# Intelligent Mail® Barcodes:
## What Printers Need to Know

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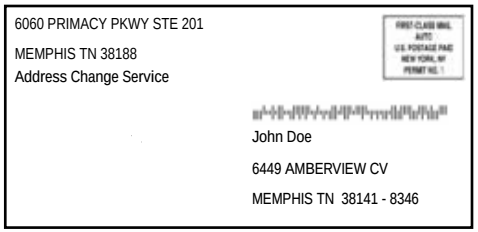
National Postal Forum 2008

# Agenda!

- Intelligent Mail® barcodes - introduction
- Last two years
- What's new
- Generating Intelligent Mail barcodes
- Harte-Hanks – Intelligent Mail barcodes meet the real world

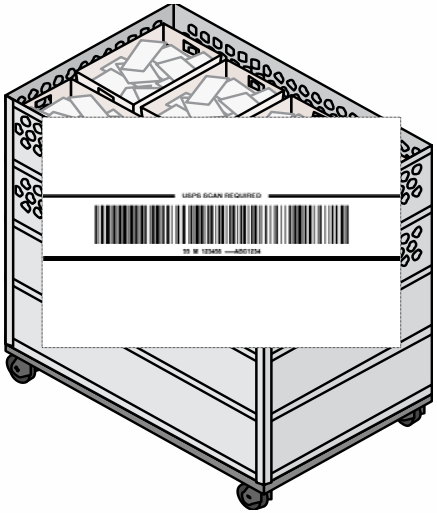
# Suite of Intelligent Mail® Barcodes

- Intelligent Mail® Barcode
- Intelligent Mail® Tray Barcode
- Intelligent Mail® Container Barcode




**Intelligent Mail® Barcode**

**Intelligent Mail® Tray Barcode**



**Intelligent Mail® Container Barcode**

# Common Thread to Intelligent Mail Barcodes

- Uniquely identifies the sender
- Uniquely identifies the mailpiece
- Identifies any service(s) the mailer requests
- Provides a destination ZIP™ Code for sortation & routing

# Last Two Years

- Launched Intelligent Mail® barcode for Letters (2006) and Flats (2007)
- Offered for OneCode Confirm™, OneCode ACS™ and Automation Discounts
- Proposed Basic and Full-Service options
- Addressed specification issues

# OneCode Confirm™

- Available on First-Class Mail®, Periodicals, and Standard Mail® for letters and flats
- Provides Confirm® service (subscription) using the Intelligent Mail® barcode
- Provides near real-time tracking information
- Can combine Confirm® service visibility with other applications such as OneCodeACS™ service

# OneCode ACS™

- Available on First-Class Mail®, Periodicals, and Standard Mail® for letters and flats
- Lower costs than traditional ACS™
- Provides address corrections to the mailer in an electronic format
- Provides a more efficient means for the mailer to apply corrections
- Can combine with other services

# Two Proposed Options

- Basic Option – Available Today
- Full-Service Option – May 2009-2010

# Basic Option

- Available today
  - Intelligent Mail® barcode for OneCode Confirm™, OneCode ACS™, and Automation Discounts
  - Barcode uniqueness not necessary

# Full-Service Option

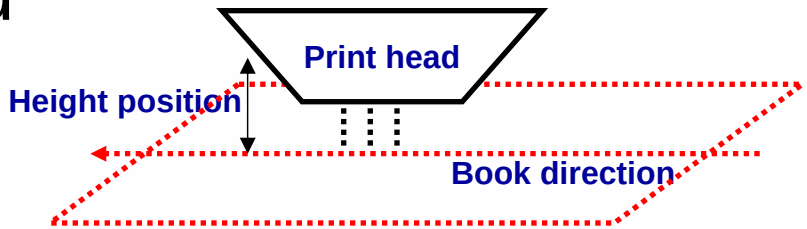
- Proposed for May 2009
  - Unique Intelligent Mail® barcode, unique Intelligent Mail® Tray barcode, unique Intelligent Mail® Container barcode
  - Electronic documentation
  - Appointment scheduling (FAST)
- Proposed for May 2010
  - Required use of Intelligent Mail barcode in lieu of POSTNET for automation discounts

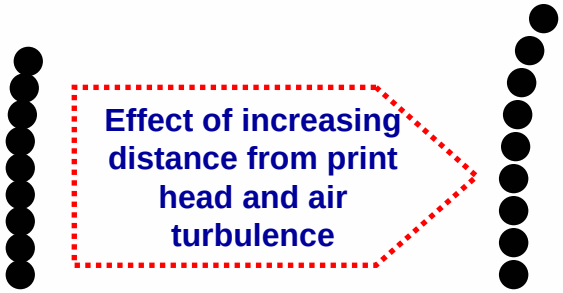
# Full-Service Option Benefits

- Address Correction Information
- Start-the-Clock

# Inkjet Constraints in Printing Barcodes

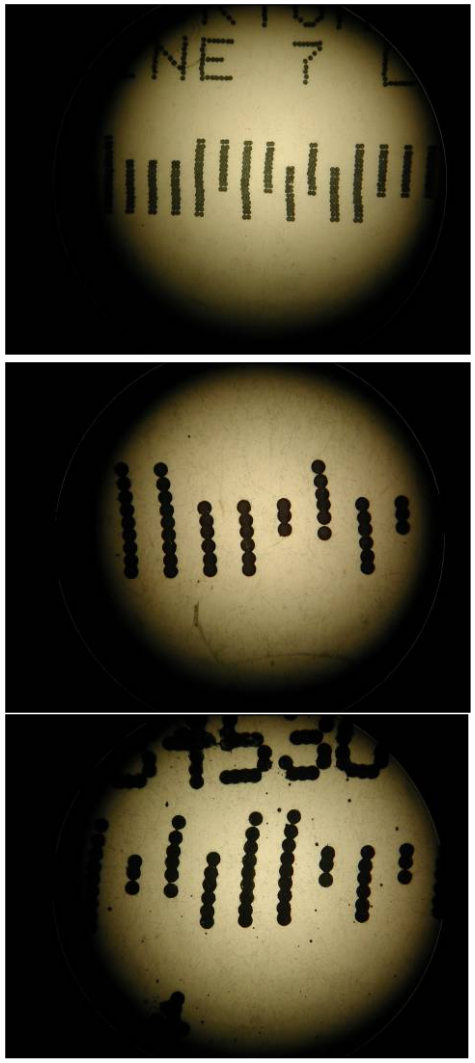
- Old specification required full bar height to be between .134” and .230”
- Distance from print head affects voids separation and air turbulence, which affect barcode quality
- In addition to print quality, some mailers face print head limitations and need to fit eight lines of text/barcode within one inch



