Part Section 7.8.2 reads in full:

"7.8.2.1 ResourceType code list

" ResourceType is a CodeList of values for the attribute urlType.

"Table 3 – CodeList for ResourceType

Name	Definition
database	Collection of records where each record has the same structure of data elements
documentation	Resource file that describes usage of referenced URL
dtd	Schema expressed via a set of declarations written in Document Type Definition (DTD) language*
metadata 19115_19139	Metadata records formatted using structure from ISO 19115, Geographic information – Metadata, and ISO 19139, Geographic information – Metadata - XML schema implementation
metadataFGDC	Metadata records formatted using structure from a version of the FGDC Content Standard for Digital Geospatial Metadata
webPage	Resource on the World Wide Web usually in Hypertext Markup Language (HTML) format
webSite	Collection of Web pages that common to a particular domain name or subdomain on the World Wide Web
xmlSchema	Schema expressed using a version of the XML Schema World Wide Web Consortium (W3C) Recommendation

"7.8.2.2 DataType code list

" DataType is a CodeList of values for the attribute dataType.

"Table 4 – CodeList for DataType

Name	Definition
boolean	True or False
characterString	A CharacterString is an arbitrary-length sequence of characters including accents and special characters from repertoire of one of the adopted character sets
date	Values for year, month, and day
dateTime	A combination of year, month, and day and hour, minute, and second
integer	Any member of the set of positive whole numbers, negative whole numbers and zero
number	One of a series of symbols of unique meaning in a fixed order which may be derived by counting
real	Real numbers are all numbers that can be written as a possibly never repeating decimal fraction
url	Network accessible resource in the form of a Uniform Resource Identifier (URI)

Address Standard Conformance to Base Part 7.8.2. All data types in the data dictionary conform to the code list in Table 4, except for certain address reference system

elements, which are geometric features. The Address Standard includes no resource types, so Table 3 does not apply to the Address Standard.

3.8 Conformance to Base Part Section 8: Encoding of Framework Data Content

Framework Base Part Section 8 reads in full: *"8: Encoding of framework data content. To support data exchange, the parts of the Framework Data Content Standard may include informative annexes that provide guidance to implementers on the transformation of the UML information content into a specific encoding environment. These annexes not only document the context and environment of implementation and validation schema for the information content unique to a part of the standard, but also may include encoding or schema representation of heterogeneous collections of features from multiple themes. Because the standard includes a single UML model of all themes that are exposed progressively through a series of limited diagrams in the context of a theme, it represents an integrated set of classes for all framework data."*

Address Standard Conformance to Base Part 8. The Address Standard provides both a UML model and an XSD. The XSD provides guidance on the transformation of address information into a specific encoding environment. The Content and Classification Parts of the Address Standard provide XML models for each class, element, and attribute defined in the standard. The Exchange Part of the standard integrates the XML element, attribute, and class models into a single XSD. The XSD provides complete, open, standard XML data exchange templates for both monolithic and transactional data exchanges. For validation tests, similar guidance is provided by inclusion of complete SQL pseudocode in each test defined in the Data Quality Part of the Address Standard.