



Crime Scene Unit
Standard Operating Procedures
Houston Forensic Science Center



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Introduction

The purpose of the Crime Scene **Unit** Standard Operating Procedures (SOPs) is to provide a direction and standard operating guidance on procedures used to process crime scenes/vehicles and evidence related to crime scenes/vehicles, and to document the methods used by the Crime Scene Investigators in those processes.

The methods described herein require use by a qualified Crime Scene Investigator (CSI) who has demonstrated competency in the applicable method; or a Crime Scene Investigator Trainee under the direct supervision of their mentor (trainer) following **the** documented training on the procedure. It is expected that Crime Scene personnel will follow the SOP in combination with all other Quality and Policy Manuals when applicable.

The methods and procedures are described to provide scientifically valid and generally accepted boundaries for field application, and do not reflect all the variations and combinations of services which may be provided by the Crime Scene Unit. The procedures outlined in this manual may require occasional deviations depending on the field circumstances, but the deviations **shall** be approved and documented. Refer to the HFSC Quality Manual for more information on deviations

If exigent circumstances are present, then the CSIs **shall**:

- Notify CSU management as soon as practical when a deviation occurs.
- Document in the case record the exigent circumstance and resulting deviation, along with management's acknowledgement, as soon as practical.

HFSC provides equipment for use at scenes. Personnel **shall** use only HFSC-issued or authorized equipment for casework. Authorized equipment is marked with a unique identifier such as a serial number or internally generated and tracked number. CSIs **shall** not use any equipment on scene unless they have received authorization in the form of an authorization memo signed by CSU management **and Quality**.

The information contained within this SOP applies to CSIs while they are on-scene, while they are processing evidence at the Vehicle Examination Building (VEB), while they are working in laboratory spaces at 500 Jefferson and while they are working or training at the HFSC Crime Scene House.

1. Safety/Personal Protective Equipment (PPE)

CSIs **shall**:

- Exercise caution when performing their duties to prevent injury, illness, or exposure to potentially hazardous materials/conditions.
- Follow applicable safety protocols outlined in the HFSC Health and Safety Manual.
- Notify the **on-duty** supervisor if exposure to other relevant risks (e.g., known carcinogens, explosives, confirmed cases of HIV, Hepatitis B, and novel coronavirus) is encountered.
- Be alert for sharps such as needles, scalpels or other items that could cause wounds or punctures.
- Not consider used sharps as evidence and dispose **them** in puncture-resistant sharps disposal containers.
- Remove biohazardous or contaminated personal protective equipment prior to leaving the scene and place **them** into a biohazard bag for disposal.



Upon completion of opioid awareness and safety training, CSIs are assigned a Narcan kit for emergency situations. They are responsible for taking the Narcan with them to each scene.

2. Preventing Contamination

CSIs shall exercise due care and caution when performing their duties to prevent the possible contamination of evidence, to minimize scene contamination using the following practices:

- Gloves should be worn when stocking consumable materials in the lab or vehicles (swab boxes, envelopes, bags, etc.).
- Limit access to the crime scene, including removing any citizens or non-essential police personnel.
- Use designated entrance/exit points.
- Use appropriate PPE when near potential evidence.
- Do not use gloved hands to touch your face or other unprotected areas of your body before handling potential evidence.
- A face mask shall be worn while around potential evidence unless all evidence is packaged and sealed or contained in a closed locker or dryer.
- Do not smoke, eat, or drink when near potential evidence.
- Avoid excessive handling of potential evidence; when collecting physical evidence, handle it in a way that minimizes the chance of interfering with potential DNA, latent prints and/or other forensic analyses.
- Change gloves after handling equipment, evidence markers, etc., and before collecting evidence.
- Place evidence collected at the crime scene into a secure package or container upon collection.
- Wear shoe covers if scene processing cannot be completed without meeting biological fluids on the ground.

3. Initial Crime Scene Procedures

CSU management may assign CSIs to function in lead, assisting CSI or administrative assisting CSI capacities.

CSIs shall:

- Brief with the officer and/or investigator on scene to gather preliminary information on what occurred and actions by individuals that may have affected the scene.
- Document the information shared in the case record.
- Confirm the agency case number and should exchange contact information.
- Record and consider the initial stakeholder requests and will inform and/or consult with the stakeholder on significant changes to the requested examination.
- However, CSIs have a responsibility to perform all forensic work required to investigate and process the crime scene reasonably and sufficiently.
- Document the name of the detective from whom proper consent or search warrant is obtained.
- Notify the on-duty supervisor if no requesting agency investigator or officer is present.



CSIs are trained to assess:

- Adequacy of scene security and scene perimeter
- If additional resources are needed to secure and/or extend the scene and perimeter. This could include asking officers to stop traffic, turn on or off lights to facilitate photography, or halting civilians from cleaning or otherwise altering the scene.
- Scene entry/exit points
- If possible, avoid locations that may have been used by the suspect(s).
- The need for additional CSI personnel.
- If needed, the lead CSI will request additional personnel.
- If proper search authority has been established.
- Scene safety (CSIs enter a scene under the assumption the scene has been made safe by law enforcement officers). CSIs should not enter a scene if he/she believes it is not safe to do so.

3.1. Crime Zone Perimeter

CSIs sets up the "Crime Zone" with red barrier tape or, if one has already been established, ensures it is adequate. This zone denotes areas that may contain DNA evidence.

CSIs shall:

- Established a PPE staging area just outside the red barrier tape. A kit with PPE is in each CSU vehicle. The kit includes laminated signs advising that PPE is required for all personnel entering this zone.
- Wear the following PPE when entering the Crime Zone:
 - Masks
 - Gloves
 - shoe covers (If biological fluids are present on the ground, see Section 1.2 for more information).

CSIs should offer PPE to any individual prior to that person entering the crime scene. CSIs should document the name(s) of any individual(s) inside the red tape perimeter who are not wearing the appropriate PPE. If the names are known, they shall be included in the CSI's case notes and report.

4. Scene Documentation

Scene documentation shall include a thorough and comprehensive account of observations, actions and analyses performed at the scene to later assist the CSI in report writing and testimony.

This documentation shall provide enough detail that another trained CSI could review the documentation and understand:

- What was done at the scene by whom and when.
- The correct scene location and relevant environmental factors in effect at the time of processing.
- The results, both positive and negative, of scene processing.
- The description and unique identifiers of the evidence collected at the scene.

Documentation may include scene and examination notes, photography, videography, scene searches, sketches, and measurements.



4.1. Scene and Examination Notes

CSIs shall:

- Keep written notes throughout the scene investigation.
- Write notes in pen.
- Include their name and a statement if the CSIs sole purpose on a scene is to scribe notes for another CSI
- Add relevant scene information stated below, processing requests and evidence collection requirements to note.
- Not rely solely on their photographs and/or memory to later write their case notes or report.
- Preserve examination and crime scene notes that are rewritten.
- Retain any observations recorded on scrap or other unapproved papers.
- Write case notes in a clear and legible fashion.
- Date and initialed any information that is added to the notes or corrections made after the original date of service.
- Document in the case record if they believe probative evidence was compromised, perhaps by being moved in to or out of the scene.
- If the case record does not say otherwise, it is assumed the CSI did not believe evidence was compromised.
- Use only current controlled and approved note forms.
- Graph paper may be used for rough sketches in lieu of the controlled sketch form.
- Rough sketches may be recorded using pen or pencil.

CSIs shall document at least the following information in the scene notes:

- Case number
- Name of lead investigator
- Names of other relevant personnel such as first responding officer or Medical Examiner's Office investigator
- Type of case
- Victim's name as provided to the CSI
- Date/time of arrival on scene
- Exact location of the scene(s)
- Scene information obtained from the investigator
- Date of evidence collection and date/time of swab collection
- If no evidence was collected
- Description and location of all evidence collected
 - Type of item
 - Color and/or size of item
 - Manufacturer's markings or serial numbers
 - Noticeable damage to the item
 - Stains and/or unusual stains
 - Unusual markings
- Items/locations processed for latent prints and/or DNA
- Date/time crime scene investigation was completed
- The name of each CSI who entered the crime zone perimeter



- The name(s) of any individual(s) (if known) inside the red tape perimeter who are not wearing the appropriate PPE.

HFSC CSU does not maintain a record of every person (e.g., law enforcement, medical examiner, district attorney, witness) inside the scene.

5. Clearing the Scene

CSIs should:

- Complete a final walk-through to ensure that all necessary processing and collection have been completed.
- Document in the lead CSI's case notes if the officer/investigator is not present.

During the final walk-through, CSIs should:

- Ensure photographs are taken of any damage caused by CSIs during the recovery of evidence. This may include, but is not limited to, cutting into drywall, or removing portions of the flooring.
- Consider if additional processing will be needed based upon changes in circumstances of the investigation or if additional information comes to light.
- Ensure all trash, disposable items and evidence markers have been removed from the scene.
- All equipment and collected items have been secured in CSI vehicles.

6. Photography

Photographs do not replace handwritten notes and observations made on scene and in the laboratory.

6.1. General Photography Information

Photographs shall be done using photography equipment issued to the CSI by CSU management.

CSIs shall ensure their assigned camera equipment is:

- Maintained in proper working order
- Readily available while on duty
- Checked for correct date and time settings upon initial receipt of a camera and at least at the beginning and end of daylight savings time.
- Memory cards shall also be spot checked and will be replaced as needed.
- Notify a CSU supervisor of malfunctioning or damaged equipment as soon as is practical. If the malfunction or damage occurred while on a scene, the CSI shall document this in the case notes.
- Take care to protect their camera during inclement weather. CSIs can use an umbrella or plastic bag with a hole cut out for the lens to protect the equipment

Cameras shall:

- Be performance checked before being returned to service using the following criteria:
 - Cameras:
 - 3 photos taken at ISO 200, 400, 800 on Manual
 - 3 photos taken at ISO 200, 400, 800 on Aperture



- 3 photos taken at ISO 200, 400, 800 on Program
- Flashes: 3 pops of the test flash function or testing can be in conjunction with the criteria of the cameras (listed above).
- Performance checks shall be documented in a CSU Critical Equipment workflow.
- Monthly checked for firmware updates and documented in a CSU Critical Equipment workflow.

All general crime scene photographs should be taken in .jpg format with resolution settings at:

- For Nikon cameras
 - Image quality: Fine
 - Image size: Medium
- For Canon cameras
 - Image quality: Largest .jpg setting
 - Image size: Large

6.2. Photography Case Identification

CSIs shall:

- Complete a photography cover sheet at each scene that will be recorded in the case file.
- Not utilize a dry erase marker for completing the cover sheet.
- Photograph the cover sheet as the first photograph captured in the case.
- Complete a new photography cover page each time a significant scene change occurs.
- Photograph a cover sheet or any other document (such as a driver's license) when photographing a live person.

6.3. Progression and Composition of Crime Scene Photographs

When documenting a crime scene through photography, CSIs should consider the following:

Progression

- A logical sequence of images that depicts the layout of the area and relationship of the area to the evidence within the crime scene.

Composition

- The images are properly framed ensuring the object fills the frame, depth of field is correct, the film plane is parallel and extraneous equipment and/or personnel are not captured.

Exposure

- The photographs must contain enough light to ensure the clarity and detail in the images are visible.

CSIs shall:

- Take overall (establishing the location of the crime scene), mid-range and close-up photos at every scene in which evidence is present. This process may occur twice, once without evidence markers (EM) and once with evidence markers (EM).
- Photograph item(s) that have been moved in its current location and document what happened with the item in the crime scene notes.



- Digital cameras provided to CSIs are equipped with a viewing screen. Use this screen to ensure the image taken is properly exposed, is in focus and depicts what was intended.
- Retake any images not meeting these criteria (above) until the desired image is achieved.
- Not delete any digital images taken during scene or evidence documentation.
- Spot check scene photographs prior to departing from the scene to ensure photographs saved properly to the memory card and document this check in the case record.
- Photograph any damage caused during the recovery of evidence. This may include, but is not limited to, removal of doors, panels, or cutting.
- Not take any reenactment photographs.

6.4. Comparative Quality Photographs

Comparative quality photographs shall follow the steps below for the appropriate process:

6.5. Latent Print Photography:

If applicable, CSIs should photograph fingerprints in place with a unique identifier to orient the prints in the scene such as on a wall or doorframe). On surfaces that will not be collected (such as walls), CSIs shall label the developed print with a letter designation prior to photography.

Camera Setup:

- A tripod or other stabilization device shall be used.
- All comparative quality images shall be digitally captured using the RAW + JPG setting on the camera.
- Aperture should be set at F-8 or F-11.
- ISO 100 should be used.
- Use a macro lens or other macro device(s).
- Ensure the image plane of the camera is parallel to the plane of the print. An angle finder can be utilized for this purpose. Obtain the angle of the print plane as well as the angle of the image plane.
- Place a scale of measure near the friction ridge detail of interest, leaving a small gap between the scale and the ridges.
- Take overall photographs of the item with the scale in place.
- Fill the frame as much as possible with the print and scale.
- CSIs are expected to properly expose the image. This may require the CSI to try different flash angles or use no flash at all.

6.6. Footwear Photography (impression or imprint)

Three-dimensional impressions:

- Shall be captured using a minimum of three (3) photographs with the flash at varying angles of light.
- These photographs should be taken with the flash at a low angle, approximately 3-4 feet away from the impression and at approximately 45 degrees from three different sides of the impression using an off-camera flash.
- The deeper the impression the greater (higher) the angle of the flash.
- The shallower the impression, the lower the flash angle can be.



Two dimensional imprints:

- The flash is held at an extremely low angle or with the flash pointing straight down.
- Three different angles of light are not needed.
- The angle of light used should be the one that produces the optimal image.