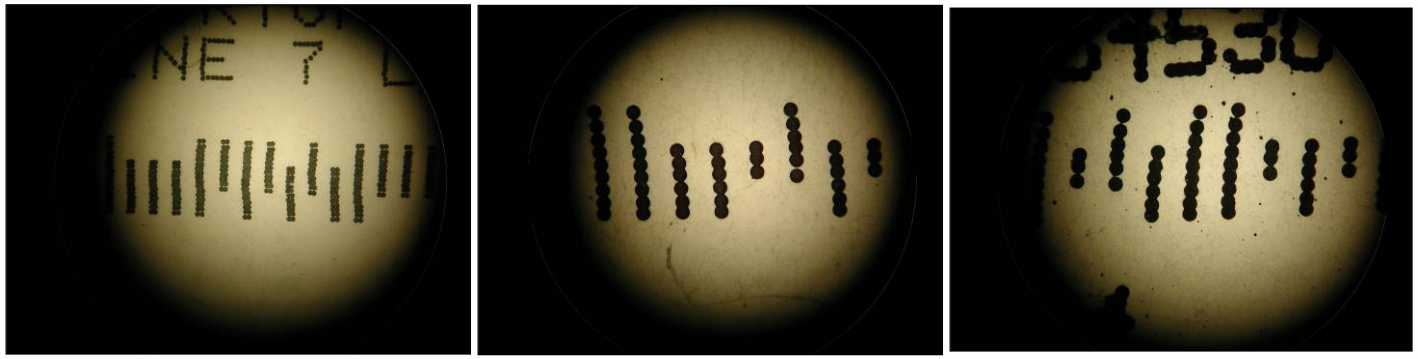
# Shortening the Barcode Height

- Summer 2006
  - Began joint Postal Service and IDEAlliance testing of flat mailpieces with shorter-height barcodes
  - Tested shorter-height Intelligent Mail® barcodes on flats (printed at variable speeds) on UFSM, AFSM, and APPS
  - Shorter-height (.125”) does not negatively impact readability



# Shortening the Barcode Height

- October 2007
  - Revised Intelligent Mail® barcode specification



# Intelligent Mail® Barcode Specification

- Significant effort made to keep Intelligent Mail barcode specifications similar to POSTNET™ and PLANET® Code

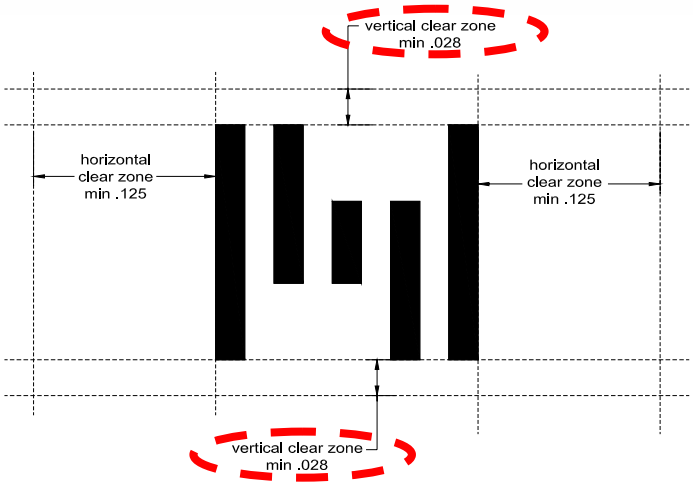
| | 11-digit POSTNET | 13-digit PLANET | Intelligent Mail Barcode |
|---|---|---|---|
| Number of Bars | 62 | 72 | 65 |
| Width of Bars (in inches) | 0.020 ± 0.005 | 0.020 ± 0.005 | 0.020 ± 0.005 |
| Bars per inch (length) | 22 ± 2<br>(min: 2.542”) | 22 ± 2<br>(min: 2.958”) | 22 ± 2<br>(min: 2.667”) |
| Height of Full Bar (in inches) | 0.125 ± 0.010<br>(min: 0.115) | 0.125 ± 0.010<br>(min: 0.115) | 0.145± 0.020<br>(min: 0.125)* |
| Vertical Barcode Clearance (in inches) | min: 0.040 | min: 0.040 | Min: 0.028 |
| Voids (in inches) | min: 0.005 | min: 0.005 | min: 0.010 |

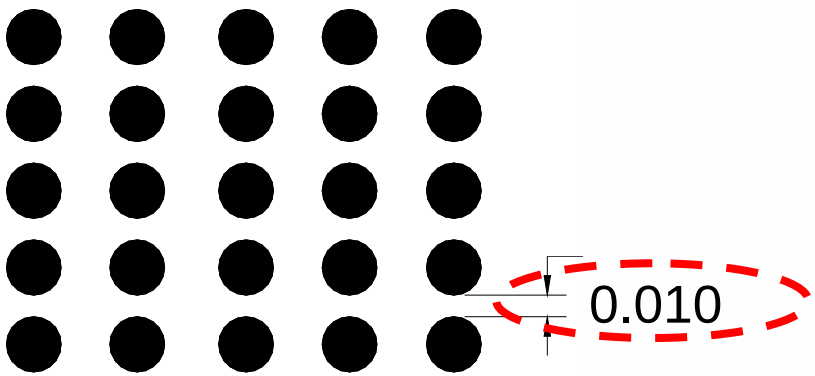
Length

Height

* Original minimum bar height specification was 0.160”

# Barcode Clearance and Voids




Vertical clear zone was reduced from 0.040 inches to 0.028 inches per request from the mailing industry

Maximum dot matrix spacing increased from 0.005 to 0.010 inch.

