ANSI/NIST Fingerprint Standard Update Workshop II

Processing Major Case Prints

Table 6: Finger position code & maximum size

Table 6.1: Major Case Print Codes

Table 19: Palm Codes, Areas, and Sizes

Additional Fields within Type-13 & Type-14

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National Palm Print Service

FBI Palm Service will serve as the National Palm Repository

- Fully Integrated within IAFIS
- Primary customers include FBI Laboratory Division and other federal, state and local law enforcement agencies
- Functionality
  - Receive, Store, & Search Palm Prints
    - Including Major Case Prints
  - Allow Bulk Submissions
  - Search Unsolved Latent File
  - Multi-modal
- Benefits
  - Additional Biometric
  - Solve More Crimes

Standardize Major Case Collection

- A systematic recording of all of the friction ridge detail appearing on the palmar sides of the hands. This includes the extreme sides of the palms, and joints, tips and sides of the fingers.

Recommendation primarily provided in September 2005 by:

SWGFAST

Scientific Working Group on Friction Ridge Analysis, Study and Technology

Also worked very close with NIST to define SWGFAST business requirements into the standard.

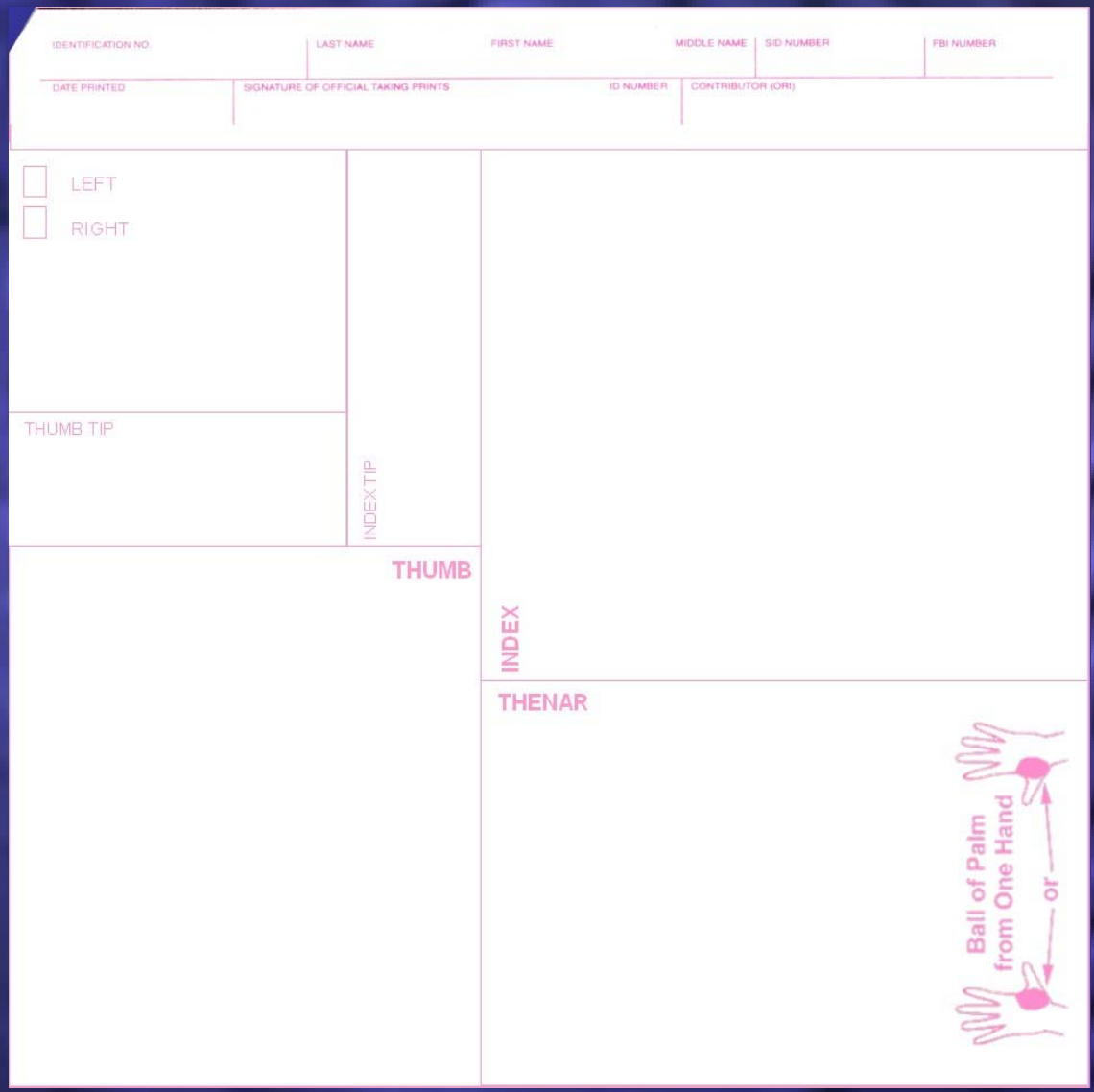
Standardize Major Case Collection

- A Standard Major Case Print Card Collection Shall Consist of:
  - 1 – FBI Standard Fingerprint Card
  - 2 – IAI Standard Palm Print Cards (1 Card Per Hand)
  - 2 – Newly Defined Major Case Card (1 Card Per Hand)

  A Total of 5 Cards Per Subject.

