

ADDRESS ELEMENT CORRECTION

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IECC

Technical Guide

January 2003

ADDRESS MANAGEMENT  
NATIONAL CUSTOMER SUPPORT CENTER  
UNITED STATES POSTAL SERVICE  
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MEMPHIS TN 38188-0001  
1-800-238-3150



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# Address Element Correction: An Address Quality Improvement Tool

## The Importance Of Accurate Addresses In Your List

Cost-effective, consistent, and timely delivery of every mailpiece depends on its address. An accurate address contains only elements that are complete and correct. When you send mailpieces with accurate addresses, you are supporting the mutual goal of the US Postal Service (USPS) and mailers to achieve the lowest combined cost for providing and receiving mail service. You also ensure that your mail is compatible with the USPS automation process and, thus, is on the fast track for delivery.

When a mailpiece is missing address elements or contains incorrect address elements, it requires additional handling, including manual processing. This can delay delivery or even make delivery impossible.

Address Element Correction (AEC) is a quality process developed by the USPS with industry support. AEC focuses on inaccurate addresses, specifically those deliverable addresses that cannot be matched to a USPS ZIP+4 code using commercially available, Coding Accuracy Support System (CASS) -certified address-matching software. If an address is missing an element, CASS-certified address-matching software may lack sufficient information to determine the correct or most accurate

**Recent surveys indicate that over 23% of all mailpieces contain deficient address elements that could cause them to be delayed or undelivered.**

match to ZIP+4 Product and, therefore, may not provide a ZIP+4 code. After an address goes through this process and is not resolved, it becomes a candidate for AEC.

By correcting or providing missing elements, AEC turns problem addresses into accurate addresses or identifies them as potentially undeliverable. The result is a complete and standardized address that can be matched to a 5-digit ZIP Code and ZIP+4 code. This greatly improves your efforts to have the mail reach your customers in a timely and consistent manner by allowing the corrected addresses to take full advantage of USPS automation.

## AEC Overview

First, AEC separates each line of the address block into logical elements. Then, it determines if there is a complete address on a line or if the address is split between lines then processes the lines accordingly. Next, AEC determines whether the city, state, and 5-digit ZIP Code are valid and corrects them if they are not. It then uses

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specialized, USPS-controlled address element programs to perform a series of evaluations and comparisons. Unambiguous addresses are supplied with missing or corrected address elements, and these addresses are standardized and ZIP+4 coded, resulting in USPS automation-compatible records.

For each address processed, the customer receives a two-part record containing the following elements:

## **Part One: Bytes 1—450**

### **Resolved Addresses:**

1. The standardized address.
2. An element resolution flag that identifies the address resolved and indicates whether it resolved to a specific or default address.
3. The urbanization name for Puerto Rican addresses (if present in ZIP+4 Product).
4. Nine-digit ZIP Code.
5. Delivery point code and check digit.
6. Carrier route ID.
7. The standardized address parsed (separated) into identified components (i.e., pre-directional, street name, suffix, post-directional, secondary unit designator, and secondary number).
8. A code that describes specifically what was changed in the address to match ZIP+4 Product.

### **Unresolved Addresses:**

1. The original address parsed into logical components.
2. A code for each component specifying what it was interpreted as (e.g., primary number, street name, suffix, etc.) and whether it matched anything in ZIP+4 Product. An attempt is made to match each component of the address individually to a special ZIP+4 Product that has been parsed into logical components.
3. A code that gives an opinion (based on the codes described in number two) as to why the address could not be matched to ZIP+4 Product.

## **Part Two: Bytes 451—900**

The original address, unchanged.

## **AEC vs. CASS**

What does AEC do for addresses that commercially-available Coding Accuracy Support System (CASS) -certified software doesn't do?

- Expands certain initials to the full spelling of the words and standard and non-standard abbreviations to their full spelling
- Contracts a full spelling to abbreviations or initials (if necessary)
- Corrects misspellings, fractional primary number variations (e.g., 123 1/2 becomes 123 1/2), and road designator spellings (e.g., HGY becomes HIGHWAY)

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- Connects two components to form one or separates one component into two (when necessary)
  - Converts digits to alphabetic characters (e.g., 21 becomes twenty-one) or vice versa (e.g., twenty-one becomes 21), addresses to locatable addresses (e.g., Locatable Address Conversion (LACS), and state names to abbreviations or names (e.g., VA becomes Virginia or Virginia becomes VA)
  - Standardizes school and firm name component spellings and overseas military addresses
  - Compresses or expands coordinate-type addresses (e.g., W 300 S 125 to W300S125)
  - Determines and codes unique ZIP Codes
  - Provides the correct city/state name when the names given do not match the ZIP Code or provides the correct ZIP Code when the one given does not match the city/state name
  - Properly processes comma- and period-delimited data within fields

AEC programs use the Zip+4 Product and the Delivery Point Validation (DPV) which are updated weekly to resolve addresses by following the following steps:

**Computer Logic Resolution** is a computer-based program that uses a variety of USPS programs and products to perform a series of evaluations and comparisons in an attempt to correct insufficient addresses. When address analysis yields an unambiguous address, the missing elements are provided and/or the incorrect address elements are corrected. The address is then standardized and ZIP+4 coded. Those addresses that cannot be resolved are flagged as potentially undeliverable.