# New Shorter Height Barcode

Both Intelligent Mail® barcode and POSTNET™ barcode allow placement of barcode, clear zones, and at least seven lines of text on a 1-inch label.

# New Shorter Height Barcode Comparison

**Barcode height + barcode clear zone + seven text lines + clear space between lines + clear space around address block < 1”**

POSTNET: 0.115” + 0.040” + 7x0.080” + 6x0.028” + 2x0.040” = 0.963” (< 1”)

IM™ barcode: 0.125” + 0.028” + 7x0.080” + 6x0.028” + 2x0.040” = 0.961” (< 1”)

# Intelligent Mail® Barcode Encoding

- POSTNET™ and PLANET Code®
  - Image-based fonts
  - Do not require encoding algorithms
    - POSTNET Example:  53594 = 53594
    - Visually determine the information….(74210)

# Intelligent Mail® Barcode Encoding

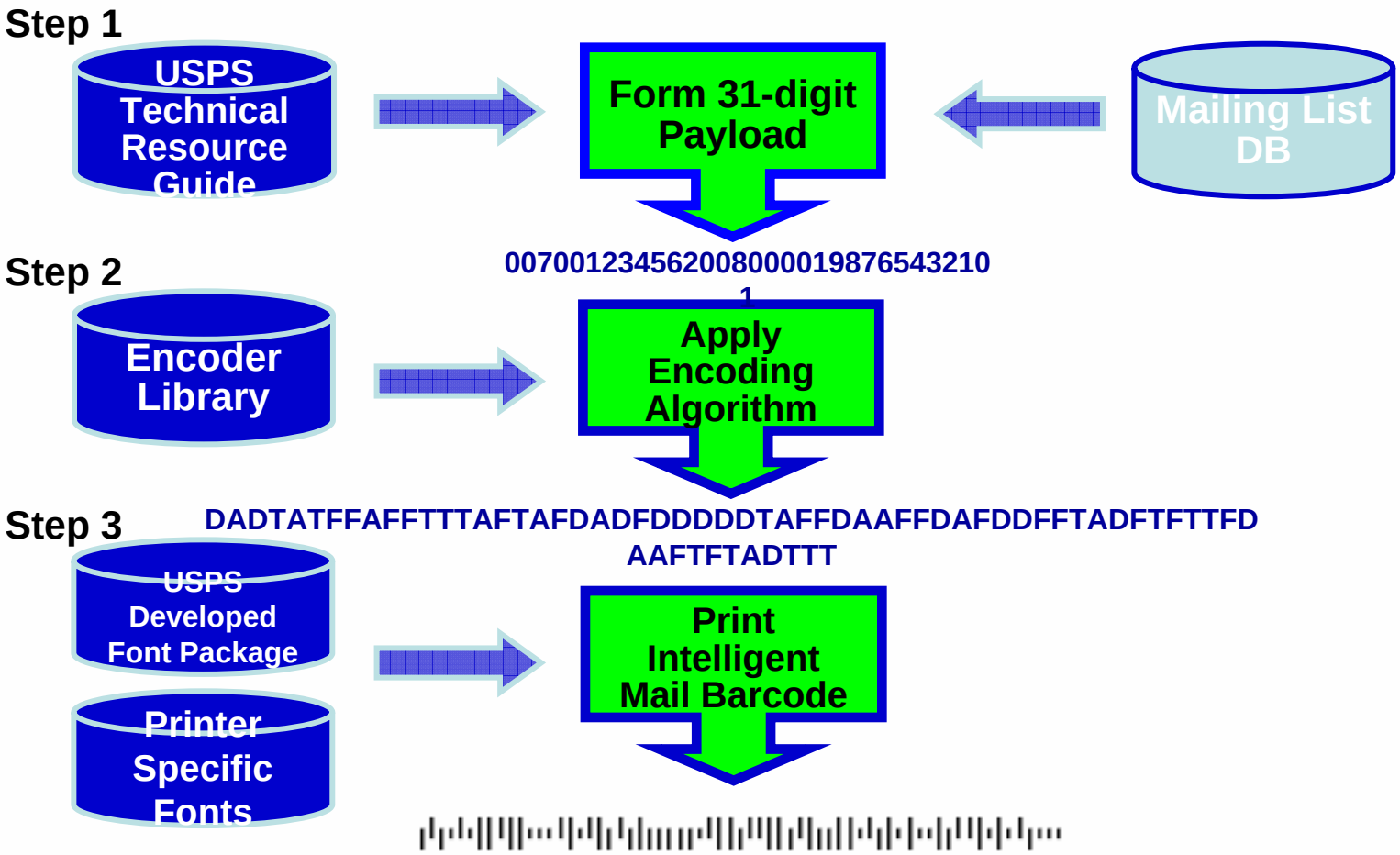
- Intelligent Mail barcode requires an encoding algorithm
  - Bar-for-bar image
  - Requires conversion with algorithms

