

MASTERCLASS - Cloddiau

As part of the Branch's activities to help preserve Cloddiau earlier in the summer we ran our first Clawdd Construction Training Course. Hopefully it will be the first of many and to provide a taster of what can be a unique way of using stone this masterclass deals with one aspect of the work, that is the placement and coursing of the vertical stones.



One of the major misconceptions people hold about clawdd construction is that it is particularly difficult to course the stone. Compared to coursing a dry stone wall it is really easy.

During the stripping out process the stone is set out either in lines or piles of similarly sized stone. Note the use of similarly. The key to coursing a clawdd is not to worry about being too precise, look at an old clawdd and you will see that there is often a difference of 2cm or more between adjacent stones yet the overall effect is of a coursed wall. My experience in teaching people this method of construction is that they tend to try and be too precise, and of course when they are not being precise the differences end up being too great! At some point it all clicks and suddenly you realise that compared to dry stone walling it is very easy indeed.

The use of lines is crucial to coursing. They should be set to a height that accommodates the average size of the largest stones you have left, always set the line to fit the stone you have left, do not arbitrarily raise it to a height and then

try to find stones that fit. The only thing as far as size is concerned is to ensure that the line is set so that the height of each course diminishes as the wall gets higher. just as in a dry stone wall your

Clawdd rebuilt by the author near Brynsiencyn. Photo © S.Adcock

smallest stone should be used nearest the top of the wall.

Once in place the line is used as a guide to help



you keep the line and batter, and as an aid to the height of stone required. It is only an aid and a guide, it is not supposed to determine exactly what size stone you want. With experience stone selection becomes increasingly accurate and the courses become more and more even.

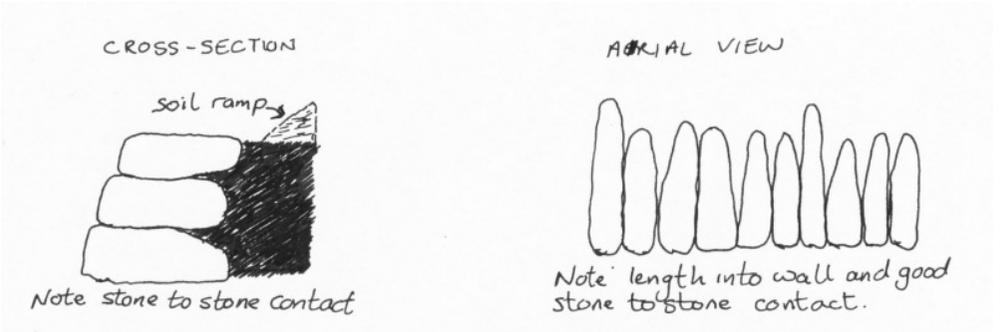
Having decided how high the course is going to be you need to select a stone and place it. In this article I'm going to explain this on the basis that one course has already been completed. If the Clawdd is vertically coursed from ground up then the only difference between the first and second course (beyond a few foundation considerations I am not dealing with here) is that you can dig the stones into the ground to give a very level course. Other Cloddiau have either a dry stone wall component at their base or a number of larger boulders or flat stones in the foundation. Here you usually have a relatively even base with just a few minor variations in height, and your first course will consequently have to be built out of more stones of an even height. If you want to know more about these aspects you'll have to come on a course or buy the booklet coming out sometime next year!

The first thing to do is to make a small ramp of soil inside the wall just beyond the point the building stones will reach to (see diagram below).

When placing a building stone it is very similar to coping a dry stone wall. Once the height of the stone has been decided on there are two major considerations:

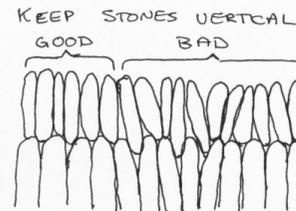
- Placed length into wall (making sure longer than high). This rule is NEVER broken.
- Tightly fitting with neighbours, alongside and below, with no voids

This is of course the ideal, small gaps are inevitable, but the fewer there are the stronger the wall



The stone is set on the wall, because it is set vertically it may be necessary to use a small amount of soil from your ramp, alongside stones with rounder bases to ensure that they do not fall over. Care

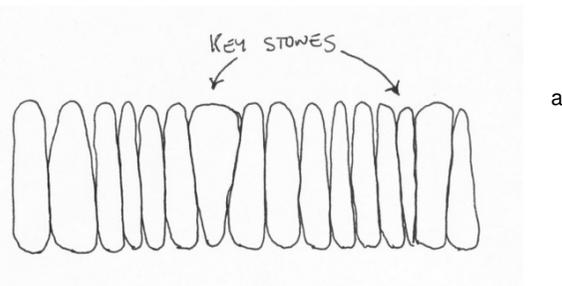
has to be taken to ensure that you do not get too much soil on the previous course as one of the keys to a strong clawdd is to ensure stone to stone contact at all times. On occasion a small amount of stone from the ramp used around the 'tail' of your building stone can also help.



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When you build your first clawdd it is best to work sequentially, i.e. you place your first stone, then the one immediately next to it, then the one next to that, ad infinitum. Care needs to be taken to ensure a good fit, and that you set each stone vertically. It is all too easy to slightly slope a stone so that it is the right height, and whilst the odd one will probably not show in the end result a number of them can turn the end result into quite a mish-mash

There is a knack to making sure the stone is sitting tightly against its neighbour and care must be taken that the stones remain tight throughout the sequence. To ensure tight end result every couple of feet key stones are used.



