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AES systems Introduction and Legal Notice

CASS™, Coding Accuracy Support System, certification is the process of normalizing addresses to USPS® Publication 28 standards and validating them against current USPS data. All address elements are verified while adding ZIP Code™, ZIP+4™, carrier route, delivery point and barcode details.

AES is USPS CASS Certified™ for ZIP+4, carrier route, 5-digit Zip Code, LACS^{Link®}, Suite^{Link™}, eLOT®, DPV® and RDI™ for Linux and Windows operating systems.

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Address Lists

When invoked by Mail*LIST, an address list is available to Mail*STAR for batch or interactive certification and the primary screen is expanded to include a block showing the original input address data, CASS certified address elements, DPV validation footnotes and address quality flags.

This guide describes Mail*STAR when run standalone and is 100% relevant to list management. Additional Mail*STAR features available when managing address lists are covered in [MailLIST.pdf](#) section labeled Mail*STAR annex and [MailDPVeLOT.pdf](#).

Point-of-Service

Mail*STAR can also be used as a standalone application validating addresses one at a time entered from the keyboard or the Windows clipboard.

Mail*STAR treats address data as a stream of information making cut and paste between other applications and Mail*STAR practical.

Input addresses do not have to conform to USPS Publication 28 standards of delivery and last line for accurate address validation. The advantage of free form data entry is that the user or client application is not required to preprocess input addresses into line or field objects before requesting validation.

Minimal Key Data Entry

The “address painter” feature is provided for detailed address investigation and creation with the minimum number of keystrokes.

Portable Deliverable Addresses

An “export” feature permits Mail*STAR to share certified address results with other applications and can print a single envelope for immediate mailing.

Closed-system Integration

Mail*STAR can be configured to paste address elements into fields of another locally running Windows application. See [Closed-system Integration.pdf](#)

AIS – USPS Data

Mail*STAR is a client program providing access to the Mail*SERVE address service. Mail*SERVE relies on current USPS data updated monthly. USPS data includes AIS, Address Information System, City/State, ZIP+4, ZIPMOVE, eLOT and EWS as well as licensed products, DPV, LACS^{LINK}, Suite^{LINK} and RDI.

Data not required for USPS Automated-Mail discounts are listed below as “optional”. Configuring options is described in [Configuration File.pdf](#). All data sources listed below are included in a standard license except RDI. The RDI add-on, licensed separately, identifies households.

City State

City State is a comprehensive list of ZIP Codes with corresponding city and county names. This data also contains other city names and abbreviations by which a Post Office may be known. City-State defines relationships between city, state, ZIP, USPS finance number and county codes and names.

DPV – Delivery Point Validation

A Delivery Point is a delivery location. The USPS delivers to more than 150 million delivery points including PO BOX, Rural Route, street, high-rise and firm addresses. CASS certification is limited to verifying addresses are within a ZIP+4 range. DPV verifies that the address has USPS delivery.

eLOT - optional

The eLOT sequence number indicates the line-of-travel delivery order for each carrier route. The ascending/descending code indicates the approximate delivery order within the sequence number. eLOT processing is used to qualify for enhanced carrier route presort discounts.

EWS - optional

EWS lists new streets not yet found in Zip+4 data. The EWS file prevents potential miscodes of new streets. When an exact match is made to EWS data, fuzzy matching is not allowed. If EWS is set, a fresh file must be refreshed weekly.¹

LACSLINK - optional

Locatable Address Conversion System identifies addresses that has been renumbered or converted by a municipality and provides address conversion. Rural route conversion to city-style addresses is managed by LACSLINK.

RDI – optional

RDI (residential indicator) helps customers reduce shipping costs by verifying whether a delivery type is classified as residential or business.

SuiteLINK

Suite^{Link} provides improved business addressing information by adding known secondary information to business addresses, allowing USPS delivery sequencing where it would not otherwise be possible.

ZIPMove

ZIPMove maximizes mailers' Zip+4 code matching potential where ZIP code realignments have taken place and a change in city name and/or finance number has occurred.

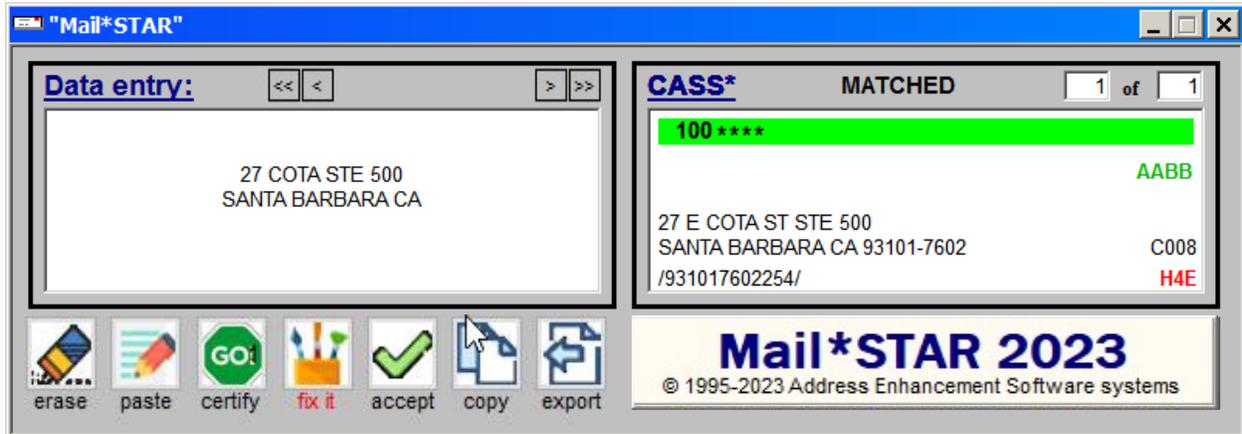
Zip+4

Street, high-rise, firm, rural route and PO BOX addressees are matched to Zip+4 address range records. Address matching uses street name, rural route type/number and firm name to find exact or fuzzy matches within primary and secondary number ranges. When indicated, Zip+4 records override the default ZIP code city name mandating the correct non-default Zip city name.

¹Download from https://ribbs.usps.gov/cassmass/documents/tech_guides/EWS002C0.ZIP. Move the unzipped file “Out” to C:\AES\usps.ews.

Primary Screen

The window features a free form data entry block, a read only CASS certified candidate block and seven "icons for investigation and manipulation of address data in both blocks.



Icons

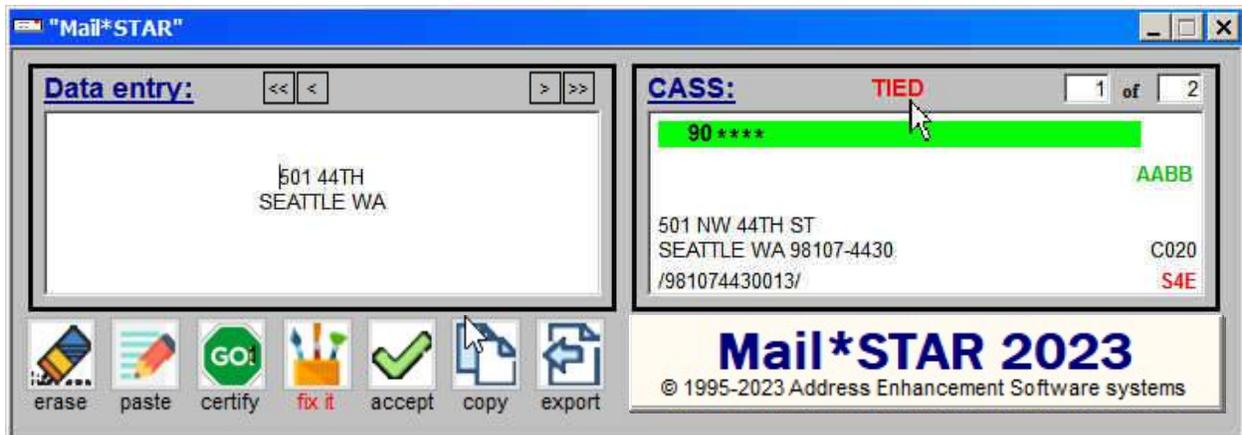
- “erase” — Erases the address in the data entry block
- “paste” — Pastes data from the Windows “clipboard” into the data entry block
- “certify” — CASS certifies and DPV validates the address data entered in the “Data entry” block
- “paint” — Opens the “address painter”
- “accept” — Moves the selected CASS address solution to the data entry block
- “copy” — Copies the address in the data entry block into the Windows “clipboard”
- “export” — Opens the “export” window

“CASS:” Block

This read only block displays CASS certified addresses resulting from the “certify” icon as well as echoing addressees created by the “address painter”.

Address Status

In the upper part of the "CASS:" block, there is a field that indicates the state of the address. Address status messages are listed and explained in appendix A. In this example, the status “<TIED>” indicates that a tie exists between multiple candidates.



Mail*STAR – Users Guide

Counter Fields

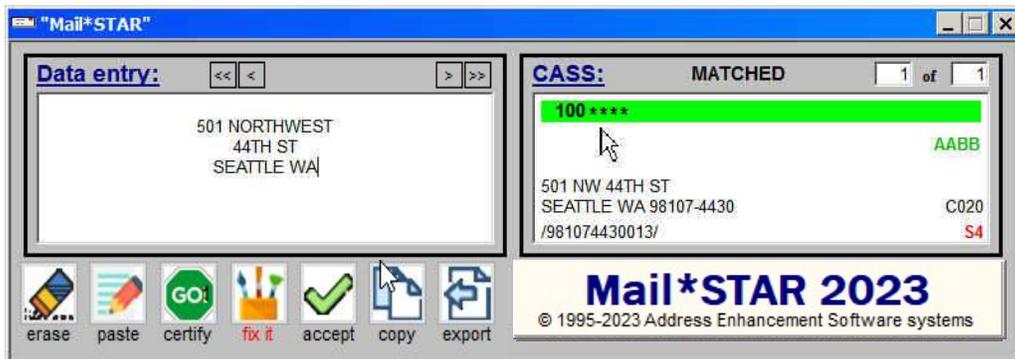
Immediately to the right of the status message field are two counters showing which address candidate is currently visible of the number of candidates. The candidates are sorted in the order by reliability. Use <DOWN-ARROW> and <UP-ARROW> to view multiple candidate addresses.

Reliability Bar

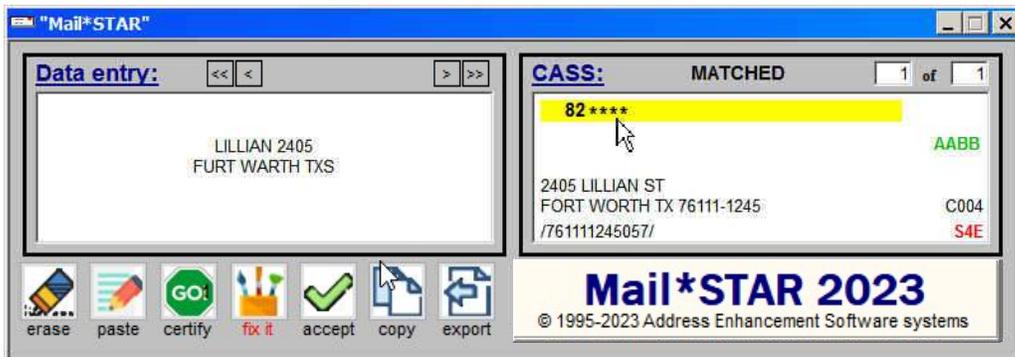
The reliability bar is color coded, {green, yellow, red}, with a reliability value reported to the left. Address reliability is determined by the edits required on the input address to certify it. Address edits are reported as address quality flags listed in appendix B.

In batch Mail*STAR only certifies green unambiguous addresses. Any address with a reliability value of less than 85 is not considered a green address.