Focuses on the following addressing issues:

- Incomplete address
- Incorrect street name
- Missing or incorrect directional
- Missing or incorrect suffix
- Incorrect city name
- Incomplete building name
- Rural conversion to city

AEC *does not* (at this time):

- Process foreign addresses
- Produce missing Secondary information
- Handle driving directions (i.e. 5 miles south of mile marker 11)

## The Application Process

1. Submit only original, non-foreign, deliverable addresses that could not be matched to a USPS ZIP+4 code using commercially-available CASS-certified address-matching software.
2. Restrictions: Do not submit packed or software-compressed data or records with comma-delimited fields. AEC can process comma- and period-delimited data within fields but cannot process records with delimited fields.

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3. Submit payment and a completed application to the NCSC. No files will be processed until a completed AEC Application, AEC Input Layout form and payment are received by the NCSC.
  4. Submit addresses on CD-ROM, cartridge, or via electronic transmission.

**Note:** *You must use the USPS to ship the container. We reserve the right to accept or reject shipments by any carrier other than the USPS.*

For further information or questions, call AEC at 1-800-238-3150.

## **For Files Transmitted Electronically**

AEC files may be transmitted to the NCSC electronically. Files submitted electronically are treated the same as any file submitted to AEC. Electronic transmission generally allows faster processing since it eliminates the mail-in process.

A completed AEC application and payment in the form of a credit card or CAPS account number must be faxed to **901-681-4409** before the electronic file can be processed.

### **File Requirements for Electronic Transmission**

Records within electronically submitted file(s) must be separated by carriage return/line feed, and the file name must be written on your AEC application. The file can not be a dbase, an Access or an Excel file. **The file must be a flat non-indexed file.** The file's name must 1) begin with the three characters assigned by AEC following initial AEC registration for the service, 2) be followed by four characters of your choice, and 3) end with the extension .TXT. For example, if your three characters are YYY, then YYY0925.TXT would be a valid file name.

Files must be compressed with the PKZip compression utility and must include the .ZIP file extension. The first seven characters of the Zip file name must be the same as the first seven characters of the text file name, e.g., if your text file name is YYY0925.TXT, the Zip file name must be YYY0925.ZIP. When we post your processed file, the file name will be the same as the Zip file name with the addition of an "R" before the extension, e.g., YYY0925R.ZIP.

### **Electronic Transmission Procedures**

If you do not already have an account with us, please call the AEC Department at 1-800-238-3150 to set up a user ID and password to access [www.ribbs.usps.gov](http://www.ribbs.usps.gov).

1. **UPLOAD - Web Instructions**
  - a. Access **[<https://ribbs.usps.gov/files/aec/customers/\(your user ID\)>](https://ribbs.usps.gov/files/aec/customers/(your user ID))** <enter>
  - b. Enter your user name <tab>
  - c. Enter your password <enter>
  - d. Select **upload.cfm**
  - e. Enter the path and filename or click **browse** to find the correct file, select the file, click **open**, then click **upload**.

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## 2. DOWNLOAD - Web Instructions

- a. Access [\*\*https://.ribbs.usps.gov/files/aec/customers/\(your user ID\)\*\*](https://.ribbs.usps.gov/files/aec/customers/(your user ID)) <enter>
- b. Enter you user name <tab>
- c. Enter you password <enter>
- d. Select the file to be downloaded
- e. Select **save file**
- f. Select the directory to download to

### For Cartridge

Submit addresses written in ASCII or EBCDIC on high-/low-density cartridge. Files can contain up to three million addresses, and there is no limit to the number of files you can send. Each cartridge can contain only one file and no continuation records from another tape or cartridge. **Please do not send more than one file per cartridge.**

Do not submit a file having a block size that is not a multiple of its record size.

### For CD

Submit addresses written in ASCII text form (fixed length, non comma-delimited).

### For Diskettes

The NCSC no longer produces files on diskette. Customers may submit files on diskette but must choose either FTP or CD-ROM as the form of media for the return of their AEC files.

The AEC program will discontinue acceptance of files on diskette effective March 1, 2000. All files received after February 28, 2003 must be submitted on CD-ROM, cartridge, or via FTP.

Submit a maximum of 15,000 addresses per file on DOS-compatible 3.5" ASCII high-density diskettes. Include a carriage return/line feed at the end of each record. There is no limit to the number of files you can send; however, **please do not send more than one file per diskette.**

#### **Diskette customers must adhere to the following guidelines:**

- a. The file must be a fixed-length FLAT (non-indexed) file.
- b. The file cannot be a dBase file or a backup of a dBase file.
- c. The file must not be compressed.
- d. The diskette must not contain any executable programs.
- e. The file must not contain comma-delimited fields.
- f. There must be a carriage return AND line feed after each record.
- g. You may put as many records as possible on each diskette.