**INTELLIGENT MAIL BARCODE EXAMPLE**

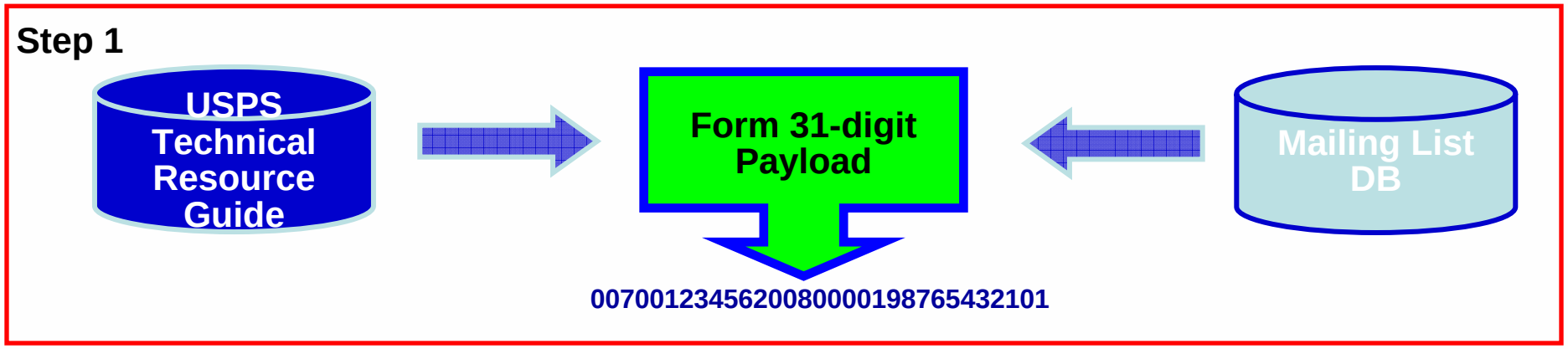
**00700123456200800001987654321 01 =**

**DADTATFFAFFTTTAFTAFDADFDDDDDTAFFDAAFFDAFDDFFTADFTFTTFDAAFTFTADTTT =**

# Generating Intelligent Mail® Barcodes for Letters and Flats



# Sample 31-digit Payload

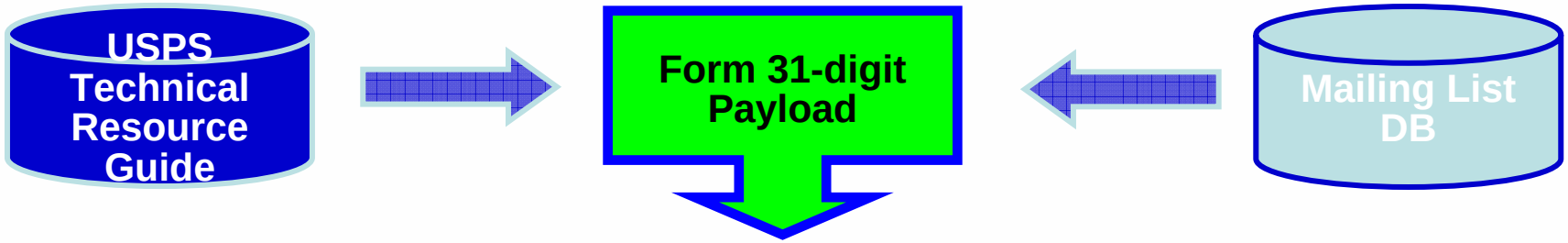


# Sample 31-digit Payload

| *Data Field* | *Number of Digits* | *Definitions* |
|---|---|---|
| **Barcode ID** | **2** | **Fill with "00" or OEL digits if required** |
| **Service Type** | **3** | **Examples:**<br>**700 – First Class Mail**<br>**702 – Standard Mail**<br>**704 – Periodicals** |
| **Mailer ID** | **6 or 9** | **Postal Service designates Mailer ID (MID) based on volume** |
| **Serial Number** | **6 or 9** | **Mailer provides** |
| **Routing ZIP** | **None, 5, 9, or 11** | **Delivery Point ZIP Code information** |

