29. PHOTOGRAPHY

A. Introduction

In crime scene photography, for documentation of evidence, it is important to work systematically. Crime scene photography should be an orderly and systematic process to present a logical approach to the scene and make reviewing the evidence easy. Too many photographs are better than not enough. There is only one chance to photographically document the scene the first time. Refer to the camera and flash operator manuals and be familiar with the operation of all issued photographic equipment. The purpose of crime scene photography is to document the crime scene as you (the CSS) originally found it and to document all evidence in order to accurately represent the scene and evidence to someone not present and for reference later in helping to write reports and recollect/reconstruct the scene.

B. Crime Scene Photography

Crime scene photography is the application of photographic techniques to record specific features and details as they appear at the crime scene. The primary focus is the documentation and extraction of information from the evidence. Photographs provide visual images and have the distinct advantage of showing physical objects in a way similar to what the human eye sees.

(1) Objectives

(a) Record the condition of the scene before alterations occur.

(b) Record the location and position of evidence items collected.

(c) Document the point of view of the principals and potential witnesses. (see Specialized Photography section for perspectives taken at night)

(d) Document the spatial relationships of pertinent items.

(2) Digital Camera

(a) Camera strap

(b) Eyepiece cover

(c) Camera batteries

(d) Camera lens

(e) Lens cap

(f) Camera user guide manual

(3) Dedicated flash unit

(a) Transmitter for flash unit

(b) Batteries

(c) Flash unit manual

(4) Accessories

(a) Digital media (e.g. CF, SD, etc.) cards

(b) Camera case

(c) Camera battery charging unit

(d) Flash battery charging unit

(e) Color chart

(f) Bite mark (ABFO) ruler

(g) Off shoe flash cord

(h) Shutter release mechanism (e.g. cable or remote)

(i) Camera lens filters

(5) Procedures for basic Crime Scene Photography

(a) Photograph the dedicated form with essential case documentation

- Incident Report Number
- Type of crime/Investigative unit
- Date
- Time
- Address/Location of scene
- Address/Location of where crime took place if different from scene location (if applicable)
- Officer/Detective name and serial number requesting service (if applicable)
- Crime Scene Specialist's serial number
- Name and date of birth of subject being photographed (if known)
- Description of type of photographs being taken (e.g. aerials, shoeprint, tire track, low light, ambient light, scene, evidence, etc.)
- Frame number of first photograph
- Multiple cases may be photographed on each disk, depending on space. The start of each new case will have a photograph of the dedicated form with the above listed information.
- A new dedicated photo form will be filled out and photographed for each new location or significant event related to the same report number (e.g. Officer Involved Shooting scene photographs, weapons inventory photographs, and hospital follow-up would each have a dedicated photo form photographed).
- Include a color chart. This may be repeated in subsequent photographs if a color correction may be needed.

(b) Photograph the scene

- Photograph the area of interest using a four-corner method to capture a 360-degree view. An overlapping method helps to fully show the entire area of interest.
- Do not photograph any police equipment or supplies as well as police personnel in the overall photographs, if possible
- Photograph the location identifiers (e.g. street signs, addresses, surrounding areas, apartment complex name, other identifiers, etc.).

- The wide-angle lens can be utilized to document small or confined spaces (e.g. small rooms, closets, vehicle interiors, etc.).

(c) Photograph specific items of evidence

- Photograph the desired evidence or items by using a progressive technique and logical sequence of photographs
- Overall photographs
- Intermediate photographs
- Close-up photographs
- Marked items of evidence should be photographed to show sufficient detail of the item (e.g. headstamps, interior pockets, serial numbers, etc.)
- Photograph any evidence that may be altered due to natural weather conditions first
- Additional photographs of items of evidence may be taken in a controlled environment with a scale to document distinguishing features (e.g. defects (from stab wounds, bullets, etc.), bloodstains, clothing information, etc.)

(d) Photograph the subject

- With the camera in a vertical position, complete photographs of the following from all four sides:
    i. The whole body from head to toe.
    ii. Torso and face
    iii. Subject's head
- Complete close-up photographs of both sides of the hands.
- When tread patterns are relevant, photograph the bottom of the subject's shoes for class characteristics.
- Limited photographs may be allowed for children, handicapped, or medically restricted patients.
- Photograph distinguishing marks (e.g. scars, tattoos, other unique marking) when applicable.
- With assistance from OME staff, additional photographs for deceased individuals will include close-ups of the eyeballs, top of the head, bottom of the feet or shoes, and torso (without any obstructing clothing). Additional photographs may be needed to document areas/items of interest such as lividity, ligatures, items in pockets, and close-ups of the extremities.
- For officer photographs, all the officer's accessories need to be captured (such as duty belt, vest, and any police insignia) without obstruction as worn.

