

2. GENERAL EXCAVATION PROCEDURES

2.1. GENERAL GUIDELINES

Cleanliness is next to godliness on an archaeological site. A few millimeters of dust or loose soil on the surface of the excavated area can obscure soil changes completely and make stratigraphic excavation impossible. **Make sure to sweep often** (see §2.3 for instructions on recording archaeological cleaning). It is also very dangerous to allow loose soil to accumulate around the edge of the excavation. This will happen naturally as foot traffic disturbs dry soil, but it is very important for the edges of the excavation to be swept back regularly to prevent topsoil material from falling into the freshly excavated areas, and thereby contaminating the contexts revealed below.

The hot and dry climate of Greece and the Mediterranean region as a whole makes it difficult to see the stratigraphy of the site—and especially color changes—as dry soil loses much of the color it has when moist. **The soil should be sprayed with water when this becomes a problem.**

Ideally, it will be possible to recognize each archaeological context on site by its unique physical properties (i.e. appearance or texture) and to remove it neatly. In practice, however, some stratigraphic relationships will be difficult to discern without careful exploration of the boundaries with other contexts. In situations where it is difficult to find the edges between similar contexts, the junctions should be explored carefully until the boundaries can be established with certainty.

There may be times, however, when an error will have been made in deciding which context is stratigraphically

the latest. When an error is recognized, excavation of the context should be stopped immediately and no more material collected. The error must be described in the NOTES field on the context recording sheets: specifically, when and how the error was identified and the course of action needed to rectify the mistake. A new context number with new measurements must be registered in order to continue excavation, and changes must be made as appropriate to the new understanding of the stratigraphic sequence. Be sure that the Harris Matrix reflects the new understanding of the stratigraphic sequence, and not simply the order of excavation (which in some cases may be erroneous).

Since contexts are dated by the latest material contained within them, it is essential to avoid **contamination** in the form of later and stratigraphically different material (particularly pottery) mistakenly collected with any given context. Make sure, therefore, that **all** the soil from a specific context is removed before the context is closed and excavation continues with a new context.

As the removal of different contexts on site is recorded, keep in mind that what is written in the field will be examined, analyzed, and weighed by future scholars wishing to publish the archaeological material of Corinth and understand aspects of the development of the site. A future researcher may be interested in a specific context and the materials contained within it, as well as the context's relation to other deposits and features. For example, a future scholar interested in dating a wall will want to know if a certain context is a floor, and (1) if the floor is cut by a foundation trench for a wall, (2) if the floor goes directly up to the wall or over the cut of the foundation trench, or (3) if the floor goes over the top of the wall. In example (1), the floor pre-dates the wall. Any context that is cut by the foundation trench must have existed before the wall was built, and finds from these contexts could give a "pre-occupation" date (the *terminus post quem* for the structure). In example (2), the floor was laid after the foundation trench was dug and the wall was built, and all three are part of the

same structure. Any finds from this floor are from the use phase of the building. In example (3), the floor is covering the top of a wall that is part of an earlier building. Finds from above the floor will help date the abandonment of the structure (i.e. its *terminus ante quem*). Describing the relationships between contexts during excavation therefore requires interpreting not only the function and formation of the context being recorded, but also its role in the greater web of human activity in this area over time.

On the DEPOSIT SHEET, the recorder's interpretations should be stated and evidence given in support of them, but sometimes it is only possible to fully interpret a context after it is excavated, its pottery and finds are analyzed, and related contexts are similarly studied. When this is the case, it is crucial that the new interpretation be added to the NOTES field on the same DEPOSIT SHEET and context record in the database. These additions must be labeled "Later Notes" so that is clear to anyone consulting the records in the future which comments were an interpretation made in the field and which were added later. Be sure to initial and date all "Later Notes."

During the recording process, both in the field and out, it is important to communicate with fellow excavators, recorders, and supervisors as, ultimately, all contexts that are excavated contemporaneously are related in some manner, and these relationships are crucial to understanding the site as a whole.

