

**Raleigh/Wake City-County
Bureau of Identification
Crime Laboratory Division**

**FORENSIC PHOTOGRAPHY UNIT
TECHNICAL PROCEDURES MANUAL**



Raleigh/Wake City-County Bureau of Identification
Forensic Photography Unit Technical Procedures Manual

Issued: January 1, 2013
Issued By: CCBI Director

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Forensic Photography Unit Technical Procedures Manual

Issued: January 1, 2013
Issued By: CCBI Director

Chapter: FFTP01
Version: 1

Chapter 1: Administration

1.1 Purpose

The purpose of these procedures is to establish procedures and guidelines for the photography, scanning, and photo reproduction services offered by the CCBI Forensic Photography Unit.

1.2 Scope

The Forensic Photography Unit will provide thorough and professional photography services to the CCBI Crime Laboratory Division staff by qualified personnel.

1.3 Organization

The Forensic Photography Unit shall be a component of the CCBI Crime Laboratory Division and under the direction of the Crime Laboratory Division Deputy Director.

1.4 Forensic Photography Services

1.4.1 Personnel in the Forensic Photography Unit will provide the following photography services upon request by a CCBI Forensic Examiner or other CCBI staff member:

1.4.1.1 Photography of fingerprints located using an alternate light source and reproduction of these photographs for comparison by Forensic Examiners

1.4.1.2 Photography of shoe impressions

1.4.1.3 Reproduction of photographs containing shoe impressions at 1:1 scale for comparison by Forensic Examiners

1.4.1.4 Scanning of latent fingerprints at a 1:1 scale for comparison by Forensic Examiners

1.4.1.5 Reproduction of crime scene photographs or evidence item photographs containing latent fingerprints at a 1:1 scale for comparison by Forensic Examiners

1.4.2 Upon CCBI Crime Laboratory Division Deputy Director approval, the Forensic Photography Unit will provide related training to CCBI employees.

1.5 Forensic Photography Unit Case Records

The Forensic Photography Unit may retain case records on cases in which evidence is actively being examined and will ensure that such case records are maintained securely during such possession.

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1.6 References

CCBI Crime Laboratory Administrative Procedures Manual
CCBI Forensic Science Quality Manual

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Issued: January 1, 2013
Issued By: CCBI Director

Chapter: FFTP01
Version: 1

Revision History		
Effective Date	Version Number	Reason
1/1/13	1	ISO Compliance

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Issued: January 1, 2013
Issued By: CCBI Director

Chapter: FFTP02
Version: 1

Chapter 2: Equipment Maintenance

2.1 Equipment Maintenance

2.1.1 All equipment is to be maintained in accordance with the manufacturer's specifications and recommendations as per operating and warranty manuals.

2.1.2 In the event that repairs or modifications are performed on equipment, a performance check will be conducted before the system or any of its components are utilized for casework purposes. This documentation will be maintained.

2.2 Laboratory Conditions

Other than standard laboratory conditions, no other factors influence quality of services in the Forensic Photography Unit.

2.3 References

CCBI Laboratory Administrative Procedures Manual
CCBI Forensic Science Quality Manual

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Issued: January 1, 2013
Issued By: CCBI Director

Chapter: FFTP02
Version: 1

Revision History		
Effective Date	Version Number	Reason
1/1/13	1	ISO Compliance

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Issued: January 1, 2013
Issued By: CCBI Director

Chapter: FFTP03
Version: 1

Chapter 3: Minimum Processing Standards

3.1 Purpose

This section describes an overview of the processing methodology.

3.2 Scope

This is information defining the structure of the processing methodology.

3.3 Processing Request

Forensic Photography Unit personnel should communicate with the requestor to determine the focus and parameters of the services.

3.4 Evidence Preservation

Items submitted for processing must be maintained in such a way that the integrity of the item is preserved. Items must be handled in a manner preventing cross contamination. If other forensic processing will be conducted, the Forensic Photographer should consult with forensic examiners in the appropriate disciplines.

3.5 Documentation

While documentation may vary, the following items may be included in the CCBI case record:

3.5.1 Chain of Custody

The chain of custody must include a description of the item and a documented history of each transfer.

3.5.2 Notes

3.5.2.1. Notes stemming from the processing shall include, at a minimum, the procedural steps of the processing, with a minimum of the start and end dates of the work. These steps should be written in sufficient detail to allow another Forensic Photographer, competent in the same area of expertise, to be able to identify what has been done and to assess the work independently.

3.5.2.2 Each page of notes must be marked with the unique CCBI case number and the Forensic Photographer's initials or signature. Two-sided documents must contain the unique case identifier and the Forensic Photographer's initials or signature on both sides.

3.5.2.3 If multiple Forensic Photographers are working on the same case and producing combined notes, the initials of the Forensic Photographer performing each procedural step shall be included.

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3.6 Approved Software

The Forensic Photographer may use any software necessary, in his/her discretion, to complete the processing. This includes freeware, shareware, "trial-ware," and retail software. The Forensic Photographer should document what software, including what version number, was used during the processing in his/her notes.