(e) Photograph injuries to the body

- Follow the above listed procedure for photographing a subject. Photograph the general area of interest with enough information to identify the portion of the body that is being documented.

- Complete a close-up photograph of the injury by itself without a color chart.
- Photograph the injury again with a color chart placed parallel to the injury and on the same plane. Include the entire color chart in the photograph.
- A closer photograph may be taken if the injury is small. Include a partial view of the color chart in this photograph.
- Additional photos with an ABFO ruler may be taken. If more detailed information is needed for interpretive value, see the section related to comparative photography.

(f) Photographing a vehicle

- Photograph location identifier when possible (as listed above).
- Photograph each side of the vehicle systematically including all exterior surfaces.
- Photograph the license plate specifically.
- Photograph the Vehicle Identification Number (VIN) if necessary and accessible.
- Photograph specific areas of interest, prior to processing or collecting evidence items. For example, damage to the vehicle, seat positioning, possible bullet impact sites, or biological evidence collection sites, etc.

(g) Photographing individual perspectives

- Photographs will be taken to document the relative perspective of specific individual's vantage points within the crime scene.
- Photograph a documentation method (e.g. white erase board, photo card, etc.) to indicate the individual's perspective being captured. Include the subject's name and date of birth or serial #.
- The camera lens should be set to a focal length of approximately 32mm in order to mimic the focal length of the human eye.
- For the mirrorless camera use a 50mm lens or set the telephoto lens to 50mm.

(6) Chain of Custody (this applies to all photography)

(a) The total number of images will be captured on the dedicated form/info sheet prior to turning in the digital media card.

(b) The digital media card will be uploaded into Evidence.com by the CSS that took the photographs or a supervisor.

(c) After the photos have been uploaded, the digital media card will be added to the approved log form and placed into the designated secured storage location to have the uploaded photos verified.

(d) The digital media cards and the approved log form will be removed from the storage location by a Crime Scene Response Supervisor or designee to be verified that the photos have been uploaded to Evidence.com. Once verified the digital media cards will be returned to the CSS.

(e) The logs will be retained in the Crime Scene Response Section.

(7) Camera Malfunction

(a) Refer to the camera manual for possible trouble shooting

(b) When photographs are not properly captured due to a camera malfunction, the following corrective action and notification procedures will be followed:

- Notify the scene officer/detective of the noted malfunction
- If functioning camera equipment is available, re-shoot any photographs that could not be captured due to the malfunction
- As soon as feasible, notify the on-duty supervisor or designee
- Upon returning to the office, document in writing to the on-duty supervisor or designee the situation, and any corrective action that was taken
- Give the camera to the Equipment Coordinator for evaluation.

C. Aerial Photography

On occasion, aerial photographs may be taken of a crime scene or location. The following settings are recommended; however, alternate settings may be necessary depending on the conditions.

(1) Required Equipment

(a) Issued digital camera

(b) Digital media card

(c) Optional Lens- 70-200mm lens (for use in higher elevation aerial photography, e.g. plane or helicopter). Unable to use on mirrorless cameras without an adapter.

(2) Recommended Digital Camera Settings

(a) Set the digital camera control dial to TV (shutter priority) and the shutter speed set to a minimum of 1/500th of a second.

(b) Set the ISO at 100

(c) Adjustments may be necessary depending on lighting and weather conditions

(d) A flash device will not be used

(3) Weather and Atmospheric Conditions

(a) Aerial photographs should not be taken in bad weather or low light conditions.

(b) Temperature inversions and smog alerts are not conducive to good visibility.

(4) Procedure

(a) An overall view of the scene will need to be documented. Capture the area using the four-point method, at different altitudes to establish the location and condition of the crime scene. Show established borders (e.g. mountains, major cross streets, etc.), if possible

(b) Close-ups of key areas of the crime scene need to be taken from several positions from directly over the scene.

(c) Photographs of items of interest can be taken in relation to the rest of the crime scene.

(5) Safety

(a) The Crime Scene Specialist will follow the instructions given by the pilot or observer.

D. Comparative Photography

Comparative quality photographs are those which are taken for the purpose of comparison with known exemplars or for interpretive value. They may include, but are not limited to, shoe print, tire print, fingerprint, tool mark, bite mark, and bloodstain pattern photography. The following exposure settings are recommendations. Alternate exposure settings may be necessary for alternative or challenging scenarios, such as night photography.

(1) Equipment

(a) Digital camera and accessory equipment

(b) Digital media card

(c) A 17-40mm lens,24-105mm lens if using a full frame camera, 50mm lens or 100mm Macro lens for mirrorless camera use.

