

Technical Specifications for Simple Retaining Walls

Preamble

The following notes form part of a series of technical specification leaflets designed to give guidance on particular aspects of the craft of dry stone walling. Before giving general guidelines, several points should be understood.

- Stone supplied must be clean. Dismantling of existing structures should be done by hand.
- The difference between good and bad work is probably greater than any other skill. It is essential to obtain the services of a qualified waller, particularly with prestigious projects. DSWA operates the only tiered, national, practical skills certification scheme in dry stone walling.
- The waller can obviously only work with the stone supplied: specify a style/design that can be built with available material.
- Where possible, match stone type and style to the tradition of the area.

Guidelines

For practical purposes, retaining walls may be divided into two types: "domestic" walls, under 1.5m in height and not subject to heavy loading, such as field walls with a substantial difference in ground level on either side, garden retaining walls or ha-ha. These notes refer to these "domestic" walls.

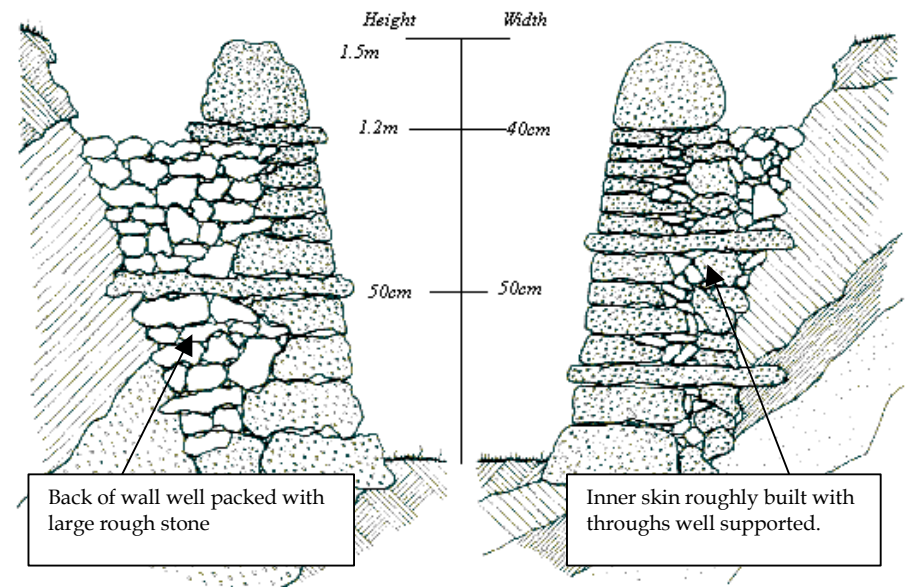
The second type is fully load-bearing walls and a civil engineer should be consulted at all times. However, dry stone in civil engineering work is a very narrow field. DSWA Master Craftsman Certificate holders who regularly undertake large-scale contract work could assist engineers in designing safe sections.

A retaining wall may be formed by building a standard wall with carefully laid back-fill. However, in some regions many retaining walls are "single skin" only, whereby only the outer face is built up, back-filling as work proceeds, using carefully placed stones of sufficient size to support throughstones.

There are many variations with retaining walls, but the following points are almost universal.

- In forming a new retaining wall, the banking must be cut back to a distance at least equal to half the height of the finished wall. If the material behind the wall is loose or liable to slumping, cut back further and/or slope the face of the bank away from the wall.

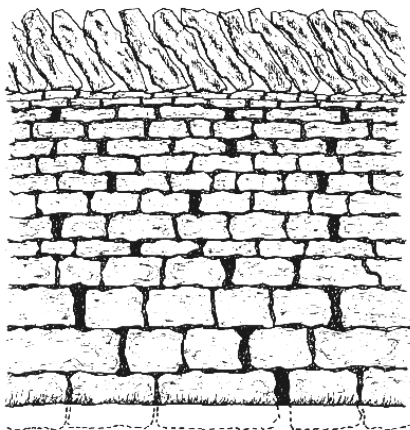
- The foundations must be hard and level. Insert a foundation course in all instances, ensuring these stones and subsequent building stones are placed lengthways into the wall. The width of the base of the wall is usually one-third to one-half of the finished height.



Sections through a Scottish-style retaining dyke and a Yorkshire-style (right) retaining wall.

- The batter (inward slope) should be 1:6 for maximum strength and longevity; greater if there is any doubt about the likely effect of lateral pressure. Such pressures are greatly increased by water saturation in wet spells, with wall failures increasing markedly at such times. Low walls can be built with less batter, sometimes almost vertically, but there may be a pay-off in terms of durability.
- Lay throughstones as frequently as their availability permits, choosing stones that tie back as far as possible. Ideally, they should be tied into the bank behind, with extra excavation if necessary.
- Particular attention should be paid to the face stones, to ensure that each one runs into the wall and not along the face. It is important to use as large face stones as possible. The bedding planes should be parallel to the base.

- Use selected, heavy copes (top stones) particularly if the wall is backfilled to the top. Occasionally, a wall is topped with large, heavy stones laid flat to be level with ground on the higher side.
- Dry stone walls are free draining. However, where the hearting is solid (where soil has been incorporated in garden terracing), or where crushed waste is employed, construct weep holes for drainage at 2-3m intervals, more frequently where water is a problem. It is not uncommon to find water from rock strata, field drains, etc when cutting back the bank - and this should be taken away by constructing drains or drainage channels in the foundation to prevent water erosion.



Front elevation showing weep holes
in a Yorkshire-style retaining wall

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