

	x2		y2
	x3		y3
	....		....
<b>Pseudocode Example: Testing the Conformance of a Data Set</b>	<b>Function</b> See <a href="#">Perc Conforming</a> for the query example.		
	<b>Function Parameters</b> count_of_nonconforming_records <i>SELECT COUNT( * )</i> <i>FROM Address Collection</i> <i>WHERE NOT( EQUALS( Addressed Object.Geometry, Point(</i> <i>Address X Coordinate, Address Y Coordinate ) ) )</i> count_of_total_records <i>SELECT COUNT( * )</i> <i>FROM Address Collection</i>		
<b>Result Report Example</b>	Tested <a href="#">XY Coordinate Spatial Measure</a> at 90% conformance.		

3034

## 3035 5 Address Data Exchange

### 3036 5.1 Introduction

3037 The purpose of this section is three-fold: to provide a template for the XML documents and  
 3038 metadata that will move addresses from place to place, to provide information on preparing  
 3039 address data to be packaged, and to provide information on unpackaging address data that has  
 3040 been received.

3041 Historically, the data format aspect of data exchange has impeded the flow of information. By  
 3042 providing a single and flexible data structure for exchanging street address data, the Address  
 3043 Standard will simplify the implementation of data exchanges, making them more reliable and  
 3044 less likely to need small changes, especially over time. Local data processing systems and  
 3045 applications change over time and frequently data exchange programs and reports must be

3046 rewritten along with those changes. Such changes may be as seemingly minor as the renaming  
3047 of a data element, shortening or extending the length of a field, or the addition or subtraction  
3048 of a field. When new data sharing partners are identified, a data format for sharing data with  
3049 that partner must be constructed and implemented by each party. The Address Standard aims  
3050 to minimize local changes necessary when upgrading computer systems and to provide a  
3051 structure that can be reused by all data sharing parties without their having to implement  
3052 something new.

3053 The data sharing benefits of the Address Standard will only be realized when local agencies  
3054 have implemented both export and import engines to process exchanged street addresses. The  
3055 initial implementation of these data engines or programs will provide a lasting benefit to  
3056 implementers in that once created, the agency will never again need to be concerned with  
3057 creating programs or engines to share data with any new data sharing partners that they  
3058 identify in the future.

3059 The Address Standard is designed to be flexible enough to fit within current data sharing  
3060 methods. There are two basic forms of sharing data between parties:

- 3061           • Monolithic, in which all records are in the exchange package.
- 3062           • Transactional, in which the exchange package records include commands to  
3063           add or remove a record from the local copy of all records.

3064 The Standard supports both of these forms, using a slightly modified structure to enable  
3065 transactional exchanges.

## **5.2 Structure of a Transfer Package**

All packages of address data to be exchanged must include:

- FGDC Metadata, conforming to the FGDC-STD-001-1998 *Content Standard for Digital Geospatial Metadata*, Version 2.0 (see Part 6: References for a complete citation).
- Address data, expressed as an XML document conforming to the AddrStd XML Schema.

### **5.2.1 FGDC Metadata**

Metadata provides a common set of terminology and definitions for the documentation of digital geospatial data (CSDGM, Introduction). It is a required part of all Federal standards, and is required of all federally generated geospatial data per Executive Order 12906. The transfer of data always needs to be accompanied by copyright information, use restrictions, contact information, data lineage information, known data defects and a description of the geographic area that the data represents. The *Content Standard for Digital Geospatial Metadata* provides a uniform, consistent and well known way to express those things amongst others.

### **5.2.2 Address Data**

The Address Standard XML schema is a way of packaging address data such that only fields meaningful to the particular data transfer package need to be included. The nature of XML is that only meaningful data is included but the meaning of everything that could be included is

documented. In addition, XML data transfer implementations can be extended without breaking existing implementations. Existing implementations will not understand the extensions but by definition will ignore them.

Data is produced by agencies possessing address information and consumed by those receiving the address data. Many agencies will be both producers and consumers at different times. The roles of producer and consumer describe, respectively, the activity at hand when exporting or importing address data.

#### **5.2.2.1 Exporting Data**

A data producer will follow these basic steps while implementing an export engine:

- Construct a logical map of local data fields into the equivalent Address Standard Content and Classification elements.
- Write programs or subroutines to split local fields into the Address Standard elements if necessary.
- Collect support information required by the CSDGM metadata into a accessible place.
- Optionally, write programs or subroutines to automate the CSDGM "Data Quality" tests documented in the Data Quality section of this standard.
- Write programs or subroutines to include the CSDGM support data into a complete and valid CSDGM document.

A data producer will follow these basic steps while creating a package of address data:

- 3107                   • Run the Data Quality tests and collect the reports into the CSDGM metadata.
- 3108                   • Set the "Publication Date" element of the CSDGM metadata to be the time the
- 3109                   package was created.
- 3110                   • Run the data remapping and splitting programs.
- 3111                   • Set the "DirectSource" element of the Address Standard to be the producer's
- 3112                   ID.
- 3113                   • Set the "AddressID" and "AuthorityID" elements of the Address Standard for
- 3114                   any addresses created by the producer.
- 3115                   • Export the data into the Address Standard XML format.
- 3116                   • Transfer both the Address Standard XML document and the CSDGM
- 3117                   document to another party.

#### 3118   **5.2.2.2 Importing data**

3119   A data consumer will follow these basic steps while implementing an export engine:

- 3120                   • Construct a logical map of local data fields into the equivalent Address
- 3121                   Standard Content and Classification elements.
- 3122                   • Write programs or subroutines to combine Address Standard elements into
- 3123                   local data fields, if necessary.
- 3124                   • Create a place to store the CSDGM data from received packages.
- 3125                   • Optionally write programs or subroutines to automate the CSDGM "Data
- 3126                   Quality" tests documented in the Data Quality section of this standard on the
- 3127                   received data.

3128 A data consumer will follow these basic steps while importing a package of  
3129 address data:

- 3130 • Receive both the Address Standard XML document and the CSDGM  
3131 document from another party.
- 3132 • Parse the Address Standard XML document into a working area.
- 3133 • Parse the CSDGM XML document into a working area.
- 3134 • Run the Data Quality tests and compare to the report in the CSDGM metadata  
3135 received.
- 3136 • Run the data remapping and combining programs.
- 3137 • Import from the working area to the local production database.

3138 When mapping local data fields into the equivalent Address Standard Content and  
3139 Classification elements, or the reverse, it is important to understand that the Address Standard  
3140 is set up to allow address producers to directly and unequivocally express the taxonomy of  
3141 their own addresses. The Content and Classification sections provide a taxonomy to help parse  
3142 addresses into descriptive elements.

3143 For example, given an address such as **225 North Avenue Northwest Atlanta GA 30318**, the  
3144 Address Standard allows the address producer to state that the word **North** is not a [Street](#)  
3145 [Name Pre Directional](#) but is actually a [Street Name](#). When stated by the actual addressing  
3146 authority, it should be taken as factual and not converted.

3147 Within other agencies, database design requirements might cause the address to be stored  
3148 differently, but they should record the **official** form somewhere within their databases.

3149 It is important, if distributing data received from other address authorities, that their taxonomy  
3150 or parsing of addresses into elements be maintained and be reproducible.

3151 **5.3 The Address Standard XSD Data Model (see Part 7.1:**

3152 ***Appendix A for the complete XSD document)***

3153 **5.3.1 General Notes on the XML schema**

3154 Content and Classification use the word **element** in a way that differs slightly from its use in  
3155 designing XML document schemes.

- 3156 • Content and Classification use **element** to describe a taxonomy facet for  
3157 parsing an address.
- 3158 • XML Scheme Document (XSD) uses **element** to describe an XML tag.

3159 Some Content and Classification **elements** become XSD elements and others become XSD  
3160 attributes of other XSD elements.

3161 The Address Standard XSD has been designed by creating a simple type for almost every  
3162 thing in Content and Classification. The simple data type is a place to describe the form of  
3163 data that populates the simple type. Many times no attempt to provide an automatable test for  
3164 correctness of form is given in the XSD. Local implementers may attempt such tests outside  
3165 the scope of the Address standard.

3166 From the simple types simple elements are created. Simple elements and some simple types  
 3167 cluster into complex elements. Finally, elements are gathered into the **global** elements that  
 3168 comprise the top level XML data types.

### 3169 **5.3.2 Relation of the Address Standard XSD data model to the Content and** 3170 **Classification parts.**

3171 A crosswalk chart relating the Content and Classification elements into XSD classes, types,  
 3172 elements and attributes.