(d) Detachable electronic flash

(e) Sturdy tripod

(f) Scales (L-shaped ruler and tape measure)

(g) Level or angle finder

(h) Flashlight

(i) Lens band

(2) Procedure

(a) Shoe and Tire Track Evidence (Impressions)

Impressions are viewed as 3-dimensional; however, photographs are two dimensional. Therefore, lighting and depth of field are very important in the comparative photography of impressions.

A sampling of at least one left shoe impression and one right shoe impression, if applicable, of the same general class characteristics will be comparatively photographed within the same observable path of travel. Other shoe impressions observed in a separate path of travel will require these same sampling guidelines regardless of whether similar class characteristics are observed. Obtain partial impressions if full impressions are unavailable or noted to be a separate pattern from the other full impressions.

- Photographs will be taken of the location of the comparative prints/impressions in the general scene photographs. Overall, intermediate, and close-up photographs will be taken. The pictures will include the lettered markers.
- Load the camera with a digital media card.
- The camera will be set to RAW
- Recommended ISO setting of 100.
- Mount the transmitter or off shoe cord on the camera. If utilizing the transmitter, set the transmitter and flash to the same channel.
- It is recommended that the flash be set to the “slave” setting and the flash set to ¼ power.

- Set the camera to “Manual” and select an aperture of f11 or greater. Select a shutter speed of 1/60 of a second (recommended exposure settings). For mirrorless cameras select an aperture of F16.
- Mount the assembled camera to the tripod away from the impression. Do not attempt to handhold the camera.
- Extend the boom and tripod legs (if applicable). Use the center tube extension to vary your distance from the print/impression.
- Utilize a sandbag or other weight bearing device to evenly distribute the weight along the boom of the tripod (if applicable).
- Place the assembled camera and tripod over the impression. Fill the viewfinder horizontally with the image, but keep the lens set at approximately 32mm. Full frame cameras, however, will be set at 50mm. Adjust the tripod legs to fill the frame, lens does not zoom.
  - To ‘lock’ the lens, move half of the lens band over to the non-moving part of the lens barrel. The friction of the band will be enough to prevent the lens shifting under its own weight. Ensure the lens band does not interfere with the focus ring when locking the zoom in position.
- Do not attempt to remove debris that has been pressed into the impression. Carefully use tweezers to remove debris that has fallen onto the shoe/tire impression.
- With a level or angle finder, ensure that the camera sensor/front of lens is parallel to the print/impression.
- Place the ‘L’ shaped ruler near the print/impression. The ruler must be on the same plane as the print and placed to show width and length of the footwear. The entire ‘L’ ruler does not need to be visible. Fill the frame with the impression/ruler.
- On tire tracks, place the long arm of the ‘L’ shaped ruler next to the print. On the opposite side extend a tape measure parallel to the impression. Attempt to avoid placing the short arm of the ‘L’ shaped ruler over the tracks by directing it away from the evidence as you move along the track for photography. However, if necessary, do not place the short arm over the tracks until the photographs have been taken of that area unless a casting is to be completed of the impression. If a casting is to be done, you will not place the short arm of the ‘L’ ruler across the impression to avoid disturbing the area.
- Photograph each shoe and tire print/impression from four different flash positions/lighting angles. Overlapping photographs will be taken of all tire impressions. If possible, approximately 8 feet of tire print/impression will be photographed in 12-14 inch increments. Capture shoe print impressions that are larger than 14-16 inches in sections.
- Each photograph of a shoe or tire print/impression will contain lettered marker; directional indicator; Incident Report Number; date; and serial number or name of photographer.
- Block outside light (sunlight, headlights, etc.) as much as possible
- Manually focus all photographs to obtain critical detail.
- Take the exposure using the camera remote control, cable, or camera timer.

(b) Shoe and Tire Track Evidence (Imprints)

The camera and tripod set-up for photographing imprints is the same as for impressions. Imprints are viewed as two dimensional, such as the transfer of blood, dirt, grease, or other materials onto a surface. Shoe/tire prints that are two dimensions in nature do not require a 4-way lighting technique. The use of the flash is optional when the print is readily visible. Check the camera LCD display after each photograph to ensure the best results.

(c) Bite Marks and Wound Pattern Analysis

Bite mark and/or wound pattern analysis will utilize the same comparative photography techniques as outlined above but adapted to format the forensic evidence. Photograph bite marks and/or wounds using overall, intermediate, and close-up photographs or location placement and orientation. Use a color chart and ABFO ruler when photographing bite marks. When photographing wounds (e.g. GSW, stab/incised wounds, pattern wounds, etc.) a color chart is necessary and an ABFO ruler will be used, if needed for scaling purposes. Utilize a macro lens for the comparative photographs.