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- h. Each diskette must be labeled.
  - i. One application and one check are all that are needed for multiple diskette shipments. Call your software company if you have concerns about producing diskettes and/or integrating AEC-standardized records into your database.
1. Allow up to seven business days for processing. You will be notified if the NCSC is experiencing a backlog of orders that might delay the processing of your address list.
  2. Make all payments to the United States Postal Service by check, CAPS, money order, or credit card. Each batch submitted requires a separate application and fee. Please note on the check the purpose is for AEC Processing.

## **Items Received Following AEC Processing**

After processing your addresses through AEC, the USPS's National Customer Support Center will return the following:

1. The original address file in the same medium that you provided.  
*Note: We do not return cartridges unless otherwise instructed.*
2. A summary data report that lists the number of addresses processed and elements corrected.
3. A diagnostic report that lists information about the content of your original mailing file.



**Table 1: File Format for Returned Records**

| <b>Field Contents</b>  | <b>Beginning Byte</b> | <b>Length</b> |
|--|-----------------------|---------------|
| AEC-Assigned Customer Number                                 | 01                    | 05            |
| AEC-Assigned Sequence Number                                 | 06                    | 07            |
| Resolution Flag  | 13                    | 01            |
| Standardized Firm Name                                       | 14                    | 40            |
| Standardized Delivery Address                                | 54                    | 50            |
| Standardized City  | 104                   | 28            |
| Standardized State   | 132                   | 02            |
| 9-digit ZIP Code   | 134                   | 09            |
| Delivery Point Code  | 143                   | 02            |
| Check Digit for 9-digit + DPC                                | 145                   | 01            |
| Carrier Route ID   | 146                   | 04            |
| Lookup Type Code   | 150                   | 01            |
| Puerto Rican Urbanization Name                               | 151                   | 28            |
| Filler   | 179                   | 14            |
| Standardized Address DPV Confirm                             | 193                   | 02            |
| Filler   | 195                   | 142           |
| PARSED STANDARDIZED ADDRESS <i>IF RESOLVED</i> : 108 Bytes   |                       |               |
| Primary Number   | 337                   | 10            |
| Pre-Directional  | 347                   | 02            |
| Street Name  | 349                   | 28            |
| Suffix   | 377                   | 04            |
| Post-Directional   | 381                   | 02            |
| Secondary Designator   | 383                   | 04            |
| Secondary Number   | 387                   | 08            |
| Filler   | 395                   | 50            |
| PARSED ORIGINAL ADDRESS IF UNRESOLVED: Same 108 Bytes Reused |                       |               |
| Unresolved Component 1                                       | 337                   | 10            |
| Unresolved Code 1  | 347                   | 01            |
| Unresolved Component 2                                       | 348                   | 10            |
| Unresolved Code 2  | 358                   | 01            |
| Unresolved Component 3                                       | 359                   | 10            |
| Unresolved Code 3  | 369                   | 01            |
| Unresolved Component 4                                       | 370                   | 10            |
| Unresolved Code 4  | 380                   | 01            |
| Unresolved Component 5                                       | 381                   | 10            |
| Unresolved Code 5  | 391                   | 01            |
| Unresolved Component 6                                       | 392                   | 10            |
| Unresolved Code 6  | 402                   | 01            |
| Unresolved Component 7                                       | 403                   | 10            |
| Unresolved Code 7  | 413                   | 01            |
| Unresolved Component 8                                       | 414                   | 10            |
| Unresolved Code 8  | 424                   | 01            |

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(Continued)

| Field Contents                     | Beginning Byte | Length |
|------------------------------------|----------------|--------|
| Unresolved Component 9             | 425            | 10     |
| Unresolved Code 9                  | 435            | 01     |
| Unresolved City Flag               | 436            | 01     |
| Unresolved State Flag              | 437            | 01     |
| Unresolved ZIP5 Flag               | 438            | 01     |
| Unresolved Opinion Code            | 439            | 02     |
| Filler                             | 440            | 04     |
| How the Address Was Resolved Flag  | 445            | 02     |
| Other Descriptive Flag             | 447            | 02     |
| Filler                             | 449            | 02     |
| Customer Original Data (Unaltered) | 451            | 450    |

## Limitation of Liability

The Postal Service makes no warranty or representation, express or implied, with respect to the returned AEC file, nor will the Postal Service be liable for direct, indirect, special, incidental, consequential, or other similar damages arising out of use or inability to use the AEC return media, even if advised of the possibility of such damages.

