Fencing and Security of Archaeological Excavations

FAME Advice for Archaeological Practitioners

The FAME Health and Safety Guides are produced by the FAME Health and Safety Working Group to provide advice to its members to foster safe systems of work for development-led archaeological practice. They are not designed to replace existing, detailed guidance available from the Health and Safety Executive (HSE) / Health and Safety Authority (HSA) and other bodies, and must always be used in conjunction with that guidance, clearly referenced in each guide, where applicable.

FAME Health and Safety Guide 7: Fencing and Security of Excavations

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Definitions

Fencing - any demarcation or barrier.

Edge protection - a barrier strong enough to withstand a person falling against it, so preventing that person from falling over the edge being protected. There are engineering and scaffolding standards not referenced in this document which specify how edge protection must be designed and constructed to ensure safety.

Introduction

Archaeological organisations have a duty of care to prevent danger arising from their work. In the United Kingdom, this is enforced through the Health and Safety at Work Act 1974 (HSWA) and in Ireland, the Safety, Health and Welfare at Work Act 2005 (as amended) (SHWWA). The focus is often on the archaeologists, but we, archaeologists, need to consider ensuring the work area and excavations do not pose a risk to others who may come onto the site as visitors or trespassers.

In construction, fencing is usually addressed by a client or Principal Contractor (PC) if the project falls within the CDM regulations in the UK. In Ireland, if the Safety, Health and Welfare at Work (Construction) Regulations (Amended 2021) (SHWWCR) apply, then it is the responsibility of the Project Supervisor Construction Stage (PSCS). However, most stand-alone archaeology projects are not subject to CDM in the UK (see FAME Health & Safety Technical Guide 0), and this guide is intended for situations where the archaeology organisation has to make the fencing decisions. Though where CDM/SCWWCR applies, it may also be useful in discussions with the PC/PSCS, who have fencing rules that are impractical or inefficient for archaeology.

Practice

Any person planning and managing an archaeological site should carry out a risk assessment, including hazards from, and risks to, unauthorised people (and animals) that may come onto the site. During this, it is important to consider:

1. How to deter unauthorised access. This is both for reasons of security and for reasons of health and safety. We should also protect wildlife and livestock from suffering harm as a result of the archaeological work.
2. How to ensure the perimeter of the site is secured and/or that the critical locations/facilities are secured, especially the excavation.
3. There is a need to consider both unauthorised access on foot or access by vehicle, including farm machinery on some sites.

4. Consider the provision of fencing if the excavations are, or are expected to be, greater than a certain depth, for example, 0.5m deep, or are in waterlogged or non-cohesive soils. This should be risk assessed and site-specific.

5. During the working day, some excavations may not need to be fenced unless unattended and out of sight. There will be exceptions to this.

6. Some factors may increase the risk of an unauthorised person entering the site, as well as the risk of them suffering harm. In these cases, there will be a greater need for fencing. Such factors include, but are not limited to:

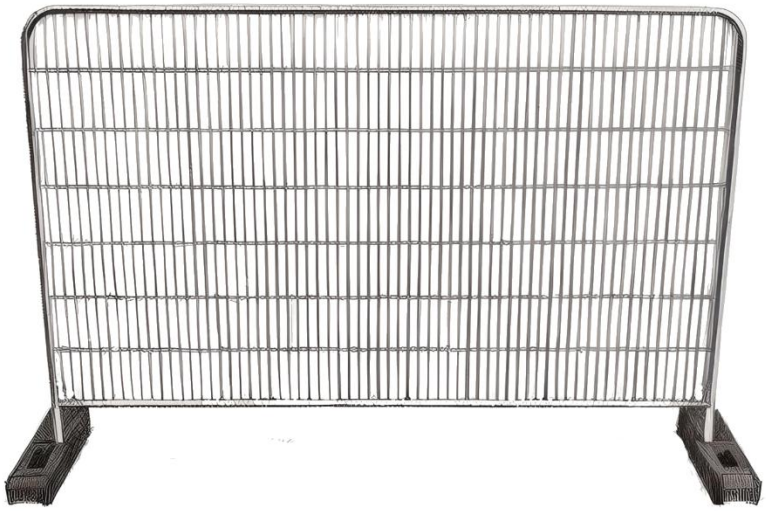
    - rights of way are present;
    - use of the area by the public, such as dog walkers, even if there is no right of way;
    - other work is taking place nearby;
    - other work that may take place nearby (eg crops that might be sprayed);
    - presence of livestock in adjacent field;
    - occupied houses are nearby; or
    - vulnerable people or children might be nearby (eg schools, care homes).