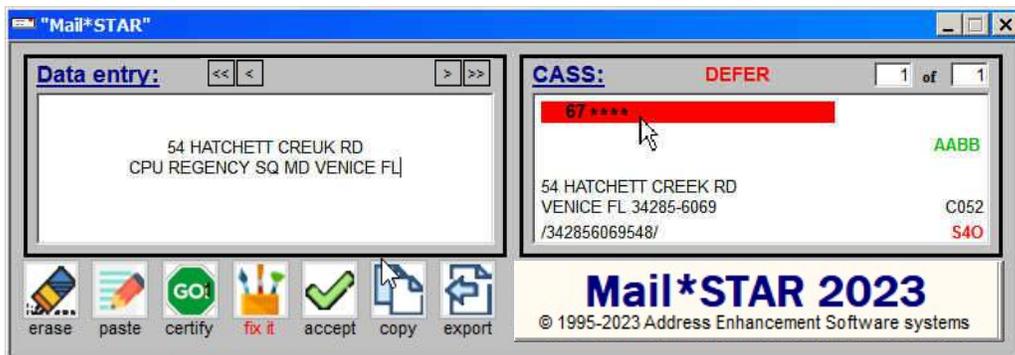
Green: Reliability >= 85.



Yellow: Reliability between 70 and 84



Red: Reliability less than 70



Mail*STAR – Users Guide

CASS Address

The complete CASS certified address appears below the reliability bar. The twelve-digit barcode is displayed in human readable form below the address. The carrier route is displayed to the far right of the last address line.

Address Type and Quality Flags

To the right of the human readable barcode are a series of address quality flags beginning with a single character address type and followed by address quality flags indicating Mail*STAR edits. Every address candidate displays at least the address type, but perfect or near perfect addresses not requiring edits may not have additional address quality flags.

First Character – Address Type

“G”: “GENERAL DELIVERY”

“P”: “PO BOX”

“R”: Rural Route

“S”: Street

“H”: High-rise

“F”: Firm

Second Character – Number of Stars

“4”: **** means 100% DPV valid

“3”: *** means DPV valid but secondary number missing or invalid

“2”: ** means DPV invalid

“1”: * address marked as non-deliverable by the USPS

Address Quality Flags

There are several dozen address quality flags documenting edits required to certify addresses. When Mail*STAR is used by Mail*LIST to process lists, quality flags are kept as permanent address attributes.

Mail*LIST can be used to define address quality criteria to double check addresses based on any set of attributes including address quality flags. For example, address quality criterion could be defined to double check addresses that were certified using a USPS high-rise alternate record and the unit designator was modified and DPV validation could not validate the unit number in the building.

The list of flags includes but is not limited to indicators documenting:

- Extraneous elements
- Primary or secondary number edits
- Use of USPS street alias or high-rise alternate
- Spelling changes in any name or address element
- Misplaced or altered street directional
- Street suffix or unit designator change
- ZIP code or city Change
- Vacant
- No-Stat (occupied DPV valid address mail being consistently returned)

Address Tie-breaker Flags

When multiple address candidates exist, a series of tiebreakers is used to attempt to break the tie. Tiebreakers rules are defined by the USPS and their use is indicated by “:c” in the address quality flag where the “c” is a lower case letter. A list of all tiebreakers is provided in appendix B.

Mail*STAR diagnostics

Usage diagnostics requires the “**DIAGNOSTICS=YES**” key after “[PROFILE ADDRESS_SERVER]” in “C:\AES\cfg\config.svc” file as shown below.

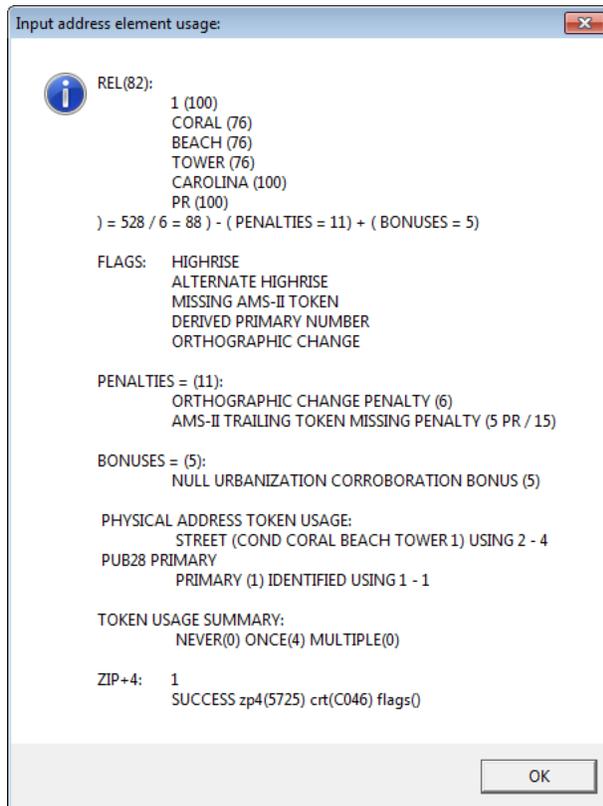
**[PROFILE ADDRESS_SERVER]
DIAGNOSTICS=YES**

Enable or disable diagnostics clicking on the word “**CASS:**” toggling the word from “**CASS:**” to “**CASS***”. When “**CASS:**” appears, diagnostics are disabled. When “**CASS***” appears, diagnostics are enabled.

<Click> on the current candidate in the CASS block to see the analysis explaining how reliability was set, address quality flags and how input tokens were matched to certified address elements. Example:

1 CORAL BEACH TOWER
CAROLINA PR

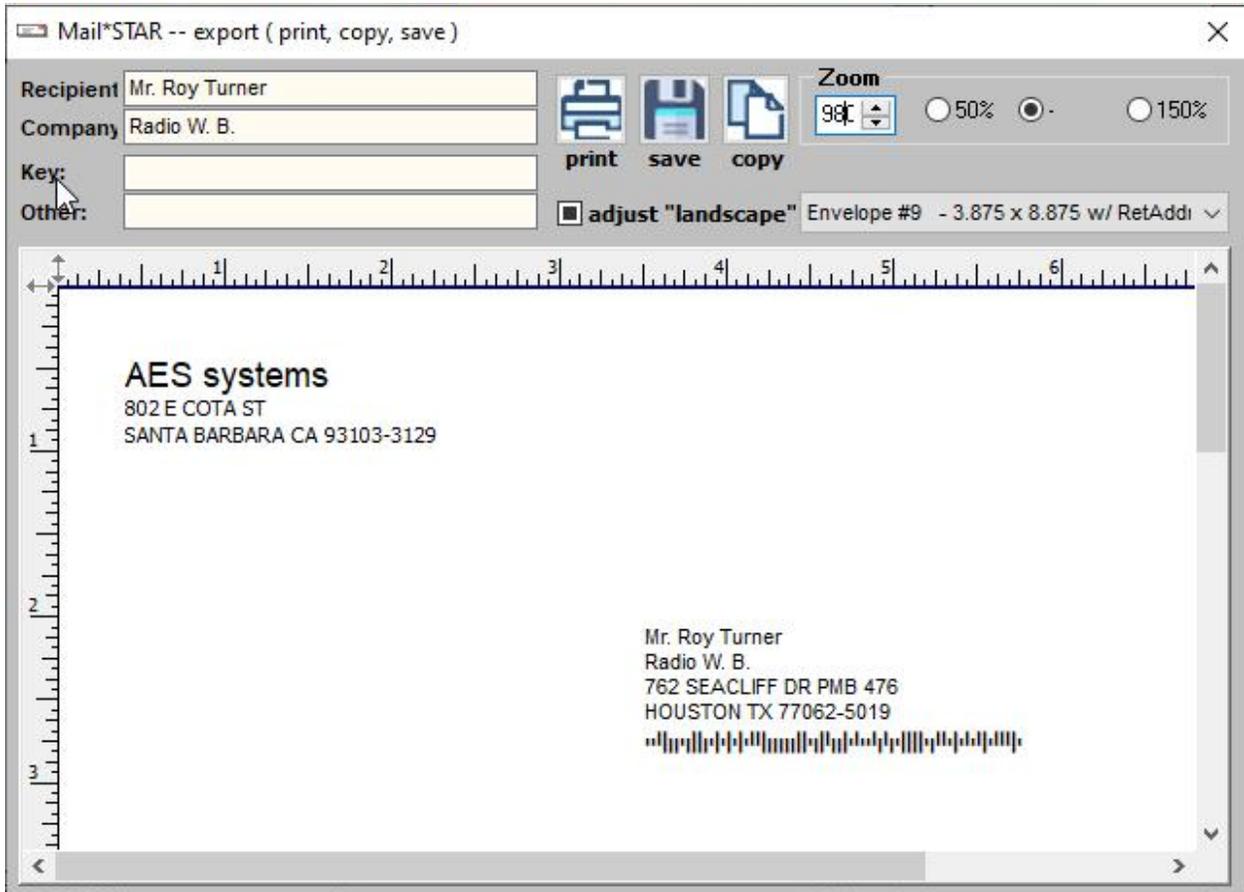
COND CORAL BEACH TOWER 2
5869 AVE ISLA VERDE STE 1
CAROLINA PR 00979-5725



- The first section reports address and token reliability. The sample shows street name token reliability 76 and city/state name token reliability 100. Overall, token reliability is 88 while address reliability is 82 adjusted by penalties and bonuses.
- The second section reports on address quality flags. The sample explains the flags “H4!O\”. See appendix B for address quality flag details.
- **Penalties:** Reports two penalties for a spelling change and missing USPS token.
- **Bonuses:** Reports bonuses for NULL urbanization corroboration for five bonus points.
- The next sections describe how input tokens were matched and include a match summary.
- The analysis ends showing ZIP+4 search results. If the ZIP+4 lookup required consideration of either primary or secondary number variants, alternate numbers are listed.

Mail*STAR – Export Screen

The window opens with a <click> of the “export” icon. The window permits printing, copying and saving the address found in Mail*STAR’s data entry block. For this example, a 6” x 3” envelope has been selected with a return address.



Envelopes and return addresses are defined in the Mail*STAR label configuration file. Adding or changing envelope definitions and return addresses are documented in the Mail*LIST guide. The double-headed arrows on the ruler allow manipulation of margins limited to the selected printer’s capabilities.

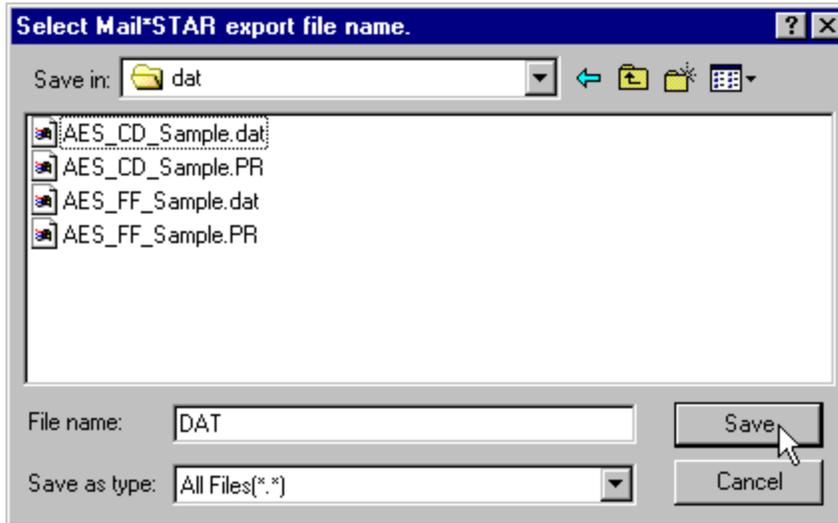
Icons

- **“Print”**, prints the envelope using the name and company fields entered. If neither name nor company is present, “RECIPIENT” automatically appears above the address. <Right-click> permits printer setup. For this example, the paper selection was a custom 6.0 x 3.0 inch envelope.
- **“Copy”**, copies the name and address into the Windows clipboard. This icon differs from the copy icon available from the primary screen in that it includes name(s).
- **“Save”**, writes the address information including the account number in a comma-delimited file suitable for update into existing databases. The first time the “Save” icon is <clicked> after starting a Mail*STAR session, the user is required to identify the file (create or append) where the comma delimited address record will be written.