## Each Record is Returned in Two Parts

1. If resolved, you will receive the standardized delivery address and other data; otherwise, it will be blank.
2. Delivery addresses returned are parsed into individual address elements; however, addresses with military, unique, or general delivery ZIP Codes will not be parsed because AEC does not produce or return standardized addresses for addresses having these types of ZIP Codes. For rural routes, the term "RR #" will appear in the Street Name field, the word "Box" will appear in the Suffix field, and the box number will appear in the Primary Name field. For PO box addresses, the words "PO Box" will appear in the Street Name field, and the box number will be listed in the Primary Number field. Elements for all other addresses will be entered into the field reflected in Table 1 on page 8.
3. You will receive your original, unaltered record.

*Note: All returned files will be compressed.*

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**Table 2: Diagnostic Return Codes**

| <b>Code</b> | <b>Resolved Addresses<br/>ZIP+4 Record Type</b> |
|-------------|---|
| F           | Firm  |
| G           | General Delivery                                |
| H           | Highrise  |
| >           | Highrise Default                                |
| M           | Military  |
| P           | PO Box  |
| R           | Rural/Highway Contract Route                    |
| S           | Street  |
| U           | Unique  |
| L           | LACS  |
| <           | Rural Route/Highway Contract<br>Default         |

| <b>Code</b> | <b>DPV Confirmation</b>   |
|-------------|---------------------------|
| SS          | Exact Match               |
| P1          | Secondary Address Invalid |
| P2          | Secondary Address Missing |

# Address Element Correction Application

## Customer Information

Your Address (Please print or type)

Contact Name

Company

Address

Ste

City

ST

ZIP+4

( )

( )

Phone

Ext.

Fax

Email Address

Shipping Address (If different)

Contact Name

Company

Address

Ste

City

ST

ZIP+4

( )

Phone

Ext.

### AEC Pricing

No. of Records

x \$0.015/record  
\$15.00 minimum

Purchase Amt.

### USPS Use Only

No. Verified

Amt. Verified

**Method of Payment:**  Check  Money Order  Credit Card  CAPS

Make check or money order payable to **United States Postal Service**. Note the purpose on the check is for AEC Processing.

**CAPS Number** \_\_\_\_\_

### Credit Card Information

MasterCard

Visa

American Express

Discover

Diner's Club

Contact Name

Card Number

Company

Expiration Date

Address

Ste

Signature

City

ST

ZIP+4

( )

Phone

Ext

The signature above accepts total responsibility governing the use of this card and agrees to comply with the terms of the issuer.

### CASS Certification Information

Only addresses that have been processed through CASS-certified, address-matching software that could not be ZIP+4 coded are eligible for AEC.

**Note:** All address lists submitted for AEC processing are considered confidential between the United States Postal Service and the list owner.

# AEC INPUT LAYOUT

(Please read and answer all questions carefully.)

| Input Media/Information   | File Information  |
|---|---|
| <p><u>Media</u></p> <ul style="list-style-type: none"> <li><input type="radio"/> IBM 3480</li> <li><input type="radio"/> IBM 3490/3490E</li> <li><input type="radio"/> Electronic Transmission</li> <li><input type="radio"/> CD-Rom</li> </ul> | <p><u>Character Set</u></p> <ul style="list-style-type: none"> <li><input type="radio"/> EBCDIC</li> <li><input type="radio"/> ASCII</li> </ul> <p>1. Number of records: _____<br/>Electronic File —max.: 500,000</p> <p>2. Record length: _____<br/>Characters per record—max.: 450</p> <p>3. NCSC Electronic File Name: _____</p> |

For best results, the following data must be located in the specified positions in every record. When answering questions regarding position, the first byte in a record is always position 1. Also, keep in mind:

- AEC cannot process packed data or foreign addresses.
- A separate application and fee are required for each tape/file submitted.
- For CDs and electronic files, AEC provides a carriage return and line feed after each record.
- Submit only records with fixed-length fields. Do not submit records with comma-delimited fields.

|  |                |              |
|--|----------------|--------------|
| 1. Does file contain Personal Name field(s)?<br>If yes, location(s) of Personal Name field:      | Position _____ | Length _____ |
| 2. Company Name field(s)?<br>If yes, location(s) of Company Name field:                          | Position _____ | Length _____ |
| 3. Location of Delivery Address field:   | Position _____ | Length _____ |
| 4. Does file contain Secondary Address field?<br>If yes, location of Secondary Address field:    | Position _____ | Length _____ |
| 5. Location of City field:<br>(This field may also contain the state or the state and ZIP Code.) | Position _____ | Length _____ |
| 6. Location of State field:  | Position _____ | Length _____ |
| 7. Location of ZIP Code/ZIP+4 Code field: (up to 10 char.)                                       | Position _____ | Length _____ |

**Submit your AEC Application form, the AEC Input Layout form, your file, and payment to:**

Via USPS Mail:                   ACCOUNTS RECEIVABLE DEPARTMENT  
   NATIONAL CUSTOMER SUPPORT CENTER  
   UNITED STATES POSTAL SERVICE  
   6060 PRIMACY PKWY STE 201  
   MEMPHIS TN 38188-0001