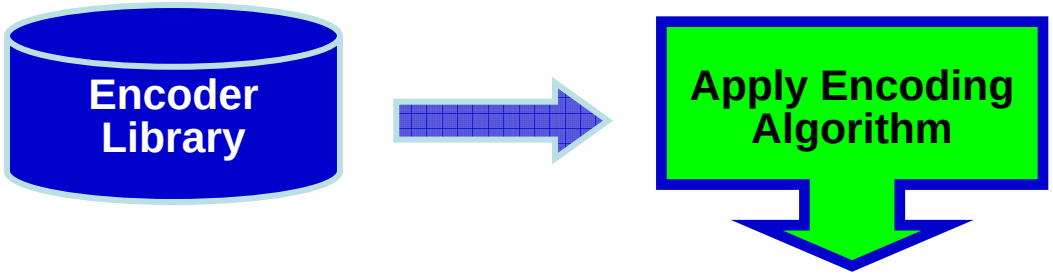
# Apply Encoding Algorithm

**Step 1**




**0070012345620080000198765432101**

**Step 2**



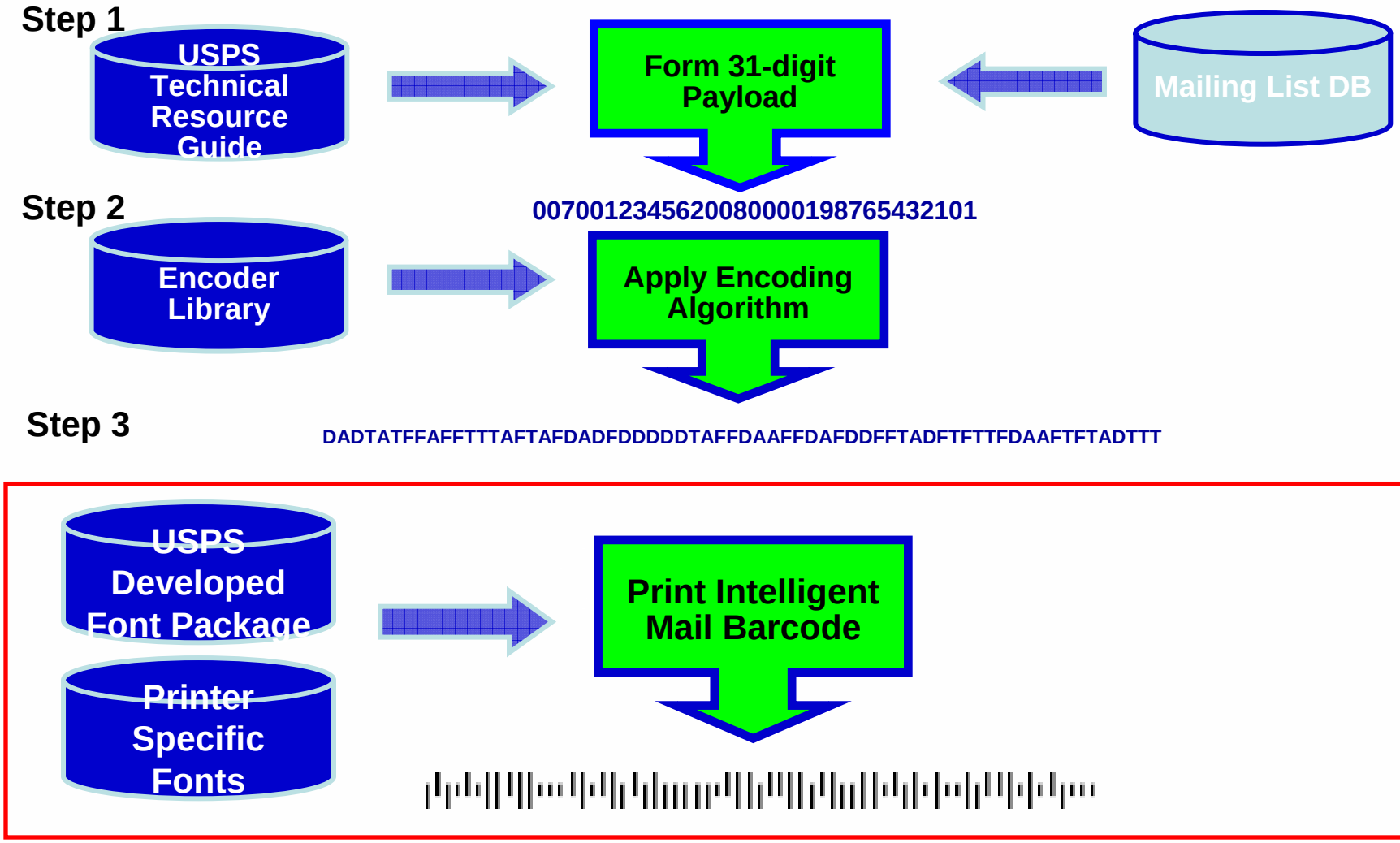

**DADTATFFAFFTTTAFTAFDADFDDDDDTAFFDAAFFDAFDDFFTADFTFTTFDAAFTFTADTTT**

To download encoders and user guides visit:
http://RIBBS.USPS.GOV/ONECODESOLUTION

# Free Encoders

| | *Language and Applications Supported* | | | | | |
|---|---|---|---|---|---|---|
| **Operating System** | **C** | **Java** | **COBOL** | **PL/1** | **MS Access** | **MS Excel** |
| **MVS, z/OS, and OS/390** | **Yes** | **Yes** | **Yes** | **Yes** | | |
| **VSE/ESA** | **Yes** | | **Yes** | **Yes** | | |
| **OS/400** | **Yes** | **Yes** | **Yes** | | | |
| **AIX** | **Yes** | **Yes** | | | | |
| **Linux for pSeries** | **Yes** | **Yes** | | | | |
| **Linux for Intel (including Intel-compatible systems)** | **Yes** | **Yes** | | | | |
| **Solaris *** | **Yes** | **Yes** | | | | |
| **HP/UX *** | **Yes** | **Yes** | | | | |
| **Mac OSX *** | **Yes** | **Yes** | | | | |
| **Programmer Version for Windows** | **Yes** | **Yes** | | | | |
| **MS Office Version for Windows** | | | | | **Yes** | **Yes** |

# Printing


Step 1
USPS Technical Resource Guide
Form 31-digit Payload
Mailing List DB
Step 2
0070012345620080000198765432101
Encoder Library
Apply Encoding Algorithm
Step 3
DADTATFFAFFTTTAFTAFDADFDDDDDTAFFDAAFFDAFDDFFTADFTFTTFDAAFTFTADTTT
USPS Developed Font Package
Printer Specific Fonts
Print Intelligent Mail Barcode

# Fonts

- USPS® provides both standard-height & compact-height fonts –
  - Close to min .125”
- USPS® provides fonts for digital printing
  - TrueType, Postscript, AFP, Metacode, PCL
- Some Inkjet printers require proprietary printer-specific fonts

# Validating Intelligent Mail® Barcodes

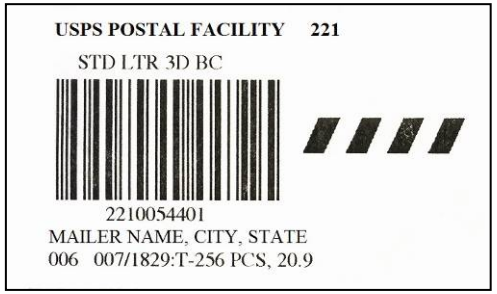
- Manual Tools
  - Visual Inspection
  - Plastic Templates
  - Optical Comparator
- Software Tools
  - Online Encoder/Decoder
  - Scanners and Verifiers
- Contact Your Mailpiece Design Analyst (MDA)

