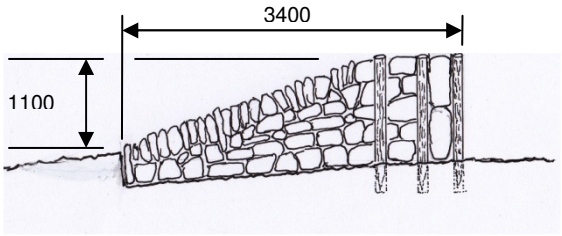
DULVERTON WEIR

Original date of construction: 12th to 13th Century

Original length: 65.0 metres (approx)

Length remaining: 26.7 metres



Cross section dimensions (in millimetres)

It is widely recognised that watermill technology was introduced into the UK in Roman times. By the medieval period there had been an explosion in the number of mills and technical sophistication so that by the time of the Domesday survey, there were already around 6000 watermills recorded. All of these mills will have been dependent on the management or adaptation of watercourses for their power source so there was a proliferation of weir construction at that time.

The ancient (original) structure of Dulverton weir appears to have been built in a style that is typical of the Norman period. At first sight, the weir might appear to be a very simple structure. However, closer inspection reveals that the people that built this weir knew exactly what they were doing and clearly had experience.

The materials are local stone and timber stakes. The design comprises five elements with each element supporting the others. These are:

1. The "toe" of the weir - a step cut in the river bed for the structure to compress against.
2. Oak stakes – hammered into the rock bed of the weir to prevent horizontal slippage (probably located into holes actually drilled into the river bed).
3. Facing stones – large flat stones laid on edge across the upstream face of the weir to prevent seepage.
4. Substructure – large random sized stones laid from the toe going forwards to support the stakes horizontally and the glacis stones vertically.
5. The glacis – rounded edge stones laid from the toe going forwards to form a slope from the crest of the weir down to the toe (approximate angle 20°).

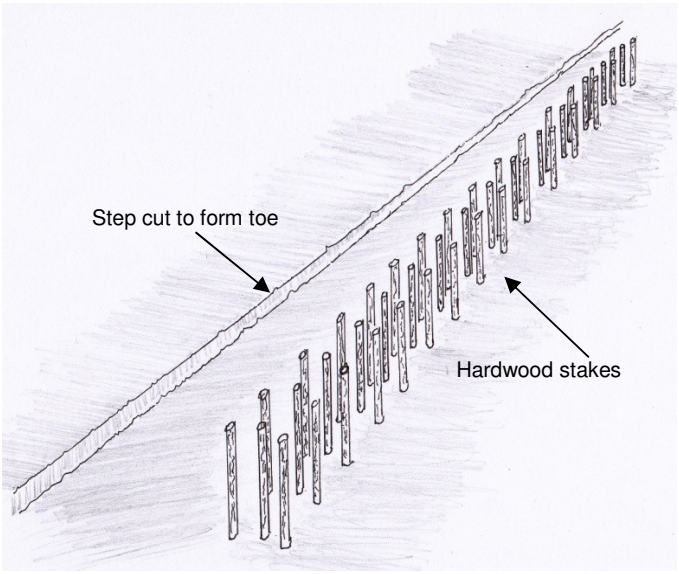
Photo showing flat stones at the "toe"

Photo showing rounded stones of the "glacis"

How was the weir built?

The site was prepared by excavating the gound to form the weir pool and the level bed of the weir. A step was cut in the edge of the river bed to form the toe of the weir.

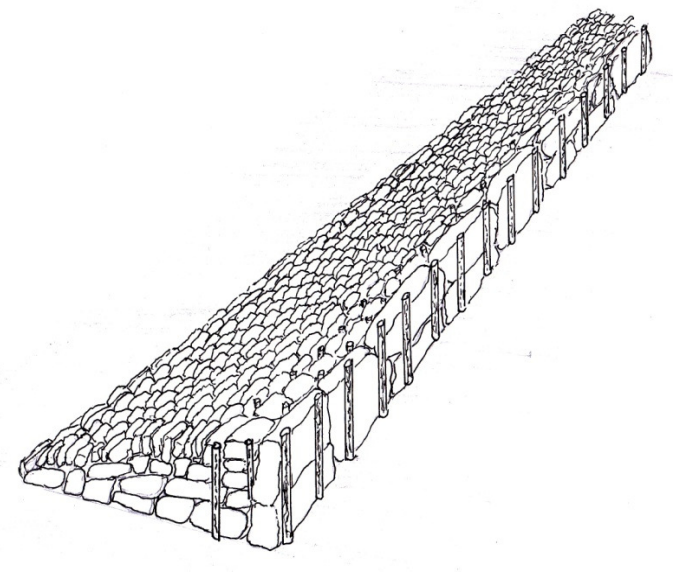
Holes were drilled in the rock to accomodate at least 3 rows of hardwood stakes about 600mm apart



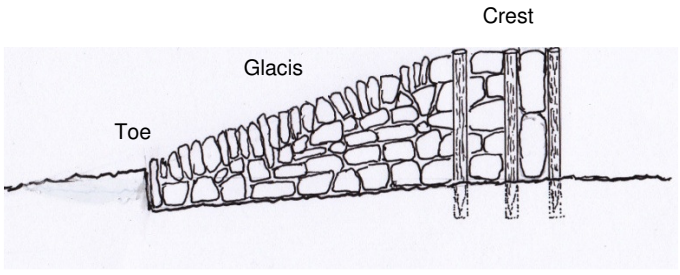
Between the first two rows of stakes, large flat stones were laid on edge across the face of the weir to prevent seepage.

From the toe going forwards, the substructure was laid to provide lateral support behind the facing stones and to form the "crest" of the weir.

Above the substructure, the "glacis" was formed by laying rounded stones on their thinnest edge, similar to a dry stone wall but at an angle of approximately 20° to the horizontal.



Under pressure from water, the resulting structure is always in compression against the toe and, therefore, is resistant to displacement of stones by the water flow. In effect, the pressure squeezes the stones against each other, holding them in place.



Cross-section

As more is discovered about the Dulverton Urban Watermill Landscape it's becoming more and more obvious that Dulverton Weir and Leat is not the simplistic and charmingly haphazard structure that most have formerly believed. When it was built it was at the cutting edge of technology and was built by skilled individuals who may not have called themselves 'Engineers' (the term had not been invented at that time) but in effect, that is precisely what they were. The more senior of these 'Engineers' were often from Mainland Europe, where the technology was more advanced.

Contemporary accounts of the time show that there were groups of skilled individuals travelling the country and available for hire to build cathedrals, churches, castles and other complex structures (including weirs and leats). This situation has been repeated through-out history with the building of the railways ('navvies'), motorways and more recently in Dulverton, the dam on Wimbleball Reservoir.

The effect of the arrival of large groups of men and 'camp followers' on small rural communities has been widely written about. It's probable that one or two of the men who built the weir and leat met local women and stayed on (just as happened with Wimbleball Dam).

It's interesting to speculate whether some people on Exmoor are not as English as they think.

Peter Romain and Philip Hull