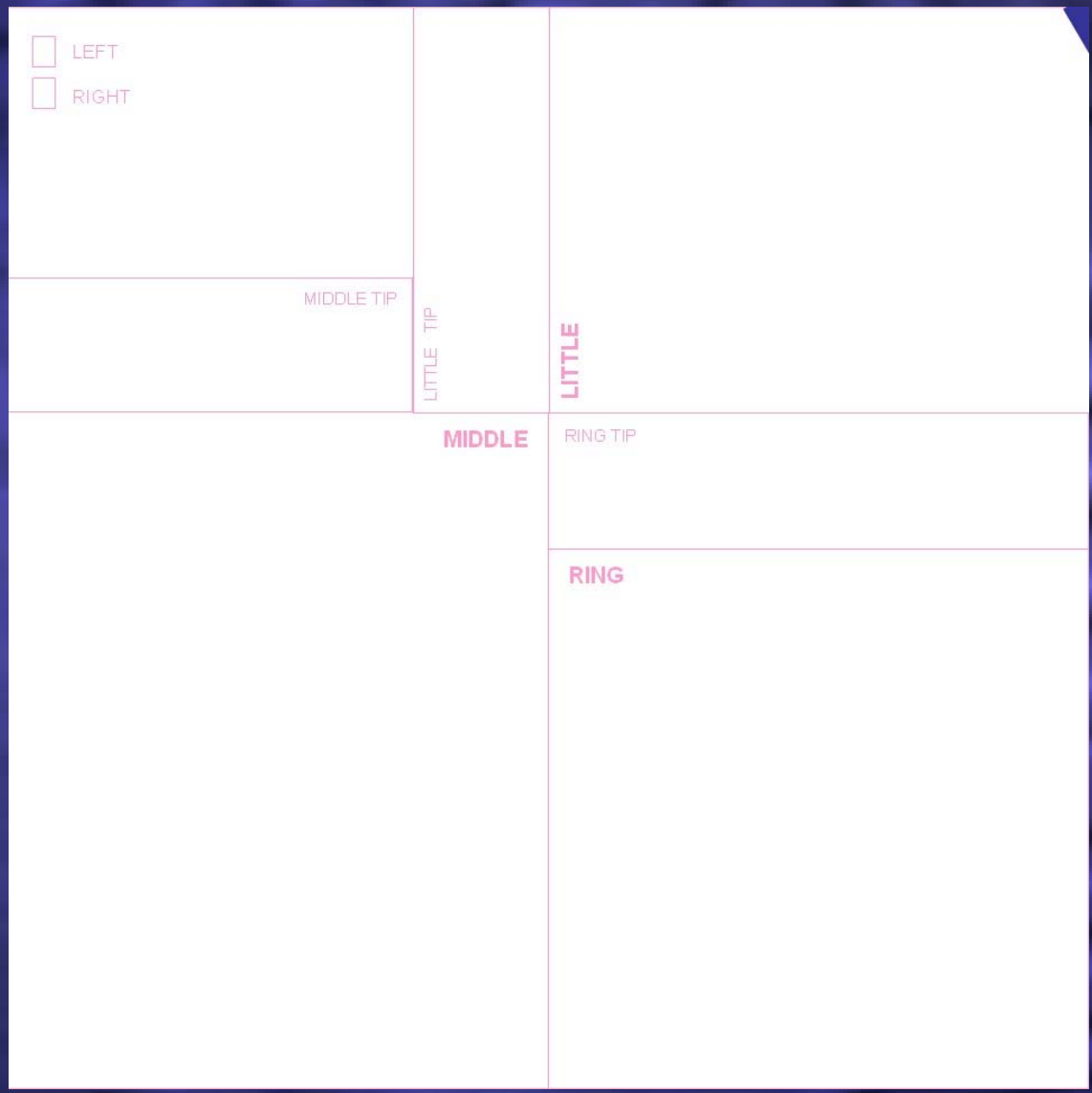
Major Case Card Front

(Blank)