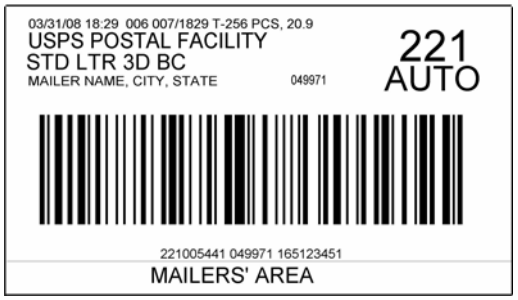
# Harte-Hanks – Phase I

- Using Intelligent Mail® Barcodes
  - Summer 2006 - Implemented Intelligent Mail barcode
  - Flat Mailers with JCPenney
  - 135+ Inkjet Systems (125 are Kodak)
  - Employed downloadable encoder from USPS

We make it happen.

# Intelligent Mail® Tray Label






**Existing10-digit Legacy Label:**

- **Can use today for automation discounts**

**Transitional 10/24-digit Intelligent Mail Tray Label**

- **Can use today for automation discounts (Basic option)**
- **Can use for the Full-service option when available**

**24-digit Intelligent Mail Tray Label**

- **When 24-digit Label is available can use for automation discounts (Basic option)**
- **Can use for Full-service option, when it becomes available**

# Intelligent Mail® Tray Barcode

- 10/24-digit Intelligent Mail® Tray Barcode
  - Uniquely identifies every tray/sack/tub
  - Includes a Mailer ID
  - Includes routing/sorting information
  - Provides specific mail content information

# Intelligent Mail® Tray Barcode

- 24-Digit Intelligent Mail® Tray Barcode
  - Currently in testing and validation process

# 24-digit Tray Label Construct

For Intelligent Mail Tray barcodes:
<u>Uses 24-digit ISS Code 128, subset C</u>

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ZIP™ Code (5N) | | | | | Content Identifier Number (CIN) (3N) | | | Processing Code | Mailer ID (6N) | | | | | | Serial Number (8N) | | | | | | | | LABEL TYPE - 1 |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ZIP™ Code (5N) | | | | | Content Identifier Number (CIN) (3N) | | | Processing Code | Mailer ID (9N) | | | | | | | | | Serial Number (5N) | | | | | LABEL TYPE - 8 |

# 24-digit Tray Label Data Element Definitions

| 24-Digit Encoded Data Elements | | |
|---|---|---|
| Barcode Element | Position | Definition |
| ZIP Code:3 or 5-digit | 1–5 | 3 or 5 digit ZIP Code destination. |
| Content Identifier Number (CIN) | 6–8 | Contents of the tray or sack based on the USPS DMM CIN list. |
| Processing Code | 9 | Value of ‘1’ for automation compatible, barcoded, and machinable mail. Value of ’7’ for all other mail. |
| Mailer ID (MID) | 10–15 or 10-18 | USPS assigned six-digit or nine-digit mailer ID that uniquely identifies the preparer of the tray or sack. |
| Serial Number | 16–23 or 19-23 | A unique five-digit or eight-digit number for each tray or sack. |
| Label Type | 24 | Value of ‘1’ when used with a six-digit MID and “8” when used with a nine-digit MID. |

# Generating Intelligent Mail® Tray Labels

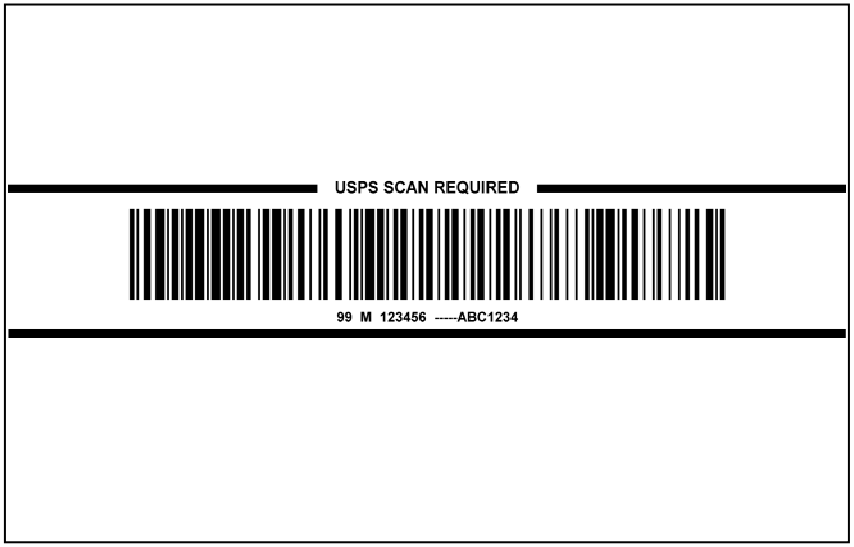
- To create and print labels
  - Obtain and use the specifications available on the Rapid Information Bulletin Board System found at: http://ribbs.usps.gov

# Generating Intelligent Mail® Tray Labels

- 10/24 specification updated April 2008
  - Defines Mailer Text Area to the right of the 24 digit barcode
  - Moves all human-readable barcode numeric line text to the upper right quadrant

# Intelligent Mail® Container Barcode

- Intelligent Mail® Container labels
  - Two Form factors: 8½"x11" and 4" x7"
- Intelligent Mail® Container barcode
  - Identifies mailer
  - Establishes a unique "serial number" for each pallet/container
  - Associates pallet/container to unique mailing



# Intelligent Mail® Container Barcode – Construct

For Intelligent Mail Container barcodes:
Uses GS1-128 (formerly UCC/EAN 128)