2.2. COORDINATE GRID MEASUREMENTS AND ELEVATIONS

Every context should have a plan. At Corinth, all plan measurements are related to a Cartesian coordinate grid system. Each point measurement is determined uniquely in a plane through two numbers: an X-axis value (easting) and a Y-axis value (northing). Thus, for example, a point in the excavation could be designated as: E265.76, N1003.57. The grid used at Corinth is also a reference to the grid on the

Hellenic Military Geographical Services 1:50,000 Korinthia map, which is in the HATT projection but is easily converted to the newer ΕΓΣΑ87 projection. Because the values in the system are large and unwieldy (e.g. E7043.76, N16362.75), a benchmark closer to the grid for the ancient site has been established to keep the numbers small and with positive values. For the sake of uniformity with other work on the site since 1960, all elevation measurements are related to the benchmarks established by the Hellenic Military Geographical Service monuments (Robinson and Weinberg 1960:238). Measurements are taken using a total station, and all context recording sheets and drawings reflect these benchmarks (eastings and northings are recorded in meters, and elevation in meters above sea level). **Measurements should always be taken to the nearest 0.01 m.**

All supervisors should learn how to use the total station at the beginning of the excavation season, as well as how to physically set up the machine and tripod and how to use the machine to take accurate readings using the reflective prism.

When a new context is excavated or described, **representative elevations must be taken** on the surface of the context; if the context runs into the edge of excavation, elevations must also be taken along that edge. Several representative bottom elevations must also be taken on the surface revealed by the removal of the context. In the case of a wall, elevations should be taken on the highest preserved stone, the last stone at both ends of the wall, and/or the last stone before the wall runs into the edge of excavation. While the STRUCTURE SHEET requires only maximum elevations and coordinates north and east of the permanent benchmark, several elevations should be taken on the surface of each context—as well as below it after it is removed—so that the general contours of each context can be reconstructed after excavation. These elevations must be recorded on the plan of each context using the appropriate drawing convention (see §6.2.3).

2.3. ARCHAEOLOGICAL CLEANING

There may be times when it is necessary to scrape or sweep down an area that is composed of several different soil contexts (e.g. to prepare a section for drawing or a large area of the site for photographing). Any material from this operation should be collected on its own and assigned a new unique context number; this will prevent it from being added to the material from another discrete context and thus contaminating it. If it is possible to ascertain **exactly** which contexts are contributing materials to this cleaning operation, these numbers should be entered in the NOTES field of the appropriate context recording sheet for the cleaning operation. While material collected during the cleaning of multiple contexts may not be useful for dating or interpreting an individual context on site, the material might be useful to the museum staff at the end of the season for the purposes of mending pottery or other finds, and so it is worth keeping at least temporarily.

Cleaning “contexts” are not included in the Harris Matrix because they are not true contexts, but rather units created as a means of tracking finds during cleaning. If the cleaning operation extends over multiple contexts, it is unnecessary to describe the soil in the relevant soil description fields on the various context sheets. However, measurements and elevations must still be entered on the DEPOSIT SHEET for each cleaning operation, and a description of the cleaning and why it was performed must be entered in the NOTES field.

2.4. BALKS

If the “Last In, First Out” principle cannot be followed for some reason, a protective strip of soil or a “skin balk” should be left around the later context while the earlier context is being excavated. Sometimes other techniques may also be employed to protect the archaeological integrity of the site, to prevent contamination, and to explore potentially important features within a reasonable time frame.

2.4.1. Skin Balks

Skin balks protect against contamination of the earlier context by creating a barrier between the earlier and later contexts. If the strip of soil is excavated later, it should be assigned its own context number and its relationship to the earlier and later contexts should be made clear in the NOTES and HARRIS MATRIX fields.

2.4.2. Pedestalling

In an ideal open-area excavation, pedestalling is unnecessary; however, in reality it is unavoidable in certain conditions. For example, it is against Greek law to remove a wall without a permit, and so at Corinth some walls must have skin balks and be pedestalled. Alternatively, an excavator may encounter an object (such as a large boulder) that cannot be removed safely for some reason; in this case, the object should be pedestalled and a skin balk used, if necessary.