<b>Classes</b>	<b>XSD Type Name</b>	<b>Simple or Complex (in XSD terms)</b>	<b>Element or Attribute Name</b>	<b>XSD</b>	<b>Parent XSD class</b>
Numbered Thoroughfare Address	NumberedThoroughfareAddress_type	Complex	NumberedThoroughfareAddress	Global Element	Global, AddressCollection
Intersection Address	IntersectionAddress_type	Complex	IntersectionAddress	Global Element	Global, AddressCollection
Two Number Address Range	TwoNumberAddressRange_type	Complex	TwoNumberAddressRange	Global Element	Global, AddressCollection
Four Number Address Range	FourNumberAddressRange_type	Complex	FourNumberAddressRange	Global Element	Global, AddressCollection
Unnumbered Thoroughfare Address	UnnumberedThoroughfareAddress_type	Complex	UnnumberedThoroughfareAddress	Global Element	Global, AddressCollection
Landmark Address	LandmarkAddress_type	Complex	LandmarkAddress	Global Element	Global, AddressCollection
Community (Urbanization) Address	CommunityAddress_type	Complex	CommunityAddress	Global Element	Global, AddressCollection



USPS Postal Delivery Box	USPSPostalDeliveryBox_type	Complex	USPSPostalDeliveryBox	Global Element	Global, AddressCollection
USPS Postal Delivery Route	USPSPostalDeliveryRoute_type	Complex	USPSPostalDeliveryRoute	Global Element	Global, AddressCollection
USPS General Delivery Address	USPSGeneralDeliveryAddress_type	Complex	USPSGeneralDeliveryAddress	Global Element	Global, AddressCollection
General Address	GeneralAddressClass_type	Complex	GeneralAddressClass	Global Element	Global, AddressCollection
Address Reference System	AddressReferenceSystem_type	Complex	AddressReferenceSystem	Global Element	Global, AddressCollection
	AddressCollection_type	Complex	AddressCollection	Global Element	
Complete Address Number	CompleteAddressNumber_type	Complex	CompleteAddressNumber	Element	Various, AddressNumberRange
Address Number Prefix	AddressNumberPrefix_type	Simple	Prefix	Element	CompleteAddressNumber, AddressNumberRange
Address Number	AddressNumber_type	Simple	Number	Element	CompleteAddressNumber, AddressNumberRange
Address Number Suffix	AddressNumberSuffix_type	Simple	Suffix	Element	CompleteAddressNumber, AddressNumberRange
SeparatorElement	SeparatorElement_type	Simple	SeparatorElement	Attribute	CompleteAddressNumber, AddressNumberRange

CompleteStreetName	CompleteStreetName_type	Complex	CompleteStreetName	Element	Global objects
Street Name Pre-modifier	StreetNameModifier_type	Simple	PreModifier	Element	CompleteStreetName
Street Name Pre-directional	StreetNameDirectional_type	Simple	PreDirectional	Element	CompleteStreetName
Street Pre-type	StreetNameType_type	Simple	PreType	Element	CompleteStreetName
Street Name	StreetName_type	Simple	StreetName	Element	CompleteStreetName
Street Post-type	StreetNameType_type	Simple	PostType	Element	CompleteStreetName
Street Post-directional	StreetNameDirectional_type	Simple	PostDirectional	Element	CompleteStreetName
Street Name Post-modifier	StreetNameModifier_type	Simple	PostModifier	Element	CompleteStreetName
CompleteSubaddress	CompleteSubaddress_type	Complex	CompleteSubaddress	Element	Global objects
Subaddress Type	SubaddressType_type	Simple	SubaddressType	Element	Building
Subaddress Identifier	SubaddressIdentifier_type	Simple	SubaddressIdentifier	Element	Building
CompleteLandmark Name	Set the "AddressID" and "AuthorityID" elements of the Address Standard for any addresses created by the producer.CompleteLandmarkName_type	Simple	CompleteLandmarkName	Element	Global objects
Landmark Name	LandmarkName_type	Complex	LandmarkName	Element	LandmarkAddress
Community (Urbanization) Place Name	CommunityPlaceName_type	Simple	CommunityPlaceName	Element	PlaceName, LandmarkSiteAddress, Community Address

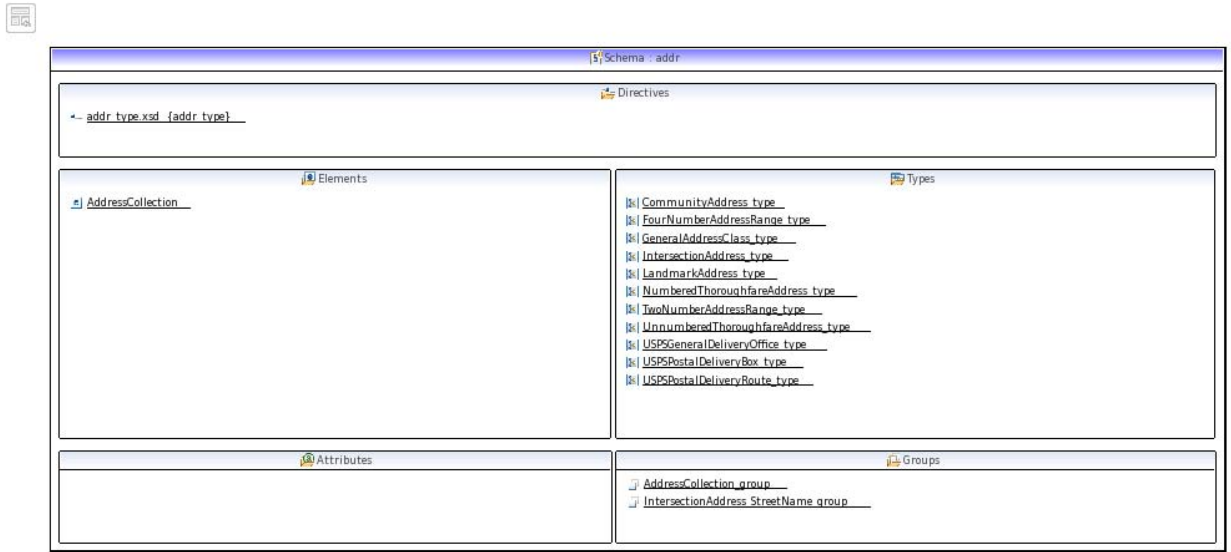
CompletePlaceName	completePlaceName_type	Complex	CompletePlaceName	Element	Global objects
PlaceName	PlaceName_type	Simple	PlaceName	Element	CompletePlaceName
PlaceNameType	PlaceNameType_type	Simple	PlaceNameType	Attribute	PlaceName
County Name	CountyName_type	Simple	CountyName_type	Element	PlaceName
State	StateName_type	Simple	StateName	Element	Global objects
ZIP Code	ZIPCode_type	Simple	ZIPCode	Element	Global objects
ZIP+4 Code	ZIPPlus4_type	Simple	ZIPPlus4	Element	Global objects
CountryName	CountryName_type	Simple	CountryName	Element	Global objects
USPS Box Type	USPSBoxType_type	Simple	USPSBoxType	Attribute	USPSBox
USPS Box ID	USPSBoxId_type	Simple	USPSBoxId		USPSBox
	USPSBox_type	Complex	USPSBox	Element	USPSPostal Delivery Classes
USPS Box Group Type	USPSBoxGroupType_type	Simple	USPSBoxGroupType	Attribute	USPSBoxGroup
USPS Box Group ID	USPSBoxGroupId_type	Simple	USPSBoxGroupId		USPSBoxGroup
	USPSBoxGroup_type	Complex	USPSBoxGroup	Element	USPSPostal Delivery Classes
USPS General Delivery Point	USPSGeneralDeliveryPoint_type	Simple	USPSGeneralDeliveryPoint	Element	USPSPostal Delivery Classes
DeliveryAddress	CompleteFeatureAddress_type	Simple	DeliveryAddress	Element	GeneralAddress
Place State ZIP	PlaceStateZip_type	Simple	PlaceStateZip	Element	GeneralAddress
Address ID	AddressId_type	Simple	AddressId	Element	Global

Address X Coordinate	AddressXCoordinate_type	Simple	X	Element	objects XYCoordinate
Address Y Coordinate	AddressYCoordinate_type	Simple	Y	Element	XYCoordinate
Address Longitude	AddressLongitude_type	Simple	Longitude	Element	LongLat
Address Latitude	AddressLatitude_type	Simple	Latitude	Element	LongLat
US National Grid Coordinate	LocationUSNG_type	Simple	USNGCoordinate	Element	Global objects
Address Z Value	AddressZValue_type	Simple	Zvalue	Element	Global objects
Address Classification		Internal		Internal to model	The XSD element name stores this information
Feature Type	FeatureType_type	Simple	AddressFeatureType	Element	Global objects
Address Lifecycle Status	AddressLifecycleStatus_type	Simple	AddressLifecycleStatus	Element	Global objects
Address Official Status	AddressOfficialStatus_type	Simple	OfficialStatus	Element	Global objects
Address Anomaly Status	AddressAnomalyStatus_type	Simple	AddressAnomalyStatus	Element	Global objects
Address Range Type	AddressRangeType_type	Simple	AddressRangeType	Element	Global objects
Location Description	LocationDescription_type	Simple	LocationDescription	Element	Global objects
Address Number Parity	AddressNumberParity_type	Simple	Parity	Attribute	TwoNumberAddressRange
Address Reference System Name	AddressReferenceSystemName_type	Simple	AddressReferenceSystemName_type	Element	Global objects
Address Reference	AddressReferenceS	Simple	AddressRefere	Element	AddressRefe

System Axis	systemAxes_type		nceSystemAxis_type		renceSystem
Address Reference System Document Citation	AddressReferenceSystemDocumentCitation_type	Simple	AddressDocumentCitation_type	Element	AddressReferenceSystem
Address Reference System Origin	AddressReferenceSystemOrigin_type	Simple	AddressReferenceSystemOrigin_type	Element	AddressReferenceSystem
Address ReferenceSystem Extent	AddressReferenceSystemExtent_type	Simple	AddressReferenceSystemExtent_type	Element	AddressReferenceSystem
Address ReferenceSystem	AddressReferenceSystem_type	Complex	AddressReferenceSystem	Global Element	Global
Address Start Date	AddressStartDate_type	Simple	AddressStartDate	Element	Global objects
Address End Date	AddressEndDate_type	Simple	AddressEndDate	Element	Global objects
Address Direct Source	AddressDirectSource_type	Simple	AddressDirectSource	Element	Global objects
Address Authority	AddressAuthority_type	Simple	AddressAuthority	Element	Global objects
Address Authority Identifier	AddressAuthorityIdentifier_type	Simple	AddressAuthorityIdentifier	Element	Global objects