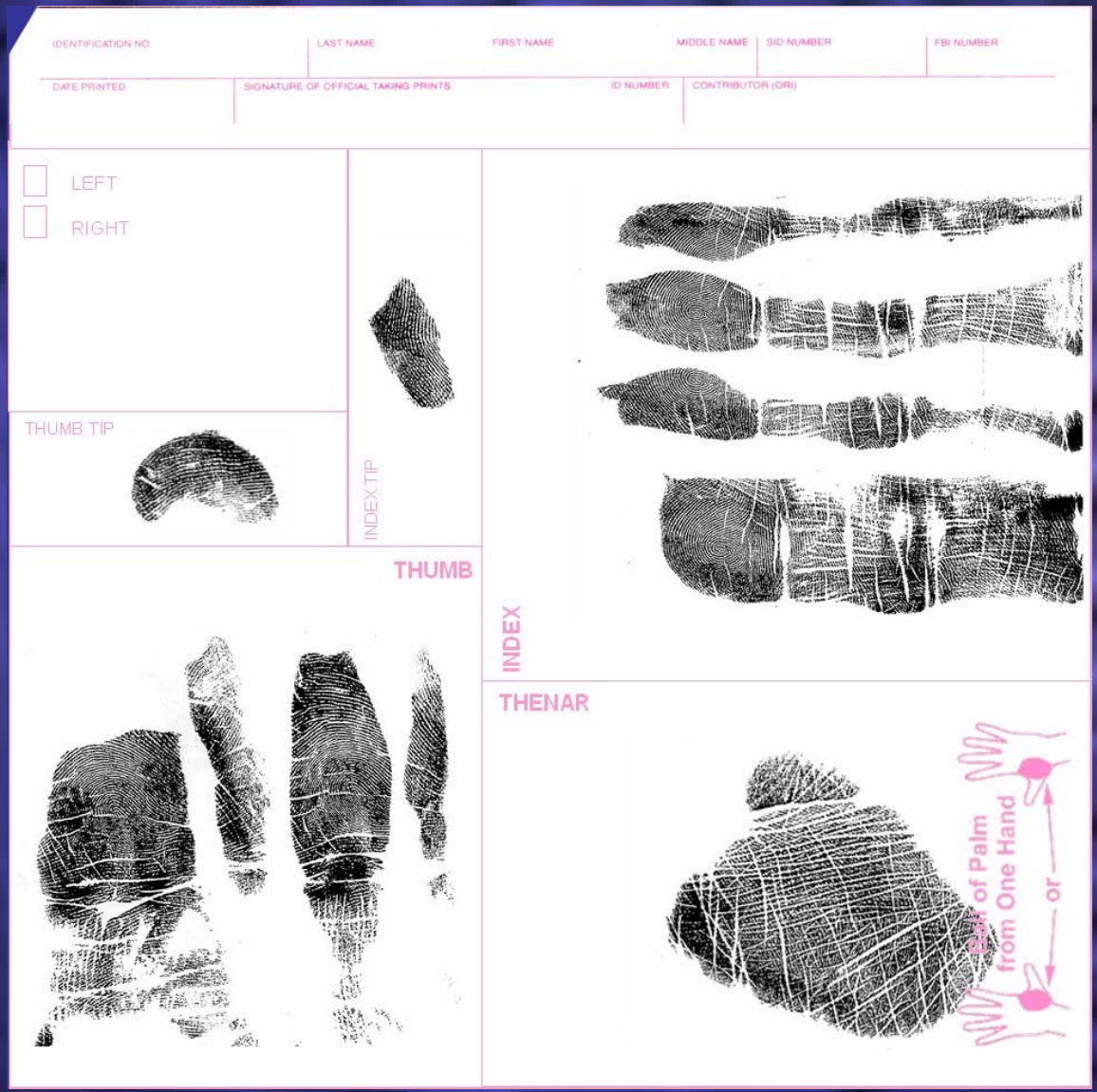
Major Case Card Back

(Blank)



Major Case Card Front

(With Example Images)