2.4.3. Sectioning

In open-area excavation, sectioning is generally avoided because it is antithetical to the principle as a whole. However, it is occasionally a necessary and wise choice. At Corinth, contexts for which sectioning is appropriate include large pits and deep fills characteristic of the Late Roman and Medieval periods. In these cases, a section or sample of the pit or fill will often provide enough information to determine whether the entirety should be excavated. Before sectioning, the entire context should be drawn on a top plan and the area to be sectioned clearly indicated. Once completed, the section will reveal a scarp or vertical face (which can also occur when a skin balk is left in place). This vertical face (see §4.3) should be recorded with drawings and photographs.

2.5. DRY SIEVING

Dry sieving guarantees nearly complete retrieval of all archaeological material larger than the size of the sieve mesh from a given context. In addition to pottery and coins, dry sieving may recover other small objects that are impossible to recover manually, such as mammal and fish bones, glass, carbonized seeds, and eggshells. In addition, the recovery of carbonized finds and microfauna would indicate that water flotation (see §2.6) should be used on the context. Certain contexts will be more rewarding to sieve than others, and it is essential to consider the kind of data that is sought before determining the proportion, mesh size, and method of sieving. Primary deposits (**the fills of pits, hearths, floors, roads, foundation trenches, and the matrix of structures**) should be 100 percent dry sieved, with a portion sampled for water sieving. Secondary and disturbed deposits (**topsoil, agricultural plow zone, robbing trenches, dumped fill, and leveling fill**) should be sieved only when it is very important to establish a date for their deposition and to aid the understanding of the site's development. Secondary and disturbed deposits may contain an overwhelming amount of early material, and it may be important to see if there are any later pieces. In this case, a proportion can be sieved as an experiment, and if needed, 100 percent can be dry sieved. In other cases, sieving is a poor use of time and excavation resources. For example, sieving for pottery in a context composed of degraded mud brick will produce huge quantities of tiny sherds that were reused as temper and that predate the construction of the mud brick wall, but virtually no material useful in dating the context.

The reasons for sieving a particular context should be made explicit in the NOTES field on the DEPOSIT SHEET. In addition, the size of the mesh used (typically 5 mm) and the percentage of the total context that was sieved should be recorded in the DRY SIEVING field (see §6.2.14). The latter can be estimated by counting the number of buckets of soil removed.

2.6. WATER FLOTATION

A water flotation machine forces water upward from below a soil sample (Fig. 3). Light materials—such as small bones, seeds, and carbonized organic materials—float and are thus propelled by the flow of water toward collection sieves. The rest of the sample is washed clean of any soil, leaving behind heavier material—any larger microfauna, botanical material, and anthropogenic finds—that can be sorted once they are dry. Although limey soils, such as those at Corinth, are generally not good for pollen preservation, the micro-chemistry of certain contexts may be ideal. Regardless, the recovery of microfauna is an important part of understanding the archaeological record and the processes of site formation because it recovers artifacts and ecofacts not possible to obtain through dry sieving.