Camera Setup:

- A tripod or similar camera stabilization device **shall** be used for all close-up images.
- All comparative quality images **shall** be digitally captured using the RAW +JPG setting on the camera.
- Depth of field should be set at F-8 or F-11.
- ISO 100 should be used.
- The camera lens should be set at 35mm focal length.
- Utilize a 300mm L-shaped scale to outline the impressions to be photographed.
- The scale must be on the same plane as the impression. Exercise care when removing soil, snow, etc. around a three-dimensional impression.
- Ensure that a direction indicator (compass or hand-written) is visible in the image to allow proper orientation of the image within the scene.

6.7. Tire Track Photography (impression or imprint):

Three-Dimensional Tire Impressions:

- Take at least three images with various flash angles for each section.
- When taking the next image, overlap the end of the first segment by about 3-4 inches. (For example, the first segment of photographs is 0-13 inches. The second segment is 11-24 inches, and so on).
- Do not move the tape measure until the entire track is photographed.

Two-Dimensional Tire Imprints:

- Photograph the same way as three-dimensional impressions, except the flash is held at an extremely low angle or with the flash pointing straight down.
- Three angles of light are not needed.
- The angle of light used should be the one that produces the optimal image.

Camera Setup:

- A tripod or similar camera stabilization device **shall** be used for all close-up images.
- All comparative quality images **shall** be digitally captured using the RAW +JPG setting on the camera.
- Depth of field should be set at F-8 or F-11.
- ISO 100 should be used.
- The camera lens should be set at 35mm focal length.
- The 300mm L-shaped scale or other scale of measure that is at least the width of the track should be used. Place scale parallel to the track to measure the width.
- A tape measure **shall** be used when photographing tire tracks, unless the length of the track is such that it can be fully captured in one image. In these cases, the tape measure is not required. The tape measure is placed alongside the tire mark to measure length. Tire marks usually must be captured in multiple images. The average 14-inch automobile tire has a



circumference of about 8 feet.

- If the entire mark is less than 8 feet in length, photograph the entire mark.
- If the mark is greater than 8 feet, photograph the best 8-foot section of the mark.
- Photograph the tire track in approximately 12-16-inch sections until the entire track is captured.
- Do not place any portion of the scale on or over the impression before it has been photographed.
- Ensure that a direction indicator (compass or hand-written) is visible in the image to allow proper orientation of the image within the scene.
- If the tracks from both sides of the vehicle are present at the scene, take the track width measurement.

6.8. Tool Marks Photography:

- **Shall** be captured using a minimum of three (3) photographs with the flash at varying angles of light.
- These photographs should be taken with the flash at a low angle, approximately 1-2 feet away from the impression and at approximately 45 degrees from three different sides of the impression using an off-camera flash.
- The deeper the impression, the greater (higher) the angle of the flash.
- The shallower the impression, the lower the flash angle can be.

Camera Setup:

- A tripod or similar camera stabilization device **shall** be used for all close-up images.
- All comparative quality images **shall** be digitally captured using the RAW +JPG setting on the camera.
- Depth of field should be set at F-8 or F-11.
- ISO 100 should be used.
- The camera lens should be set at 35mm focal length.
- The camera is positioned so that the entire tool mark and scale are fully visible and fill the image frame.
- The image plane of the camera is parallel to the plane of the impression.
- The CSI must determine the angle of the impression as well as the angle of the image plane. An angle finder can be utilized for this purpose.
- The impression is evenly shaded.

The following information **shall** be visible in the first image of all comparative quality photography:

- Agency case number
- Photographer's name or initials
- Item description and orientation, if applicable
- If the information listed above is not captured at the scene, then the CSI shall annotate a copy of the image with the information once back at the laboratory.

6.9. Long Exposure Photography

Camera Setup:



- A tripod or copy stand and remote control or timer to avoid camera shake.
- The camera should be set to Manual or Aperture Priority mode.
- In Manual mode, the CSI selects the F-stop and the shutter speed.
- In Aperture Priority mode, the CSI selects the desired F-stop.
- The F-stop should be set to F-8 or F-11 for an acceptable depth of field.
- For exposures that require a time longer than the pre-programmed settings (usually 30 seconds), use the Bulb setting.
- A pop of the flash or soft sweeping strokes with a flashlight (avoid creating hotspots) may be used to help illuminate the scene or highlight extremely shadowed areas, such as under a car.
- The photographer should stay behind the camera to avoid being captured in the image.
- A shadow of the photographer and/or the tripod may be minimized by adding a small amount of extra light to the shadow.

7. Videography

A video recording may be completed on any scene requiring CSU response at the request of the agency involved. If the requesting agency states that a video is needed, CSIs shall record this request in case notes.

If a video is conducted on scene, CSIs shall:

- Spot check scene video recordings prior to departing from the scene to ensure the video saved properly to the memory card and document this check in the case record.
- Copy the video to a DVD and ensure the video is present on the DVD prior to reformatting the memory card.
- Start all video recordings with the HFSC cover sheet.
- Include the address, business name or other identifying features of the scene in the video.
- Not perform any walk-through and/or reenactment videos.

CSIs should:

- Record the video after evidence markers are placed in the scene. However, circumstances such as lighting or weather may necessitate the video being recorded before evidence markers are placed or after evidence is collected.
- Walk slowly through the scene, stopping to slowly pan vertically and horizontally where appropriate.
- Capture general scene video without sound.

8. Crime Scene Searches

CSIs shall:

- Work with the requesting agency to determine what areas need to be searched and who will be assigned to search those areas.
- Do a methodical and systematic searches of crime scenes, vehicles, open areas, or other relevant locations (see Appendix A for more information on search patterns).
- Try to search under, over or around items of interest to identify other potential items of evidence.
- Before departing from a crime scene, VEB case vehicle or other relevant location, conduct a final visual search of the scene, vehicle, or open area to ensure all evidence was collected



and no equipment was left behind.

CSU management recognizes there is a risk of CSIs not locating all relevant evidence during a scene search. Therefore, CSIs may contact the on-duty supervisor to request additional personnel respond to the scene to conduct a secondary search for additional evidence.

9. Metal Detector

CSI shall:

- Conduct a performance check on the metal detector prior to using it on scene and document it in the CSIs case notes.
- Move the coil in a slow, side-to-side motion while holding it one to two inches from the ground or search area.
- If an item of evidentiary value is located, it should be marked with an evidence marker, flag, or cone, and documented in the case record.

Procedure for Performance Check on scene:

- Utilize the cartridge or cartridge case included in the carrying case of each detector for the performance check.
- Document a description of the other metal object in the case notes if used in lieu of the cartridge or cartridge case.
- An alert tone heard while the coil is above the known metallic object is a satisfactory performance check.

Metal Detectors shall:

- Be checked monthly to the standard (listed above in performance) included in every CSU vehicle.
- All monthly checks shall be documented in a CSU Critical Equipment workflow.

10. Sketching

CSU utilizes three types of crime scene sketches:

- Rough sketch
- Final diagram
- Orientation sketch

CSIs shall:

- Measure and record the location of probative evidence found in the scene.
- Use the same evidence identifiers on the sketch as those used in the evidence list.
- Complete a rough sketch at every scene unless otherwise approved by the on-duty supervisor.
- Ensure that the sketch contains enough information that, when paired with the photographs, a recreation of the scene could be completed.

CSIs should:

- Include room dimensions, furniture, vehicles and other to help the viewer understand the overall layout of the scene.



- Indicate openings in walls, doorways, windows, etc. as well as any points of entry/exit.

Rough sketches shall be completed on all scenes. If the requesting agency states that a rough sketch is not needed, the on-duty supervisor **must** approve the deviation. This deviation **shall** be documented in the case record.

Rough sketches are not required for the VEB, hospital rooms, interview rooms or other locations where a person or item is being processed for evidence.

CSIs **shall** include the following on rough sketches:

- Agency case number
- North indicator
- “Not to scale” or “all measurements are approximate” indicator
- Scene location or address
- Date of the incident
- Legend for notations such as security cameras, green cones, evidence markers, etc., **either on the diagram or a separate sheet.**
- Reference point(s) used for measurements
- Evidence items/evidence markers, if applicable
- Measurements, either on the diagram or a separate sheet.

Final diagram shall be completed for every scene where a rough sketch is completed, unless otherwise authorized by a supervisor. The final diagram may not always show all measurements and distances originally recorded on the rough sketch.

CSIs **shall** include the following on final diagrams:

- Agency case number
- North indicator
- “Not to scale” or “all measurements are approximate” indicator
- Scene location or address
- Date of the incident
- Legend for notations such as security cameras, green cones, evidence markers, etc., **either on the diagram or a separate sheet.**
- Reference point(s) used for measurements
- Evidence items/evidence markers, if applicable
- Measurements, either on the diagram or a separate sheet.
- Date diagram was completed

The final diagram **shall** be uploaded as a .jpg attachment in JusticeTrax. CSIs should also keep a copy of the digital version of the sketch in the event it needs to be edited later.

Orientation Sketch may be **drafted** to show possible defects, blood trails, overall layout of a scene **with evidence markers**. The orientation sketch **shall** be labeled to indicate it is for orientation **sketch** and **therefore**, a final diagram is not required. **An orientation sketch can be used to create a demonstrative layout diagram at later time if requested by a stakeholder.**



10.1. Measuring Techniques

All techniques listed below are based upon the determination of known reference points (RP). These points should be permanent, if possible, allowing the items of evidence to be fixed (or placed back into the same location if scene reconstruction is needed).

Rectangular coordinates

- Best for indoor scenes and smaller outdoor scenes that have a well-defined area.
- CSIs shall use two adjacent walls/items as reference points from which distances are measured at right angles.
- Measurements from two separate reference points are taken to each end or center mass of the item of evidence.
- This may not "fix" larger items in the scene as measurements are to the center mass of the item.

Triangulation

- Best suited for larger outdoor scenes
- Three measurements are recorded:
- Distance between the two reference points
- Distance from each reference point to the individual items of evidence
- The three lines of measurement will create a triangle

Baseline

- Is like the rectangular coordinates method and is suited for outdoor scenes that do not have landmarks.
- Extend a tape measure from a reference point. Ideally, the tape measure is extended in a cardinal direction (north, south, east, or west) for as far as necessary. This tape measure becomes your baseline.
- If a reference point is not readily available, a point can be set by triangulating it to a set of nearby landmarks or GPS coordinates.
- Take measurements from the reference point down the baseline and then from the baseline, at a right angle, to the item of evidence.

Global Positioning System (GPS):

- Cell phones may be used to obtain GPS coordinates at a scene when no address or specific fixed points/landmarks are available. (i.e., to document the location of evidence in the woods).
- The make and model of the cell phone and the program and software version used to obtain the GPS coordinates shall be recorded in the notes.

10.2. Measuring Devices:

- All length measuring devices shall be checked against the NIST traceable ruler and approved by a member of CSU Management Team prior to their initial use.
- The NIST traceable ruler and tape measurers shall be inspected annually for damage and shall be calibrated by an approved vendor once every accreditation cycle.



- All Laser measurers and Rolly wheels shall be performance checked monthly to two (2) identified spots in the 500 Jefferson garage.
- All performance checks shall be documented in a CSU Critical Equipment workflow.

10.3. FARO

FARO may be used at any scene that requires a diagram to be completed or as requested by CSU management.

CSIs shall:

- Scan the location of the crime scene to include the exterior and front of structures, interior and its layout and items of evidence, if possible.
- Create an orientation sketch for reference and will include the location of each scan number, evidence markers (EM), north indicator, and a reference measurement.
- The reference measurement is a measurement of a door frame, sidewalk, or other item of a standard size. This measurement documents the performance check when the scene scans are rendered. Document the FARO unique identifier in the CSU case record.

FARO shall:

- Be performance checked before each use as stated above.
- Be cleaned before being taken into a scene and after removal from the scene. An approved disinfectant or 90/10 bleach solution should be used to prevent contamination. Spray the cleaning or bleach solution onto a clean cloth rather than spraying it directly onto the unit.
- Be removed from service during annual calibration or when the FARO Company notifies HFSC the FARO needs maintenance. After either service is performed by the FARO Company, the unit must be performance checked before being returned to service.
- Be stored in a room temperature-controlled environment, such as the basement at 500 Jefferson, when not in use.
- FARO Checklist for instructions on setting up and using the FARO on scene can be found in the FARO kits.
- A monthly visual check shall be conducted on the FARO to locate any damage, wear, or tear of the device included in the visual check will be an operating check by powering on and off the device.
- All monthly checks shall be documented in a CSU Critical Equipment workflow.

Uploading FARO Data (scan(s) and final project(s):

- FARO data shall be uploaded to the HFSC network drive located at \\hfsj-stor-02\csu-faro under the CSU Scene folder using the case number as the file's name.
- Memory cards should be formatted once all data uploading is complete.

Computer Rendering (Scene 2go):

- Only personnel authorized to render the data will create the final diagram via FARO SCENE (Scene 2go).
- The final project (including all required files: mac, manuals, source, win, SCENE.2GO, Start SCENE 2go on Mac.command and Start SCENE 2go on Windows) shall be saved to \\hfsj-stor-02\csu-faro the under the case number subfolder.



- Once the FARO data is requested by the HPD or non-HPD agency, CSIs shall follow these instructions for downloading the data:
- Select the correct case number final project data from the CSU Scene folder.
- Copy the above listed files to the desktop (do not to use the 'cut' function at any time as this will delete the information).
- From the desktop, copy data to a USB.
- The USB is then given to HFSC Case Management/Client Services section.

11. Evidence Documentation

CSIs shall:

- Document all probative evidence prior to collection via the use of notes, photographs, sketches, and video.
- Uniquely identify evidence using evidence marker (EM) numbers or letters in the case record to avoid confusion regarding the identity and original location of the items.
- Document enough identifying information to ensure like items, such as cartridge cases, are not confused with one another, if evidence markers numbers or letters are not used.
- Document the reason in the case record that an item identified as probative while the CSI is on scene is not collected.
- Document the date, time, description of the items and locations from where the items were collected in the case record.