Via Fax:                             ATTN: ACCOUNTS RECEIVABLE DEPARTMENT  
   901-681-4409

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## Appendix A: Resolved Addresses: Elements Returned

In AEC, when an address is resolved, the following is returned:

1. Standardized delivery address line (byte 54 for 50 bytes)
2. Standardized city spelling (byte 104 for 28 bytes)
3. Two-character state abbreviation (byte 132 for two bytes)
4. Standardized firm name if the match is made using the firm name in the address (byte 14 for 40 bytes)
5. Nine-digit ZIP Code (byte 134 for nine bytes)
6. Delivery point code (byte 143 for two bytes)
7. Check digit for the 9-digit ZIP Code plus the delivery point code (byte 145 for one byte)
8. Carrier route ID (byte 146 for four bytes)
9. Urbanization name if the address is Puerto Rican and ZIP+4 Product contains an urbanization name (byte 151 for 28 bytes)
10. A resolution flag containing either “Y,” indicating that the address resolved to a specific point, or “1,” indicating that it resolved to the default highrise or rural route address (byte 13 for one byte)
11. The standardized delivery address parsed into its specific components, i.e., pre-directional, street name, suffix, post-directional, secondary unit designator, and secondary number, if present (byte 337 for 108 bytes)
12. A flag that describes which specific elements were changed in the input delivery address to make a match to ZIP+4 Product (byte 445 for two bytes)

When an address cannot be resolved, it is parsed and returned in a nine-item table.

Each item contains the following:

- The first ten characters of the component. If the component is longer than ten characters, the rightmost characters are lost (byte 337 for 108 bytes)
- A code identifying what the component was interpreted as and whether or not it matched ZIP+4 Product (byte 337 for 108 bytes; see Table 1)
- A code that offers an opinion as to why the address could not be matched to ZIP+4 Product is also returned (byte 439 for two bytes).

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## Appendix B: Unresolved Return Codes

The following unresolved return codes represent a fairly accurate analysis of the individual address elements. The codes are in the following positions:

- #1 - Byte 347 for one byte
- #2 - Byte 358 for one byte
- #3 - Byte 369 for one byte
- #4 - Byte 380 for one byte
- #5 - Byte 391 for one byte
- #6 - Byte 402 for one byte
- #7 - Byte 413 for one byte
- #8 - Byte 424 for one byte
- #9 - Byte 435 for one byte

| Code | Description  |
|------|--|
| A    | <p>This component, which was interpreted as part of the street name, matched one of the following in ZIP+4 Product:</p> <ol style="list-style-type: none"><li>1. Exact match to a street name component.</li><li>2. Abbreviation match type 1 (e.g., JACK to JACKSON)</li><li>3. Abbreviation match type 2 (e.g., LNCLN to LINCOLN)</li><li>4. Spelling correction (e.g., CARLINGTON to ARLINGTON)</li><li>5. Matched to two words (e.g., KNOLLCREST to KNOLL CREST)</li><li>6. This component plus the adjacent component matched to one component in ZIP+4 Product (e.g., KNOLL CREST to KNOLLCREST)</li><li>7. Matched to a suffix in ZIP+4 Product (e.g., SQUARE to SQ)</li><li>8. Matched to a directional in ZIP+4 Product (e.g., SOUTHWEST to SW)</li></ol> |
| B    | <p>This component, interpreted as a pre-directional, matched to one of the following in ZIP+4 Product (there must also be a street name match):</p> <ol style="list-style-type: none"><li>1. Pre-directional to pre-directional (e.g., N MAIN ST to N MAIN ST)</li><li>2. Pre-directional to post-directional (e.g., N MAIN ST to MAIN ST N)</li><li>3. Pre-directional to street name (e.g., NORTH HAMPTON ST TO NORTHHAMPTON ST or N HAMPTON ST to NORTHHAMPTON ST)</li></ol>  |
| C    | <p>This component, interpreted as a post-directional, matched to one of the following in ZIP+4 Product (there must also be a street name match):</p> <ol style="list-style-type: none"><li>1. Post-directional to post-directional (e.g., MAIN ST N to MAIN ST N)</li><li>2. Post-directional to pre-directional (e.g., MAIN ST N to N MAIN ST)</li><li>3. Post-directional to street name (e.g., BAY NORTH to BAYNORTH or BAY N to BAYNORTH)</li></ol>  |