3.7 References

CCBI Crime Laboratory Administrative Procedures Manual
CCBI Forensic Science Quality Manual

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Issued: January 1, 2013
Issued By: CCBI Director

Chapter: FFTP03
Version: 1

Revision History		
Effective Date	Version Number	Reason
1/1/13	1	ISO Compliance

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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FFTP04
Version: 2

Chapter 4: Photographing ALS Latent Prints

4.1 Purpose

This section describes an overview of the methodology used in photographing latent fingerprints located using an alternate light source.

4.2 Scope

This is information defining the structure of the processing methodology.

4.3 Photographing ALS Latent Prints

4.3.1 The Forensic Photographer receives the item(s) of evidence to be processed using an alternate light source from Evidence Receiving Unit personnel or from Locker 71 in the evidence vault. The Forensic Photographer fills out the applicable chain of custody form for this evidence.

4.3.2 The Forensic Photographer photographs the evidence using an alternate light source and camera filter to best visualize and document the latent print(s).

4.3.2.1 The Forensic Photographer will use a scale, if possible.

4.3.2.2 The Forensic Photographer will use the back of the camera as a sensor plane and place this sensor plane parallel to the surface containing the latent fingerprint.

4.3.2.3 The scale will be placed at the same level and angle as the latent print and on the same plane as the latent print.

4.3.2.4 The Forensic Photographer will use a depth of field appropriate for obtaining the best documentation of the latent print.

4.3.3 The Forensic Photographer will load the digital photographs into the CCBI Digital Crime Scene system.

4.3.4 The Forensic Photographer will print a Photo Log of the photographs for the Latent Print Examiners to use to indicate the photographs that need to be reproduced for comparison purposes. The Photo Log will be deposited in locker 69 in the evidence vault, given to the appropriate Latent Print Examiner, or placed in file in Latent Evidence Control.

~~4.3.4~~ **4.3.5** The Forensic Photographer will reproduce the best digital photographs requested by the Latent Print Examiner of the latent prints at a scale of 1:1 for comparison purposes by Latent Print Examiners.

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Issued By: CCBI Director

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~~4.3.5~~ **4.3.6** The Forensic Photographer will assign each ~~requested photograph latent card~~ a **latent card** number and, **if applicable**, will assign a derivative item number to the envelope containing the latent card(s).

~~4.3.6~~ **4.3.7** The Forensic Photographer will attach her/his notes and the chain of custody to the envelope containing the latent lift cards.

~~4.3.7~~ **4.3.8** The Forensic Photographer will sign the envelope containing the latent card(s) over to locker 69 in the evidence vault **or directly to the requesting Latent Print Examiner, if applicable**.

~~4.3.8~~ **4.3.9 References**

CCBI Crime Laboratory Administrative Procedures Manual
CCBI Forensic Science Quality Manual
Camera user manual
Software user manuals

Raleigh/Wake City-County Bureau of Identification
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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FFTP04
Version: 2

Revision History		
Effective Date	Version Number	Reason
1/1/13	1	ISO Compliance
1/26/16	2	Revise handling of digital images.

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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FFTP05
Version: 2

Chapter 5: Photographing Shoe Impressions

5.1 Purpose

This section describes an overview of the methodology used in photographing shoe impressions.

5.2 Scope

This is information defining the structure of the processing methodology.

5.3 Photographing Shoe Impressions

5.3.1 The Forensic Photographer receives the item(s) of evidence from Evidence Receiving Unit personnel or from Locker 716 in the evidence vault. The Forensic Photographer fills out the applicable chain of custody form for this evidence.

5.3.2 The Forensic Photographer photographs the evidence using appropriate lighting.

5.3.2.1 The Forensic Photographer will use a scale, if possible.

5.3.2.2 The Forensic Photographer will use the back of the camera as a sensor plane and place this sensor plane parallel to the surface containing the shoe impression.

5.3.2.3 The scale will be placed at the same level and angle as the shoe impression and on the same plane as the shoe impression.

5.3.2.4 The Forensic Photographer will use a depth of field appropriate for obtaining the best documentation of the shoe impression.

5.3.3 The Forensic Photographer will load the digital photographs into the CCBI Digital Crime Scene system.

5.3.4 The Forensic Photographer will create a case file folder and place his/her notes therein. The case file folder will then be routed to Central Records.

5.3.5 The Forensic Photographer will return the item(s) of evidence to the Evidence Receiving Unit.

5.3.6 Upon request, the Forensic Photographer will reproduce the best digital photographs requested by the Latent Print Examiner of the shoe impressions at a scale of 1:1 for comparison purposes by Latent Print Examiners.

5.3.7 The Forensic Photographer will assign each requested photographic print an item number. This item number may be a derivative number, if applicable.

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Issued: January 26, 2016
Issued By: CCBI Director

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Version: 2

5.3.8 The Forensic Photographer will attach his/her notes and the chain of custody to the envelope containing the photographic prints.