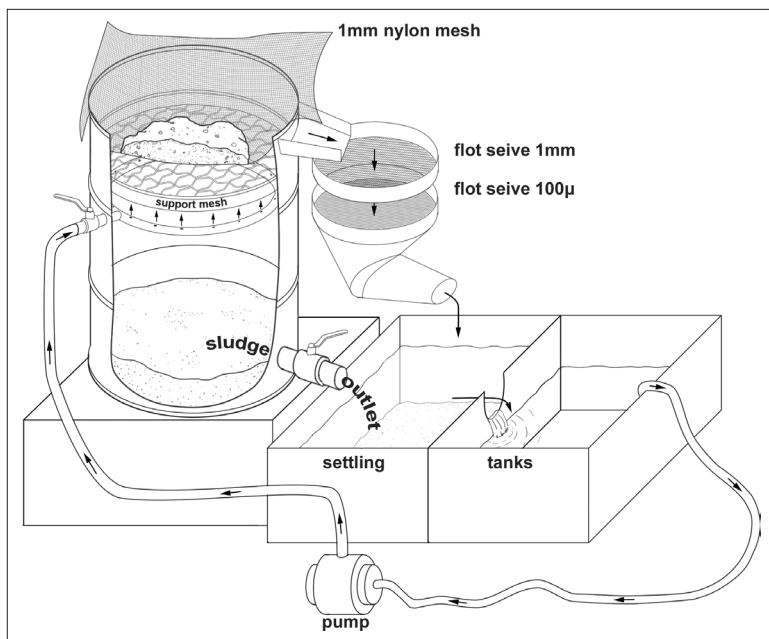


Figure 3. Diagram of a flotation machine. Drawing J. Herbst.

Certain deposits are better suited to water flotation than others. Deposits that should always be sampled include hearths, pits, sewers or drains, wells, floors and surfaces, depressions in floors, areas with a high concentration of burned material, storage and working areas, and the contents of whole vessels. If the fill of a pit or well is sampled, a sample of the context it cuts should also be taken for comparison. When a sample is taken for water flotation, all or a percentage of the remainder of the context must also be dry sieved. As a general rule, contexts should only be sampled if they are well stratified and constitute an archaeologically defined feature whose function and relationship to the site is understood. Sampling a random anomalous feature will not clarify its formation, and sampling a context that is poorly stratified will be of no help to the excavation. By keeping the Harris Matrix up-to-date, relationships between contexts will be transparent, thereby enabling the development of a more successful sampling strategy.

When taking a sample for water flotation, **the minimum sample size is 10 liters (about 2.5 gallons)**. The sample should be collected in plastic bags or buckets that are labeled with wooden tags. If the context is too small to remove 10 liters of earth, a percentage of the context may be sampled and this percentage noted in the PERCENT OF CONTEXT field on the SAMPLE SHEET. **One SAMPLE SHEET must be completed for each sample from a single context.**

In certain instances, such as a floor deposit or a kitchen, the water flotation sampling strategy may differ. The SAMPLE SHEET allows for such instances. In every context in which multiple water flotation samples are taken, a new sheet must be completed for each sample. In the special situations described above, such as a floor deposit, the location where the sample was taken from within the context should be indicated in the SKETCH PLAN field (see §2.6.1.11) on the SAMPLE SHEET.

Setting Up and Operating the Water Sieve for Flotation: Instructions by Katerina Ragkou

The types of finds recovered from flotation will help in understanding the nature of the sample's context. At times, the sample may produce surprising results: for example, the flotation of certain contexts at Corinth has recovered chance finds of metal objects, including a lead seal and coins.

1. The most important step in preparing for water flotation is to place the small sieve in front of the barrel; if the sieve is not placed properly, all of the small residue will be lost. The small residue should never be touched by hand, as doing so can damage carbonized seeds or charcoal pieces.

2. Adjust the net to fit the barrel properly. Without the net, the soil will fall into the barrel and all of the data will be lost.

3. Check how many liters are in the sample and record this number in the SIZE (in L) field on the SAMPLE SHEET. Measuring the sample's volume is necessary to calculate the percentage of the context that was taken as a sample. Record the weight of the sample on the NOTES field of the SAMPLE SHEET if asked to do so by the Director of Excavations.

4. Pour the sample into the water. Wash the sample by stirring it until all the mud disappears. Any pieces that float should pass into the small sieve.

5. Allow the sample to dry. Do not attempt to sort the sample while it is still wet, as certain microfauna, such as fish bones, will remain attached to the wet soil.

6. Record any observations made during the water-flotation process (e.g. visible seeds, no visible seeds, half bits of charcoal, etc.). These notes will be important for gaining a general understanding of the context.

7. Place the small residue and its identification data on a paper towel and allow it to dry. Once the paper towel is dry, place the small residue in a bag and store it in the museum, together with the other light residue from the same context. A palaeobotanist or the charcoal expert will analyze the small residue once the flotation is complete.