### 3173 5.3.3 Diagrams of Elements of the XSD datamodel

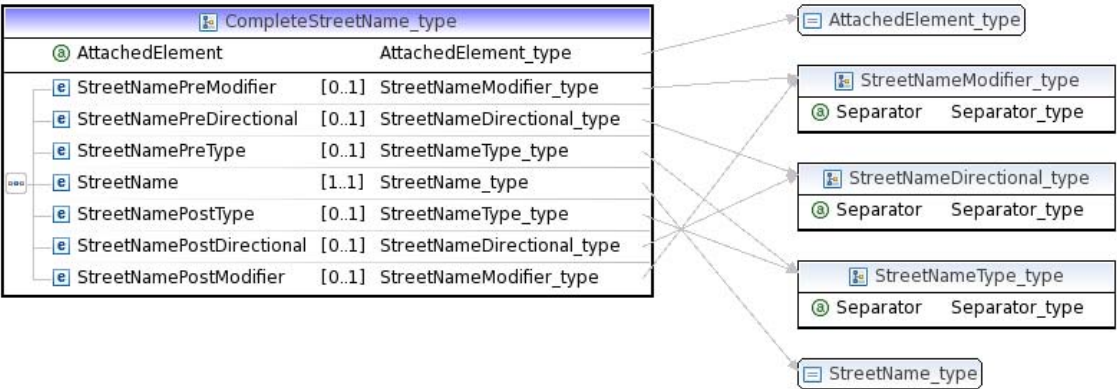
#### 3174 5.3.3.1 Data Model



3175

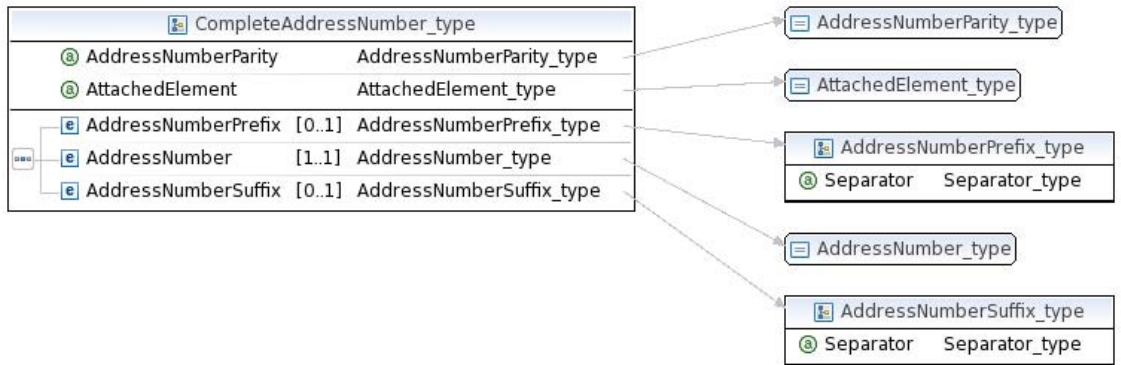
3176    **5.3.3.2 Complex Types**

3177    **5.3.3.2.1 Complete Street Name**



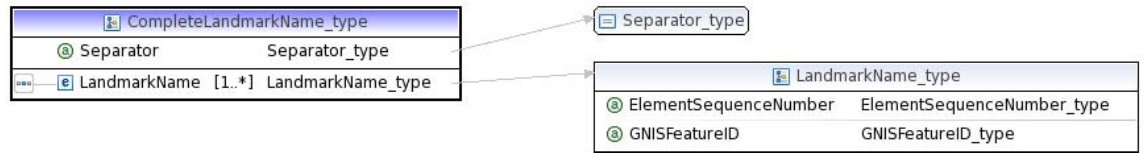
3178

3179    **5.3.3.2.2 Complete Address Number**



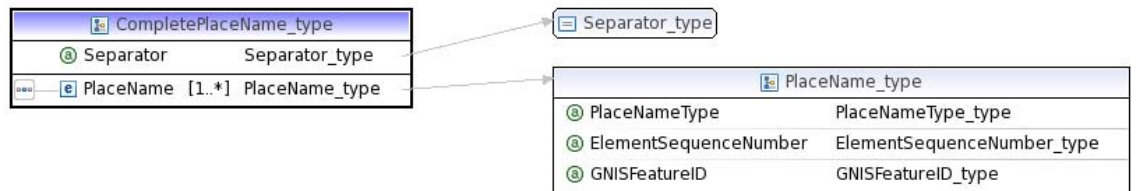
3180

### 3181 5.3.3.2.3 Complete Landmark Name



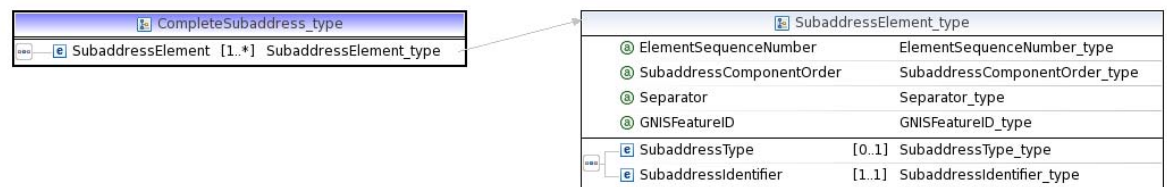
3182

