# 3. Part 3: Address Data Classification

## *3.1 Introduction*

### 3.1.1 Basis for Classification

The classification part of this standard classifies addresses according to their syntax, that is, their address elements and the order in which the elements are arranged. Syntax determines the record structure needed to hold and exchange an address, and often it is all that is known about the addresses in a given file.

Classifying addresses by syntax rather than semantics (i.e. meaning) allows the users of the standard to focus on record structures, and to avoid making any assumptions about what Address Feature Type the address might identify. Classifying addresses by Address Feature Type can be frustrating or impossible because:

1. Reliable information about an address may be unavailable.
2. Often, one address is used to identify several types of features (e.g., parcel, building, building entrance, utility meter, utility pole, incident location, etc.) at the same location.
3. Address Feature Type categories may be found to be ambiguous or incomplete when applied to a given address.

### 3.1.2 Organization

The classes are presented in four broad groups:

1. **Thoroughfare addresses** specify a location by reference to a thoroughfare.
2. **Landmark addresses** specify a location by reference to a named landmark.
3. **Postal delivery addresses** specify points of postal delivery which have no definite relation to the location of the recipient, such as post office boxes, rural route boxes, overseas military addresses, and general delivery offices.
4. The **general address class** may include addresses from any or all of the other classes, or addresses whose class is unknown, or whose syntax does not conform to any of the thoroughfare, landmark, and postal classes.

Each class is described by giving its:

1. **Name:** The name of the class.
2. **Syntax:** The address elements required and permitted in the class, and the order in which they are arranged.

3. **Defining Characteristics:** The elements and arrangement that distinguish this class from the other classes.
4. **Examples:** Illustrative examples of the class.
5. **Notes:** Explanatory notes about the class.
6. **XML Tag:** The XML tag for the class.
7. **XML Model:** XML model of the class.
8. **XML Example:** The XML model applied to a specific example of the class.
9. **XML Notes:** Explanatory notes about the XML model.
10. **Quality Measures:** Data quality tests applied to the class.
11. **Quality Notes:** Explanatory notes about the data quality measures applied to this class.

### 3.1.3 Formatting Conventions

**Syntax and Formatting.** The following notation is used to show how classes are constructed from elements:

**{}** enclose the name of an element.

***** indicates that the element is **required** in addresses of that class. Otherwise the element may be omitted when desired.

**+** indicates "and" (concatenation), with a space implied between each component unless stated otherwise.

Example: { Complete Address Number *}+{ Complete Street Name *}+{ Complete Subaddress }

**Complex Elements Include All Combinations of Their Component Elements.** To avoid a multiplicity of insignificant permutations and combinations, complex elements are used to represent the various combinations of the simple elements that comprise them. Thus, for example, {CompleteAddressNumber} includes all of the following combinations:

1. { Address Number *}
2. { Address Number* } + { Address Number Suffix }
3. { Address Number Prefix } + { Address Number *}
4. { Address Number Prefix } + { Address Number *} + { Address Number Suffix }

Place State ZIP **is Shown in Parsed Form.** In each class syntax pattern, the Complete Place Name, State Name, Zip Code, Zip Plus 4, and Country Name. are shown separately. They could also be shown in their unparsed form as the Place State ZIP

element. However, the elements are shown separately in each syntax pattern, to emphasize the importance of each separate element in the address.

**XML Notation and Formatting.** XML models and examples conform to the W3C XML Core Working Group's "Extensible Markup Language (XML) 1.0" (see Part 6 for a complete citation).

## *3.2 Address Classes*

### 3.2.1 Thoroughfare Classes

A thoroughfare address specifies a location by reference to a thoroughfare. A thoroughfare in this context is a road or other access route by which the addressed feature can be reached (definition adapted from Universal Postal Union, *"International Postal Address Components and Templates"*, Publication S42-4 (approved July 6, 2004), section 5.2.9). A thoroughfare is typically but not always a road — it may be, for example, a walkway, a railroad, or a river. In most but not all addresses the thoroughfare is designated by a Complete Street Name and sites or features along the thoroughfare are designated in sequence by their Complete Address Number.

#### 3.2.1.1 Numbered Thoroughfare Address

**Syntax: { Complete Landmark Name or Complete Place Name } + { Complete Address Number * } + { Complete Street Name * } + { Complete Subaddress } + { Complete Place Name * } + { State Name * } + { Zip Code } + { Zip Plus 4 } + { Country Name }**

**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.

**Examples:**

- 123 Main Street Buffalo Lake MN 55314
- 123 Main Street Apt 3A Buffalo Lake MN 55314
- 123 North Main Street Le Sueur MN 56058
- 123A North Main Street Le Sueur MN 56058
- 123 South Avenue C Cheyenne WY 82007
- A123 Calle B Ponce PR 00716-2525
- 123 Boulevard of the Allies Pittsburgh PA 15222-1613