11.1. Evidence Collection and Transport

CSIs shall place identifying information on evidence packaging prior to leaving the scene to include:

- Case number
- Evidence marker number
- Item description (if no evidence marker used)
- Clean any equipment and tools used to collect evidence to prevent contamination. Using a 90/10 bleach solution upon return from scene. Disinfectant wipes may be used on cameras or other equipment when spraying or immersion is not practical.
- Discard any single use/disposable equipment in an appropriate manner. Single use/disposable supplies such as plastic tweezers, scalpels, etc. are kept in clean containers until ready for use.
- Mark any temporary transport container with identifying information as stated above and close the temporary transport container to prevent loss of the evidence. This may be accomplished by using binder clips on bags and paper clips or clasps on envelopes. If necessary, transporting evidence from more than one scene in the same vehicle is acceptable.
- Remove evidence from the vehicle as soon as possible upon return to HFSC.

11.2. Chain of Custody (COC)

CSIs begin the chain of custody as items of evidence are collected and shall:

- Include the make, model, and serial number of a mobile device or a firearm in the description on the COC.
- If the serial number is obliterated or is otherwise illegible, include this on the COC along with enough describing information that no two mobile devices or firearms of the same make and



model could be confused with each other.

- Document transfers that do not occur at the location where the evidence was collected from.
Document transfers that occur between non-HFSC staff on or off scene using a paper chain of custody form.
Document each transfer on the chain of custody form with an original signature of the person transferring custody and the original signature of the person receiving the evidence.
Document each transfer to storage locations with an original signature of the CSI making the transfer and the identity of the storage location where the evidence is being transferred to.
Update the COC, each time an evidence item is transferred to a new location or person.
Retain a copy of the temporary storage location log in the case record.
Mark any copies of the COC or temporary storage location log with the word "Copy".
Ensure that a chain of custody accompanies items placed into 3-HFSC.
Not only use the 3-HFSC designation on the chain of custody form, but it shall also be accompanied by temporary storage locker location (i.e.: 3-HFSC Locker 103).

Evidence transfers that occur between CSIs who are at the same scene at the same time do not need to be documented on the chain of custody form because this information shall be included in the case notes.

12. Biological Evidence

12.1. Alternate Light Source (ALS)

CSIs shall:

- Use more than one wavelength if negative results are obtained with the initial wavelength to ensure optimal visualization.
Use the correct color of goggles when using an ALS.
Use the recommended color of goggles for initial viewing, but other colors may be used to ensure optimal visualization.
Use a barrier filter on the camera lens when photographing areas of fluorescence.

Below is a guide of manufacturer-recommended goggles/filters:

Table with 2 columns: Wavelength (in nm) and Goggle/Filter Color. Rows include values like 365, 390, 415, 445, 455, 475, CSS short pass, 495, 515, 535, 555, 575, 600.



A barrier filter **shall** be used on the camera lens when photographing areas of fluorescence.

ALS Cautions:

CSIs **shall**:

- Wear protective goggles.
- Never direct the light beam into a person's eyes.
- Never look directly into the aperture emitting the light beam.
- Be aware of the possibility a mirrored or shiny surface can reflect the beam into the eyes.

ALS **shall**:

- Be performance checked to ensure it is working properly. A known fluorescing samples is included in each ALS kit and be used for this purpose.
- Not be used on scene until it has been determined to be working correctly. It may be necessary to contact the on-duty supervisor so that another ALS or another control samples can be brought to the scene.
- Cleaned before being taken into a scene and after removal from the scene. An approved disinfectant or 90/10 bleach solution should be used to prevent contamination. Spray the cleaning or bleach solution onto a clean cloth rather than spraying it directly onto the unit.
- When not in use, store the ALS in a room temperature-controlled environment such as the basement at 500 Jefferson.
- A monthly visual check **shall** be conducted on the ALS To locate any damage, wear, or tear of the device included in the visual check will be an operating check by powering on and off the device.
- All monthly checks **shall** be documented in a CSU Critical Equipment workflow.

Procedure for Performance Check:

- Turn on the power switch and ensure the fans are working.
- Wear the proper goggles.
- Turn on the lamp switch.
- Darken the room.
- Direct the ALS beam, tuned to CSS wavelength, at the known fluorescing samples.
- The samples **must** fluoresce, indicating a positive result.
- The area around the samples (which has not been treated with a fluorescing substance) **must** not fluoresce, indicating a negative result.
- The results of the performance check **shall** be recorded in the case notes.
- The ALS unique identifier **shall** be documented in the CSU case record.

Semen, Saliva and Urine Stains

These stains will show a varying degree of fluorescence with different wavelengths of light depending on the substrate on which the fluid is deposited.

- Refer to the Biological Evidence collection section for further information **about collection procedures**.
- If the CSIs collect a swab from a fluorescing item as well as the entire item, then the area that is swabbed **shall** be circled with a Sharpie or other permanent marker.



- The circle will indicate the area from where the CSI saw fluorescence.
- Do not circle stains on items such as sofas or vehicles that are not collected.

Photographing Suspected Semen, Saliva and Urine Stains Using an ALS

- If a fluorescing stain is visualized, it should be photographed both with and without scale. Refer to Long Exposure Photography for further information.
- A camera filter and goggles of corresponding color **must** be used.
- When photographing a stain on an item, a small amount of white light should be added to the image to help visualize the item.
- The item should also be photographed in regular light with a marker to indicate any areas of interest.

12.2. Presumptive Testing

CSIs will use discretion when determining the need for a presumptive test and should only test when enough sample exists for presumptive testing, collection, and further analysis in the laboratory. Blood is not always a red or reddish-brown colored stain. Due to the environment, it may appear as a different color, such as black or green. Take this into consideration when determining if a stain should be tested

If the stain is not large enough for the CSI to test presumptively and have enough for further testing, then the CSI **shall** collect the entire stain without doing the presumptive test.

If the stain appears to be diluted, the CSI **shall** collect the item or sample for further laboratory testing.

Hemastix

Substances other than blood may yield a positive reaction. These substances include, but are not limited to, some metal ions, bleach, and some dyes.

Hemastix are received from the manufacturer with the following labels:

- Preparation or expiration date
- Lot number
- Any applicable hazard warnings

CSIs will receive individual kits made from the master Hemastix lot. Individual kits will be placed in UV protection bags. The individual kits are aliquots of the master kit, so it is not necessary to add the preparer's name to the kit label. Each individual kit **shall** be labeled with the:

- The name - Hemastix
- Expiration date
- Lot number
- Any applicable hazard warnings

CSIs **shall**:

- Perform a positive and a negative control test to ensure the Hemastix are working properly before testing suspected/possible blood.



- Record all reagent lot numbers and results of control tests in the case notes.
- Not collect or reuse the swabs used in control testing.
- Not touch the Hemastix to the stain.
- Remove individual Hemastix kit from their vehicle at the end of shift with all other personal equipment.
- Store individual Hemastix kit at room temperature in tightly capped bottle or kept in UV protection bag when stored in vehicle.
- Tightly close the container immediately after removing the reagent strip.
- Provide no conclusions as to the donor of the blood.
 - If a positive presumptive test result, refer to the Biological Evidence section 6.3 for further information.

Procedure for Control Test:

Positive:

- Moisten a sterile cotton swab with distilled water.
- Rub the swab on a known bloodstain.
- Apply the swab to the reagent pad.
- An immediate green reaction to the reagent pad indicates the presence of blood and a satisfactory positive control test.

Negative

- Moisten a sterile cotton swab with distilled water.
- Apply the swab to the reagent pad.
- No color change indicates a satisfactory negative control test.

Interpretation of Control Test:

- Positive result: The reagent pad should turn green within 30 seconds.
- Negative: The reagent pad does not change color and remains yellow at 30 seconds.

12.3. Collection of Biological Material

The following biological evidence collection methods should be considered. Prior handling of an item by fire, EMS or police personnel does not negate subsequent DNA swabbing.

Entire item:

- Preferred method for clothing or other items made of fabric that can be easily collected and packaged

Swab(s) (Contact/Blood/Saliva):

- If the stain is dry, moisten one sterile cotton swab using distilled water. Typically, one to two drops are sufficient. Do not over-saturate the swab since this could dilute the sample. Roll the moistened swab tip onto the stain.
- If the stain is wet, roll the dry swab tip onto the stain.
- Place the swab into a cardboard swab box and then into a paper envelope. Ensure packaging material, such as the flaps on the swab box, does not touch gloves that may have DNA on them.

Cutting:

- This is a reasonable course of action when dealing with large furniture, vehicle upholstery, area rugs, carpeting, etc.



- If processing under a search warrant, property damaged or destroyed while collecting evidence is covered by the court order.
- If the search is performed under consent, the agency investigator or representative shall be notified of potential damage prior to evidence collection.
- Cut a sample that is at least the size of a quarter. If the stain is smaller than a quarter, cut out the entire stain.

Scraping:

- If the biological evidence is dried, it can be scraped with a sterile scalpel onto a piece of filter paper, folded into a bundle or “pharmacist fold” and secured in an envelope.
- Scrape enough of the stain to cover the head of a quarter. If unable to scrape enough to cover the head of a quarter, scrape the entire stain.

12.4. Bloodstain Swabbing

Blood Trails

- For lengthy blood trails where the origin of the blood is in question, a minimum of three swabs should be taken (beginning, middle and end of the trail).
- When a trail has large gaps, it may be necessary to take additional swabs of different pattern areas due to the possibility of multiple bleeders.

Bloodstain Patterns

- A minimum of one swab should be taken from each observable pattern at the scene.
- If there is a bloodstain pattern within another pattern, the entire area shall be documented in case notes and photographs and swabs taken from relevant areas.
- The clothing item shall be wrapped in paper so that the bloodstain pattern does not bleed through to other areas of the fabric, obscuring the original stain observed.

12.5. Packaging and Storage of Biological Evidence

CSI shall:

- Not completely seal a package that is being used to transport wet evidence a plastic packaging from the scene.
- Remove the evidence from the plastic as soon as possible.
- Dry wet biological evidence prior to being placed into paper or another final package that is permeable by air to prevent/reduce the growth of bacteria or mold. See Section 21 for information on Drying Cabinets.
- Proper drying of wet evidence (including currency) takes precedent over submission of evidence to the HPD Property Room.
- Empty any visible contents of a condom into a specimen cup or other plastic container with a lid.
- Place the condom itself into a separate plastic container with a lid and then into a paper bag or envelope with the following wording “Store Frozen” or other similar wording. When submitting to the HPD Property Room, ensure Property Room personnel know to **freeze the items**. CSIs should document this conversation on the HPD Property receipt.
- Dry items saturated with decomposition fluid and then packaged with the following wording “Store Frozen” or other similar wording. When submitting to the HPD Property Room, ensure Property Room personnel know to **freeze the items**. CSIs should document this conversation



on the HPD Property receipt.

- Items such as saturated diapers, **absorbent pads** or bed pads will **be dried as follows**:
 - Use a clean razor and gently make a cut near the saturated/wet area.
 - Date and initial next to the cut. This should be away from the stain or wet area. Then, placed into a drying cabinet.
 - After the item has dried, place butcher paper on the top and bottom of the pad and fold it multiple times.
 - Place pad/butcher paper into a paper bag, marked with biohazard if appropriate and submit to the Houston Property Room.
- Package knives with biological fluids in rigid, porous containers such as boxes. The sharps can be wrapped in paper to prevent dried flakes from escaping through openings in the box. See Section 9 for more information on Sharps.
- Label packaging with the appropriate hazard warnings (sharps, biohazard, etc.).
- For biological evidence types not listed here, ask your supervisor for assistance with packaging and long-term storage conditions.

12.6. Blood Enhancement

CSIs **shall** carefully evaluate and coordinate the search for blood evidence with the lead investigator to preclude destruction of potentially valuable evidence. Occasionally, it will be necessary to decide which of two or more procedures may produce more valuable findings (i.e., the possibility of enhancing ridge detail to positively identify a suspect versus the potential value of serological findings). This decision-making process should be documented in the CSIs case record.

12.6.1. Bluestar®

CSIs **shall** search for and collect visible blood prior to using Bluestar®. Bluestar® should be the last process done on scene or on a vehicle.

Positive and negative control tests **shall** be conducted prior to using Bluestar®. Bluestar® is considered performance checked once positive and negative control tests are completed. If either control test fails, do not use the Bluestar®. Obtain another batch from your supervisor.

Procedure for Control Test:

Positive:

- Moisten a sterile cotton swab with distilled water.
- Rub the swab on a known bloodstain.
- Lightly spray the mixed Bluestar® chemical on the swab.
- A bright blue color change within a few seconds indicates the presence of blood and a satisfactory positive control test.

Negative:

- Moisten a sterile cotton swab with distilled water.
- Lightly spray the mixed Bluestar® chemical on the swab.
- No color change indicates a satisfactory negative control test.
- Record control test results and the Bluestar® lot number in the case notes.

Bluestar® Mixing and Application Instructions:



- Refer to the manufacturer's mixing instructions for Bluestar®. Manufacturing instructions will be found with the original packaging.
- CSIs shall photograph areas of interest prior to Bluestar® use.
- Spray lightly, ahead of you, at least two feet away from the target, in a side-to-side sweeping motion; not pointing toward the ground.
- Do not overly saturate the stain because this could hinder DNA analysis. One four-ounce bottle should process approximately 250 square feet.
- When indoors, don't saturate walls and vertical surfaces to avoid excessive dripping.
- When outdoors, consider wind direction. Do not spray into the wind.
- Case notes shall contain if positive or negative results were obtained.

After application of Bluestar®, CSIs shall take additional photographs using procedures for long exposure photography (see Section 2.3) to capture the resulting chemiluminescence.

A positive Bluestar® result (a bright blue color that does not require total darkness to visualize) indicates areas of interest that should be collected for DNA testing. If the blood is highly diluted, visualization will be easier if viewed in total darkness.