### 3183 5.3.3.2.4 Complete Place Name



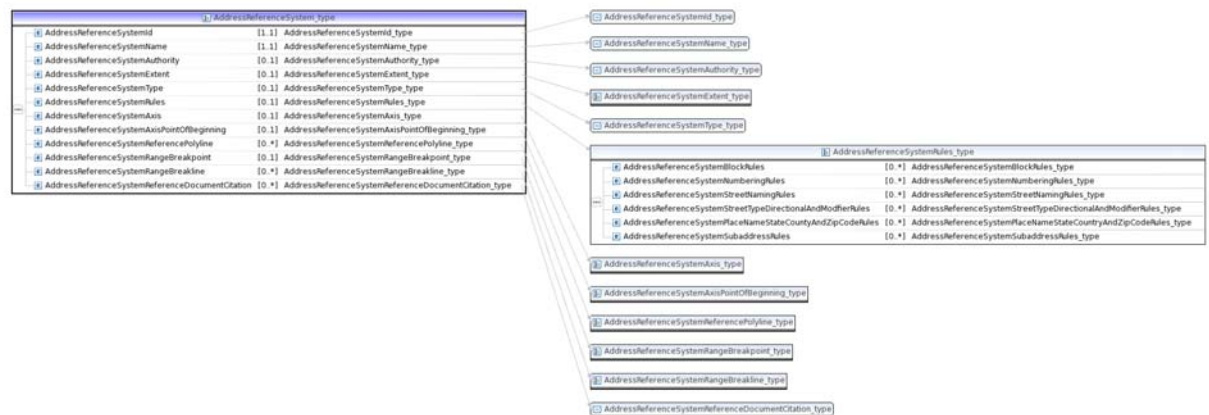
3184

### 3185 5.3.3.2.5 Complete Subaddress

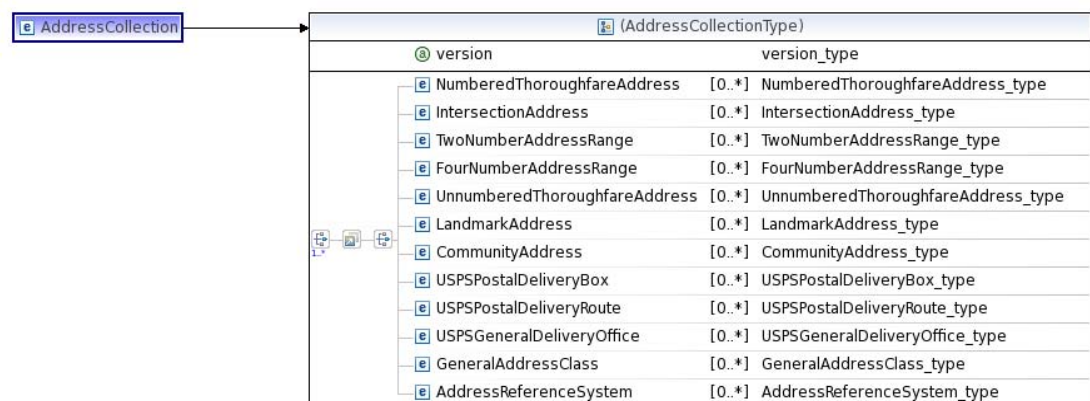


3186

### 3187 5.3.3.2.6 Address ReferenceSystem



3188

3189 **5.3.3.2.7 Address Collection**

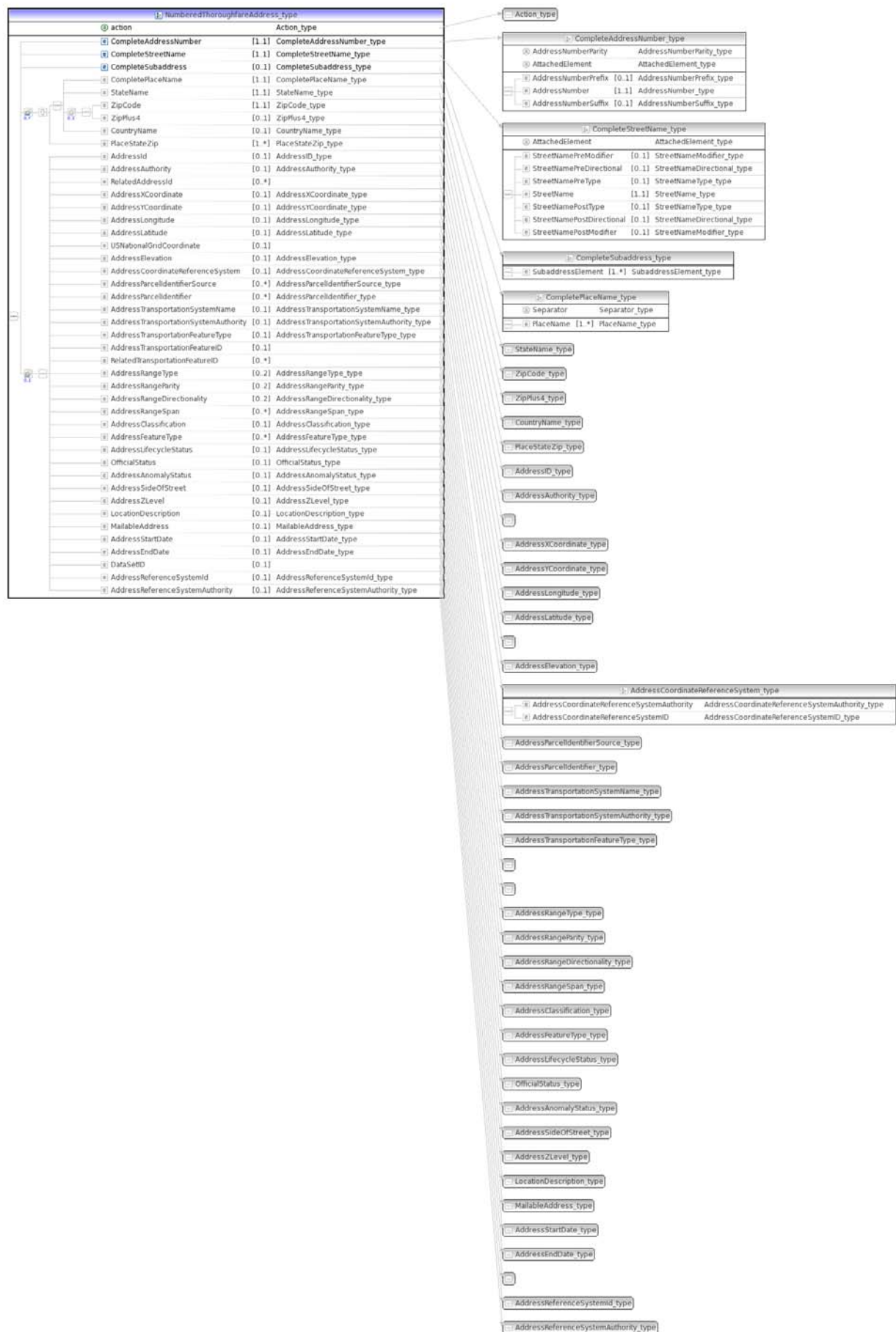
3190



3191    **5.3.3.3 Thoroughfare Address Classes**

3192    **5.3.3.3.1 [Numbered Thoroughfare Address](#) v0.4:**

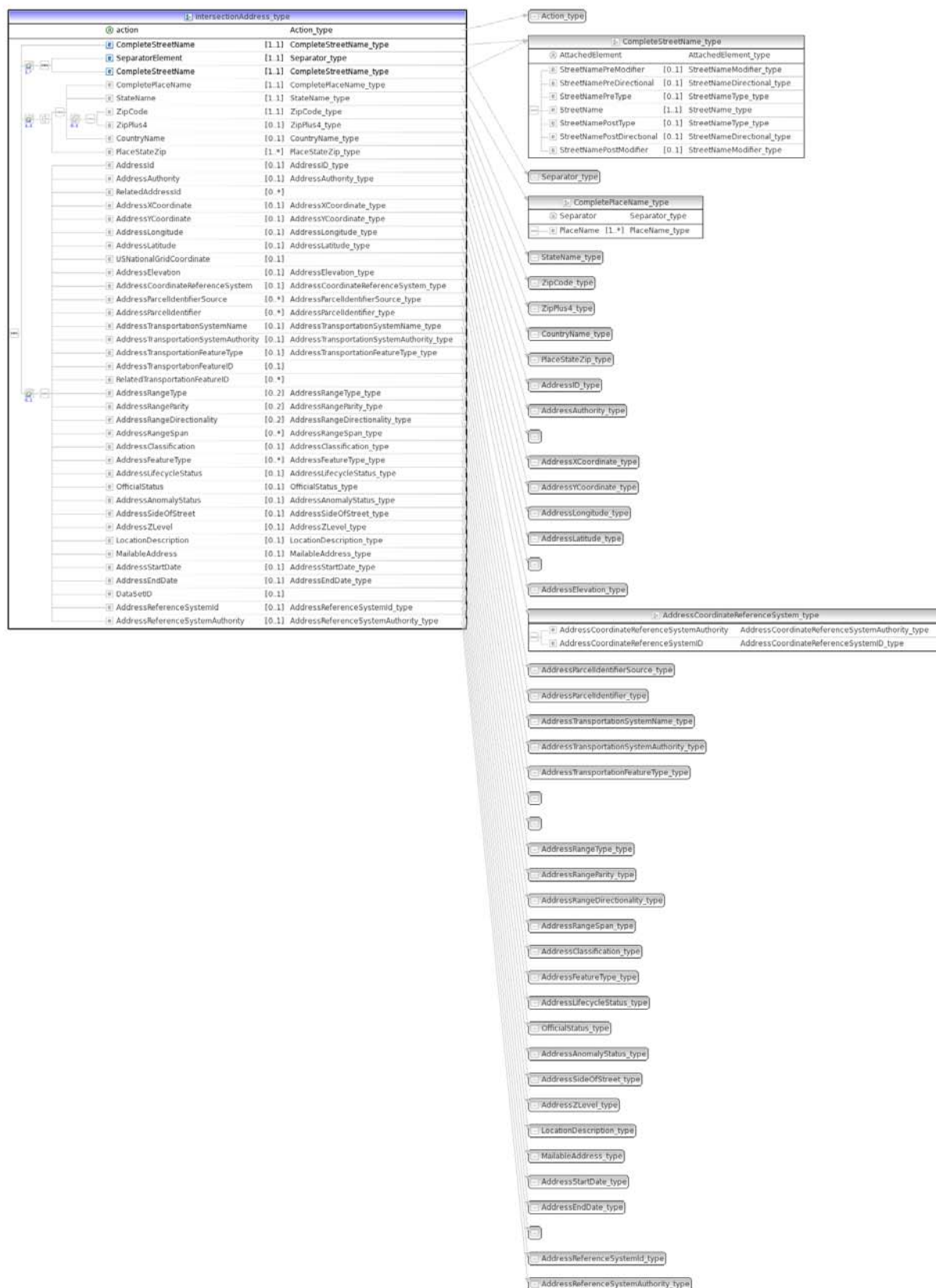
3193



3195 5.3.3.3.2 [Intersection Address](#)

