RICHMOND ADDRESSING MANUAL

Version 1.2

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Edit History:

Editor	*Date*	*Description*	*Version*
Steve Waldron	8/3/2012	Final Draft	1.0
Steve Waldron		Added sections L, N, and O. (Landmarks, Intersections, Blocks)	1.1
Steve Waldron	9/13/2012	Updated “Blocks” section	1.2
Steve Waldron	11/9/2012	Add Section for “Address Structures to Support Business Processes”	1.3
Steve Waldron	3/14/2013	Updated ”AllAddress Feature Class” section	1.4
Steve Waldron	6/6/2013	Updated “AllAddress Feature Class” section re: “ExtensionWithUnit” attribute field, established for purpose of supporting Energov	1.5
Steve Waldron	7/22/2013	Added information about addr_PINshaveParcelAddresses relationship class	1.6
Steve Waldron	8/13/2013	Added the appendicies, cads mailable, Use Cases, Workflow diagrams	1.7
Steve Waldron	9/9/2013	Updated information about Zip Code values and Zip Code feature class	1.8
Steve Waldron	9/19/2013	Updated information about PINs and relationships to addresses	1.9
Steve Waldron	10/7/2013	Updated information about Fractional Exceptions, Grandfathering, and front doors’ usage of BldgNumbers.	1.1
Steve Waldron	10/28/2013	Updated Appendix C to include more details from Address Maintenance Tool Tech Specs. Added Appendix D.	1.2

Forward:

The Richmond Addressing Manual was developed with the contributions and editing of content by the GIS-DIT group and members of the City’s Addressing Authority; Steve Waldron (GIS Coordinator-DIT), Bill Rose (GIS Developer-DIT), Zbigniew Brodzik (GIS Project Manager-DIT), Jeff Galang (GIS Developer-DIT), Richard Morton (GIS Analyst-PDR), Parrish Simmons (GIS Manager-Assessor Office), and Pravin Mathur (GIS Manager-DPW).

The manual was written during the development of both the GIS-based addressing data model and addressing web services; between February, 2012 and August, 2012.

The manual serves to formally document the City’s address data model, standards, rules, procedures, workflows, and anomalies. Prior to the development of this manual, there was no reference guide that explained the City’s addressing solution.

The manual is intended to be a living document, mainly under the purview of the Dept. of Planning and Development Review (and the Addressing Authority), and will be updated over time, as the data model is modified or workflows change.

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A. Addressing Policy

The City of Richmond wants to maximize data sharing and data correlation capabilities across computerized systems. Because most systems involve the delivery of some type of service to customers, an address is used to identify where City services are provided. In order to accomplish data sharing and correlation, either the elements of an address or a common linking element (a key or index) is necessary to tie records from different systems together. Therefore, the standardization of address validation and recording against recognized addresses is important to ensure the City's ability to communicate address-based information across multiple systems.

B. What is an Address? (Characteristics)

Richmond Address
A description of a geographic location inside or near the incorporated City of Richmond boundary, and subsequently of interest to one or more Richmond business processes.

Richmond ParcelAddress

- A type of Richmond Address that must include:
  1. The distinguishing attributes of a named thoroughfare, and
  2. A numeric value used to position the location along the thoroughfare. These values correspond to building numbers where structures exist and are either interpolated or assigned from nearby streets where there are no structures.

- A ParcelAddress is nearly always related to one or more Richmond real estate assessment records; Parcel Identification Numbers (PINs).

- ParcelAddress features include:
  - All entities commonly known as *street addresses* and *mailing addresses*
  - Structures where building numbers can be posted
  - Vacant buildable lots
  - Condominium units

- ParcelAddress features do not include:
  - Vacant non-buildable parcels
  - Most accessory buildings
  - Structural divisions such as apartment units that are not legally defined as condominiums

- ParcelAddress can be related to one or more common place names, which the City models as Landmark features.

- A common characteristic of the ParcelAddress is that they are tied to a building's separate front door(s). (A duplex, for example, should be modeled as two ParcelAddresses, instead of one ParcelAddress with two Subaddresses.) *See section J-38 in this manual.*

Richmond Subaddress

- A type of Richmond Address that must include:
    1. Exactly one related ParcelAddress, and
    2. Text describing a structural division or sub-designation of the related ParcelAddress.

- Subaddress features never exist independently of a *parent* ParcelAddress.

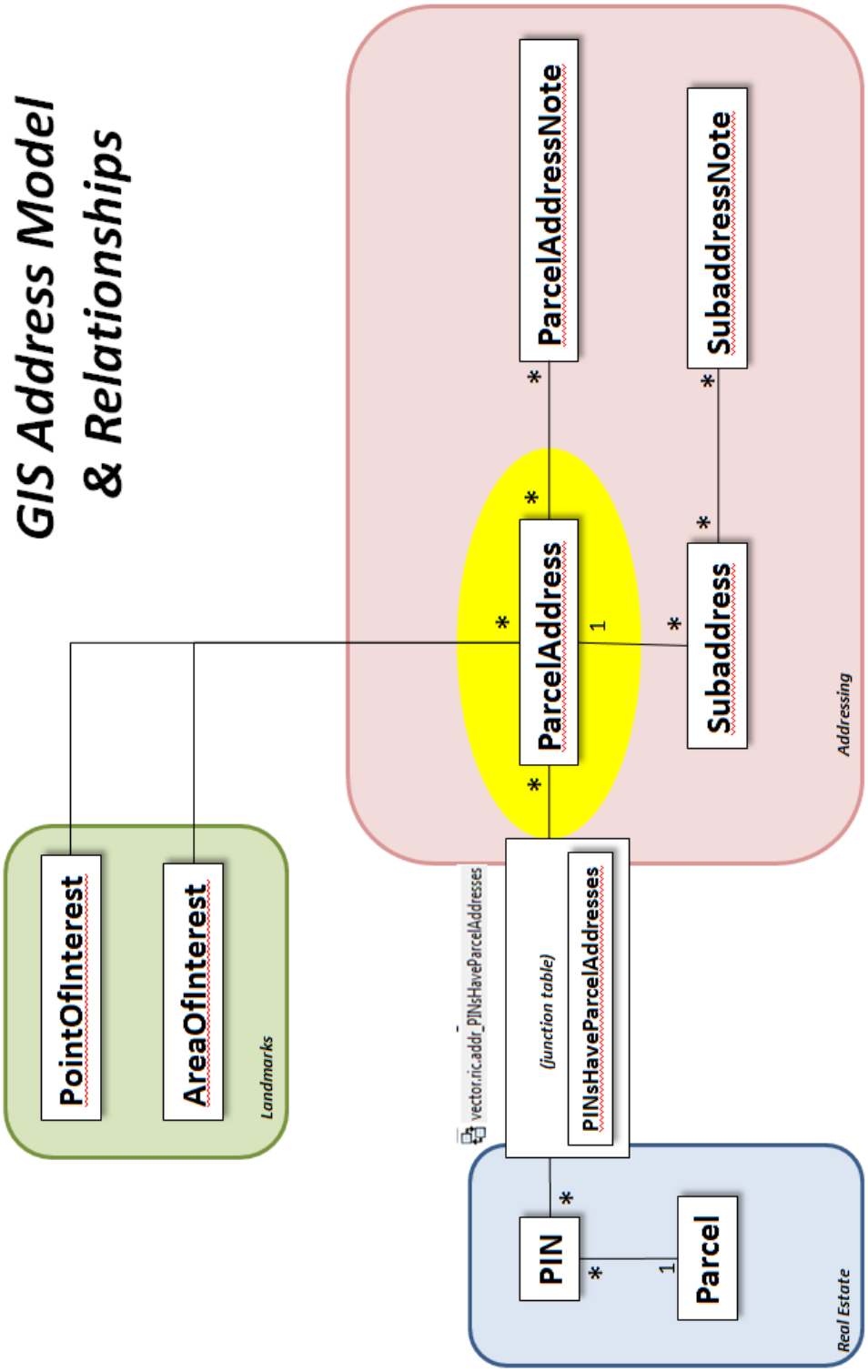
- Subaddress features include:
    - Structural divisions such as apartment units that are not legally defined as condominiums
    - Other non-condo designations recognized by USPS as *secondary addresses*

- With the exception of condominiums (because they have unique real estate PIN assignments), a common characteristic of Subaddresses is that they are not tied to a building's separate front door(s). Rather, these are associated to interior doors within the building that serve as the front door of the living spaces; not the front door of the building.

<u>Scope</u>

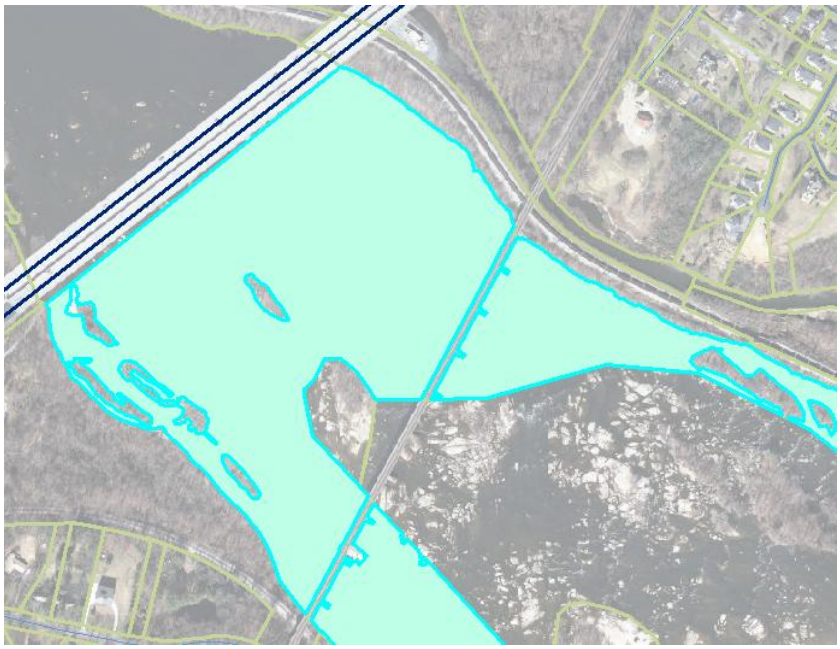
- Limited to City Addresses. The model does not attempt to include/manage county addresses.
- Subaddress features are generally limited to residential and utility locations within the City.

C. Address Model Diagram:

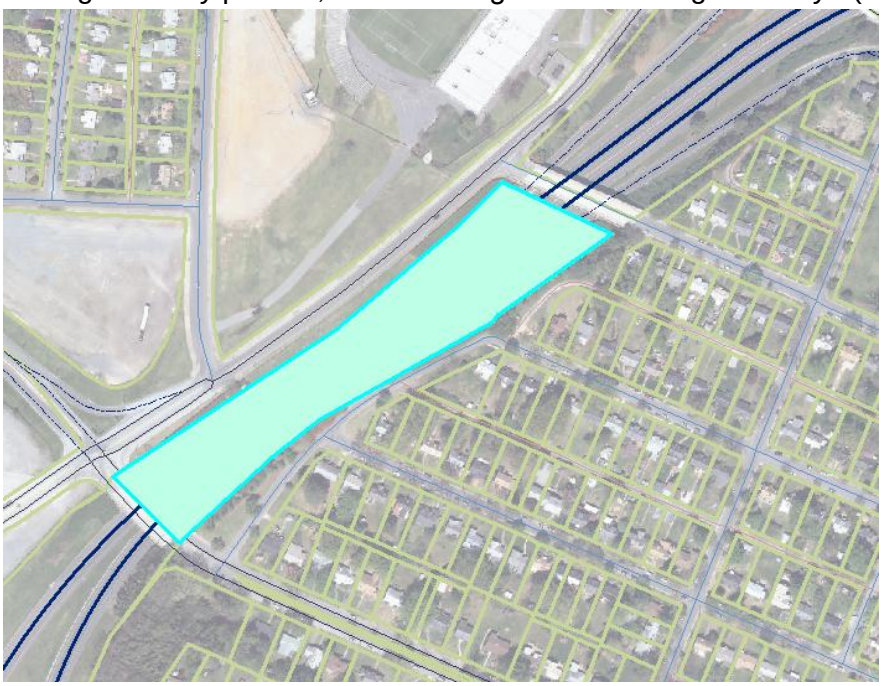


D. What Does Not Get Addressed:

- County addresses that the City provides utility services to will not be kept in the City's address repository. (The City is not the addressing authority for non-City addresses.)
- Out-of-state addresses required for other business processes, are to be stored in the proprietary business system.
- CAMA-defined vacant river parcels and islands. (see below)



- CAMA-defined right-of-way parcels, nor for 'air rights' over the right-of-way. (see below)



E. The Life of an Address – The "Status" Field

Addresses can be created, proposed, edited, and retired.
Addresses are first established as *active*, and can later become *inactive*.
In all cases where "proposed" addresses are discussed, they can be described as created for the purpose of eventual use, and are therefore given an 'active' status.
A "retired" address is one whose status is changed to 'inactive.'

Important Note: In all address changes, editors will record one or more notes in the ParcelAddressNote and/or SubAddressNote table that records and explains the change.

Address Creation – Status 'Active'
Address(es) are established when:

- New Subdivision. Case: Developers of new subdivisions will require address assignments. The Planning Dept will create new addresses based on the subdivision plan and associate then to the master PIN(s). (This should be performed by PDR) Then the Assessor's Office will move the points to the proper location when they subdivide the property, and establish the proper PIN relationships. (This should be performed by the Assessor's Office or could be done by PDR if the Assessor's office has already created the subdivision)
- Parcel Split. Case: Existing parcel is split into two or more parcels requiring address assignment, and the new parcels created during the process most likely will not have a structure on them and would thusly be proposed addresses. (This should be performed by the Office of the Assessor)
- Initial address assigned to an undeveloped parcel, or a location that is not a habitable structure with a posted address number.
- Addressed Structure Added. (New Development) Case: Through the Certificate of Occupancy (CO) in the permitting process, a structure can be built where there was a proposed address(es). (This should be performed as a result of PDR workflows)
- Administrative Change. Case: A permit applicant or voter registration applicant has an address that the City had not previously set as active. Another example would be the addition of an address as an outcome of researching a missing address reported from a City agency. (This can be performed by a designated member of the Addressing Authority). Or Citizen can request an address change and successfully reviewed by PDR.
- Inhabitable Structure. Case: Any residential or commercial structure that people inhabit and have an address posted, should already be indicated with

an active status. (This can be performed by a designated member of the Addressing Authority)

NOTE: There are times when a parcel gets briefly (a matter of months) split into A and B parcels (taxable and non-taxable). When the two parcels are merged back together (usually as a result of a sale), then the A and B nomenclature is removed. The address was only there for a short while, it has no records on it (at least as far as DPU and Permitting are concerned) and there isn't a need to maintain this 'A' address. And, nobody's ever complained about this strategy.

The GIS will likely not have separate address for most A/B PINS.

Address Editing – Status 'Active'

NOTE: Currently when an address is 'moved' from one PIN (Parcel record) to another, then every permit for that address also has to be moved. In Cornerstone, the permits are tied to address and PIN. If the permits were 'hung' on the address, then there would not be a problem. If they are 'hung' on the PIN, then PDR is going to have to make those PIN updates in the permitting system.
There is a requirement that the addressing solution provides a way to notify PDR of this case and that there are addresses to update. We will still have to see how the Cornerstone replacement deals with this; it will probably need to be associated to PIN too?!?!

Address Retirement – Status 'Inactive'

- Parcel Merge. There are only a few cases when addresses would be retired under the parcel merge scenario, and many cases when they might not. Two or more parcels are merged for the purpose of creating one larger parcel.
  Case Result 1: This usually happens when a single family house merges to an adjacent vacant parcel and the vacant parcel is considered unbuildable. The address on the vacant parcel can be retired as it would no longer be needed.
  Case Result 2: Most merges will keep the existing addresses. When commercial buildings cross parcel boundaries the address will be kept after the merge. PINS need updating.

Case Result 3: A new subdivision could result in many new addresses and the old addresses being retired. (DPR will process this.)

- Redevelopment after Demolition. There are two sample scenarios to explain the edits to be performed on an address(es) following a demolition.
  Scenario 1: If a large multi-dwelling building (e.g. apartment building) gets knocked down, then the apartment addresses should be retired, with Status set to 'Inactive,' and the Mailable flag set to 'N.'
  Scenario 2: If a single family dwelling is removed from a property, then the City would still consider the original address to be 'Active,' because it is still available for reuse by the currently vacant land, but the Mailable flag should be set to 'F.'
  (This should be performed by PDR, as part of their workflows).
  Scenario 3: Two houses with two different addresses are torn down and one larger structure is built. One of the addresses is reused, but the other is not. The one that is not, is set to 'Inactive' and update mailable = N.
- Address Change Request. Result: If someone requests an address change, and the previously used address should be changed to 'Inactive.'
  (This should be performed by PDR, as part of their workflows)
- Administrative Change. Result: Research results in an address being set to 'Inactive.' (This can be performed by PDR)

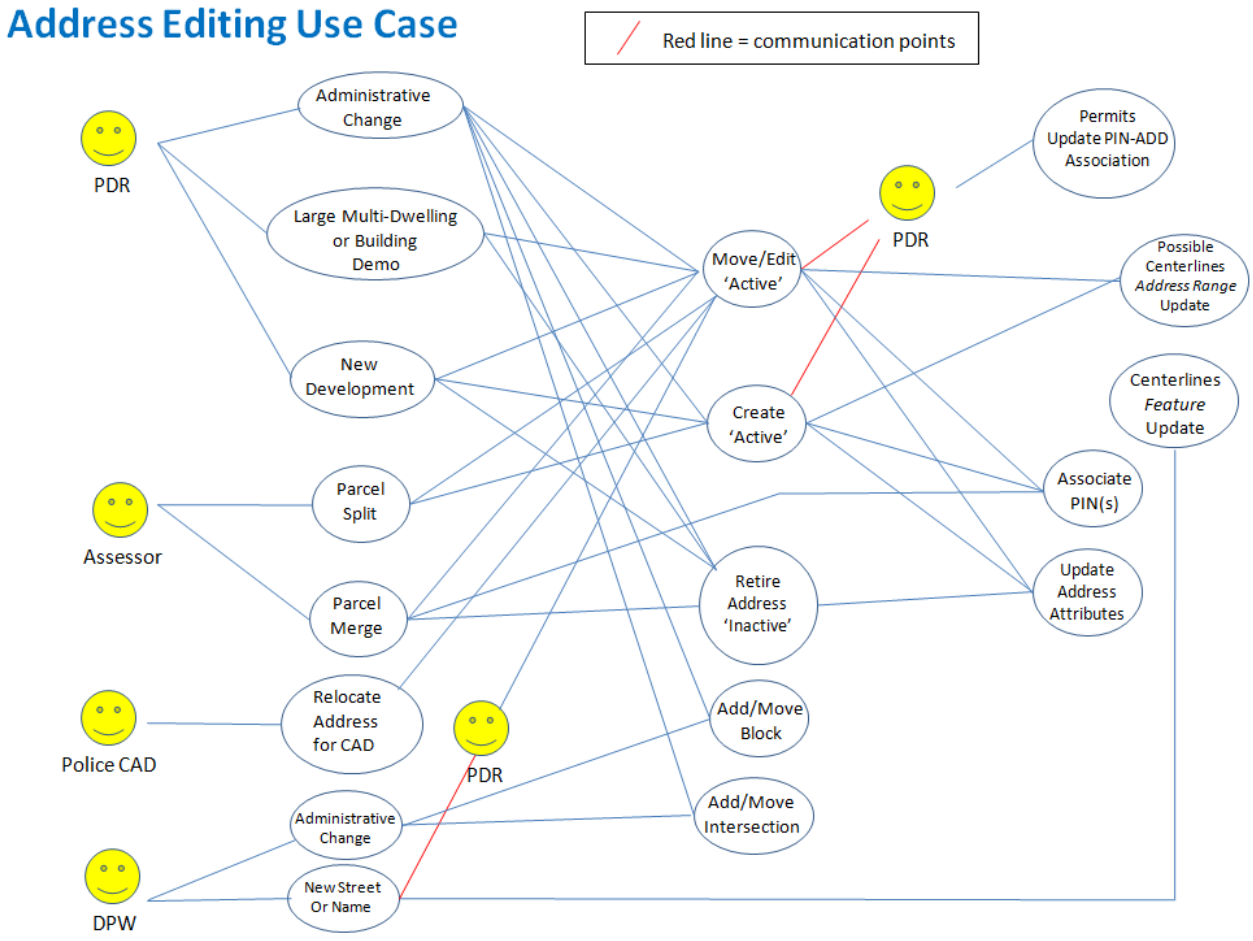
Address Attribute Updates

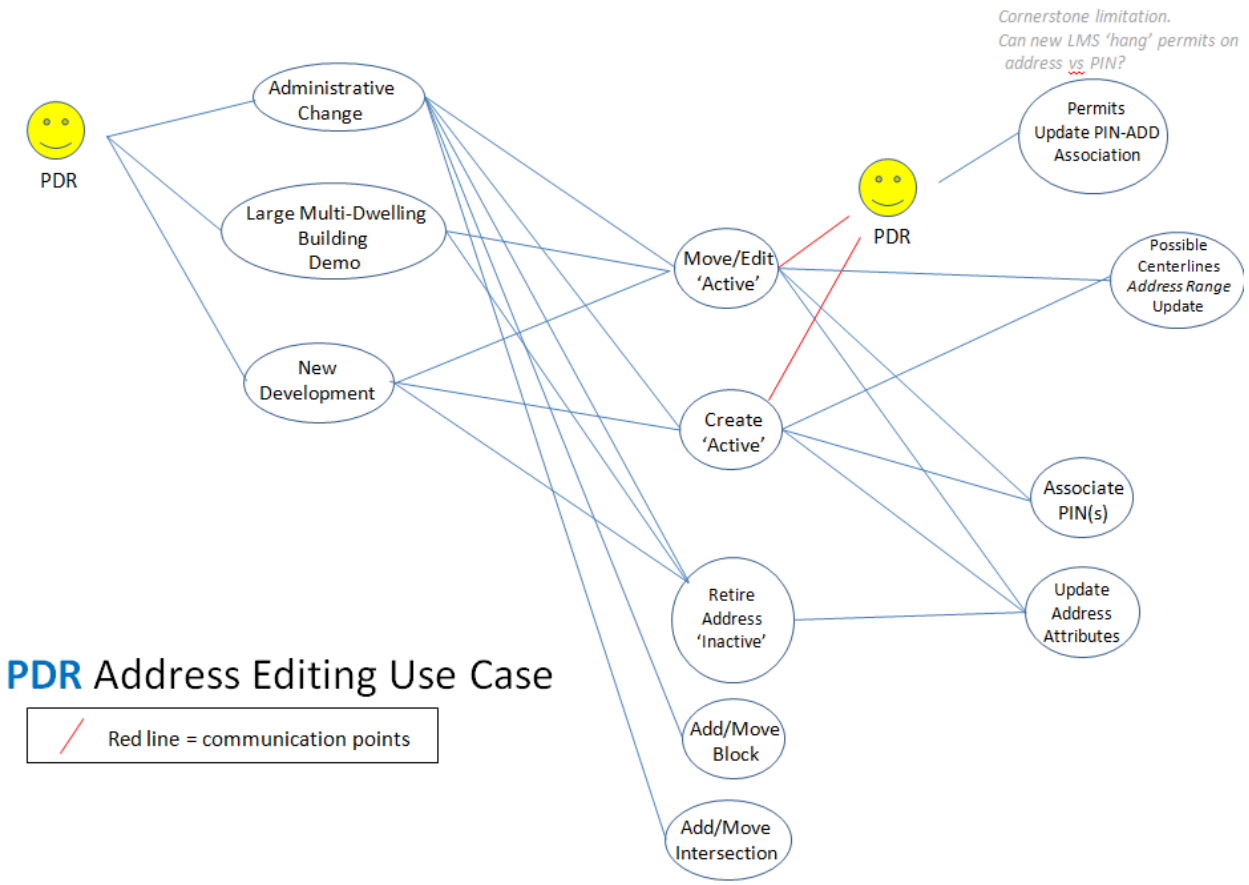
- Street Name Change. Case: potential update to any of the addressing fields, including:
  - BuildingNumber
  - BuildingNumberSuffix
  - StreetDirection
  - StreetName
  - StreetType

  (This should be performed by PDR)
- Address Correction. Case: potential update to any of the addressing fields. (This should be performed by any member of the Addressing Authority)
- Locality. Case: Although the scope of addressing is said to be limited to locations inside the City, there 'could' be cases for addresses located outside of the City, such as for propertied that are actually managed by the City, but are in the county. Address points will indicate if they are in the City or one of the surrounding counties. (This can be performed by a designated member of the Addressing Authority)

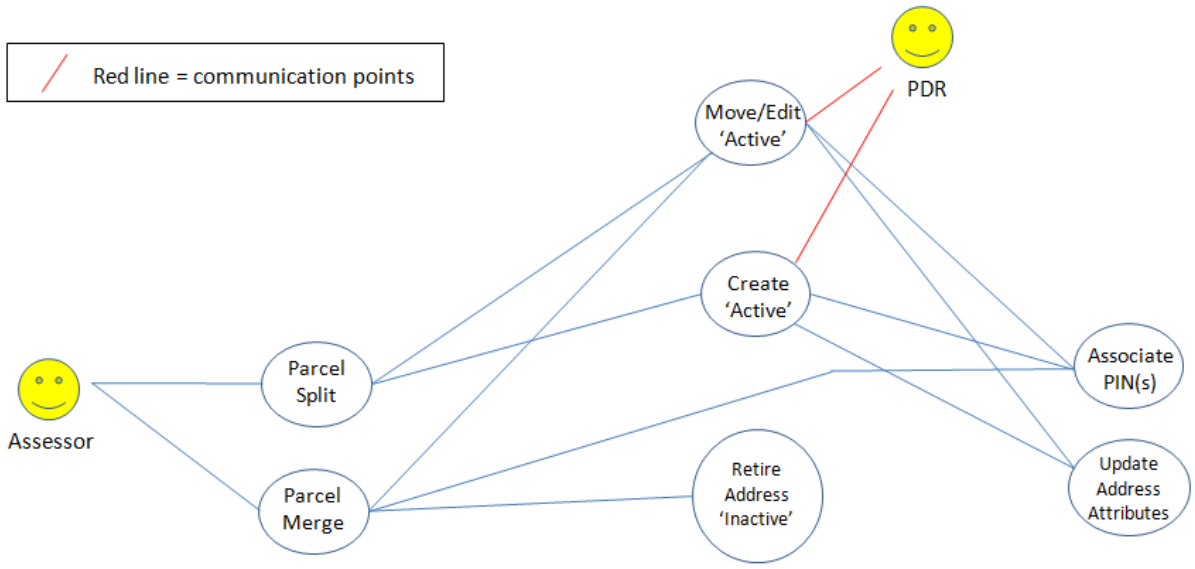
- Mailable. Case: If an address is located on a property with a structure that can be occupied by people, and it's Status = 'Active,' then the postal flag indicator can be updated to 'Y.' The existence of a structure is supported by review of the Assessor Office's Property Class Code interpretations of Land Use. Vacant land, for instance, is a land use that does not support the Mailable flag being set to 'Y.' If structure is removed or does not exist, then the mailable flag indicator can be set to 'N.' (This should be performed by PDR or the Office of the Assessor of Real Estate)
- Administrative Change. Case: A permit applicant or voter registration applicant has an address that the City had not previously set as active. (This will be performed by PDR)