5.3.9 The Forensic Photographer will sign the envelope containing the photographic prints over to locker 69 in the evidence vault **or directly to the requesting Latent Print Examiner.**

5.3.10 References

CCBI Crime Laboratory Administrative Procedures Manual
CCBI Forensic Science Quality Manual
Camera user manual
Software user manuals

Raleigh/Wake City-County Bureau of Identification
Forensic Photography Unit Technical Procedures Manual

Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FFTP05
Version: 2

Revision History		
Effective Date	Version Number	Reason
1/1/13	1	ISO Compliance
1/26/16	2	Revise handling of digital images.

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Forensic Photography Unit Technical Procedures Manual

Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FPTP06
Version: 2

Chapter 6: Scanning Items for Latent Comparison

6.1 Purpose

This section describes an overview of the methodology used in scanning latent fingerprints for comparison purposes by Latent Print Examiners.

6.2 Scope

This is information defining the structure of the processing methodology.

6.3 Scanning Items for Latent Comparison

6.3.1 The Forensic Photographer receives the item(s) of evidence to be scanned from Evidence Receiving Unit personnel or from Locker 71 6 in the evidence vault. The Forensic Photographer fills out the applicable chain of custody form for this evidence.

6.3.2 The Forensic Photographer scans the evidence into the CCBI Digital Crime Scene system at the appropriate resolution for latent comparison, using a scale if possible.

6.3.3 The Forensic Photographer will print a Photo Log of the scans for the Latent Print Examiners to use to indicate the scans that need to be reproduced for comparison purposes. The Photo Log will be deposited in locker 69 in the evidence vault, given to the appropriate Latent Print Examiner, or placed in file in Latent Evidence Control.

~~6.3.3~~ **6.3.4** The Forensic Photographer will reproduce scans as requested by the Latent Print Examiner of the latent prints at a scale of 1:1 for comparison purposes by Latent Print Examiners.

~~6.3.4~~ **6.3.5** The Forensic Photographer will assign each requested scans a latent lift card a number and, if applicable, will assign a derivative item number to the envelope containing the latent card(s). The assigned latent card number will be added to the Image Description text box in Digital Crime Scene. Any photos copied to a USB drive or to the SPEX Latent Share folder will be labeled in the following format: CCBI Case number Latent Card number (ex. XXXXXXXX LC X). When copying files to a USB drive, the Forensic Photographer must ensure that the USB drive is blank before copying any files to it.

~~6.3.5~~ **6.3.6** The Forensic Photographer will attach her/his notes and the chain of custody to the envelope containing the latent card(s).

~~6.3.6~~ **6.3.7** The Forensic Photographer will sign the envelope containing the latent card(s) over to locker 69 in the evidence vault or directly to the requesting Latent Print Examiner, if applicable.

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Issued By: CCBI Director

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Version: 2

~~6.3.7~~ **6.3.8** References

CCBI Crime Laboratory Administrative Procedures Manual
CCBI Forensic Science Quality Manual
Camera user manual
Software user manuals

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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FFTP06
Version: 2

Revision History		
Effective Date	Version Number	Reason
1/1/13	1	ISO Compliance
1/26/2016	2	Revise handling of digital images.

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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FPTP07
Version: 2

Chapter 7: Reproduction of Photographs of Latent Prints from Crime Scene

7.1 Purpose

This section describes an overview of the methodology used in reproducing crime scene photographs containing latent fingerprints for comparison purposes by Latent Print Examiners.

7.2 Scope

This is information defining the structure of the processing methodology.

7.3 Reproducing Photographs of Latent Prints for Comparison

7.3.1 The Forensic Photographer will print a Photo Log of the photographs for the Latent Print Examiners to use to indicate the photographs that need to be reproduced for comparison purposes. The Photo Log will be deposited in locker 69 in the evidence vault, given to the appropriate Latent Print Examiner, or placed in file in Latent Evidence Control.

~~7.3.1~~ **7.3.2** The Forensic Photographer will reproduce the ~~best~~ digital photographs **as requested by the Latent Print Examiner** of latent prints photographed at the crime scene at a scale of 1:1 for comparison purposes ~~by Latent Print Examiners~~.

~~7.3.2~~ **7.3.3** The Forensic Photographer will assign each **requested photograph** a latent card a number and, **if applicable**, will assign a derivative item number to the envelope containing the latent card(s), ~~if applicable~~. **The assigned latent card number will be added to the Image Description text box in Digital Crime Scene**. Any photos copied to a USB drive or to the SPEX Latent Share folder will be labeled in the following format: CCBI Case number Latent Card number (ex. Xxxxxxxx LC x). When copying files to a USB drive, the Forensic Photographer must ensure that the USB drive is blank before copying any files to it.

~~7.3.3~~ **7.3.4** The Forensic Photographer will attach her/his notes and the chain of custody to the envelope containing the latent card(s).

~~7.3.4~~ **7.3.5** The Forensic Photographer will sign the envelope containing the latent card(s) over to locker 69 in the evidence vault **or directly to the requesting Latent Print Examiner, if applicable**.

