

FORENSIC ARCHEOLOGY PROTOCOLS

Used by the University of Indianapolis

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(1) Establish the parameters of the scene

- Verify the limits or boundaries of the scene with a patterned search, if necessary.
- Establish a note-taking & data recording person.
- Note the arrival time, anthropology crewmembers, and the general location of the scene. Describe the surroundings and current weather. Field recovery data forms can be used.
- DO NOT assume the responsibility of recording non-anthropologists who are present at the scene unless specifically asked to do so by the police.
- Begin a sketch map of the environs of the scene (not to scale).

(2) Secure the scene

- String an outer boundary, for medicolegal personnel only (no press!).
- String an inner boundary, for anthropologists only.
- Use crime scene or flagging tape liberally.
- The inner boundary should completely surround the burial feature or scatter of remains.
- The outer boundary is frequently already established by the police.
- Check for shoeprint and tire impression evidence before it is destroyed or contaminated.

(3) Photograph the scene

- Take photos from different angles.
- Use scales as appropriate (humans serve as good points of reference for juries).
- Mark relevant evidence with flags or other visible markers beforehand.
- Make sure to take some close-ups of how debris & leaves may be covering the remains.
- The goal is to document the scene as it existed before the anthropologists altered it in any way.

(4) Stage 1: Establish a subdatum

- Place a wooden subdatum stake near the central concentration of remains; this is the (0S,0W) point. A subdatum positioned 1 to 3 meters from the remains generally works best. Assign numbers to each subdatum you use.
- Take a GPS reading over the remains or the subdatum stake, and record it on the field data form.
- The top of the subdatum stake should be higher than highest point of the burial mound (if present).
- Measure the height of the top of the subdatum stake above the ground surface at its base; this is the "BD" (below datum) set point for depth measurements taken below the ground surface. Make sure to record the BD value on the field data form.
- Put a nail halfway into the top of the subdatum stake and attach a line level string at the TOP OF THE STAKE (NOT at the top of the nail!).

(5) Stage 1: Establish a datum

- Measure and record the distance and compass direction of the subdatum stake from at least 2 permanent landmarks. These will be your datum points. Assign letters to each datum you use.
- Mark the datums so that they can be found again easily; consider painting the side of a tree or a point on the road with fluorescent paint.
- Telephone poles make good datum points, as each usually has a unique utility number stapled to it.
- When in large fields that lack stable surface features, bury a large piece of scrap of metal as a datum so that it can be located later with a metal detector.

(6) Stage 1: Lay out a baseline

- If considerable vegetation, branches, or shrubs cover the scene, they can be partially and carefully removed prior to constructing the baseline and reference grid.
- Use the subdatum stake as one end of the baseline.
- Hook the metal loop of a 30 or 50 meter tape on the datum nail and lead out the tape.
- Shoot the tape to a specific compass heading (preferably a cardinal direction).
- Alternatively, lay out the baseline for convenience and plot its compass bearing afterwards.
- Because Indiana lies close to the magnetic meridian, correction for declination is not necessary.
- Set a wooden endstake at some even distance from the first subdatum stake, far enough out to be workable. You can always extend the baseline in either direction later if needed. The second stake can be given another subdatum number.
- Place chaining pins along the baseline at 1 meter intervals if a grid will be established.
- Connect the 2 endstakes with string.
- You can leave the tape in place for later reference.
- A second baseline can be constructed perpendicular to the first and running through the subdatum.
- If a transit is to be used, it can be assembled over one of the subdatums now.

(7) Stage 1: Construct a reference grid

- String grids are used for burials and compact surface scatters.
- Extend the grid directly off of the baseline; it does not necessarily have to include the subdatum stake.
- Make sure that the grid is large enough to be workable (you can always add on later).
- A 3 x 3 meter grid is good for a defined burial or compact scatter.
- Use a hypotenuse table and 2 tapes to place the 2 the corner pins.
- Place chaining pins at 1 meter intervals on the remaining 3 sides of the grid.
- Use string to connect the tops of the 4 corner pins around the periphery of the grid. Then run string on the periphery at the ground level.
- String the individual units within the grid at ground level, wrapping it around the chaining pins and allowing the lines to cross naturally in the center. Try to use a single string, minimizing doubling-back and cutting.
- Chaining pins can be placed in the center where the strings cross (don't put pins into the remains!).
- Fluorescent orange or green string is preferable for photographic purposes, and different colors can be used for different lines.
- Each unit is numbered by the location of its SW corner relative to the subdatum stake. For example, (2S,2W) designates the unit whose southwest corner is located exactly 2 meters S and 2 meters W of subdatum (0S,0W). The coordinate (2S,2W) therefore refers simultaneously to a 1 square meter unit and also to the specific point on the ground surface at the unit's SW corner.