- 123 Camino de la Placitas Taos NM 87571
- 210 East 400 South, Salt Lake City, UT 84111
- Mile Post 142.5, Sterling Highway, Happy Valley, AK 99639
- White House, 1600 Pennsylvania Avenue, Washington DC 20500
- Heinz Hall, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh PA 15217
- Standard Office Building, Suite 400, 600 North Milwaukee Street, Milwaukee, WI 53202
- Urbanizacion Las Gladiolas, 150 Calle A, San Juan PR 00926-3232
- Carver Park Estates, 2730 Unwin Road, Cleveland, OH 44104

**Notes:**

1. Most business and residential addresses are Numbered Thoroughfare Addresses.
2. Numbered Thoroughfare Addresses are sometimes preceded by Complete Landmark Names. For example:
    - White House, 1600 Pennsylvania Avenue, Washington DC 20500
    - Heinz Hall, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh PA 15217
    - Standard Office Building, Suite 400, 600 North Milwaukee Street, Milwaukee, WI 53202
3. Less commonly, Numbered Thoroughfare Addresses are preceded by Complete Place Names, such as, for example, the name of a neighborhood, housing project, or Puerto Rican urbanizacion. When a Complete Place Name is used in this syntax, it must have a Place Name Type of Community:
    - Urbanizacion Las Gladiolas, 150 Calle A, San Juan PR 00926-3232
    - Carver Park Estates, 2730 Unwin Road, Cleveland, OH 44104
4. Strictly speaking, these are hybrid addresses. Logically they could each be decomposed to two related addresses, a Numbered Thoroughfare Address, and a Landmark Address or Community Address.
5. If the Complete Address Number is missing, then either the address is incomplete, or the address should be classified as an Unnumbered Thoroughfare Address.
6. In Puerto Rico it is common practice to name subdivisions and neighborhoods ("urbanizacions"), number the streets within them (Calle 1, Calle 2, etc.), and assign Complete Address Numbers that duplicate Complete Address Numbers in

other nearby urbanizacions. As a result a jurisdiction or postal delivery area may contain duplicate Complete Street Names and address ranges. In these cases the urbanizacion name is required to tell the duplicates apart:

- Urbanizacion Royal Oak, 123 Calle 1, Bayamon PR 00961-0123
- Urbanizacion Hermosillo, 123 Calle 1, Bayamon PR 00961-1212

7. Some Puerto Rican urbanizacion addresses include Complete Street Names, and some do not. Urbanizacion addresses are classified as Numbered Thoroughfare Addresses if they include a thoroughfare name. Without a thoroughfare name, they are classified as Community Addresses:
   - (Numbered Thoroughfare Address): Urbanizacion Royal Oak, 123 Calle 1, Bayamon PR 00961-0123
   - (Community Address): 1234 Urbanizacion Los Olmos, Ponce PR 00731
8. For additional information on Puerto Rican addressing see USPS “Addressing Standards for Puerto Rico and the Virgin Islands” (p. 1-6), and also USPS Publication 28, Section 29.

**XML Tag:** <
`NumberedThoroughfareAddress`
>

**XML Model:**

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

**XML Example:**

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4.2" 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>
```

**XML Notes:**

**Quality Measures:**

Address Completeness Measure
Address Number Fishbones Measure
Address Left Right Measure
Pattern Sequence Measure
Range Domain Measure
Spatial Domain Measure

#### 3.2.1.2 Intersection Address

**Syntax: :{ Complete Landmark Name or Complete Place Name } + { Corner Of } + { Complete Street Name * { Separator Element * } } (2..n) + { Complete Place Name *} + { State Name *} + { Zip Code } + { Zip Plus 4 } + { Country Name }**

**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.

**Examples:**

- Boardwalk and Park Place, Atlantic City, NJ
- Hollywood Boulevard and Vine Street, Hollywood, CA
- West Street & Main Street, Newtown, CT
- P Street && 19th Street && Mill Road, Ellicott City, MD
- Avenida Rosa y Calle 19, Bayamon PR
- Memorial Park, Last Chance Gulch and Memorial Drive, Helena, MT
- Phoenix Village, Scovill Avenue and East 59th Street, Cleveland, Ohio
- Northwest corner of Hollywood Boulevard and Vine Street, Hollywood, CA
- Freeway Park, north corner of Spring Street and Sixth Avenue, Seattle, WA

**Notes:**

1. Intersection addresses are useful for recording events occurring in the street, such as accidents, infrastructure locations, etc. However, when referring to a feature on one corner of an intersection, the Numbered Thoroughfare Address for that corner is always preferable to the intersection address.

2. A Complete Landmark Name or Complete Place Name may precede an Intersection Address. Where a Complete Place Name is used it must have a Place Name Type of "Community". Strictly speaking, these are hybrid addresses. Logically they can each be decomposed to two related addresses, an Intersection Address, and a Landmark Address or Community Address. Examples:

    - Memorial Park, Last Chance Gulch and Memorial Drive, Helena, MT 59601
    - Phoenix Village, Scovill Avenue and East 59th Street, Cleveland, Ohio 44104

3. The Complete Street Names of an Intersection Address may be written in any order. A complete list of intersections should include multiple listings for each intersection, one with each name first (for example, both "State Street and Main Street", and "Main Street and State Street"). Intersections of more than two streets can be represented as one sequence of three or more street names, or as every pairwise combination of the names.

4. An intersection corner address can include only two Complete Street Names, and it must include a Corner Of element that specifies a particular corner of the intersection. Examples:

    - Northwest corner of Hollywood Boulevard and Vine Street, Hollywood, CA

    - Freeway Park, north corner of Spring Street and Sixth Avenue, Seattle, WA

5. Separator values include " and ", “ at “, “ @ “, " & ", and " && " " + "," - ", and " y " or " con " (Spanish) each having a space before and after. Other values may also be in use.

6. Some address parsing software permits the use of ampersands (" & " or " && ") to signify intersection addresses, because the double ampersand does not occur in any street names, and ampersands rarely do. Be wary, though--in many programming languages, ampersands are reserved for other uses, which could complicate data exchange.

**XML Tag:** <