7. It is not an absolute that the perimeter of a site must be fenced. Natural barriers are often sufficient, such as existing hedgerows. In the UK, CDM regulations allow for a site to have its perimeter identified by suitable signs and be arranged so that its extent is readily identifiable.

8. Consider fencing a footpath/right of way, rather than the site.

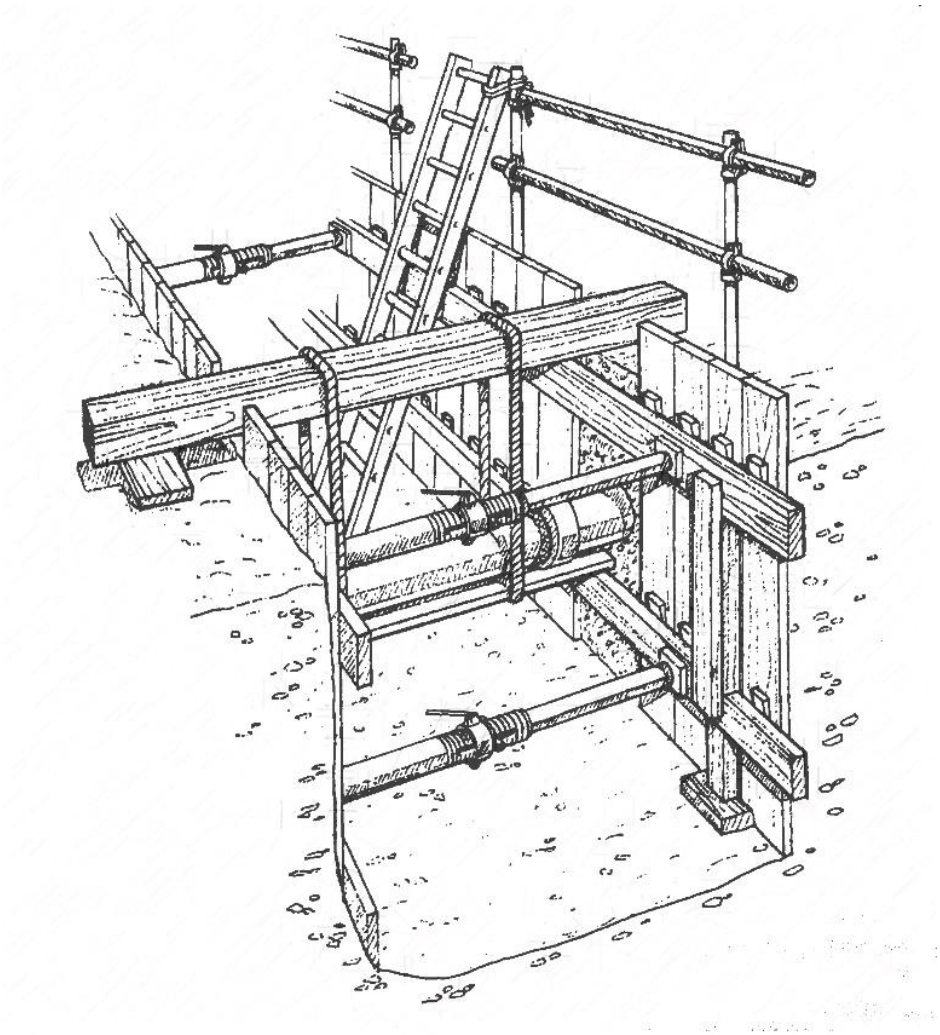
1.1 Options to fence an excavation

1.1.1 Heras-type fencing



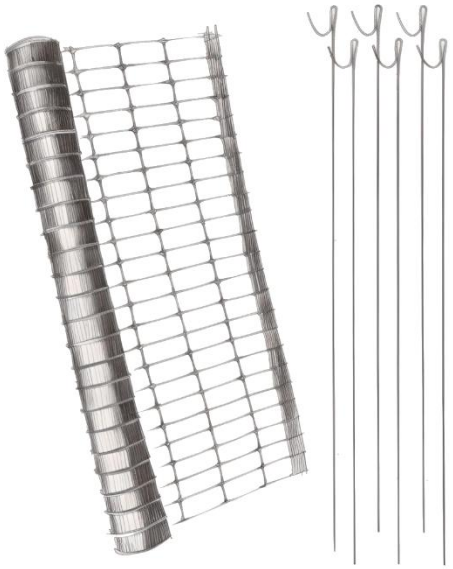
A single Heras panel is not itself load bearing, so should be set back from any excavation/trench edges. Panels can be linked together, but rigidity depends on the number of panels and the arrangement involved. Most appropriate for fencing off-site perimeters, large areas and securing overnight plant locations. This type of fencing must be placed away from an excavation/trench edge to avoid falling panels becoming a hazard. The most popular deterrent where there is a risk of trespass is foreseeable, especially in combination with security cameras. Ideally, supply and installations should be undertaken by a fencing contractor, especially for site perimeter/large areas, but see pedestrian barriers, point 6 below.