~~7.3.5~~ **7.3.6** References

CCBI Crime Laboratory Administrative Procedures Manual
CCBI Forensic Science Quality Manual
Camera user manual
Software user manuals

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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FFTP07
Version: 2

Revision History		
Effective Date	Version Number	Reason
1/1/13	1	ISO Compliance
1/26/2016	2	Revise handling of digital images.

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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FPTP08
Version: 2

Chapter 8: Reproduction of Photographs of Latent Prints from Items of Evidence

8.1 Purpose

This section describes an overview of the methodology used in reproducing photographs of items containing latent fingerprints for comparison purposes by Latent Print Examiners.

8.2 Scope

This is information defining the structure of the processing methodology.

8.3 Reproducing Photographs of Latent Prints for Comparison

8.3.1 The Forensic Photographer will print a Photo Log of the photographs for the Latent Print Examiners to use to indicate the photographs that need to be reproduced for comparison purposes. The Photo Log will be deposited in locker 69 in the evidence vault, given to the appropriate Latent Print Examiner, or placed in file in Latent Evidence Control.

~~8.3.1~~ **8.3.2** The Forensic Photographer will reproduce the best digital photographs as requested by the Latent Print Examiner of latent prints photographed on an evidence item at a scale of 1:1 for comparison purposes by Latent Print Examiners.

~~8.3.2~~ **8.3.3** The Forensic Photographer will assign each requested photograph a latent card a number and, if applicable, will assign a derivative item number to the envelope containing the latent card(s). The assigned latent card number will be added to the Image Description text box in Digital Crime Scene. Any photos copied to a USB drive or to the SPEX Latent Share folder will be labeled in the following format: CCBI Case number Latent Card number (ex. Xxxxxxx LC x). When copying files to a USB drive, the Forensic Photographer must ensure that the USB drive is blank before copying any files to it.

~~8.3.3~~ **8.3.4** The Forensic Photographer will attach her/his notes and the chain of custody to the envelope containing the latent card(s).

~~8.3.4~~ **8.3.5** The Forensic Photographer will sign the envelope containing the latent card(s) over to locker 69 in the evidence vault or directly to the requesting Latent Print Examiner, if applicable.

~~8.3.5~~ 8.3.6 References

CCBI Crime Laboratory Administrative Procedures Manual
CCBI Forensic Science Quality Manual
Camera user manual
Software user manuals

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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FFTP08
Version: 2

Revision History		
Effective Date	Version Number	Reason
1/1/13	1	ISO Compliance
1/26/2016	2	Revise handling of digital images.

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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FPTP09
Version: 2

Chapter 9: Reproduction of Photographs of Shoe Impressions

9.1 Purpose

This section describes an overview of the methodology used in reproducing photographs containing shoe impressions for comparison purposes by Latent Print Examiners.

9.2 Scope

This is information defining the structure of the processing methodology.

9.3 Reproducing Photographs of Latent Prints for Comparison

9.3.1 Upon Latent Print Unit personnel request, the Forensic Photographer will reproduce the best digital photographs **as requested by the Latent Print Examiner** of shoe impressions at a scale of 1:1 for comparison purposes ~~by Latent Print Examiners.~~

9.3.2 The Forensic Photographer will assign each **requested** photographic print an item number. This item number may be a derivative number, if applicable. **The assigned item number will be added to the Image Description text box in Digital Crime Scene. Any photos copied to a USB drive or to the SPEX Latent Share folder will be labeled in the following format: CCBI Case number Item number (ex. XXXXXXXX Item x). When copying files to a USB drive, the Forensic Photographer must ensure that the USB drive is blank before copying any files to it.**

9.3.3 The Forensic Photographer will attach his/her notes and the chain of custody to the envelope containing the photographic prints.

9.3.4 The Forensic Photographer will sign the envelope containing the photographic prints over to locker 69 in the evidence vault **or directly to the requesting Latent Print Examiner.**

9.3.5 References

CCBI Crime Laboratory Administrative Procedures Manual
CCBI Forensic Science Quality Manual
Camera user manual
Software user manuals

Raleigh/Wake City-County Bureau of Identification
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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FFTP09
Version: 2

Revision History		
Effective Date	Version Number	Reason
1/1/13	1	ISO Compliance
1/26/2016	2	Revise handling of digital images.

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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FFTP10
Version: 2

Chapter 10: Enhancement of Photographs

10.1 Purpose

This section describes an overview of the methodology used in enhancing photographs contained in the CCBI Digital Crime Scene system.

10.2 Scope

This is information defining the structure of the processing methodology.

10.3 Enhancing Photographs

10.3.1 At the request of Latent Print Unit personnel, the Forensic Photographer may enhance a digital photograph contained in the CCBI Digital Crime Scene system. These enhancements may include, but are not limited to:

10.3.1.1 Brightening or darkening the print

10.3.1.2 Increasing the contrast of the print

10.3.1.3 Converting the print to black and white

10.1.3.4 Flipping the print horizontally

10.1.3.5 Inverting the print (i.e. creating a “negative” version)

10.3.2 All enhancements will be done through the CCBI Digital Crime Scene system in order to save a record of the enhancements made. Any record of enhancements will be printed and included with the Forensic Photographer’s notes.