Bluestar® may be used in conjunction with another presumptive test such as Hemastix. CSIs may choose to use a presumptive test if positive Bluestar® results are obtained.

Disposal of Bluestar® Chemicals

- All mixed chemicals shall be properly disposed of after use in accordance with the HFSC Health and Safety Manual. Mixed chemicals shall not be stored for later use.

12.6.2. Leuco-Crystal Violet (LCV)

CSIs shall:

- Take comparative quality photographs of any visible prints prior to LCV use.
- Label each impression with a unique letter or number designation. The letter or number may be written on the scale along with the case information.
- Determine if a possible DNA blood swab needs to be collected prior to LCV use.
- Conduct a positive and negative control tests prior to each use of the LCV.
- Not use the LCV, if either control test fails and can obtain another batch from the on-call supervisor.

LCV is considered performance checked once positive and negative control tests are completed. If either control test fails, do not use the LCV. Obtain another batch from your supervisor.

Procedure for Control Test:

Positive

- Moisten a sterile cotton swab with distilled water.
- Rub the swab on a known bloodstain.
- Lightly spray the mixed LCV chemical on the swab.
- A bright purple color change within a few seconds indicates the presence of blood and a satisfactory control test.



Negative:

- Moisten a sterile cotton swab with distilled water.
- Lightly spray the mixed LCV chemical on the swab.
- No color change indicates a satisfactory negative control test.
- Document control test results and reagent lot numbers in the case notes.

LCV Mixing and Application Instructions:

- Refer to the manufacturer's mixing instructions for Leuco-Crystal Violet. Manufacturing instructions will be found with the original packaging.
- Apply the LCV by spraying the blood impression using a fine-mist sprayer or other approved method.
- Use the finest mist sprayer possible since excess application may cause overdevelopment or running of the print impression.
- Non-porous item: Allow the impression to develop to the desired color (approximately 5-10 seconds) and remove excess reagent by absorbing with a paper towel or pouring it off.
- Allow the item or area to dry and CSIs **shall** take comparative quality photographs of any usable prints or patterns.
- When using in direct sunlight, useable prints or patterns **shall** be photographed as soon as possible to avoid unwanted background development caused by photoionization.
- Case notes **shall** contain if positive or negative results were obtained.
- The preceding steps can be repeated to possibly improve the contrast.

Disposal of LCV Chemicals

- All mixed chemicals **shall** be properly disposed of in an appropriate hazardous waste container located in the CSU basement at 500 Jefferson.

13. Firearms Evidence

The first consideration when handling a firearm is safety. All firearms **must** be treated as though they are loaded, this includes airsoft and pellet/BB guns.

13.1. Firearms Documentation and DNA Collection

CSIs should:

- Document the location of the firearm with notes and photography.
- If the firearm has been moved prior to the CSI's arrival on scene, document this information in the case notes and photograph the firearm in its current location.

Documentation may include, but is not limited to:

- Area of the firearm from where contact DNA swabs were collected
- Hammer position (cocked, not cocked)
- Position of safety
- Position of slide/breech bolt (closed, locked open, jammed)
- Visible damage
- Visible trace evidence (blood, tissue, hair)
- Location of possible blood swabs collected



- Magazine in or out, or not fully inserted
- Cartridge, cartridge case, or nothing in the chamber
- Revolver cylinder positions marked on both sides of the top strap, using a permanent marker
- Photographs or diagram of cylinder contents including the cartridge and/or cartridge case brand in each chamber
- If airsoft or pellet/BB gun, check for the presence of a CO2 cartridge and/or pellets/BBs.

CSIs shall:

- Evaluate before handling the location, position, and condition of the firearm.
- Swab all firearms and cartridges from firearms for contact DNA before handling if safe to do so - one contact DNA swab can be collected from the textured area of the body of the firearm, ensuring the trigger and trigger area are avoided
- Use one swab, lightly moistened with distilled water, to swab all visible areas of the cartridge while it is seated at the top of the magazine.
- Eject the cartridge and use the same swab for the next cartridge.
- Continue until all cartridges have been swabbed and removed from the magazine.
- The textured areas of the magazine, such as the bottom, may also be swabbed. The smooth areas shall be preserved for latent print processing.
- Swab any possible blood using one sterile cotton swab and separately from contact DNA (if possible).
- Mark the packaging of firearms evidence contaminated with biohazardous substances with a biohazard sticker or handwritten 'biohazard' or similar wording.
- If not safe to do, then collect one contact DNA once the firearm is made safe (unloaded).
- This includes officers' firearms if it is believed a subject touched an officer's weapon.

CSIs should handwritten or stamp the letters "NVB" (no visible blood) on the packaging of any firearms evidence that does not contain visible biohazardous substances.

After contact DNA has been collected from the textured area of the body of the firearm, the firearm shall be made safe with the following steps:

- If a magazine is present, eject it from the magazine port.
- If airsoft or pellet/BB gun, remove CO2 cartridge and any pellet/BBs.
- Verify the firearm is unloaded by using a light to ensure the chamber is not obstructed by a cartridge, cartridge case or pellets/BBs.
- A zip-tie shall be used to safely block the slide or keep the ejection port or cylinder from closing. Do not leave the slide locked back. Gently close the slide forward once the zip-tie or similar item has been inserted.
- Secure the firearm in an appropriate container.
- Do not place anything in the barrel of the firearm or through the trigger guard.

If a CSI is unable to make a firearm safe:

- An officer on scene can be utilized for assistance, the name and payroll of the assisting officer shall be documented in the notes.
- Contact the on-duty supervisor before transport to advise of traveling with an unsafe weapon.
- Transport the firearm to 500 Jefferson and place it in a basement gun locker. Send an



email to the Firearms Section as well as CSU supervisors stating a loaded firearm has been placed in a locker.

- If airsoft/pellet/bb guns cannot be rendered safe on scene, transport back to 500 Jefferson and placed in a CSU locker. **Send an email to the Firearms Section as well as CSU supervisors for assistance.**

13.2. Firearms Submerged in Water

- Firearms and all components found in water **shall** be packaged in a watertight container and submerged in the same water from which it was collected.
- The firearm and components do not need to be swabbed for contact DNA.
- The container(s) **shall** be transported to the CSU laboratory. During regular business hours, contact the Firearms Section to take custody of the container(s). After business hours, secure in a basement gun locker at 500 Jefferson.
- See Section 5.4.1 for more information on charting a firearm submerged in water.

13.3. Cartridges and Cartridge Cases

CSIs should:

- Conduct a search of the scene to locate any cartridges or cartridge cases. This may be done through a visual inspection of the scene or using a metal detector.

CSIs **shall**:

- Mark each cartridge and/or cartridge case with an individual evidence marker unless it is not feasible to do so (multiple cartridges or cases are grouped together making placement of individual markers impractical, additional cartridge and/or cartridges cases found during the late stages of scene processing or when inclement weather exists).
- Cartridges or cartridge cases in vehicles do not require evidence markers unless there is more than one like item in a similar location, such as on a passenger seat.
- If legible, the manufacturer and caliber shall be included in the case record. If it is not legible, CSIs will document this in the case record.
- Package cartridge cases individually in coin envelopes or similar packaging.
- Each envelope **shall** contain the evidence marker number or identifying information regarding the location from which it was recovered.

14. Possible Bullet Defects

14.1. Labeling Bullet Defects

CSU's labeling system includes using letters, numbers, and written descriptions.

CSIs **shall** label all bullet defects within reach using a labeling scheme/unique identifier, listed below:

- **Method 1:** The first defect encountered would be labeled "A". Any subsequent defects **shall** be labeled continuing the series of letters (B, C, D, etc.) If defects go beyond Z, any remaining defects **shall** be labeled with double letters beginning with AA, BB, CC, etc. If defects go beyond ZZ, any remaining defects **shall** be labeled with triple letters beginning with AAA, BBB, CCC etc. This pattern will continue until all defects have been labeled.
- **Method 2:** The first defect encountered would be labeled "A". If defects go beyond Z, any remaining defects **shall** be labeled with double letters beginning with AA, AB, AC, etc. If



defects go beyond ZZ, any remaining defects **shall** be labeled with triple letters beginning with AAA, AAB, AAC etc. This pattern will continue until all defects have been labeled.

- **Method 3:** The first defect encountered would receive a number label. Any subsequent defects should be labeled with a subsequent number. This pattern will continue until all defects have been labeled.
- If CSIs chooses to use a different labeling scheme other than those listed above, the labeling scheme **shall** be clearly described in their notes. The scheme **must** be easily understood by another reader who would reference their notes.
- Subsequent defects that follow the same trajectory, such as the interior and exterior of a car door, with subsequent numbers (A1, A2, A3, etc.) for Methods 1 and 2. Using Method 3, subsequent defects that follow the same trajectory, will be lettered (3A, 3B, 3C etc.)
- By subsequently numbering/lettering bullet defects, the CSI is not reconstructing the scene but is indicating the defects appear to correlate.
- The entry/exit path of thin items (i.e., blinds, paper, glass, etc.) need not be labeled on both sides. Label only the entry side with a letter or numbered marker, depending on method chosen.

CSIs **shall**:

- Label the bullet defect with an uncertain of the origin or trajectory with the next letter/number.
- Photograph and document in the case notes any defects that cannot be reached due to height and/or location.
- Documentation before utilizing any trajectory rods.

14.2. Possible Bullet Defects on Scene

CSIs **shall**:

- Photograph bullet defects that are found in stationary objects with a scale of measure and unique identifier.
- Record in the case notes the unique identifier and location of the defect.
- Record each bullet defect on the rough sketch and measured (fixed) in the scene.
- See Section 2.7 for additional information on measurements.

14.3. Possible Bullet Defects in Collected Items of Evidence:

CSIs **shall**:

- While on scene, document bullet defects in items of evidence that are marked for collection.
- Photograph bullet defects with scale.

CSIs may:

- Bring back the item for additional photographs.

14.4. Possible Bullet Defects in a Vehicle on Scene:

If the vehicle is being towed to the Vehicle Examination Building (VEB):

CSIs **shall**:

- Photograph each bullet defect on the exterior of the vehicle with a scale of measure.
- Record location of the defect in the case notes.



- Sketch and measure the vehicle into the scene.
- Taken two measurements from at least two tires, for a total of four measurements. **These two measurements should be from either of the front tires and the opposite rear tires.**

If the vehicle is not being towed to the VEB:

CSIs shall:

- Photograph each bullet defect on the exterior and interior of the vehicle with a scale of measure and unique identifier.
- Record the unique identifier and location of defect in the case notes.
- If access to the interior of the vehicle cannot be obtained, this **must** be added to the case record.
- Sketch and measure the vehicle into the scene.
- Taken two measurements from at least two tires, for a total of four measurements. **These two measurements should be from either of the front tires and the opposite rear tires.**

14.5. Flight Path

- Trajectory rods should only be placed in non-moveable objects such as walls, vehicle exteriors, etc. A minimum of two possible bullet holes are needed.

14.6. Projectiles

CSIs shall:

- Be cautious when attempting to remove or extract projectiles, so as not to cause additional damage or scratches to them.
- Cut out the area around the lodged projectile when removal cannot be done cautiously.
- Look for any trace evidence that may be on the projectile or left on the defect once the projectile has been removed. Any trace evidence observed **shall** be photographed.
- If the projectile or a metal fragment is removed from a labeled bullet defect, include the bullet defect identifier on the exterior of the packaging and record it in the case notes.
- Package projectiles and other metal fragments with sharp edges so the edges do not cut through the packaging.

15. Officer Involved Shootings – Charting Weapons

CSIs shall:

- Photograph the officer(s) involved, including any injuries, debris, signs of struggle and body worn cameras and record this information in the case notes.
- Swab the officer's firearm for contact DNA if the subject is believed to have touched the officer's weapon.
- Swab the firearm when there is visible **blood**.
- Chart (document) all firearms and ammunition involved in the incident. This includes make, model, serial number, accessories, etc.
- Document and photograph ammunition information and position in the firearm and magazine, including the number of cartridges in the magazine and the capacity of the magazine.
- Unless otherwise instructed, return all weapons and component(s) to the officer.

CSIs may ask the officer(s) to assist with the unloading the firearm(s) and should document this in



their case notes.

When possible, CSIs should utilize an ammunition tray to contain cartridges during the documentation process. CSIs should also document any less-than-lethal weapons involved in the officer involved shooting, such as Tasers or a firearm with beanbag rounds.

15.1. Charting Firearms Submerged in Water

- If a firearm that has been submerged in water **must** be charted, CSIs **shall** make the stakeholder aware of the loss of potential DNA and/or latent print evidence and the possibility of damaging the firearm (i.e., rusting). If the stakeholder still requests the firearm be charted, the following steps **shall** be taken:
- After collection of the submerged firearm, remove the firearm from the water and retain the water for later use.
- Collect a contact DNA swab from the firearm.
- Chart (document) the firearm and ammunition. This includes make, model, serial number, accessories, etc.)
- Place the firearm back into the water it was collected from. See section 5.1.1 for collection and transport of submerged firearm.

16. Trace Evidence

16.1. Collection Techniques

The trace evidence should be first placed into an appropriate-sized container, such as a druggist fold, vial, etc. (unless otherwise instructed) then placed in a larger envelope for submission to the Property Room.

Particle Pick

- Particle pick is using gloved fingers or equipment such as tweezers, forceps, or a similar collection tool to pick small particles off an object. This technique is generally used for the collection of loose hairs, fibers, paint, glass, vegetation, etc.
- The particles may be placed onto folded paper such as a druggist fold, into a small plastic or glass container, or on the sticky side of tape. Do not place particles believed to be paint onto tape.