(d) Tool Marks

Tool mark photography will utilize the same comparative photography techniques as outlined above but adapted to format the forensic evidence. It is necessary to take overall, intermediate, and close-up photographs of a tool mark/impression prior to casting or removal. Include a scale in the close-up photographs. An adhesive scale or ABFO ruler can be used in these photographs. Utilize a macro lens for the comparative photographs.

E. Fingerprint Photography

Fingerprint comparative photography techniques are the capturing of friction ridge detail using a digital camera. Most often, this detail will be present in a foreign substance, or cannot be lifted with conventional methods. These images will be used for comparative analysis at a later date, so quality and documentation are essential in the initial stages of recording. Examples of fingerprints found at a crime scene are included into three categories: latent (existing, but not yet developed), patent (visible), and plastic (molded into a foreign substance).

The following photography procedure is a guide only. Experience, camera type, crime scene conditions, and other factors may dictate slight changes in procedures to accurately and effectively capture fingerprints photographically.

(1) Required Equipment

(a) Approved digital camera and accessory equipment

(b) A 60mm macro lens, or 100mm macro lens if using a full frame camera. Use a 100mm Macro lens for mirrorless cameras.

(c) Digital media card

(d) Detachable flash for oblique lighting or ring light flash heads with adapter

(e) Scale

(2) Photographic Procedures

(a) Photographs will be taken of the location of the fingerprints in the overall scene photos.

(b) Overall, intermediate, and close-up photographs will be taken of the friction ridge detail.

(c) The photographs will include a letter identifier and an approved measuring device/scale.

(d) Comparative Quality Photography *(recommended exposure settings*)

- Use a 60mm macro lens, or 100mm macro lens if using a full frame camera
- Load the camera with a digital media card
- The camera will be set to the 'RAW' setting
- Set the camera to Manual and adjust the f-stop to 11 or greater with a shutter speed of 1/60 of a second. For curved surfaces an aperture of approximately f/32 should be utilized. For mirrorless cameras adjust the f-stop to F16 or greater with a shutter speed of 1/60 of a second.
- It is recommended that the flash be changed to "Manual" setting at ¼ power
- Set the ISO to 100
- Mount the camera to the tripod; do not attempt to handhold the camera
- With a level or angle finder, ensure that the camera sensor/front of lens is parallel to the print/impression.
- Extend the boom and tripod legs (if necessary). Use the center extension to vary your distance from the friction ridge detail.
- Record the case information, including the IR#, date, serial number, and scene identifier, on an adhesive ruler/scale and place it parallel to the fingerprint.
- In the case of a large fingerprint, the ABFO ruler can be utilized instead of an adhesive ruler.
- A directional arrow will be included to indicate the orientation of the fingerprint.

(e) Place the assembled camera and tripod adjacent to the print. The fingerprint and the associated scale should fill the viewfinder. The recommended maximum distance for photographing fingerprint print evidence for comparison purposes should be no more than 14" from the front of the lens to the surface being photographed. Additionally, the area being photographed should not extend past the borders of a 3"x5" index card or standard size fingerprint lift card.

(f) Hold a flashlight at varying angles to determine the best position for the flash or ring light flash heads on the camera.

(g) All exposures will be manually focused and taken using a remote control or camera timer to prevent blurred images.

(h) Take one photograph of the fingerprint ensuring that the entire scale, case identifying information, and the fingerprint is visible in the photograph. Take at least one additional close-up photograph with the fingerprint and at least 5mm of the scale visible in the photograph. Scene identifier and directionality of the fingerprint will also be in the photograph.

(i) If the fingerprints are exceptionally large (palm prints, entire hand, foot) or on curved surfaces, photograph the fingerprint overall, then in sections. The overall will receive a "parent" identifier (e.g., A), and subsequent sections will be sub-itemized (e.g., A1, A2, A3…). Each subsection will be treated like an individual print for photographic purposes.

(j) If the prints are on abnormal surfaces and there is concern for a loss of detail due to the surface or technique that will need to be employed, the friction ridge detail must be photographed before any further processing is done and again upon completion. For curved surfaces, the camera or print surface will be rotated to ensure the entire print is captured in sharp focus.

(k) The digital media card with the fingerprint photographs will be placed in the temporary storage location to be uploaded into the MIDEO system. A MIDEO form will need to be filled out and submitted with the digital media card.