**Intelligent Mail CONTAINER barcode: 6-Digit and 9-Digit Mailer IDs**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Application Identifier (2N) | | Type Indicator | Mailer ID (6N) | | | | | | Serial Number (12A/N) | | | | | | | | | | | |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Application Identifier (2N) | | Type Indicator | Mailer ID (9N) | | | | | | | | | Serial Number (9A/N) | | | | | | | | |

# Intelligent Mail® Container Barcode – Construct

| **Example: 6-digit Mailer ID Format** *(for use by large mailers)* | | | | | |
|---|---|---|---|---|---|
| **Field No.** | **Field Description** | **Field Size** | **Character Position** | **Logical Values** | **Allowable Values** |
| 1 | Application Identifier | 2 | 1-2 | Numeric | "99" (Only) |
| 2 | Type Indicator | 1 | 3 | Alpha | "M" (Only) |
| 3 | Mailer ID | 6 | 4-9 | Numeric | USPS-assigned ID |
| 4 | Serial Number | 12 | 10-21 | Alphanumeric | Mailer-defined |

# Generating Intelligent Mail Container Label

- To create and print labels
  - Obtain and use the specifications available on the Rapid Information Bulletin Board System found at: http://ribbs.usps.gov
- Specifications Updates address:
  - Label Layout parameters
  - Rules for applying the Intelligent Mail Container label (application parameters)

# Harte-Hanks – Phase II

- Expansion of Intelligent Mail® Barcodes
  - July 2007 - Initiated Seamless Acceptance Pilot for Letters and Flats
  - Equivalent to Full-service Option
  - eDoc
  - Intelligent Mail Tray Label with 10/24 digit barcode
  - Intelligent Mail Container Barcode – pallet placard

We make it happen.

# Harte-Hanks – Lessons Learned

- Full-Service Option
  - Ability to start pilot did not happen overnight
  - Deciding whether you are going to “build it” or “buy it”
  - Either way – integration with production systems takes time

# Harte-Hanks Business Model

- Full Service Provider
- Fully Integrated Systems and Solutions; Transportation, Mailing & Tracking (Some Complete Rewrites!)
- Integration of Automated Warehouse
- Data Rich Environment with Automated Feedback Loops

# Harte-Hanks – Lessons Learned

- Maintaining Uniqueness
  - Managing uniqueness of trays, sacks and pallets is a complicated issue requiring a complete review of systems and intra and inter company relationships
    - How and where will uniqueness be driven and managed?
    - Process relationships and the “Cast of Characters”

We make it happen.

# Harte-Hanks – Lessons Learned

- Maintaining Uniqueness
  - The relationship and reporting piece-to-tray and tray-to-pallet information is not new to Harte-Hanks but doing so formally is new

We make it happen.

# Harte-Hanks – Lessons Learned

- Maintaining Uniqueness
  - Creating Mail.dat for the Pilot requires own solutions
  - Sharing of PDR file; xml solution
    - File is as large as the mailing
    - Not something to pass around within own organization

We make it happen.

# Harte-Hanks – Business Benefits Gained

- Beyond preparing for the full-service discount:

  *It's all about being able to better meet client's needs!*

We make it happen.

# Harte-Hanks – Business Benefits Gained

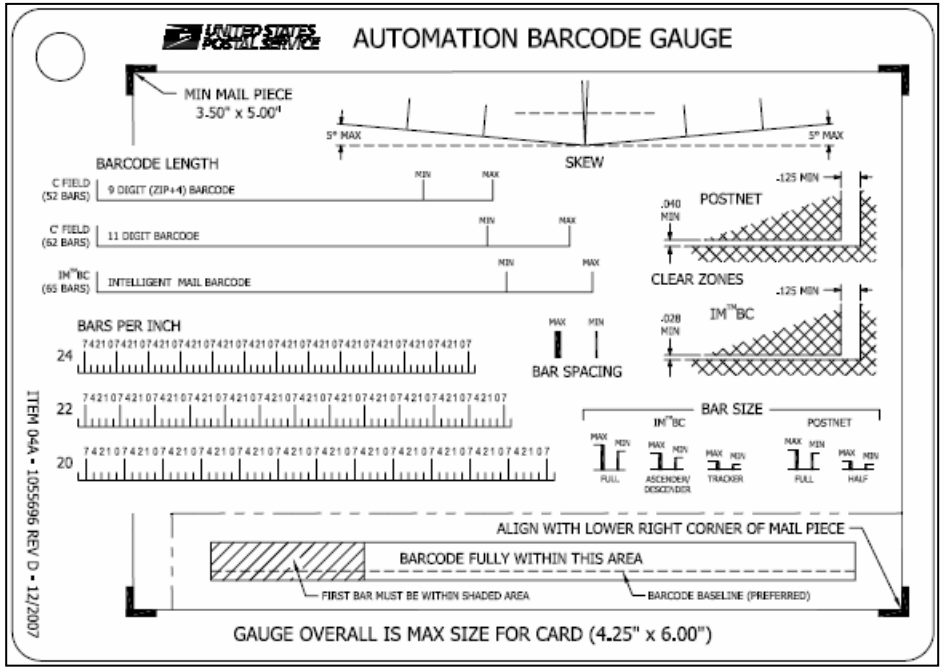
- Taking Advantage of a Data Rich Environment
  - Using Intelligent Mail Barcodes for internal control
  - Identifying root causes and solving problems with mailings
  - Job/Mail Tracking
  - Entry adjustments

We make it happen.