Adhesive Tape Lifts

- Clear fingerprint tape should be used for the collection of hairs and fibers. This method is not recommended for surfaces that will strongly adhere to the tape lift adhesive (e.g., paper products, cardboard, etc.).
- The tape may be used as a strip or folded around the hand in a circle with the adhesive side facing out. After the evidence is collected onto the tape, CSIs **shall** place the tape into a clean plastic bag with the sticky side(s) of the tape against the plastic. The tape should not be wadded up or folded with the sticky sides together. If more than one piece of tape is used to collect evidence on the same item, all the pieces can be placed into the same evidence container.

Scraping

- Scraping utilizes a spatula, wooden dowel rod or other scraping tool to loosen particulate debris which is then caught in/on clean paper.



16.2. Hair and Fiber Reference (Known) Samples

CSIs **shall** add a description of the reference sample, such as source, location, color, condition, etc. to the case notes.

16.2.1. Head Hair Samples

- Record the name and date of birth of the person from whom the head hair is collected in the case notes.
- Examination and collection **shall** be done while the subject is standing on clean butcher paper.
- Collect the butcher paper after hair examination and collection are complete.
- Collect at least 25 hairs from 5 different areas of the scalp: center, front, back, and both sides. If 25 hairs cannot be collected, collect as many as possible. Include the reason(s) why fewer than 25 were collected in the case record.
- Hairs **must** be pulled by firmly grasping the hair near the root and pulling it quickly. Hairs that are cut are not appropriate standards.
- Loose or shedding hair may be collected by using tweezers or by combing the entire head while the subject is standing over a piece of clean paper to collect the dislodged hairs.
- Collect the butcher paper after hair collection is complete.
- Hairs **shall** be securely packaged to prevent loss or contamination.

16.2.2. Pubic Hair Samples

- Record the name and date of birth of the person from whom the pubic hair is collected in the case notes.
- Examination and collection **shall** be done while the subject is standing on clean butcher paper.
- Collect the butcher paper after hair examination and collection are complete.
- CSIs **shall** examine the pubic hair for indications of dried or moist secretions or presence of any foreign materials. If secretions are noted or suspected, collect the hair by cutting it, thereby collecting both the hair and the secretions.
- Collect at least 25 hairs from different areas of the pubic region. If 25 hairs cannot be collected, collect as many as possible. Include the reason(s) why fewer than 25 were collected in the case record.
- Hairs **must** be pulled by firmly grasping the hair near the root and pulling it quickly.
- Loose or shedding hair may be collected by using tweezers or by combing through the pubic hair while the subject is standing over a clean piece of paper.
- Collect the butcher paper after hair collection is complete.
- Hairs **shall** be securely packaged to prevent loss or contamination.

16.2.3. Fiber Standards

- When possible, collect the entire item. If the entire item, such as a vehicle or furniture, cannot be collected, use the following method to collect a known fiber sample:
- Cut a representative sample from various areas of the object.
- Collect samples that are visually different (e.g., different colored areas, areas that are faded due to sunlight, areas or sections that show signs of wear, etc.). Ensure the backing material is also recovered.



16.3. Paint Samples

Collecting **Known Paint Sample**:

- When possible, collect the entire item (i.e.: piece of car bumper).
- If the entire item cannot be collected, use a clean razor blade, scalpel, or knife to gently pry, carve or chip the paint from the surface down to the foundation or substrate.
- Collect a sample that is approximately 1"X 1". If the sample is smaller than 1" x 1", collect the entire sample.
- Collect paint standards near each damaged area. Include a description of the paint standard in the case notes, including from where it was collected.

Collecting **Questioned Paint Samples**:

- Use a clean razor blade, scalpel, or knife to gently pry, carve or chip the paint from the surface down to the foundation or substrate.
- Collect a sample approximately 1"x 1" from a particularly damaged area, when possible.
- Include a description of the paint sample in the case notes, including from where it was collected.

When contact between two painted surfaces is indicated or suspected, the possibility of cross-transfer **must** be considered. Collect paint standards from both surfaces.

16.4. Soil Collection

Known samples

- Collect two to three tablespoons. If you cannot collect two to three tablespoons, then collect the entire known sample.
- Allow to dry and place in a sealed container.

Clothing

- Allow soil to dry.
- Package in a separate paper bag or other porous container.
- Collect two to three tablespoons of soil. If you cannot collect two to three tablespoons, then collect all the soil observed.

Vehicles

- Search areas such as tires, wheel wells and floorboards for any soil debris.
- Collect soil samples using scraping or adhesive tape lifts (If adhesive tape lifts are used, they should be placed in a clear plastic bag for submission).
- Collect two to three tablespoons of soil. If you cannot collect two to three tablespoons, then collect all the soil observed.

Residences

- Samples should be collected near points of entry or shrubbery where a subject could hide.
- Samples should also be collected from pathways leading to the residence.
- Collect two to three tablespoons from each relevant point of entry, shrubbery, and pathways. If you cannot collect two to three tablespoons, then collect all the soil observed.

16.5. Gunshot Residue



16.5.1. Gunshot Residue on Clothing

- Clothing from the victim should be carefully preserved to prevent damage or disruption to powder residues deposited around the bullet holes.
- Avoid cutting or tearing clothing around these holes.
- Each item of clothing should be packaged separately in paper.
- If it is necessary to fold an article of clothing, place a piece of paper over the article to prevent contact and reduce the possibility of transferring residues to other areas of the clothing.
- GSR kits can be utilized on clothing, refer to GSR kits section 8.5.2.

16.5.2. Gunshot Residue (GSR) Kits

CSIs shall:

- Collect in accordance with the manufacturer's instructions provided in each kit the gunshot residue samples.
- A kit should be used on a live subject as soon as possible and preferably within a four (4) hour window of the incident. The CSI will still collect the potential GSR if the incident is beyond the four-hour window and the evidence is requested by the requesting law enforcement agency.
- Use a GSR kit on deceased persons within Harris County.
- A GSR kit may be utilized on death investigation cases in other counties where a representative from the Medical Examiner's Office is not responding. However, this will only be done at the request or approval of a criminal justice official from the requesting county.
- Collect the bags from the hands the decedent after GSR collection is complete (for out of county cases only).

16.5.3. Gunshot Residue Analysis form included in the GSR kit:

CSIs should:

- Not be complete the section "Write a brief description of the subject's activity...".
- Leave the original document in the kit.
- Make a copy and place it in the case record.

17. Ignitable Liquids and Ignitable Liquid Residues

ILs and ILRs cannot be submitted to the HPD Property Room. The sample collected should be given to the requesting agency detectives to be submitted for analysis.

To obtain an IL sample, CSIs shall:

- Take a sample of the liquid using two sterile cotton swabs by dipping the swabs for approximately 15 seconds into the container containing the liquid. Transfer the swab sample to an arson can.
- Place the lid on the can then properly seal and label the can.
- Transfer custody of the arson can to the detectives requesting collection of the sample.
- If necessary, provide the detective(s) with the location of the original scene.
- Complete the CSU chain of custody form.
- Dispose of any remaining liquid at the City of Houston Environmental Service Center.
- Submitted the IL container to the HPD Property Room, once all excess liquid has been



disposed of.

- If the item appears to contain an ILR but there is not enough residue to collect as stated above, the CSI should collect the entire item and place it into an arson can or arson bag for submission to the detective.
- If an IL or ILR sample is collected for an agency other than HPD or Houston Fire Department, the CSI will turn these samples over to the requesting agency on scene. A CSU chain of custody form **shall** be completed.

18. Latent Print Processing

18.1. Conventional latent print powders

Conventional latent print powders are applied with a brush:

- Work from a portion of conventional powder in a shallow container.
- Touch only the ends of the brush bristles to the powder.
- When using a fiberglass brush, use a smooth twirling motion to apply the powder.
- A smooth brushing motion, like a paintbrush, may also be used.
- Powder does not need to be applied to the fiberglass brush for each application; powder can be added as needed.
- The excess powder should be shaken or tapped off.
- Excess powder should be removed from the evidence prior to lifting to prevent “fish-eye” artifacts in the latent print. The excess powder should be shaken or tapped off.

18.2. Magnetic powder

Magnetic powder are powders that have fine iron filings mixed with the powder and are applied with a magnetic wand.

- When the magnetic wand is inserted into the magnetic powder, the powder will be picked up with the tip of the wand forming a bristle-less brush.
- Only the powder should touch the surface being processed.
- A light, smooth stroking motion is used to guide the wand over the area to be processed. Effort should be made not to leave large gaps between the brush strokes (often creating a zig-zag effect).
- The powder is released from the tip of the wand by pulling up on the end of the rod.
- Remove excess powder from the work area by passing the wand over the area without touching the surface. A fiberglass or feather brush may also be used to clean excess powder from the print.
- Magnetic powder **shall** not be used on cellular telephones, computers, tablets or any other digital or multimedia device.
- Caution should be used when using magnetic powder on credit/debit cards or any other card with a magnetic strip because the magnet in the wand may interfere with data stored on the card. The officer or investigator should be consulted before this procedure is used.

18.3. Clean Powders and Brushes

- Clean powders and brushes are used to process surfaces that are subsequently swabbed for contact DNA in areas where no friction ridge detail is developed.
- The powder **must** be used with a new fiberglass brush or a magnetic wand that has been



cleaned with a disinfectant or antimicrobial cleaner.

- The powder **must** come from a sealed container, or the powder **must** have not previously touched any surface.
- All secondary containers (powder, distilled water, etc.) **shall** be appropriately labeled.

18.4. Small Particle Reagent (SPR)

- Shake the solution thoroughly before use.
- Fill another bottle with water from the supply of water located in the CSU vehicle or any other clean water source (such as tap or distilled).
- Test spray the solution away from any evidence to ensure the nozzle is clear.
- Spray the SPR solution on the area to be searched for latent prints.
- Shake the bottle between sprays as the particles tend to settle rapidly.
- Using the other bottle with clean water, rinse the treated area and watch for the separation of water from an area with latent prints.
- Because latent tape can easily slip on wet surfaces, the CSI **shall** document the possible print(s) with comparative photography prior to a lift attempt on a wet surface.
- Place lifting tape over the wet surface and utilize a squeegee to remove excess water from underneath the tape.
- Alternatively, the area can be allowed to dry, and then conventional lifting techniques can be used to recover the print.

18.5. Latent Lifting Techniques

Latent prints developed with powders are usually recovered using adhesive lift tape **or** other mediums such as poly (stretchable) tape, gel lifters or flexible casting material may be used on curved, round and/or textured surfaces.

- Place the edge of the lifting medium adjacent to the target area.
- Using light pressure and a smooth, deliberate movement, apply the tape to the target area.
- A piece of cork or a pencil eraser **or squeegee** may be used to smooth the tape over the surface to minimize the development of air bubbles
- Multiple prints near each other may be collected on the same lift.
- If the latent lift is going to be larger than 8" x 11", the CSI **shall** examine the print to determine if there is a way to lift in smaller sections. If the CSI is unable to determine if the print can be collected in smaller sections, they **shall** contact the on-duty supervisor.
- Remove the tape from the target area and place it onto a latent lift card.
- In some instances, multiple lifts of the same print may be needed to achieve the best detail and clarity. If multiple lifts of the same area are taken, the lifts should be labeled "Duplicate lift 1 of 2" "Duplicate lift 2 of 2", etc.

18.6. Plastic and Patent Prints

- These prints **shall** be photographed using comparative quality procedures before any recovery attempts are initiated, refer to the Comparative Quality Photograph section 4.7 for further.
- If possible, collect the entire item or portion of the item containing the print.
- Flexible casts or gel lifts may be used to recover the prints.



18.7. Latent Print Cards

CSIs shall document the lift cards as follows:

- The case number written on every card.
- Sketch and description of item/location from which the print was lifted on every card.
- Place an "X" on the sketch to indicate from where the print was lifted.
- Add an "up" or other orientation arrow to each card.
- Not add letter or numeric designations to lift cards, other than the lift card number, which is written in the designated location on the card.
- Place print card in envelope and secure the envelope in such a manner to prevent loss, damage, or change to the contents.
- Adhesive labels may be used in lieu of writing the information by hand. The same information that is required on the card shall be on the label.
- The make, model and license plate number of vehicle processed written on the first card.
- Latent lifts which may contain blood or other biohazardous substances marked with "biohazard", "visible blood" or other similar wording.

19. Impression Evidence Recovery

Before attempts any recovery, the impression and/or imprints shall be photographed using comparative photography procedures, refer to the Comparative Quality Photograph section 4.7 for further information.

19.1. Gel Lifts

- Gel lifts work best at room temperature.
- The gel lift protective cover should be removed and the lift allowed to rest for approximately five minutes prior to use.
- Then apply the lift to the surface; a fingerprint roller may be used to smooth out any air bubbles.
- After application, the lift should be allowed to rest for approximately five more minutes.
- When the lift is removed from the surface, the CSI should place the original plastic cover back onto the gel lift. The roller or other object may be used to smooth the cover back over the lift. Ensure no air bubbles exist between the cover and the lift.

Record the following information on the back of each gel lift:

- Case number
- Date
- CSI's name or initials
- Impression number if more than one gel lift is collected
- Address of the scene
- Sketch if needed to show location (such as on a door)
- Directional arrow, if applicable

When writing on a gel lift, take care to write in a corner or other part of the lift that does not coincide with the impression on the front, to avoid indentation from the pen showing through on the impression.



19.2. Plaster Casts

- If the impression is in soft, fine, or loose dirt, the impression may be firmed up by spraying pump hair spray gently, evenly, and indirectly over the impression.
- A frame may be used to help position and retain the casting compound.
- When casting on hard surfaces, place an item such as a wooden spatula or cardboard under the cast to assist with lifting after the cast is dry.
- Prepare the casting compound following manufacturer's instructions.
- Target an area near the impression to begin pouring the compound; do not pour directly onto the impression to avoid disturbing fine detail.
- Pour the casting compound in a smooth continual motion.
- Continue pouring onto the target area until the mixture covers the entire impression area. Do not stop and restart pouring as this can cause imperfections in the cast.
- Do not touch or move the cast until it is fully dry.