F. Specialized Photography

Specialized photography techniques may be used to provide increased illumination or depth of field that cannot be captured during normal point-and-shoot photography. Alternatively, when taking perspective photographs or attempting to capture the lighting conditions of the scene, it may be necessary to remove the flash and decrease the exposure value. Experience and camera type will further dictate the settings and outcome of the photography.

(1) Application

(a) Crime scenes differ greatly in the environment and composition that is present in each and must be evaluated individually for the best application of photographic techniques.

(b) All outside nighttime scenes will be photographed with the “Low Light” or “Painting with Light” methodology outlined below to ensure the scene is properly documented. “Available Light” photography will be completed when the scene necessitates such, or at the discretion of the CSS in collaboration with investigative personnel. This policy applies to darkened environments regardless of time or location.

All outside nighttime scenes will have the overall photographs taken with the camera mounted on a tripod for stability; mid-range photographs may also necessitate having the camera on the tripod, depending on lighting conditions. Additional handheld photographs can be used to supplement the scene photographs. Any deviation from this practice will necessitate supervisor approval.

(2) Available/Ambient Light Photography – utilized to replicate lighting conditions at the scene (independent of supplemental light provided by the photographer)

Recommended guidelines for proper exposure value

(a) Set the camera to the appropriate ISO based on the lighting conditions.
(b) Use the adjustable zoom lens provided with the digital camera or wide-angle lens, if appropriate.

(c) Mount the camera on a tripod for stability. Do not attempt to hand hold the camera.

(d) Attach the remote shutter release.

(e) Position the tripod approximately at eye level and manually focus the camera.

- Adjust the lens to accurately capture the scene.

(f) Set the camera to “Manual.”

(g) Set the aperture to the most appropriate setting for the lighting/scene conditions.

(h) Remove/turn off the flash.

(i) Take a metered reading and adjust the shutter speed so that an exposure value of -1 is obtained.

(j) The above exposure value is a guideline and may need to be adjusted based on the lighting conditions at the scene, to include adjusting the white balance as needed.

(k) If necessary, set the camera to "Bulb" for exposures longer than 30 seconds.

(l) Take the exposure and evaluate the image to ensure that all necessary criteria has been recorded. Adjust the camera settings and take additional exposures until the lighting conditions are correct.

(m) Once the available lighting conditions are replicated, place the "available light" marker cone in an unobtrusive area of the image (usually the lower left or lower right foreground area of the image).

(n) Take another exposure with the same exact settings as previously stated.

(o) Prior to moving the camera/tripod to the next location, the marker cone will be removed and low-light exposures will be captured.

(3) Low Light Photography – utilizing the existing light at the scene with or without supplemental lighting to enhance lighting conditions

Recommended guidelines for proper exposure value

(a) Set the camera to the appropriate ISO based on the lighting conditions.

(b) Use the adjustable zoom lens provided with the digital camera or wide-angle lens, if appropriate.

(c) Mount the camera on a tripod for stability. Do not attempt to hand hold the camera.

(d) Attach the remote shutter release.

(e) Position the tripod approximately at eye level and manually focus the camera.

- Adjust the lens to accurately capture the scene.

(f) Set the camera to "Manual."

(g) Set the aperture to the most appropriate setting for the lighting/scene conditions.

(h) Remove/turn off the flash.

(i) Take a metered reading and adjust the shutter speed so that an exposure value of +1 is obtained.

(j) The above exposure value is a guideline and may need to be adjusted based on the lighting conditions at the scene, to include adjusting the white balance as needed.

(k) If necessary, set the camera to "Bulb" for exposures longer than 30 seconds

(l) Take the exposure and evaluate the image to ensure that all necessary criteria has been recorded. Adjust the camera settings and take additional exposures until the lighting conditions are correct to properly light the scene.

(4) Low Light Photography in combination with 2nd Curtain Flash – utilized to illuminate the scene combined with general lighting conditions

(a) Follow procedures listed above for low light photography

(b) Turn flash on and set to 2nd curtain

(5) Painting with Light – utilizing multiple flashes to properly expose a low light scene

Recommended guidelines for proper exposure value

(a) Set the camera to the appropriate ISO based on the lighting conditions.

(b) Mount the camera to the tripod

(c) Attach the shutter release cable

(d) Position the tripod to approximately eye level

(e) Set the camera to “Manual” and the f-stop to a wide-open setting (e.g. f/2.0-f/4.5)

(f) Set the shutter speed to “Bulb”

(g) Set the flash unit to “Manual” and full power

(h) Manually focus the camera

(i) Place a piece of black cardboard or some other form of visual obstruction in front of the camera lens.

(j) When ready to begin, lock the shutter open and remove the obstruction. DO NOT BUMP THE CAMERA!