Save the Address for MIS

From the “export” screen, the first use of the “Save” icon opens the window shown below.

1. Using the Windows standard controls “Save in”, “File name” and “Save as type”, the user specifies the file that will be used to write the address record. Once specified, the file is opened for creation or appends.
2. Close the file selection window with <Save>.



The field order for the comma-delimited record is; account id, recipient name, company name, auxiliary line (building name or urbanization), delivery line and last line. When used with this example, the following data as a single line record would be written to the file specified as:

```
"3101-242-5220",  
"Mr. Roy Turner",  
"Radio W. B.",  
"PMB 476",  
"762 SEACLIFF DR",  
"HOUSTON TX 77062-5019"
```

Zoom

Zoom in and out as well as window scroll bars permit the user control of the envelope view. There are four fixed percentage zoom buttons and zoom wheel for fine-tuning the zoom control with a range of zero to 200%.

Adjust Landscape

In support of all printer drivers, this control has three positions, {landscape, portrait and printer setup default}. It is normally not required. If the envelope is not oriented correctly after selecting the envelope and setting up the printer, this check box can be used to resolve it.

The "address painter"

This feature provides minimal key entry and powerful address investigation with the minimum of keystrokes and clicks. The tool helps users quickly identify and create a single valid deliverable address.

Designed for both casual and power users providing extensive visual clues with both "point and click" and keyboard interfaces.

An understanding of addressing concepts and how the "address painter" treats cumulative criterion while building address context is covered in this document and necessary to get the most from the tool.

As the address is created, it is echoed in the Mail*STAR's "CASS:" block.

For a thorough understanding of the features and practical use of the "address painter", the reader should follow every example. Where the demonstration leaves off, complete the process with the following steps.

- <ESC>: Returns control to Mail*STAR
- <Click>: the Mail*STAR "accept" icon
- <Click>: the Mail*STAR "certify" icon

Painter Objects

Address painter objects organize all USPS address data into a hierarchy that allows the user to interactively build address context. The user provides clues and the "address painter" shows what address elements remain conforming to those clues until there is only one CASS certified address,

Tabs

Address elements are organized by tabs and ordered hierarchically. The tabs include city/state/ZIP, urbanization (Puerto Rico only), street, building/firm and rural route. Address context is developed in tab and criterion field order. Each additional criterion further limits the address candidates available.

Tab Page

Each tab owns one or more criterion fields that limit address element candidates displayed as rows in address element data windows. Criterion fields and data windows make up the tab page.

Tab Focus

Although there are several address element tabs, only one tab has focus. The tab page of the tab that has the focus is the only tab page that is visible. The tab's text appears in red when the tab has the focus; otherwise, the tab text is black.

Tab Text

Until tab criteria have been established, the text displays the tab's purpose in lower case within question marks "?". Once criterion established, the tab's name is replaced by the criterion.

Criterion is inexact when the criterion field clue(s) results in multiple candidate rows and no row has been selected. Once the clue results in only one candidate or a row is selected, criterion is exact. Exact criterion is displayed uppercase text while inexact criterion is shown in lowercase.

Tab Picture Clues and Their Meaning

- | | |
|-------------------------------|--|
| • <u>Yellow question mark</u> | No criterion has been established for the tab |
| • <u>Red question check</u> | Inexact criterion has been established for the tab |
| • <u>Red cherry</u> | Exact criterion has been established for the tab |
| • <u>Red "X"</u> | Tab is not applicable due to address context |

Criterion Fields

The user controls address context by entering clues into criterion fields. Criterion fields control which address element candidate rows appear in their respective data windows. Once there is one and only one possible address element candidate, the criterion field is no longer available for data entry.

Criterion Field Focus

Only one criterion field can have the focus. The field that has the focus will have a cream background color and will contain the cursor while all other fields will have a gray background.

Criterion Field Cursor

There is only one cursor that indicates where typed characters will go. An actual flashing cursor bar will appear in the criterion field that has focus showing where new characters will be entered or from which point characters will be deleted.

Criterion Field Erase Icon

Every criterion field has an erase icon. There is also a master erase icon in the lower right after the message line. The master erase icon resets all fields. Erase icons allow:

- <Double-click> resets the single field – If the criterion field was established implicitly, the erase icon command will be ignored and a user message will be provided in red explaining why the command was ignored and how to override.
- <Right-click> deselects the selected candidate row and scrolls to the first candidate row – If there is only one candidate based on the criterion set by the user, the single candidate will appear in the field and the <right-click> command will be ignored.

Data Windows

A data window is provided for address elements, state, city, ZIP code, urbanization, street, building and rural route. Data windows display rows of candidates available based on the established context and the criterion fields that control the data window.

Data Window Rows

Address elements meeting the address context and field criterion appear as candidate rows.

Data Window Columns

Address element candidates have attributes that appear as columns in the candidate row.

Data Window Row Selection

Any candidate in the row can be selected. The selected candidate row is highlighted in blue and becomes an exact criterion regardless of the inexact clue used to find it. The selected candidate will override the clue in the criterion field and the tab text will be uppercase.

Current Row of Candidate Rows Counters

There are two counters that indicate which row of how many candidate rows is selected. The counters refer to the data window that has focus. With the exception of the city/state/ZIP code tab, all tabs have only one data window. The first tab, which establishes state, city and ZIP code, has three data windows.

Message Line

The message line provides the user with suggestions on how to proceed or error messages and resolution tips. If the message appears in black text, it contains a suggestion as to how to proceed. If the message appears in green text, address element identification is being confirmed along with a suggestion how the user might proceed. Red messages report error conditions and any resolution.

Quick Reference

Navigation Commands

Navigation between address element tabs, criterion fields and data window rows are provided by point and click as well as keyboard commands. The casual user can use the “address painter” without restriction using the mouse to make selections, while power users will prefer keyboard commands.

Mouse Navigation

Address element tabs are opened with a mouse <click> on the tab. <Click> of criteria fields change focus to the <clicked> field. Candidate address rows are selected with a mouse <click> on the row. Scroll bars are provided for data windows when there are too many rows to display in the window.

Keyboard Navigation

- <F7>: Opens the first available tab to the left
- <F8>: Opens the first available tab to the right
- <F5>: Moves the field cursor to the left
- <F6>: Moves the field cursor to the right
- <DOWN-ARROW> and <UP-ARROW>: Moves up and down within data window rows

Erase Command – Erase Icon Alternative

- <F4> Erases the current field
- <SHIFT><F4> Erases all fields
- <SHIFT><F5> Navigates to and erases the previous field
- <SHIFT><F6> Navigates to and erases the next field

Miscellaneous Commands

- <F1>: When the ZIP code has been set, causes wildcard search in fields that are not live fields.
- <ESC>: Minimizes the "address painter"

Specific Data Window Candidate Row Commands

- <Double-click> of the city row will report the finance number and internal Mail*STAR group.
- <Double-click> of the ZIP code row reports all USPS city names for that ZIP code preceded by a “(USE = {Y, N})” note. If the use value is ‘Y’, the name is an accepted USPS city name for that ZIP code; otherwise, the name is known but cannot be used in addresses for that ZIP code.
- <Double-click> on address element rows certified with a ‘+’ address quality flag will display the non-default last line city name indicated by the USPS AMS-II ZIP+4 record and required by the USPS for that specific address.

Intelligent Clues – Tutorial

Effective use of minimum key data entry of “address painter” depends largely on the use of intelligent clues. This topic serves as a discussion on selecting the most significant clue.

Picking the Best Token Clue

Token is used in this document to mean a single word without spaces. Streets usually have multiple tokens and elements. If chosen well, a good search can usually be performed on one simple token.

All street elements are permissible clues. Street directionals, suffixes and common words such as “STATE”, “COUNTY”, etc. are not the most significant clues and can result in too many candidates.

Multiple token names such as MARTIN LUTHER KING can have several variations based on the use of abbreviations. The last name is usually the best single token choice.

Token Search vs. Name Search

Most names have only one token. Finding multiple token names can be simplified by considering that Mail*STAR and the “address painter” perform both name and token searches. For example, there is a street in “BOSTON MA” named “ALVAH KITTREDGE PARK“. The token “PARK” is the street suffix and the actual street name is “ALVAH KITTREDGE“. If there are no spaces in the clue, the search is a token search and the clue “KITTREDGE” results in the candidates seen below. As will be seen when discussing phonetic searches, the clue “KTRDG” would have produced the same result.

The screenshot shows the Mail*STAR address painter interface. At the top, it displays 'BOSTON MA' and 'kittredge'. Below this is a search input field containing 'KITTREDGE'. A table of results is shown below the input field, with columns for Prd, Street, Sfx, Psd, lmin, lmax, Amin, Amax, Zip-code, and HA. The results are as follows:

Prd	Street	Sfx	Psd	lmin	lmax	Amin	Amax	Zip-code	HA
	ALVAH KITTREDGE	PARK		1	99			02119	X
	KITTREDGE	CT		1	99			02131	
	KITTREDGE	ST		1	399			02131	X
	KITTREDGE	TER		1	99			02131	

At the bottom of the interface, there is a status bar showing '0 of 4' and the text 'Add to street name clue or select street from list.'

Literal and Phonetic Search

Literal searches will only produce candidates where a token matches exactly. Phonetic search is based on sounds and has the feature of producing inexact match candidates that sound like the clue.

Literal Precedence

Mail*STAR and the “address painter” only resort to phonetic searches when no literal match exists.

Understanding Phonetic Searches

Phonetic searches convert graphemes, letters, into phonemes, letter representations of sounds. Having a basic understanding of how phonetic searches work can help the experienced user when entering long clue names and solving difficult address problems. For example:

Grapheme Consonant → Phoneme Conversion

This is a partial list of consonant phonics considerations.

- The letter “C” before the vowels “E”, “I” and “Y” sound like an “S” while the same letter “C” sounds like the English letter “K” in most other instances.
- The letter “K” before and “N” such as “KNOXVILLE” is silent.
- The letter “X” can sound the same as “KS”
- The letters “H” and “W” within a word is often silent.

Several consonants receive similar grapheme to phonemic conversions based on their context. Since non-standard abbreviations, foreign names, uncertain syllable breaks and typographical errors make a single phonetic system fallible, the “address painter” and Mail*STAR use two phonetic systems. Other phonetic search considerations are:

All But First Vowel Dropped

The phonemic representation of the name “ELTON” retains the “E” while dropping the “O”.

WARNING: Double Consonants Reduced to One

Users wanting to take advantage of phonetic searches to reduce keystrokes have to be careful about this rule. For example, the name “LILLIAN” keeps the first and second “L” while dropping the third “L” since it occurs in the “LL” pair.

LILLIAN → LLN

If the user chose a clue “LLN”, “LILLIAN” would not be a candidate because ...

LLN → LN does not equal LLN ← LILLIAN

The rule should be that the user relying on phonics should avoid double consonants in the clue. Instead, the clue “LILN” does match the name “LILLIAN”.