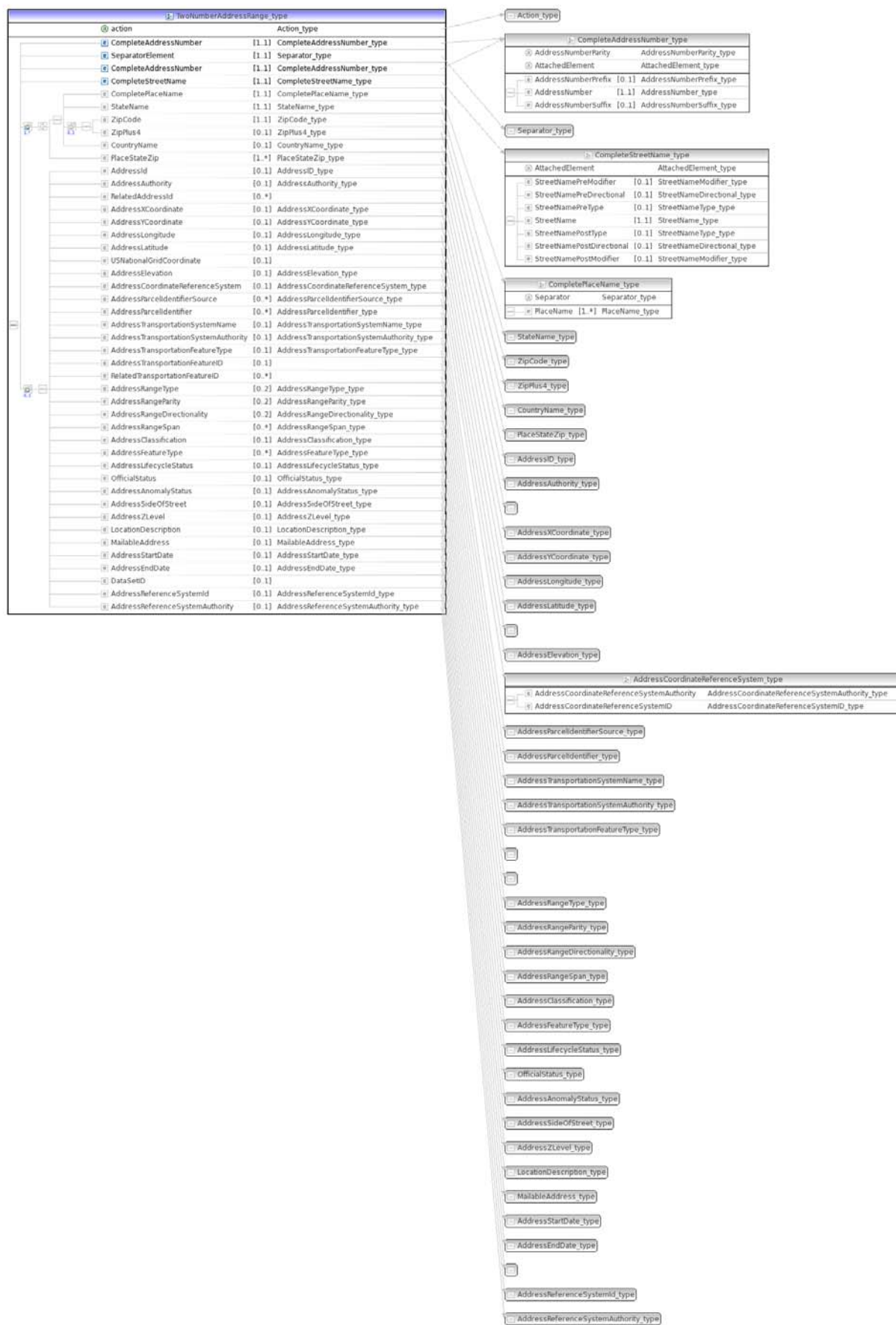
3196

---



3198 5.3.3.3.3 [Two Number Address Range:](#)