1.1.2 Edge protection built to scaffolding standards



Most likely as part of temporary works required for a very deep excavation. The only one of these options designed to withstand a person falling against it and so prevent a person from falling into the excavation. Would have to be installed by a specialist contractor.

1.1.3 Netlon

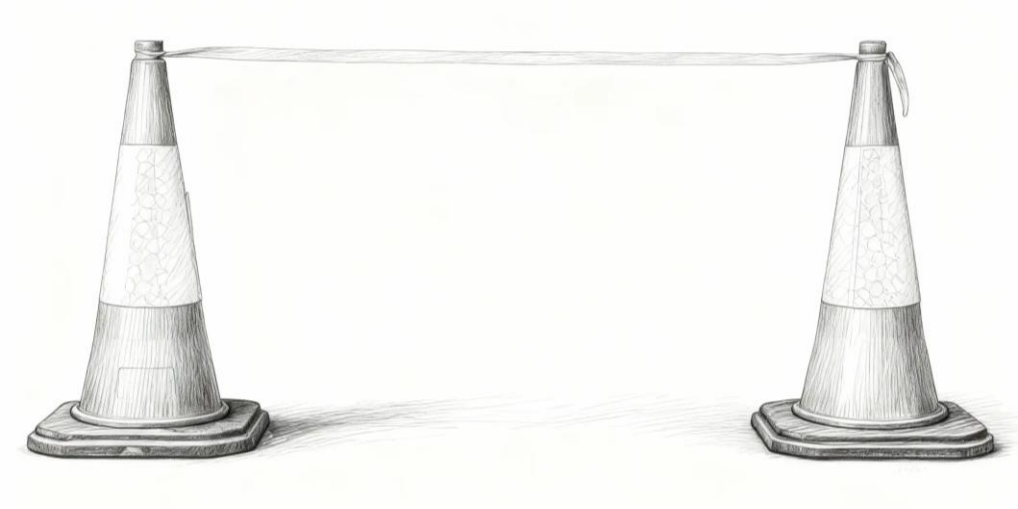


Traditionally with metal road pins, which are discouraged by many clients where risk of unmapped services is high. In some ground conditions, alternative posts made from plastic and wood are viable. Netlon is an expendable plastic material and therefore is inconsistent with sustainable aspirations/goals. Some consider that this option may well have to be phased out in due course.

1.1.4 Rope and post

Used as an alternative to 'netlon and post', works well with wooden posts. Sometimes poorly visible but less likely to be disturbed by weather or animals than with 'cone and tape'. Merely demarks the hazard.