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- D This component, interpreted as a suffix, matched to one of the following in ZIP+4 Product (there must also be a street name match):
1. Suffix to suffix (e.g., MAIN ST to MAIN ST)
  2. Suffix to street name (e.g., HERO BLVD to HERO BOULEVARD)
- E This component, interpreted as a road number, matched to a road number in ZIP+4 Product (e.g., 123 RT 75 to 123 US HIGHWAY 75)
- F This component was interpreted as a part of a PO box address.
- 1 This component was interpreted as the PO box number in a PO box address.
- G This component was interpreted as the box number in a highway contract (HC), rural route (RR), or military address.
- H This component was interpreted as the box element of an HC, RR, or military address.
- I This component was interpreted as the HC, RR, PSC, CMR, or unit element of an HC, RR, or military address.
- J This component was interpreted as the route number in an HC, RR, or military address.
- K This component immediately follows what was interpreted as the primary number and contains digits. Possible fragmented primary number or misplaced secondary number.
- L This component, which was interpreted as part of the street name, did not match any component in any ZIP+4 record to which a match was attempted.
- M This component, which was interpreted as a suffix, did not match any component of any ZIP+4 record to which a match was attempted.
- N This component, which was interpreted as a pre-directional, did not match any component of any ZIP+4 record to which a match was attempted.
- O This component, which was interpreted as a post-directional, did not match any component of any ZIP+4 record to which a match was attempted.
- P This component, which was interpreted as a road designator, did not match any component of any ZIP+4 record to which a match was attempted.
- Q This component, which was interpreted as a secondary designator, did not match any component of any ZIP+4 record to which a match was attempted.
- R This component, which was interpreted as a secondary number, did not match any component of any ZIP+4 record to which a match was attempted.
- S This component, which was interpreted as the primary number, did not match any range of numbers in any ZIP+4 record to which a match was attempted.
- T This component, which was interpreted as a PO box number, did not match any PO box number range in any ZIP+4 record to which a match was attempted.
- U This component, which was interpreted as a road number, did not match any component of any ZIP+4 record to which a match was attempted.

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- V This component, which was interpreted as a Puerto Rican urbanization code, did not match any urbanization code of any ZIP+4 record to which a match was attempted.
  - W This component was interpreted as part of a firm name.
  - X This component was interpreted as part of a school name.
  - Y This component was interpreted as part of a building name.
  - Z This component could not be defined.

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## Appendix C: Opinion Codes

These codes offer the most accurate indication as to why the address did not match ZIP+4 Product (byte 439 for two bytes).

| <b>Code</b> | <b>Description</b>   |
|-------------|--|
| PA          | The post office matching the 5-digit ZIP Code only has PO box and general delivery.  |
| PB          | Matching the address to ZIP+4 Product produced a multiple response that could not be resolved.   |
| PC          | The address matched to ZIP+4 Product but appears in more than one urbanization code. We could not determine the correct address based on the address given.                    |
| PD          | The address matched to ZIP+4 Product but is a non-delivery point. The 4-digit add-on returned contains "ND."   |
| PE          | Some parts of the address matched some parts of one or more addresses in ZIP+4 Product but none of the ZIP+4 addresses coded using what was interpreted as the primary number. |
| PF          | No element of the street name matched any street name in ZIP+4 Product.  |
| PG          | All components of the input address matched exact components in ZIP+4 Product except what was interpreted as the primary number.   |
| PH          | The PO box address given does not match any in ZIP+4 Product.  |
| PI          | The rural route or military address given does not match any in ZIP+4 Product.   |
| PJ          | The address contains no digits.  |
| PK          | The city/state/ZIP Code was invalid.   |
| PL          | No opinion could be formed from the data in the address.   |

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## Appendix D: How Codes

These codes provide a fairly accurate description of what was done to the address to enable a match to ZIP+4 Product. The address is parsed into individual components before a match to ZIP+4 Product is attempted, and identification of the individual components is attempted. The address is then submitted unaltered to the USPS Coding Accuracy Support System (CASS) -certified address-matching engine. If it does not match, the following action codes produce a match to ZIP+4 Product (byte 445 for two bytes).

| <b>CODE</b> | <b>DESCRIPTION</b>  |
|-------------|---|
| A           | No changes were made to the address to produce a match to ZIP+4 Product, because our files were more current than those of the CASS-certified address-matching engine through which you passed the addresses before sending them to AEC, or a problem exists with the CASS-certified address-matching engine through which the addresses were passed. |
| D           | Compressed dash (–) from a Puerto Rican primary number.   |
| E           | Inserted dash (–) in a Puerto Rican primary number.   |
| F           | Fabricated the primary number in a Puerto Rican address from fragments found.   |
| H           | Added secondary designator and secondary number from an address line other than the delivery address line.  |
| I           | Removed dash (–) from a Puerto Rican PO box or rural route address.   |
| J           | Removed undefined data to the left of the Puerto Rican address.   |
| K           | Compressed a coordinate-type address (W 300 S 125 to W300S125).   |
| L           | Reversed a coordinate-type address (W300S125 to S125W300).  |
| M           | Expanded a coordinate-type address (W300S125 to W 300 S 125).   |
| N           | Converted an Illinois-type address (0W125 to 0W125).  |
| O           | Converted an abbreviation to a full spelling.   |
| P           | Joined secondary address to delivery address to form the address matched to ZIP+4 Product.  |
| Q           | Joined delivery address to secondary address to form the address matched to ZIP+4 Product.  |
| R           | Converted alphabetic to numeric look-alikes in the primary number (e.g., b to 8, o to zero, etc.)   |
| S           | Combined adjacent numbers to form the primary number.   |
| T           | Removed “#” symbol attached to the left of primary number.  |