LILN → LLN does equal LLN ← LILLIAN

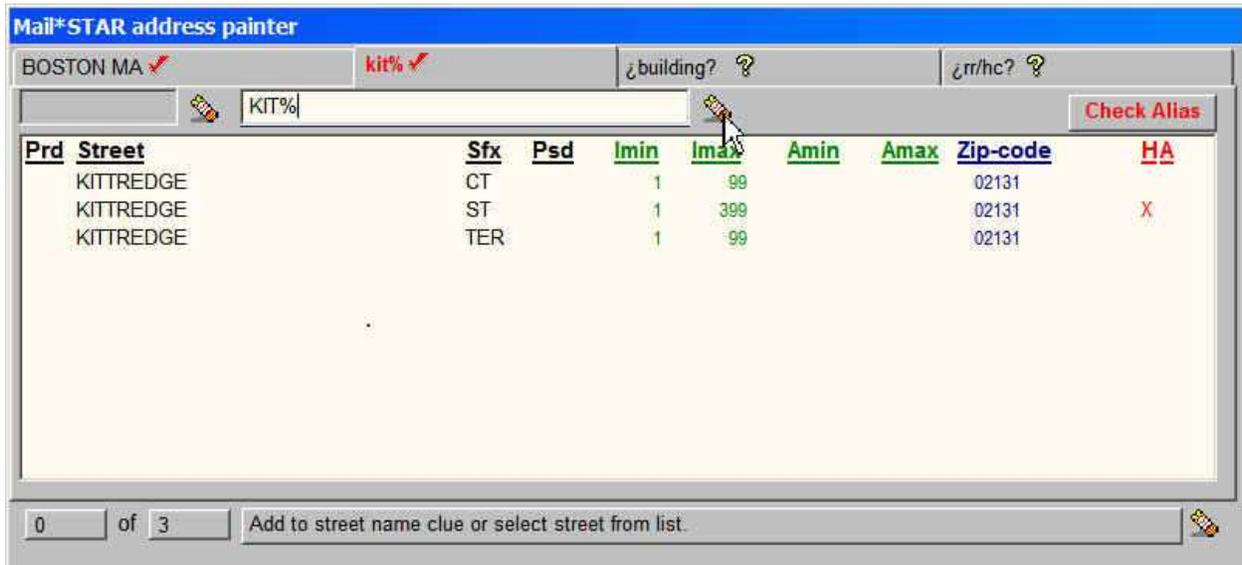
Words ending in “S” drop the final “S”

It is a common error to add or drop a final “S”.

Using Wildcards

The percent sign, “%”, is the Mail*STAR “wildcard” which permits inexact searches without using phonics. When using the wildcard character the search will be against the entire name and not individual tokens. Returning the phonetic example used in “BOSTON” to discuss token searches, consider the following search result noting that “ALVAH KITTREDGE PARK” does not appear when using the clue “KIT%”. The clue “A% KIT%” would have included “ALVAH KITTREDGE PARK” just as the clue “M% KING” would match:

- MARTIN LUTHER KING
- MARTIN L KING
- M L KING
- ML KING
- MR KING



The screenshot shows the Mail*STAR address painter interface. At the top, there's a blue header with the title "Mail*STAR address painter". Below the header, there are several input fields: "BOSTON MA" with a checkmark, "kit%" with a checkmark, "building?" with a question mark, and "hc?" with a question mark. A search input field contains "KIT%" and a "Check Alias" button is to its right. Below the search field is a table with the following columns: Prd, Street, Sfx, Psd, lmin, lmax, Amin, Amax, Zip-code, and HA. The table contains three rows of results for "KITREDGE".

Prd	Street	Sfx	Psd	lmin	lmax	Amin	Amax	Zip-code	HA
	KITREDGE	CT		1	99			02131	
	KITREDGE	ST		1	399			02131	X
	KITREDGE	TER		1	99			02131	

At the bottom of the interface, there is a status bar showing "0 of 3" and a button labeled "Add to street name clue or select street from list".

Seven Things Effective Users Need To Know

Effective use of the “address painter” requires an understanding the following concepts.

ADDRESS HIERARCHY

The order of importance of address elements is referred to as address hierarchy. Address hierarchy of last line address elements begins with state, followed by city and finally ZIP code. Address element hierarchy continues as described for each address type as follows.

GENERAL DELIVERY

No other hierarchical elements to consider

PO BOX

Continues with PO BOX number

Street

Continues with urbanization (Puerto Rico only), followed by street and then door number

High-rise

Continues with street, door number, unit designator and secondary number

Rural Route

Continues with route type and number followed by box number

Context

Address context is the entire set of criterion established in hierarchical order. Once the state “WY” is established, only cities in “WYOMING” remain candidates within the address context.

Context is cumulative. For example, the street candidate list that contains ten rows without a street door number might be reduced to only one or two after supplying the door number.

Implicit Criterion

Data that is established automatically because of an address element lower in the hierarchy results in implicit criterion. For example, if address creation begins by setting the ZIP code to “90210” without having established the city/state, “BEVERLY HILLS CA” is set as the implicit city/state criteria.

Explicit Criterion

Criterion established by data entry or a <click> selecting a row

Live Criterion Fields

Live criterion fields change address context with every keystroke. The “address painter” fields that are live are state-code, city, ZIP code, urbanization (Puerto Rico only) and rural route.

Static Criterion Fields

Static criterion fields change address context only after the <ENTER> key is pressed activating the change. The “address painter” fields that are static include PO BOX number, street number, street clue, building clue, building unit designator, building unit number and rural route box number.

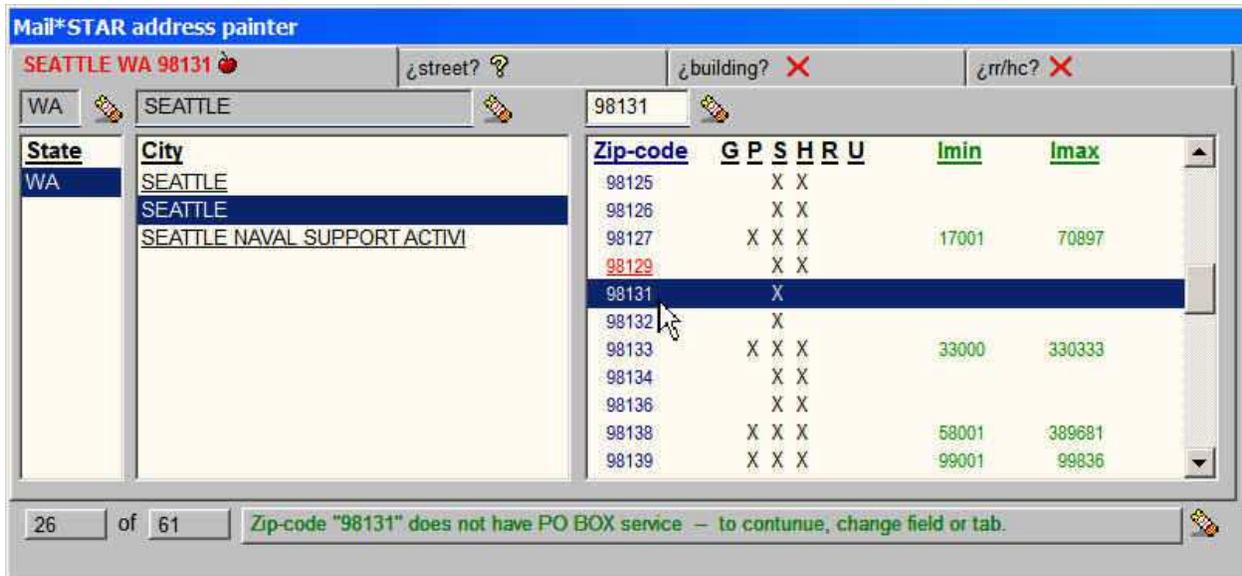
USPS Default Range

CASS certified addresses rely on ZIP+4 records where the primary or secondary number is within the ZIP+4 range. Two address types, rural route and high-rise addresses, have ZIP+4 records which have null or empty ranges that serve as a catch all for all rural route box numbers or building unit numbers where there is not a non-default ZIP+4 that can be used to certify the address. A third special instance of default records exists for unique ZIP codes regardless of address type.

Default matches are usually not ideal. USPS form 3553 has an address quality statistics section providing fields reporting default address matches for both high-rise and rural route addresses. DPV validation has a flag value for default validation discussed in the Mail*DPV guide.

City, State ZIP code Address Element Tab

The city/state tab is the only address element tab that has multiple data windows. Only after the city has been established do other tabs become accessible. The “current row” of “number of rows” counters refers to the data window that has the focus that is determined by the criterion field that has the focus.



State Code Criterion Field

The first criterion field allows for a two-digit state code. This is a live field automatically updating the state code data window after each character is entered.

City Criterion Field

Once the state code has been established, the city criterion field is available. This is a live field updating the city data window after each character. There is an implied trailing wildcard, '%'. The trailing implied wildcard can be eliminated by terminating the clue with a period, ".", character.

Non-postal Cities

The city data window includes non-postal cities which are underlined. A non-postal city name represents an alias or alternate name that references one or more ZIP codes in one or more postal-cities. A city name may appear as both a postal city and a non-postal city. Selecting a non-postal city will cause the ZIP code list to contain all the ZIP codes implied by the selected non-postal city. In this case, selection of any ZIP code in the list of non-postal ZIP codes will set the implied city context to the default city for the ZIP code.

Finance Numbers

The USPS has internal administrative districts identified by finance number. These districts can serve multiple cities and can be thought of as metropolitan areas. Finance numbers are important because CASS requires street searches to include the finance number area.

ZIP code

The user can begin with the ZIP code if it is known to establish an implied city/state context. This is a live field accepting only numbers and is validated once it contains a valid 5-digit ZIP code.

Hint: <Double-click> of the ZIP code row will report all USPS AMS-II city names for that ZIP code preceded by a "(USE = {Y, N})" note. If the use value is 'Y', the city name is accepted by the USPS for the ZIP code; otherwise the name is known but cannot be used on mail for the ZIP code.

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PO BOX

There is a fourth criterion field for PO BOX number that is visible only when the selected city or the selected ZIP code has PO BOX delivery.

ZIP code Data Window Columns

- The first column contains ZIP codes and if a PO BOX number is present and certified will include the ZIP+4. Regular non-unique ZIP codes are blue and unique ZIP codes are red and underlined.

A unique ZIP code has special treatment because the ZIP code has been assigned to a single government agency, company, organization, university, etc. and usually serves as a single USPS drop where the organization receiving the mail is responsible for ultimate delivery to the recipient. CASS rules for certification within unique ZIP codes are different from non-unique ZIP codes.

- The second group of six columns, marked with either an “X” or blank, reports the delivery services available for the ZIP code. Urbanization is not actually a delivery type and only refers to Puerto Rican ZIP codes that have urbanizations in the ZIP code.

G: “GENERAL DELIVERY”	H: “High-Rise”
P: “PO BOX”	R: “RR/HC”
S: “STREET”	U: Urbanization

- The third group of green columns reports absolute integer PO BOX ranges. <Right Click> on the ZIP code opens the ZIP+4 range window described later in this guide.
- The last group of columns appears in red when applicable. When the first column contains an “X”, there are alphanumeric PO BOX ranges for the ZIP code. The last column contains any address quality flags that need to be reported for the certified PO BOX address.

Once the city has been established, PO BOX and rural route candidates will be considered only within the set city. In the case of streets, CASS requires that searches be expanded to include all cities with the same finance number of the matched city. If no ZIP code has been set, both the “address painter” and Mail*STAR will search for streets in all cities with the same finance number. Unlike Mail*STAR however, the “address painter” will restrict searches to the ZIP code if one has been set.

Hints

Be careful when starting with a ZIP – it might be wrong eliminating the actual address prematurely.

Exercise

Set the address context to a city with several ZIP codes. Navigate to the ZIP code criteria field noting the total number of ZIP codes for the city.

Open the ZIP+4 range window with a <right-click> on a ZIP code that has PO BOX ranges. It may be necessary to use the ZIP code data window scrollbar to find a ZIP code that has PO BOX ranges. <Right-click> again to return to the city/state/ZIP code tab. ZIP+4 ranges will be discussed in detail later.

Enter a valid PO BOX number in the fourth field. If a valid PO BOX number is not known for the city, pick any number listed in green in the PO BOX data window.

After entering a valid PO BOX number, note that the ZIP code list has been reduced to only ZIP codes that have the valid PO BOX. If there was more than one ZIP code, select one of them. Hit the <ESC> key to return to the Mail*STAR window. From the Mail*STAR primary screen, first <click> the “accept” then the “certify” icons. Now click of the “export” icon and try things described earlier for the “export” window.

Urbanization Address Element Tab

There is only one criterion field and one data window associated with the tab. The criterion field is a live field updating the data window after every character is typed. There is an implied leading and trailing wildcard. The trailing wildcard can be eliminated by ending the clue with a period, “.”.