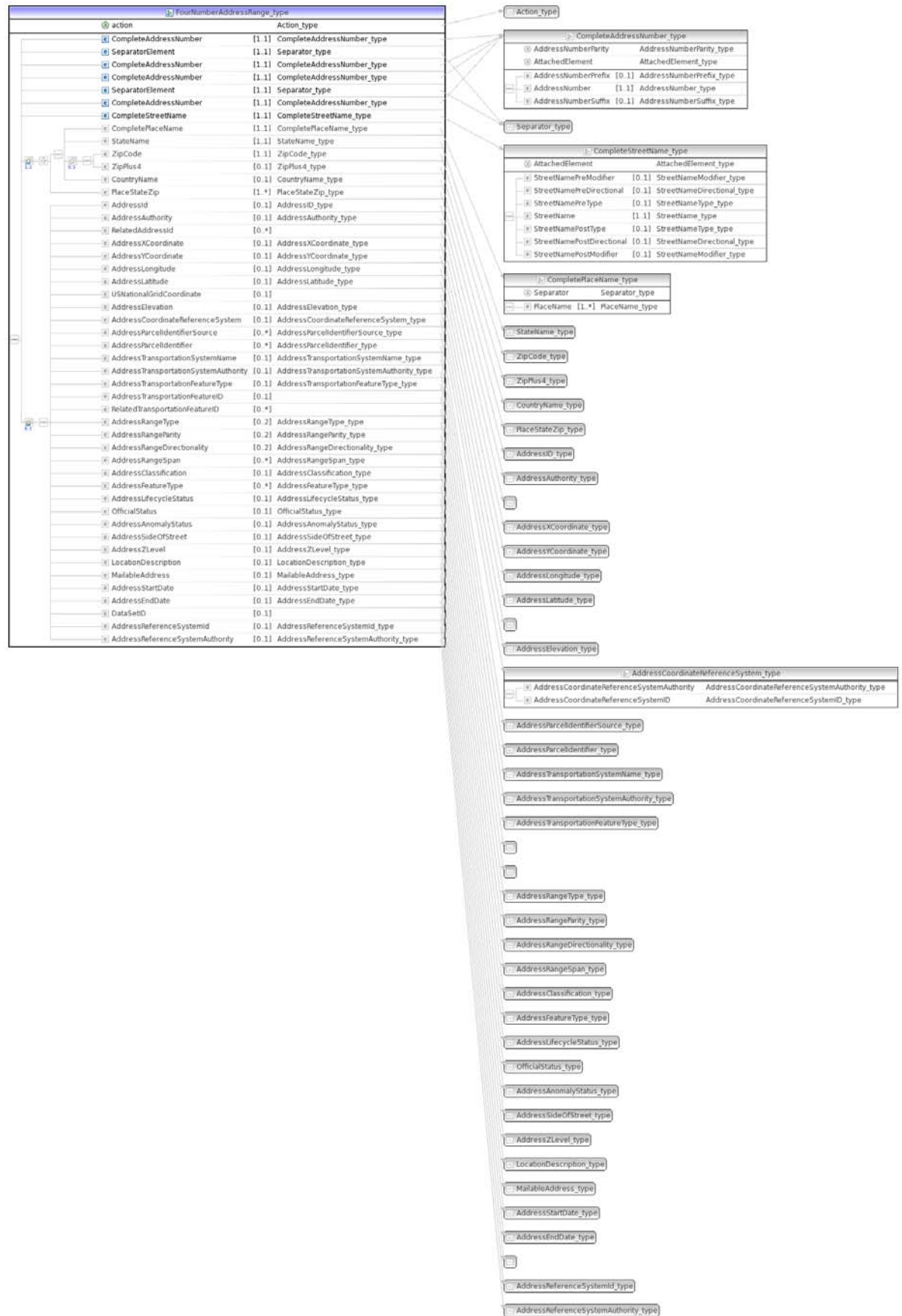
3199



3201 5.3.3.3.4 **Four Number Address Range**

3202

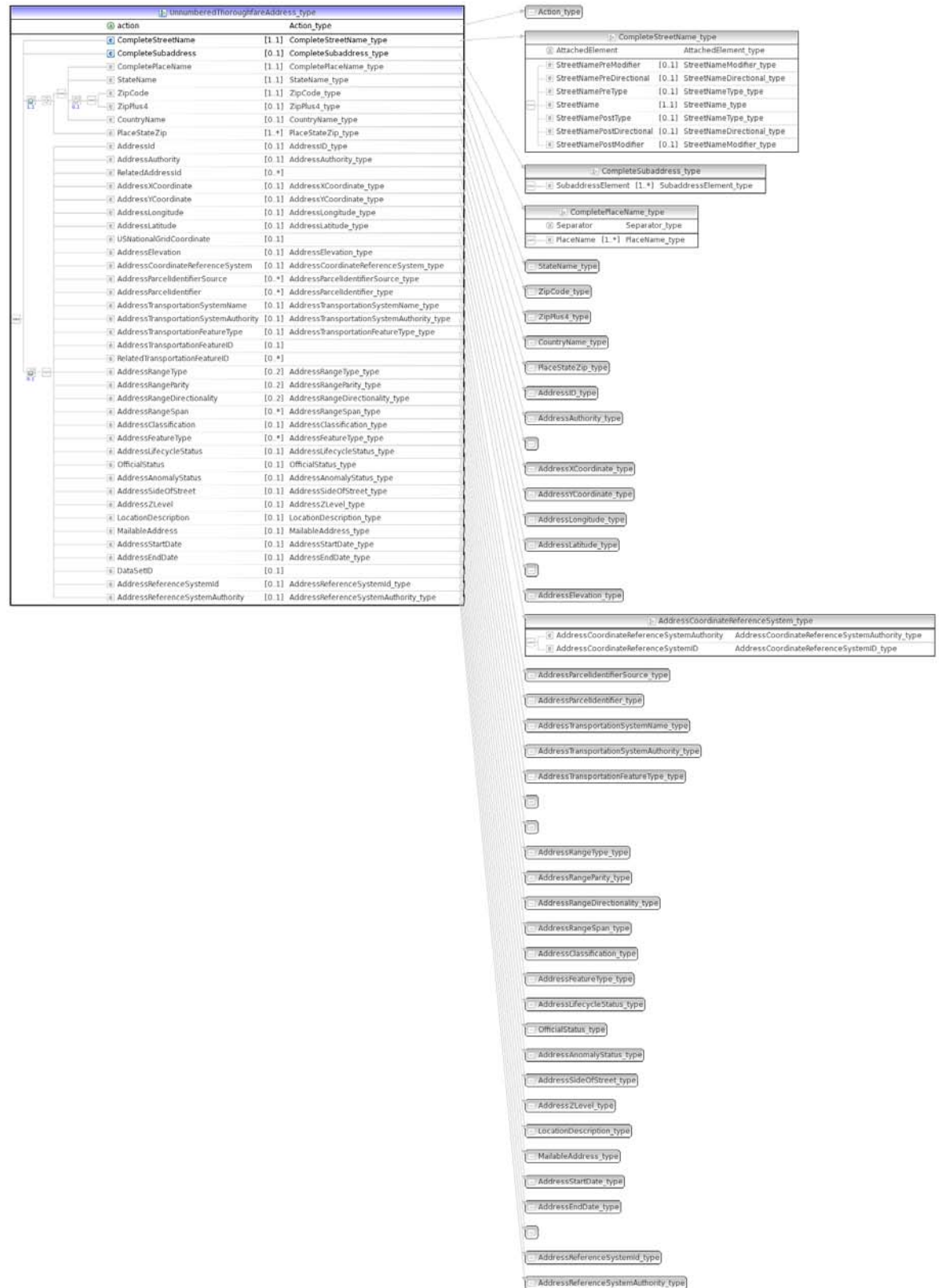
---





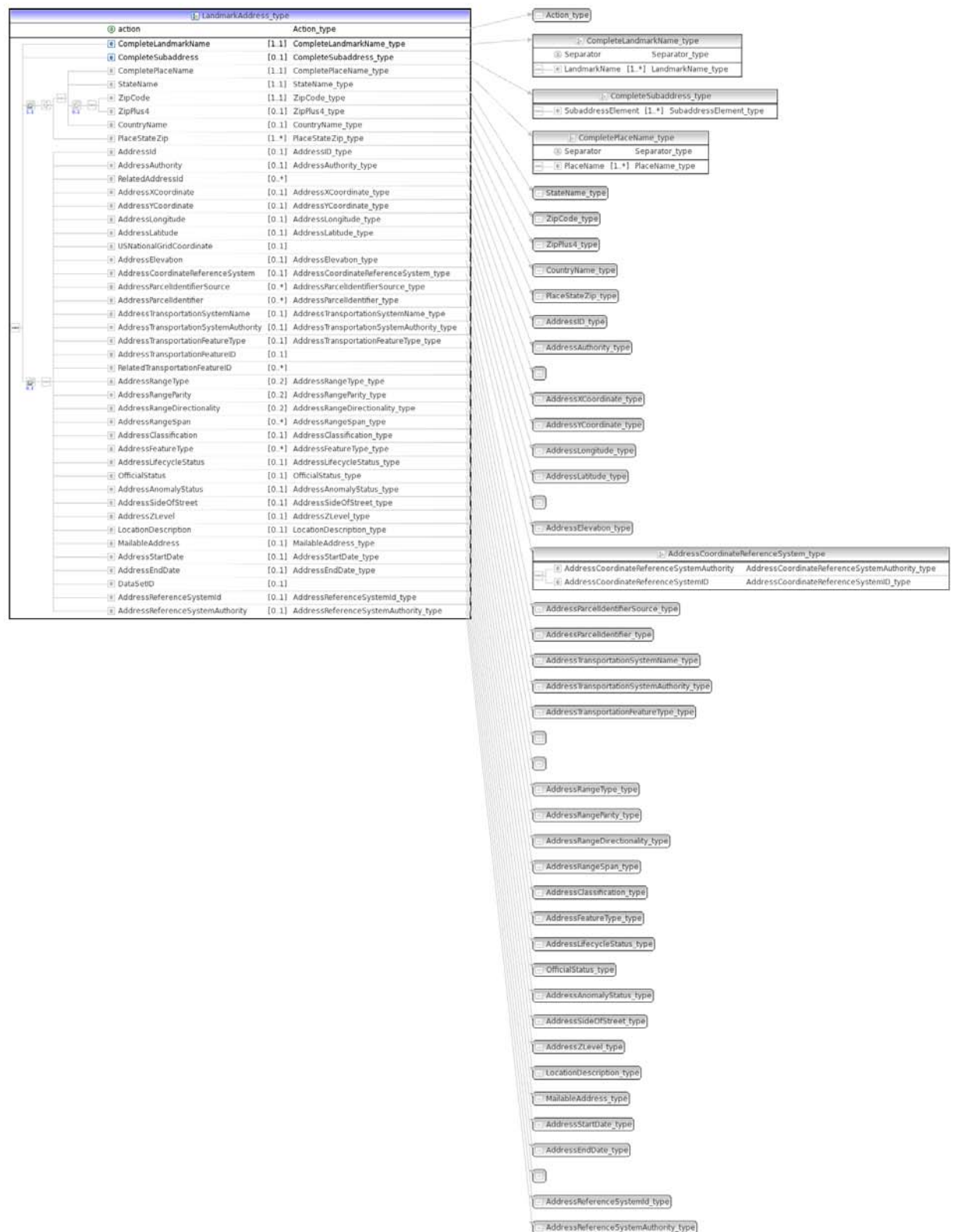
3204 5.3.3.3.5 Unnumbered Thoroughfare Address:

3205

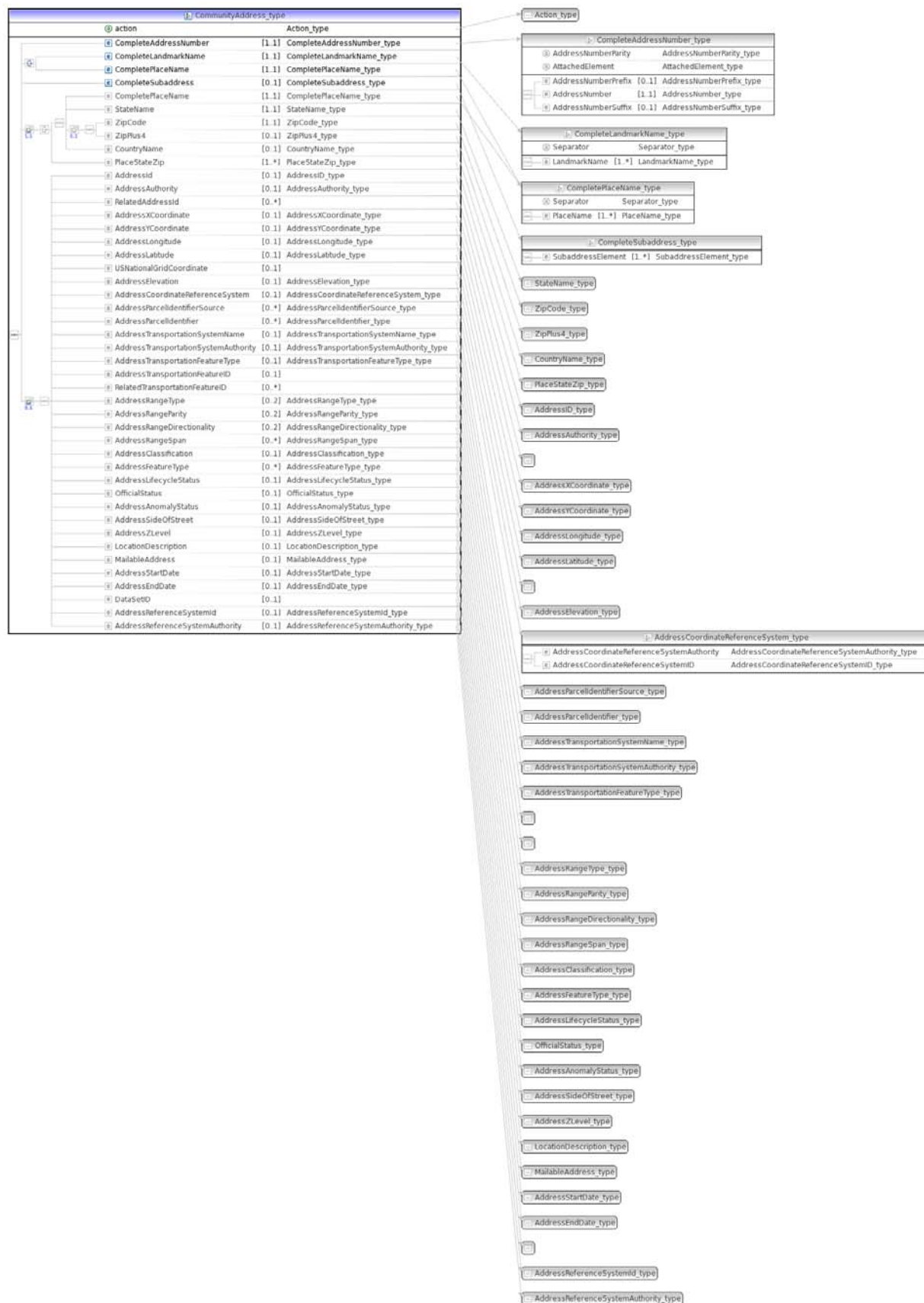


3207    **5.3.3.4 Landmark Address Classes**

3208    **5.3.3.4.1 Landmark Address**

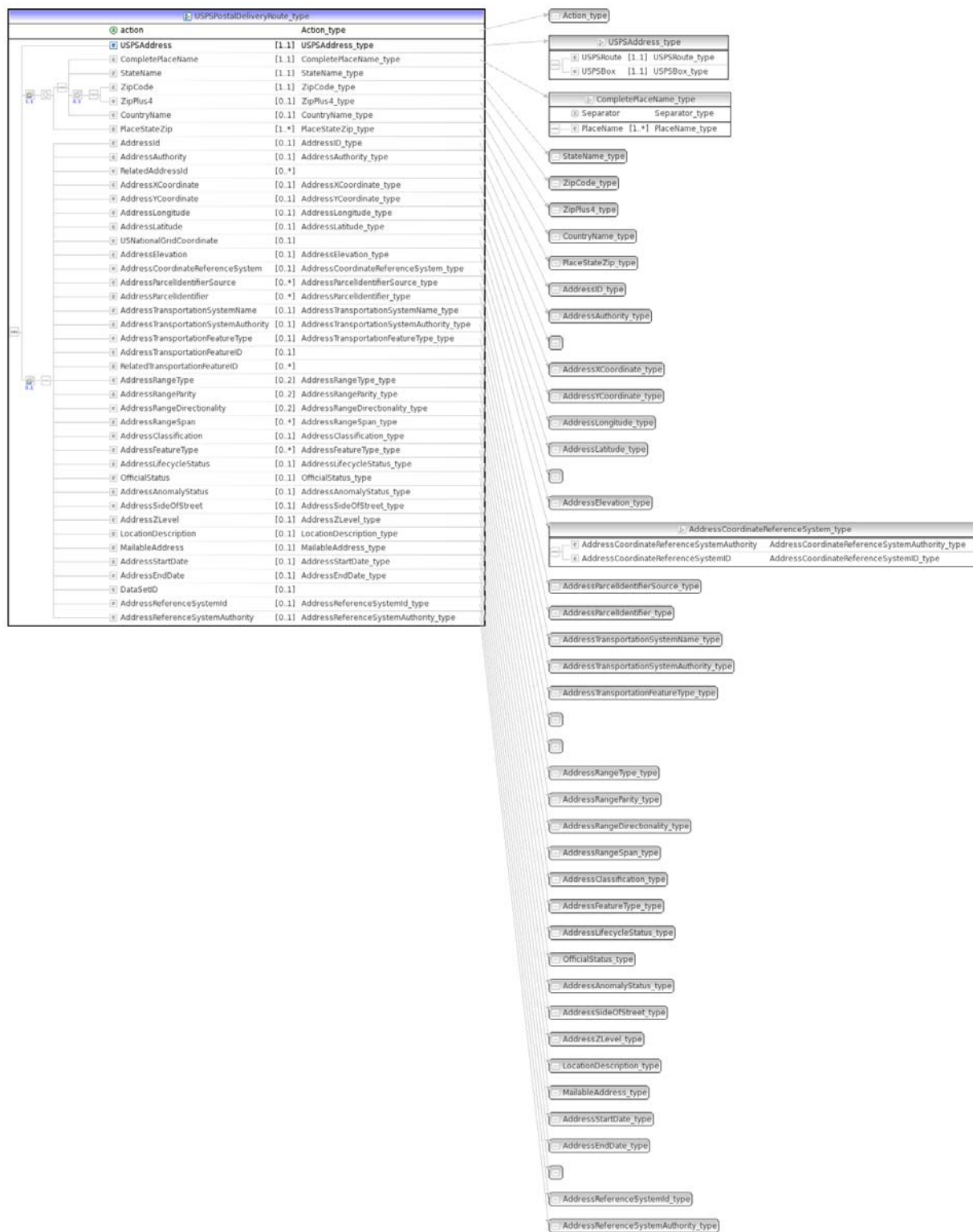


3210 5.3.3.4.2 [Community Address](#)



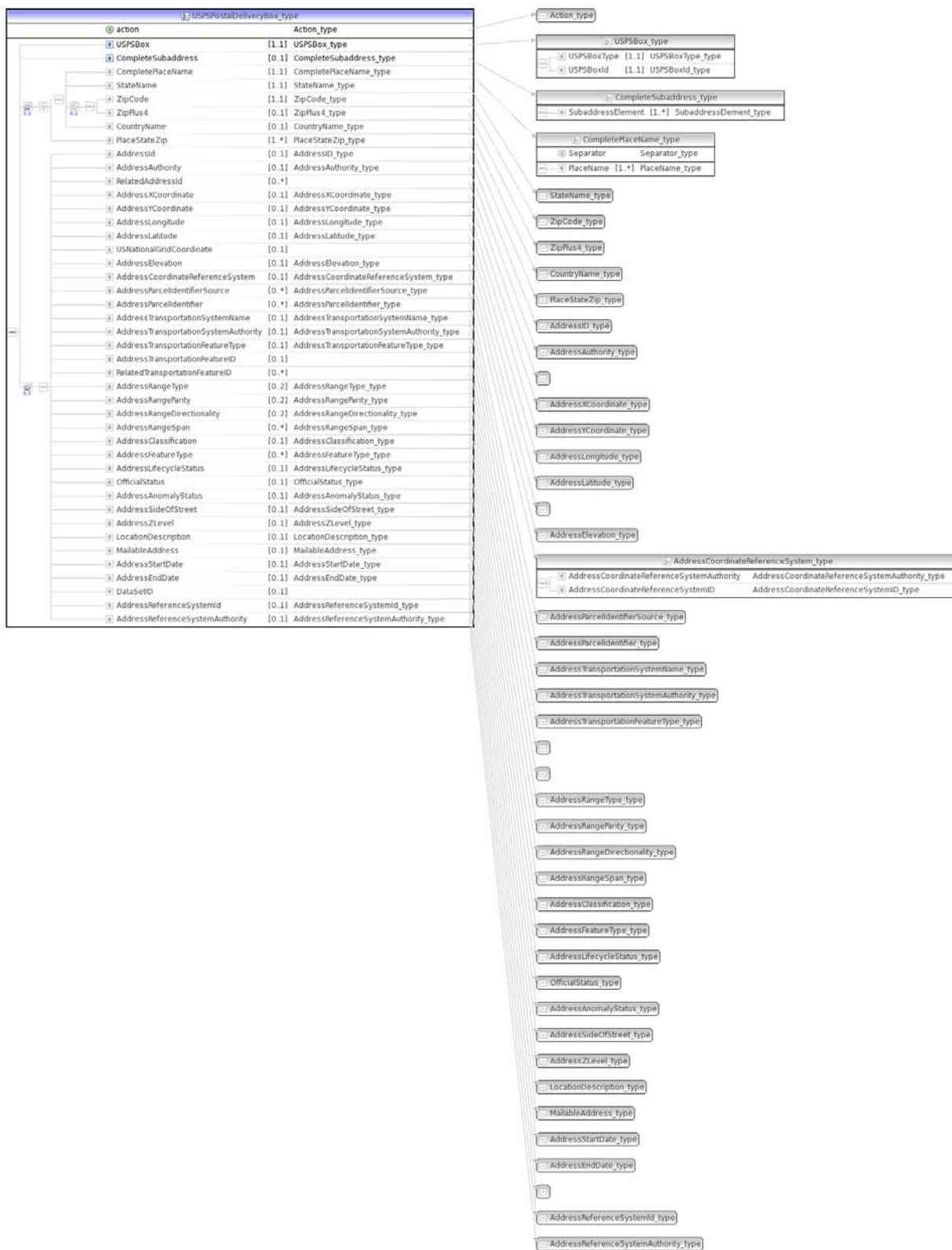
3212    **5.3.3.5 Postal Delivery Address Classes**

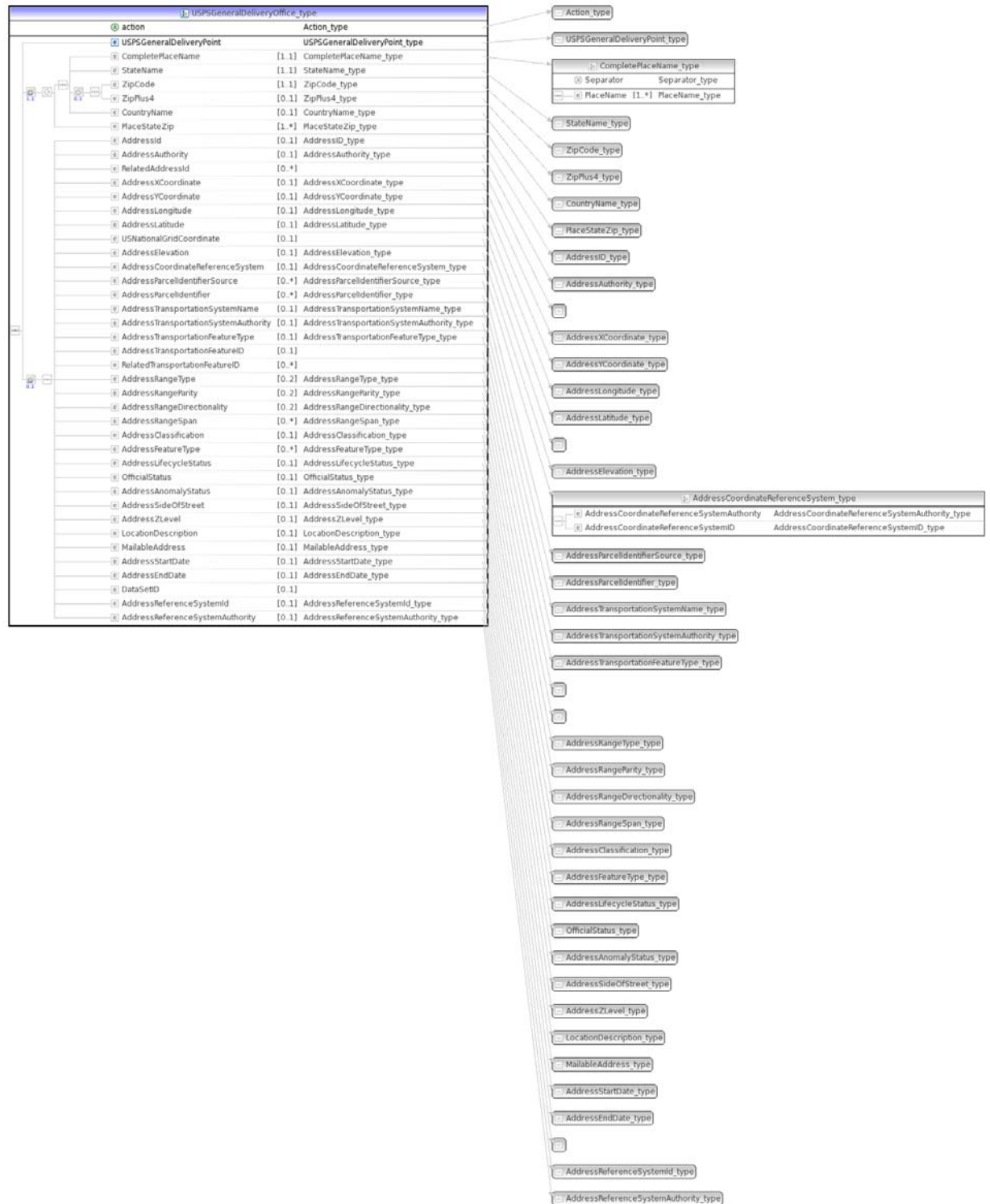
3213    **5.3.3.5.1 USPS Postal Delivery Route**