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- U      Converted primary number fractions (e.g., 12312 to 123 1/2, 1231 2 to 123 1/2, 123 12 to 123 1/2).
  - V      Moved secondary number to the right of address (e.g., 123 45 MAIN ST to 123 MAIN ST # 45).
  - W      Converted joined alpha/numeric to numeric/alpha (e.g., M123 to 123M).
  - X      Removed ordinal abbreviation (i.e., “st” “nd” “rd” “th”) from primary number (e.g., 123<sup>rd</sup> MAIN ST to 123 MAIN ST).
  - Y      Separated possible secondary number from primary number (e.g., 1234 to 123 4).
  - Z      Separated primary number and street name (e.g., 123MAIN to 123 MAIN).
  - 0      Converted numbers separated by a dash (–) (e.g., 123-456 to 123 456).
  - 1      Combined primary number and adjacent single alpha character (e.g., 123 A to 123A).
  - 2      Separated pre-directional from street name (e.g., SMAIN to S MAIN).
  - 3      Rearranged misplaced components (e.g., MAIN 123 ST to 123 MAIN ST).
  - 4      Separated numeric street name from primary number (e.g., 123-7 MILE RD to 123 7 MILE RD).
  - 5      Connected single alpha character immediately preceding what was interpreted as the street name (e.g., A SPEN to ASPEN).
  - 6      Separated single alpha character from what was interpreted as the street name (e.g., JMAIN to J MAIN).
  - 7      Connected apparent primary number and the single number immediately to its right (e.g., 123 4 to 1234).
  - 8      Separated and attached to the primary number a single number from the apparent street name (e.g., 123 4MAIN to 1234 MAIN).
  - 9      Combined possible secondary number with apparent primary number to form the primary number (e.g., 123 MAIN ST 45 to 45-123 MAIN ST).
  - !      Combined possible primary number with apparent secondary number to form the primary number (e.g., 123 MAIN ST 45 to 123-45 MAIN ST).
  - @      Separated pre-directional “S” from the primary number (e.g., 123S to 123 S) or separated “5” from the primary number and convert it to its alpha look alike “S” (e.g., 1235 to 123 S).
  - #      Reversed the apparent primary and secondary numbers (e.g., 123 MAIN ST 45 to 45 MAIN ST 123).
  - \$      Separated the possible secondary number from the address and moved it to the right of the address (e.g., 123A MAIN ST to 123 MAIN ST A).
  - %      Removed alpha character from the right of the primary address (e.g., 123A MAIN ST to 123 MAIN ST).

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- &       Converted alpha/numeric look-alikes in the primary number (e.g., IZSGB to 12568).
  - (       Converted numeric/alpha look-alikes in street name (e.g., 12568 to IZSGB).
  - Converted last digit of apparent primary number to its alphabetic equivalent (1236 FLAGS ST to 123 SIX FLAGS ST).
  - \_       Removed alpha from the box number in PO box or rural route addresses (e.g., PO BOX 123CLYDE to PO BOX 123).
  - +       Standardized a rural route address (e.g., RT1 BOX 123 to RR 1 BOX 123 or 123 MAIN ST RR 1 BOX 123 to RR 1 BOX 123).
  - \       Expanded the PO box number to 5-digits using the last two digits of the 5-digit ZIP Code with zeros as filler (e.g., PO BOX 1 to PO BOX 85001 where the ZIP Code is 12385).
  - :       Expanded the PO box number to six digits using the last two digits of the 5-digit ZIP Code and zeros as filler (e.g., PO BOX 1 to PO BOX 85001 where the ZIP Code is 12385).
  - “       Rearranged a PO box address (e.g., 12 PO BOX to PO BOX 12).
  - <       Converted addresses like HWY 45 & 37 to HWY 45/37, HWY 45.37 to HWY 45/37, HWY 45.37 to HWY 45-37, etc.
  - >       In an address containing a road designator and road number, tried different highway designators. If only one matched ZIP+4 Product, resolved it (e.g., 123 HWY 61 to 123 HIGHWAY 61; 123 HWY 61 to 123 US HIGHWAY 61; 123 HWY 61 to 123 COUNTY ROAD 61; 123 HWY 61 to 123 STATE ROUTE 61).
  - ,       If an address contained an apparent primary number as the first component of the address and the last two components were both numeric, combined the longer of the two with the primary number (e.g., 123 HWY 61 567 to 123 567 HWY 61).
  - AA       Corrected misspellings of “highway” (e.g., HGY to HWY, HIGHWAY).
  - AC       For Texas addresses, changed FM to FARM MARKET.
  - AD       Converted abbreviations RR, RD, RT in a highway address to HIGHWAY.
  - AE       Converted abbreviations RR, RD, RT in a highway address to COUNTY.
  - AF       Separated US designator from the highway number (e.g., US12 to US 12).
  - AG       Rearranged misplaced highway designator and highway number (123 HIGHWAY to HIGHWAY 123).
  - AH       Corrected school abbreviations to full spellings (e.g., SCH to SCHOOL, UNIVER to UNIVERSITY, etc.).
  - AK       Removed secondary address on a school-name only address (e.g., NEW YORK UNIVERSITY, PROFESSOR CLYDE BARROW to NEW YORK UNIVERSITY).
  - AL       On an indicated multiple response in which the number of responses was only one, resolved the address.