# Questions?

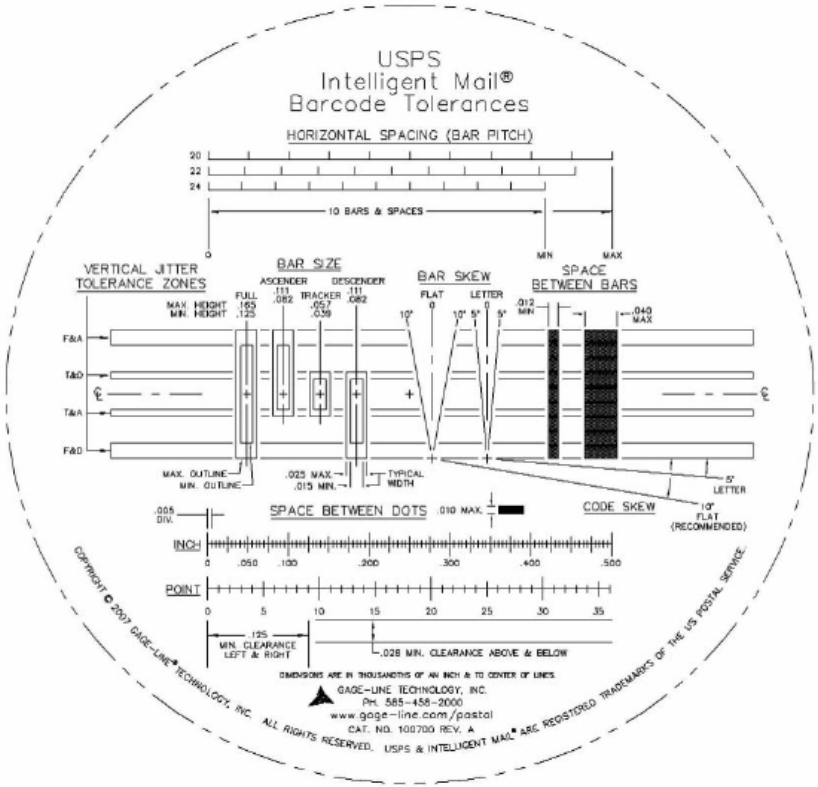
# Plastic Template

- Automation Barcode Gauge Template (Item #04A)
- Great tool available from local BSN or Mailpiece Design Analyst
- Measures both the Intelligent Mail barcode and the POSTNET



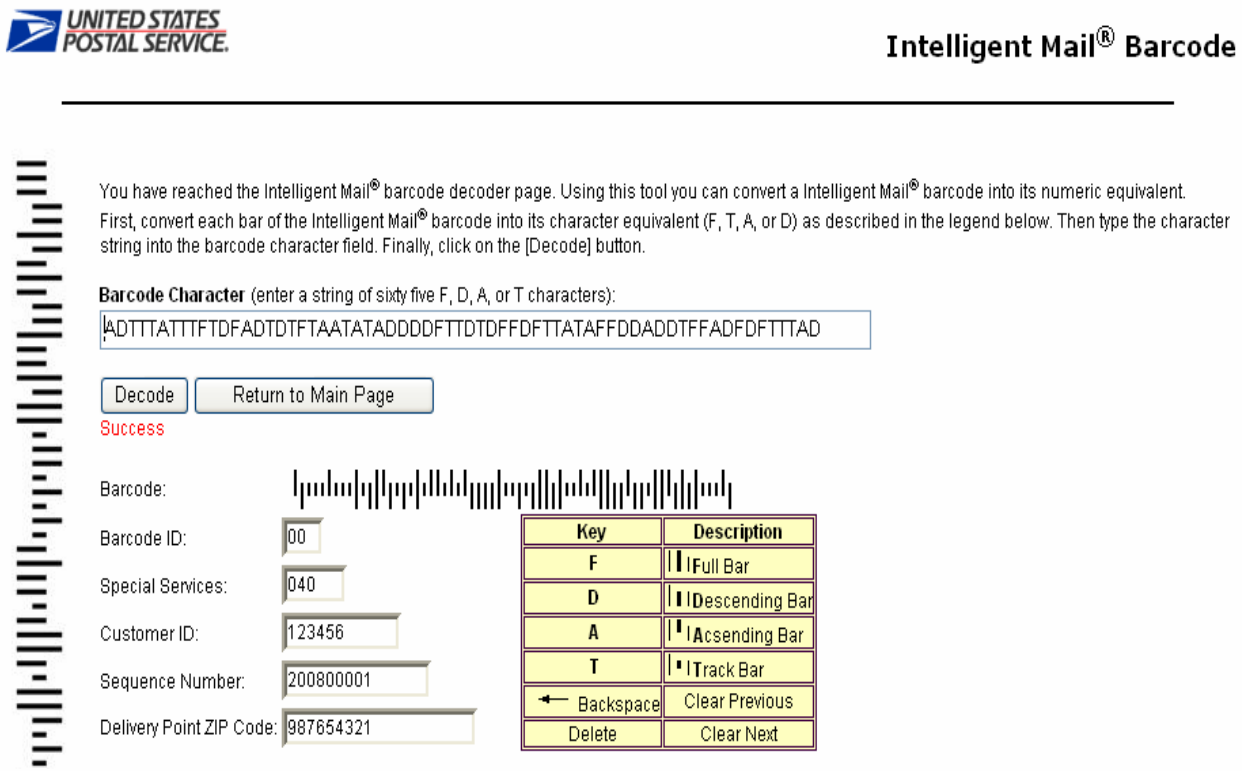
# Using Optical Comparator

- Optical Comparator 6X (Eye Gage) by Gage-Line Technology
- Complements Item 04A with ability to measure exact heights/widths and to assess barcode jitter (~centerline shift).



# Online Decoder

Basic online decoder tool is available at:
http://ribbs.usps.com/OneCodeSolution



# Scanners & Verifiers

- The Culver Group
  - HHP4600 Area Imager
- Videk
  - VisionSensor 2030 and PostnetVerifier
- BCC Software (A BÖWE BELL+HOWELL Company)
  - Mail Verifier Plus (MVP)
- Motorola / Symbol
  - Scanners – DS3408, DS3478 and DS6707
  - Mobile computers – MC50, MC70, MC3000, MC9000
- Others