The coordinate (2.74S,2.31W) would be a point that falls within unit (3S,3W), at a point that is exactly 2.74 m S and 2.31 m W of subdatum.

- Subgrids consisting of larger blocks of units may be designated for convenience and numbered in some logical fashion.
- Not all units must be strung. A grid of chaining pins without string, or with string on alternating lines can be very effective in certain circumstances.
- Any point on the landscape can be tied into the coordinate grid system no matter how far from subdatum it lies or whether the grid is strung or not.

(8) Stage 1: Begin detailed documentation of the scene

- Photograph the baseline and the completed grid.
- Begin a plan view diagram of the grid on graph paper.
- Begin a profile view diagram of the grid through the center of the burial (if present) and/or along the baseline.
- Diagrams do not have to be incredibly detailed nor perfectly to scale as long as provenience data has been recorded on each item or feature.
- Maps are NOT to be used to record detailed provenience data (that's what the field forms are for!).
- Assemble evidence bags and collection equipment.
- Record collected items, features, & basic measurements on the field recovery data form.

(9) Stage 1: Take starting depths BD (below datum)

- at points along the baseline;
- at the intersections of 1m squares;
- at each corner stake or pin;
- at the center of the grid;
- at any other pertinent points (e.g., the highest point of the burial mound or within depressions).
- Record depth data on a field recovery data form.
- A transit or line-level must be used to take depths.

(10) Stage 1: Assign separate feature numbers

- to the graveshaft;
- to the burial mound, if present;
- to the halo of disturbed earth, if present;
- to the decomposition fluid stain in surface depositions (sometimes also present in shallow burials);
- to rodent holes that are close enough to the remains to have impacted them;
- to water drainage channels;
- to depressions or mounds caused by fallen trees;
- to any other alterations of the landscape caused by humans or animals (e.g., holes caused by cadaver dogs, shovel test pits created during search activities, campfires, exploratory windows dug by the archeologists into the grave, mounds of dirt caused by construction activities, etc.).
- Feature numbers are not assigned to items of evidence.

(11) Stage 2: Expose the surface of the grid

- Scrape the surface of each unit with trowels into dustpans and then into buckets.
- Do not go deeper than about 1 to 2 cm into the topsoil.

- Scraping should start in the more peripheral units, progressing inward towards the remains.
- Similarly, scraping within a unit should start at its outside edge, moving inwards. This will ensure that hidden evidence is not kneeled on and that debris is not piled onto unexamined surfaces, further burying evidence.
- Screen each unit separately through 1/4" mesh, making sure to help the screeners keep track of where each bucket came from.
- Any evidence recovered during this stage is given an item number, bagged, and recorded in the log.
- Establish a remote spot to dump screened refuse.
- Make sure to keep an eye out for insect evidence, hair, and fibers.
- When the grid is cleared, take photographs of all features and map in relevant boundaries.
- Clear the entire grid before proceeding to Stage 3.

(12) Stage 3: Excavate the remains

- If the remains are not significantly buried (as for surface scatters), then Stage 3 procedures are bypassed.
- If a burial mound is present, remove it in its entirety to the level of surrounding (undisturbed) ground surface before proceeding into the graveshaft.
- Uncover the remains by removing all soil from within the burial feature.
- If the position or depth of the remains is uncertain, a 15 x 15 cm window can be opened first.
- Proceed by unit, and do not mix soil from different units (screen the material separately).
- Work from the center towards the edges of the graveshaft, to preserve toolmarks.
- Pedestal large objects on a tower of soil until their presence becomes unwieldy.
- Small, shallow objects can be removed as they are encountered if they will get in the way.
- Map and photograph the burial when the grave fill has been completely removed and the remains are completely exposed.
- The undisturbed soil outside of the graveshaft should never be excavated unless the burial feature has been fully excavated first.
- Always be alert for toolmarks in the walls of the graveshaft.

(13) Stage 4: Collect the remains

- A body still articulated with soft tissues can be wrapped in a clean sheet and placed in a body bag.
- Loose bones and other evidence should be bagged in paper sacks and transported in a large Rubbermaid container or in a body bag.

(14) Stage 4: Collection of wide scatters using triangulation

- For moderately-scattered evidence that is distributed no more than about 4 meters from the baseline, a tape can be run off of the baseline and eyeballed for perpendicularity. Record the measurements from the stretched tape and on the baseline for your coordinate point.
- It may be unwieldy to plot coordinate locations of evidence that is widely scattered, especially if a grid has not been constructed. Switch to triangular recording in these cases as follows:
- Use the 2 endstakes of the baseline as reference points. Make sure to record the distance between the stakes and record this value on the field data form.
- Attach a long tape to each endstake and pull both tapes out to the evidence.
- Record the 2 measurements, making sure to note which measurement came from which stake.
- Record the direction from the baseline that the evidence lies (e.g., either N or S of the baseline, since the tapes could be pulled in either direction).