(k) Have an assistant move along the outside perimeter of the exposure area firing multiple flash bursts. The bursts should be about 10-15 feet apart. Aim the flash at a slight angle away from the camera lens, not directly towards it.

(l) Cover the front of the camera lens with the visual obstruction between flash bursts to reduce the amount of ambient light that is being recorded.

(m) Repeat the process on the opposite perimeter of the exposure area.

(n) If a spotlight is used in lieu of the camera flash, slowly move the spotlight over the entire area starting at the top and moving toward the ground. Again, making sure the light source is not directed toward the camera lens. This method can be used if you do not have an assistant available.

(o) Close the camera shutter using the release

(p) Evaluate the image

(q) If more or less light is needed, take additional exposures using the number of flash bursts that is necessary to properly document the area of concern. If a spotlight is being utilized, move the light faster or slower across the scene as necessary.

G. Infrared Photography

The human eye can generally see light between the range of 400nm to 700nm on the electromagnetic spectrum. Above the range of 700nm is the region of infrared light. The purpose of Infrared (IR) photography is to be able to enhance the contrast between specific types of evidence and the surfaces on which the evidence resides. These photographic processes involve the use of various pieces of equipment.

(1) Equipment

(a) Standard issued DSLR camera

(b) Hoya R72 (or similar) IR transmitting filter

(c) LED Flashlight (light source)

(d) External or Internal Flash (light source)

(e) Tripod or copy stand

(f) Shutter release cable / remote

(2) Procedure

(a) To be used when photographing tattoos or injuries on decomposed or burned bodies, or through bloodstains on bodies, visualizing gunshot residue, print or drawings on charred documents or ink for Questioned Documents:

- It is suggested to take the appropriate visible light midrange and close-up photographs of the evidence to show it “in situ” prior to photographic enhancement.
- Mount the camera on the tripod and compose your image
- Once focused, switch to manual focus
- Take an image in program mode (this will be your baseline image)
- Switch to “Monochrome” and take an additional black and white image, if desired.
- Change to Manual or Bulb mode and start with a 30 second exposure with a wide-open f/stop (f/5.0, for example) and set your ISO to 1600 (these will be your baseline settings)
- Carefully attach the Hoya R72 (or similar) IR filter to the front of the camera (note – you will not be able to see through the viewfinder or “Live View” feature once the filter is in place)
- Take the IR photograph (with flash) and use your flashlight to “paint” the area with light
- Evaluate the exposed image in the camera’s LCD screen.
- Adjust the camera variables to achieve an appropriate exposure (add or subtract additional time for the shutter speed, change the f/stop, increase or decrease ISO, etc.). Note – in some instances you may need considerable exposure time (3 – 4 minutes, for example). This is considered normal, depending on lighting, camera settings and subject matter.

H. Gel Lifter Photography

(1) Refer to CSR-SOP-3 Adhesive Lifts section for the specific photographic procedures.

I. Bloodstain Pattern Photography

(1) Refer to CSR-SOP-5 Bloodstain Pattern Evidence section for the specific photographic procedures.

J. EDPL Photography

(1) Refer to CSR-SOP-15 Electrostatic Dust Print Lifter section for the specific photographic procedures.

K. Forensic/Alternate Light Source Photography

(1) Refer to CSR-SOP-18 Forensic-Alternate Light Source section for the specific photographic procedures.

L. Bluestar Photography

(1) Refer to CSR-SOP-23 Latent Bloodstain Enhancement section for the specific photographic procedures.

M. Documentation of Officer Involved Shooting Incidents

The purpose of this is to define and standardize the procedures used to document officer involved shooting incidents used by the Crime Scene Response Unit Specialists and the Violent Crimes Bureau Detectives.

(1) General Overview

(a) During officer walk-throughs, positions of interest will be marked and documented by the Crime Scene Specialist. If only one walk-through is conducted, as in the case of one involved officer, colored cones will be used to mark the positions of interest during the walk-through. After the walk-through is concluded, the cones will be photographed, and the positions will be measured and documented.

(b) If multiple walk-throughs are needed because of multiple involved officers, small colored plastic chips will be utilized to mark the positions of interest. The small chips are used in lieu of the cones to minimize any bias influences on the witnesses that follow. The chips are placeholders only, once all walk-throughs are concluded, colored cones will replace the colored chips and the scene will be photographed one account or story at a time. The positions for each account or story will be measured and documented.