10.3.3 The Forensic Photographer will reproduce the enhanced digital photograph at 1:1 scale for latent print comparison purposes.

10.3.4 The Forensic Photographer will assign each requested photograph a derivative latent card a number and, if applicable, will assign a derivative item number to the envelope containing the latent card(s). The assigned derivative latent card number will be added to the Image Description text box in Digital Crime Scene. Any photos copied to a USB drive or to the SPEX Latent Share folder will be labeled in the following format: CCBI Case number Derivative Latent Card number (ex. XXXXXXXX LC x-x). When copying files to a USB drive, the Forensic Photographer must ensure that the USB drive is blank before copying any files to it.

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Issued: January 26, 2016
Issued By: CCBI Director

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Version: 2

10.3.5 References

CCBI Crime Laboratory Administrative Procedures Manual
CCBI Forensic Science Quality Manual
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Software user manuals

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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FFTP10
Version: 2

Revision History		
Effective Date	Version Number	Reason
1/1/13	1	ISO Compliance
1/26/16	2	Revise handling of digital images.

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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FFTP11
Version: 2

Chapter 11: Enhancement of Photographs After Scanning Latent Print

11.1 Purpose

This section describes an overview of the methodology used in enhancing scanned latent prints or shoe impressions that are contained in the CCBI Digital Crime Scene system.

11.2 Scope

This is information defining the structure of the processing methodology.

11.3 Enhancement of Photographs After Scanning Latent Print

11.3.1 The Forensic Photographer receives the item(s) of evidence to be scanned from Evidence Receiving Unit personnel or from Locker 716 in the evidence vault. The Forensic Photographer fills out the applicable chain of custody form for this evidence.

11.3.2 The Forensic Photographer scans the evidence into the CCBI Digital Crime Scene system at the appropriate resolution for latent comparison, using a scale if possible.

11.3.3 The Forensic Photographer will reproduce scans **as requested by the Latent Print Examiner** of the latent prints or shoe prints at a scale of 1:1 for comparison purposes ~~by Latent Print Examiners~~.

11.3.4 At the request of Latent Print Unit personnel, the Forensic Photographer may enhance scans now saved in the CCBI Digital Crime Scene system. These enhancements may include, but are not limited to:

11.3.4.1 Brightening or darkening the print

11.3.4.2 Increasing the contrast of the print

11.3.4.3 Converting the print to black and white

11.1.4.4 Flipping the print horizontally

11.1.4.5 Inverting the print (i.e. creating a "negative" version)

11.3.5 All enhancements will be done through the CCBI Digital Crime Scene system in order to save a record of the enhancements made. Any record of enhancements will be printed and included with the Forensic Photographer's notes.

11.3.5 The Forensic Photographer will reproduce the enhanced digital ~~scan photograph~~ **scan photograph** at 1:1 scale for latent print comparison purposes.

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Issued By: CCBI Director

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11.3.6 The Forensic Photographer will assign each requested scan a derivative latent card a number and, if applicable, will assign a derivative item number to the envelope containing the latent card(s). The assigned derivative latent card number will be added to the Image Description text box in Digital Crime Scene. Any photos copied to a USB drive or to the SPEX Latent Share folder will be labeled in the following format: CCBI Case number Derivative Latent Card number (ex. XXXXXXXX LC x-x). When copying files to a USB drive, the Forensic Photographer must ensure that the USB drive is blank before copying any files to it.

11.3.7 References

CCBI Crime Laboratory Administrative Procedures Manual
CCBI Forensic Science Quality Manual
Camera user manual
Software user manuals

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Issued: January 26, 2016
Issued By: CCBI Director

Chapter: FFTP11
Version: 2

Revision History		
Effective Date	Version Number	Reason
1/1/13	1	ISO Compliance
1/26/16	2	Revise handling of digital images.

Raleigh/Wake City-County Bureau of Identification
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Issued: January 1, 2013
Issued By: CCBI Director

Chapter: FPTP12
Version: 1

Chapter 12: Video Surveillance Stills

12.1 Purpose

This section describes an overview of the methodology used in extracting still images from video surveillance footage.

12.2 Scope

This is information defining the structure of the processing methodology.

12.3 Video Surveillance Stills

12.3.1 The Forensic Photographer receives the item(s) of evidence from Evidence Receiving Unit personnel or from Locker 6 in the evidence vault. The Forensic Photographer fills out the applicable chain of custody form for this evidence.

12.3.2 Using the appropriate software and hardware, the Forensic Photographer will extract still images of requested portions of the surveillance video. The request will come from the law enforcement personnel assigned to investigate the case.

12.3.3 The Forensic Photographer will assign an item number to any still images or digital copies of the still images.

12.3.4 The Forensic Photographer will sign the original evidence and the still images over to the Evidence Receiving Unit to be returned to the requestor.