- A team of 3 people works best with this method.
- The triangular data can be converted later to coordinate grid data using trigonometry.
- DO NOT take triangular measurements on any evidence found within an established grid! Use the proper coordinate data instead, measuring off of the strings of each unit.

(15) **Stage 5: Final cleanup**

- BEFORE scraping, take soil samples from below the thorax and abdomen areas, if needed.
- Scrape at least 2 to 3 cm of soil from below the remains and screen it for evidence.
- Make sure there is nothing else buried in the floor of a graveshaft. Sink a shovel test pit (STP) in the center if you are unsure whether you have reached undisturbed soil.
- Take a soil profile from one wall of a graveshaft and record it on the field data form.
- Take a soil sample off-site for comparison purposes, at least 5 meters from the body in undisturbed soil.
- Make sure that plant samples have been taken from the vicinity.
- Record the times that all anthropologists leave the scene.

GUIDELINES FOR ASSIGNING ITEM NUMBERS TO EVIDENCE

An item number can be assigned to any one thing or group of things that possess some intrinsic property, such as a common provenience, the same material composition, or a common exposure to some other element (such as blood). The significance of the intrinsic property and its relevance to the particular scene must be explained by the archeologist.

Examples:

(1) The skeletonized bones of a right hand are tightly clustered on the surface of one unit. They are collected and bagged under the same item number, with a single coordinate location measured to the center of the cluster; **OR**

(2) Multiple fragments of burned bone recovered in the screen during the sifting of a single stratigraphic layer are bagged under the same item number; **OR**

(3) Numerous small clumps of stuffing from a sleeping bag have been dispersed over the grid by carnivores. Their general locations are noted and photographed and then they are all collected in one bag under the same item number; **OR**

(4) Numerous bones are widely scattered over the surface of a cornfield and plotted using triangulation. Each bone is given a separate item number, which is written directly on the bone in pencil or on a string tag that is attached to the bone. If the bone can be identified in the field by the anthropologist (e.g., “left femur”), then it does not have to be numbered or tagged as long as no other left femurs are present at the scene. All bones are then placed in the same Rubbermaid container for transport; **OR**

(5) A partially decomposed body with many bones still articulated by soft tissues is lifted in its entirety into a disaster bag, being given a single item number; **OR**

(6) During the excavation of a burial, a hyoid bone with a possible perimortem fracture is found at a shallow depth in the neck area. It is removed before the exhumation is completed to keep it from becoming damaged and is assigned its own item number.

If there is any possibility that trace evidence (such as hairs, fibers, or blood) could be artificially transferred from different pieces of evidence simply by being bagged together, collect them in different bags. However, our experience is that these situations rarely apply to decomposed remains because they are highly mixed and disturbed to start with.

Evidence to be taken by police should be put in separate bags from the very beginning, to allow rapid transfer at the conclusion of the field recovery. In most cases, all evidence other than human remains and insects -- such as personal effects, clothing, and weapons -- should go directly to the police. We frequently ask the evidence technicians to collect this evidence directly by themselves (only after we have fully documented its provenience!), making their chain of custody easier to manage.

It is a good idea to have an array of packaging materials ready for use, including coin envelopes, plain white paper (for wrapping hair or other trace evidence), newspaper, a variety of sizes of sturdy paper sacks and plastic ziplock bags, plastic garbage bags, aluminum foil, small plastic vials, small cardboard boxes, and Rubbermaid containers. Bags should be labeled in waterproof ink on the lower half of the bag, to allow the top half to be folded down and stapled. The following information should be recorded on the bags:

Case or Site #

Date & Time

Item #

Brief Description

Provenience (including Unit # & Feature #)

Excavator's Initials

TYPICAL ITEMS IN THE ARCHEOLOGIST'S TOOLKIT

- large rocking screens with about 30" x 24" of exposed 1/4" wire mesh;
- geological pan screens for finer sifting of insect evidence & very tiny items;
- trowels;
- line level & plumb bob;
- large nails, wooden stakes, & chaining pins;
- string (fluorescent orange, yellow-green, & white);
- 30 to 50 m fiberglass tapes, 5 m pocket tapes, & folding rules;
- plastic pails (as many as you can fit!);
- dustpans & natural bristle brushes;
- toothbrushes;
- sharpened chopsticks or bamboo barbecue skewers (for excavating next to bones);
- spoons of various sizes;
- basic hand tools (hammer, pliers);
- pocketknife;
- compass;
- field notebook with waterproof paper & pencils, plus clipboards or a metal field desk;

- root clippers & scissor-style grass shears;
- small children's chalkboard & chalk, for making captions in photographs **OR**
- whiteboard with marking pens ;
- plastic graduated north arrow, for scale in photographs ;
- flat and round-pointed shovels, rakes, and a metal t-probe;
- plastic tarps & ropes;
- photographic gear.

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