```
IntersectionAddress
>
```

**XML Model:**

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

**XML Example:**

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4.2" 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>
```

**Quality Measures**

Intersection Validity Measure
Pattern Sequence Measure
Spatial Domain Measure

### 3.2.1.3 Two Number Address Range

**Syntax: { Complete Landmark Name or Complete Place Name } + { Complete Address Number (low) *} + { Separator Element *} + { Complete Address Number (high)*} + { Complete Street Name * } + { Complete Place Name * } + { State Name * } + { Zip Code } + { Zip Plus 4 } + { Country Name }**

**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.

**Examples:**

- 401-418 Green Street, Flint MI 48503
- 1400-1420 Smith Street, West Monroe, LA 71292
- 13-25 Elm Street, Muncie, IN 47305
- 214-02 - 214-14 1/2 Evergreen Street, New York, NY 11364
- 55A - 55H Kelly Circle SW, Bolling Air Force Base, Washington, DC
- Quincy Market, 1-47 Faneuil Hall Market Place, Boston, MA 02109

**Notes:**

1. The Two Number Address Range includes a set of two Complete Address Numbers, which represent the low and high values of a continuous series of Complete Address Numbers. By convention, the first Complete Address Number represents the low end of the range, and the second represents the high end, and they are separated by a hyphen.

2. Generally, but not always, if a range refers to Complete Address Numbers on one side of a thoroughfare, the Complete Address Numbers in the range will all have the same parity, that is, they will all be either odd or even. However, mixed parities do occur in some places.

3. A range can begin or end with a Complete Address Number that has a suffix or prefix. USPS Publication 28 Appendix E contains instructive notes on the complexities of these address ranges.

4. Use the Address Range Type to show whether a Two Number Address Range represents an actual or potential range.

5. Use the Address Range Parity attribute to show whether a Two Number Address Range includes Complete Address Numbers that are odd, even, or both.

6. If a Two Number Address Range is related to a transportation segment (or set of segments) in a transportation network model, then:

    - The Address Range Side attribute may be used to show if the Complete Address Numbers in the range are on the right side, left side, or both sides of the segment(s).

    - The Address Range Directionality attribute may be used to show if the Complete Address Numbers in the range increase with or against the directionality of the segment(s).

    - The Address Range Span attribute may be used to show whether the range spans a part of one segment, one entire segment, multiple segments, or the entire length of the thoroughfare.

7. Use the Address Transportation System Name, Address Transportation System Authority, Address Transportation Feature Type, Address Transportation Feature ID, and Related Transportation Feature ID attributes to relate a particular address range to a specific transportation segment (or set of segments) in a specific transportation network model. Transportation segments, and transportation network models generally, are defined and described in the FGDC's "Geographic Information Framework Data Content Standard Part 7: Transportation Base."

8. Ranges should not be confused with hyphenated address numbers that denote a single site. A range must be composed of two Complete Address Numbers. Certain areas of New York City, southern California, and Hawaii use hyphens in Complete Address Numbers. In the example above, "214-02 Evergreen St" would be one address, and "214-14 1/2 Evergreen Street" would be a second address, and neither one alone is an address range.

9. A Two Number Address Range may be preceded by a Complete Landmark Name or Complete Place Name that spans the range. (for example: "Quincy Market, 1-47 Faneuil Hall Market Place, Boston, MA 02109"). If a Complete Place Name is used, it must have a Place Name Type of "Community". Strictly speaking, this is a hybrid address. Logically it could be decomposed to two related addresses, the Two Number Address Range, and a corresponding Landmark Address or Community Address.