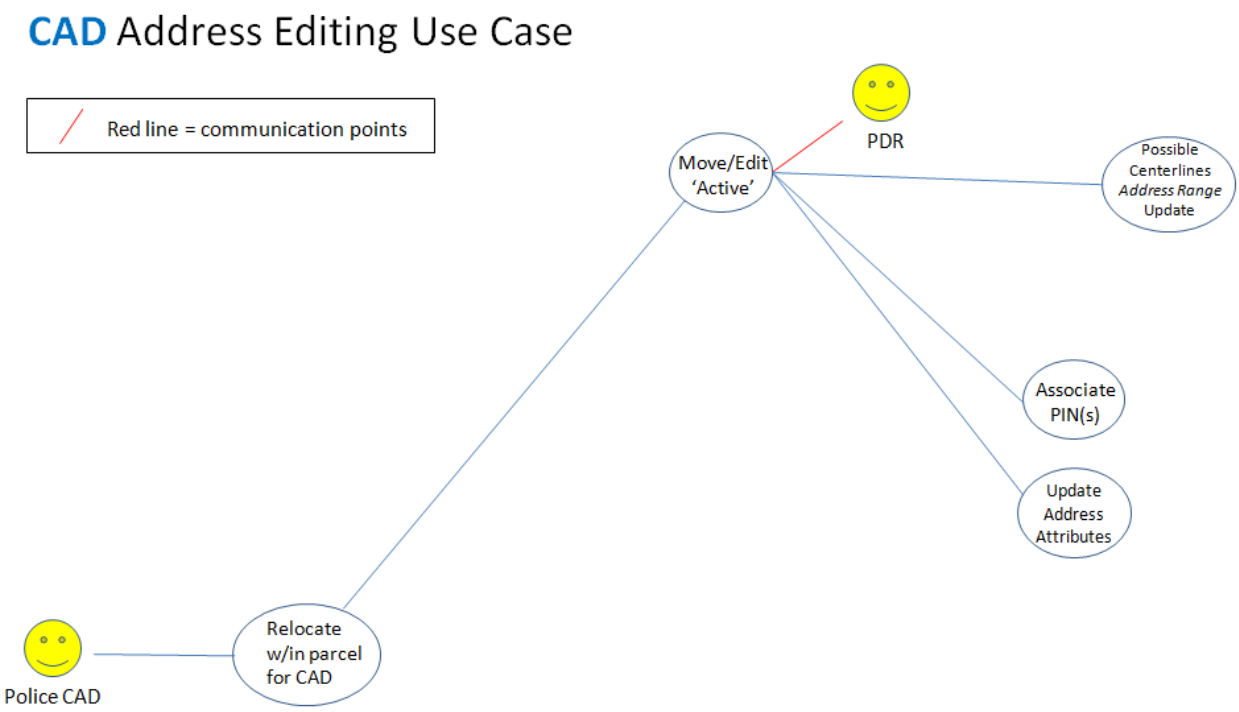
F. Use Case Diagrams:



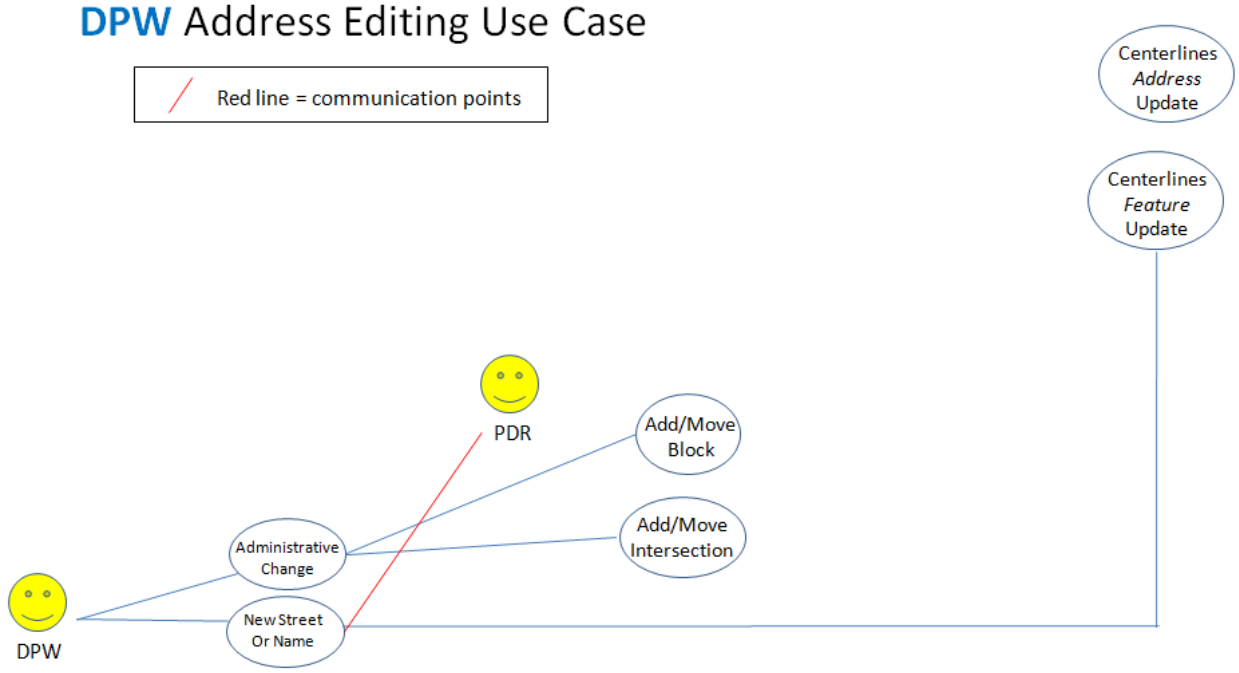

Cornerstone limitation.
Can new LMS 'hang' permits on address vs PIN?
PDR
Administrative Change
Large Multi-Dwelling Building Demo
New Development
Move/Edit 'Active'
Create 'Active'
Retire Address 'Inactive'
Add/Move Block
Add/Move Intersection
PDR
Permits Update PIN-ADD Association
Possible Centerlines Address Range Update
Associate PIN(s)
Update Address Attributes
PDR Address Editing Use Case
Red line = communication points

Assessor Address Editing Use Case

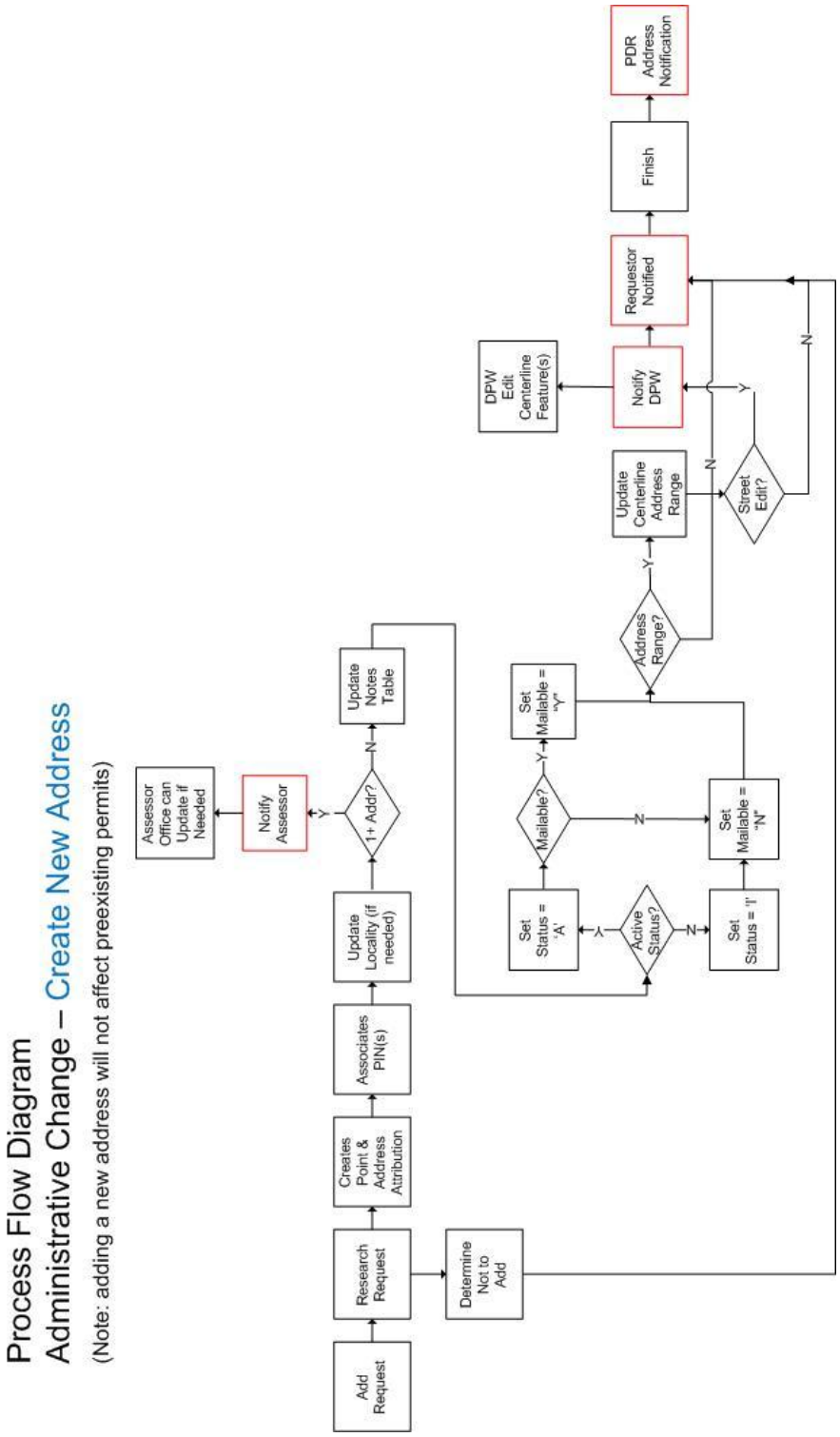



CAD Address Editing Use Case
Red line = communication points
PDR
Move/Edit 'Active'
Possible Centerlines Address Range Update
Associate PIN(s)
Update Address Attributes
Relocate w/in parcel for CAD
Police CAD

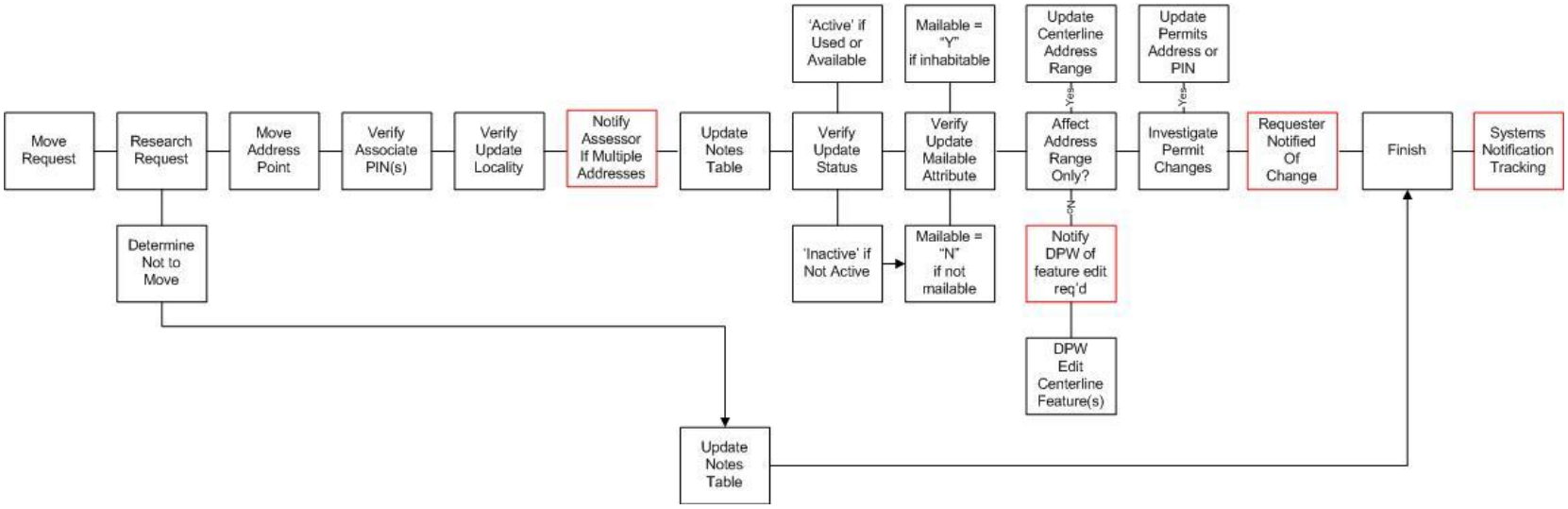
DPW Address Editing Use Case



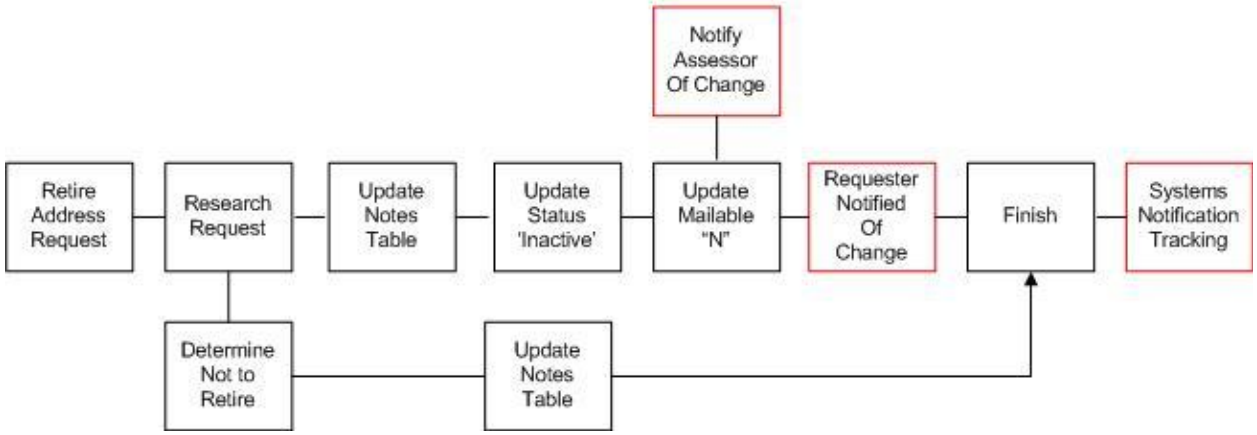
G. Addressing Workflow Diagrams:



Administrative Change – Move Address



Administrative Change – Retire Address



H. Addressing Authority:

In order to maintain accurate addressing, addresses need to be updated and managed by the GIS professionals that are involved either directly in the address lifecycle, or by performing activities that can impact addressing as a byproduct. Therefore, the City has established an *Addressing Authority*, which is comprised of a group of GIS professionals who are involved at the various touch-points that impact addresses.

Members:

Planning & Development Review

- GIS Analyst: This person is the official addressing technician for the addresses located inside of the City of Richmond, and serves as the address decision-maker and leader of the *Addressing Authority*. The Director of Planning and Development Review has the ultimate decision-making authority regarding addresses.

  The following City Code designates this authority:

  City Code Section:

  Sec. 90-43. House numbering.

  (a) All houses, buildings or structures used or intended for use as living quarters or as a place for the conduct of business and having a door or entrance facing or abutting any street, alley or public place of the city shall have displayed above or near such door or entrance in legible, easily readable characters the proper house number. The director of planning and development review shall designate the proper numbers for all such houses, buildings or structures and shall have the power to change such numbers when in the director's judgment such change is necessary to avoid or eliminate confusion with other numbers. It shall be the duty of the director of planning and development review to keep in the office of the department of planning and development review a record of the proper house numbers and to furnish such numbers to any person requesting the numbers.

  (b) It shall be the duty of any person erecting any such house, building or structure to ascertain from the director of planning and development review the proper house number and to display such number as provided in subsection (a) of this section. Any person owning, leasing, occupying or maintaining any such house, building or structure which has no number displayed thereon or displays an incorrect number, when so informed and notified by the director of planning and development review, shall put up a number or change the incorrect number so that the proper number will be displayed within 20 days after the receipt of such notice.

  (Code 1993, § 25-24; Ord. No. 2009-220-2010-8, § 2, 1-25-2010)

  Cross References: Buildings and building regulations, ch. 14.
  State Law References: House numbering, Code of Virginia, § 15.2-2024.

- The PDR GIS Analyst has privileges to edit address points, Blocks, Intersections, and Centerlines address range attributes.

Office of the Assessor of Real Estate

- GIS Manager & GIS Analyst: The Office of the Assessor of Real Estate has two GIS professionals who are the data custodians of the GIS Parcels; their parcel editing activities impact addressing. Therefore, the Assessor's GIS staff has privileges to edit address points, address locations, and Centerlines address range attributes in response to parcel edits.

CAD-911

- GIS Analyst: The City's Computer Aided Dispatch (CAD) is a GIS-based system that uses both address points and street centerlines for locating and mapping calls for help, and also for routing emergency vehicle response routes. This person has privileges to move address points and Centerlines address range attributes to support the CAD system.

Public Works

- GIS Manager, GIS Analyst, GIS Specialist(2): Public Works has a GIS Team who are the data custodians of the GIS centerlines, which includes the assignment and maintenance of street naming and address ranges. The DPW professionals are also the primary custodians of Blocks and Intersections.

I. Responsibilities:

Planning & Development Review

- When new subdivisions are created, the GIS Analyst/addressing technician creates the addresses for the new parcels (sometimes with the help of the developer), following the Addressing Standards established by the City *(see Address Standards section of this document)*
- Creating initial address and assigning AddressStatus to “Active,” prior to construction and certificate of occupancy (to include undeveloped properties)
- Validating that the AddressStatus is set to “Active,” after a structure is established and addresses are posted. (Recall, permits cannot be filed unless a parcel has a PIN and a property address)
- Updating AddressStatus to “Inactive,” once an address is retired and considered no longer in use or available for use.
- Updating the “Mailable” flag to ‘Y’ when addresses are deemed to be mailable.
- Updating the “Mailable” flag to ‘N’ when addresses are ‘Inactive’ or land use determines the property is not mailable.
- Updating address ranges values of centerlines, when new addresses might affect ranges.
- Adjusting address spatial positions to proper locations that meet the City’s Addressing Standards.
- Adjusting address spatial positions following cadastral splits and/or mergers performed by the Assessor’s GIS staff, in cases where the Assessor GIS staff have not performed such edit themselves.
- Updating relationships to PINs following cadastral splits and/or mergers, in cases where the Assessor GIS staff have not performed such edit themselves.
- Address Validation: Whenever there is a question about an address, then an investigation is performed. This investigation can involve researching within GIS, historical documentation, or field inspection.
- Updates research notes in the ParcelAddressNote and SubAddressNote table(s).
- Editing/Updating BlockLabel and IntersectionLabel feature classes.
- Issues notifications of address changes to internal and external interested parties, such as RFD, RPD, Health Dept, USPS, and others.
- **Not** responsible for addressing or researching address issues outside of the City limits.
- **Not** responsible for updating street names or editing of physical linear features of the GIS street centerlines.

Assessor's Office

- Adjusting address spatial positions following cadastral splits and/or mergers.
- Updating relationships to PINs following cadastral splits and/or mergers.

  Note: *recall the earlier documented issue to be resolved about the need for a solution to the case of updating PINs in the permitting system.*

- Address Validation: Whenever there is a question about an address, then an investigation is performed. This investigation can involve researching within GIS, historical tax map books and Sanborn books, or field inspection.
- Updates research notes in the ParcelAddressNote and SubAddressNote table(s).
- Updating Address Ranges when applicable.
- **Not** responsible for addressing or researching address issues outside of the City limits.
- **Not** responsible for updating street names or editing of physical linear features of the GIS street centerlines.

It is the official responsibility of the Assessor Office to supply the addresses for ordinance notices: (Note: the address lists that the Assessor Office is responsible for in this case are the owner addresses from Proval)

Sec. 114-1130. - Notice and public hearing by city council.
The city council shall hold a public hearing on the ordinance to amend, supplement or repeal the sections of this chapter or the boundaries of the districts established by this chapter. Notice of the time and place of such public hearing shall be given by the city clerk in accordance with general law. The names and addresses of all property owners within the city to whom notices are to be sent shall be furnished to the city clerk by the city assessor and shall be as shown on the then-current tax records of the city.

Public Works

- Edit & maintain the City's Street Centerlines data, including creation, deletion, reshaping of these linear features.
- Updating Street Names.
- Updating Address Ranges.
- Editing/Updating BlockLabel and IntersectionLabel feature classes.
- **Not** responsible for addressing or researching address issues outside of the City limits.

CAD 911:

- Adjusting address spatial positions to proper locations that meet the City's Addressing Standards.
- Updates research notes in the ParcelAddressNote and SubAddressNote table(s).
- Updating Address Ranges when applicable.
- **Not** responsible for addressing or researching address issues outside of the City limits.
- **Not** responsible for updating street names or editing of physical linear features of the GIS street centerlines.

Departments and Agencies

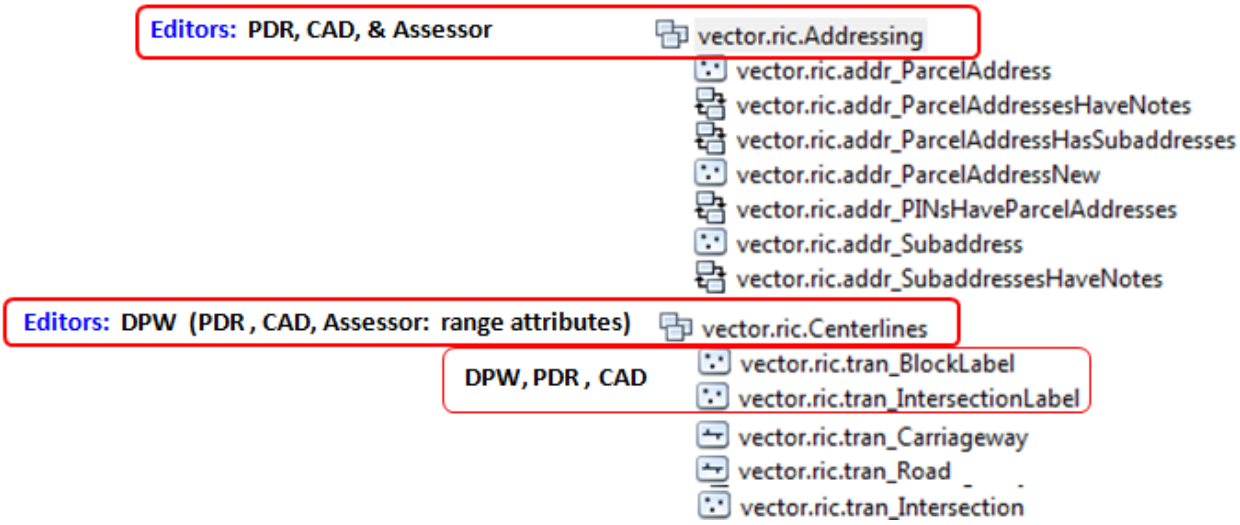
- Make efforts to utilize addressing standards.
- Use only valid city addresses and/or address standards in database systems.
- Coordinate with Addressing Authority regarding exceptions/additions.

Information Technology

- Make the GIS addressing information (and inquiry submittal) available via the Intranet Address Research tool.
- Provide ArcGIS Desktop tools for the Address Authority to maintain addressing data.
- Maintain addressing web services utilized by back-end systems.
- Support source data used by ETL procedures used by the Data Warehouse, Proval, CAD, or other systems.

When you consider the notion of “Addressing” in the city’s geodatabase, there are essentially two datasets that contain the feature classes we consider related to addresses; they are called ***Addressing*** and ***Centerlines***. Addressing contains the main parcel addresses and subaddresses, while Centerlines contains the Carriageways/Roads/Intersections and also the Blocks and Intersections that are used in our addressing solutions.
Here is a pictoral view of which datasets the GIS staff from the city agencies are maintaining:

Maintenance Assignments



Street Name Changes

It is not up to the Department of Planning and Development Review to allow or disallow street name changes. The Department of Public Works' Right of Way Management division manages the process of renaming streets.

The purpose of sections 26-7 through 26-10 of the City Code is to provide a systematic and consistent approach to considering, approving and implementing the naming or renaming of city facilities, including streets.

Sec. 26-10, item 3:

(3) Within 90 days of the introduction of a naming resolution, the chief administrative officer shall prepare and submit to the city council a staff report that evaluates whether or not the proposal is consistent with the policies and criteria herein, and that indicates the financial impact of implementing the proposed naming or renaming.

Contributors of the impact report include the following entities and a description of the tasks they would need to perform are documented:

Public Works

- Create new street signs and replace current signs at a cost of $x.
- Update GIS street centerlines.
- Streets that cross the City boundary into Henrico or Chesterfield County will not be changed as cross over into that county.