12.3.5 References

CCBI Crime Laboratory Administrative Procedures Manual
CCBI Forensic Science Quality Manual
CCBI Evidence Submission Guide
Camera user manual
Software user manuals

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Issued: January 1, 2013
Issued By: CCBI Director

Chapter: FFTP12
Version: 1

Revision History		
Effective Date	Version Number	Reason
1/1/13	1	ISO Compliance

Raleigh/Wake City-County Bureau of Identification
Forensic Photography Unit Technical Procedures Manual

Issued: June 4, 2015
Issued By: CCBI Director

Chapter: FPTP13
Version: 1

Chapter 13: Facial Recognition Program

13.1 Purpose

The purpose of this document is to provide guidelines for the CCBI Forensic Photography Unit with regard to facial image comparison. Practices included in this document are based on accepted and published standards from the Federal Bureau of Investigation (FBI), the Scientific Working Group on Imaging Technology (SWGIT), the Facial Identification Scientific Working Group (FISWG), and the Raleigh/Wake City-County Bureau of Identification. The guidelines presented in this document are intended to address appropriate practices for performing a variety of tasks associated with the acquisition, proper use, storage, comparison of facial images, and reporting of conclusions.

13.2 Scope

This document presents best practices for the proper use and treatment of images and for conducting facial recognition searches using the CCBI Facial Recognition (FR) software to search the CCBI arrestee mugshot database. This is done in an effort to assist with the identification of unknown individuals.

13.3 Personnel

FISWG recognizes two hierarchically distinct levels of facial comparison: facial review and facial examination (FISWG Approved Standards, Guidelines, and Recommendations - Guidelines for Facial Comparison Methods, version 1.0).

13.3.1 Facial Review

- Includes facial comparison situations that are by nature typically undertaken in a relatively short amount of time, such as a traffic stop or one-to-many facial recognition searches, etc.
- CCBI considers one-to-many FR searches as Facial Review level comparisons
- Personnel qualified for Facial Review: Reviewers and Examiners

13.3.2 Facial Examination

- More rigorous process than facial review
- Involves morphological comparison
- Requires knowledge of image science, facial anatomy, and the changeability of facial features
- CCBI considers Investigative Leads and other one-to-one image comparisons as Facial Examination level comparisons
- Personnel qualified for Facial Examination: Examiners

13.3.3 FR Examiner

FR Examiner refers to an individual who has completed the training course outlined in the CCBI Facial Recognition Examiner Training Manual, which includes attending the FBI/CJIS Face

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Comparison and Identification Training. Upon completion of this training, a Certificate of Competency in FR Examination will be issued (LAPM 03) (FRETm 4.5).

Examiners have received advanced training in the CCBI FR application and its features. Examiners have a working knowledge of the usefulness and limitations of the CCBI FR application and the ability to use image editing software (such as Adobe Photoshop). They are qualified to assess image quality and appropriateness for FR searches. Examiners perform one-to-many and one-to-one facial image comparisons using the comparison features available in the FR application. Examiners determine if images are suitable for FR searches, enhance images for the purpose of conducting a FR search, and may develop potential investigative leads based on their observations of the results from the FR search. FR Examiners must have thorough knowledge of the usefulness and limitations of the software and applications used for Facial Recognition Examinations. Examiners must submit the conclusions of their analyses that result in a potential candidate for an investigative lead for verification by another FR Examiner.

13.4 Facial Comparison

All Facial Comparison will go through a standard series of steps.

13.4.1 Facial Recognition Application

An image is submitted to the CCBI for FR searching. It is at this point that the examiner analyzes the submitted image to determine its suitability searching. There may be a need to edit the submitted image to increase the likelihood of acceptance into the search engines. The image(s) is entered into the FR application where it is compared to the database and one of two results is delivered:

- “Probe not accepted.” – The probe image is not accepted into one or more of the search engines.
- The search engines supply a candidate list for review.

13.4.2 Facial Recognition Review

A Facial Recognition Review is a basic one-to-many review of the probe image to the candidate list with the sole purpose of filtering through the large galleries of candidates and narrowing those results to candidates that require more detailed examination.

13.4.3 Facial Recognition Examination

Once the Facial Recognition Review is complete, the resulting candidates are then compared side-by-side with the submitted image in a Facial Recognition Examination. During this process, individual characteristics of the face are compared between the submitted image and the candidate (FISWG Approved Standards, Guidelines, and Recommendations Facial Image Comparison Feature List for

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Morphological Analysis, version 1.0). The Facial Recognition Examination determines if a candidate is an investigative lead. These examinations are subject to verification.

13.5 Acquisition and Storage of Images for Facial Examination

Facial images that will be subjected to a FR search must be part of a criminal investigation.

The examiner should immediately report any images submitted to the CCBI regarding a subject that is not directly related to an ongoing criminal investigation to the CCBI Laboratory Division Deputy Director (LAPM 19: Review of Requests, Tenders, and Contracts for Laboratory Services).

All images submitted for FR should consist of the original image or video in the highest quality format available. If a video is submitted, the examiner should ensure that the appropriate video players or video codecs are submitted along with the video.

Once the image is submitted to CCBI, it shall be entered into the Digital Crime Scene (DCS) system for archiving purposes. Any enhancements or edits of this image shall also be entered into the DCS as a separate file from its original. The FR candidate image that is the result of a FR examination shall also be entered into the DCS.