**XML Tag:** <

`TwoNumberAddressRange`

>

**XML Model:**

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

**XML Example:**

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4.2" 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>
```

**Quality Measures**

Address Number Fishbones Measure
Address Number Range Completeness Measure
Address Number Range Parity Consistency Measure
Low High Address Sequence Measure
Overlapping Ranges Measure
Pattern Sequence Measure
Range Domain Measure
SpatialDomainMeasure

#### 3.2.1.4 Four Number Address Range

**Syntax: { Complete Landmark Name or Complete Place Name } + { Complete Address Number *(left low) } + { Complete Address Number *(left high) } + { Complete Address Number * (right low) } + { Complete Address Number * (right**

**high) }+{ Complete Street Name * } + { Complete Place Name * } + { State Name * } + { Zip Code } + { Zip Plus 4 } + { Country Name }**

**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)).

**Examples:**

- U.S. Census Bureau TIGER file formatted address ranges (left low, left high, right low, right high, street name) are the most widely-used examples of Four Number Address Ranges.

**Notes:**

1. Address ranges are important for municipal operations (such as street cleaning and snow plowing), emergency dispatch, and geocoding.

2. A Four Number Address Range includes four Complete Address Numbers, representing, for each side of a block or transportation segment, the low and high end of the Complete Address Number range. By convention, based on the attribute structure established by the U.S. Census Bureau for the TIGER/Line files, the left-side low Complete Address Number is given first, followed by the left-side high Complete Address Number, followed by the right-side low and high Complete Address Numbers.

3. Generally, but not always, the left and right ranges will have different parities (even or odd). However, mixed parities do occur in some places.

4. A range can begin or end with a Complete Address Number that has a suffix or prefix. USPS Publication 28 Appendix E contains instructive notes on the complexities of these address ranges.

5. Use the Address Range Type attribute to show whether a Four Number Address Range represents an actual or potential range.

6. Use the Address Range Parity attribute to show whether Four Number Address Ranges include Complete Address Numbers that are odd, even, or both. Each Four Number Address Range has two Address Range Parity values, one for the left range and one for the right range. The parity of the left range is determined by

the Address Number Parity of first two Complete Address Numbers (left low and left high). The parity of the right range is determined by the Address Number Parity of third and fourth Complete Address Numbers (right low and right high).

7. If a Four Number Address Range is related to a transportation segment (or set of segments)in a transportation network model, , then:
    - The Address Range Side attribute may be used to show if the Complete Address Numbers in the range are on the right side, left side, or both sides of the segment(s).
    - The Address Range Directionality attribute may be used to show if the Complete Address Numbers in the range increase with or against the directionality of the segment(s).
    - The Address Range Span attribute may be used to show whether the range spans a part of one segment, one entire segment, multiple segments, or the entire length of the thoroughfare.
8. Use the Address Transportation System Name, Address Transportation System Authority, Address Transportation Feature Type, Address Transportation Feature ID, and Related Transportation Feature ID attributes to relate a particular address range to a specific transportation segment (or set of segments) in a specific transportation network model. Transportation segments, and transportation network models generally, are defined and described in the FGDC's "Geographic Information Framework Data Content Standard Part 7: Transportation Base."
9. By definition, milepost Complete Address Numbers cannot be used in composing Four Number Address Ranges. Milepost Complete Address Numbers denote distance only, not side of street or parity. Therefore milepost Complete Address Numbers can be used only in Two Number Address Ranges (e.g. Milepost 21 - Milepost 24).
10. A Four Number Address Range may be preceded by a Complete Landmark Name or Complete Place Name that encompasses the range. If a Complete Place Name is used, it must have a Place Name Type of "Community." Strictly speaking, this would be a hybrid address. Logically it could be decomposed to two related addresses, the Four Number Address Range, and a corresponding Landmark Address or Community Address.

**XML Tag:** <

`FourNumberAddressRange`

>

**XML Model:**

```
<xsd:complexType name="FourNumberAddressRange_type">
   <xsd:annotation>
       <xsd:documentation>
       </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>
```

**XML Example:**

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4.2" 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>
```

**Quality Measures**

Address Number Fishbones Measure
Address Number Range Completeness Measure
Address Number Range Parity Consistency Measure
Overlapping Ranges Measure
Left Right Odd Even Parity Measure
Low High Address Sequence Measure
OverlappingRangesMeasure
Pattern Sequence Measure
Range Domain Measure
Spatial Domain Measure

### 3.2.1.5 Unnumbered Thoroughfare Address

**Syntax: { Complete Landmark Name or Complete Place Name } + { Complete Street Name * } + { Complete Subaddress } + { Complete Place Name * } + { State Name * } + { Zip Code } + { Zip Plus 4 } + { Country Name }**

**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.

**Example:**

- Ili'ili Airport Road, Ili'ili, AS
- East End Road, St. Croix, VI 00820
- Ilisagvik College, Stevenson Street, Barrow, AK 99723
- Orote Point Lighthouse, San Luis Drive, Santa Rita, GU

**Notes:**

1. In many areas no address numbers have been assigned, and addresses in those areas often include only the thoroughfare name. This class separates those addresses from addresses that include address numbers or cross-streets.

2. An Unnumbered Thoroughfare Address may be preceded by a Complete Landmark Name or Complete Place Name (for example, "Ilisagvik College, Stevenson Street, Barrow, AK 99723"). If a Complete Place Name is used, it must have the Place Name Type of "Community". Strictly speaking, this would be a hybrid address. Logically it could be decomposed to two related addresses, the Unnumbered Thoroughfare Address, and a corresponding Landmark Address or Community Address.