Record the following case information on the back of the cast with a permanent marker:

- Case number
- Date of cast
- CSI's name or initials
- Impression number (if more than one cast is made)
- Address of the scene
- Do not attempt to clean dirt or debris from the impression side of the cast.
- Allow the cast to dry for at least 48 hours prior to packaging.
- Package the cast in a way that protects it from damage.

19.3. Underwater Impressions

- Impressions that are within pooled water, puddles or under any form of standing water may still be cast. Excess water may be removed, taking care not to disturb the impression.
- A metal casting form may be placed around the impression.
- Lightly sprinkle unmixed casting material over the impression until it is covered by approximately one inch of the casting material. The material should settle at the bottom of the water-filled impression.
- Allow to set for at least 60 minutes.
- Allow the cast to dry for at least 48 hours prior to packaging.
- Record the information listed above on the back of the cast.
- Package the cast in a way that protects it from damage.

19.4. Flexible Casting Material

- If the latent print is on a curved surface such as a bottleneck or door handle, consult with a CSU Supervisor on the best way to document the print prior to collection.
- Brown casting material is recommended for the reproduction of tool mark impressions.
- Prior to casting tool mark impressions, the CSI should consider the presence of latent prints and if the casting material would interfere with them.
- White or clear casting material is recommended for lifting latent prints that have been developed with black-colored powders.
- The CSI may need to prepare a label for the cast, as it is not practical to write on the



hardened silicone rubber.

- Latent print casts shall be affixed to a latent print card with tape. The CSI shall document the relevant case information on the card.

20. Impression Evidence Standards (Eliminations)

20.1. Footwear Standards

Collection of the shoes is the preferred method; however, if collecting the shoes is not possible, then CSI can utilize the below methods:

If the individual is present on scene:

CSIs shall:

- Photograph the individual's shoe.
 - The photograph shall be taken with scale and the film plane parallel to the tread of the shoe.
- Document the name and payroll of the individual in the case record.
- Take at least one photograph of the impression within the scene using a scale.

If the individual is not present on scene:

CSIs shall:

- Document that in the case record.
- Photograph the impression as an unknown footwear (Refer to the Comparative Quality Photograph section 4.7 for further information.)

Two-Dimensional Footwear Standards

- Coat the bottom of the shoe with the shine sponge.
- Have the individual wearing the shoe walk as they normally would across a sheet of white paper.
- Visually verify that the entire tread design transferred to the receiving surface.
- Apply black magnetic powder to the transferred impression.
- Place the paper in a paper or plastic bag, manila envelope, or folder.
- Mark each standard with the following case information:
 - Case number
 - Date
 - Name of the person who owned/wore the shoes
 - Agency name and payroll, if applicable

20.2. Tire Standards Sample

To collect a tire standard from a vehicle, CSIs shall:

- Photograph each tire
- Document in case notes the condition, and position of each tire on the vehicle
- Clean the floor area where the butcher paper is going to be placed (debris may damage/break the paper).
- Place 1 sheet of butcher paper as "buffer", to ensure sample doesn't get torn.
- Place a 2nd sheet of butcher paper on top of the first sheet (this is going to be the standard sample; tape can be used to secure the paper in place)



- Make sure the paper aligns with the vehicle tires, so the tires roll on the center of paper
- Apply a thin coat of Vaseline or spray lubricant on the tire threads
- Roll the vehicle slowly over the butcher paper ensuring one full rotation of the tire (avoid going over the sample several times backwards or forward)
- Stop the vehicle (put it in parking or place a wheel stopper) once a full rotation is achieved and remove the butcher paper.
- Mark an orientation arrow on each of the standard sample
- Write the case information, date, their name and payroll, the brand, model, and DOT information (manufacturer plant and I.D. code, tire size code, date). on each standard sample

To package the standard sample, CSIs shall:

- Cut open heat sealer plastic and place it on top of impression
- Secure plastic with clear tape along both edges
- Fold paper standard (druggy fold) or roll it (tube) and place in paper bag

20.3. Tool Mark Standards

If possible, collect the tool. If the tool cannot be collected, contact the on-duty supervisor.

21. Sharps

- Any evidence collected that presents a possibility of physical danger (knives, needles, other items with sharp edges, etc.) shall be packaged in an appropriate rigid container and clearly marked as such.
- Items contaminated with biological fluids that are typically placed in plastic containers for safety reasons (i.e., knives) shall instead be packaged in rigid, porous containers such as boxes.
- The sharps can be wrapped in paper to prevent dried flakes from escaping through openings in the box.

22. Liquids

- Liquid foodstuff, such as milk from a bottle or other substances suspected of containing alcohol or other contaminants, should be placed in a glass container.
- The glass container should then be packaged inside another sturdy container to minimize the chance of breakage and to contain the liquid if the glass does break.
- Another option is to place the liquid into a plastic container.
- A large zip-top or heat-sealed plastic bag may also be used as a secondary container.
- The outer packaging shall be marked with orientation arrows to indicate the proper orientation of the container and that the contents **need to be refrigerated**.
- All liquids should be submitted to the HPD Property Room immediately.
- Tell Property Room personnel that the evidence needs to be refrigerated.
- Ensure the case investigator is aware of any perishable items that are available for testing.

23. Currency

CSIs shall:

- Collect currency from a scene when of evidentiary value or probative to the investigation. If the CSI is unsure about the evidentiary nature of the currency, the CSI should communicate



with the investigator or primary officer from the responding agency or contact the on-duty supervisor to determine if it should be collected.

- Document the collected currency on the currency worksheet including the “On Scene Count Performed by” section of the worksheet.
- Have a second person, either another CSI or law enforcement officer be witness of the counting and documenting of the collected currency including enter this information in the “On Scene Verification Performed by” section of the worksheet.
- Collect money more than \$5 located in a vehicle being processed on scene or at the VEB, unless otherwise authorized by the investigator and the on-duty supervisor.
- Money collected from vehicles at the VEB be witnessed by a second person, unless a second person is not available at the VEB then the CSI may complete a remote verification (video call) with a supervisor.
- Document this verification on the “On Scene Verification” line of the currency worksheet
- Documentation and packaging of currency at CSU or the HPD Property Room shall be witnessed by another HFSC staff member or HPD employee.
- Currency in an amount over \$100 shall be submitted to the HPD Property Room by the end of the CSI’s shift, unless other arrangements have been made and approved by a CSU supervisor and documented in the case record.

Check all clothing, purses, backpacks, wallets, and other containers reasonably expected to contain currency prior to leaving the scene or the VEB.

24. Mobile Cellular Devices

CSIs shall:

- Attempt to power off or place into airplane mode all mobile devices when they are collected so they do not connect with surrounding networks during transportation.
- Include if the device was placed in airplane mode in the case notes. If the device was unable to be placed in airplane mode, this should be in the case notes as well.
- The HFSC Multimedia Section prefers the CSI include a note on the outer packaging of all devices the CSI placed into airplane mode. This information may be important during later analysis by the Multimedia Section.
- Include the make, model, and visible serial number of mobile cellular devices in the case notes.
- Document in the case notes if this information cannot be located, along with a description of the mobile cellular devices so that each device can be easily distinguished from other mobile devices.

25. Video Evidence

CSIs shall:

- Attempt to collect video evidence in the following situations:
 - Collection is needed after HFSC’s normal business hours and video will be overwritten or will delete before the next business day.
 - The DVR system or video will be damaged before the HFSC Multimedia Section is able to respond.
 - CSU does not collect audio evidence. In the event the stakeholder has requested



audio evidence, or the CSI is unable to collect DVR evidence, and one of the above instances is present, the CSI will contact the on-duty supervisor.

If the CSI is tasked with collecting the video evidence, the CSI **shall**:

- Evaluate the DVR system to determine the functionality and if it is password protected.
- Determine if:
 - an export needs to be conducted at that time
 - or the system needs to be seized
 - or the export will be scheduled for a later time
 - or no video is needed

If video needs to be retrieved, the CSI **must**:

- Verify search authority or consent
- Capture photographs of the following (if photographs cannot be taken the settings **must** be documented):
 - Make, model, serial number (if visible)
 - Time offset (actual time and DVR time)
 - Date/time and camera channels exported
 - Document the USB flash drive identifier (number)

26. Narcotics Evidence

See CSU Narcotics SOP

27. Entomological Evidence

CSIs do not routinely collect entomological evidence. However, general supplies used to collect this evidence are stocked in CSU **basement**.

For maggot/larvae/pupae/egg collection at the scene or at the VEB:

- Collect approximately 10-15 maggots/pupae/eggs; various sizes are preferred.
- Using disposable plastic tweezers, place the sample into a plastic jar. Try not to squeeze or crush the sample.
- Bring the jar back to the lab and perform the following procedure:
- Wash the maggots/larvae in warm water
- Transfer them to a plastic or glass jar and cover with a 70% ethanol solution.
- Seal and label the jar 'Fixed Maggot Specimen' or other similar wording.
- Dried pupae casings and eggs should be placed into a separate jar.
- Do not add ethanol solution to pupae and eggs.
- Seal the jar.
- The fixed specimen jars and the jars containing pupae/eggs can be placed into a box for submission to the Property Room or non-HPD entity to be stored at room temperature.
- These boxes should be labeled 'fragile'.
- Add an upward arrow to any boxes containing liquid (so the boxes are not turned upside down causing the solution to leak).
- If the detective assigned to the case was not present on scene, notify him/her that entomological evidence was collected.



28. Non-Routine Evidence

For non-routine evidence, including any evidence types not already described in this SOP manual, the CSI will consult with on-duty supervisor to ensure the evidence is collected, packaged, and stored in a manner that preserves the evidentiary value of the evidence. CSU management will also work with the CSI to ensure an appropriate sample size is collected.

29. Processing Persons

This protocol covers the various processes, methods and procedures involved in processing victims, witnesses and/or suspects.

CSIs shall:

- Collect and package all evidence in accordance with accepted procedures for each type of evidence.
- Follow proper procedure ensuring safety and protection from contamination and cross-contamination.
- Process individuals separately from each other.
- Handle and package evidence from different individuals separately to avoid contamination.
- Take care to change PPE between processing of different subjects.
- Processing individuals when it is important to link an individual to a crime or to an item of evidence or to link a crime or item of evidence to a person.
- Collect evidence from individuals as soon as possible since some evidence can be perishable or lost over time and with excessive movement.
- Have another HFSC or law enforcement witness present if processing involves the breasts or genital area of a subject or the removal of underwear. The witness should be the same sex as the subject being processed.
- Document the name of the witness in the case notes.

29.1. Documentation

CSIs shall:

- Document the person beginning processed using case notes, photographs, and sketches, as applicable. Documentation the description of the person's physical appearance, clothing, injuries, and other distinguishing features.
- Distinguishing features may include:
 - Injuries
 - Tattoos
 - Scars/birthmarks
 - Jewelry
 - Clothing
 - Stains

29.2. Photographing Persons

CSIs shall:

- **Utilize** a cover sheet or any form of identification (such as a driver's license) with the person's name should be photographed prior to capturing images of the individual.



- Photograph all four sides of the person, at full length (entire body), to include the type and condition of clothing.
- Photograph individuals in hospital beds or those otherwise unable to stand as thoroughly as possible in their bed, chair, etc.
- Photograph the person's face and shoulders (a driver's license-type photograph) for identification.
- Photograph both sides of the hands.
- Photograph the general area (mid-range) of any injuries without a scale to establish the location of the area of interest.
- Photograph any injury or area of interest close-up to include bite marks, both with and without a "L" shaped scale (has an X and Y axis).
- Photograph close-up injuries with the camera lens perpendicular to the injury to avoid distortion in the photographs.
- Document if they are unable to fully photograph a subject in the case notes.

29.3. Evidentiary Items on Persons

29.3.1. Biological Evidence

- Examine the person and their clothing for visible biological evidence such as blood or other biological fluids.
- Consider the possibility of potential touch DNA evidence on the person or their clothing.
- If the person scratched another person, consideration should be given to collecting fingernail swabs. Fingernail swabs are collected using a sterile cotton swab moistened with distilled water.

29.3.2. Trace Evidence

- Examine the person and their clothing for visible trace evidence such as hairs, fibers, glass, etc.
- Ensure proper consent or a warrant has been obtained prior to any evidence collection.

29.3.3. Bite Marks

- Bite marks should be swabbed prior to processing to collect potential saliva or other DNA evidence that may be present on the wound.

29.3.4. Known DNA Samples (Buccal Swabs)

- Use appropriate PPE when handling and/or collecting buccal swabs.
- To collect the buccal swabs, use two sterile cotton swabs to rub the inside of the subject's cheek for approximately 15 seconds.
- Document the subject's name and date of birth in the case notes and in the written report.
- Package the buccal swabs separately from evidence swabs in a labeled cardboard swab box.
- Buccal swabs from multiple individuals shall be packaged separately.

29.3.5. Patterned Impressions on Skin or Clothing

CSIs shall:

- Photograph any impression on clothing or skin using comparative quality procedures, refer to



the Comparative Quality Photograph section 4.7 for further information.

- Included in the report specific relevant information **and** any notable features of the impression described in the case notes.

30. Deceased Persons Located Out of Harris County

Initial written and photographic documentation of the decedent is conducted as part of standard processing protocol, without any maneuvering of the decedent.

- **CSIs do not touch or maneuver bodies that are found within Harris County. This is the responsibility of the Harris County Institute of Forensic Science (Harris County Medical Examiner's Officer).**
- Trace evidence should be collected before the decedent is moved.
- Obtain permission from the death investigator before maneuvering the decedent for documentation and evidence collection purposes.
- Record from whom permission was granted in the case notes.
- Search for and collect hairs, fibers, or other relevant trace evidence.