13.6 Assessment of Images

Once the FR examiner has received the image, the image will be assessed for its quality and its usefulness for a FR search. This assessment will include an evaluation of the subject's pose, the lighting, focus, perspective, possible distortion, image resolution, image rotation, subject's expression, etc. When the FR Examiner determines that the image quality is unsuitable for the Facial Recognition application, the factors detracting from the quality will be recorded in the case notes. The image will not be submitted to the FR application and no facial examination will occur. A report will be generated, using the template in the Report Writing Manual, stating that the requested service was not performed due to unsuitable image quality.

Optimal images for the FR search will be non-compressed original source images. There may be instances when a submitted image is saved in a format that is excessively compressed (e.g. within a PDF or Word document). Such images may be problematic for FR searches because the aspect ratio and amount of visual information contained within them may have been altered from the original image or they may be of such low resolution that the FR application will have difficulty generating a gallery of candidates. This information will be recorded in the case notes.

13.7 File Format

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Images to be searched in the FR application must be saved as JPEG files. If the file format of the submitted image is anything other than JPEG, the image must be opened using image editing software (such as Adobe Photoshop) and resaved as a JPEG before submitting it to the FR application. If the change of image file occurs, it will be recorded in the case notes.

13.8 Rotation

If a submitted image shows the subject's face in neutral or near neutral position, but the image of the face within the image is rotated, the rotation can be corrected, using image editing software or the FR application, so the face is oriented properly. If the image must be rotated, the examiner shall ensure the proportions of the image are constrained before it is rotated in order to preserve the integrity of the facial image to be searched. If the rotation of an image file occurs, it will be recorded in the case notes.

13.9 Cropping

If a submitted image shows the subject's face in neutral or near neutral position, but the image shows a large amount of background information or too much of the torso below the shoulders, the image may be cropped, using image editing software or the FR application, to make it more suitable for a FR search. If the image file is cropped, it will be recorded in the case notes.

13.10 3-D Pose-Correction

If a submitted image shows the subject's face in a non-neutral position, the face in the image may be pose corrected using the 3-D model capability within the FR application. Facial image comparison shall not be conducted using a 3-D pose corrected model as the comparative image. Only the originally submitted image shall be used for comparison purposes. If the image file is pose-corrected, it will be recorded in the case notes.

13.11 Image Enhancements

If a submitted image shows the subject's face in a position that is appropriate for a FR search, but portions of the face are obscured or are unsuitable for a FR search (e.g., lines over the face in a passport photo, mouth showing exaggerated expression, eyes not visible, postmortem photo with slack-jaw, closed eyes, etc.), the examiner should take steps to ensure the probe image is made suitable for FR. The examiner should use image editing software to enhance the image and maximize its potential effectiveness for a FR search. All enhancements will be recorded in the case notes. Any comparisons by the examiner shall be between the originally submitted image and the potential investigative lead; the enhanced image shall not be used as the comparative image in a one-to-one comparison.

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13.12 Facial Recognition Search using the Dataworks Plus FACE Plus Facial Recognition Application

This FR application can only be used by FR Reviewers and FR Examiners. It is the responsibility of the FR Reviewer/FR Examiner to search through a sufficient number of the images provided by the FR application to assess whether there are any candidates that are viable for further investigation. The extent of the gallery review will be set at a minimum of 50 candidates. If the FR Reviewer/FR Examiner determines that a gallery review of greater than 50 candidates is necessary, the basis for that determination will be recorded in the case notes.

13.13 Comparison of Facial Images

When comparing images from the galleries provided by the FR application against the probe image, the examiner will look at an array of features to determine whether or not the facial features visible in the returned images have enough similarities with the probe image to warrant further analysis.

When a viable candidate for further investigation is identified, a more intensive morphological comparison is warranted. When conducting a morphological comparison, the FR Examiner will maintain a record of the facial features compared, which will be a part of the case notes. The features compared will vary, depending upon the nature of the images (i.e. not all features will be observable in all images). The examiner shall not make inferences about facial features that are not observable. No morphological comparison shall take place between a 3-D pose- corrected or enhanced probe images to the candidate image. When the FR Examiner determines that one or more of the candidate images are viable as an investigative lead, the FR Examiner will seek verification from another FR Examiner (LAPM 02) (FR Technical Procedures 13.16).

13.14 Review of FR Search Results

If the FR Examiner determines the submitted image is unsuitable for a FR search or that there are no viable investigative leads among the candidates generated by the FR search, verification of that conclusion is not required but may be conducted at the discretion of the examiner.

If the FR Examiner determines that any of the candidates returned by the FR search are potential investigative leads, then the facial image comparison is subject to verification (LAPM 02) (FR Technical Procedures 13.16). If the verification confirms the viability of the investigative lead, then the FR examiner will generate an Investigative Lead Report, using the template in the Report Writing Manual. If a candidate is generated for an investigative lead, an inquiry must be performed to determine that at the time the submitted image was captured, the candidate was not incarcerated in a Wake County Detention Facility.