8. When sorting the finds, use tweezers to separate the finds into different categories. Seeds found during sorting should be stored in plastic bags. All other finds from a single sample should be stored in a cardboard box that is labeled on the outside with the context number—do not store the finds separated by species (e.g. all of the fish bones together). Finds from each individual sample taken from a context are stored together, as are all samples from the same context.

During the flotation process, the barrel must be cleaned as often as possible—usually after about 10 samples have been processed. Every

part of the water sieve must be kept clean. If the sieve is not cleaned regularly, accumulated mud will prevent the system from operating properly and risk contaminating the samples. At the end of the season, be sure to clean the water sieve thoroughly one final time.

2.6.1. Completing the Sample Recording Sheet

2.6.1.1. Title Tag, Context Number, and Chronological Range

Enter the TITLE TAG (see §6.2.1) and CONTEXT NUMBER of the context being sampled. Later, complete the CHRONOLOGICAL RANGE OF CONTEXT field (see §6.2.2), marking which material was used to date the context. Samples do not receive a new unique number—they are assigned the same number as the context from which they are taken.

2.6.1.2. Sample Number

Note how many samples were taken from the context (e.g. SAMPLE NUMBER “1 of 4”). This information will be useful in situations where several samples are taken from the same context but are kept separate for comparative analysis (such as a large floor or a burial) (see §2.6).

2.6.1.3. Coordinates, Elevations, and Dimensions

Take measurements (in meters) of the location and size of the sample and enter this information into the COORDINATES OF SAMPLE (see §6.2.5), ELEVATIONS OF SAMPLE (see §6.2.3), and DIMENSIONS OF SAMPLE fields. These measurements are for the sample itself, not the context.

2.6.1.4. Sample Taken from Plan or Section

In the SAMPLE TAKEN FROM field, note whether the sample was taken from the plan (i.e. from above the context—this will be the norm) or from a section (i.e. the vertical face of a section, see §4.3).

2.6.1.5. *Amount and Volume of Sample*

Estimate the PERCENT OF CONTEXT sampled, the SIZE (IN L) of the sample, and the NUMBER OF CONTAINERS USED to take the sample (see §6.2.14 and §6.2.15). Use the number of containers to estimate the size of the sample.

2.6.1.6. *Methods and Conditions*

In the METHODS AND CONDITIONS field, briefly describe the methods used to collect the sample and the soil conditions (see §6.2.13).

2.6.1.7. *Inclusions*

List any INCLUSIONS IN THE CONTEXT being sampled, and explain why sampling to water-sieve the context would be valuable (e.g., presence of organics, carbon, shells, etc.) (see §6.2.9).

2.6.1.8. *Harris Matrix*

Copy the HARRIS MATRIX OF THE CONTEXT BEING SAMPLED from the appropriate context recording sheet to this SAMPLE SHEET.

2.6.1.9. *Reasons for Sampling Context*

In the REASONS FOR SAMPLING CONTEXT field, discuss the reasons this context is being sampled. For example, is there a reasonable amount of organic material or carbonized organics preserved in the context? Is the context particularly wet or waterlogged? Were other related contexts sampled and this sample was required for comparison? Is this sample taken from a floor near a hearth or a food preparation area?

2.6.1.10. *Specific Questions about Sample*

In the SPECIFIC QUESTIONS ABOUT SAMPLE field, describe any questions about this sample. For example, will frequent types of animal bone provide information about diet? Will any seeds recovered provide information about the environmental conditions or the farming practices in use when this context was deposited? Have a series of stratified floors been sampled to show continuity or change in diet over time? These will not be the only questions taken into account during the post-excavation analysis, but they will help any researchers who consult the records in the future understand why this sample was taken.

2.6.1.11. *Sketch Plan*

Draw a sketch of the context showing the location of the sample. The sketch does not have to be to scale, since a top plan of this context will have been drawn already. Note dimensions or coordinate points and draw a NORTH ARROW in the labeled box. If multiple samples are taken from the same context, include them all on the same sketch so that it is easy to determine from where they were taken in relation to each other. If a fill from a pit or well has been sampled, a sketch of the context will suffice.