Planning & Development Review

- Update Permit records on previous street name.
- Update Code Enforcement records on previous street name.
- Notification is sent to DIT, DPU, DPW, Assessor, USPS, Richmond Ambulance, Richmond Public Schools, public safety. Up to the notified agencies to update each of their IT systems.

Dept of Information Technology

- Inspect programs to check, verify, and recompile for use of new street name.

Police/Fire Emergency Communications

- Usually not a good reason to change a street name for public safety purposes.
- Edit and test street name in Computer Aided Dispatch system.
- Non-standards (e.g. Greenway as a 'type') require database changes to accommodate.
- Coordination with Verizon on MSAG (Master Street Address Guide) for 911.
- Training/familiarization for emergency dispatchers

- Training/familiarization for fire and police personnel
    - Unfamiliar name could delay response

Registrar

- Update City voter system
- Update State VERIS system
- Office of the General Registrar's state voter registration database uses standardized addressing. (e.g. Greenway as a type is not a standard)
- New voter ID cards will be sent to the voters as soon as the ordinance is adopted, unless the change affects a polling place. In the latter case, Department of Justice preclearance is required (minimum of 60 days) before the change can be entered into the state database and new ID cards produced.

Public Utilities

- Coordinate changes with Bill Print Vendor
- Coordinate changes with Ventyx for Advantex system
- Coordinate with Dom VA Power for any EDI 810 partner addresses to change
- Run scripts to update all addresses in CIS system (Customer Information System)
- Test all billing processes, charges, calculations to CIS system

Planning District Commission

- Use Street Name Clearinghouse to verify street name consistency.

Verizon E911

- Prefer to follow USPS and NENA standards for 911. (National Emergency Number Assc)

J. Address Standards:

* Note about some Domains:

Domain to be applied when ***final*** iteration of GIS Address Edit Tool is implemented at the time that Central Address is retired. Until that time, this attribute field is populated by previously validated CA processes, which the first iteration of the GIS Address Edit Tool merely copies the value provided by CA into the GIS field.

1) Attributes of ParcelAddress

- **ParcelAddressID** — nvarchar(7)
- **Status** — nvarchar(10)
  Domain (*all_status3*) Values:
  - (1) Active
  - (0) Inactive
- **Mailable** — Short Integer
  Domain (*all_booleanYesNo*) Values:
  - (1) Y
  - (0) N
- **AddressLabel** — nvarchar(66)
- **BuildingNumber** — nvarchar(6)
- **BuildingNumberSuffix** — nvarchar(4)
- **StreetDirection** * — nvarchar(2)
  Domain Values:
  - N
  - S
  - E
  - W
- **StreetName** — nvarchar(20)
  (not domain, but table)
- **StreetType** * — nvarchar(4)
  Domain Values: ***(see part 14)***

- **ExtensionType** nvarchar(10)
  ExtensionType is a “value-added” field that is explicitly modified by the GIS editor through the Address Editor tool dialog. The human editor is forced to make decisions about this value.
  Domain Values:
  - Unit
  - Rear
  - Med
  - Adj
  - Comm
- **ExtensionValue** nvarchar(20)
- **Zip5** nvarchar(5)
  Domain Values: **(*see part 20)***
- **Zip4** nvarchar(4)
- **Locality** * nvarchar(3)
  Domain Values:
  - 760
  - 087
  - 041
- **UspsResult** nvarchar(20)
- **UspsStandardizedAddress** nvarchar(66)
- **StatePlaneX** numeric(38,8)
- **StatePlaneY** numeric(38,8)
- **Latitude** numeric(38,8)
- **Longitude** numeric(38,8)
- **EditBy** nvarchar(15)
- **EditDate** datetime

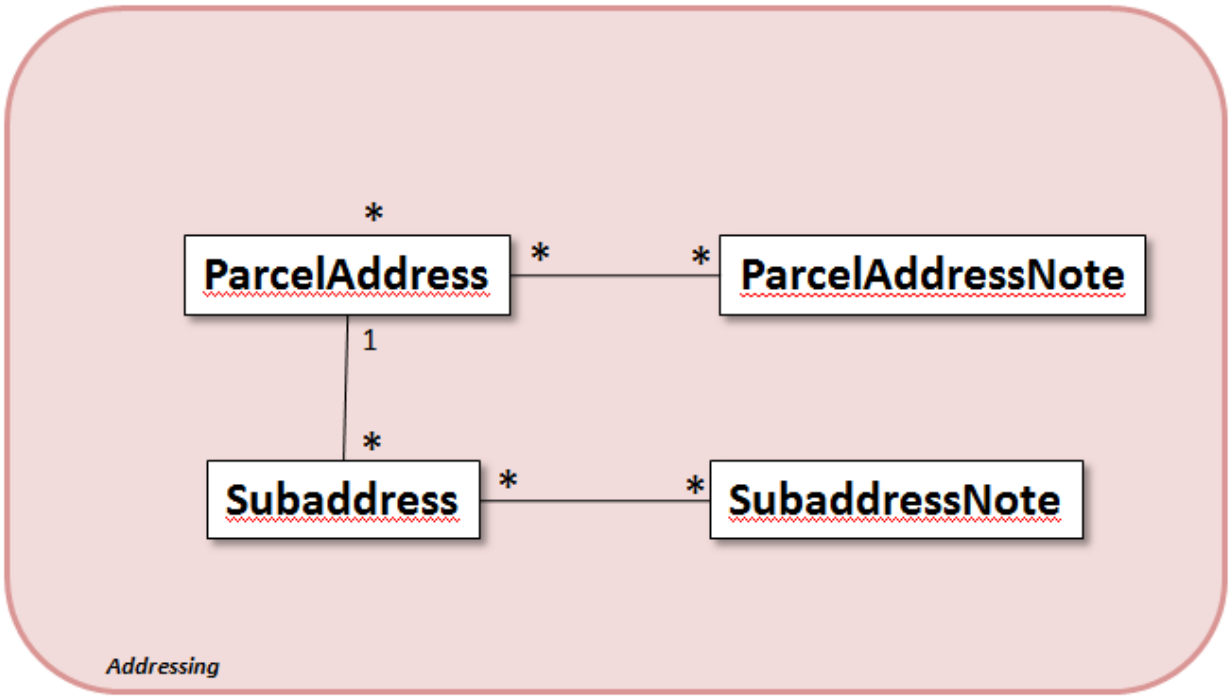
2) Attributes of SubAddress

- **SubAddressID** nvarchar(7)
- **ParcelAddressID** nvarchar(7)
- **Status** nvarchar(10)
  Domain (*all_status3*) Values:
  - (1) Active
  - (0) Inactive
- **Mailable** short int(2)
  Domain (*all_booleanYesNo*) Values:
  - (1) Y
  - (0) N

- **UnitType** * nvarchar(10)
  Domain Values:
  - Apt
  - Bsmt
  - Bldg
  - Dept
  - Frnt
  - Rear
  - Rm
  - Ste
  - Trlr
  - Unit
  - Lowr
  - Uppr
- **UnitValue** nvarchar(10)
- **UspsResult** nvarchar(20)
- **UspsStandardizedAddress** nvarchar(66)
- **StatePlaneX** numeric(38,8)
- **StatePlaneY** numeric(38,8)
- **Latitude** numeric(38,8)
- **Longitude** numeric(38,8)
- **EditBy** nvarchar(15)
- **EditDate** datetime

3) Relationships of the ParcelAddress & Subaddress

- ParcelAddress is related to SubAddress (1..*)
- ParcelAddress is related to PIN table (*..*)
- ParcelAddress is related to ParcelAddressNote table (1..*)
- SubAddress is related to SubAddressNote table (1..*)



4) **ParcelAddressNote** table

Whenever an address is changed or researched, then comments are entered to track the reason for the activity; stored in the ParcelAddressNote table:

- **ParcelAddressNoteID** guid
- **Category** nvarchar(100) (mandatory)
  Domain Values:
  - ❖ Created
  - ❖ GIS Conversion
  - ❖ Retired
  - ❖ Spatial Adjustment
  - ❖ Attribute Update
- **Description** nvarchar(7) (not mandatory)
- **FieldVerifiedBy** nvarchar(15)
- **FieldVerifiedDate** date
- **LegacySource** nvarchar(2)
- **LegacyRRHA** nvarchar(5)
- **LegacySection8** nvarchar(5)
- **LegacyEditBy** nvarchar(20)
- **LegacyEditDate** date
- **EditBy** nvarchar(15)
- **EditDate** datetime

5) **SubaddressNote** table

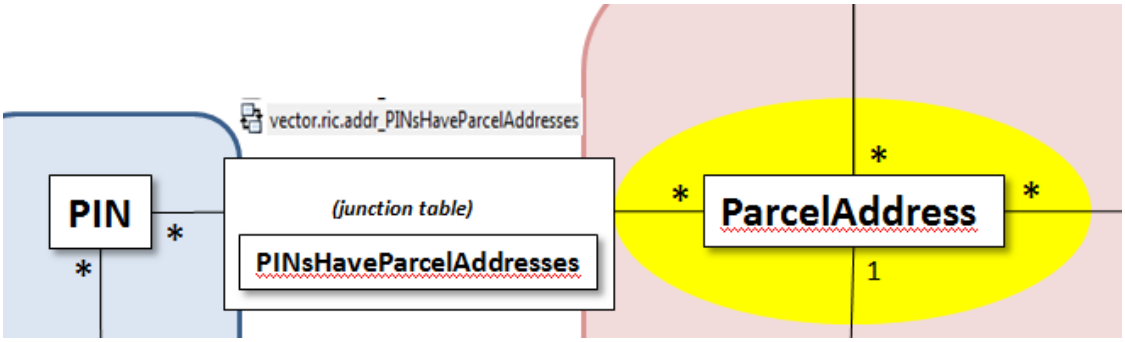
- **SubAddressNoteID** guid
- **Category** nvarchar(100) (mandatory)
  Domain Values:
  - ❖ Created
  - ❖ GIS Conversion
  - ❖ Retired
  - ❖ Spatial Adjustment
  - ❖ Attribute Update
- **Description** nvarchar(7) (not mandatory)
- **FieldVerifiedBy** nvarchar(15)
- **FieldVerifiedDate** date
- **LegacySource** nvarchar(2)
- **LegacyRRHA** nvarchar(5)

- **LegacySection8** nvarchar(5)
- **LegacyEditBy** nvarchar(20)
- **LegacyEditDate** date
- **EditBy** nvarchar(15)
- **EditDate** datetime

6) Address(es) to PINs Relationships

Our business rule is that if there are multiple PINs associated with a parcel, then all PINs will be associated with all addresses located on the parcel.

Therefore, multiple addresses can all share the same multiple PIN relationships.



Note: The use of our “addr_DataWarehouseAddress” view as the new address table source for the Data Warehousing ETL processes, is an improvement over the prior use of a Central Address table that was incapable of supporting a single address relationship to multiple PINs.

7) Status

Status is an attribute used by both ParcelAddress and SubAddress.
An address can be either “Active” or “Inactive.”

A full discussion of when an address is set to either of these statuses is described in a previous section of this manual entitled, “The Life of an Address – The ‘Status’ Field.”

8) Mailable (cads_ParcelAsrView Mailable versus Address' Mailable)

The "Mailable" attribute is updated based upon a review and interpretation of identified and available information sources, as to whether it can be reasonably expected that postal deliveries can be made to an addressed location. Mailable is an attribute of both ParcelAddress and SubAddress.

What is a Mailable address? Perhaps it is easier to say what it is not mailable since the USPS itself is not a definitive source. Our definition cannot simply be "what USPS will deliver" if we can't predict 'where' they say thay can deliver mail.
Proposed Definition: an address that passes the legacy Central Address test (760, NonPO=' ', not delete) AND which is not on vacant land, e.g. "not obviously unmailable."

The determination of setting this attribute to be "Mailable = 'Y'," is made by considering the following factors:

First, the USPS web service can be used to determine if the USPS says it is a Mailable address. The service is useful, however there are cases where the USPS information conflicts with the situation on-the-ground. For example, the address in question may be utilized by a vacant parcel of land with no inhabitable structure on it.

A second source, and mandatory requirement, is for the Address to be set to "Status = 'Active'." Only an 'Active' address could be Mailable.

A third, and primary source to determine if an address is Mailable is to check the status of the land use upon which the address is located. Address editing of the mailable attribute is assisted by referencing the Assessor Office's own interpretation of the CAMA (Proval) Property Class Codes. Property Class Codes can identify things like surface parking, condo common areas, vacant complexes, and other fine-grained classifications.

The DIT-GIS team assists the Assessor Office GIS staff by keeping a table (GeodataSummary.ric.cads_PropertyClass) in the GIS updated with a list of valid Property Class codes and a Mailable field; the later of which the Assessor staff uses to indicate whether or not they think a particular property class would be a mailable location. This information is reviewed when ever the Assessor Office considers changes to their Property Class Codes.

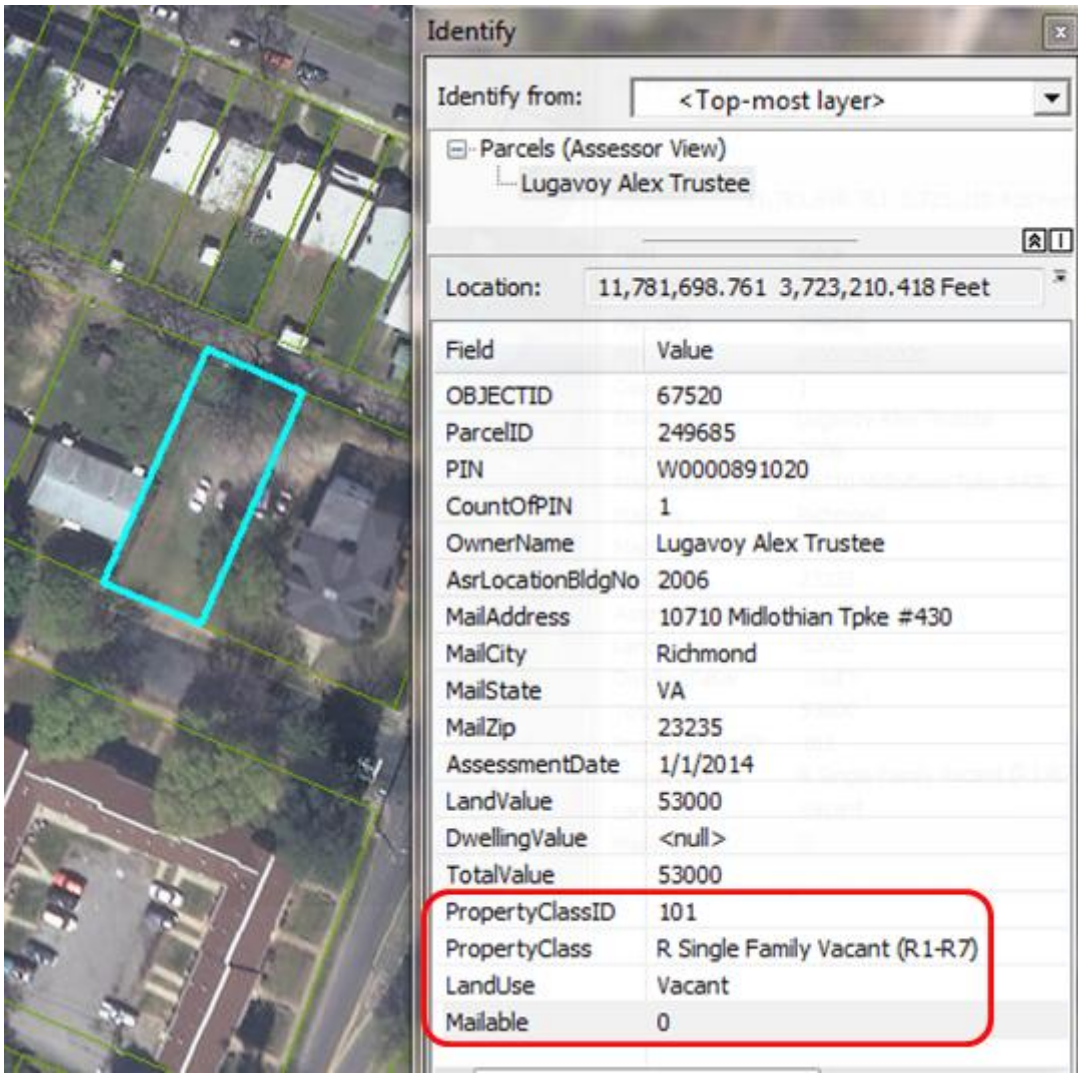
PropertyClassID	LandUseName	Mailable
101	Vacant	0
102	Public-Open Space	0
105	Public-Open Space	0
106	Commercial	0
109	Single Family	0
110	Single Family	1
115	Single Family	1
120	Single Family	1
130	Single Family	1
150	Single Family	1
155	Single Family	1
160	Duplex (2 Family)	1
161	Duplex (2 Family)	1
170	Multi-Family	1
171	Multi-Family	1
180	Multi-Family	1
181	Multi-Family	1
185	Multi-Family	1
190	Commercial	0
191	Vacant	0
193	Multi-Family	1

(note: LandUseName is a general classification that the Planning Office comes up with in their interpretation of Property Class Codes)

The DIT-GIS team includes this cadastral/property class mailable attribute in the definition of the cads_ParcelAsrView.

It can be said that the Property Class Codes are of primary importance, because the Addressing Authority will refer to the cads_ParcelAsrView feature class in ArcMap when editing addresses. The cads_ParcelAsrView data source can also be used to periodically query for addresses that are set to Mailable and for incompatible property classes and land use codes to look for errors/updates.

cads_ParcelAsrView



A fourth source is to check the assessment total of the “Improvement Value” that the Assessor Office has recorded. A very low monitery improvement value for a structure could meet a criteria for a not inhabitable structure. It is at least worthy as another clue to the mailable indicator.

A fifth source is to use Pictometry imagery to view the property where the address is located.

A sixth source is to visually inspect the GIS base mapping or orthophotography to detect if there is a structure appears to be inhabitable where the address is located.

9) BuildingNumber and Handling of Fractions

Address street numbers are nvarchar. There shall be no address numbers that are higher than six digits. Fractions, such as “1/2,” have legacy usage and are always considered address number suffixes.

The City will try to avoid the use of fractions in new address assignments, but exceptions have to be allowed for ‘in-fill’ development cases.

For example, there may be a case where a builder can slot an address in between 1020 and 1022 *XYZ* St. In this case, it is preferable to give the new house a fractional address (1020 ½ *XYZ* St) rather than change the address of 1022 and every other higher address on that side of the street. The City has always tried to respect existing addresses, because it is inconvenient for a citizen to have their address changed, and there would be a lot of work to perform on information updates in all existing systems that utilize addresses.

Fractions and the Computer Aided Dispatch system:
Fractional addresses shall be avoided if possible. The use of fractions causes issues for the computer aided dispatch system. If the two (or many) units are co-equal in a building, each shall have a separate address assignment. If one unit is subsidiary to another, then the subsidiary unit shall be given a unit designation and unit number.

10) BuildingNumberSuffix & Fractional Exceptions

If there is a need for a fractional value, then it will be recorded in the BuildingNumberSuffix field.

The rule for use of fractional values in the BuildingNumberSuffix field:
Fraction numbers can only follow the building number, considered as an extension to the Building Number, in cases where a new property needs to be inserted in between existing properties that have sequential address numbers in place. (For example, 1736 W Leigh St and 1738 W Leigh St are on either side of 1736 ½ W Leigh St; use of the "1/2" building number suffix is the reasonable way to insert an address in between them.)

Fractional Exception and Grandfathering Non-compliant Cases:
There are the very few exceptions when a non-fractional value may exist in the BuildingNumberSuffix field. However, we do have to make exceptions, which we can say are 'grandfathered' exceptions to our rule to only use fractional values in order to squeeze in addresses parcels inbetween.
In Richmond's long history, values such as "A" may have been used in an address following the building number, which violates the current rule for only using fractions; historically, there was no single rule. Those non-fractional values are grandfathered in and may remain only because they are few and far between, and any attempt to change them to fractions would create distress and headaches.

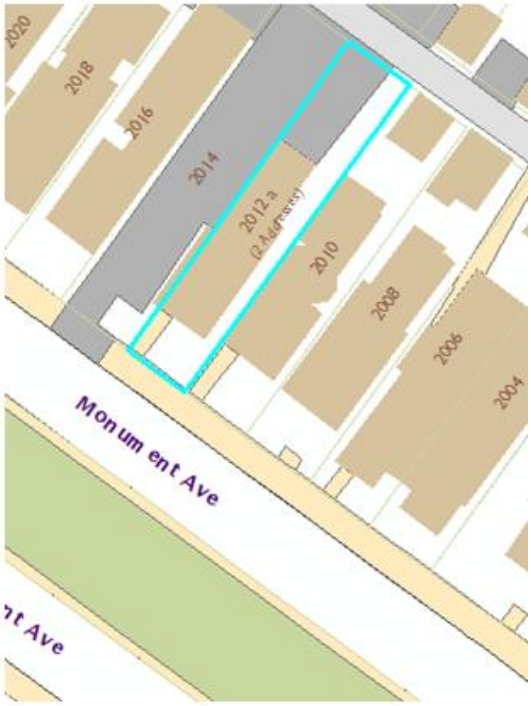
Definition of "Fractional Exception": ParcelAddress features having a non-empty, non-fractional ("/") BuildingNumberSuffix value that are located on a parcel with only one property assessment. These typically have neighboring ParcelAddress features with AddressLabel values that differ only by the BuildingNumberSuffix. Neighboring addresses may or may not share a parcel, but the ***parcel on which the exception sits must have no more than one PIN relationship***.

As in the example below, these are typically found where a single building has addressed a second entryway with a letter designation, like "A." Note that there could be other examples where buildings side by side on the same or even separate parcels may have used the fractional exception; we have to grandfather those exceptions.

Formatting Note: Addresses like these must be formatted as 2012 Monument Ave A (with the "A" at the end), in order to be located by a geocoding service.

For example: 2012 A Monument Ave

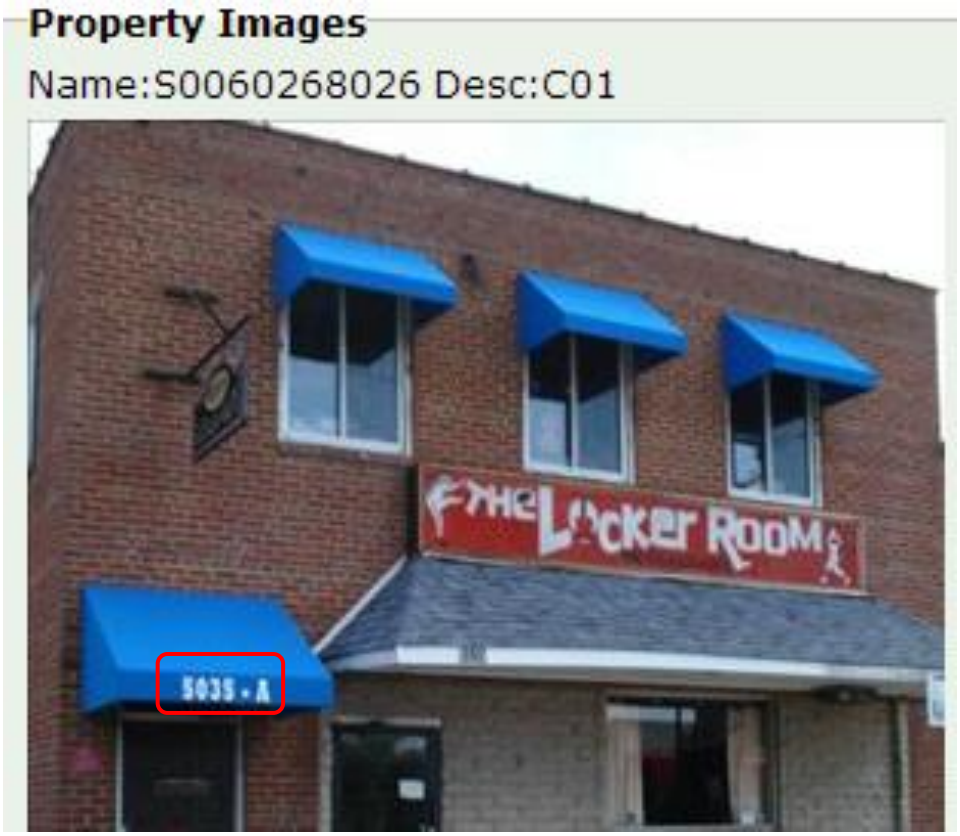
- 2012 and 2012 A are both addresses use by this property on Monument Av.
- 2012 A is not a condo; it does not have a separate PIN from 2012.
- 2012 A is not an apartment; it is not a SubAddress.



This is a prototypical example of the characteristic of tying the ParcelAddress to a building's separate front door(s).

There are also historical inconsistencies with assigning fractional exceptions as main addresses versus making them a unit address (like an apartment).

In the example on the prior page, *2012 A Monument Ave* was entered into the legacy addressing system (Central Address) as a stand alone address.
However, in the example below, *5035 A Forest Hill Ave* was entered into Central Address as a sub unit, which therefore ends up being a Subaddress in GIS.
There is no physical or logical difference between these two documented cases.
However, we have decided to grandfather in any differences that were recorded prior to the new GIS-based Addressing System.



The rule moving forward, is that no alpha values will be entered in BuildingNumberSuffix to fit parcels inbetweeen existing parcels; only fractions may be used. The legacy Central Address system will continue to permit use of alphas in this space only for condominiums. However, when such Central Address records are transferred into/created in GIS, these alpha values will be stored in the ExtensionType field and the BuildignNumberSuffix field will be null. (read part 14 for details on ExtensionTypes)

11) Exterior Front Doors and Building Numbers

This section of the manual is to explicitly define when a new Building Number and/or Building Number Suffix can be applied.

Only a structure's presence of an exterior front door will permit a building number to be assigned for an address. It was discussed that in cases when properties/structures are already using address building number assignments, that when inserting one in between, then the City will attempt to use a next available number, or inclusion of a fractional building number suffix if no whole number exists.

In cases where there is a structure (not an undeveloped parcel) that seeks to have address numbers assigned (e.g. redevelopment of a structure), only an exterior front door shall be given a new number and/or fractional suffix.