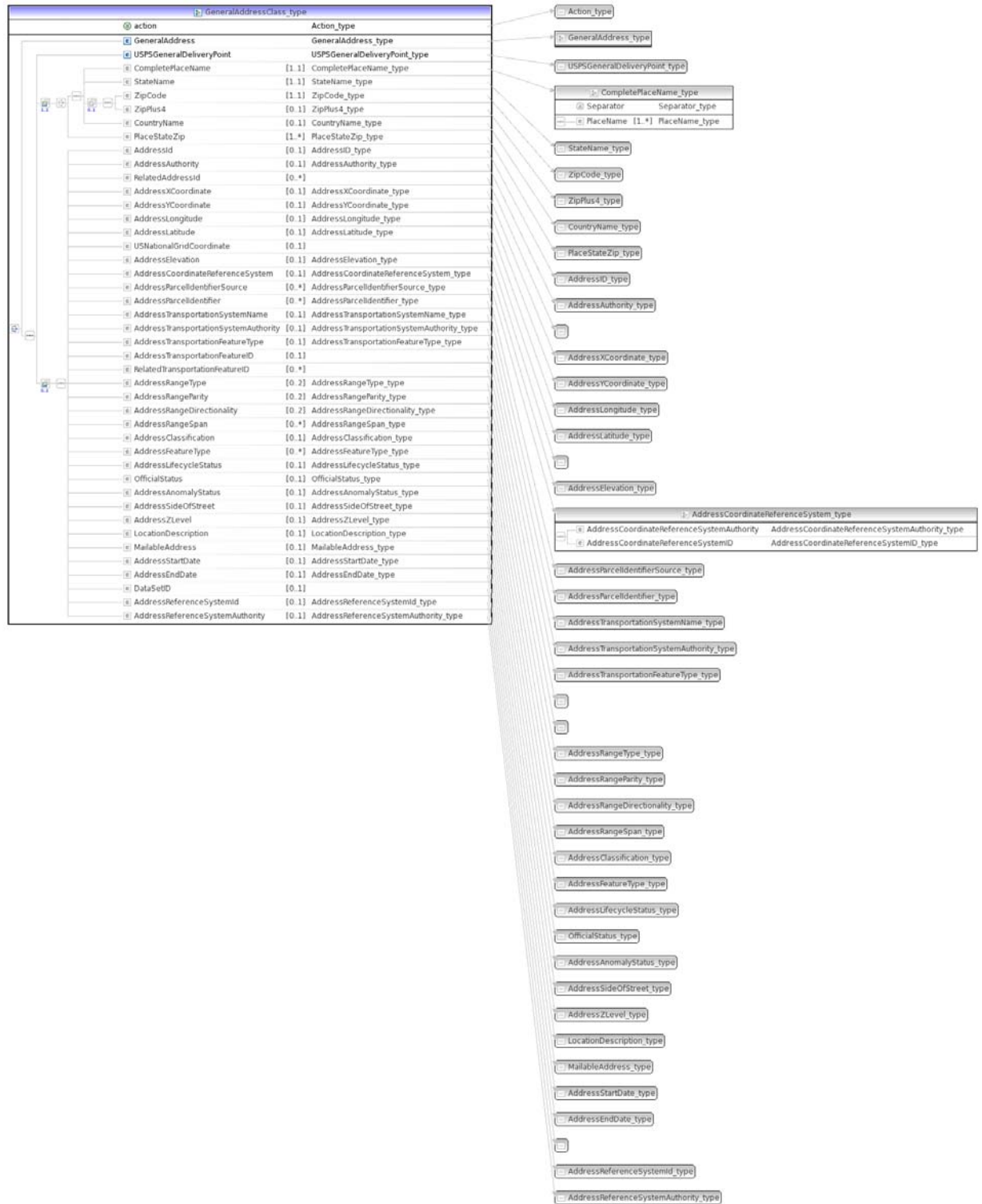
3215    **5.3.3.5.2 USPS Postal Delivery Box**



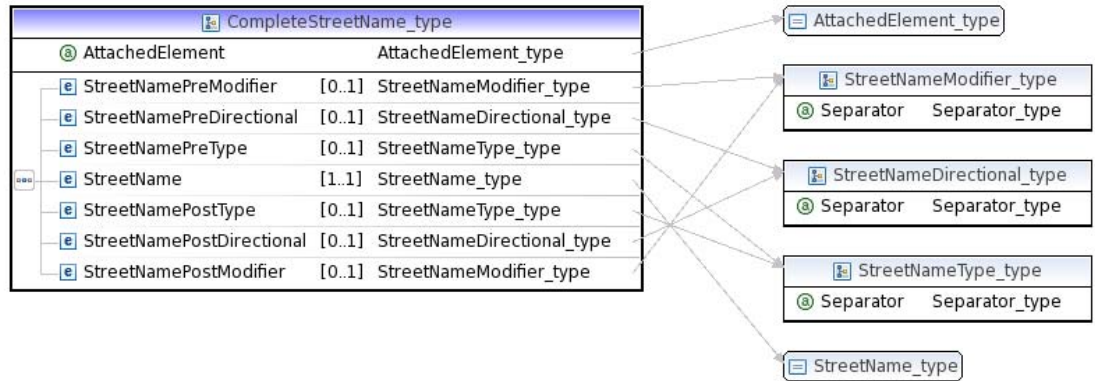
3217 5.3.3.5.3 USPS General Delivery Office

3219    **5.3.3.6 General Address Class**

3220    **5.3.3.6.1 General Address Class**



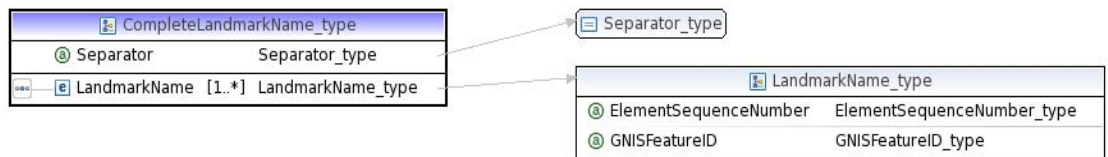
3222 5.3.3.6.2 Complete Street Name



3223

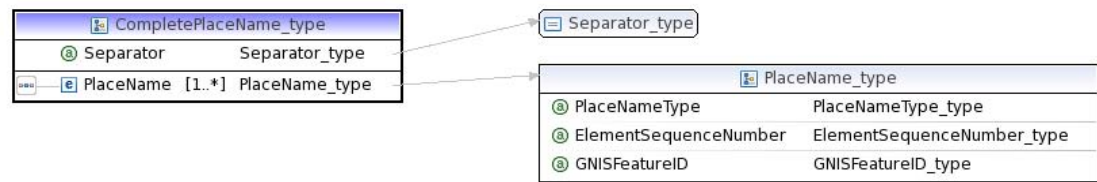
3224 5.3.3.6.3 Complete Address Number

3225 5.3.3.6.4 Complete Landmark Name



3226

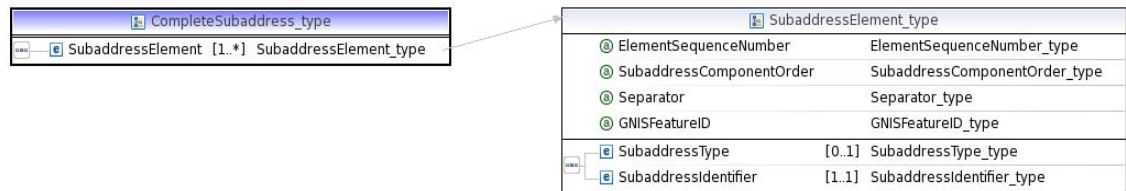
3227 5.3.3.6.5 Complete Place Name



3228

3229

5.3.3.6.6
[Complete Subaddress](#)



3230

3231

3232

3233

6
REFERENCES

3234

3235

**Note:** All references and URLs were current as of September 5-8, 2009, with selected updates through January 6, 2010.

3236

6.1
Standards and Specifications Cited

3237

3238

3239

3240

1. American National Standards Institute. "INCITS 38:200x, Codes for the Identification of the States, the District of Columbia, Puerto Rico, and the Insular Areas of the United States." Maintained by the U.S. Census Bureau. (Formerly FIPS Publication 5-2, May 28, 1987). "Last revised January 9, 2009."