The city or ZIP code selected and the field criterion entered affect the address context. This example shows ten urbanizations in “BAYAMON PR” that have an “HO” in the name.

The screenshot shows the 'Mail*STAR address painter' window. At the top, there are tabs for 'BAYAMON PR' (checked), 'ho' (checked), and three question mark icons for 'street?', 'building?', and 'rr/hc?'. Below the tabs is a search input field containing 'HO'. The main area displays a table of urbanizations with columns for 'Urbanization', 'Zip5', 'City', and 'Streets'. At the bottom, there is a pagination control showing '0 of 10' and a button labeled 'Add to urbanization name clue or select urbanization from list'.

Urbanization	Zip5	City	Streets
SECT EL RELINCHO	00917	SAN JUAN	X
SECT HOYO	00926	SAN JUAN	X
URB DOS PINOS TOWNHOUSE	00923	SAN JUAN	X
URB HOLLYWOOD EST	00926	SAN JUAN	X
URB HORIZONS	00926	SAN JUAN	X
URB PARK GDNS TOWNHOUSES	00926	SAN JUAN	X
URB RIO HONDO 1	00961	BAYAMON	X
URB RIO HONDO 2	00961	BAYAMON	X
URB RIO HONDO 3	00961	BAYAMON	X
URB RIO HONDO 4	00961	BAYAMON	X

- The first column reports the candidate urbanization name.
- The second and third columns report the ZIP code and city. The state is always Puerto Rico.
- The last column is a flag indicating that the urbanization actually has street references. The USPS publishes some urbanizations that have no streets.

Side effects

If the tab picture clue is yellow because no urbanization criterion has been set, this tab will have no effect on the address context.

If the urbanization criterion is exact, only one urbanization candidate, the street tab will only consider streets in that urbanization. If the urbanization criterion is inexact, more than one candidate row, only streets referencing urbanizations in the list will be considered candidates. Remember that selecting a row causes the criterion to be exact and only streets in the selected urbanization will be candidates.

Hints

Puerto Rican urbanizations usually begin with an urbanization prefix. Since the prefix clue may be incorrect, it is usually best if the urbanization clue starts with the name and not the prefix, which will avoid missing the target urbanization.

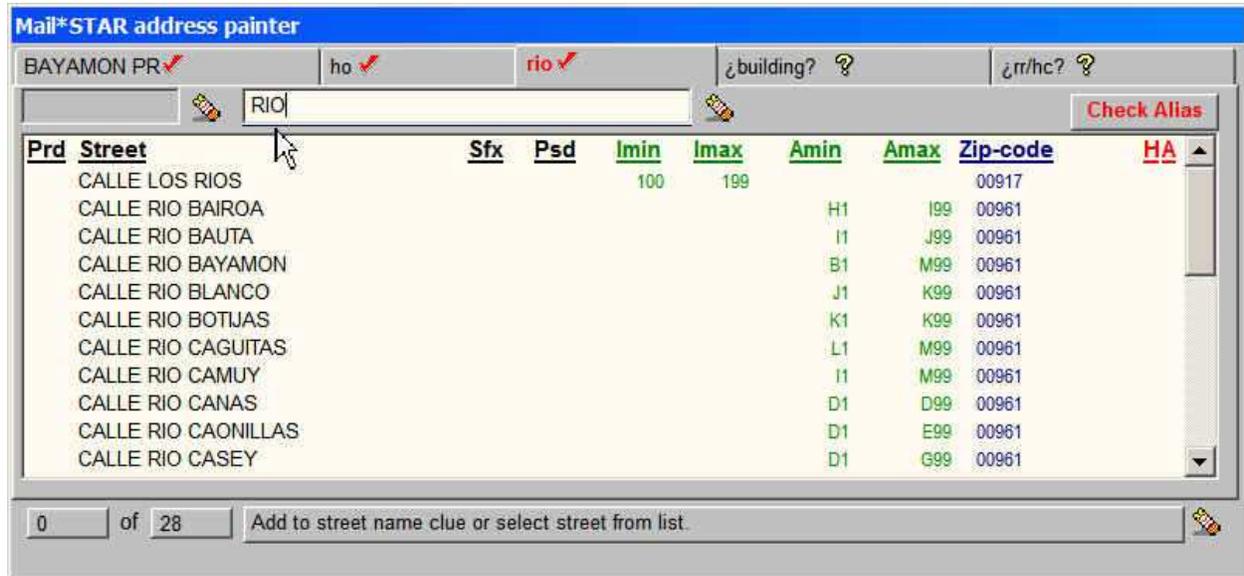
The urbanization might be wrong or the street might not be listed in any urbanization. If the street being investigated is not in the urbanization indicated, clear the urbanization field and try again.

If the target street has a name, it is usually quicker to skip the urbanization and go directly to the street clue. If there are too many streets that match, the criterion can be refined by returning to the urbanization tab. If the street is a number or single letter and an input urbanization clue exists, it is usually preferable to begin with the urbanization tab.

Street Address Element Tab

The street tab has two criterion fields, one data window and three command buttons. Both criterion fields are static requiring an <ENTER> before the data window is affected. The city or ZIP code selected and the field criterion entered affect the address context. In Puerto Rico, the urbanization criterion will be included in the address context if any urbanization criterion is set.

This example is a continuation of the previous screen to illustrate inclusion of urbanization context with an inexact urbanization clue. The street token “RIO” was typed followed by <ENTER>. All 28 candidates have the word “RIO” in the name and are found in an urbanization with the letters “HO” somewhere in the name. Since ZIP code was not part of the address context, the search included all cities having the same USPS finance number as BAYAMON which includes SAN JUAN.



- The first four columns in order are pre-directional, street name, suffix and post directional.
- Columns in green report integer and alphanumeric ranges of the street door numbers for the street.
- The section in blue reports the ZIP code and if the address is certified, the ZIP+4.
- The last group in red includes three columns:
 1. If the address is certified any address quality flags.
 2. The column titled “H” indicates that the candidate street has buildings and or firms on the street.
 3. The column titled “A” indicates that the candidate street has high-rise alternates.

Side effects

If a street is selected, the high-rise tab will only show building and firms on that street. If a list of streets appears, the high-rise tab will only show building and firms on this list of streets.

Hints

Intelligent clues, token searches and the mechanism used for phonetic searches drastically reduce keystrokes and speed of investigation. An understanding of finance numbers will avoid confusion when looking for a street in “BOSTON MA” there are candidates in “HYDE PARK MA”, etc.

Exercise

Set a city/state with multiple ZIP codes that you know. Do not set a ZIP code. From the street tab’s street criteria field practice various street clues using intelligent clues, token, name, phonetic, literal and wildcard searches. Complete some address by supplying a door number.

Street Components & Hints

A good understanding of the anatomy of street names and possible erroneous street component splits and splices can help resolve some of the most perplexing addressing problems.

Pre-directional and Post-directional – maximum 2 characters {N, NE, NW, S, SE, S, W, E, W}

Directionals may not be present. Rarely does an address have both pre-directional and a post-directional.

Sometimes street directionals are seen where the directional is actually part of the street name:

“WEST LAKE” → “WESTLAKE”

Directionals might be misplaced such as “W 45TH” when in fact it is “45th W”.

The directional value might be wrong. The USPS has reported that, “... changing a directional from one cardinal point to another (e.g., south to north or east to west) produces erroneous assignments more than 50 percent of the time. However, in cases where a non-cardinal point change occurred (e.g., north to northeast) or where the directional value was added to or deleted from the input address, the delivery point was confirmed at least 80 percent of the time.” Below is a street directional conversion table recommended by the USPS.

	N	NE	NW	S	SE	SW	E	W	Blank
N	Y	Y	Y						Y
NE	Y	Y					Y		Y
NW	Y		Y					Y	Y
S				Y	Y	Y			Y
SE				Y	Y		Y		Y
SW				Y		Y		Y	Y
E		Y			Y		Y		Y
W			Y			Y		Y	Y
Blank	Y	Y	Y	Y	Y	Y	Y	Y	Y

Name – maximum 28 characters

The reverse of the sample above might also be true where the address clue is “WESTLAKE” → “W LAKE”. In this case, the street name would become “LAKE with a pre-directional of “W”. Another example might be an address clue that appears “N SIDE DR” where “N” appears to be a pre-directional but the actual address turns out to be “NORTHSIDE DR”.

Suffix – maximum 4 characters

There are 188 street suffixes most of which require abbreviation. Many of them have a singular and plural form (i.e. “COURT” → “CT” and “COURTS” → “CTS” or “HILL” → “HL” and “HILLS” → “HLS”).

Keep in mind the following possibility considering that “WAY” and “WALK” are standardized USPS suffix that does not require abbreviations. In New York “BROAD WAY” is probably “BROADWAY” where in some other city “BROADWAY” could be “BROAD WAY”.

Element Shifts Examples

- “VALLEY VW” ↔ “VALLEYVIEW ST”
- “SOUTHPARK AVE” → “S PARK AVE”
- “E LAKE CIR” ↔ “EASTLAKE CIR”
- “SW DRIVE” ↔ “SOUTHWEST DR”
- “W SIDE CIR” ↔ “WESTSIDE CIR”

Check Alias Button

The USPS publishes common street aliases by ZIP code. There is a command button available from the street address element tab that will open the street alias window. The address context includes the city and if set, the ZIP code as well as any street field criterion.

This example has the address context “NEW YORK NY” without a ZIP code. The street name clue, “C%”, selects all streets that begin with the letter “C”. <Click> on the “Check Alias” command button opens a window of all “NEW YORK” street aliases that begin with “C”. <Right-click> on the alias data window will close it returning to the street tab. The tenth candidate row was clicked before taking this snapshot.

Zip5	Pr	Alias name	Sfx	Ps	Pr	Street name	Sfx	Ps	R I
10024		CPW				CENTRAL	PARK	W	X O
10024		CPW				CENTRAL	PARK	W	X O
10024		CPW				CENTRAL	PARK	W	X O
10024		CPW AT 79TH ST			W	77TH	ST		X O
10025		CATHEDRAL	PKWY		W	110TH	ST		X O
10026		CATHEDRAL	PKWY		W	110TH	ST		X O
10026		CATHEDRAL	PKWY		W	110TH	ST		X O
10026		CATHEDRAL	PKWY		W	110TH	ST		X O
10026		CATHEDRAL	PKWY		W	110TH	ST		X O
10026		CENTRAL	PARK	N	W	110TH	ST		X O
10026		CENTRAL	PARK	N	W	110TH	ST		X O
10026		CENTRAL	PARK	N	W	110TH	ST		X O

10 of 20 Alias: LOW (350) HIGH (699) OEC (B) (clipboard) -- <RightClick> to close.

- The first column in black is the ZIP code.
- Four columns in green after the ZIP code report the four street alias components.
- Four columns in black report the four USPS recommended street components.
- If the last column in red contains an “X”, the alias is a ranged alias and should only be considered a substitute within the alias range specified. Once selected, ranged alias records report the effective range in the user message in the message field as seen above. “OEC” means odd/even code and has values of {O=odd, E=even, B=both}.

The selected row along with the user message is suggesting that addresses reported on “CATHEDRAL PKWY, NEW YORK NY 10026” with odd/even numbers between 350 and 699 are known by the USPS as “W 110th ST, NEW YORK NY 10026”.

Hint

For convenience, the “address painter” provides for easy cut and paste of the target street. After a mouse <click> of the alias row, the Windows clipboard is loaded with the alternate street that can in turn be pasted directly into the criterion field for street name.

Exercise

Set a large city/state with multiple ZIP codes that you know. Do not set a ZIP code. <Click> the “Check Alias” command button and look for streets that you know. Also, look at street alias records that are ranged and note the effective ranges. Verify that click on an alias row loads the Windows “clipboard” with the USPS standard address that can be pasted into the street criterion field.