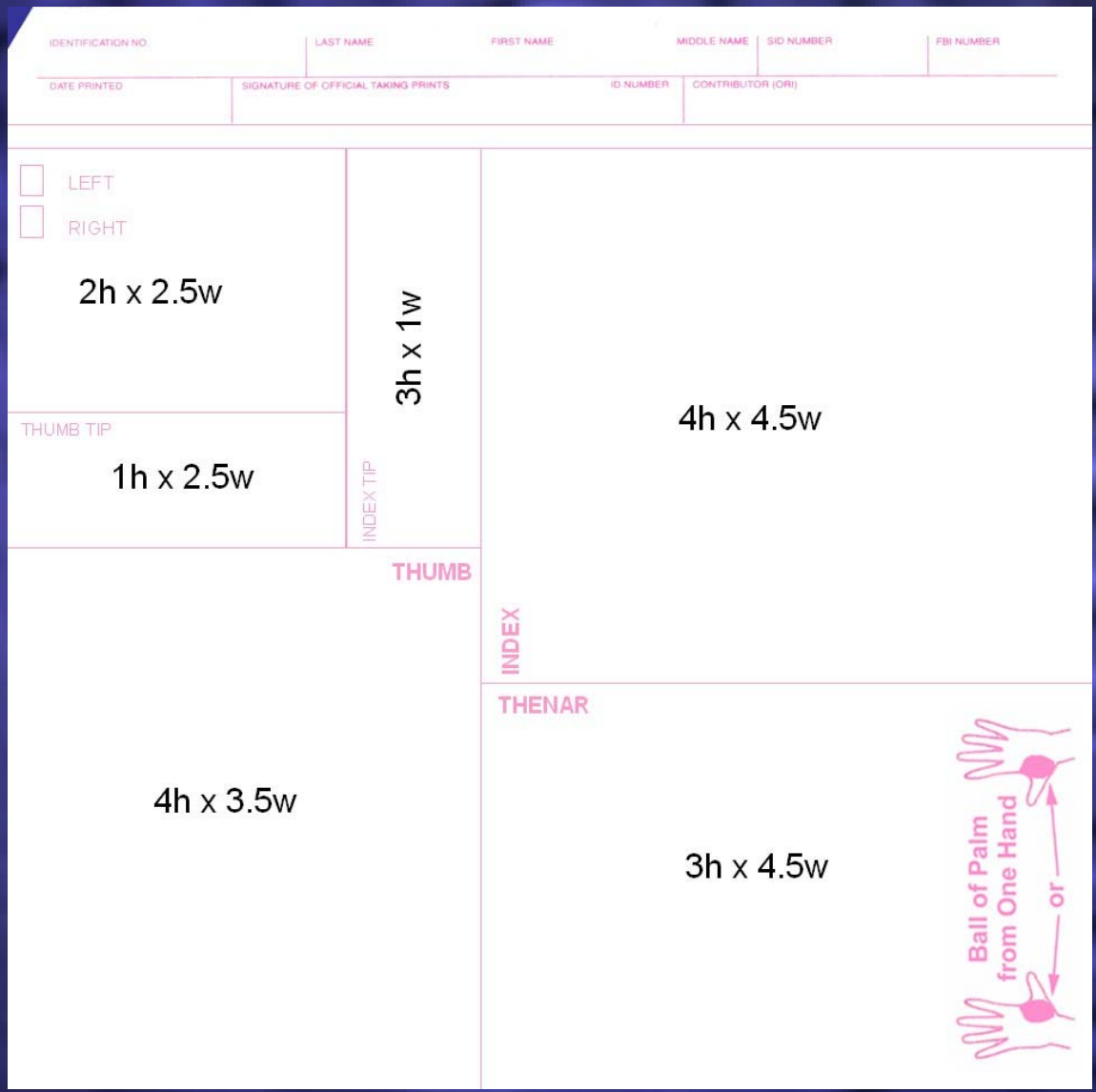


Major Case Card Back

(With Example Images)