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13.15 Reporting

Facial Review and Facial Examination are related but are distinct categories of analysis. All facial recognition examinations require that a report be authored and published. Facial Reviews do not require reports. All reports will be published using the CCBI FR reporting templates as outlined by the CCBI Report Writing Manual. Published reports will be entered into the CCBI records management system. An additional copy of the report will be provided to the requesting investigator.

There are three distinct and different levels of FR examination reports. They are as follows:

13.15.1 Unsuitable for Facial Recognition Search

If the probe is not suitable for a FR search, an “Unsuitable for Facial Recognition Search” report will be published.

13.15.2 No Candidates

If the FR search does not generate a candidate, a “No Candidates” report will be published.

13.15.3 Investigative Lead

If the FR search generates one or more viable candidates for further investigation, the examiner shall publish an “Investigative Lead” report.

The examiner will not use any language that would imply positive identification.

All Investigative Lead Reports will contain the following statement:

**THIS REPORT DOES NOT REPRESENT A POSITIVE IDENTIFICATION.
THE INFORMATION IN THIS REPORT IS PROVIDED AS AN INVESTIGATIVE LEAD. THIS
INVESTIGATIVE LEAD ALONE DOES NOT CONSTITUTE PROBABLE CAUSE TO ARREST.**

13.16 Verifications

All FR examinations that result in an investigative lead must be verified by another FR Examiner. Verification is the independent examination by another qualified FR Examiner resulting in the same conclusion.

13.17 Verification Conflicts

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If there is a disagreement in conclusion between the primary FR Examiner and the verifying FR Examiner, the following procedures will apply.

If a verifier cannot reach the same conclusion as the primary FR Examiner, the comparison shall be submitted to another qualified FR Examiner for verification.

If the second verifier likewise cannot reach the same conclusion as the primary FR Examiner, the verification process and its results thereof shall be documented in the primary FR Examiner's case notes. However, the comparison will not be considered or reported as an investigative lead. The result of such an instance will be regarded and reported as a "No Candidate".

13.18 Administrative Report Review

All reports must be reviewed for accuracy prior to them being published and disseminated. All crime laboratory employees are authorized to complete Administrative Reviews (LAPM 02).

13.19 Technical Report Reviews

Technical Reviews will be performed on 25% of the cases submitted for Facial Recognition. Technical Reviews will be completed by an FR Examiner other than the one who authored the report. It is the responsibility of the examiner to flag every third case for technical review.

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Revision History		
Effective Date	Version Number	Reason
6/4/15	1	Policy creation and implementation

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Version: 2

Chapter 14: Abbreviation List

The following is a list of abbreviations and acronyms commonly used by the Facial Recognition Program. This list has been generated to assist in the interpretation of case notes and is not a standardized list of required abbreviations. The abbreviations are appropriate written in either lower or upper case and they are appropriate with or without punctuation such as periods. Common chemical formulas, chemical, mathematical, and shorthand abbreviations are equally acceptable and will not be listed here.

Admin: Administration
ALS: alternate light source
AOI: Area of Interest
AVI: Audio Video Interleave
BMP: Bit mapped
B/W: Black and White
CCD: Charged Couple Device
CCW: Counter clockwise
CD: Compact disc
CD-R: Recordable compact disc
CD-RW: Re-writable compact disc
CF: compact flash memory card
CMYK: Cyan, Magenta, Yellow, &Black
Cont: Continued
Config: Configuration
CSP: crime scene photographs
CSV: crime scene video
CW: Clockwise
DCS: Digital Crime Scene System
Det: Detective
Dig: Digital
DPI: Dots per inch
DVD: Digital video disc
DVR: Digital video recorder
DX: Drug Section
Enh.: enhancement
Ex: Examiner
FR: Facial Recognition
Freq: Frequency
FX: Firearms/Tool mark Section

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GB: Gigabyte
HD: High density
HDR: High Dynamic Range
IMG: Image
Imp: Impression
Inv: Investigator
IR: Infra Red
ISO: International Standards Organization
JPG: joint photographic experts group file format
LB: Latent Box
LC: Latent Card
LP: Latent Print
LEX: Latent Print Examiner
LX: Latent Print Section
MB: Mega Bite
MC: Memory card
MPEG: Moving Pictures Expert Group
NEF: Nikon Electronic File
PFF: Proprietary file format
PPI: Pixels per inch
PS: Adobe Photoshop
PSD: PhotoShop Document
RAW: Binary file without a specified format
RGB: Red, Green & Blue
S/N: Serial number
SD: Secure Digital memory card
SDHC: Secure Digital High Capacity memory card
TIFF: tagged image file format
TTL: Through the lens
UV: Ultra Violet
VLC: VideoLAN Client
VR: Vibration Reduction
WMP: windows media player
WMP: windows media player

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Issued By: CCBI Director

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Revision History		
Effective Date	Version Number	Reason
January 1, 2013	1	New Policy to comply with ISO 17025
June 4, 2015	2	Renamed from Ch13 to Ch14 and 3 new abbreviations added to accommodate facial recognition

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