In the case of condominiums, any doors internal to the structure must use the ExtensionType and ExtensionValue attribute fields of ParcelAddress; they are prohibited from receiving their own building numbers and/or building number suffix assignments.

In non-condominium cases, any internal doors must be assigned as Subaddresses; utilizing the UnitType and UnitValue attributes.

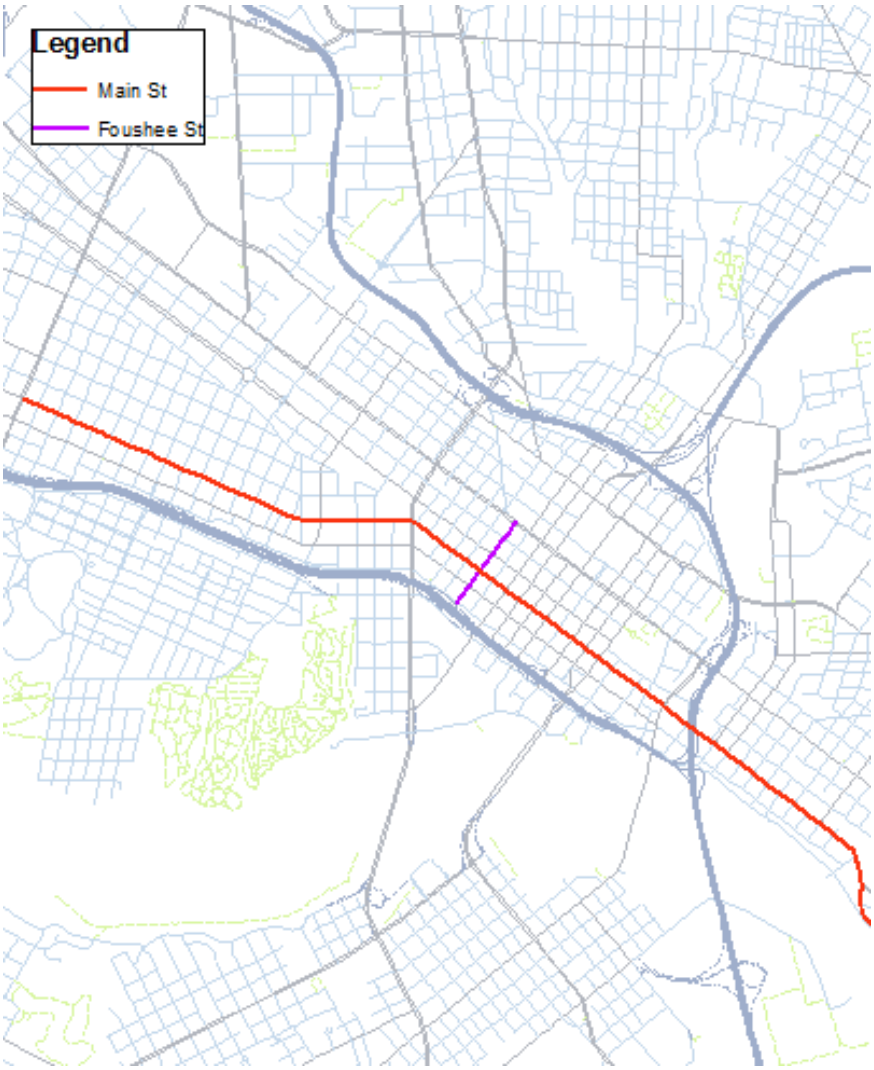
12) StreetDirection

Street directions are to be indicated by a single uppercase letter designation: N, S, E, or W.

Street directions are only used when a street crosses a N/S or E/W dividing road-line. For example, Monument Ave doesn't cross such a dividing line, so there's no E Monument or W Monument. Main Street does, which is why we have E Main and W Main.
In another example, East Richmond Road exists, but not E Richmond Road; "East Richmond" is the StreetName, without a StreetDirection; street directions would not be spelled out.

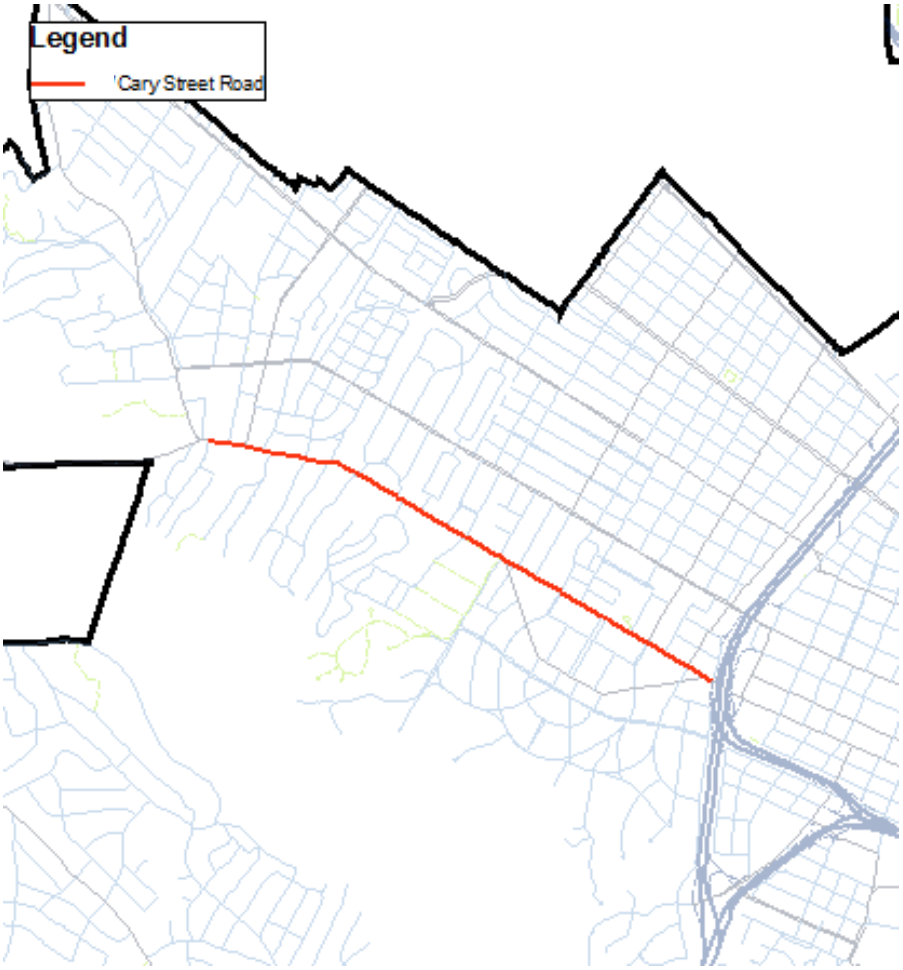
<u>In the center of town, north of the river</u>:

- Main St is the dividing line for N versus S street directions.
- Foushee St is the dividing line for E versus W street directions.



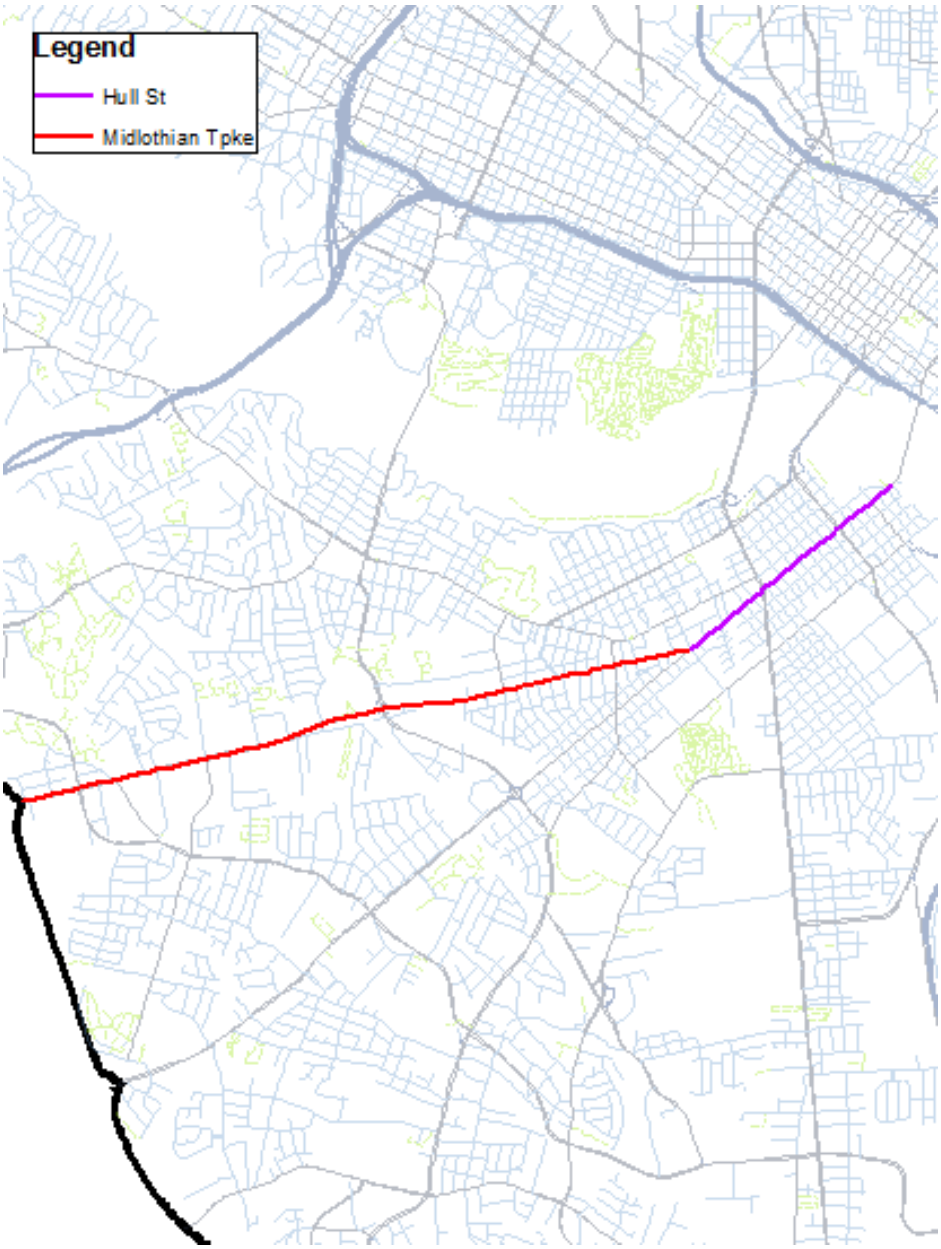
West of the Downtown Expressway:

- Cary Street Road becomes the dividing line for N versus S street directions.



South of the river:

- Hull St is the dividing line for E versus W street directions, until it intersects with Midlothian Tpke, at which point Midlothian Tpke is the dividing line for E versus W street directions.



13) StreetName

Street names are managed by the right-of-way administrators in the Department of Public Works.

Street names can use the following abbreviations, but are not mandated:

Full	Abbreviated	Example
Saint	St	St Moritz

Street names using numbers will not use ‘spelled-out’ names:

Incorrect	Correct	Example
Forty Fifth	45th	W 45th St

14) StreetType

Street Types will utilize the existing nomenclatures established by the legacy *Central Address* system, because they have been used by many City databases for decades, and we do not wish to introduce a change to this standard. These abbreviations are also recognized/usable standards by the USPS.

Al		Pkwy
Ave		Pl
Blvd		Plz
Cir		Priv
Cncs		Pt
Conn		Road
Cres		Row
Ct		Sq
Dr		St
Expy		Ter
Hwy		Tpke
Lane		Trce
Loop		Way
Park		

15) ExtensionType & ExtensionValue (Condominiums)

Condominiums are ParcelAddress features; not SubAddress features.

According to the Assessor of Real Estate Office, Condominiums have a distinct unit of ownership and have their own unique PIN assignment.

Condominium ParcelAddresses are related to PINs.

ExtensionType	Description
Unit	Always used for Condominium
Rear	Parcel behind
Med	Median *
Adj	Adjacent *
Comm	Common area *

* Legacy use by the Dept. of Utilities for locating special meter locations

In cases where "Unit" is used, the *ExtensionValue* field will identify a condominium's number and/or letter designation.

Examples:

- 511 N Boulevard Unit 9
- 910 Tilden St Unit 1
- 1510 Eddystone Ct Unit A
- Stuart Ave Unit 2a

The City of Richmond has also adopted a non USPS standard application of the use of a "Rear" designation, which can be used in the ExtensionType field. Briefly, "Rear" will indicate a separate parcel, which is located behind what is described as a street-frontage property. The "Rear" parcel is typically only accessible by alley, or may not be accessible at all. For specific details about this, the reader should review Section 17 *Unnamed Alleys & 'Rear' Designator*.

Examples:

- 307 N Rowland St Rear
- 1801 Bath St Rear

16) UnitType & UnitValue (Apartment versus Condominium)

While condominiums use the ExtensionType and ExtensionValue fields in the ParcelAddress feature class to identify condominiums, and they have relationships to PINs, Apartments are modeled as SubAddress features.

In the SubAddress feature class, the UnitType will contain one of the following valid values: The USPS refers to these as “Secondary Address Unit Designators.”

UnitType	Description
Apt	Apartment
Bldg	Building
Bsmt	Basement
Fl	Floor
Gar	Garage *
Lbby	Lobby
Ofc	Office
Ste	Suite
Rm	Room
Side	Side
Trlr	Trailer
Unit	Unit
Whse	Warehouse *
Uppr	Upper
Lowr	Lower
Frnt	Front
Rear	Rear

*Not an approved designator by USPS, but used by COR.

UnitType is typically reserved for residential units and are generally not used for all spaces located inside of office buildings (offices and suites, for example), unless they are needed for Public Utilities or some other business reason.
However, the City attempts to capture all residential units.

Note: hotel rooms are excluded from the City’s addressing solution.

The *UnitValue* will contain whatever alphanumeric nomenclature that is used in the structure or by the secondary address location.
Most UnitValues have an interior entrance to the location.

Here are examples of what the complete address looks like with a database view that combines SubAddress UnitType + UnitValue with the ParcelAddress' Address Label

Examples:

- 4 S Auburn Ave ***Apt*** A
- 1600 Westwood Ave ***Rm*** 102
- 2210 Barton Ave ***Unit*** 2

While it probably does not impact anything, there is something that can be brought to the reader's attention regarding differentiation between condominiums and apartments. With respect to condominiums' persistent use (*always*) of the ExtensionType = "Unit," and some SubAddresses using the UnitType = "Unit," it would not always be possible to differentiate condos from apartments, if you did not know whether the address was in ParcelAddress or SubAddress.

For example:

- 2210 Barton Ave Unit 2 (is an apartment)
- 910 Tilden St Unit 1 (is a condominium)

17) Unnamed Alleys & 'Rear' Designator

It was mentioned briefly in section 15 "ExtensionType & ExtensionValue (Condominiums)," that "Rear" may be used by the ParcelAddress feature in the ExtensionType attribute field.

In situations where a property exists on an unnamed alley, which requires an address assignment (e.g. for a permit), then the use of the "Rear" nomenclature will be used. These properties do not have street frontage and are located behind a separate parcel that has street frontage.

It is important to note that if the alley is actually named (e.g. Walnut Al), then the properties should be assigned an address to the that street/alley name, and the use of 'Rear' would not be needed.

Illustrative examples (maps) will follow in the subsequent pages of this section of the Addressing Manual, but here are the ***rules to determine which address will be used as the 'frontage'***:

1. Use a property address that is front and centered from the rear property.
2. Always try to use a property address that fronts the same street that is also used to access the alley. (see example 1)
3. When a property address is not fronting the same street that is accessible by the unnamed alley, then you may default to the street address that is not accessed directly by the unnamed alley. (see example 2)
4. In all cases where a 'Rear' ExtensionType is needed, then a search for common ownership will be performed. If a rear property is fronted by a property with the same owner, then the address of the commonly owned frontage address will be used. That is, does this 'Rear' parcel have the same owner as a street frontage parcel? If so, then the 'Rear' parcel will be addressed to follow suit of this other commonly owned parcel.

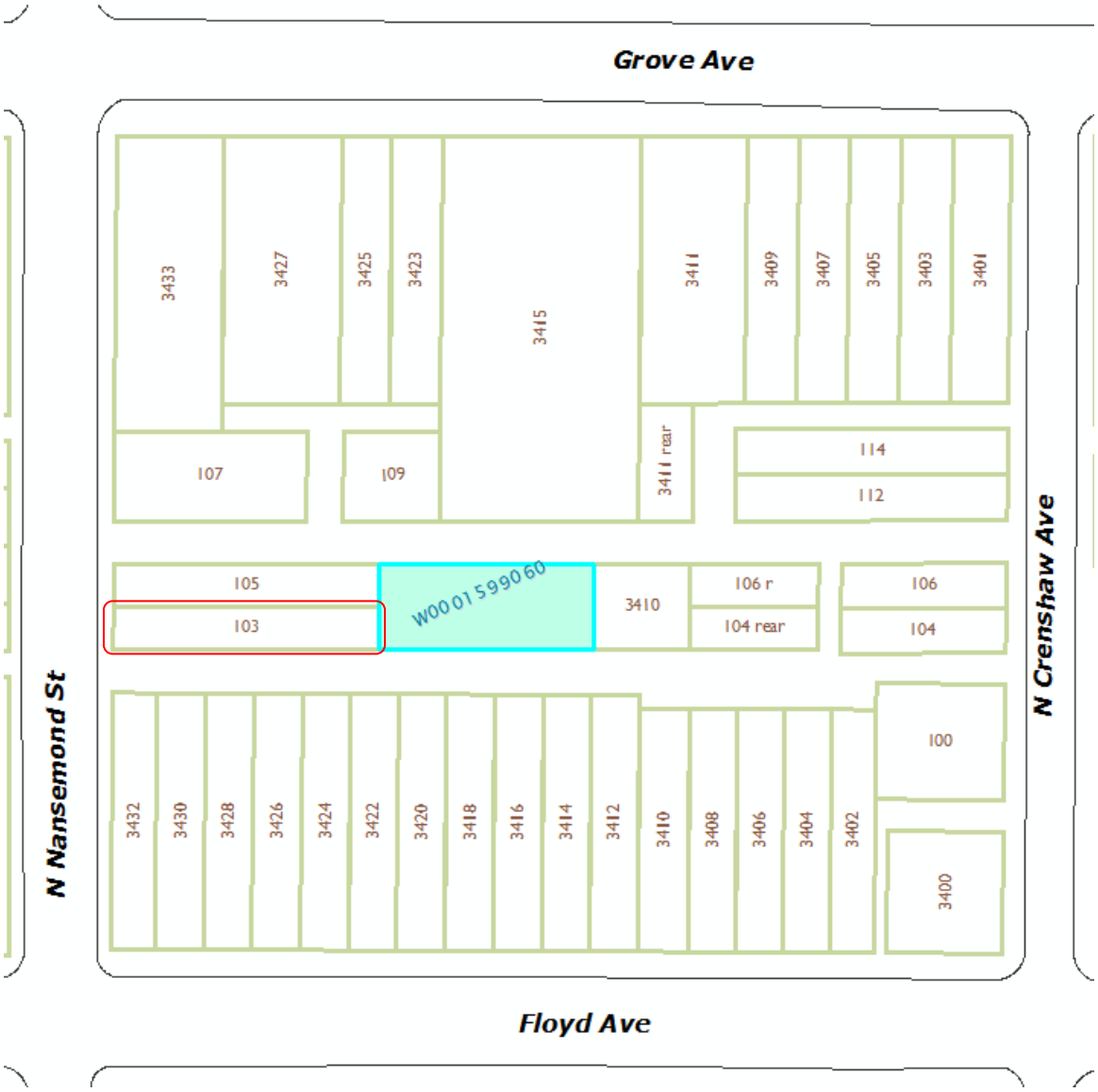
Example 1)
In this example, after verifying the ownership of this parcel isn't owned by someone at a surrounding parcel (rule 4), then "10 S Plum St" is used instead of a W Cary St address; the unnamed alley is not accessible from W Cary St.

BldgNumber	Direction	Name	StreetType	ExtensionType	ExtensionValue
1516	W	Cary	St		
10	**S**	**Plum**	**St**	**Rear**	

Example 2)
In this example, the two Rear property addresses are most closely accessible from S Rowland St, but there is no addressed property frontage on S Rowland St. 13 S Rowland St is not front and center of these locations, thus they are not used. In this case, the property addresses used do not front the same street that is accessible by the unnamed alley; W Cary St addresses are used. (Note: it may also be likely that these properties would be owned by the person owning the W Cary St-fronting properties; rule 4 should be investigated)

Number	Suffix	Direction	Name	StreetType	UnitType	Unit
2022		W	Cary	St		
2022	**Rear**	**W**	**Cary**	**St**		
2018		W	Cary	St		
2018	**Rear**	**W**	**Cary**	**St**		

Example 3)
In this case, the property with PIN = W-000-1599-060 could be addressed off 3415 Grove, or 3414 Floyd, for example. But the property owner lives at 103 N Nansemond; the owner of 103 N Nansemond thinks of this parcel as 103 rear N Nansemond. (Note: this also follows rules 2& 3)



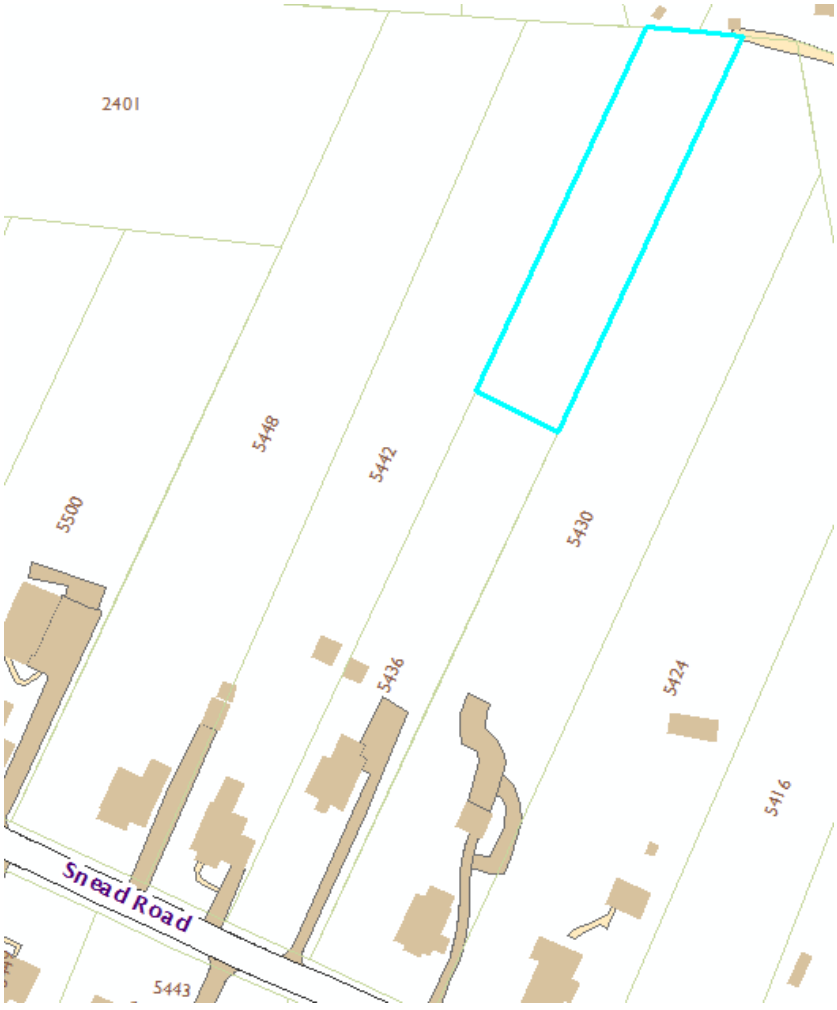
BldgNumber	Direction	Name	StreetType	ExtensionType	ExtensionValue
103	N	Nansemond	St	Rear	

18) Inaccessible Parcels & 'Rear' Designator

In a situation very similar to the case of parcels that are only accessible by unnamed alleys, the City addresses parcels that are land-locked and do not have any transportation access.

These properties do not have street frontage and are located behind a separate parcel that has street frontage.

Example "C0080615026":



BldgNumber	Direction	Name	StreetType	ExtensionType	ExtensionValue
5436		Snead	Road	Rear	

19) The Three Uses of 'Rear' – A Recap

Case#1: "Rear" can be a *UnitType* value of SubAddress.

Example: 3501 W Broad St Rear

Case#2: "Rear" can be a *UnitValue* value of SubAddress. (note. The use of 'Rear' as a value does not adhere to USPS standards) *This case occurs so infrequently, that the City should inspect these and consider if they can be changes, and this case be dropped.*

Example: 504 N 25th St Apt Rear

Case#3: "Rear" can be an *ExtendedType* value of ParcelAddress, in cases where a parcel is only accessible by an unnamed alley, or is land-locked behind other street frontage parcels.

Example: 3525 Grove Ave Rear

20) Zip5

Zip code values do not fall under the addressing authority of a locality. The United States Postal Service (USPS) is in charge of assigning zip codes. Therefore, a special tool is used within the ArcGIS Desktop framework to call upon a USPS web service to look up and present the zip code to the editor.

Here is a list of the valid zip codes used within the City of Richmond and used by our geodatabase domain for the *Zip5* attribute field. There are additional zip codes in our domain, which are not mappable and may be questionable, but they were verified in USPS.com.

Zip Code	In GIS feature class	Note
22173	X	
23219	X	
23220	X	
23221	X	
23222	X	
23223	X	
23224	X	
23225	X	
23226	X	
23227	X	
23228		4921 Lakeside Ave. along boundary where zip follows.
23229		UR area along boundary where zip follows.
23230	X	
23231	X	
23234	X	
23235	X	
23241		Central Station Post Office
23269		2300 W Broad St (DMV)
23284		multiple properties around VCU main campus
23298	X	

21) Zip4

The 4 extra zip code values are a further extension of the assigning of zip codes by the USPS.

There is no domain applied in the geodatabase for these values.

22) AddressLabel

The AddressLabel field contains the value resulting from the concatenation of the following fields in the ParcelAddress feature class. The purpose of this field is to pull together the attribution parts of the ParcelAddress and can be used for labeling and identification results legibility.