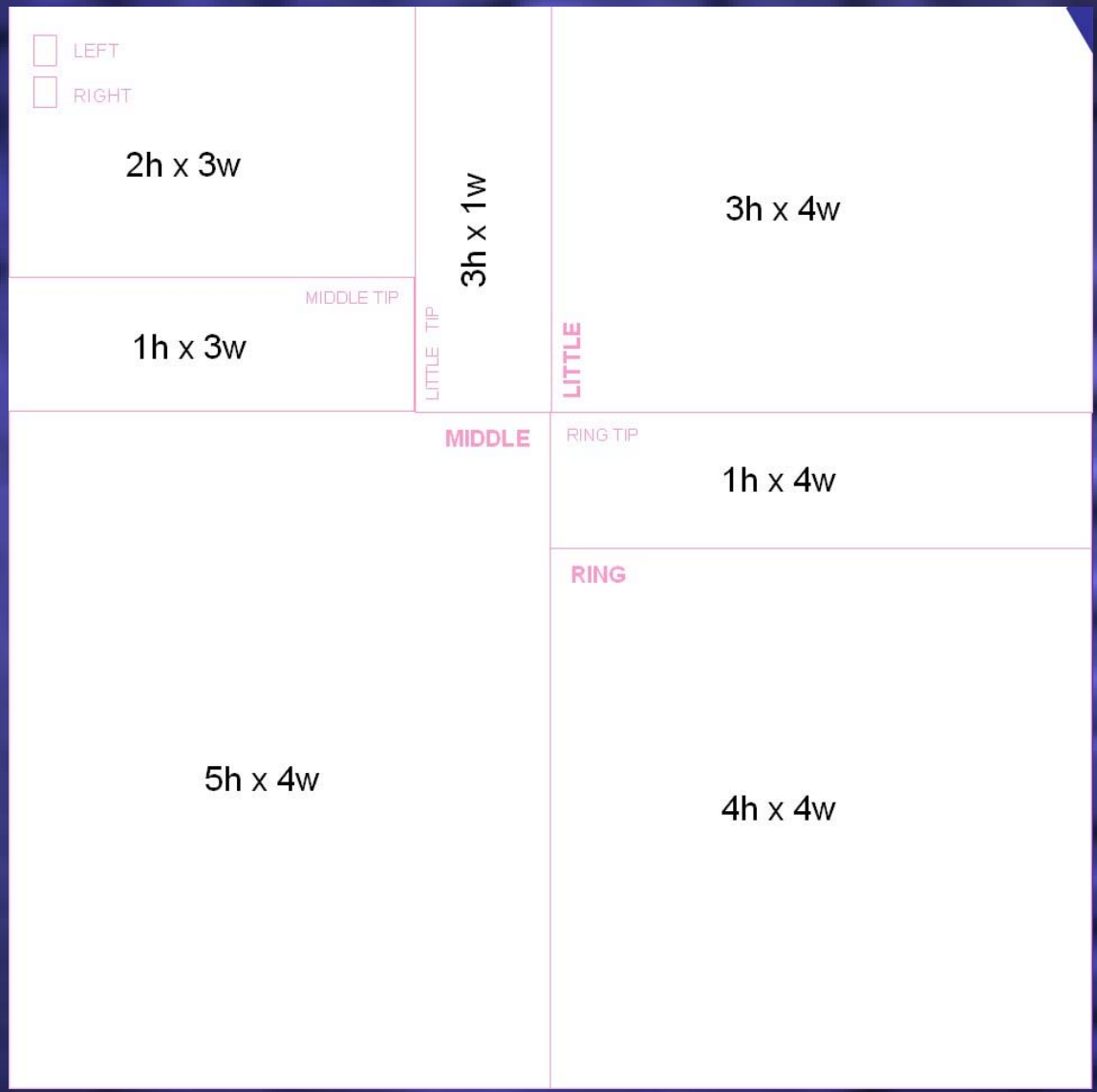
Major Case Card Front

(With Max Image Sizes)



Major Case Card Back

(With Max Image Sizes)



Additional Areas of Capture

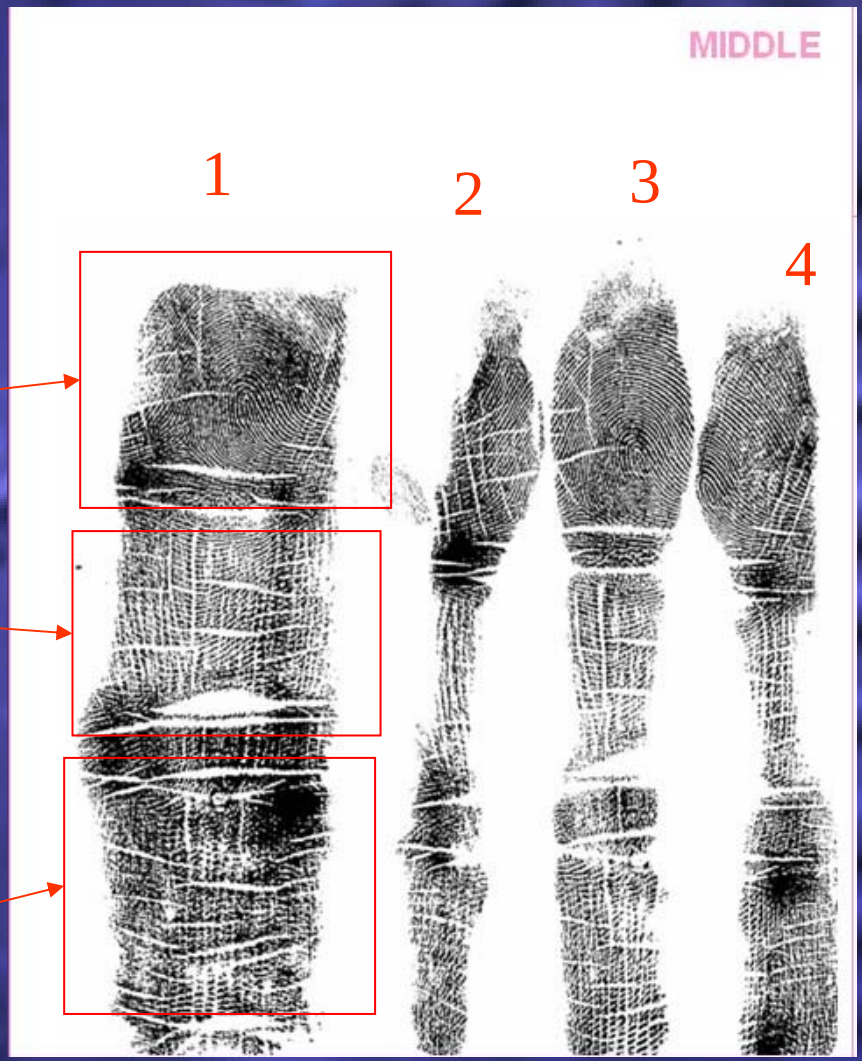
- Joint Prints (Later broken down into Distal, Medial, and Proximal)
  - *Rolled Joint Print: a single recording of the friction ridge skin on the distal, medial (except thumbs), and proximal areas of each finger. This type of impression is taken in one motion, similar to the taking of a rolled fingerprint impression.*
- Rolled Tips
  - *A single recording of the friction ridge skin on the tip of the end joint of a finger. This type of impression is taken by placing the end joint of the finger on one side and rolling the finger across the tip such that the fingernail is in constant contact (or near constant contact) with the sheet of paper until the other side of the finger is reached.*
- Rolled Thenar *(already defined by M1)*
  - *The large cushion of the palm located at the base of the thumb opposite of the Writer's Palm or Hypothenar..*