**XML Tag:** <
`UnnumberedThoroughfareAddress`
>

**XML Model:**

```
<xsd:complexType name="UnnumberedThoroughfareAddress_type">
   <xsd:annotation>
      <xsd:documentation xml:lang="en">
      </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>
```

**XML Example:**

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4.2" 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>
```

**Quality Measures**

Address Number Fishbones Measure
Pattern Sequence Measure
Spatial Domain Measure

**Quality Notes**

Although this address class has no street number, the Address Number Fishbones Measure can be run without reference to ranges or address number, simply drawing fishbones to the closest point on the street.

### 3.2.2 Landmark Classes

A landmark address specifies a location by reference to a named landmark. A landmark is a relatively permanent feature of the manmade landscape that has recognizable identity within a particular cultural context (definition adapted from U.S. Board on Geographic Names, *"Principles, Policies, Procedures,"* (Online Edition (revised)), 2003, p. 48, definition of "geographic name").

#### 3.2.2.1 Landmark Address

**Syntax: { Complete Landmark Name * } (1..n) + { Complete Subaddress } + { Complete Place Name * } + { State Name * } + { Zip Code } + { Zip Plus 4 } + { Country Name }**

**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.

**Examples:**

- Statue of Liberty, New York NY 10004
- Langston Housing Complex, Building 7, Apartment 290, Kansas City KS 66101
- Condominium Garden Hills Plaza, Torre 2, Apartamento 905, Mayaguez PR 00680-1233
- Condominium Del Mar, Apartamento 905, Ponce PR 00731
- Residencial Las Margaritas, Edificio 1, Apartamento 104, San Juan PR 00924

**Notes:**

1. This class includes the "condominium" addresses found in Puerto Rico, where a complex or building is known by name, without reference to a street.

**XML Tag:** <

```
LandmarkAddress
>
```

**XML Model:**

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

**XML Example:**

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4.2" 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>
```

**Quality Measures**

Pattern Sequence Measure
Spatial Domain Measure

### 3.2.2.2 Community Address

**Syntax: { Complete Address Number * } + { Complete Landmark Name or Complete Place Name * } + { Complete Subaddress } + { Complete Place Name * } + { State Name * } + { Zip Code } + { Zip Plus 4 } + { Country Name }**

**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.

**Examples:**

1. 1234 Urbanizacion Los Olmos, Ponce PR 00731
2. A17 Jardine Fagota, Ponce PR 00731
3. B133 Urbanizacion Golden Gate, San Juan PR 00920
4. 23B Edgewater Park, Apartment 12, Bronx, NY 10465

**Notes:**

1. Community Addresses may be found in gated communities, housing projects, Puerto Rican urbanizations, trailer courts, and similar developments that are built around interior walkways or roadways. Their Complete Address Numbers refer to the community name, not to a thoroughfare. The community name might be a treated as a Landmark Name or Place Name--the distinction is often arbitrary or unclear for community names.
2. If there is no Complete Address Number preceding the urbanization name, the address fits into the Landmark Address class.
3. If the address includes both a Complete Street Name and a community name, it fits in the Numbered Thoroughfare Address class.
4. This class includes Puerto Rican urbanization addresses where the urbanization name is preceded by a number, and no street name is included. In Puerto Rico, an urbanization denotes an area, sector, or residential development within a geographic area. 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”. See also the notes under Numbered Thoroughfare Address.

**XML Tag:** <

```
CommunityAddress
>
```

**XML Model:**

```
 <xsd:complexType name="CommunityAddress_type">
  <xsd:annotation>
   <xsd:documentation> 1. Community Addresses are commonly used for
   housing projects, Puerto Rican urbanizations, trailer courts, and
   similar developments that are built around unnamed interior walkways
   or roadways. Their Complete Address Numbers refer to the community
   name, not to a thoroughfare. 2. A Community Address includes a
   Complete Address Number, a community name, and a Place Name. The
   address does not include a Complete Street Name. The community name
   might be a treated as a Landmark Name or Place Name--the distinction
   is often arbitrary or unclear for community names. 3. If there is no
   Complete Address Number preceding the urbanization name, the address
   fits into the Landmark Address class. 4. If the address includes
   both a Complete Street Name and a community name, it fits in the
   Landmark Site Address class. 5. This class includes Puerto Rican
```

```
   urbanization addresses where the urbanization name is preceded by a
   number, and no street name is included. In Puerto Rico, an
   urbanization denotes an area, sector, or residential development
   within a geographic area. 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: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>
```