- BuildingNumber
- BuildingNumberSuffix
- StreetDirection
- StreetName
- ExtensionType
- ExtensionValue

Examples:

BldgNumber	*1901*	*1911*	*1517*
Direction		*W*	*W*
Name	*Stuart*	*Cary*	*Main*
StreetType	*Ave*	*St*	*St*
ExtensionType		*Unit*	*Rear*
ExtensionValue		*A*	
AddressLabel	*1901 Stuart Ave*	*1911 W Cary St Unit A*	*1517 W Main St Rear*

23) Locality

Locality contains the FIPS (Federal Information Processing Standard) code value of the City of Richmond, and counties of Henrico and Chesterfield.
Although the Address Systems' purpose is not to track county addresses, these are present to accommodate any *special* cases. (Section "*K: Address Anomalies: Parcels Split by City-County Jurisdictional Boundary*" documents one of these known special cases.)

- 760 Richmond
- 087 Henrico
- 041 Chesterfield

24) Assigning Address Numbers – Odd/Even & Blocks

In cases where new addresses need to be created (e.g. existing parcel being subdivided, creating a new subdivision), new addresses will be matched-up with existing addresses. Where there are even numbers on one side of the street, then even numbers will continue to be assigned along that side of the street; conversely with odd number assignments.

Address numbers will be either increasing or decreasing in the same manner of the surrounding neighborhood. For examples:

- When dealing with an east-west oriented street that is north of the river, then the addresses are getting higher the further you move ease or west from N. Foushee St.
- When dealing with a north-south oriented street that is north of the river, then the addresses are getting higher the further you move north or west from Main St.

Address numbers will utilize the block range consistent with parallel streets:

- if the block over, in both directions is the 3400 block, then the current block will also utilize 3400's.
- And with the preceding and following streets, if the block before is 3300 and the block after is 3500, then once again this will be the 3400 block.

25) Assigning Address Numbers - Ranges

Avoid assigning addresses along a street that only increment by 2 (e.g. 3400, 3402, 3404, etc…), to avoid any future problems if a parcel is split and new address numbers need to be determined.

Depending on the situation, assigning new addresses should be incremented by 4, 6, 8 or even 10.

Consider future land development/land use when beginning a address number assignment. Do not assign the lowest number available to the side of the street for a block if it is possible to put something between the end parcel and/or structure and the corner.

For example: at 1001 West Ave. It isn't at the corner of West and N Harrison, but it's the lowest possible number on that side of the street. When the owner's of 316 N Harrison St requested an additional address on West Ave (for a 2nd apartment) the City had to give them 1001 A West Ave (even though there's no relationship between 1001 and 1001 A).

Lastly, if possible/appropriate always match the odd/even addresses with what's across the street (e.g. 3401 would be opposite 3402).

26) Assigning Address Numbers - Apartments

Assigning new unit numbers can be approached in the following ways.

For a small number of units, they should be addressed 1-8 (for example) or A-H (if letters are preferred.)

For the larger multi-floor apartment buildings, use numbers to indicate floors.
Units 1a-1d would be on the first floor, 2a-2d on the second, etc.
Or 101-125 for the first, 201-225 for the second.

For field investigations, the standard is to go by what is on the physical building/doors.

27) Apartment Units

There are situations when apartments can be assigned a unit number, or be created with their own stand alone address.
Generally, if they've got their own front door, they get their own stand-alone address.
If multiple units are accessed through a common door, then they are units within the main 'core' address.
Sometimes units can be accessed through multiple doors (a front door, a side door, a back door, etc). Here the question becomes "Where are the mailboxes?" If the building has a door on E Broad and a door on N 9th and the mailboxes are located at the E Broad St door, then the units will be addresses off E Broad, not N 9th St.
Sometimes units within a building with be accessed from different doors, and that's acceptable. Sometimes the only way to get to a unit is through the alley. If that's the case, then the alley might have to be named.

Note: Please see the previous section "Assigning Address Numbers – Apartments," for details about apartment numbering.

28) Case

All data shall be recorded and stored in Mixed Case.
Examples:

- 900 E Broad St
- 702 Freeman Road

All CAPS are not cartographically pleasing and more difficult to read and will not be used:

- 900 E BROAD ST
- 702 FREEMAN ROAD

Note: For systems that require the use of ALL CAPS for addresses, the use of functions and methods will need to be used by the services and interfaces that update those systems. ProVal is an example of one such system that requires all upper case letters.

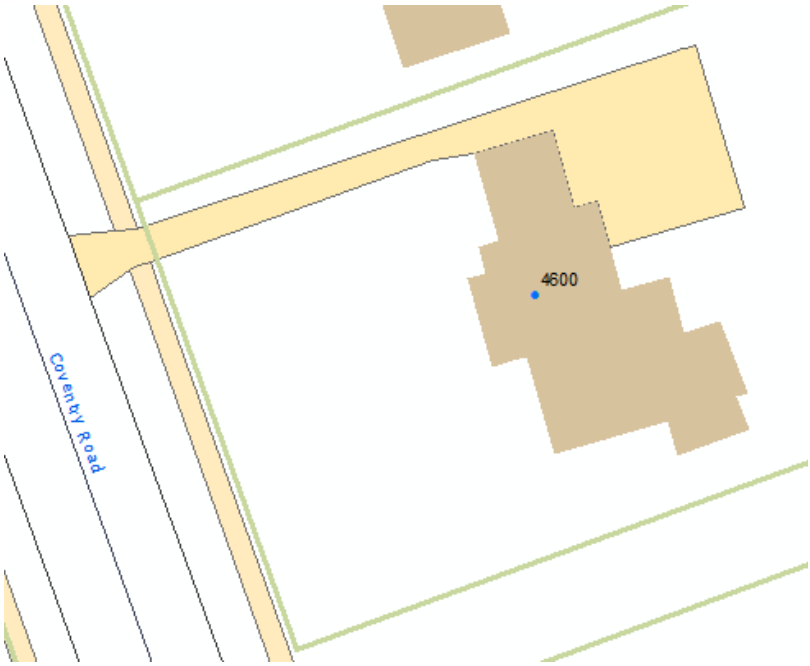
29) Punctuation

No punctuation shall be used with addresses.

30) Address Placement

There are rules governing the placement of Address point features in the GIS:

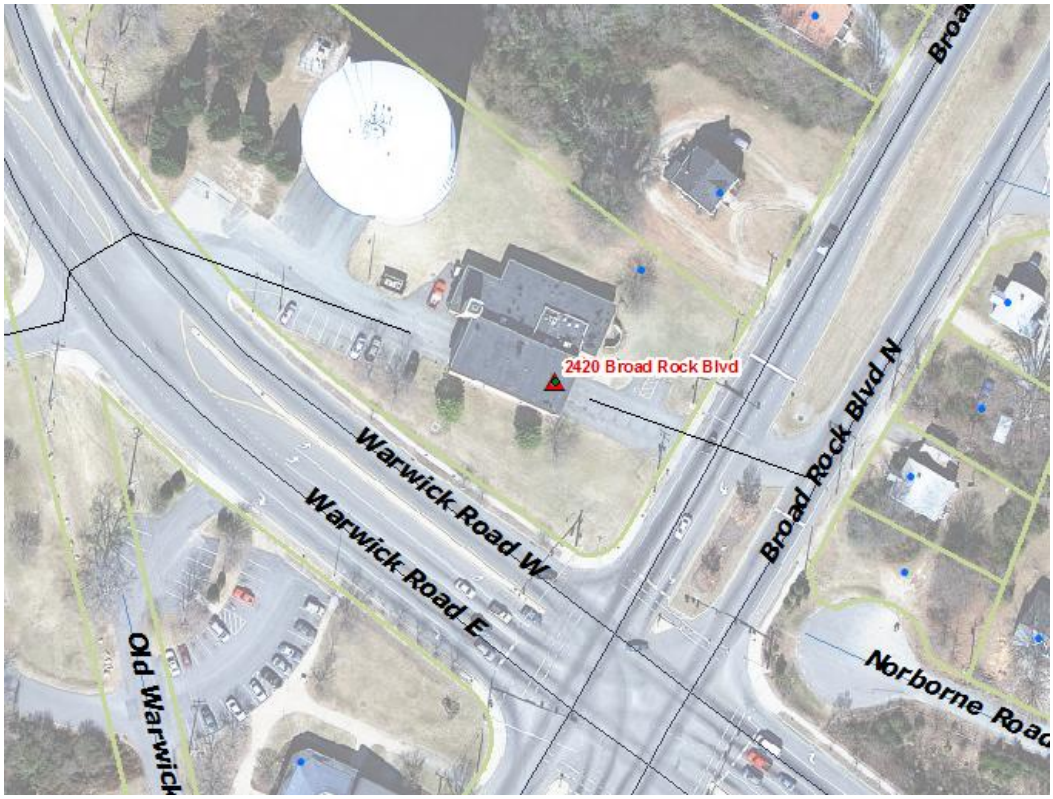
- Feature placement is optimized for CAD 911 routing to approximate either a building or driveway entrance.
- Features on unimproved Parcels are typically located at the Parcel centroid.
- Features outside the Richmond boundary are provided for utility premise mapping and are either positioned by the contributing locality or as required by DPU.
- Whenever possible always place the address point on the building footprint.



- If there is a commonly used accessible entrance, then try to place the point at that location.
- Always place the address points on the correct parcel.
- If neither of the first two options are possible, then place the point at the location where it is believed emergency vehicles will access the property. This is important because of the fact that the Computer Aided Dispatch (CAD) system uses the address point locations in determining routing from centerlines.

  When this option must be used, several factors come into play.
  - Will the address point remain on the correct parcel?
  - How will routing of response vehicles by the Computer Aided Dispatch system be affected by the placement of this point?

If the answer to the first question is that it is not possible, then measure the distance from the address point to the nearest Carriageway segment. If the closest segment is not appropriate for routing, then consult with the DPW GIS Team to have them draw in a private street segment to assist in routing. Usually the address points can be manipulated enough to where there is not a need for the extra segments to be drawn in. (here is an example of a fire station with two new segments drawn to the address point, to support proper routing out of the station)



31) Field Investigation

Field investigations are done to physically verify the addressing of a structure. When inspecting apartments the posted units on the structure will take precedence and the GIS addressing will be updated to match. For example: a citizen registered to vote using an address with Apt. “1,” but Apt. “A” is observed, then this will trigger an update of the UnitNumber to utilize the “A” value.

K. Address Anomalies:

Address anomalies are illogical addresses. Address anomalies are rare. We have identified the following types of anomalies:

- Street number out of sequence
- Address far from its associated street name
- “Paper Street” or street no longer physically exists, but address remains
- Missing hundred block building numbers
- Even addresses on the odd Side of the street
- Odd addresses on the even side of the street

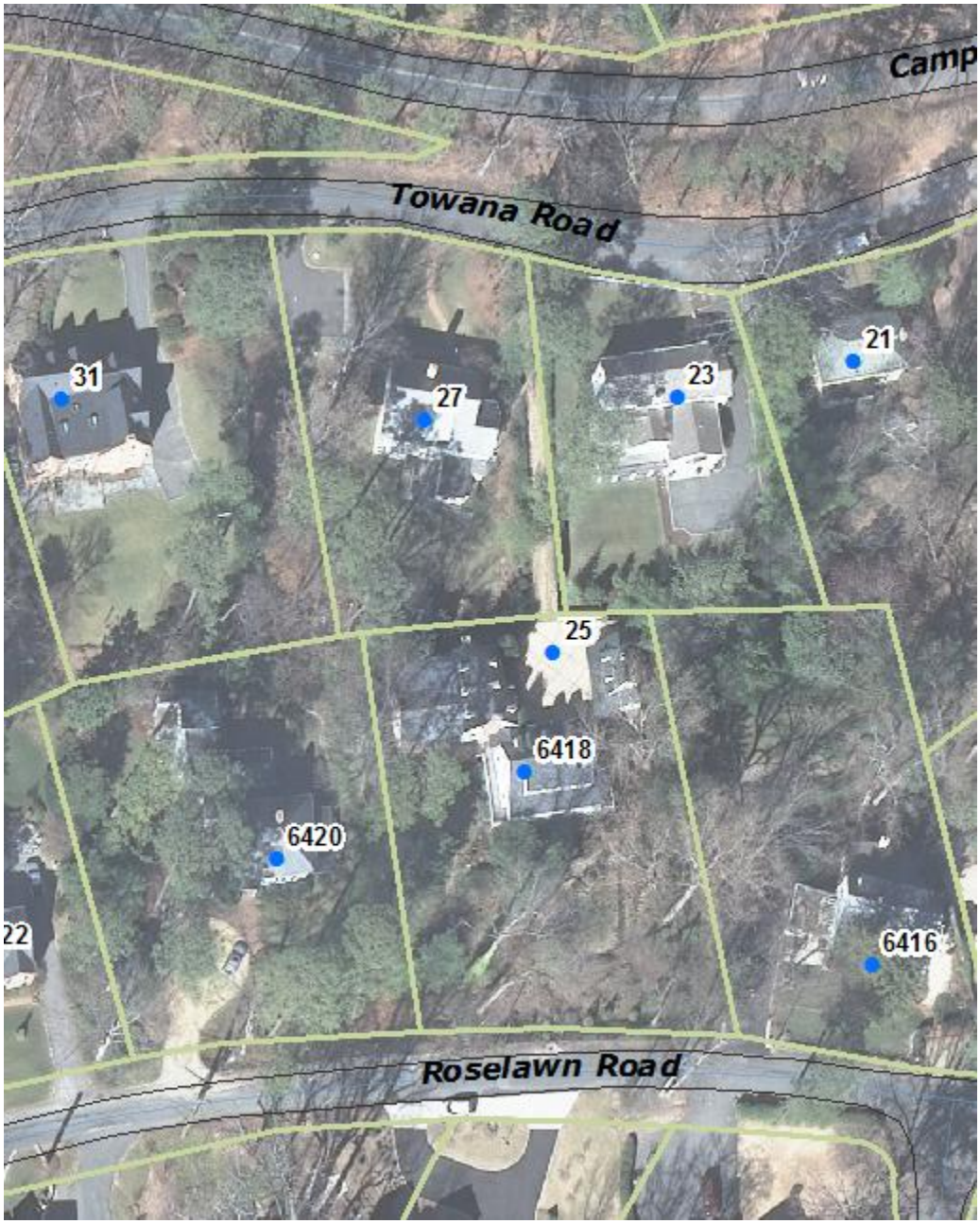
Street number out of sequence

We have not found cases where street numbers are listed out of sequence, but rather issues do arise from not planning beginning address numbers at the end of blocks, which can create a numbering issue. As cited earlier 1001 West Ave is a case of street number sequence problems. It isn’t at the corner of West and N Harrison, but it’s the lowest possible number on that side of the street. When the owner’s of 316 N Harrison St requested an additional address on West Ave (for a 2nd apartment) the City had to give them 1001 A West Ave (even though there’s no relationship between 1001 and 1001 A).

Address far from its associated street name

There are cases where an address is referenced to a street that is not the closest one to it.

Example 1)
25 Towana Road occupies space at the end of a very long driveway and is on the same property as 6418 Roselawn Road.



Example 2)
N 28th St may have previously continued across O St, but currently comes to a 'T' with O St. Now the address used for George Mason Elementary School is not really located on N 28th St. This example leads to the topic of 'Paper Streets.'

“Paper Street” - street was never constructed or no longer physically exists, but address remains

It is not uncommon for the City to have street rights-of-way planned, but there is not a physical road. These are called “Paper Streets.” If there is undeveloped property frontage on such a Paper Street, then addresses will assume the street name.

Example)
E Bacon St is a ‘Paper Street’ on the western side of St James St.

Missing hundred block numbers

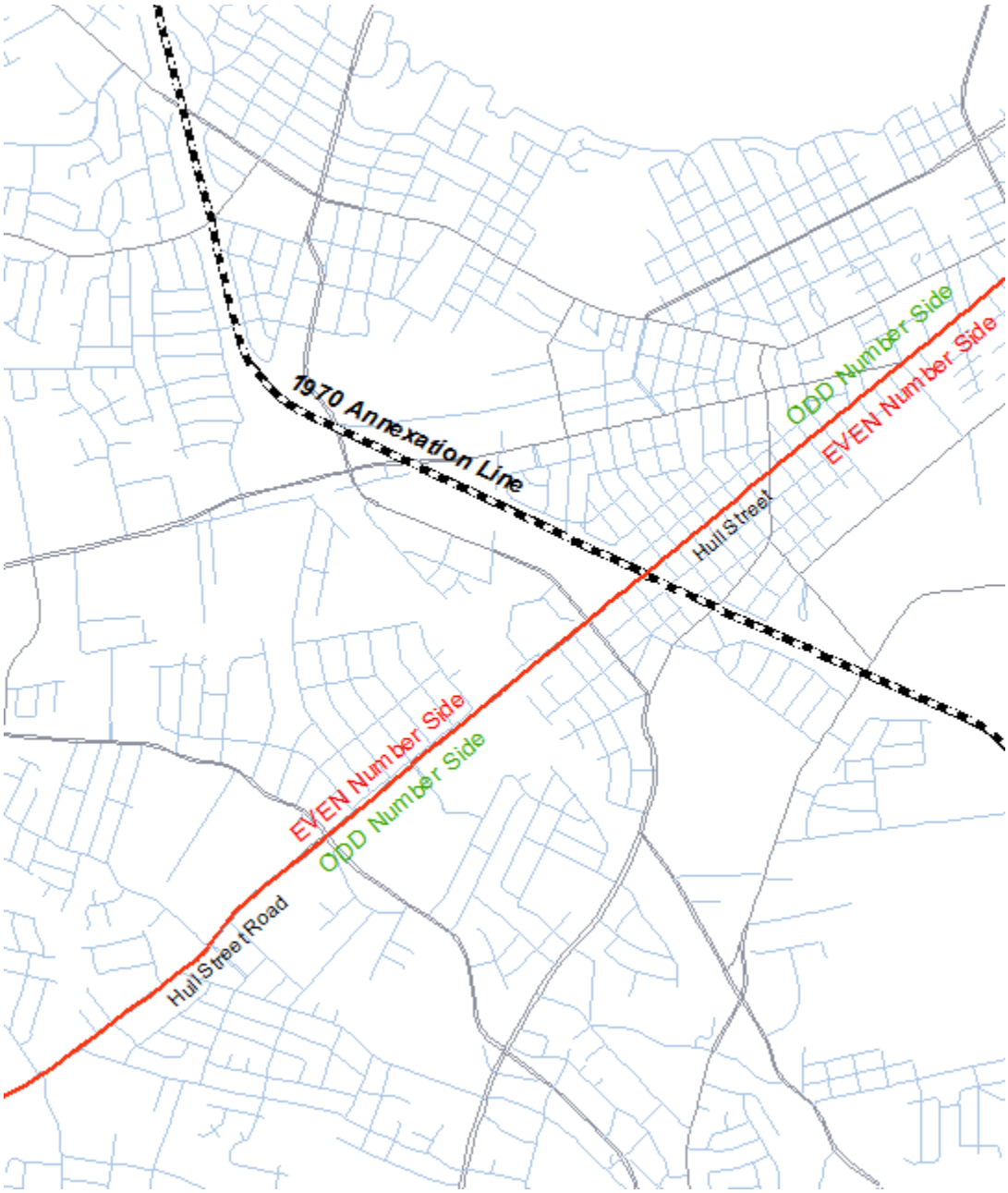
It is possible that a thoroughfare will skip a hundred block number assignment. We have not itemized them all, but they can be observed when reviewing with GIS or the Address Research tool.

(e.g. there is no 1400 block of W Broad St)

Even addresses on the odd Side of the street

<u>South of the James River</u>:
South of the James River, the even/odd address number assignments are less standardized.
In Blackwell, the even/odd sides of the street switch sides as you cross Hull St. (Look at 14 E 12th St and 106 W 12th St for examples)

The even/odd sides of Hull St switch at the pre-1970 City line. (This is also the point where Hull Street becomes Hull Street Road).

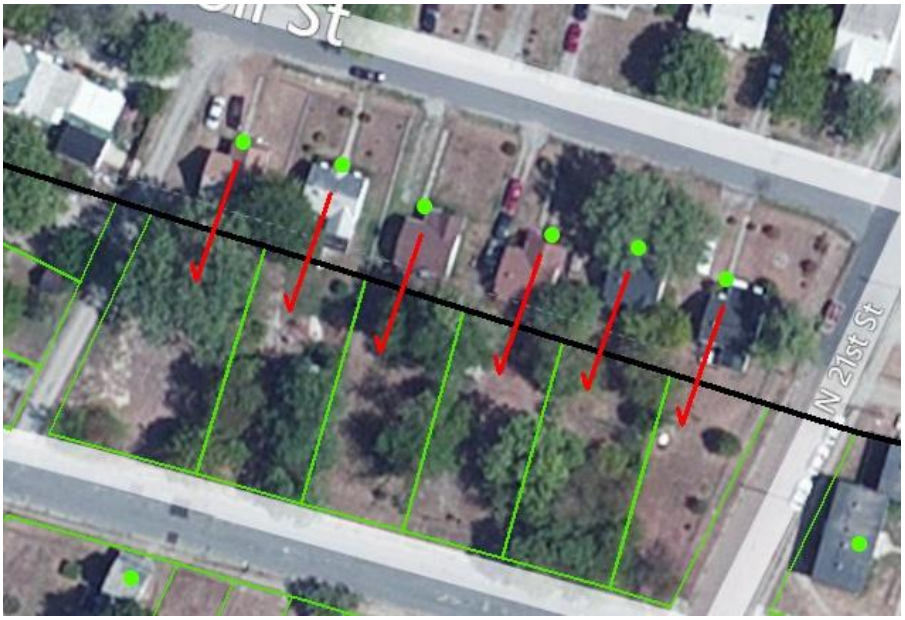


Parcels Split by City-County Jurisdictional Boundary

Along the boundary, there can be parcels which are split.
This can result in cases where the back yard of the property is located inside the City, but the main house is in the County. Or there can be cases where an even smaller sliver of the property is located in the City and clear majority is in the County.

In these cases, the address point:

- Does not use the 'Rear' designator, unless it fits the definition for use of 'Rear' that was documented earlier in section "*J. Address Standards*:"
- Is always located inside of the City boundary, if there's a mapped parcel for it. Consider them to have been moved from the county back in to the City, to support the spatial positioning rules or potential needs for spatial overlays.



ParcelAddress points are located on parcels with PIN values they're associated to.

Proval Note:

- The Assessor of Real Estate uses the 'Rear' nomenclature in its own address field. While this does not match the GIS Address values, the purpose of its usage is to indicate to the property owner, on their real estate tax bill, that they are only being taxed for the 'rear' portion of their property that resides in the City. It is believed that this nomenclature really does help clarify for the property owner the fact that the City is not taxing them for anything more than that portion of the land. But this usage of 'Rear' in the Assessor Office is not required for use according to GIS Addressing definitions.

Developer's Legal Recordation versus Apartment-to-Condo Standardization

It is usually the case that the apartment numbers are just reused.
When apartments are converted into condos, it can sometimes occur that the developer/property owner will actually list a unit value in the legal description that differs from the previously posted apartment number.

So there is just the possibility of a discrepancy between GIS Addressing and Proval.

Proval Note:

- The Assessor Office must use the address that appears on the deed for the legal description, even if it is different from what is posted in the real world and used by the ParcelAddress.

Example:
An example of poor condo addressing. There was a set of established addresses in the "Declaration Of Condominium Of Cary Street Flats Condominiums" (09-3158), and then the deed of sale in 09-20940. And then the owner requested a mailing address change to 1645 W CARY ST APT A, despite the fact it is a condominium.

Declaration has:

Survey:
1643 West Cary Street, A & B
1645 West Cary Street, A & B

Plans:
1643 West Cary Street, Unit #1
1645 West Cary Street, Unit #1
1643 West Cary Street, Unit #2
1645 West Cary Street, Unit #2

Exhibit 2:
1643 West Cary Street, Unit #1
1643 West Cary Street, Unit #2
1645 West Cary Street, Unit #3
1645 West Cary Street, Unit #4

The B&S Deed:

Unit #1, 1645 West Cary Street

ProVal:

Legal Description: CARY STREET FLATS U3 (1645-1)
Property Address: 1645 1 W CARY ST
Mailing Address: 1645 W CARY ST APT A

Note: In the City's addressing system, the addressing utilizes the "Unit" ExtensionType.

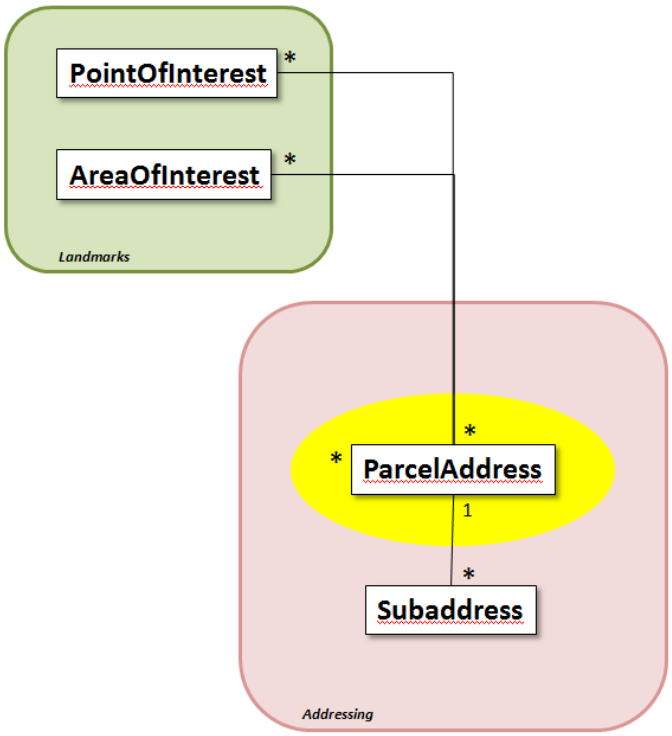
L. Landmarks:

A landmark is a relatively permanent feature of the manmade landscape that has a recognizable identity within a particular cultural context. A landmark represents a community facility or cultural point of interest.