Joint Prints

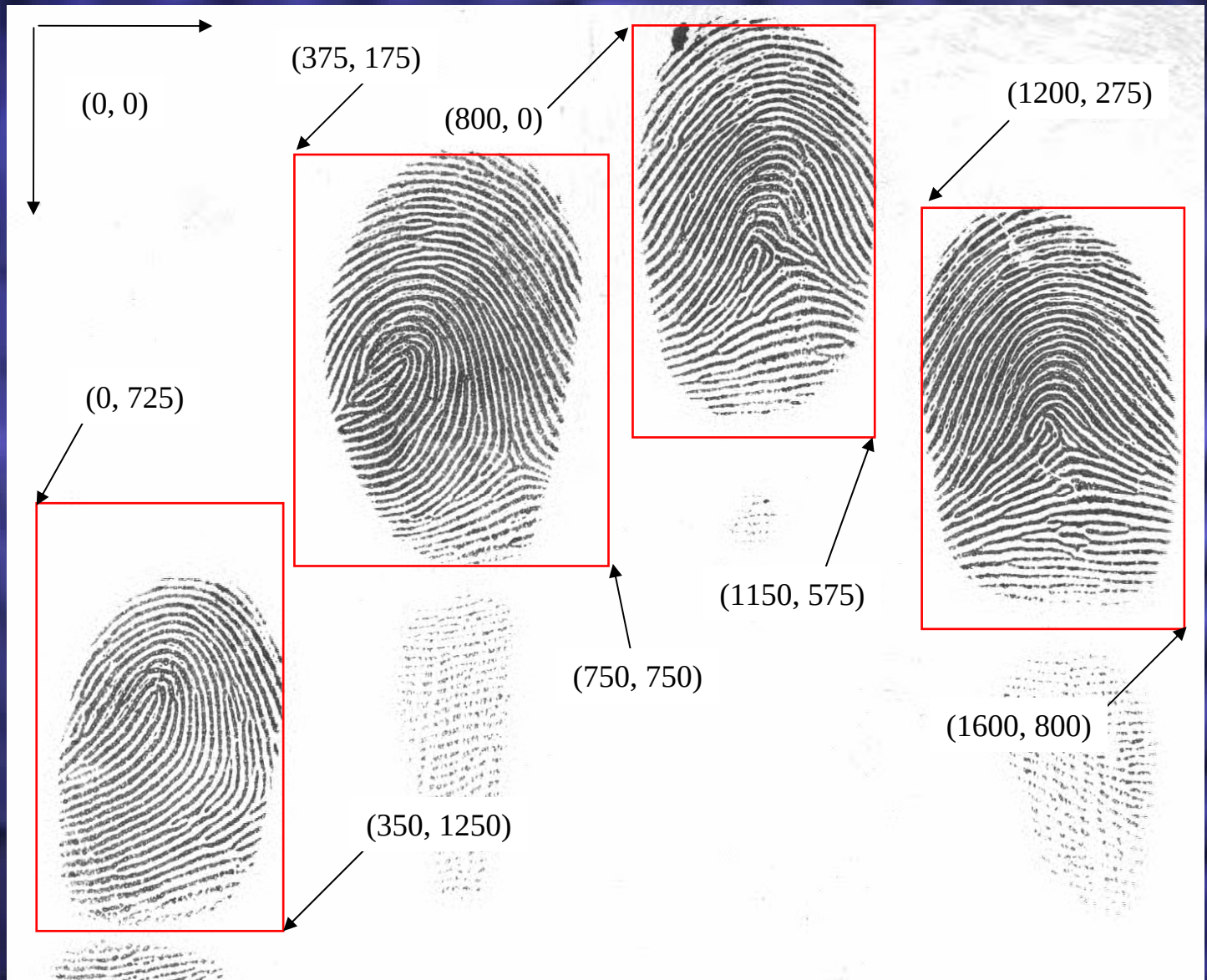
DISTAL

MEDIAL

PROXIMAL



Type-14 Identification Flats



Coding Major Case Prints

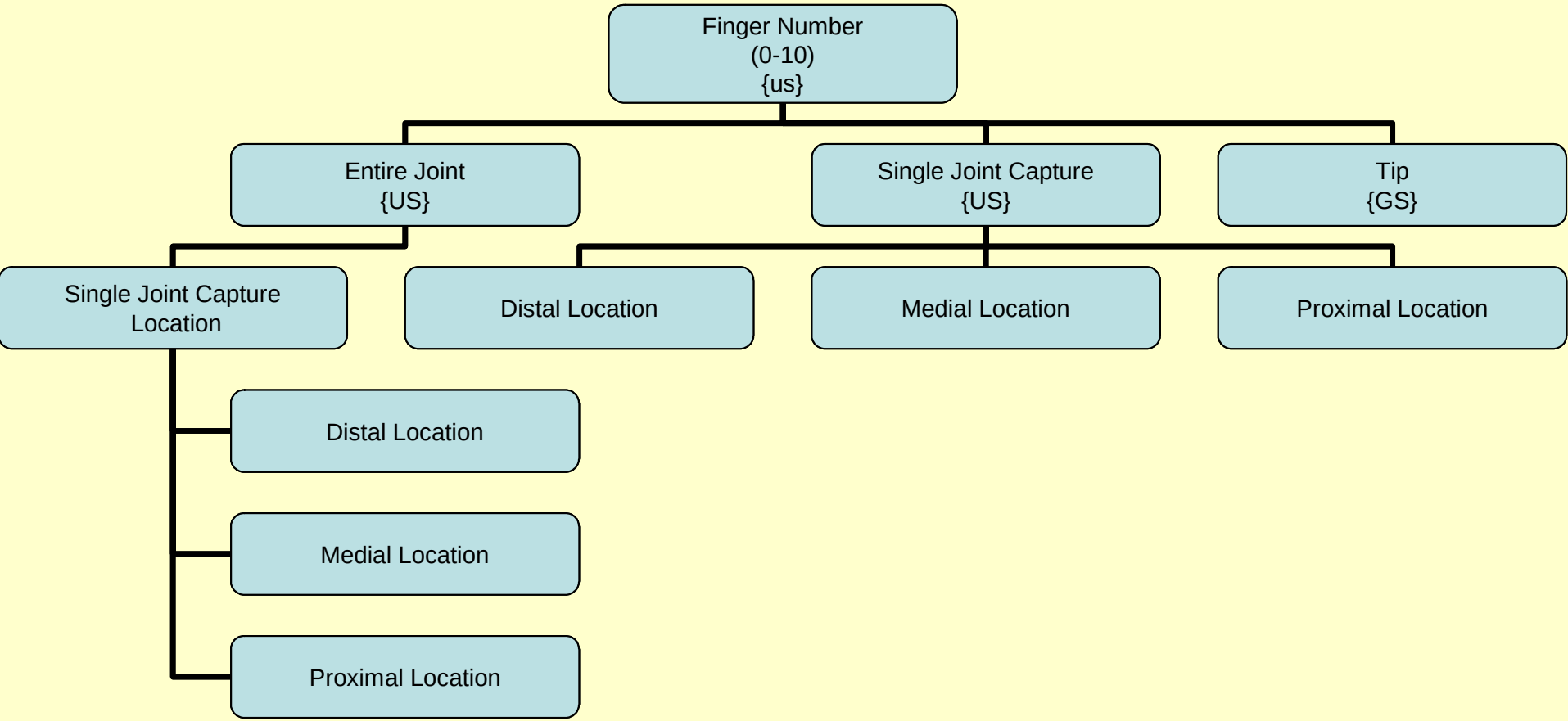
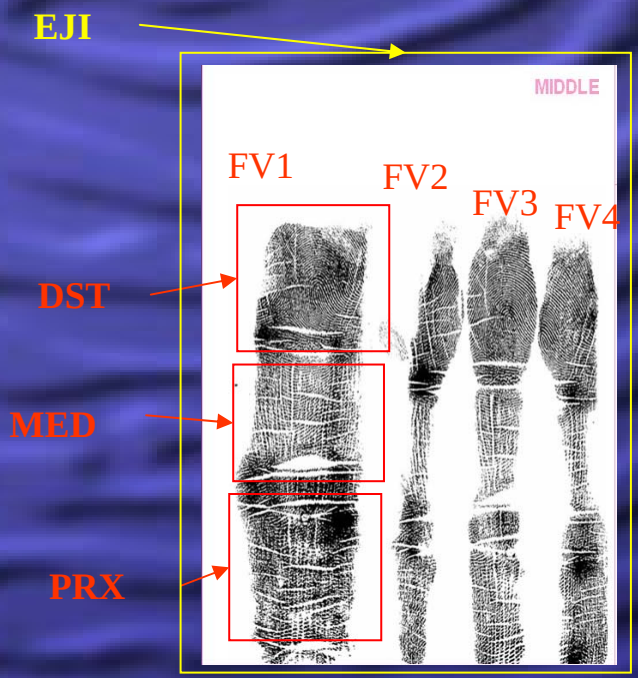


Table 6 – Finger Position Code & Maximum Size

Finger position	Finger code	Width (mm)	Width (in)	Length (mm)	Length (in)
Unknown	0	40.6	1.6	38.1	1.5
Right thumb	1	40.6	1.6	38.1	1.5
Right index finger	2	40.6	1.6	38.1	1.5
Right middle finger	3	40.6	1.6	38.1	1.5
Right ring finger	4	40.6	1.6	38.1	1.5
Right little finger	5	40.6	1.6	38.1	1.5
Left thumb	6	40.6	1.6	38.1	1.5
Left index finger	7	40.6	1.6	38.1	1.5
Left middle finger	8	40.6	1.6	38.1	1.5
Left ring finger	9	40.6	1.6	38.1	1.5
Left little finger	10	40.6	1.6	38.1	1.5
Plain right thumb	11	25.4	1.0	50.8	2.0
Plain left thumb	12	25.4	1.0	50.8	2.0
Plain right four fingers	13	81.3	3.2	76.2	3.0
Plain left four fingers	14	81.3	3.2	76.3	3.0
Plain thumbs together	15	81.3	3.2	76.2	3.0
Major Case Prints	19	????		????	