1.1.5 Cone and tape



Higher visibility than rope and post, but, again, merely demarking hazard. Plastic chain is an alternative to the tape. Does not involve ground penetration so viable on hard ground and where unmapped services are expected.

1.1.6 Pedestrian barriers

Not reliably load bearing as linking can be poor or readily broken. Designed for street works and event crowd control. Not typically used for site perimeter. Like Heras they do not readily suit smaller irregular-shaped excavations or features, so these are most likely to be used to fence an excavation area or trench. On most construction sites, handling to the point of use would be by a materials handler, as

excavators and dumpers are not ideally designed to move fencing sections. Therefore, manual handling to the point of use could be a significant additional risk added by selecting this option, plus the time for staff to do this could be significant time away from the archaeology.

1.1.7 Natural or existing boundaries

This could be walls, fences, gates, etc. It is important that any natural or existing boundaries are surveyed for integrity and any gaps or weaknesses are supplemented with other fencing. Not all clients are comfortable with using this option.

1.1.8 Spoil heap

When next to an excavation, they do work to demarcate an excavation. They are climbable by people or animals, so are not secure. If fencing is needed, then place this outside the spoil. Inside the spoil may be near the edge of the excavation, and a fall risk. Spoil heaps can be tempting for youngsters to play on.

1.1.9 No fencing?

If we do not use any of the fencing options, aren't we doing nothing? We may well instead be taking measures that are proportionate and effective, such as:

- Cover the risk of a fall from height into an excavation at induction.
- Provide a clear and obvious point of safe access and egress from an excavation.
- Actively supervising work.
- Escorting all visitors. Some visitors may be less aware of the risk.

Examples

Here are two real-life examples from FAME members to highlight how the different options for fencing might be used on a site:

An example that was agreed with a tier one contractor

Fencing, where installed, to be typically 1m away from edge.

- less than 0.4m deep: no fencing required
- 0.3m to 0.6m: rope and cone sufficient;
- 0.5m to 1.2m: crowd barriers sufficient;
- over 1.2m: Heras + bespoke solutions required.

An example of fencing solutions on a dig at a Quarry site

- Quarry site already fenced off with a combination of stock-proof fencing and wooden post and rail fence;
- Possible access areas have warning signs;
- Staff and sub-contractors to report any unauthorised access to site manager;
- Safety soil bunds installed by Client between quarry working area and archaeological excavation.
- Safety soil bund between archaeological area and quarry edge;
- no pedestrians or plant to cross a soil bund;
- Within archaeology area, any deep, unstable or dangerous hand-excavations to be fenced off with netlon and road pins as a visual indicator of risk to archaeologists and client's staff

Further Guidance

Public protection - construction industry health & safety (hse.gov.uk)

https://www.hse.gov.uk/pubns/priced/l153.pdf CDM approved code of practice.

https://www.hse.gov.uk/pubns/indg401.pdf

Working at Height

https://www.hsa.ie/eng/topics/work_at_height/

Legal – UK

In the UK, the need for fencing comes under two requirements, access to a site by unauthorised persons and a fall risk.

1.2 Site boundary

The following regulations in CDM (UK) refer to access to a site by unauthorised persons:

CDM reg 13(4)

"The principal contractor must ensure that—

(b) the necessary steps are taken to prevent access by unauthorised persons to the construction site"

CDM reg 15(10)

"A contractor must not begin work on a construction site unless reasonable steps have been taken to prevent access by unauthorised persons to that site."

CDM reg 18(2)

"Where necessary in the interests of health and safety, a construction site must, so far as is reasonably practicable, and in accordance with the level of risk posed, comply with either or both of the following—

(a) have its perimeter identified by suitable signs and be arranged so that its extent is readily identifiable; or

(b) be fenced off."

Guidance in support of CDM regulation 13(4) uses the phrase "reasonable steps"[1] and suggests that the site boundary should be physically defined, taking account of the nature of the site and its

[1] Guidance in support of CDM regulation 15(10) uses the word "proportionate" but refers back to the guidance for 13(4).

surrounding environment and that special consideration should be given:

- where rights of way are present;
- where other work is taking place nearby; occupied houses are nearby;
- or where vulnerable people or children might be nearby.