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| AM | Removed the delivery address when a school name is in the Secondary Address field (same as AK above in reverse).   |
| AN | Separated suffix and secondary designator (e.g., BLVDSTE 12 to BLVD STE 12).   |
| AO | Combined two adjacent street name elements into one name (e.g., VALLEY VIEW to VALLEYVIEW).  |
| AP | Separated post-directional from last street name element (e.g., MAINSOUTH to MAIN S or MAIN SOUTH).  |
| AQ | Removed dashes (-) , slashes (/) , and periods (.) from the address.   |
| AR | The delivery address line had a suffix, and an unsuccessful attempt has been made to match the address on that line to ZIP+4 Product. The secondary address also contained a suffix, and the attempt to match to ZIP+4 Product using only the secondary address resolved it. |
| AS | An unsuccessful attempt to match to ZIP+4 Product with an address line containing a pound sign (#) had been made. Removing the pound sign resolved it.   |
| AT | Moved an embedded suffix to the right address (123 ST MAIN to 123 MAIN ST).  |
| AU | Connected the apparent last piece of the street name and the apparent post-directional (e.g., 123 DUE SOUTH to 123 DUESOUTH).  |
| AV | Separated suffix from the last piece of the street name (e.g., 123 MAINST to 123 MAIN ST).   |
| AW | Converted a directional abbreviation to its full spelling (e.g., 123 W BEND to 123 WESTBEND).  |
| AX | Corrected non-standard abbreviations to their correct full spellings (e.g., CTH to COUNTY ROAD, COUNTY ROUTE, etc.).   |
| AY | Separated a pre-directional from the first element of a street name (e.g., NORTHHAMPTON to N HAMPTON).   |
| AZ | Converted divided numbers to equivalent (e.g., HWY 22.5 to 22/5,22-5 etc.).  |
| BC | Rearranged address components (e.g., 123 RED ST BUD to 123 RED BUD ST).  |
| BD | Converted US to United States.   |
| BE | Added HIGHWAY after US in an address in which it was not present.  |
| BF | Separated secondary unit designator from the secondary number (e.g., APT12 to APT 12).   |
| BG | Converted firm name abbreviations to the full spellings.   |
| BH | The address produced a multiple response and was resolved using DPV confirmation (or the urbanization code in Puerto Rican address).   |
| BI | Standardized a PO box address (e.g., POBOX 123 to PO BOX 123, PO BX 123 to PO BOX 123, etc.).  |

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- BJ Removed elements to the right of the suffix because the elements were not a secondary designator or secondary number (e.g., 6060 PRIMACY PKWY LAKECREST CENTER).
- BK Removed elements to the left of the primary number (C/O ACLU 123 MAIN ST to 123 MAIN ST).
- BM Used only the first number in an apparent range of numbers because it is the apparent primary number (e.g., 25-27 MAIN ST to 25 MAIN ST).
- BN Corrected the street name spellings (e.g., DARLINGTON to ARLINGTON).
- BO Swapped delivery and secondary address positions (e.g., HUDSUCKER INDUSTRIES 123 MAIN ST to 123 MAIN ST, HUDSUCKER INDUSTRIES).
- BP The input city/state was invalid for the 5-digit ZIP Code. Corrected city/state and address resolved.
- BQ Combined multiple single alpha characters (probable initials) immediately following the primary number (e.g., 123 J F K PKWY to 123 JFK PKWY).
- BR The input 5-digit ZIP Code was a unique ZIP Code. The information in the Delivery Address field was returned unaltered as the resolved address.
- BS The address was a non-domestic military address (e.g., APO to FPO).
- BT The post office represented by the input 5-digit ZIP Code only has general delivery.
- BU Removed undefined alphabetic characters attached to the left of the apparent primary number (e.g., XYZ123 MAIN ST to 123 MAIN ST).
- BV Where the apparent primary number was numeric/alpha, used the numeric as the primary number and the entire apparent primary number as the secondary number (e.g., 15A3 SPA CREEK LANDING to 15 SPA CREEK LANDING 15A3).
- BX What was interpreted as the delivery address was parsed and EACH element of the street name was matched to a special file containing the parsed street names in ZIP+4 Product. This facilitated location of street names in which parts of the name, pre-directional, suffix, or post-directional had been omitted from the input address.
- BY The correct address was found using the process in BX. It was then determined that the address has been LACS converted. The converted address was returned as the resolved address.