Examples include: schools, fire stations, museums, hospitals, churches, sport venues, monuments, parks, dams, river rapids, RRHA developments, historically significant buildings, government buildings, college buildings, shopping centers, business centers, highway exits, highway mile markers, parking decks, post offices, libraries, cemeteries, theaters, community centers, playgrounds, etc…

Characteristics of a Landmark:

- Defined to have explicit relationships with ParcelAddress features, but is not required to have a related ParcelAddress. (for example, highway mile markers, highway exits, and river rapids locations will not have an address assignment, but all schools and churches will)
- Are always represented as a point feature (PointOfInterest), and sometimes as an additional polygon feature (AreaOfInterest). For example, all parks are modeled as both a PointOfInterest and an AreaOfInterest.



- As with addresses, use proper case, eg, "McAdams House."
- Common short names such as “Saint” or “Mount” should not be abbreviated.
- Some longer names are more common in their abbreviated form and should be recorded as such. Do not use periods or spaces in these cases, eg, "JEB Stuart Elementary School".
- Avoid beginning a name with an article such as “The” unless the landmark is not known without it, eg, “The Jefferson”.
- Use a space-hyphen-space combination to designate named sub-sections of a landmark, eg, “James River Park - Pony Pasture”. Hyphens may also be used without spaces to designate combined names, as in “Hancock-Wirt-Caskie House”.
- Apostrophes, ampersands, and commas are permitted, but should be dropped if the landmark is just as recognizable without them. “BB&T” requires the ampersand to be identified, while “Pine Camp Park and Arts Center” should not use an ampersand in lieu of the conjunction.

Why Landmarks?

- Landmark information provides additional information about an address location.
- A cultural landmark’s *name* is another (and probably more popular) identification for an address location.
- Landmarks will support the City’s ability to track and lookup place names related to addresses, through the use of our Addressing web services.

Example:

Address	Related to POI	Related to AOI
101 E Franklin St	Main Library	Library Park

M. Geocoding & AddressReference Feature Class:

The GIS Address Model described in this manual is maintained in a normalized structure in our transactional geodatabase.

In order to support our ability to use geocoding services, there are automation procedures which are used to 'process' our normalized data model into a feature class named "AddressReference." AddressReference is structured and optimized to support address geocoding capabilities. The processed data source is created weekly on our publication geodatabase.

Note worthies about the transformation process:

- The AddressReference feature class is a combination of all active ParcelAddresses and SubAddresses.
- The attribute field names are sometimes changed from their transactional systems', in order to match the default field names that ESRI's geocoding operations like to default to. This helps to remove any ambiguity about the field interpretations when constructing geolocators.
- AddressReference has an "AddressID" field, which is populated from ParcelAddress's '*ParcelAddressID*' attribute field and by Subaddress's '*SubaddressID*' attribute field.
- '*HouseNumber*' is populated by concatenating "BuildingNumber" + "BuildingNumberSuffix." This means in cases where there are fractional values, they will appear in this field, following the building number.
- Recall that *ParcelAddress* uses "ExtendedType" and "ExtendedValue" (mainly for condominiums, while *SubAddress* uses "UnitType" and "UnitValue" (for entities like apartments). In address geocoding technology, there can only be one field used for any type of secondary address element. Therefore, "ExtendedType" and "ExtendedValue" are translated into the UnitType and UnitValue fields. We have proven that address geocoding to condominiums originating from ParcelAddress, and apartments originating from SubAddress, works extremely well with the structure of the AddressReference feature class.
- There is no complete address concatenation of all attributes in this feature class, because geocoding only works with the discrete elements of the address.

ParcelAddress and SubAddress conversion table:

SubAddress (before)	ParcelAddress (before)	AddressReference (after)
SubAddressId	ParcelAddressID	***AddressID***
na	BuildingNum + BuildingNumSuffix	***HouseNumber***
na	*na*	***PrefixType***
na	StreetDirection	***PrefixDirection***
na	StreetName	***StreetName***
na	StreetType	***SuffixType***
UnitType	ExtensionType	***UnitType***
UnitValue	ExtensionValue	***UnitValue***
na	Zip5	***ZipCode***

Examples of AddressReference features:

AddressID	*HouseNumber*	*PrefixDirection*	*StreetName*	*SuffixType*	*UnitType*	*UnitValue*
0059859	402 1/2	S	Laurel	St		
3152228	1 1/2	S	Vine	St	Apt	B
3150539	3319		Kensington	Ave	Rear	
1042083	14	E	Clay	St	Apt	Rear

N. AllAddress Feature Class

In comparison to geocoding against the AddressReference feature class, sometimes it is just easier (or necessary) to work with a single feature class of all active addresses that is not normalized. Therefore, we have a geoprocessing model that queries and combines the "Active" ParcelAddress and Subaddress features into a single, more usable source. The addr_AllAddress feature class is processed into the Publication environment and GeodataSummary database, as part of our weekly maintenance cycle, in order to support EnerGov, and as a source for PISTOL and CAD.

It is an unnormalized view and combination of ParcelAddress and Subaddress features.

Field	Note
AddressID	ParcelAddressID or SubaddressID
ParcelAddressID	From ParcelAddress (always populated)
SubaddressID	From Subaddress (only populated if Subaddress)
AddressLabel	BuildingNumberWithSuffix + StreetDirection + StreetName + StreetType + ExtensionType + ExtensionValue
AddressLabelWithUnit	BuildingNumberWithSuffix + StreetDirection + StreetName + StreetType + ExtensionType + ExtensionValue + UnitType + UnitValue
BuildingNumber	From ParcelAddress
BuildingNumberSuffix	From ParcelAddress
BuildingNumberWithSuffix	BuildingNumber + BuildingNumberSuffix
StreetDirection	From ParcelAddress
StreetName	From ParcelAddress
StreetType	From ParcelAddress
ExtensionType	From ParcelAddress
ExtensionValue	From ParcelAddress
UnitType	From Subaddress
UnitValue	From Subaddress
ExtensionWithUnit	ExtensionType + ExtensionValue + UnitType + UnitValue *(for Energov)*
Zip5	From ParcelAddress
Zip4	From ParcelAddress
Locality	From ParcelAddress
ParentMailable	From ParcelAddress 'Mailable'
ParentUspsResult	From ParcelAddress
ParentUspsStandardizedAddress	From ParcelAddress
ChildMailable	From Subaddress (if Subaddress record)
ChildUspsResult	From Subaddress (if Subaddress record)
ChildUspsStandardizedAddress	From Subaddress (if Subaddress record)
StatePlaneX	From ParcelAddress or Subaddress (depending which address type it is)
StatePlaneY	From ParcelAddress or Subaddress (depending which address type it is)
Latitude	From ParcelAddress or Subaddress (depending which address type it is)
Longitude	From ParcelAddress or Subaddress (depending which address type it is)
EditBy	From ParcelAddress or Subaddress (depending which address type it is)
EditDate	From ParcelAddress or Subaddress (depending which address type it is)

Example: 1133 W Franklin St has 3 apartments (Subaddresses)

ParcelAddress

ParcelAddressID	BldgNum	BldgNumSuffix	StDir	StName	StType	ExtType	ExtValue	Zip5	Locality	Mailable
0037320	1133		W	Franklin	St			23220	760	1

Subaddress

SubaddressID	UnitType	UnitValue
1049400	Apt	1
1049402	Apt	3
1049401	Apt	2

PIN

PIN
W0000531001

AllAddress *(only select attributes displayed and abbreviated for display)*

AddressID	ParcelAddressID	SubaddressID	BldgNum	StDir	StName	StType	UnitType	UnitValue	Zip5	Locality	Mailable	PIN
0037320	0037320		1133	W	Franklin	St			23220	760	1	W0000531001
1049400		1049400	1133	W	Franklin	St	Apt	1	23220	760	1	W0000531001
1049402		1049402	1133	W	Franklin	St	Apt	3	23220	760	1	W0000531001
1049401		1049401	1133	W	Franklin	St	Apt	2	23220	760	1	W0000531001

(note: we reference both the ParcelAddressID and SubaddressID as the "AddressID")

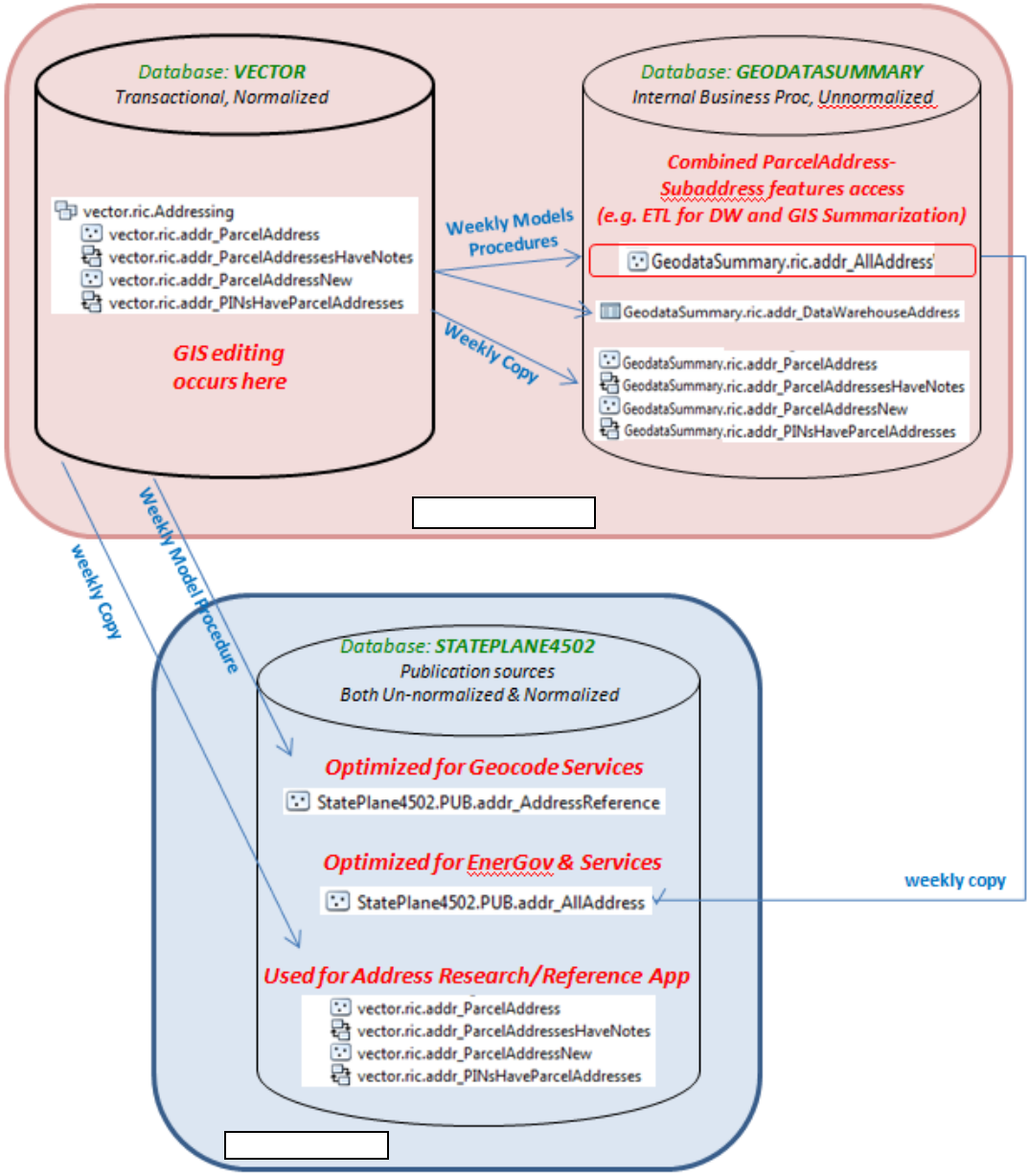
The AllAddress table contains the address attributes that are of core importance to those using addressing elements.

O. Address Organization to Support Business Processes

The purpose of this section of the Address Manual is to diagram the over-all organization and location of the varying addressing resources we have defined/created. It highlights the purposes of address sources, and diagrams the processing of address data dissemination.

Also, see Appendix B for more details.

Address Systems Diagram



P. Intersections – tran_Intersection

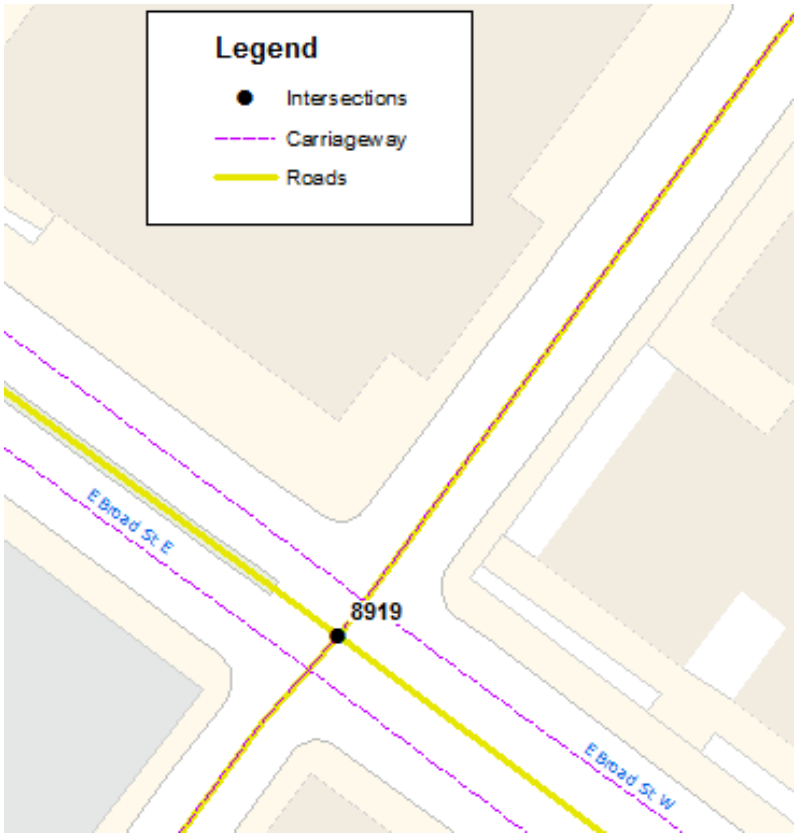
While intersections are used by some city business processes for locating purposes, they are not modeled as addresses.

The city's GIS Addressing solution leverages the *Centerlines* GIS data model, along with industry standard centerlines geocoding solutions, in order to locate intersecting centerline features. We then orchestrate geoprocessing web services to locate the closest intersection feature, following the traditional centerlines geocode operation.

Definition:

- Represented in the GIS by a single point that is topologically coincident with the end points of road features.
- In order to provide a unique identifier for intersections, we can use the unique IntersectionID attribute.

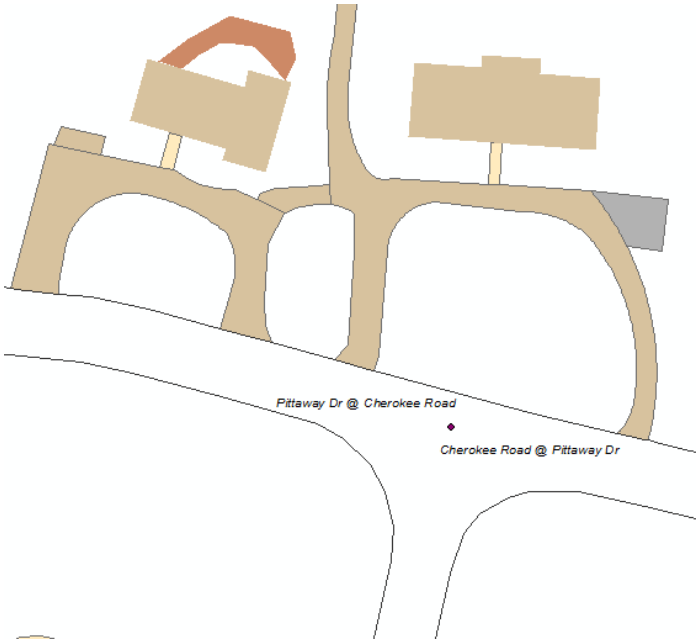
Example:
The intersection of E Broad St and N 9th St is IntersectionID '8919'.



tran_IntersectionLabel

Prior to implementation of the City's GIS-based addressing solutions, the legacy Central Address system attempted to manage intersections as an address type.
Those address features were captured and represented in GIS. Instead of deleting those intersection address features, these features are now stored inside of the Centerlines dataset as the tran_IntersectionLabel feature class.
Although tran_IntersectionLabels are no longer maintained, this is historical information that the Addressing Authority decided should be retained, and it could have some application to GIS.

These features look as follows:



Attributes of interest:

AddrID	Address
3020888	Pittaway Dr @ Cherokee Road
3014942	Cherokee Road @ Pittaway Dr
3020889	Pittaway Dr @ Rosewell Ct
3021529	Rosewell Ct @ Pittaway Dr
3020890	Pittaway Dr @ Wainfleet Dr
3022907	Wainfleet Dr @ Pittaway Dr

Q. Blocks – *tran_BlockLabel*

tran_BlockLabel is a feature class that identifies the 'hundred block' located within the right of way. History of Blocks: Blocks originated from Central Address (CA), which used very old Census data sources (e.g. DIME, or early version of TIGER) to determine blocks. (no one working currently for the City has the institutional knowledge of how the CA block address data was derived.)
As with tran_IntersectionLabels, the GIS group was responsible for mapping the CA blocks in the GIS. Therefore, these features continue to be maintained, even afer the retirement of CA.

Tran_BlockLabel is a good data source for *general*, less specific geocoding purposes. By using the low-high range values and basic street attribution stored on the *tran_BlockLabel* features, the industry standard geocoding solutions can be used to locate and identify the 'hundred blocks.'

Geoprocessing web services can use the tran_BlockLabel point to drill down through GIS layers to identify spatial relationships. In the case of the RPD, the following would need to be retrieved: Police Sector, Police Precinct, Council District, Dispatch Zone, Neighborhood, and Civic Association(s).

Sample: 1600 block of Brown St.

	Example	Description
BlockID	3116033	*original Address ID*
Address	1600 - Brown St	*Block address*
LowRange	1600	*low range from CA*
HighRange	1698	*high range from CA*
Parity	even	*side of the street*
StreetDirection		
StreetName	Brown	
StreetType	St	
BlockID	3116034	*original Address ID*
Address	1601 - Brown St	*Block address*
LowRange	1601	*low range from CA*
HighRange	1649	*high range from CA*
Parity	odd	*side of the street*
StreetDirection		
StreetName	Brown	
StreetType	St	

Definition:

- Blocks are modeled as geocodable point features in the City's GIS.
- Blocks are interpreted for both the odd & even sides of a street right of way, for a given 'hundred' block *HouseNumber* series.
- There should be a block feature representing the even ("0") and add ("1") sides of the street/block.
- Blocks are used for "general" location purposes when there is no observable specific address.
- Blocks are *meant to be* less specific/accurate than a known address point or intersection location.
- Block features are located in odd/even pairings at the mid-way point of the *entire* 'hundred' number range for the street in question.

Why Blocks:

Blocks are used mainly by the Richmond Police Department (RPD) business processes for reporting incident locations. Like intersections, blocks are not modeled as addresses, but they are modeled as point features in the Centerlines dataset.

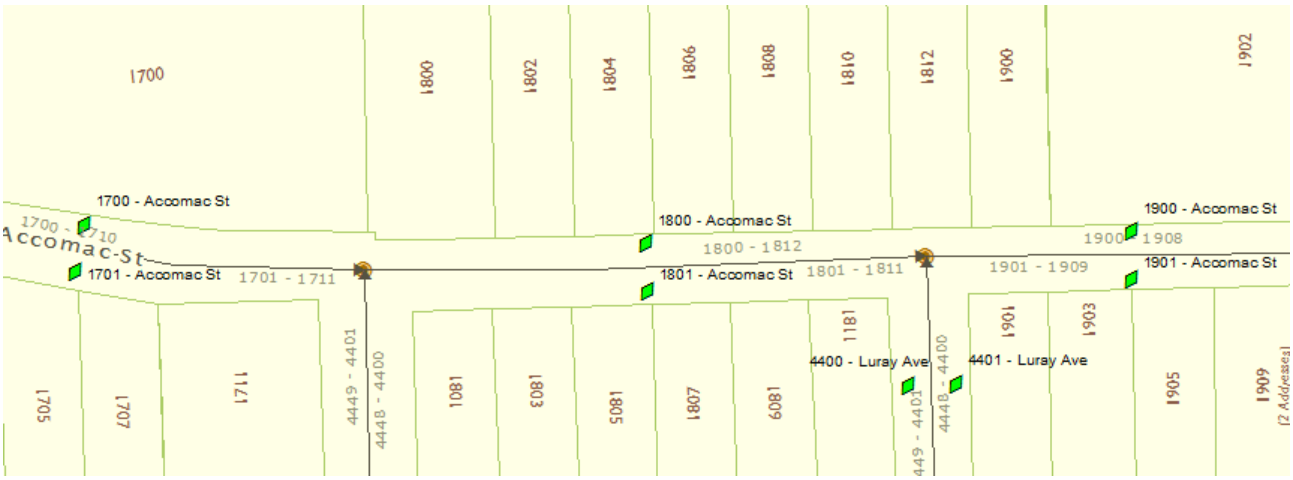
Geoprocessing web services can be used to perform an identify drill down operation through the GIS layers with the geocoded/returned block feature point location, to identify spatial relationships.
(an example of the benefit of this is that the Richmond Police Department can get the precincts, response zones, neighborhoods, etc...., for block locations.)

The interpretation and locating of the 'hundred block' features will follow these documented rules in the following pages. (Illustrative examples are provided.)

Block Assignment Rules

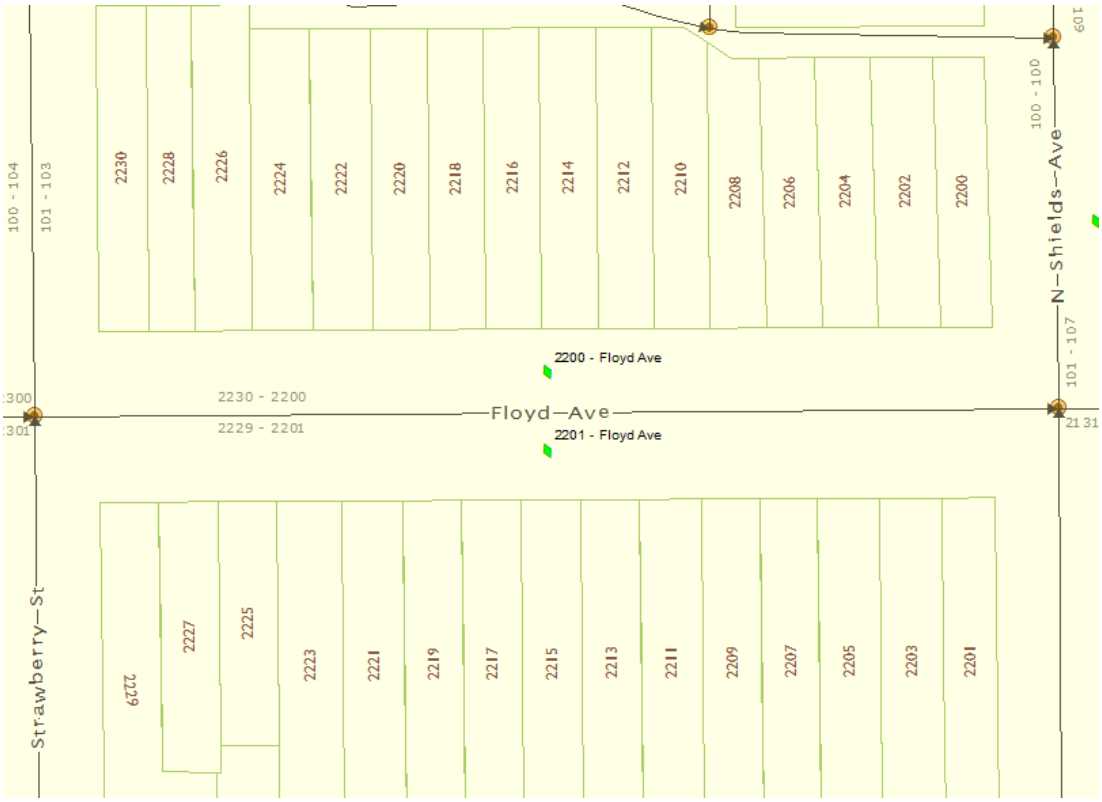
1) **Blocks will use the "0" and "1" values** in pairs to represent the even/odd sides of the street.

1600 - Accomac St
1601 - Accomac St
1700 - Accomac St
1701 - Accomac St
1800 - Accomac St
1801 - Accomac St
1900 - Accomac St
1901 - Accomac St
2200 - Accomac St
2201 - Accomac St
1900 - Accommodation St
1901 - Accommodation St



2) **Block points are to be positioned at a halfway point** along one or more centerline features that correspond to the entire address number range. There will be an even block indicator on the side of the street that contains even *HouseNumbers*, and the odd blocks on the side of the street that contain odd *HouseNumbers*.

