

Appendix A - Repairing Erosion Scars

Introduction

One of the most common tasks to be carried out on archeological earthworks in grassland management is the repair of erosion scars. These are often the result of natural slippage or borrowing animal scrapes being exacerbated by livestock erosion. If left to develop they can become significant scars disfiguring the monument and resulting in the continued loss of archeological information. It is therefore important to stabilise the scar and restore a grass sward.

Method of Repair

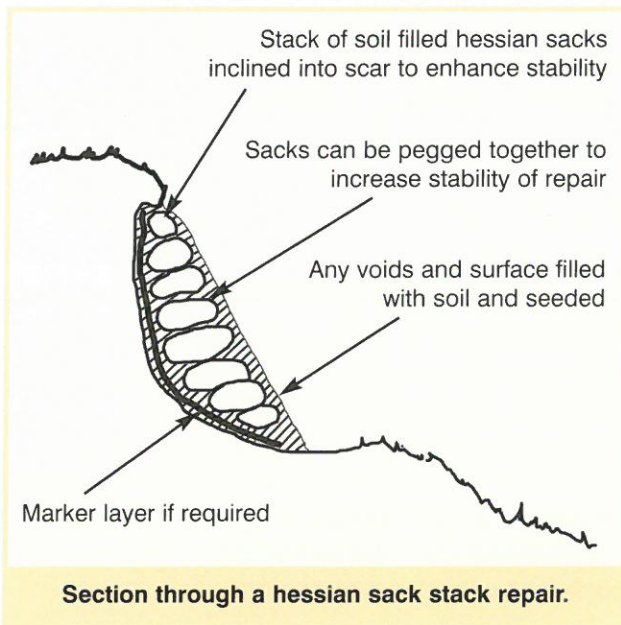
There are a variety of methods available for the repair of erosion scars. There are;

- Soil infill
- Undercut lip of scar and natural recovery or soil infill
- Turf stack or soil filled sack stack

Soil fill can only be used where the erosion scars are minor and shallow, as greater depths are relatively unstable and will be prone to slippage and settlement that may permit the erosion to restart. The technique is best applied to areas where there are a large number of minor scars or the scar is too shallow for any other method. The soil is added as a spread over the scars and re-seed with an appropriate grass seed mix.

Undercutting the lip of an erosion scar lessens the steepness of the scar and therefore aids its stability and ability to recover. The scar can either then be re-seeded if the angle is sufficiently stable or infilled with soil and then re-seeded if not. The disadvantage of this method is that it does necessitate further damage to the monument to achieve stability, which rarely acceptable and therefore this method should only be used where other solutions are impractical or inappropriate.

Turf or stacks are very effective repair methods. The stack is built up at a slight angle so the layers recline slightly into the erosion scar increasing the repair stability. Any voids are filled to reduce settlements and the surface seeded with a suitable grass seed mix.



This method of repair has the advantage that it does not necessarily aim to restore the original profile of the monument, rather it aims to achieve the minimum repair to achieve the stability of the movement.

Therefore it is often easy to recognise that damage has occurred at the site even after the repair has established. The other advantages of the method are that it is very stable and in the case of turf stacks, very quick to establish.



Turf stack repair being constructed.

A variation of the soil infill is the revetment infill. Here a variety of materials are available to create a revetment that then supports the infill behind. This method of repair is best suited to areas of gully erosion where commonly a timber or hessian sack revetment pegged or wedged into the gully is used. The infill materials can then build up behind and re-seeded.

Is a marker layer needed?

A marker layer is only required where there is the potential to confuse in future assessment the repair with the in situ archeological remains. An example of this would be where the monument is a bank that has been created between two turf stacks. A turf stack repair would therefore have the potential to be confused with the archaeology.

If a marker layer is required then this will need to be a layer of material that is easily distinguished from the archaeology, eg. sand, gravel or geotextile. If the sand or gravel is used then care will need to be taken to ensure that the materials does not alter the burial environment.

Aftercare

With all repair work there will need to be some aftercare work to ensure successful establishment of the repair. The most common operations to consider are;

- Watering: during periods of drought it may be necessary to artificially water to ensure successful germination and establishment of a grass sward on the repair.
- Over-seeding and adding soil may be necessary as there will commonly be some settlement in any repair and germination of grass seed may not always be successful
- Fencing out livestock is one of the critical considerations. If cattle or high stock rates of sheep are present then it will be necessary to exclude livestock by fencing off the repair while it establishes. Fencing is less critical where low stocking rates of sheep are present as any damage to the repair will be minor and can be adding soil and over-seeding.

- Control of scrub growth may be required as the removal of grazing and the presence of bare ground will provide the potential for scrub vegetation to establish.

Preventing Future Erosion

Fundamental to management of the earthwork is the prevention of future erosion scars developing. Ideally action needs to be taken as soon as a new scar starts to develop.

At this point it will be sufficient to dress the developing scar with soil, re-seed and exclude livestock for a couple of months with some form of temporary barrier. However, this level of management needs regular monitoring of the monument that is not always practical.

An alternative method is to reduce or remove livestock when the monument is most vulnerable, normally in winter and carry out an annual programme of minor repair to prevent erosion developing.



Turf stack repair on completion



Turf stack repair two months later