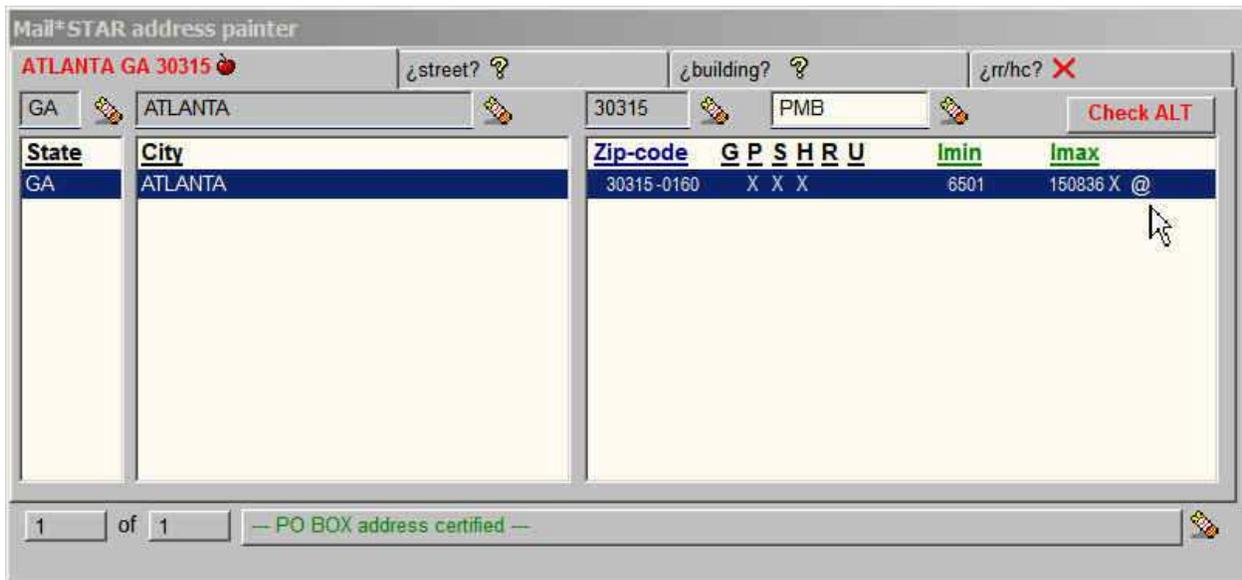
Delivery Point Alternate

The USPS publishes PO BOX, street, building and rural route ZIP+4 ranges that are called alternate delivery point records. Unlike high-rise alternate records where a street ZIP+4 is redirecting the address to a high-rise, the alternate delivery point is redirecting the primary or secondary number to another range of the same address type.

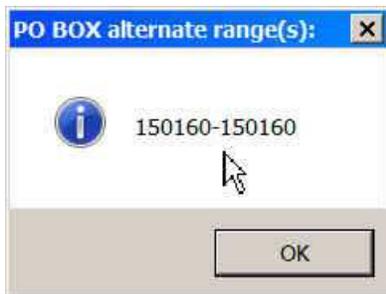
Unlike high-rise alternate records where CASS requires CASS certified products to make the conversion automatically, delivery point alternates cannot be changed automatically by CASS software.

The Mail*STAR address quality flag '@' marks addresses where alternate delivery points were detected and provides the "Check ALT" command button when this occurs.

This is an example of an alpha PO BOX being changed to a PO BOX number.



The arrow is pointed to the address quality flag, "@", for this certified address and the "Check ALT" command button is visible. <Click> the command button to show the alternate range.



The range 150160-150160 leaves no doubt which box number represents "PO BOX PMB". Change the BOX number, "PMB" to the alternate BOX number "150160" shown above.

High-rise Alternate – redirection to a single address

The USPS provides special records that redirect building addresses. Frequently buildings on street corners or accessible from two parallel streets create doubt which street is the building's address.

Note the "X" under the heading "A" in the last column of "PLEASANT AVE". That is the high-rise alternate flag. The "Check ALT" command button will appear when the highlighted candidate has an alternate.

The "Check ALT" button reports "371 PLEASANT AVE, NEW YORK NY 10035" is "501 E 117TH ST".



After closing the message box, the "Take ALT" command button appears accepting the redirection automatically avoiding having to type "501 E 117TH ST".

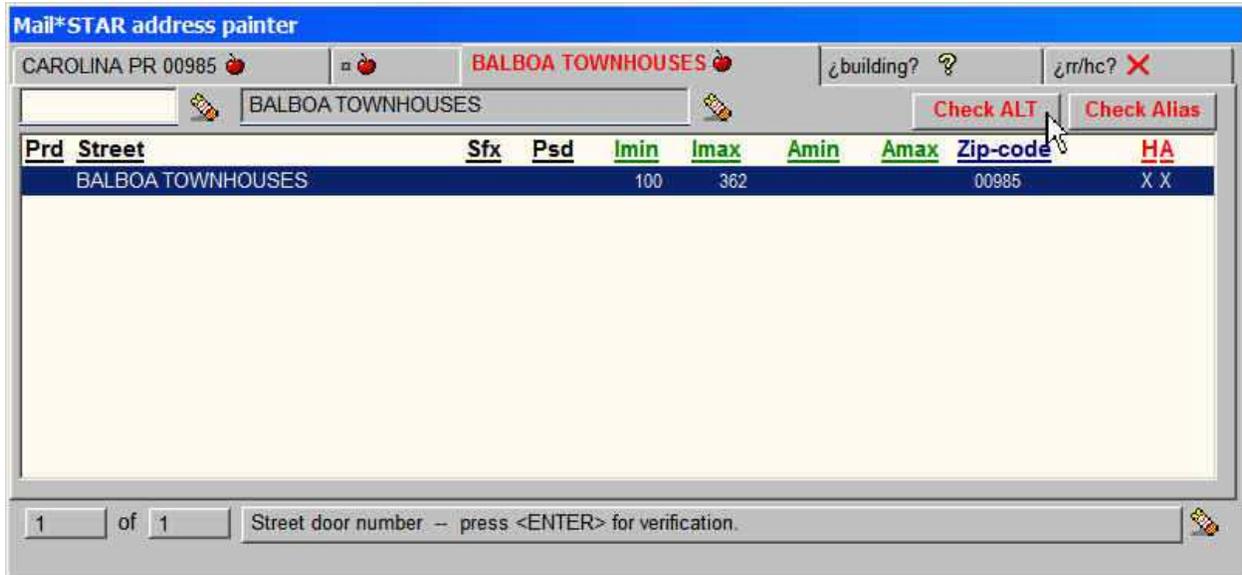


Exercise

Repeat this exercise and follow through with the "Take ALT" command button.

High-rise Alternate – redirection to multiple addresses

Clusters of buildings can be redirected to multiple street addresses. For this example, the context is “CAROLINA PR 00985” and the street criterion clue is the token “BALBOA” which results in one match.

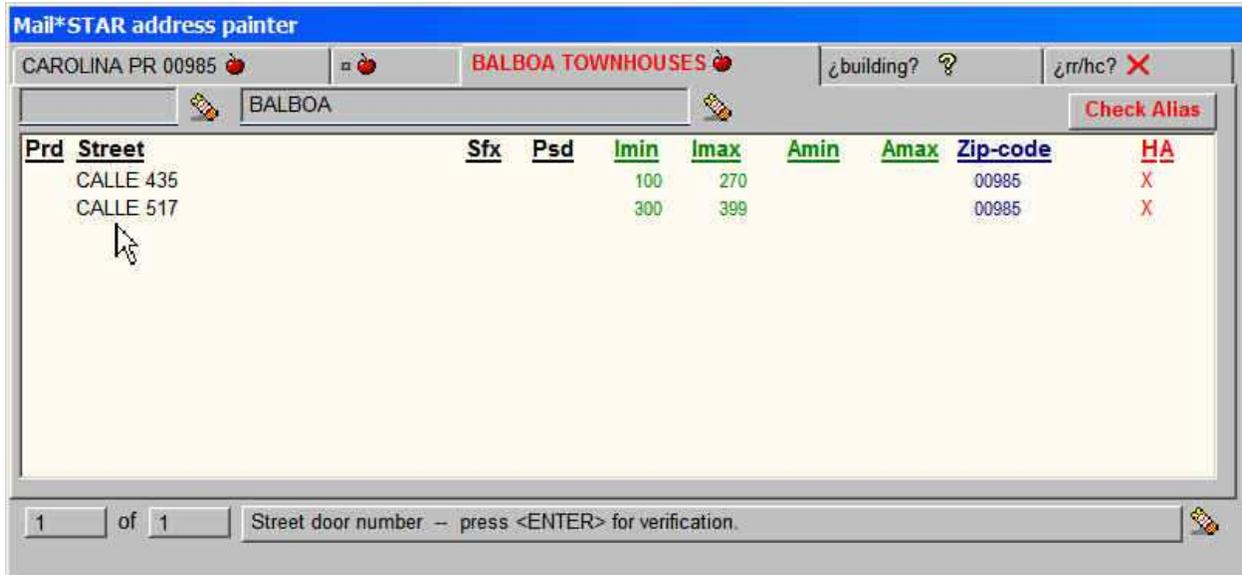


Remember that when only one candidate appears, it is selected automatically. When the “address painter” recognizes that a high-rise alternate exists, the “Check ALT” button is made available. <Click> on “Check ALT” results in the following screen.



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After closing the “Alternate street list” screen, a “Take ALT” button appears. <Click> “Take ALT” to establish this “Alternate street list” context. The address context is now defined as all addresses in the list of thirteen addresses in “CAROLINA PR 00985” on streets “CALLE 435” and “CALLE 517”.



The screenshot shows the Mail*STAR address painter interface. At the top, there is a blue header bar with the text "Mail*STAR address painter". Below the header, there are several fields and buttons: "CAROLINA PR 00985" with a red apple icon, "BALBOA TOWNHOUSES" with a red apple icon, "building?" with a question mark icon, and "rr/hc?" with a red X icon. Below these, there is a search field containing "BALBOA" and a "Check Alias" button. The main area contains a table with the following columns: Prd, Street, Sfx, Psd, lmin, lmax, Amin, Amax, Zip-code, and HA. The table lists two streets: CALLE 435 and CALLE 517. A mouse cursor is pointing at the "CALLE 517" row. At the bottom, there is a status bar with "1 of 1" and the text "Street door number -- press <ENTER> for verification." with a red apple icon.

Prd	Street	Sfx	Psd	lmin	lmax	Amin	Amax	Zip-code	HA
	CALLE 435			100	270			00985	X
	CALLE 517			300	399			00985	X

This example will be continued with the high-rise address element tab, scenario 1 on the very next page.

High-rise Address Element Tab

There are a number of address context scenarios that need to be considered for the high-rise tab. The high-rise tab is being introduced demonstrating three common high-rise address problems.

1. Complete the previous exercise, “High-rise Alternate – redirection to multiple addresses”
2. Solve a high-rise address having a street address and building unit number
3. Demonstrate a common problem of resolving buildings in “PR” where no street information exists

The high-rise tab has three criterion fields. All three criterion fields are static requiring an <ENTER> before the data window is changed. Data window columns are documented in scenario 3.