Here is a simple, most basic example:

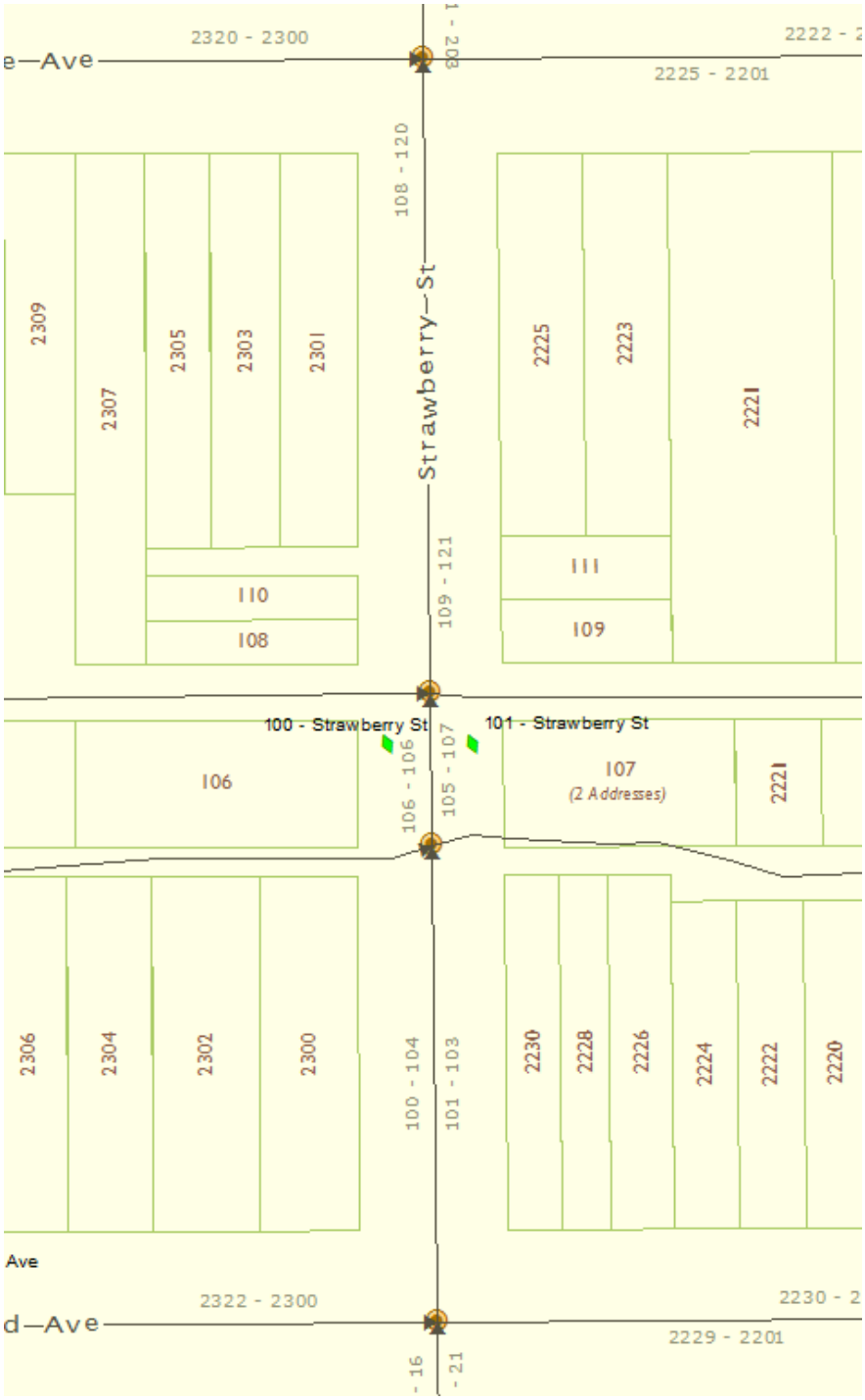


This rule holds true even in cases where the address block range numbers are interupted one or more times by alley(s) or other streets; the Block features are still positioned at the halfway point between the "end point" intersections of the complete address range. Note, this does not necessarily mean block points will fall along the centerline feature that has an address number range that contains the "0" and "1" values.

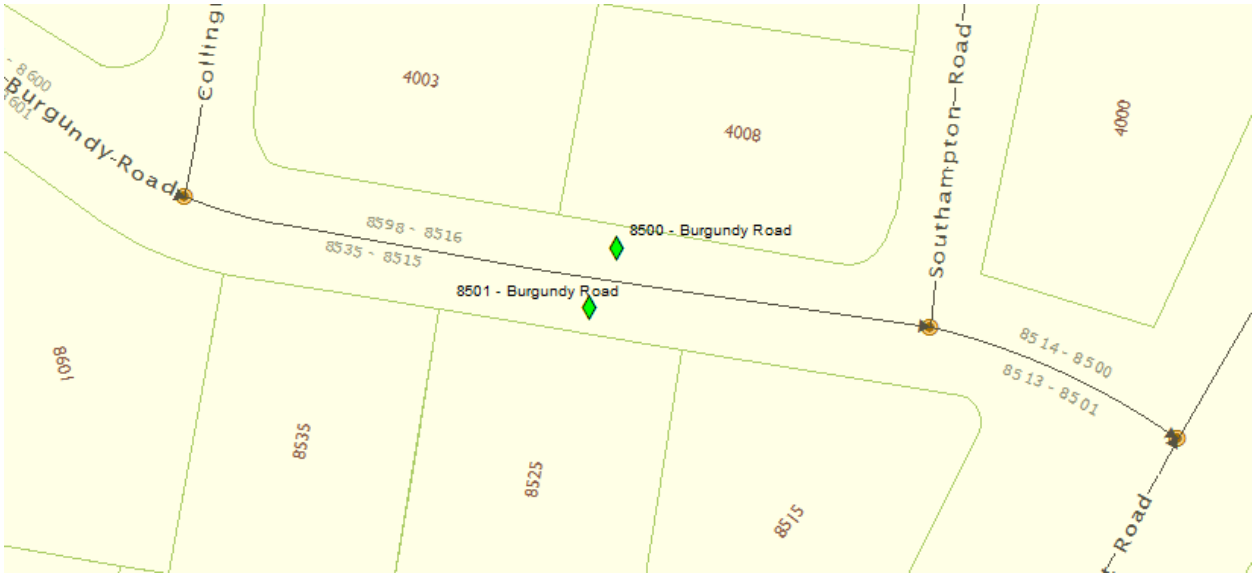
Important Note: according to the definition of a Block, it is impossible for every street section (from intersection-to-intersection) to be provided with a block feature pair.

More illustrative examples follow….

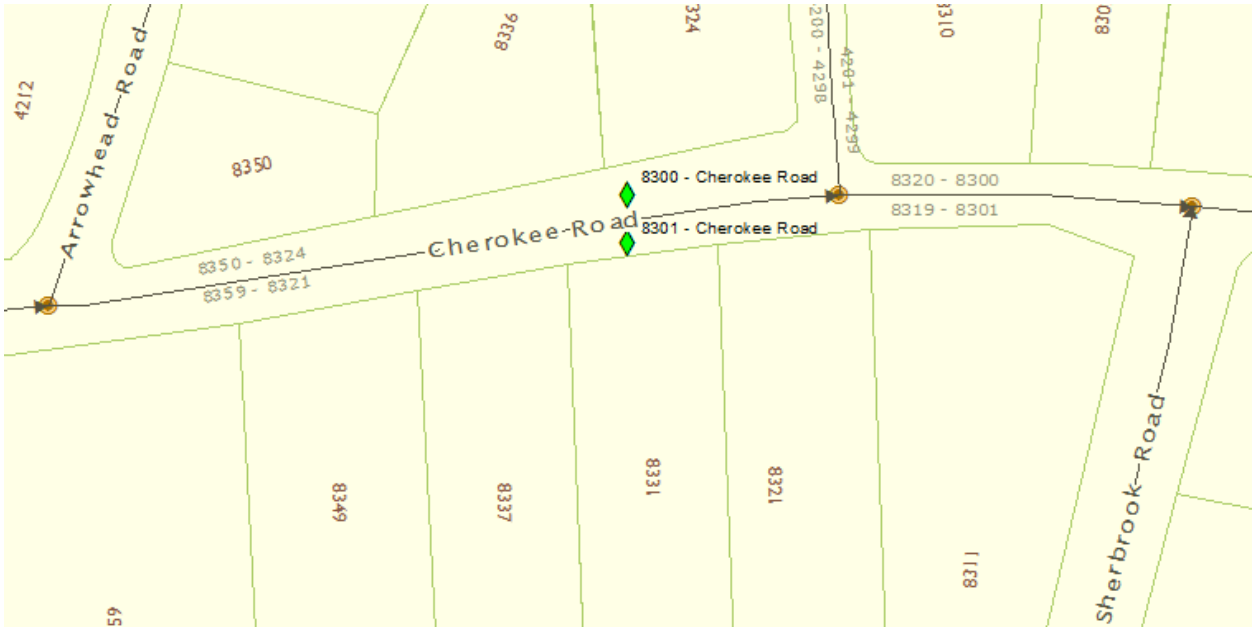
Example: the 100 block of Strawberry St positions the block point paired features between the two alleys that intersect the roadway.



Example: the 8500 block of Burgundy Road. Block odd/even pair are located halfway between the intersection of Burgundy with Cottingbourne Road to the west and N Huguenot Road to the east. (Note how they do not locate on the centerline that has the “0” and “1” range values.)



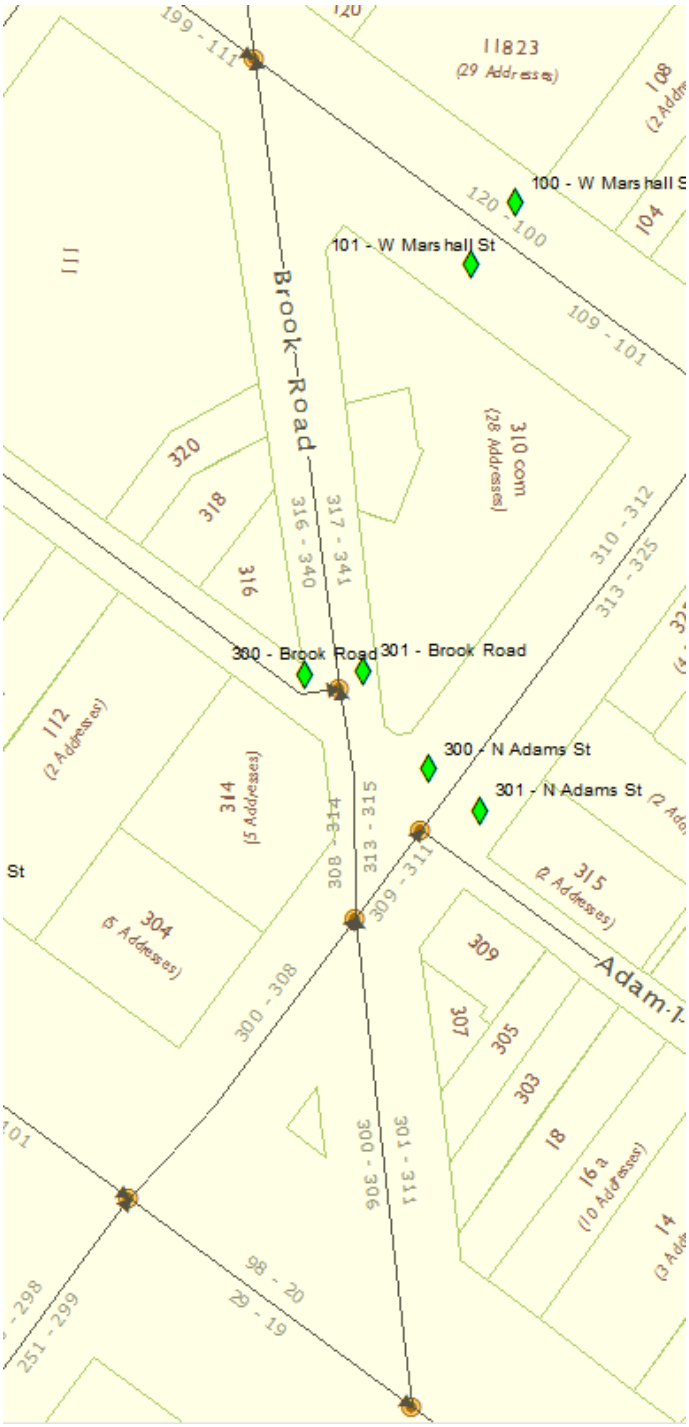
Example: the 8300 block of Cherokee Road. Block odd/even pair are located halfway between the intersection of Cherokee Road with Arrowhead Road to the west and Sherbrook Road to the east. (Note how they do not locate on the centerline that has the “0” and “1” range values.)



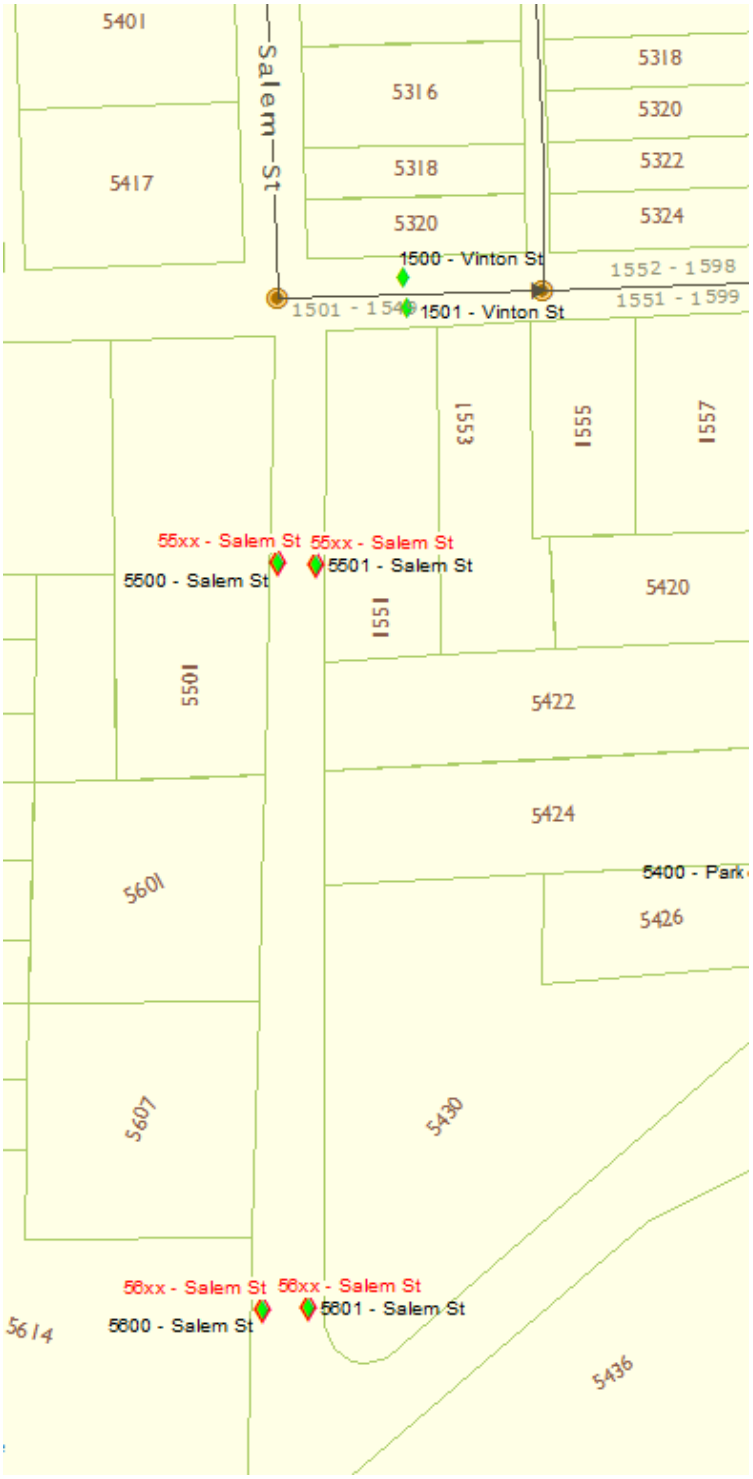
3) Hundred block address ranges can span more than one physical city block, but there **will only be one "generally" located Block features pairing used to represent the hundred block**.

Example: the 7700 block of Comanche Dr. odd/even pair are located halfway between the intersection of Comanche Dr. with Granite Hall Ave to the north and Turf Lane to the south. This block address number range spans two blocks and the mid-way point for positioning the Blocks was determined to place the block feature pair in the southern portion of the intersection area with Piney Branch Road.

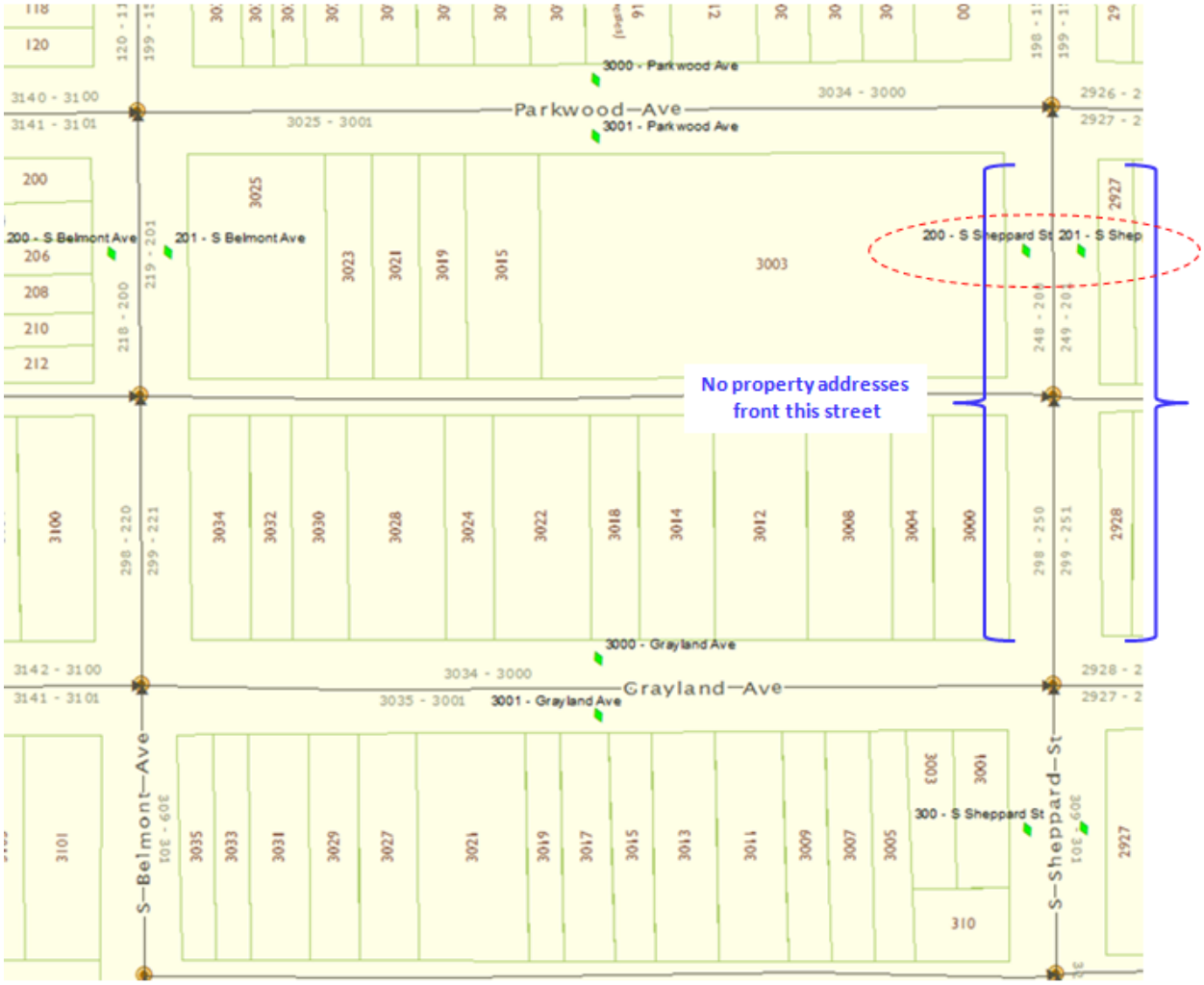
Example: the 300 address block range of Brook Road spans the 2 to 3 blocks (open to interpretation) between W. Marshall St to the north and W Broad St to the south. (Note how they do not locate on the centerline that has the “0” and “1” range values.)



4) In cases where there is not a physical street, but a '**paper street**,' (defined by right-of-way) the Block features are still positioned at a location that could be estimated as the midway point along the block. In this example, the 5500 and 5600 Block of Salem St exist as paper streets.)



5) Frequently, a block will not have any address numbers referenced to the street, so the user must **interpolate the hundred block range** by examining/comparing to the ranges found on a corresponding block (or multiple blocks away). In this example, *S Shepard St* does not have any property addressed for the “200” block. But it can be inferred as the “200” block by comparing to *S Belmont Ave*, which is one block over, and which does have building number frontage, indicating the “200” block.



6) Sometimes the physical address number postings of a block may not have a corresponding odd or even 'hundred' address number identifier for the other side of the street. In such cases, an odd or even block pairing feature should be captured.

However, it would be improper to have a paired block address point fall within the physical address range of the non-matching hundress address *HouseNumber* series. (see below image)

Example: Although there are no property/building addresses for the '1300' even side of W Leigh St, per our even/odd block pairing rule, there should still be a 1300 – W Leigh St Block point feature to represent that side of the block.

It's better to explicitly recognize that there really isn't a good place for this point by pretending to pair it up in close proximity to it's partner feature. So in rare cases like this one, the block point feature should be moved out of the non-matching physically existing block range, by moving the block point to the edge of that existing block range where the number series could theoretically increase. (in other words, do not locate the '1300' block within the '1200' physical range.)

This introduced the topic of hundred block address ranges that result in a **"distant pairing"** of odd/even block features.

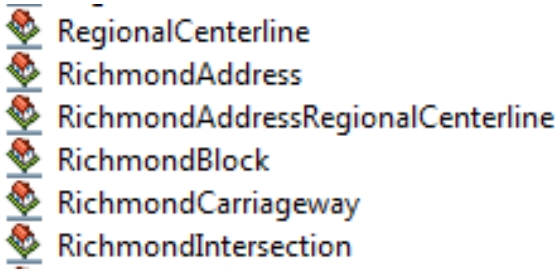
7) Non-aligned hundred block address ranges will result in a **"distant pairing"** of odd/even block features.

   Another example: The 1200 odd side block of W Leigh St extends across both the 1201 and 1301 odd block sides of W Leigh St. So the midway point for positioning '1200 W Leigh St' should locate that block point feature in the north side of the intersection with Norton St (circled in red), while the '1201' block feature is at the midway point between W Leigh St intersections with Norton St to the west and N Harrison to the east. (circled in blue)

8) **Block point off-set**. As seen in all the illustrative examples, the tran_Block features should be off-set by about 15 feet from the centerline, to be located within the right-of-way.

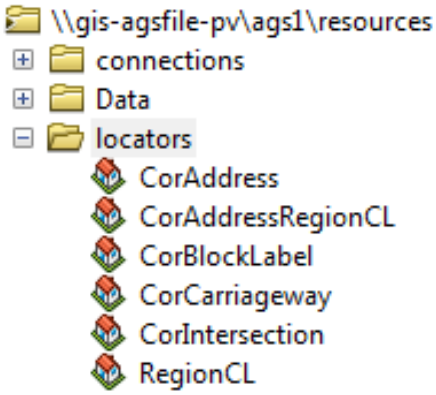
Appendix A: Geocode Services

Geocode Services available from: **arcgis on gis.richmondgov.com\Geocode**



- RegionalCenterline:
  - Refers to RegionCL locator
  - Region/MetropolitanStatisticalArea/msa_VginCenterline
- RichmondAddress:
  - Refers to CorAddress locator
  - addr_AddressReference
- RichmondBlock:
  - Refers to CorBlockLabel locator
  - tran_BlockLabel
- RichmondIntersection:
  - Refers to CorIntersection locator
  - tran_RoadView
- RichmondCarriageway:
  - Refers to CorCarriageway locator
  - tran_CarriagewayView
- RichmondAddressRegionalCenterline:
  - Refers to composite locator (CorAddressRegionCL)
  - CorAddress and RegionCL locators

File-based locators supporting these Geocode Services:



Appendix B: Geodatabases and Address Resources

Q:\Departments\PDR\AddressingManual\AddressingResources.xlsx

There are 4 geodatabases that either contain GIS address data (e.g. feature classes and tables) or are used in the processing/creation of GIS address resources (e.g. spatial views, importing)

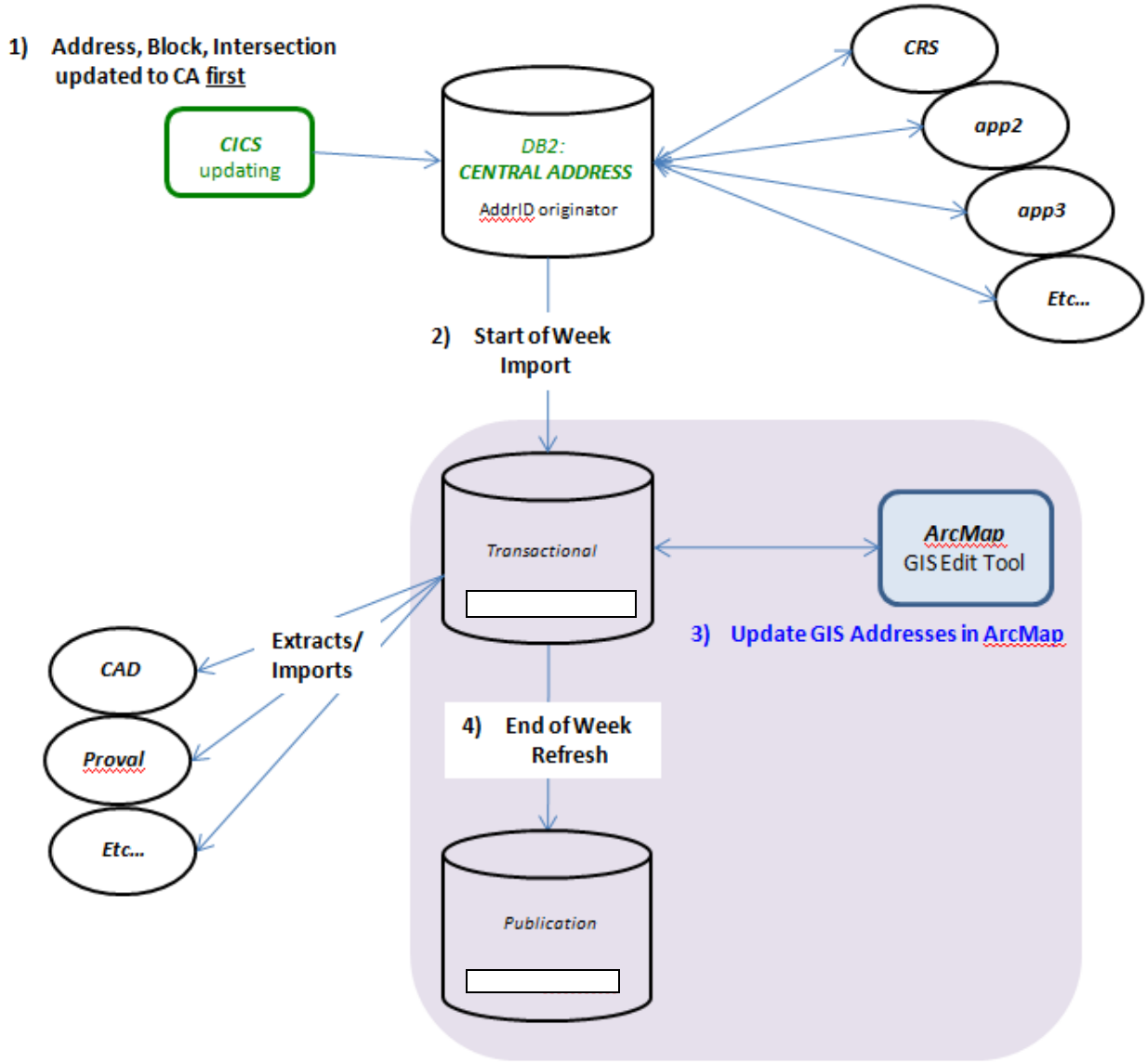
- [redacted]***Vector*** – Transactional GDB for address data maintenance
- [redacted]***GeodataSummary*** – Processing GDB to import and create new address representations.
- [redacted]***Stateplane4502*** – Publication GDB where original sources from Vector and processed data from GeodataSummary are replicated or copied to.
- [redacted]***WebEdit*** – GDB accessible by GIS API for recording/updating information for the Address Research & Reporting Application.