Whilst pre-construction archaeology is not subject to CDM, it is subject to other regulations, including the Health and Safety at Work etc. Act 1974 (HSWA), and the expectation to manage the site boundary may, therefore, fall to the archaeology contractor. The requirement to secure the site boundary would then be under section 3 of the HSWA and is to the legal standard, **so far as is reasonably practicable**, the same as the CDM regulations. If it is viable for a construction site, then it is reasonably practicable.

1.3 Fall risk at an excavation

As soon as ground level is reduced The Work at Height Regulations 2005 apply. The definition of 'work at height' is:

> "Work at height means work in any place where, if there were no precautions in place, a person could fall a distance liable to cause personal injury." see: https://www.hse.gov.uk/pubns/indg401.pdf

HSE guidance is clear, this applies to an excavation, including archaeological excavations. The 'level of risk posed' by the depth of the excavation is also relevant to the CDM and HSWA duties relating to the site perimeter, as well as visitors and unauthorised people on the site.

As is the case with securing the site boundary, the CDM regulations contain useful guidance that will help archaeological contractors comply with the HSWA and The Work at Height Regulations 2005. For instance:

> **Work at height reg 6**
>
> "(3) Where work is carried out at height, every employer shall take suitable and sufficient measures to prevent, so far as is

reasonably practicable, any person falling a distance liable to cause personal injury."

Work at height reg 10

"(1) Every employer shall, where necessary to prevent injury to any person, take suitable and sufficient steps to prevent, so far as is reasonably practicable, the fall of any material or object."

CDM reg 22(2)

"Suitable and sufficient steps must be taken to prevent any person, work equipment, or accumulation of material from falling into any excavation."

The CDM duty is higher, as strictly speaking it does not depend on injury or degree of danger, yet is still qualified by suitable and sufficient steps.

Legal - Ireland

In the Health and Welfare at Work (Construction) Regulations Amended 2021, fencing is mentioned for working near water and for preventing electrocution, but the relevant aspects for most archaeological work are:

SHWWCR 30 (2)

"A contractor responsible for a construction site shall ensure for that site that—

"(a) the surroundings and the perimeter are laid out so as to be clearly visible and identifiable and have appropriate signboards,

(b) safe means of access to and egress from are—

(i) provided and maintained, and

(ii) indicated where appropriate, and

(c) appropriate precautions are taken to protect persons present, at or in the vicinity of the site, from risks which may arise from such site, for example, **by the provision of appropriate barriers**, where necessary, to prevent unauthorised entry."

SHWWCR 55 (Fencing of excavations, etc)

(1) A contractor responsible for a construction site shall ensure for that site that every accessible part of an excavation, shaft, pit or opening in the ground near to which persons are working and into or down which a person is liable to fall a distance liable to cause personal injury—

(a) has a suitable barrier placed as close as is practicable to the edge, or…

(b) is securely covered.

SHWWCR 56 (Safeguarding edges of excavations, etc)

"A contractor responsible for a construction site—…

(c) if necessary, shall ensure that appropriate barriers are provided."

Like in the UK, 'work at height' is a factor in the need for fencing. HSA has a similar definition for work at height as the HSE, 'Work at height is work in any place, including a place at, above or below ground level, where a person could be injured if they fell from that place.' Work at height is covered by Part 4 of the Safety, Health and Welfare at Work (General Application). The HAS guidance (Guide to the Safety, Health and Welfare at Work (General Application) Regulations 2007) on this area states that, 'You must do all that is reasonably practicable to prevent anyone falling a distance liable to cause personal injury.'

FAME Health and Safety Guides

Construction (Design and Management) Regulations 2015 (2020)
Safe Working Around Utilities (UK) (2021)
Near-Miss Reporting (2022)
Medication Side-Effects: Heat and Sun Sensitivity (2023)
FAME Utility Guide (UK) (2024)
Archaeology, Lyme Disease & Ticks (2025)
Heat Stress Indices for Safe Archaeological Work (2025)