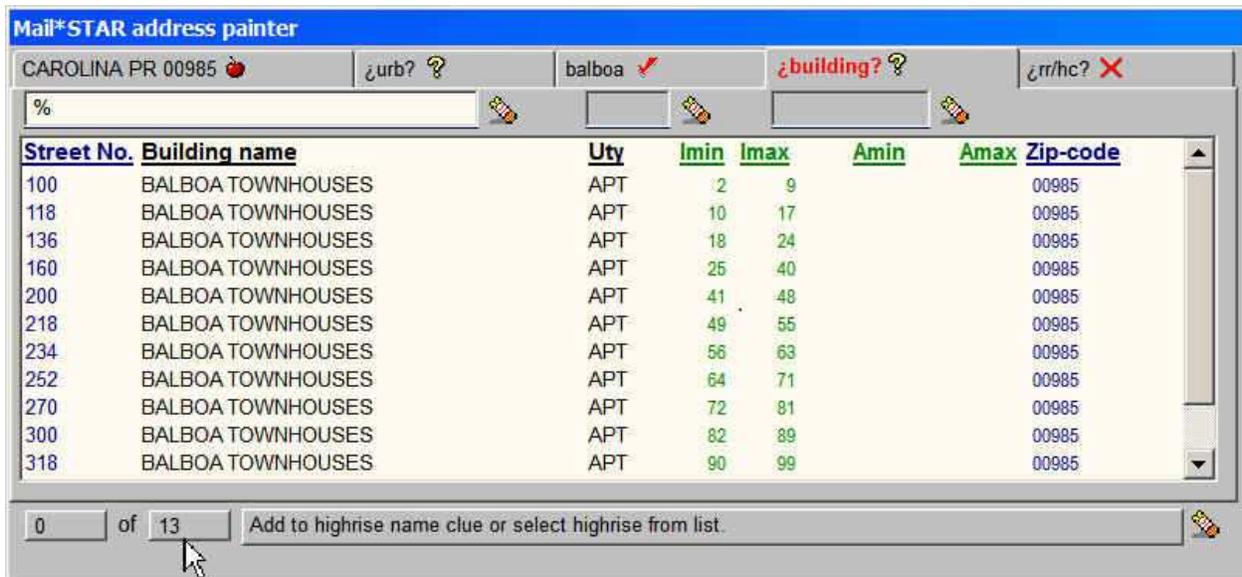
The city or ZIP code and street criteria affect the address context. In the order of specificity:

- If inexact street criterion has been established resulting in a list of streets in the street tab’s data window, only buildings and firms found in the street data window’s list of streets would be candidates.
- If a specific street has been selected, only buildings and firms on that street will be listed.
- If the street number is included and a USPS registered high-rise exists at that specific street address, only one building and any USPS registered firms will appear in the high-rise tab.

A single building will have a building row for every unit designator type. If the building has apartments, unit designator “APT”, and business suites, unit designator “STE”, there will be two rows showing the unit number ranges for each unit designator. A building might have any number of firms. Firm records have a red ‘F’ flag before the firm’s name.

Scenario 1: “High-rise Alternate – redirection to multiple addresses” – cont. from previous page

The street city criterion was “CAROLINA PR 00985” and there was an inexact street criterion including a list of two streets. <Click> on the high-rise address element tab followed by <F1> wildcard search.



The data window shows 13 high-rise records all having the unit designator “APT”. Scrolling through the candidates will show that all these buildings are on the two streets established by the street criterion field clue “BALBOA”, “CALLE 435” and “CALLE 517”. Selecting any building row changes the inexact street criteria, setting the implied street address criteria of the building.

Hint

Most buildings in Puerto Rico have USPS registered names. Most USPS registered buildings outside of Puerto Rico are not named. Firms are almost always named except within unique ZIP codes.

Not all firms are listed because USPS firm records only list organizations that have been given one or more private ZIP+4’s. Firms that have not requested ZIP+4 records will not appear in this data window.

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Scenario 2: Finding High-rise Using Street Information

United States high-rise address information rarely includes a building name, but should always have a street door number and street name and usually includes a unit designator and/or unit number similar to:

405 LEXINGTON STE 4101, NEW YORK NY

From the city tab, set “NEW YORK NY” without a Zip code. From the street tab, enter “LEX%” resulting in 19 occurrences of “LEXINGTON AVE” in 19 different Zip codes in NEW YORK. The high-rise door number, “405”, reduces the list to one candidate, “405 LEXINGTON AVE, NEW YORK NY 10174”. <Click> the high-rise tab.

Mail*STAR address painter

NEW YORK NY 10174 405 LEXINGTON AVE ?building? ?rr/hc? X

Street No.	Building name	Uty	lmin	lmax	Amin	Amax	Zip-code
405	CHRYSLER BLDG	BSMT	5	5	ARC1	ARC9	10174
405	CHRYSLER BLDG	FL	2	71			10174
405	CHRYSLER BLDG	FRNT			A	A	10174
405	CHRYSLER BLDG	LBBY	1	1			10174
405	CHRYSLER BLDG	RM	1400	5501			10174
405	F CREATE	FL	70	70			10174
405	F DR C WEISS DDS	FL	69	69			10174
405	F EMBASSY OF SPAIN	FL	44	44			10174
405	F GLOBAL MARKETS	RM	4501	4501			10174
405	F GOLDBERG AND GELMAN	FL	42	42			10174
405	F HL CAPITAL	RM	4800	4800			10174

0 of 25 Add to highrise name clue or select highrise from list.

The building “405 LEXINGTON AVE” has 25 rows, five unit types, “BSMT”, “FL”, “FRNT”, “LBBY” and “BSMT”, followed by firms having USPS vanity ZIP+4’s assigned to them. The red ‘F’ followed by firm name distinguishes firms from buildings. Enter the number “4101” in the third column and <ENTER>.

Mail*STAR address painter

NEW YORK NY 10174 405 LEXINGTON AVE ?building? ?rr/hc? X

4101

Street No.	Building name	Uty	lmin	lmax	Amin	Amax	Zip-code
405	CHRYSLER BLDG	RM	1400	5501			10174-4199
405	CHRYSLER BLDG	BSMT	5	5	ARC1	ARC9	10174-0002 D
405	CHRYSLER BLDG	FL	2	71			10174-0002 D
405	CHRYSLER BLDG	FRNT			A	A	10174-0002 D
405	CHRYSLER BLDG	LBBY	1	1			10174-0002 D

0 of 5 Multiple highrise choices for unit "4101" -- select highrise from list.

The first record is the preferred non-default ZIP+4 match. The first record with ZIP+4 “4199” is the right choice if there is no firm name clue. The remaining four records are for unit types using the default ZIP+4 record where ZIP+4 = “0002”.

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Scenario 3: (Puerto Rico) Finding High-rise without Street Data Using the Building Name

In Puerto Rico, high-rise address data frequently does not have street information reporting only the building name, unit designator and/or unit number similar to: DIPLOMAT APT 36, SAN JUAN PR.

Establish city and state. Since there is a unit designator, the clue 'DIPLOMAT' is a likely building name clue. Skipping over the street tab, we use the clue 'DIPLOMAT' in the building tab followed by <ENTER>.

Mail*STAR address painter

SAN JUAN PR 00907 ¿urb? ¿street? diplomat ¿rr/hc?

DIPLOMAT

Street No.	Building name	Uty	Imin	Imax	Amin	Amax	Zip-code
1126	COND THE DIPLOMAT	APT	21	88	C-01	SPH-8	00907
1126	COND THE DIPLOMAT	OFC			C-06	ADM	00907
1126	COND THE DIPLOMAT	PH	1	8			00907
1126	COND THE DIPLOMAT	STE	1	5	C-02	C11	00907

0 of 4 Add to highrise name clue or select highrise from list.

There are four high-rise records. Selecting any of the four rows will set the implied street. Enter the unit number "36" and <ENTER> and select the first row causing the implied street to appear.

Mail*STAR address painter

SAN JUAN PR 00907 1126 AVE ASHFORD COND THE DIPLOMAT ¿rr/hc?

COND THE DIPLOMAT APT 36

Street No.	Building name	Uty	Imin	Imax	Amin	Amax	Zip-code
1126	COND THE DIPLOMAT	APT	21	88	C-01	SPH-8	00907-1221
1126	COND THE DIPLOMAT	OFC			C-06	ADM	00907-1237 D
1126	COND THE DIPLOMAT	PH	1	8			00907-1237 D
1126	COND THE DIPLOMAT	STE	1	5	C-02	C11	00907-1237 D

1 of 4 -- Highrise address certified --

- The first column reports the street door number.
- The second column will contain a red "F" if the record is a firm record.
- The columns in black report the building or firm name if present and the unit designator.
- The green columns report absolute integer and alphanumeric ranges.
- The blue columns report the ZIP code and if the address is certified the ZIP+4.
- The last column reports any address quality flags in red.

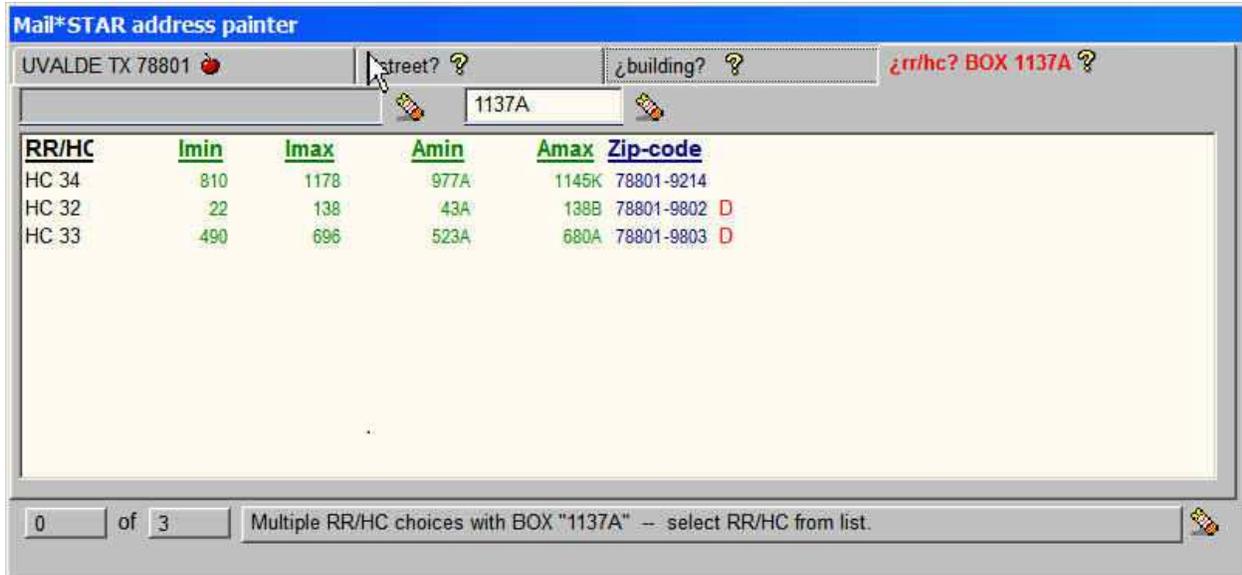
Rural Route Address Element Tab

The data window has two criterion fields and a single data window.

The rural route criterion field is live updating the data window after every character. There is an implied leading and trailing wildcard. The trailing wildcard can be eliminated ending the clue with a period, “.”.

The rural route box number is a static field requiring an <ENTER> before the data window is affected.

The example shows 3 rural routes in “UVALDE TX” using only the criterion field for rural route box number. The candidate list is sorted by address flags then by name. The red “D” at the end of candidate rows indicates that the solution is based on a default range. Default range records were discussed earlier in the general concepts section of this guide.



- The first column reports the rural route type and number.
- Columns in green report integer and alphanumeric absolute ranges of the boxes for the rural route.
- The section in blue reports the ZIP code and if the address is certified, the ZIP+4.
- The last column shows address quality flags in red.

Side effects

If urbanization, street and or high-rise criterion had been established, navigation to this tab resets it.

Hints

Most rural routes provide a default ZIP+4 record. Many rural routes only have a single ZIP+4 default record for certification of all boxes on the route. Rural route box numbers are usually unique within the ZIP code.

Rural route adjustments are not uncommon where boxes are removed from one route and added to another. Rural route adjustment is seen as a rise in rural route default range matches.

Default range rural route matches can be caught using Mail*LIST criteria and repaired by changing the route number. Care should be taken by either contacting the delivery post office or the recipient before any route change.

Deprecating for Emergency Services (Slowly but Surely)

Rural Routes are postal, not physical addresses. Physical addresses are replacing rural route address for effective dispatch of emergency services. Every month there are fewer rural route records requiring the licensed LACS^{Link} product to successfully translate rural route addresses with street style addresses.