After trace evidence is collected or it is determined that trace evidence does not need to be collected, the CSI may continue photographic documentation of the body. This includes, but is not limited to:

- Front and back of the decedent
- Anything relevant on the clothing such as bullet holes or blood spatter patterns, with and without a scale of measure
- Front and back of both hands
- Both eyes (held open if possible)
- Interior of the mouth
- Insect activity
- Wounds with and without a scale of measure

In all homicide and firearm related investigations, bag the decedent's hands using clean, unused bags such as brown paper lunch bags:

- Wrap a bag around each wrist area.
- Do not place your own hand inside the bag to open it.
- This could lead to contamination or loss of evidence.

Do not collect any property from the body unless the investigator requests you to do so, and permission had been obtained from a death investigator from the county in which the body was found.

31. Vehicles at the Scene

- Confirm with the investigating officer if the vehicle needs to be processed at the scene or if processing will take place at the VEB.
- If the vehicle will be processed at the scene, treat the vehicle as a scene and document accordingly.
- Before a vehicle is towed to the VEB, document and photograph how the vehicle was found at the scene, including the condition and placement of the vehicle within the scene.



If the vehicle is being towed to the VEB, the CSI shall complete the following on scene:

- Photograph and document the following exterior features of the vehicle. This includes:
 - All four sides of the vehicle and the license plate.
 - Any damage to the vehicle, including bullet holes, broken glass and any damage caused by a collision.
 - Photograph damage caused by a collision directly related to the scene with a vertical scale of measure.
- Document any transient evidence or details regarding the condition of the vehicle in the case notes. This may include:
 - Windows up or down
 - Exterior wet/dry/condensation present
 - Odors present in the vehicle
 - Position of the gearshift
 - Tire/wheel condition
 - Steering column intact/damaged
 - Lights on/off
- Secure and/or protect any evidence that may be lost or destroyed during transport to the VEB.
- Record in case notes, if tape or a tarp is utilized to secure shattered glass or over windows to secure evidence inside the vehicle.

32. Processing Vehicles at the VEB:

32.1. Photography

CSI shall:

- Photograph all four sides of the vehicle, license plate, any decals or custom accessories, and damage or other areas interest if applicable.
- Take overall, mid-range and close-up photographs of any relevant damage to the vehicle, including bullet holes with and without scales of measure and unique identifiers, as well as evidence in, on or under the vehicle.
- Photograph the following interior areas of the vehicle:
 - All passenger areas
 - Trunk
 - Console
 - Glove compartment
 - Door pockets
- For vehicles involved in traffic collisions, include images of the interior safety devices such as air bags, seat belts, child seats, etc. to document their presence and condition.

32.2. Evidence in or on a Vehicle

CSI shall:

- Give immediate attention to the most fragile evidence prior to completing a full search of the entire vehicle.
- Collect trace evidence upon initial entry into the vehicle.



Some investigations may require a whole and complete search which may include, but is not limited to:

- Undercarriage of the vehicle
- Under the hood
- Inside the trunk
- Underneath and alongside the seats
- Inside compartments
- Glove box, interior door pockets, center console, ashtray, seatback pockets, etc.
- Underneath visors
- Possible hidden compartments

32.3. DNA Collection from Vehicles

- A DNA sample collection consists of a cotton swab moistened with distilled water, refer to the Biological Evidence section 6.3 for further information.

The recommended areas for collecting contact DNA samples are as follows:

- Interior door handle, arm rest, etc. with one sample per door
- Exterior door handle, with one sample per door
- Steering wheel/gear shift, one sample
- Seat belt latches with one sample per seating area
- The specific location of DNA sample collection (such as steering wheel, interior/exterior door handle, etc.) shall be documented in the case notes.

32.4. Vehicle Latent Print Processing

- All surfaces of a vehicle and all objects in or on a vehicle should be considered for processing, but what surfaces to process and what techniques to employ are left to the discretion of the CSI and agency investigator.
- DNA samples should be collected prior to latent print processing unless clean powder procedures are used.
- If more than one vehicle in the same case is processed by the same CSI, the latent print cards shall be placed into separate envelopes, one envelope for each vehicle.

33. Securing and Packaging Evidence

33.1. Evidence Packaging

All evidence shall be packaged in a manner that prevents contamination and deleterious change. Physical evidence shall be handled as little as possible and held in such a way that minimizes the chances of interfering with potential DNA, latent prints and/or any other forensic analysis.

CSIs shall:

- While in CSU, store evidence under proper seal and protected from loss, cross-contamination and/or deleterious change in accordance with the HFSC Quality Manual.
- Secure evidence in an approved short-term evidence storage location whenever it is not being actively processed by a CSI.



Because CSU is a limited access area, evidence in the process of examination may be left unattended for a short period of time include time needed for telephone calls or restroom breaks.

During such times, CSIs shall:

- Take reasonable precautions to secure the evidence, such as covering the exam area with clean paper and/or a “Do not touch” sign.
- Write the case number and his/her name on clean paper and/or a “Do not touch” sign or another piece of paper.
- Notify the on-duty supervisor, if they suspect that an item might have been compromised and record those circumstances.
- Not bring unpackaged evidence into office areas.
- Process and package evidence approved areas, such as the basement.
- Repackage item(s) in a new container if the original collection package/container cannot be used for submission (usually due to the presence of biological material on the package).
- Submit the original collection container/package with **or without** the evidence. If it is included with the evidence item(s), this shall be documented in the case notes.

33.1.1. Interior Packaging

CSIs shall:

- Write on interior packaging the agency case number and a brief description of the contents
- Marked as biohazard if the contents are a biological hazard such as blood on both the interior and exterior containers.
- Secure all interior packages so the contents cannot escape.
- Not tape down Swab box flaps.

33.1.2. Outer Packaging

CSIs shall:

- Appropriately and properly seal final outer packaging (if its contents cannot readily escape and if entering the container results in obvious damage/alteration to the container or its seal).
- Date and initials or sign the seal of the final outer packaging.
- Ensure all evidence is appropriately packaged before transporting it to the Property Room or to a non-HPD agency for long-term storage.

The container exterior shall contain at minimum, the following information:

- Case number
- Evidence marker number (if applicable)
- Description of item(s)
- Biohazard (if applicable)
- CSI’s name

33.2. Authorized Temporary Storage (Lockers and Drying cabinets)

Evidence in a temporary storage location is in the custody of the CSI who placed the evidence in the listed location until it is submitted to the Property Room or transferred to another individual.

CSIs shall:



- Secure evidence pending submission to the HPD Property Room in an authorized temporary storage location by the end of the CSI's work shift.
- Use an integrity tag to secure each locker and drying cabinet and record the tag number in the case notes.
- Complete the Temporary Evidence Storage Log sheet any time evidence is placed into a cabinet or locker.
- Include a copy of the log documenting the initial entry and the final removal of evidence in the case record.
- Get supervisor approval to remove evidence from a locker and/or drying cabinet, if they are not the one who placed the evidence into the storage location.
- Email the submitting CSI and the supervisors when an integrity tag is removed for any reason, detailing any actions taken with the evidence and included the email in the case record.

33.3. Use of Drying Cabinets:

CSIs shall:

- Wear gloves while handling items being placed or removed from the drying cabinet.
- Clean the cabinets using an approved disinfectant or a 90/10 bleach solution both before and after each use to prevent cross-contamination of evidence.
- Allow the bleach solution to sit for approximately 60 seconds and then wipe the area clean and dry it thoroughly.
- Place a piece of clean butcher paper at the bottom of the cabinet before adding evidence.
- Can place evidence from the same case in the same drying cabinet unless the evidence is obtained from different individuals.
- Spread out items in the drying cabinet to facilitate rapid drying.
- Turn 'on' the internal fan anytime evidence is in the cabinet to assist in the drying process.
- Ensure proper airflow by making sure all door handles are twisted closed.
- Monitor the drying process of items in the cabinet.
- Utilized plastic hangers only.
- Clean plastic hangers with approved disinfectant or a 90/10 bleach solution after each use.
- Discarded any clips or clothespins that are used to hang items after each use.
- Hang an 'out of order' sign on the door and inform a supervisor if the drying cabinet is not functioning properly.

33.4. Maintenance of Drying Cabinets:

- The drying cabinet is equipped with a low airflow alarm. If the alarm sounds, turn the unit off and wait approximately one minute before restarting.
- Each cabinet is also equipped with an alarm that indicates when the HEPA filter needs to be changed.
- Pre-filters in the door and interior top of the cabinet shall be changed approximately once every 90 days.
- A monthly visual check shall be conducted on the drying cabinet to locate any damage, wear, or tear of the cabinets included in the visual check will be an operating check by powering on and off the device.
- All monthly checks shall be documented in a CSU Critical Equipment workflow.



34. Non-HPD Cases and Evidence:

CSU may be asked to process scenes outside the city of Houston and for agencies other than the Houston Police Department.

- Approval to process these scenes **must** come from CSU management.
- The CSI knows approval is granted if the CSI is dispatched to the scene by a member of management. Scenes should be worked with a requesting agency investigator or officer present.

CSIs **shall**:

- Return evidence collected for an agency other than the Houston Police Department to the agency representative either at the scene or after the CSI has completed processing or documentation in the laboratory.
- Properly documented and packaged the evidence prior to return to the requesting agency.
- Transfer all photographs and video recording(s) to a media such as a DVD or thumb drive.
- Packaged and sealed this media as an evidence item and included a chain of custody.

35. Post-Scene Documentation

35.1. Uploading Images:

CSIs **shall**:

- Upload .jpg scene images for HPD cases to Dataworks, the digital imaging storage system.
- Verify after uploading that the number of photos uploaded matches the number of photographs counted by Dataworks.
- Upload the images by the end of shift.
- Not alter the images themselves.
- Print and place the automatically generated email confirmation of successful import into Dataworks in the case record.
- Document if the confirmation email is not received in the case notes.
- **Upload** uncompressed file format images (such as comparative quality images taken in RAW) to DVD and submit it as evidence to the HPD Property Room. The DVD will be checked prior to submission and the check will be documented in the case record.
- Format memory cards once all images are uploaded and written to a DVD.

35.2. Report Writing

CSIs **shall**:

- Write reports for all casework completed. Casework includes, but is not limited to, crime scenes, administrative assists such as submitting evidence to the HPD Property Room, completing FARO renderings, etc.
- Followed the CSU standardized wording guide for all reports, where applicable.
- **Ensure their reports** are free of hearsay and/or unsupported conclusions.
- **Ensure** descriptions and other observations will be made in clearly understood language avoiding esoteric terms or slang, whether common or industry related.
- Not include the names of undercover police officers in reports.



35.3. Case Records

Case Packets/Notes:

CSU has established a case record workflow procedure that is listed in the CSU Administrative Manual. Please refer to that for further information.

Case Packet Documents:

Case records, as defined in the HFSC Quality Manual, may be in either hard copy or electronic form (or a combination of both) and shall contain the following documentation (applicable to the type of scene processed):

- Final report
- All crime scene notes
- All rough/orientation sketches
- Final diagram
- VEB paperwork
- CSU cover pages
- CSU case file divider pages
- HPD Property Room receipts
- Emails or other correspondence regarding case information. If a screen shot of a text message is included in the case record, the CSI must save the name of the officer or detective in the phone's contact list prior to taking a screen shot of the correspondence. The number of an officer/detective shall never be published in a CSI's notes from text message correspondence.
- Chain of custody forms
- Temporary evidence storage location logs
- Confirmation of images uploaded to Dataworks
- DVD of photographs and/or video

Unless authorized by a supervisor, the case record shall not be included:

- Copies of papers, cards, identification, etc. when the original is submitted as evidence
- Copies of reports written by HPD or other law enforcement officers
- Copies of latent print cards
- Photocopies of CDs or DVDs

Case Record Reviews

- CSIs shall review their own case record prior to submission to supervisor for review.
- Draft completing their case record serves as documentation of this review.
- All casework shall be administratively reviewed.
- All casework performed by trainees shall also be technically reviewed.
- Otherwise, a minimum of 75% of casework performed by CSIs conducting independent casework shall be technically reviewed.

36. Found Property

CSIs or Supervisor who locate property either in a HFSC vehicle or at the VEB, shall complete the following steps:



- Notify the CSU Management team via email about the found property and give a brief description of how, where, and when (time and date) the item(s) were located.
- Place the item into a CSU temporary locker
- Tag the items into the HPD Property Room
- Complete the CSU call log and complete an Administrative Assist report detailing when and where the item was found and its disposition.

CSU Technical Lead or Management team shall complete the following steps:

- Research/locate any possible case correlation of the item
- Create a found property RMS Supplement
- AR/TR the AA report of the CSIs or Supervisor
- Complete the CSU Found Property workflow and attach the report, property receipt and the email from CSIs or Supervisor to the workflow

Appendix: Technical Details and Abbreviations

The following is a list of technical details and approved abbreviations that may be utilized while taking notes regarding the activities completed during requests for service. Any abbreviations that are not included in this list or are not commonly used shall be placed into a key in the notes defining the abbreviations.

3-HFSC: A generic virtual designation used by the Houston Police Department (HPD) evidence management system (EMS). Items carrying the 3-HFSC designation have been entered into the HPD EMS but are being temporarily stored at HFSC for additional processing by HFSC.

Algor Mortis: The reduction in body temperature and accompanying loss of skin elasticity that occur after death.

Alternate light source (ALS): A light source that can be used at a crime scene or in a laboratory setting to search for evidence and aid in the recognition and therefore collection of evidence. The basic premise of the forensic/alternate light source is that it allows for the use of isolated, specific wavelengths of light, as well as white light, for trace and biological evidence searches.

Adhesive tape: Collects trace evidence that is not readily visible and is the recommended technique for recovering potential trace evidence from surfaces such as upholstery, clothing, and carpet.