**XML Example:**

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4.2" 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>
```

**Quality Measures**

Pattern Sequence Measure
Spatial Domain Measure

## 3.2.3 Postal Delivery Classes

A postal delivery address specifies a point of postal delivery that has no definite relation to the location of the recipient, such as a post office box, rural route box, overseas military address, or general delivery office. The USPS specifies each class in detail in USPS Publication 28.

Postal addresses are often combined with thoroughfare and landmark addresses. Examples:

- Landmark-Postal Address: Wagon Wheel Ranch, RR1 Box 100, Pawhuska, OK
- Postal-Thoroughfare Address: 200 South Minnesota Avenue, PO Box 1304, Sioux Falls, SD
- Landmark-Postal-Thoroughfare Address: Twin Falls Extension Center, Evergreen Building, College of Southern Idaho, PO Box 1827, 315 Falls Avenue East, Twin Falls, ID

These potential classes are not recognized in this standard because the USPS strongly discourages their use (USPS Publication 28 sections 215, 245, 255, 295.6 and 295.7). Within the standard they can be handled in two ways:

1. Separate them into their component types, create records for each, and relate the records to show that they refer to the same location.
2. Treat the entire address as a General Address Class address.

### 3.2.3.1 USPSPostal Delivery Box

**Syntax: { USPS Box* } + { Complete Subaddress } + { Complete Place Name * } + { State Name * } + { Zip Code } + { Zip Plus 4 } + { Country Name }**
USPS Box Format: USPS Box = "PO Box"* + { USPSBox ID * }
NOTE: In this address class, the phrase "PO Box" is the only permitted value for USPSBox Type.

**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.

**Example:**

- PO BOX 16943, New Orleans LA 70112
- PO BOX 1890, Kryton TN 38188-1890
- PO BOX G, Gabbs NV 89409
- PO BOX 159753 PMB 3571, Herndon VA 22071-2716

**Notes:**

1. This class is defined in USPS Publication 28, Sections 281-283. The phrase "PO Box" is mandatory as the USPS Box Type.
2. USPS Pub 28 Sec. 282: “Post Office Box numbers that are preceded by significant leading zeroes are identified in the ZIP+4 File by a hyphen (-) preceding the box number. Convert the hyphen into a zero on the output mailpiece.
    - ZIP+4 File: PO BOX -0145
    - Mailpiece: PO BOX 00145"
3. USPS Pub 28 Sec. 283: “PO Box addresses often appear with the word CALLER, FIRM CALLER, BIN, LOCKBOX, or DRAWER. Change these to PO BOX.”
    - Incorrect: DRAWER L
    - Correct: PO BOX L
4. The Complete Subaddress, if it appears at all, must have only one Subaddress Element, and that Subaddress Element must have a Subaddress Type of "PMB".
5. In USPSPostal Delivery Box addresses, the Complete Place Name element may include multiple Place Names, but the USPS strongly prefers that only the postal community name be used. Example:
    - **Preferred:** Wailuku, HI
    - **Acceptable:** Wailuku, Maui, HI

**XML Tag:** <

```
USPSPostalDeliveryBox
>
```

**XML Model:**

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

**XML Example:**

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4.2" 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>
```

**Quality Measure**

Pattern Sequence Measure

### 3.2.3.2 USPSPostal Delivery Route

**Syntax: { USPS Address * } + { Complete Place Name * } + { State Name * } + { Zip Code } + { Zip Plus 4 } + { Country Name }**

**Type 1: Rural Route (RR) or Highway Contract Route (HC):**
USPS Address = "**RR**" or "**HC**" + { USPSBox Group ID * } + "**BOX**" + { USPSBox ID * } + { Private Mail Box }

**Type 2: Overseas Military or Diplomatic Delivery:**
USPS Address = **"PSC"** or **"CMR"** or **"UNIT"** + { USPSBox Group ID * } + **"BOX"** + { USPSBox ID * }
NOTE 1: In this type, the Complete Place Name must be **"APO"** or **"FPO"** or **"DPO"**
NOTE 2: In this type, the State Name must be **"AE"** or **"AP"** or **"AA"**

**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.

**Notes and Examples**

**1. General.** In RR and HC addresses, the Complete Place Name element may include multiple Place Names, but the USPS recommends that only the postal community name be used. Example:

- Preferred: Wailuku, HI
- Acceptable: Wailuku, Maui, HI

**2. Rural Route Address Notes and Examples (per USPS Pub 28 sec. 24):**

- USPS Pub 28 Sec. 241: “Print rural route addresses on mailpieces as: RR N BOX NN. Do not use the words RURAL, NUMBER, NO., or the pound sign (#).”
    - RR 2 BOX 152
    - RR 9 BOX 23A
- USPS Pub 28 Sec. 242: “A leading zero before the rural route number is not necessary.”
    - Acceptable: RR03 BOX 98D
    - Preferred: RR 3 BOX 98D
- USPS Pub 28 Sec. 243: “Print hyphens as part of the box number only when they are part of the address in the ZIP+4 File.”
    - RR 4 BOX 19-1A
- USPS Pub 28 Sec. 244: “Change the designations RFD and RD (as a meaning for rural or rural free delivery) to RR.”
    - Incorrect: RFD ROUTE 4 #87A
    - Correct: RR 4 BOX 87A

- USPS Pub 28 Sec. 245: “There should be no additional designations, such as town or street names, on the Delivery Address Line of rural route addresses. Because street names used together with route and box numbers can create potential matching difficulty, mailers are encouraged to use only one style of addressing. If secondary name information is used, however, place it above the Delivery Address Line.”
    - Incorrect: RR 2 BOX 18 BRYAN DAIRY RD
    - Correct: RR 2 BOX 18
- USPS Pub 28 Sec. 246: “When applying a ZIP+4 code to a rural address, an exact match is preferred. If a box number is included in the address, the mailpiece must bear the appropriate ZIP+4 code representing the range for that box number. When box number information is not available, the Rural Route base record must be used.”