[redacted]\VECTOR	Created By	Used By
addr_ParcelAddress (FC)	Maintained here	Address Maintenance Tool
addr_ParcelAddressNotes (table)	Maintained here	Address Maintenance Tool
addr_Subaddress (FC)	Maintained here	Address Maintenance Tool
addr_SubaddressNotes (table)	Maintained here	Address Maintenance Tool
addr_ParcelAddressNew (FC)	Used here to support Address Creation	Address Maintenance Tool
[redacted]\GEODATASUMMARY		
addr_ParcelAddress (FC)	Copied here weekly from vector	Views and Data Models processing
addr_ParcelAddressNotes (table)	Copied here weekly from vector	Views and Data Models processing
addr_Subaddress (FC)	Copied here weekly from vector	Views and Data Models processing
addr_SubaddressNotes (table)	Copied here weekly from vector	Views and Data Models processing
addr_DataWarehouseAddress (view)	View	Data Warehouse, Proval, Mismatch Report
addr_AddressUnion (view)	View	Cityworks (to retire use by); Address Maintenance Tool/Import Routine; Start-Of-Week
addr_UnmappableAddress (table)	Maintained here	Address Maintenance Tool/Import Routine
tran_BlockLabel (FC)	Copied here weekly from vector	addr_AddressUnion
tran_IntersectionLabel (FC)	Copied here weekly from vector	addr_AddressUnion
tran_BlockLabel2 (FC)	Copied here weekly from tran_BlockLabel	Configured with support for RoadID display in RichmondBlock geocode service
addr_CDA01_Addresses (table)	Imported from CA weekly	Routine processes/compares for Address Maintenance Tool
addr_CDA04_Property (table)	Imported from CA weekly	Routine processes/compares for Address Maintenance Tool
addr_CDA05_Districts (table)	Imported from CA weekly	Routine processes/compares for Address Maintenance Tool
addr_CDA10_Units (table)	Imported from CA weekly	Routine processes/compares for Address Maintenance Tool
addr_CDA11_Index (table)	Imported from CA weekly	Routine processes/compares for Address Maintenance Tool
addr_NewAddress (table)	Maintained here	Address Maintenance Tool/CA Process Routine
addr_VacantBuilding (table)	Imported from Code Enforcement weekly	ArcGIS Desktop; CE Parcel Mapper
addr_VacantBuildingView (view)	Spatial view maintained here	For export to Stateplane4502
sum_XY (view)	SQL view (combines tran_BlockLabel, cads_GPIN)	GDB Summary Process

Stateplane4502	Created By	Used By
addr_ParcelAddress (FC)	Copied here weekly from vector	ArcGIS Services
addr_ParcelAddressNotes (table)	Copied here weekly from vector	ArcGIS Services
addr_Subaddress (FC)	Copied here weekly from vector	ArcGIS Services
addr_SubaddressNotes (table)	Copied here weekly from vector	ArcGIS Services
addr_AddressReference (FC)	Geoprocessing Model	GIS API; ArcGIS Services; Cityworks?
addr_AllAddress (FC)	Geoprocessing Model weekly	Energov
addr_AddressUnionPoint (FC)	Start-Of-Week import from SQL view	WebMercator/Base Map Server
addr_CodeInspectionTranslation (table)	Maintained here	CE Parcel Mapper processing (to retire with Energov)
addr_PendingCodeInspection (table)	Imported from CE nightly	CE Parcel Mapper processing (to retire with Energov)
addr_PendingCodeInspectionSum (table)	Imported from CE nightly	CE Parcel Mapper processing (to retire with Energov)
addr_PendingCodeInspectionSumView (FC)	Spatial view maintained here	CE Parcel Mapper (to retire with Energov)
addr_PendingCodeInspectionTranslationSum (table)	Imported from CE nightly	CE Parcel Mapper processing (to retire with Energov)
addr_PendingCodeInspectionTranslationsSumView (FC)	Spatial view maintained here	CE Parcel Mapper (to retire with Energov)
addr_PendingCodeInspectionView (FC)	Spatial view maintained here	CE Parcel Mapper (to retire with Energov)
addr_VacantBuildingView (FC)	Copied here weekly from GeodataSummar	CE Parcel Mapper; ArcGIS Desktop (need new solution w/Energov)

Appendix C: Central Address and GIS Address Maintenance Workflows

Until Central Address (DB2 – mainframe) is retired, it remains the source of addresses from which GIS must draw upon for the AddressID values. Therefore, our GIS workflows import, evaluate, and filter address records from Central Address and we have a custom ArcGIS Address editing tool that assists editors with creating addresses, blocks, and intersections from these imported sources.



The **GeodataSummary** geodatabase on [redacted] contains tables, views, and stored procedures used by an SSIS package that imports/synchronizes Central Address data into GIS.

ImportCA copies four Central Address tables to GeodataSummary with only minimal modifications required to transform column types between the two database environments. The resulting tables are:

GeodataSummary.ric.addr_CDA01_Addresses
GeodataSummary.ric.addr_CDA04_Property
GeodataSummary.ric.addr_CDA05_Districts
GeodataSummary.ric.addr_CDA10_Units

The tables above are used in conjunction with the following views during post-processing to identify “new addresses” and for later ad-hoc queries:

GeodataSummary.ric.addr_CDA01WithoutAddressUnion
GeodataSummary.ric.addr_CDA10WithoutSubaddress

Post processing stored procedures are:

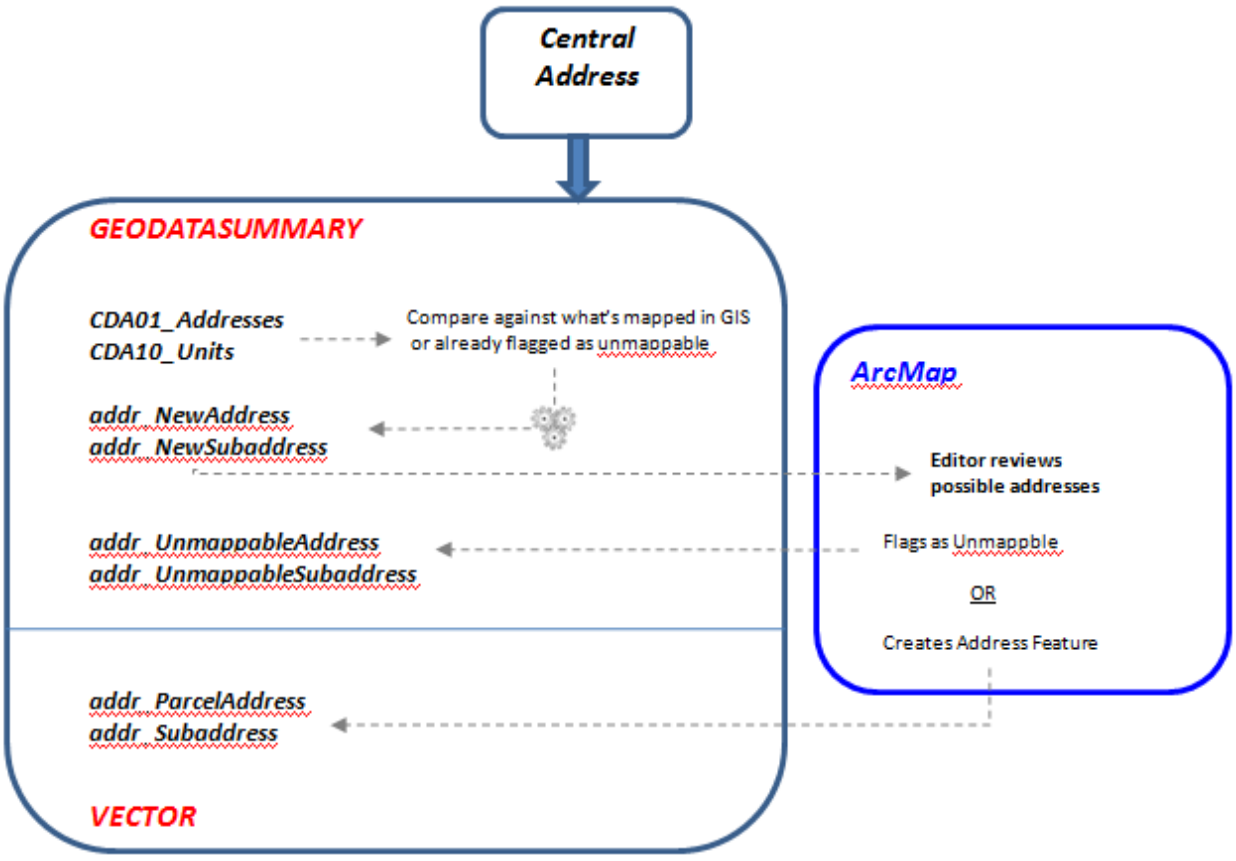
GeodataSummary.ric.ca_CreateIndices
GeodataSummary.ric.ca_CreateTempTables
GeodataSummary.ric.ca_DropTempTables
GeodataSummary.ric.ca_RebuildNewAddress
GeodataSummary.ric.ca_RebuildNewSubaddress
GeodataSummary.ric.ca_RebuildVacantBuildings

Results from executing the above procedures appear in the following tables used by the editing tools:

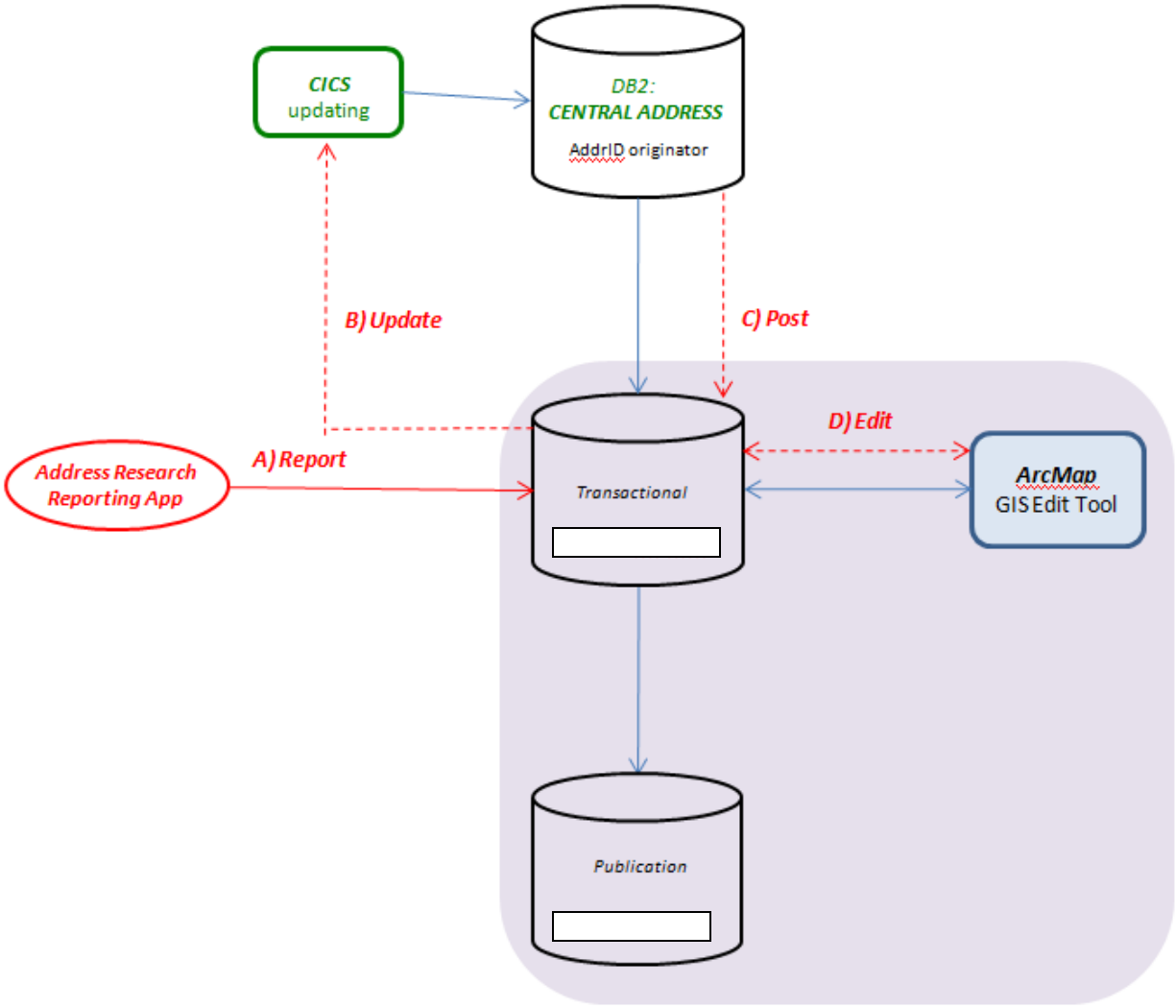
GeodataSummary.ric.addr_NewAddress
GeodataSummary.ric.addr_NewSubaddress

Selected Source Feature (Vector)	New Address Source (GeodataSummary)	Target Feature (vector)
addr_ParcelAddressNew	addr_NewAddress	addr_ParcelAddress
addr_ParcelAddress	addr_NewSubaddress	addr_Subaddress
trn_BlockLabel	addr_NewAddress	tran_BlockLabel
tran_IntersectionLabel	addr_NewAddress	tran_IntersectionLabel

Address Source Tables Supporting Maintenance Workflows



The Address Research and Reporting Application fits into the CA-GIS workflow as follows:



Appendix D: addr_DataWarehouseAddress

addr_DataWarehouseAddress is a view that is created to support ***a.*** the Informatica import job to the Data Warehouse, and ***b.*** the import of address table to Proval.

The view was designed to preserve the schema and content of ADMMGR.ADDRESSES as much as possible to prevent issues with legacy apps.

An important aspect of our new address source, is that the view will provide multiple addresses in cases where there are multiple PINs per address; something Central Address could not support.

Another distinction is that the view will provide addresses only. Blocks and intersections are not provided.

The translations are as follows.

Source	view as Field Name
ric.addr_ParcelAddress.ParcelAddressID	**CA01_ADDR_ID**
ric.addr_PinsHaveParcelAddresses.PIN	**CA01_ASRPIN**
ric.addr_ParcelAddress.BuildingNumber	**CA01_BUILDING_NUM**
ric.addr_ParcelAddress.AddressLabel	**CA01_ADDRESS**
ric.addr_ParcelAddress.BuildingNumberSuffix	**CA01_BD_NUM_SUFFIX**
ric.addr_ParcelAddress.StreetDirection	**CA01_ST_DIRECTION**
ric.addr_ParcelAddress.StreetName	**CA01_STREET_NAME**
ric.addr_ParcelAddress.StreetType	**CA01_NOMENCLATURE**
ric.addr_ParcelAddress.Zip5	**CA01_ZIP_CODE**
ric.addr_ParcelAddress.Zip4	**CA01_ZIP_PLUS**
ric.addr_ParcelAddress.ExtensionValue	**CD10_EXTENDED_NUM**
ric.addr_ParcelAddress.ExtensionType	**CD10_EXTENDED_TYPE**
ric.addr_ParcelAddress.Locality	**LOCALITY**
ric.addr_SubaddressWithParcelAddress.ParcelAddressID	**CD10_PARENT_ID**
ric.addr_ParcelAddress.StatePlaneX	**CA07_XCOORDINATE**
ric.addr_ParcelAddress.StatePlaneY	**CA07_YCOORDINATE**
ric.addr_ParcelAddress.Latitude	**CA07_LATITUDE**
ric.addr_ParcelAddress.Longitude	**CA07_LONGITUDE**
ric.addr_ParcelAddress.Status	**Status**
ric.addr_ParcelAddress.Mailable	**Mailable**
ric.addr_ParcelAddress.EditBy	**EditBy**
ric.addr_ParcelAddress.EditDate	**EditDate**

Glossary

GIS

"Geographic Information System." The ESRI (vendor) framework known as ArcGIS, within which addresses are modeled in a geodatabase, edited by GIS professional data custodians with desktop client software, and accessible to other systems via web services or database tables for Data Warehouse ETL procedures.

GIS provides the complete Addressing solution.

ProVal

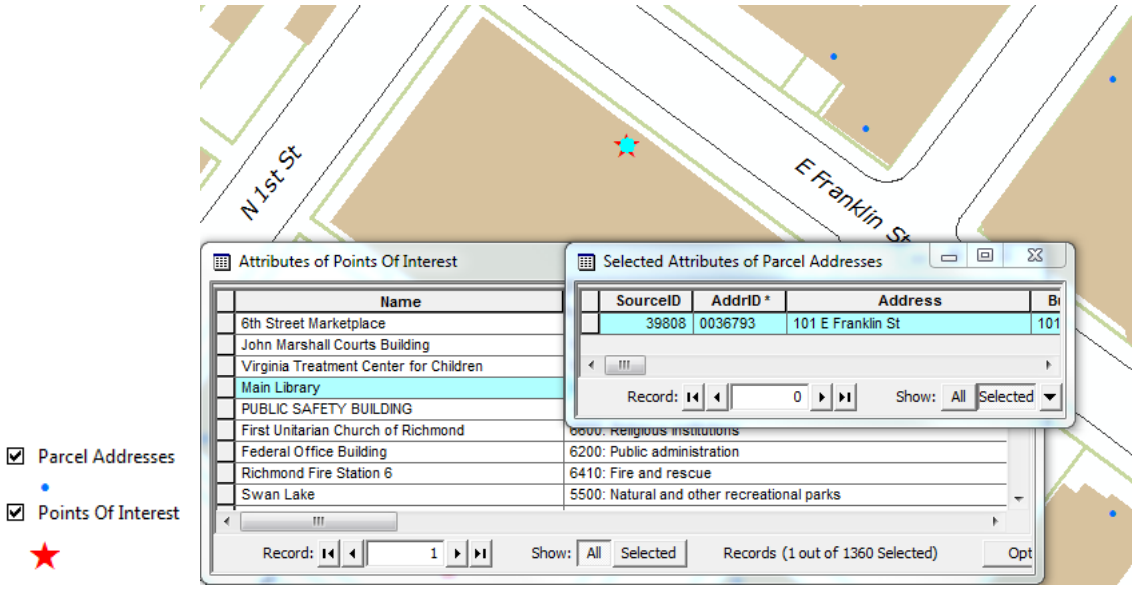
The City's CAMA system. ProVal is a third party solution used by the Office of the Assessor of Real Estate for tracking and valuating properties.
PINs are created by ProVal for identification of unique units of ownership. There can be multiple PINs in a single GIS polygon.

Landmark:

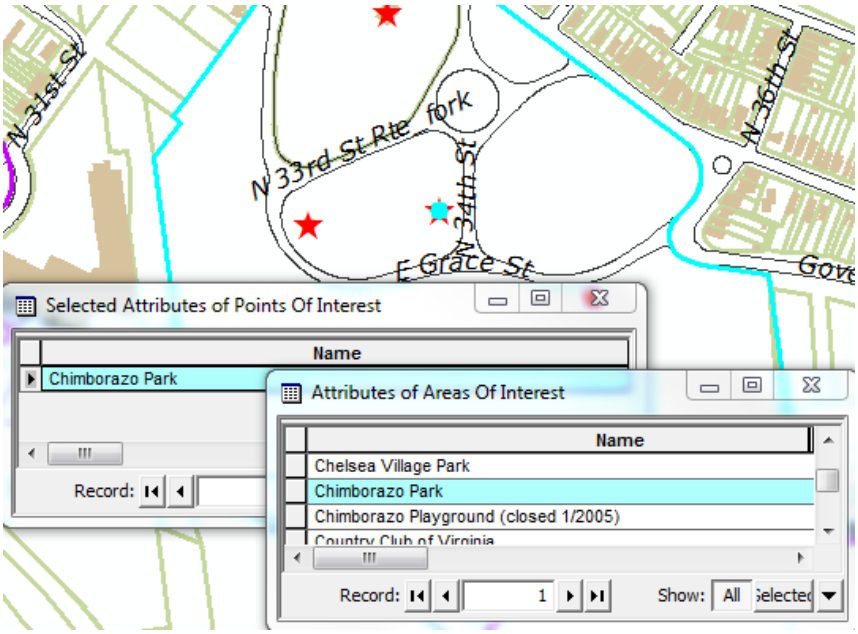
A landmark is a relatively permanent feature of the manmade landscape that has a recognizable identity within a particular cultural context; a landmark represents a community facility or cultural point of interest.

Examples include schools, fire stations, museums, sport venues, hospitals, churches, etc… Landmarks have explicit relationships with our address features.

Not all businesses will become landmarks, because that is not possible.



Landmarks are modeled as “Points of Interest” (points) (as seen above) and/or as “Areas of Interest.” (polygons) (e.g. there are two feature representations of Chimborazo Park)

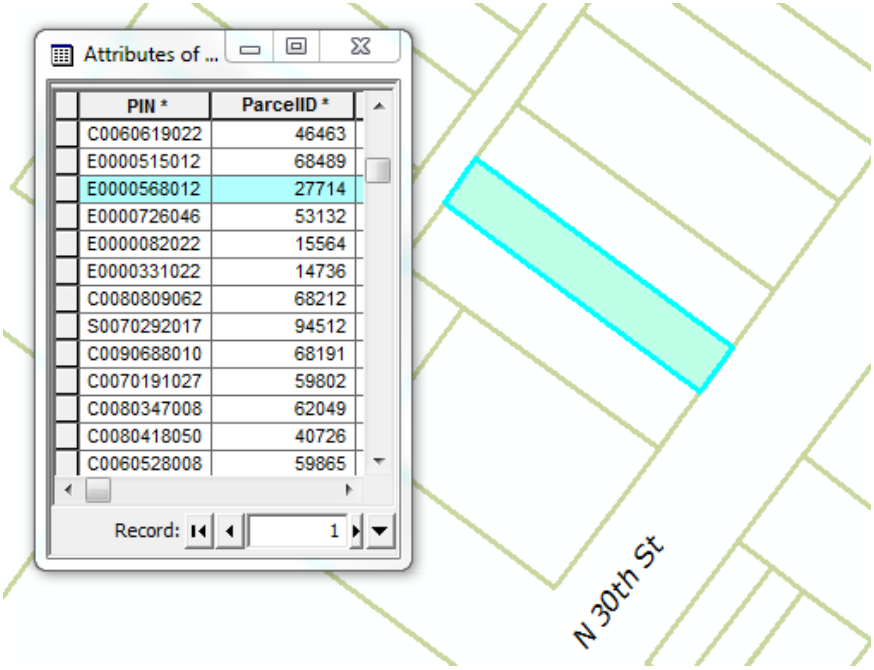


ParcelID:

The “ParcelID” is the uniqueID value assigned by the GIS to the real estate parcel features that are modeled in the GIS. ParcelIDs are auto-numbers generated by the City’s ArcGIS desktop parcel editing tools. ParcelIDs are newly created when a parcel is reconstructed during edit reconstruction; the Assessor Office will recreate parcels as part of their on-going effort to make them more accurate. **Note:** ParcelID values are therefore dynamic and their numbers will change as the parcels are edited.

PIN-ParcelID Relationship:

Parcel editing tools and procedures used by the GIS staff in the Office of the Assessor of Real Estate Office, enable Parcels to establish relations to a table of PINs (called parcel_id in the CAMA database), thereby tying property units of ownership from Proval to the GIS parcels.



PIN (Parcel Identification Number)

The PIN is an alphanumeric identifier assigned to ownership properties made by the Office of the Assessor of Real Estate in their CAMA (computer aided mass appraisal) system; ProVal. In the ProVal database tables refer to the PIN as 'parcel_id.'

Samples of PINs look like: W0190251017, N0000592008, S0002147018

The first letter indicates the general location of the property, "W" – western part of the City, "N" – northern part of the City, "S" – southern part of the City, "E" – eastern part of the City, and "C" – Chesterfield County Annexation of 1972. The first three numbers are Block Group, the next four are Block, and the last three are the individual parcel number.

"Administrative" PINs have also been created:
PIN ending in "S" (billboard)
PIN ending in "T" (cell tower)
PIN ending in "A" (non-taxable) (e.g. E0000207016A – Medical College of VA)
PIN ending in "B" (taxable) (e.g. E0000207016B – Barnes & Noble inside the Medical College of VA)
PIN starting with W9999999xxx are PSC (Public Service Corporation) parcels.
PIN starting with W9991111xxx are Area Tax only parcels.
PIN starting with "R" are City owned parcels outside of the city limits.

The W999 series and the R parcels are Unmappable PINs.

Note: so far "S" (for billboards) and "T" (for towers) PINs do not have associated addresses. But if/when that became a requirement, then the BuildingNumberSuffix would be used for the addresses, much like condos. For example, if there was a billboard on City Hall, it would probably be assigned as 900 S E Broad St, and if there were a tower there, it'd be 900 T E Broad St. (With the Cornerstone 'replacement' we may have to assign these addresses, for permitting purposes.)