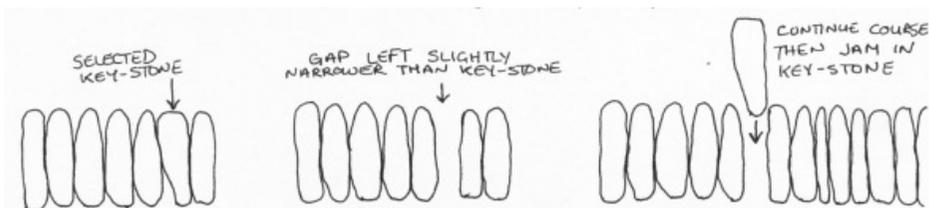
These are stones which are slightly narrower at their base than their top and when forced down into the course the stones either side are squeezed together.

The distance between these stones varies with stone size and type and there is no specific distance. The important thing is that all the stones between them get squeezed just enough. For example if you find that in general a key stone squeezes the next 12" of stones then you need them about every 24" (they squeeze in both directions).

So how does this fit into the sequential method for learners?

Experimentation is the only way to get the distances, normally you try for gaps of around 18" and take it from there through observation of the end result. As to the actual process....

Having selected a key stone you place it on the wall next in your sequence, then you select the next stone and place it. Next remove the key stone and move the single stone slightly into the gap left by the key stone, then continue your sequence to the next key stone. Once these stones are in place the first keystone can be forced down into the gap left for it and hey presto it squeezes the building stones, you hope!



Once again the effectiveness of this is very much trial and error when you start learning. If the gap left for the keystone is too small you either cannot jam it in, or when you do it forces the adjacent stones out of line rather than tightening them. If the gap for the keystone is wider than it need be then it doesn't tighten the course sufficiently. Another of the keys to success is to ensure that the stones either side of the keystone have good flat sides so that the keystone has something to key against!

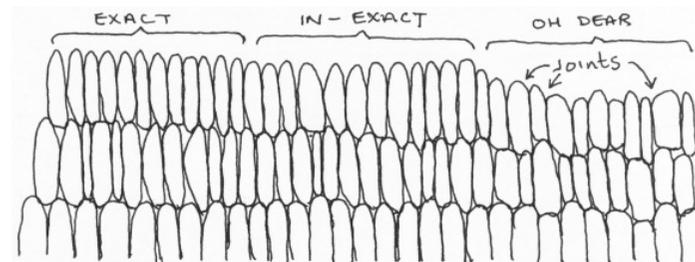
Either sometime during this process, or at the end of each course you need to firmly wedge the 'tails' of the stones, below and between. Assuming you have wedges that is, if not soil needs to be firmly compacted into all nooks and crannies (and any that are left after wedging anyway). When hammering in wedges or compacting soil between stones (usually with end of a hammer handle) care has to be taken not to loosen or dislodge the building stones.

A course is completed the middle is filled (come on a course if you want to know more about that aspect!) and so onto the next course.

Repeat the process, simple?

Now the problems start! Having used your line as a guide you will hopefully have a nice A cracked joint does not necessarily spell disaster but, clearly if movement continues then even course, the problems arise where you have taken the art of being inexact to the extreme and left a step between stones. This step inevitably makes placing the next building stone somewhat

difficult.



With a lot of effort you can probably compensate for the step so that the next course will be easier. However if you are not very precise the step will continue on up through the courses and you will have a nasty running joint.

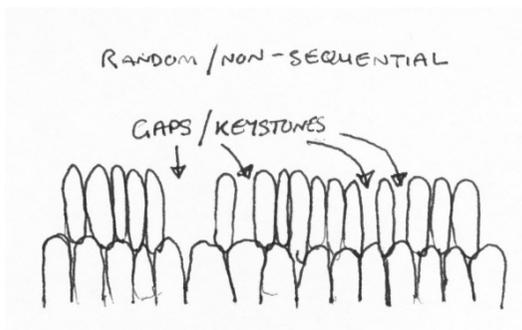
A well constructed clawdd should not have many two stone joints, just as with a dry stone wall it should be '1 on 2 and 2 on 1'. As the stones are set vertically some joints are almost inevitable, especially for beginners, but these should never be grouped together or allowed to develop into three stone joints. It can take a lot of care and effort as you are not only now worrying about the height of the stone and the internal fit of stones, you also have to contemplate its width.

The easiest way of avoiding joints is to utilise the little dips that form between each of the stones. Slightly taller building stones can be used in these and hence two birds are killed with one stone (so to speak!). It is here the inexact nature of the coursing and the opportunity to use a variety of sizes within anyone course comes to the fore. As long as you leave a relatively even surface between adjacent stones you can get away with murder, as long as you don't take it to extremes and end up with a course that is vastly undulating.



Clawdd built by trainees at Cemlyn, Anglesey, showing an amount of variation in the coursing

There is another method of construction which with experience can enable you to ensure better coursing and crossing of joints, and that is to work in a far less sequential method. You use the line as a far more accurate indication of height and place stones in the dips left in the previous course, sometimes sequentially and sometimes completely at random.



Eventually you have a number of clusters of stones and you just jam a keystone into each gap and proceed as before. It can be a far faster and more accurate method of coursing, but I do not recommend it for beginners. Until you are familiar with the basic process it can prove more problematic. With this method you have to find keystones to fit gaps, rather than create gaps for preselected keystones. If you are not very careful you will also end up with sections that are too large for keystones to squeeze sufficiently. However once you have a day or two's experience under your belt its worth giving it a go to see how you progress.

Want to know more? How to avoid the steps that develop in a coursed face, how to finish off the wall, what to do with all the stupid lumps, why you need a length of three by two wood or similar, exactly how do you determine what height to set the lines to, what should the batter be, what on earth is a concave batter let alone how to do it, why a stone has slipped out of the face despite having done everything outlined above? Then contact a committee member and I'll run some more courses!

Sean Adcock