(2) Marking Subject Positions

(a) When marking subject positions, consideration will be given to include the markings on at least two opposing sides of the cone for documentation purposes. Each involved officer will be assigned a color and all the positions of that particular officer's story will reflect that color. If more officers are involved than differing colors are available; colors will be reused but marked with a number designator for the additional officer's accounts (i.e. Officer Smith is assigned red cones and because all other colors were used for other officers, Officer Jones is assigned red cones with a number "1" designator). The involved officers and the colors assigned to their accounts must be documented in the Specialist's notes. These same colors will be reflected in the crime scene diagram created by the Crime Scene Specialist.

(b) For this example, the officer is assigned yellow for his account of the incident. The involved officer's position will be marked with a yellow colored cone. The position of the suspect according to the officer will be marked with a yellow cone with one black stripe applied to the cone. Black colored electrical tape will be used to mark the suspect's cone. If additional suspects are present, they will be marked with additional black stripes.

Officer Smith's position according to Officer Smith's account of events

SP1's position according to Officer Smith's account of events 

SP2's position according to Officer Smith's account of events. 

(a) If these positions are all that are described in the officer's account of events, this is all the marking required (i.e. Officer Smith- "I was standing here  the suspect was standing there  when he pulled a gun and I fired my weapon.").

(b) If there are multiple positions involved in the officer's account of the event, each different position will be marked with an alpha designator. The designator will be on an adhesive label applied to the colored cone base.

Officer Smith's first position during the event. 

Officer Smith's second position during event 

Suspects first position during event 

Suspect's second position during event 

(i.e. Officer Smith- "I was standing here 

when I started issuing orders.

I was here 

when I fired my weapon. The suspect was here 

when I issued orders and the suspect was here 

when I fired my weapon.")

If additional positions are needed, the alpha designations would continue alphabetically.

(3) Placement of Witnesses

(a) Witness location will be marked with chips/cones reflecting the color of the subject (Officer's account) placing them. Witness Officers will be marked with a cone marked "WO". 

(b) If more than one witness officer is present. The first witness officer cone will be marked "WO1" 

and the second witness officer cone will be marked "WO2". If additional witness officers are needed, the numeric designations would continue numerically. The Specialist should document which officer corresponds to which cone in their notes.

(c) If there are witnesses who are not police personnel and their position(s) are to be documented, they will be marked with a cone marked "W". 

If more than one witness is present. The first witness cone will be marked "W1" 

and the second witness cone will be marked "W2". If additional witnesses are needed, the numeric designations would continue numerically.

(d) The subjects and their designators must be documented in the CSS's notes for each account of what transpired. This will be the key to the colors of the cones and the alphanumeric designators.

(e) As with the officers, if multiple locations of witness officer or witnesses are to be documented, each location will be designated with an alpha designator. (i.e. the first location will be marked "WOA" for a witness officer, "WA" for a witness. The subsequent locations will be marked sequentially (i.e. "WOB", "WOC" etc.).

(4) Documentation Procedures

a) During the walk-throughs involving more than one Officer, each position should be marked with a plastic poker chip that corresponds to the appropriate color and designator of the subject it marks. The chips are to be left lying until all the walk-throughs are completed. Chips will be marked on with a Sharpie to show the designators of the subject(s) they represent. (The Specialist must clean the chips upon returning to the Lab). After the walk-throughs are completed, the chips will be replaced by cones one color or "story" at a time (i.e. Officer Smith's account which is all the Red Cones). The cones will then be photographed, measured and documented. When this is complete, the cones (in this example the Red Cones) will be removed and same procedure will be used for the next color/story (i.e. Officer Jones with Blue Cones). A photo of the photo card stating the beginning frame and what will be photographed should be taken before the documentation of each account or story (i.e. "Positions according to Ofc. Smith").

N. Perspective Photography Through Optics

May be used in conjunction with police-involved shootings and other incidents in which optics (i.e. scopes &/or red dot sighting systems mounted on rifles, handguns, less-lethal weapons, etc.) might factor into documenting the events related to the incident.

(1) Equipment
- (a) Standard issued DSLR camera.
- (b) External camera flash.
- (c) Lens that can be set to a focal length of approximately 32mm in order to emulate the perspective of the human eye. The mirrorless camera lens can be set to a focal length of approximately 50mm either fixed or adjusted.
- (d) Macro lens.
- (e) Two tripods.
- (f) Tripod-mount gun vise.

(2) Procedure

(a) Midrange / Relational Photography
- Ensure the gun is "safe" / unloaded.

- Position the firearm in the gun vise at the correct perspective alignment
- Have the person who used the firearm during the incident aid in positioning the firearm so it is oriented in the correct position within the scene.
- Position DSLR (with or without flash) on a tripod behind the firearm scope.
- Can use external flash to properly light target area / subject matter if needed.
- Set lens to ≈ 32mm.For mirrorless cameras set to 50mm.
- Take a series of photos in manual focus.
- One of the optics in focus.
- One of the target area / subject matter in focus.