Administrative assist (AA): Designation may be given for in-office functions such as transporting and submitting evidence to non-HFSC entities or to the 3-HFSC designation for the lead or assisting CSIs. The AA designation is not used for on scene work.

Anterior: Pertaining to a surface or part situated toward the front or facing forward.

Aperture: An opening, specifically of the lens, which is expressed in a fraction of the focal length, that allows light to meet the recording medium. Also called the f-stop.

Assist CSI: Refers to any additional CSIs who respond for scene processing. Assisting CSIs work in



conjunction with the lead CSI and are responsible for openly communicating with them throughout scene processing. Both lead and assisting CSIs are responsible for ensuring the scene is processed thoroughly and according to this SOP manual.

ISO: A numerical rating that describes the sensitivity to light of the film. The ISO rating doubles as the sensitivity to light doubles; example- ISO 200 film is twice as sensitive to light as ISO 100 film.

Bird's Eye/Overhead/Floor Plan Sketch/Diagram: Most used diagram for indoor scenes. It can be used in nearly all crime scene situations where the items of interest are located on one plane. This type of diagram is simple and the easiest to understand.

Bracketing: To take several exposures (some greater and some less than the one considered to be 'normal') in addition to the normal one, with the intent of getting one near perfect exposure.

Blood: When the word blood is used in this SOP or in CSIs case records, it is understood to mean presumptively positive, possible, or suspected blood.

Bluestar®: A latent blood visualizing agent that is effective on fresh, very old or altered bloodstains, either pure or diluted, and does not alter DNA. It is used to reveal bloodstain patterns on surfaces from which blood has been cleaned or surfaces on which blood is not readily visible.

Buccal swabs: Known DNA samples collected from the inside of a subject's cheek. They are collected under directive of law enforcement after the law enforcement agency has obtained consent or a search warrant.

Bullet Defect: When the word defect/hole/strike is used in this SOP or in CSIs case records, it is understood to mean presumptively positive, possible, or suspected bullet defect. A hole, divot or skid caused by a bullet strike.

Cartridge and cartridge case (CC): A unit of ammunition consisting of the cartridge case, powder charge and projectile (e.g., bullet, shot pellets, etc.). Cartridge case is what remains after the cartridge is fired.

Chain of Custody: A written or electronic record to track the movement/location of evidence. Enforced to prevent loss of evidence.

Chemiluminescence: The process whereby light is produced by a chemical reaction with the evolution of little or no heat

Close-up photographs: Depicts individual items of evidence or areas of interest.

Comparative quality photographs/Examination quality photographs: Capture photographs of impression evidence for comparison purposes via the use of high quality, close-up images.

Crime Scene Investigator (CSI): Also includes the position of Crime Scene Supervisor when the supervisor is conducting crime scene investigations. Any reference to "supervisor" also encompasses



the positions of CSU Director.

Crime scene photographs: Depict a true and accurate representation of the scene as it is when CSIs arrive. Photography is an ongoing process which will include taking additional photographs as new evidence is discovered.

Depth of Field: The region of acceptably sharp focus around the subject position, extending toward the camera and away from it, from the plane of sharpest focus. The boundaries of the depth of field are referred to as the near and far limit.

Deoxyribonucleic acid (DNA): This molecule is housed in every nucleated cell of the body. Often described as the body's blueprints since they carry the genetic codes that govern the structure and function of every component of the body.

Evidence Marker (EM): A colored (yellow) durable plastic tent labeled with a distinctive number and scale.

Exploded Sketch/Diagram: Combination of the other two types of sketch/diagrams. Utilized for indoor scenes depicting walls as being laid out flat. (This type of diagram would be useful to show bullet holes or bloodstain evidence on walls, windows and/or doors as well as any items of evidence on the floor.

FARO Focus (Laser Scanner): A laser scanner that sends an infrared laser beam into the center of a rotating mirror. The mirror deflects the laser beam on a vertical rotation around the environment being scanned; scattered light from surrounding objects is then reflected into the scanner.

FARO Scene: A computerized software that processes and manages scan data by using real time, on-site registration, automatic object recognition, scan registration and positioning to create a final project, Scene 2go.

Final diagram: A computer generated diagram utilizing software provided by HFSC (In current use ScenePD). A final diagram is a finished rendering of the rough sketch.

Fluorescence: The property of absorbing light of a particular wavelength and then emitting light of a different color and wavelength.

F-Stop: See Aperture

Gel lifts: Collect impression evidence consisting of loose material on flat, smooth surfaces such as a dust impression, and to lift imprints developed by latent print processing powder techniques. They may also be used to lift developed or visible imprints from irregular surfaces such as doorknobs or slightly textured surfaces.

Grid search: This method is the best procedure to cover a large area. This method is characterized by conducting an initial strip search and then a second perpendicular strip search; therefore, the same area is covered twice. Covering the same ground twice is more time consuming, but it is also more



thorough, which reduces the chances that an evidence item will be missed.

Gunshot Residue (GSR): Results from the discharge of a firearm. This includes primer, powder, and/or projectile material and products of their combustion.

Headstamp: The information on the head of cartridge and cartridge case that may include the manufacturer and caliber.

Hemastix: A presumptive test for blood - Hemastix are 3" plastic strips with a special blood reagent material at the tip. The strips detect the peroxide-like activity of hemoglobin in a substance.

Impressions (Shoe or prints): A three-dimensional physical piece of evidence, such as shoeprints in mud or snow or a pry mark on a door.

Imprints (Shoe or prints): A two-dimensional physical piece of evidence, such as prints in dust or transferred in another medium such as blood or grease.

Known Paint Sample: A coating sample of established origin.

Laboratory Information Management System (LIMS)/JusticeTrax (JT): A database for laboratory personnel to document and record case information.

Latent Prints: Invisible prints made by the transfer of perspiration and other secretions from the skin to a surface.

Latent Print Powder: Fingerprint dusting powders adhere to the moisture and oils left on an object when it is touched by friction skin.

Lead CSI: Refers to the CSI who is responsible for communication with the requesting agency, HFSC supervisors and other CSIs on scene. The lead delegates tasks to the other CSIs on scene. Both lead and assisting CSIs are responsible for ensuring the scene is processed thoroughly and according to this SOP manual.

Leuco-Crystal Violet (LCV): A heme-reacting chemical that causes blood to become purple in color and will only reveal prints on blood-stained portions of an item. It is suitable for developing stains such as latent prints, shoeprints, or other blood evidence on porous and non-porous items.

Line search: This method can be used effectively if the area to be searched is large and open, for example, outdoor scenes or indoor scenes with large floor spaces. This method is characterized by designating lines, with each line being searched by one individual. A line width of approximately arm's length on either side of each search member is ideal. If necessary, mark the lines (for example, with a string) to avoid missing any portion of the scene; this can be accomplished with stakes or flags at the end of each line.

Livor Mortis or Lividity: Post-mortem discoloration due to the gravitation of blood into the dependent capillaries and veins.



Long exposure photography: Capture available light to photograph nighttime or very low light situations such as when using an alternate light source (ALS) and/or to photograph the reaction of Blue Star. This method can also be used to photograph scenes during rain to help reduce the appearance of raindrops.

Metal Detector: A unit comprised of a search coil and a control housing that will locate metals at different depths. Once a target has been located through a series of beeps, the detector is able to pinpoint the target with a maximum sound.

Mid-range photographs: Establish the spatial relationship between items of evidence and the scene. This is often done by photographing an item of evidence along with a fixed object in the scene.

Orientation Sketch: A small picture that helps explain what is written in the notes or is a visual representation used in lieu of notes.

Overall photographs: Establish the location of the crime scene through street signs, address numbers or geographical location. These photographs are taken in an overlapping fashion, covering all areas of the scene. Items of evidence and their relationship to the scene are visible but are not the main subject.

Overexposure: A photographic image that has received too much light.

Patent Prints: Visible prints made by the transfer of a foreign material such as blood, paint, or ink.

Plastic Prints: Visible prints made by a friction ridge impression in soft, pliable surfaces such as putty, modeling clay, etc.

Physical Evidence: Any object that can establish that a crime has been committed or can provide a link between a crime and its victim or between a crime and its perpetrator.

Posterior: Pertaining to a surface or part situated toward the back or facing backward.

Presumptive: Results which are not yet confirmed, but which are considered highly likely. CSU does not confirm the presence of blood.

Projectile: An object propelled from a firearm barrel by the force of rapidly burning gases, e.g., bullet, shot pellets, shot slugs.

Prone: Pertaining to a posture having the frontal portion of the body downward, with the torso parallel to the reference surface, and generally with the hips and knees extended.

Questioned Paint Sample: A coating sample whose original source is unknown.

Record Management System (RMS): A computer system used by the Houston Police Department for information and reporting purposes.



Reference Point (RP): A point(s) used to find or describe the location of something.

Rigor Mortis: A rigidity or stiffening of the muscular tissue and joints of the body after death due to the disappearance of adenosine triphosphate (ATP) from muscle.

Rough sketch: A hand-drawn and should reflect what is depicted in photographs and video (layout of the scene and the corresponding physical evidence).

Small Particle Reagent (SPR): A physical development technique where these small particles adhere to the fatty substances left in fingerprint residue. SPR is most well-known for its ability to develop latent prints on wet surfaces such as vehicles wet with rain, dew or immersed in water.

Shutter: A mechanism that opens and closes to admit light into a camera for a measured length of time.

Shutter Speed: (1) The duration of the interval of exposure. (2) The marked settings on a shutter dial. The numbers represent the denominators of fractions of which 1 is the numerator.

Side View/Elevation Sketch/Diagram: Used at scenes where vertical aspects are important such as an exterior wall of a building or the exterior of a vehicle. Utilizes a vertical plane of view. (This type of diagram would be useful to show bullet holes or bloodstain evidence on walls, windows and/or doors.

Silicone based rubber casting material: Collects and preserving three-dimensional marks, such as tool marks, from a scene. This material can also be used to lift latent prints developed on irregular surfaces.

Spiral search: This method, sometimes called the circle method, is effective in small areas. This method is characterized by searching in a spiral path, either inwards from the perimeter or outwards from the designated center.

Supine: Pertaining to a posture in which the anterior portion of the body faces upward, the torso is aligned parallel to the reference surface, and hips and knees extended.

Temporary Evidence Storage: HFSC storage lockers, cages and evidence drying cabinets are authorized temporary evidence storage locations.

Trace Evidence: Physical evidence so small (in size or forensic detail) that an examination conducted to locate this evidence usually requires a stereomicroscope, a polarized light microscope, or both.

Trace Evidence Categorization: Fibrous substances (hair, plant fibers, mineral fibers, or synthetic fibers) and Particulate matter (building material, insulation, paint chips, metal filings or shavings, soil, seeds, pollen, wood chips or cosmetics)

Trajectory rods: A straight probe often used with centering cones to track and illustrate the nominal



path of a projectile.

Underexposure: A photographic image that has received too little light.

Zone search: This method is effective for searching large areas. This method is characterized by dividing the scene into zones, which can be subdivided into smaller sub-zones as circumstances require.

Abbreviation(s):	Description:
AMMO	Ammunition
APPROX; APPR; APPRX	Approximately
BATH	Bathroom
BD; BDRM; BED; BEDRM; BR; BDR	Bedroom
B/C	Because
B/W; BTWN	Between
BF; BYFND	Boyfriend
BLDG	Building
BLINE	Baseline
CAL	Caliber
CAP	Capacity
CIG	Cigarette
COM	Center Of Mass
COMPL	Complainant
☐	Containing
DET./DET	Detective
DL	Driver license
DOB	Date of birth
DOD	Date of death
DR	Dining room
D/S or DS	Driver Side
D/S/F or DSF; FDS	Driver Side Front; Front driver side
D/S/R or DSR; RDS	Driver Side Rear; Rear driver side
E	East
EVID; EV	Evidence
EXP	Expiration
EXT	Exterior
FD; F/D	Front door
FI; F/I	Forensic Investigator
FLUP; FL/UP; FU	Follow-up
F/P or FP	Front Passenger
F/P/S or FPS	Front Passenger Side
FRG or FRAG	Fragment
FTO	Field Training Officer
FW; FWY	Freeway
GF; GRLFRND	Girlfriend



GSW	Gunshot wound
HOS; HOSP	Hospital
H/S	Head Stamp
IMMED	Immediate
INFO	Information
INCL	Includes
INJ	Injury
INT	Interior
INV.	Investigator
L; LFT	Left
LF	Left foot
LG or LRG	Large
LH	Left hand
LIQ	Liquid
LOC	Location
LOCK	Locker
L/R or LR	Living Room
LP	Light pole
LGT	Light
MAG	Magazine
MBR or M/BDRM	Master Bedroom
ME	Medical examiner
NA	Not applicable
N	North
NE or N/E	Northeast
NEG or -	Negative
NW or N/W	Northwest
OBS.	Observed
OFC; OFF; OFCR	Officer
PA, or PKG	Package or packaged
P	Passenger
PL; P/LOT	Parking Lot
POSS	Possible
P/S or PS	Passenger Side
P/S/R or PSR; RPS	Passenger Side Rear; Rear passenger side
P/S/F or PSF; FPS	Passenger Side Front; Front passenger side
POS; or +	Positive
PU; P/U	Pickup
R; RT	Right
RES	Residence
RF	Right Foot
RH	Right Hand
RM	Room
RX	Prescription



S	South
SP; SUSP	Suspect
SE or S/E	Southeast
SN; S/N	Serial Number
SOC; SS; SSN; SSC	Social Security Number; Card
SUBJ	Subject
SUPV; SUP	Supervisor
S/W or SW	Search Warrant
S/W or SW	Southwest
S & W	Smith and Wesson
TRAJ	Trajectory
U; UNK	Unknown
V; VIC	Victim
VEH	Vehicle
W	West
W/	With
WEAP; WPN	Weapon
W/O	Without
XSECT; X-SECT	Intersection
XST; X-ST	Across the street
YD	Yard