ZIP+4 Range Data Window

ZIP+4 range data windows are opened and closed with a <right-click> on a candidate ZIP code, street, high-rise and rural route rows. The data window does not have the standard “current row” of “number of rows” counters and does not respond to <up-arrow> and <down-arrow> keys.

Rows can be selected with a <click> of the row. If the candidate ZIP code, street, high-rise or rural route had been CASS certified, the ZIP+4 range used to certify the address will have been highlighted. A <double-click> of the window will return to that same row at any time.

Mail*STAR -- PO BOX ranges											
B	15011	15029	B900	8511	8529	B	15059	15091	B900	8559	8591
B	50004	50028	B900	6204	6228	B	50053	50072	B900	6253	6272
B	9020001	9020007	B001	0001	0007	B	9020008	9020008	B900	0008	0008
B	9020009	9020031	B001	0009	0031	B	9020032	9020032	B900	0032	0032
B	9020033	9020081	B001	0033	0081	B	9020082	9020082	B900	0082	0082
B	9020083	9020120	B001	0083	0120	B	9020121	9020149	B002	0121	0149
B	9020150	9020150	B900	0150	0150	B	9020151	9020191	B002	0151	0191
B	9020192	9020192	B900	0192	0192	B	9020193	9020240	B002	0193	0240
B	9020241	9020360	B003	0241	0360	B	9020361	9020480	B004	0361	0480
B	9020481	9020484	B005	0481	0484	B	9020485	9020485	B900	0485	0485
B	9020486	9020523	B005	0486	0523	B	9020524	9020524	B900	0524	0524
B	9020525	9020600	B005	0525	0600	B	9020601	9020615	B006	0601	0615
B	9020616	9020616	B006	3967	3967	B	9020617	9020720	B006	0617	0720
B	9020721	9020840	B007	0721	0840	B	9020841	9020960	B008	0841	0960
B	9020961	9020991	B009	0961	0991	B	9020992	9020992	B900	0992	0992
B	9020993	9021066	B009	0993	1066	B	9021067	9021067	B900	1067	1067
B	9021068	9021080	B009	1068	1080	B	9021081	9021087	B010	1081	1087
B	9021088	9021088	B900	1088	1088	B	9021089	9021111	B010	1089	1111

This window is the result of <right-click> on the ZIP code “00902”. The other ZIP+4 range windows for street, high-rise and rural route use the same data window. The only differences are the window’s title and that streets, high-rises and rural routes only have a single ZIP+4 instead of a ZIP+4 low and high range. Firm records, which share the high-rise data window, do have low and high ZIP+4 ranges.

- The first column contains the odd/even code having the domain {O=odd, E=even, B=both}. Delivery for a ZIP+4 can include all odd, even or both odd and even numbers within the range.
- The second and third columns report the effective minimum and maximum delivery point range.
- The fourth column reports the carrier route assigned to the range.
- The last column(s) after the carrier route report the ZIP+4 range for PO BOX and firm records and a single ZIP+4 for street, high-rise and rural route delivery.

Appendix A – Address Status Values

MATCHED: Resolved addresses are given 1 to 4 stars.

- **** ZIP+4 coded and DPV valid AABB
- *** ZIP+4 coded and DPV valid AACC or AAN1 (secondary number either missing or invalid)
- ** ZIP+4 dropped as DPV invalid
- * CRT coded address has not-deliverable ZIP+4

CITY: Could not resolve the city.

CITY_NOISE: City not resolved due to extraneous clues in or around city name.

CLOSE_TIE: There are multiple candidates whose reliabilities vary but the difference is too close to call.

DEFER: There is at least one candidate, but the reliability is not high enough to recommend a solution.

NSN: (No Such Number) Candidate(s) were found, but the primary/secondary number is not supported by any of the ZIP+4 ranges.

PNE: (Primary Not Encountered): Primary token clues, excluding street directions and suffixes, unit designators, etc., were not found with sufficient reliability within city/state context.

STATE: Could not resolve the state.

SCOPE: (Installations with limited USPS service area) State is outside scope of geographic configuration.

STC_ZIP_CONFLICT: Conflict exists between input zip code and state.

TIED: There are multiple candidates with the same reliability that no tiebreaker was able to resolve.

USX: The address resolves to more than once carrier route and DPV validation was either not used or could not break the tie.

K5_CLOSE_TIE: Close tie between multiple candidates w/ name match and inexact directional match.

K5_DEFER: Multiple candidates w/ name match and inexact directional match having poor reliability.

K5_TIED: Tie between multiple candidates w/ name match and inexact directional match.

<GEN_DEL_DEFER>: General delivery address with unreliable last line changes

<MULTIPLE_HRISE>: Same as “TIED” where candidates are in the same high-rise.

<MULTIPLE_DLINE>: Same as “TIED” where candidates have the same delivery line.

<MULTIPLE_ALIAS>: Multiple exact street match alias records resulted in an ambiguity.

<POB_MLC>, <RHC_MLC>, <MIL_MLC> or <PHY_MLC>: Same as “USX” except that the address type has been identified as PO BOX, Rural Route, Military or Street/High-Rise.

<NO_ADDRESS>: The input address is empty.

<NO_DEL_LINE>: The input address does not have a delivery line.

<POB_NSN>, <RHC_NSN>, <MIL_NSN> or <PHY_NSN>: Same as “NSN” except that the address type has been identified as PO BOX, Rural Route, Military or Street/High-Rise.

<POB_NO_PRIMARY>, <RHC_NO_PRIMARY>, <MIL_NO_PRIMARY> or <PHY_NO_PRIMARY>: There was no primary number available for PO BOX, Rural Route, Military or Street/High-Rise.

<RHC_NSR>: The rural route address has no corresponding route number within the city/state context.

<CASS_STOP_Kn>: When CASS address quality flags indicate a condition where CASS forbids automatic address certification, the address status is reported as <CASS_STOP_Kn> where Kn is one of the stop conditions described in appendix ‘B’ section “CASS stop flags”.

Appendix B – Address Quality Flags

First Character – Address Type

G - "GENERAL DELIVERY"
P - "PO BOX"
R - Rural Route
S - Street
H - High-rise
F - Firm
M - Military

Second Character – ZIP+4 Match Level (Number of Stars)

4 - **** means 100% DPV valid
3 - *** means DPV valid but secondary number missing or invalid
2 - ** means DPV invalid
1 - * address marked as non-deliverable by the USPS

After Second Character

. - LACS^{LINK} conversion²
***** - Perfect address
! - High-rise alternate record
\$ - Unique ZIP code assigned to a single agency, company or university
& - Street alias - flag can be double, (i.e. &&) if extended USPS alias rules were applied
@ - Delivery point alternate
^ - Un-certified shadow data
` - Derived primary number
+ - Non-Default City - City name was determined by a USPS ZIP+4 alternate city directive
; - Street name changed to USPS required preferred alias
= - Visibly perfect - input matches output but is coded using ZIP+4 default range
> - An exact match to a USPS ZIPMove record caused a ZIP-code city change
< - ZIP does not agree with input state
(- Delivery line was reduced in length by USPS street abbreviation
) - Last line was reduced in length by USPS city abbreviation
{ - Unique-zip match without supporting Zip+4
} - The input Zip+4 was retained
A - Alpha appended primary or secondary number required by the USPS
B - Building location but certified as street address
C - City change
D - Default ZIP+4 record used to certify the address
E - Element change - Directional or Suffix is either missing or unused
F - Firm location but was certified as street address or high-rise
G - Firm address was improved adding unit designator and secondary number by Suite^{LINK}
H - Household or residence indicated by RDI
I - Implied city based on input ZIP code
J - Uncorroborated unit type
K - "CASS stop" - CASS forbids software certification
L - LACS indicator flag found in the ZIP+4 record
M - Modified primary or secondary number in accordance with CASS requirements
N - Non-deliverable ZIP+4 record
O - Orthographic change was required to match the address
P - Pre or post directional change
Q - The firm name and an address line were swapped
R - City name change
S - Street suffix change
T - Directional shift
U - Unit designator was not supported by the ZIP+4 record
V - Urbanization change
W - Non-Postal city name change
X - Embedded input token was skipped or last AMS-II match or joining input tokens (i.e. De LEON matches DELEON)
Y - Dual address
Z - ZIP code change

² The '.' LACS^{LINK} address quality flag is followed by {"00", "92"} when conversion failed, {"01", "09", "14"} when conversion was successful and 13 when a LACS false-positive was encountered.

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DPV indicators of DPV valid addressed that are undeliverable

- vacant- - DPV indicated that the known address is currently vacant
- nostat- - DPV indicated that the mail is being returned from known occupied address

The following address quality flags refer to missing input address tokens.

- # - Number
- % - Element
- ? - Clueless
- _ - Last line element
- ~ - Noise word

The following address quality flags refer to missing AMS-II tokens and appear after O flag.

- / - Leading AMS-II token missing from input address
- | - AMS-II token other than 1st or last missing from input address.
- \ - Trailing AMS-II token missing from input address.

CASS stop flags: Flags for address conditions where CASS forbids software certification

- K0** - Standalone word 'BUZON' in a Puerto Rican address
- K1** - Both address quality flags 'A' and 'M' prevent the address from being accepted
- K2** - Matched to unique ZIP code that is not supported by the input data
- K3** - PO BOX with a unique ZIP code can never be changed to a non-unique ZIP code
- K4** - Inexact match is not allowed when an exact match exists for a ranged street alias
- K5** - Multiple candidates with exact name match and inexact directional match
- K6** - Both the ZIP code and city name changed
- K7** - Stop overlapping range containing a non-del record
- K8** - Exact match to an Early Warning System record
- K9** - Both the address suffix and the directional were changed

CASS tiebreaker flags:

- :a** - Exact USPS street alias match superseded an inexact ZIP+4 street match.
- :c** - Close tie record was resolved choosing the city without CASS stop flags.
- :d** - Deliverable ZIP+4 record superseded a non-deliverable ZIP+4 record.
- :h** - Close tie record was resolved choosing the base ZIP+4 record.
- :k** - Tied inexact match solution was resolved following a K5 rule.
- :l** - Tied solution was resolved using the input last line.
- :m** - Multiple high-rise record was resolved choosing the default because was close tie.
- :n** - Tied inexact match solution was resolved choosing the street with the closed name match.
- :o** - Close tie record was resolved choosing the street name without orthographic change.
- :p** - Tied delivery line address was selected over delivery line with perfect match.
- :q** - Tied solution was resolved using a unique Zip+4.
- :s** - Close tie was resolved by selecting the street whose name exactly matched the input clue.
- :t** - Close tie record was resolved choosing the delivery line without suffix change.
- :u** - Represents two tiebreakers:
 - Multiple carrier route solutions were resolved using DPV delivery point validation.
 - Multiple candidates same ZIP code but different last line city names based on input city name.
- :v** - Tied solution was resolved using DPV delivery point validation.
- :x** - Tie where a misplaced primary was chosen over an alternate high-rise
- :z** - Tied solution was resolved using single candidate agreeing with the input ZIP code.

Appendix C – Shadow Data

Since 1996, CASS has required maintaining un-validated urbanization noise data for Puerto Rico in the urbanization address line if there was no valid urbanization occupying the urbanization line. This CASS requirement was later extended to include leading and trailing segments of the delivery line. AES refers to this retained un-validated data as shadow data.

AES has two concerns about this requirement as it relates to address quality. The CASS requirement is intended to prevent broken addresses where valuable information is discarded. AES agrees with this concern and maintains dual address attributes protecting raw address input data as read only while maintaining a second set of attributes for CASS certified data.

- Quality control: We recommend a double check of addresses where shadow data was retained. There is a special address quality flag, "^", that can be used in Mail*LIST criterion to select for review these addresses.
- Including shadow data in the non-physical address types, PO BOX and Rural Route, is controversial and can be controlled by Mail*STAR and Mail*LIST configuration file parameters. These parameters have no effect on how addresses are certified limiting their effect to address presentation. Refer to [Configuration.pdf](#) and [Configuration File.pdf](#).