**3. Highway Contract Route Address Notes and Examples (per USPS Pub 28 sec. 25)**

- USPS Pub 28 Sec. 251: "Print highway contract route addresses on a mailpiece as: HC N BOX NN. Do not use the words HIGHWAY CONTRACT, ROUTE, NUMBER, NO., STAR ROUTE, or the pound sign (#).
    - Incorrect: HIGHWAY CONTRACT ROUTE 68 BOX 23A
    - Correct: HC 68 BOX 23A"
- USPS Pub 28 Sec. 252: "A leading zero before the highway contract route number is not needed.
    - Acceptable: HC068 BOX 98D
    - Preferred: HC 68 BOX 98D"
- USPS Pub 28 Sec. 253: "Print hyphens as part of the box number only when they are part of the address in the ZIP+4 File.
    - HC 68 BOX 19-2B "
- USPS Pub 28 Sec. 254: "Change the designation STAR ROUTE, which usually refers to highway contract route, to HC.
    - Incorrect: STAR ROUTE 68 BOX # 45
    - Correct: HC 68 BOX 45"
- USPS Pub 28 Sec. 255: "There should be no additional designations, such as town or street names, on the Delivery Address Line of highway contract route addresses. Street names used together with route and box numbers can create potential matching difficulty. Mailers are encouraged to use only one style of

addressing. If secondary name information is used, however, place it above the Delivery Address Line.

- Incorrect: HC 72 BOX 18 BRYAN DAIRY RD
- Correct: HC 72 BOX 18"

- USPS Pub 28 Sec. 256: "When applying a ZIP+4 code to a highway contract route address, an exact match is preferred. If a box number is included in the address, the mailpiece must bear the appropriate ZIP+4 code representing the range for that box number. When box number information is not available, the highway contract base record must be used."

**4. Overseas Military PSC, CMR, or UNIT Address Notes and Examples** (per USPS Pub 28 sec. 225.1, 238.1, and 239)

- PSC stands for Postal Service Center. CMR stands for Common Mail Room.
- USPS Pub 28 Sec. 238.1: "The Delivery Address Line for all APO/FPO military mail must be standardized as follows:
  - PSC (CMR OR UNIT) NNNN
  - BOX NNNN
- **Examples:**
  - CMR 830 BOX 51
  - PSC 1650 BOX 10
  - UNIT 908 BOX 111
- **APO, FPO; AA, AE, AP:** USPS Pub 28 Sec. 225.1 "Overseas military addresses must contain the APO or FPO designation along with a two-character “state” abbreviation of AE, AP, or AA and the ZIP Code or ZIP+4 code."
  - APO AE 09001-5275
  - FPO AP 96606-2783
  - APO AA 34035-4198
- APO stands for Army Post Office
- FPO stands for Field Post Office or Fleet Post Office
- AE is used for armed forces in Europe, the Middle East, Africa, and Canada;
- AP is for the Pacific; and
- AA is the Americas excluding Canada."

- **DPO:** USPS Pub 28 Sec. 239 The Delivery Address Line for DPO (Diplomatic Post Office) Department of State mail must be standardized to include the DPO designation and the appropriate two-letter abbreviation (AA, AE or AP), followed by the ZIP+4 or 5-digit ZIP Code.

- **Complete Address Examples:**
    - PSC 802 BOX 74 APO AE 09499-0074
    - UNIT 2050 BOX 4190 APO AP 96278-2050
    - UNIT 9900 DPO AE 09701-1000

**XML Tag:** <

```
USPSPostalDeliveryRoute
>
```

**XML Model:**

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

**XML Example:**

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4.2" 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>
```

**Quality Measures**

Pattern Sequence Measure

#### 3.2.3.3 USPSGeneral Delivery Office

**Syntax: { USPSGeneral Delivery Point * } + { Complete Place Name * } + { State Name * } + { Zip Code } + { Zip Plus 4 } + { Country Name }**

**Type 1: General Delivery:**
**USPSGeneralDeliveryPoint** = "GENERAL DELIVERY" *

**Type 2: Overseas Military Address:**
**USPSGeneralDeliveryPoint** = [A ship's name]
NOTE 1: In this type, the Complete Place Name must be **"APO"** or **"FPO"** or **"DPO"**
NOTE 2: In this type, the State Name must be **"AE"** or **"AP"** or **"AA"**

**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.

**Notes and Examples**

**1. General.** In General Delivery addresses, the Complete Place Name element may include multiple Place Names, but the USPS recommends that only the postal community name be used. Example:

- 
  - Preferred: Wailuku, HI
  - Acceptable: Wailuku, Maui, HI

**2. General Delivery Addresses Note and Example {per USPS Pub 28 sec. 26}**

- USPS Pub 28 Sec. 261: “Use the words GENERAL DELIVERY, uppercase preferred, spelled out (no abbreviation), as the Delivery Address Line on the mailpiece. Each record will carry the 9999 add-on code.”

- **Complete Example:**
  GENERAL DELIVERY
  TAMPA FL 33602-9999

**3. Overseas Military Addresses Notes and Examples {per USPS Pub 28 sec. 225.1 and 238.1}**

- USPS Pub 28 Sec. 238.1: "The Delivery Address Line for all APO/FPO military mail must be standardized as follows:
  - SHIP'S NAME
  - **Example:**
  - USS SEA DEVIL SSN-664
- USPS Pub 28 Sec. 225.1 "Overseas military addresses must contain the APO or FPO designation along with a two-character "state" abbreviation of AE, AP, or AA and the ZIP Code or ZIP+4 code.
  - APO AE 09001-5275
  - FPO AP 96606-2783
  - APO AA 34035-4198
- AE is used for armed forces in Europe, the Middle East, Africa, and Canada;
- AP is for the Pacific; and
- AA is the Americas excluding Canada."
- **Complete Example:**
  USCGC HAMILTON
  FPO AP 96667-3931

**XML Tag:** <

`USPSGeneralDeliveryOffice`

>

**XML Model:**