Optics in Focus Subject Matter in Focus

(b) Macro Photography (for scopes only; not needed for red-dot handgun sighting systems)

- Affix the macro lens onto the camera.
- Position camera (on tripod) lens as close to firearm scope as possible.
- The camera might need to be handheld if the scope is low profile and the camera/tripod won't fit over gun stock.
- Factor in "eye relief" – make sure the image seen on the camera is clear and unobstructed.
- Set the camera to Manual or Aperture Priority.
- Set camera aperture to widest setting (≈ f/2.0).
- Compose the image and take a photograph through the optics.

(c) Perspective photographs taken with a mirrorless camera should have a minimum F-stop of f/5 with either the 50mm lens or telephoto lens.

O. Peephole Photography

On occasion, capturing images through a peephole might be of value. The following settings are recommended; however, alternate settings might be necessary depending on scene, lighting and structural conditions.

(1) Equipment

(a) Standard issued DSLR camera.
(b) Macro lens100mm lens for mirrorless cameras.
(c) Tripod.

(2) Recommended camera settings

(a) Set the digital camera control dial to AV (Aperture Priority) and the aperture to the widest possible opening (i.e. 1.4, 2.0, etc.).
(b) Set the ISO to ≈ 400. Adjustments might be necessary depending on lighting conditions.

(3) Procedure

(a) Position the camera / macro lens as close to the peephole as possible.
- The camera can be hand-held (no tripod) if the camera / lens can be braced against the door for stability. If not, a tripod should be used.
- Compose the image and take a photograph through the peephole.

Lens Over Peephole

Image Through Peephole

P. Multiple Exposure Photography

BlueStar®, FLS and laser trajectory (for example) are performed in a darkened environment. Accordingly, traditional photography results in an underexposed image where the results are hard to view in context with the environment.

The forensic usage of multiple exposure photography is a methodology in which techniques often utilized in a darkened environment can be used to show the results photographically within a well-lit image; putting the results in context within the environment and making it easier for persons viewing the photographs to comprehend the BlueStar®, FLS and laser trajectory results.

(1) Equipment
(a) DSLR (digital single lens reflex) or MILC (mirrorless interchangeable-lens camera)

(b) Tripod
(c) Shutter release remote

(2) Procedure
(a) Take normal crime scene photos prior
(b) Set the camera on a tripod and attach / enable the remote shutter release if needed
(c) Compose the image so that the resulting processes (BlueStar®, FLS, laser trajectory, etc.) can be viewed in context
(d) For cameras that have the ability to keep source images:

- Keep the camera setting in the same resolution used for standard crime scene photography i.e., JPEG
- Enable multiple exposure within the shooting menu
- Select “keep source images” (or similar verbiage)
- Select number of images desired for the finished multiple exposure composite image
- Select “additive” (or select “average” if using a particularly bright FLS) for multiple exposure control
- Choose “one shot only” (or similar verbiage) in order to have the multiple exposure automatically turn off after the image series concludes
- Take an image of the BlueStar®, FLS, laser trajectory, etc. process using appropriate camera settings so that the exposed image clearly shows the results and has a darkened background
- Repeat the process if using more than two total multiple exposure images
- For example, if the number of images for the composite is set to “4”, repeat the darkened background photography two additional times
- After the specialized process, take an image of the well-lit environment using appropriate camera settings
- The camera will merge all images within the multiple exposure portfolio. Review the resulting image and redo above steps if needed

(e) For cameras (non-mirrorless) that do not have the ability to keep source images:

- Change the camera settings to Raw + medium JPEG (depending on camera – i.e. Canon 90D)
- Take an image of the BlueStar®, FLS, laser trajectory, etc. process using appropriate camera settings so that the exposed image clearly shows the results and has a darkened background
- Review the image to ensure it is exposed properly
- Adjust settings and retake if / as needed
- Enable multiple exposure within the shooting menu
- Select “2” as the number of images for the finished multiple exposure composite image
- Select “additive” (or select “average” if using a particularly bright FLS) for multiple exposure control
- Choose “one shot only” (or similar verbiage) in order to have the multiple exposure automatically turn off after the image series concludes
- Choose “select image for multiple exposure”
- Rotate the quick control dial or appropriate camera setting to find and select the image originally taken in step 2 or 3 above

- Take an image of the well-lit environment using appropriate camera settings
- The camera will merge the images. Review the resulting image and redo above steps if needed

(f) For those cameras that do not have the ability to keep source images upload both the jpeg + Raw images.

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