Table 6.1 Major Case Print Codes

Type of Major Case Print Image	Image Code
Entire Joint Image	EJI
Rolled Tip	TIP
Full Finger View	FV*x* *x* = {1,2,3,4}
Proximal, Distal, or Medial Segment	PRX, DST, MED



FGP 14.013 – Finger Position

- **FGP 14.013—FINGER POSITION.** This mandatory tagged-field shall contain finger position code that matches the ten-print image. The decimal code number corresponding to the known or most probable finger position shall be taken from Table 6 and entered as a one- or two-character ASCII subfield. Table 6 also lists the maximum image dimensions that can be transmitted for each of the sixteen possible finger positions.

MCP 14.014 – Major Case Print

- **MCP 14.014—MAJOR CASE PRINT.** This tagged-field shall be present when the finger position code in Field 14.013 is "19" and the image data in Field 14.999 is a major case fingerprint image. This field shall consist of two mandatory information items. The first information item is the decimal finger position code (1-10) taken from Table 6. The second information item is the code taken from Table 6.1 used to indicate the type of Major case fingerprint image contained in Field 14.999. There may be up to four full-finger images in an entire joint image (EJI). These are numbered 1 to 4 as they appear left to right in the EJI and correspond to the ***'x'*** in FV***x.*** For the case where the image contained in field 14.999 is a proximal, distal, or medial segment of a finger, this information item will contain the appropriate finger segment code.

14.015 – Major Case Print Segment Position(s)

- **MCS 14.015—MAJOR CASE PRINT SEGMENT POSITION(S).** This ASCII field may contain offsets to the locations for the bounding box of the EJI, each of the full finger views, or segments within the EJI. When used, this field shall consist of six (6) mandatory information items to describe the type or portion of the image and its location within an entire joint image. The first information item is the number of the full finger view with values of "FF0" through "FF4". A value of "FF0" is used specify the bounding coordinates for all of the combined full finger views within the EJI. Values of "FF1" to "FF4" specify the bounding coordinates for each full finger view. The second information item is used to identify the location of a segment within a full finger view. It will contain the Not Applicable code "NA" if the image portion refers to a full finger view or to the entire joint image locations. It shall contain "PRX", "DST", "MED" for a proximal, distal, or medial segment. The next four information items are the horizontal and vertical offsets relative to the origin, (0,0) positioned in the upper left corner of the image. The horizontal offsets (X) are the pixel counts to the right, and the vertical offsets (Y) are the pixel counts down. The location of the image portion is defined by the sequence of X coordinates (LEFT, RIGHT) and the Y coordinates (TOP, BOTTOM), of its bounding box. The six information items within the field are separated by five <US> separators. This information will describe either the location of the entire joint image, one full finger view, or segment. Individual full finger or segment definitions may be repeated as subfields separated by the <RS> separator.

FGP 13.013 – Finger Position

- **FGP 13.013—FINGER POSITION.** This mandatory tagged-field shall contain one or more possible finger or palm positions that may match the latent image. The decimal code number corresponding to the known or most probable finger position shall be taken from Table 6 or the most probable palm position from Table 19 and entered as a one- or two-character ASCII subfield. Additional finger and/or palm positions for searching, including the major case prints, may be referenced by entering the alternate position codes as subfields separated by the *"RS"* separator character. The code "0", for "Unknown Finger", shall be used to reference every finger position from one through ten. The code "20", for "Unknown Palm", shall be used to reference every listed palmprint position. Code 19 may be used to reference major case prints.

MCL 13.014 – Major Case Latent

- **MCL 13.014—MAJOR CASE LATENT.** This tagged-field shall be present when the finger position code "19" appears in Field 13.013. This field shall consist of two mandatory information items. The first information item is the decimal finger position code (0-10) taken from Table 6. A "0" indicates that all the fingers of a possible candidate should be searched. The second information item is the code taken from Table 6.1 to indicate the portion of the major case fingerprint image in the database to search. There may be up to four full-finger images in an entire joint image (EJI). These are numbered 1 to 4 as they appear left to right in the EJI and correspond to the ***'x'*** in FV***x.*** For the case where the latent is to be compared to proximal, distal, or medial segments of a finger, this information item will contain the appropriate finger segment code. Multiple portions of the major case print can be listed and separated by the <RS> separator character.

Questions?