```
<xsd:complexType name="USPSGeneralDeliveryOffice_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:attribute name="action" type="addr_type:Action_type"
```

```
   use="optional" />
  </xsd:complexType>
```

**XML Example:**

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4.2" 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>
```

**Quality Measures**

Pattern Sequence Measure

## 3.2.4 General Class

The general address class handles all of the above classes, for files in which addresses of different classes may be mixed together, as well as addresses that do not conform to any of the above classes.

### 3.2.4.1 General Address Class

**Syntax:**

**Type 1:** The complete address as a single unparsed string of text.

**Type 2:** The complete address with place, state and zip code parsed out to a single field

**{ Delivery Address *} + { Place State ZIP *}**

**Type 3:** The complete address with place, state and zip code parsed out to separate fields
**{ Delivery Address * } + { Complete Place Name * } + { State Name * } + { Zip Code } + { Zip Plus 4 } + { Country Name }**

**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.

**Examples:**
**Type 1:**

- Record 1: Address = **123 Main Street, Apt. 1, Ames, IA 50010**
- Record 2: Address = **Ames High School, Room 12, Ames, IA 50010**
- Record 3: Address = **PO Box 1511, Ames, IA 50010**

**Type 2:**

- Record 1: Delivery Address = **123 Main Street, Apt. 1**; Place State ZIP = **Ames, IA 50010**
- Record 2: Delivery Address = **Ames High School, Room 12**; Place State ZIP = **Ames, IA 50010**
- Record 3: Delivery Address = **PO Box 1511**; Place State ZIP = **Ames, IA 50010**

**Type 3:**

- Record 1: Delivery Address = **123 Main Street, Apt. 1**; Complete Place Name = **Ames**; State Name = **IA**; Zip Code = **50010**
- Record 2: Delivery Address = **Ames High School, Room 12**; Complete Place Name = **Ames**; State Name = **IA**; Zip Code = **50010**
- Record 3: Delivery Address = **PO Box 1511**; Complete Place Name = **Ames**; State Name = **IA**; Zip Code = **50010**

**Notes:**

1. Address files often contain—and need to contain—street, landmark, and postal addresses mixed together. The general address class is intended to provide a basis for handling these kinds of files.
2. The general class provides a way to handle addresses that do not conform to any of the thoroughfare, landmark, or postal classes, including non-U.S. addresses.
3. In the general class, at minimum, the complex element Delivery Address is 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.
4. Within the general class, the three types differ as follows:
    - In Type 1, the entire address is a single unparsed string of text.
    - In Type 2, the Delivery Address line is separated from the Place State ZIP line.

- In Type 3, the Complete Place Name, State Name, Zip Code, Zip Plus 4, and Country Name are separated from each other.

5. In Types 2 and 3, if the Complete Subaddress is separated from the rest of the Delivery Address, then the Delivery Address Type value should be "Subaddress Excluded".

**XML Tag:** <

GeneralAddressClass
>

**XML Model:**

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

**XML Example: Type 1:**

```
   123 Main Street, Apt 1, Ames, IA 50010
```

**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>
     <CompletePlaceName>
    <PlaceStateZip>Ames, IA 50010</PlaceStateZip>
    </CompletePlaceName>
  </GeneralAddressClass>
 </addr:AddressCollection>
```

**Type 3:**

```
<?xml version="1.0" encoding="UTF-8"?>
 <addr:AddressCollection version="0.4.2" 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>
```

**Quality Measures**

Pattern Sequence Measure

## *3.3 Abstract Address Feature Class and Address Collection*

### 3.3.1 Abstract Address Feature Class

All of the address classes described above are specific implementations of an abstract Address Feature class. The Address Feature class is compatible with the abstract Feature class that is generally described in the FGDC Geographic Information Framework Data Content Standard, Base Part, section 7.8.1. It is described in more detail in Part 4 of this standard.

### 3.3.2 Address Collection

An Address Collection is an aggregation of address data with its associated metadata, which can then be transferred from one party to another. The Address Collection conforms to the Feature Collection construct that is generally described in the FGDC Geographic Information Framework Data Content Standard, Base Part, section 7.8.1. The Address Collection is described in more detail in Part 4 of this standard.