Stonework - Ashlar & Rubblework

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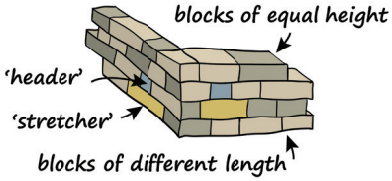
Ashlar stonework

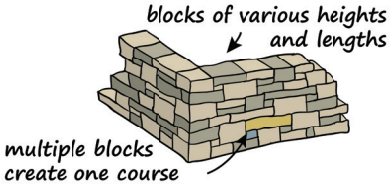
'Dressed' stone; where rough faces are removed, with the stone squared off. Frontward (exterior) faces may be left rougher for aesthetic purposes, but are still 'worked' to produce an intentional effect.

Note that rougher stonework or alternate materials may be used behind the external wall. Similarly, often only the facade of a building uses ashlar.



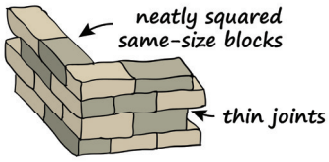
Block-in-course

All stone blocks are of equal height but have different lengths - usually 2-3 times their height. Joints don't usually align. Short 'header' stones sit above long 'stretchers' for better interlocking.



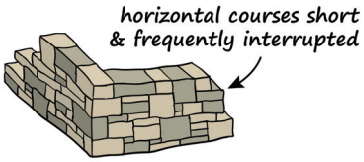
Random-coursed

Stone blocks are cut to a multitude of specific heights, most commonly; 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14 and 16 inches. This enables multiple blocks to form a set course height.



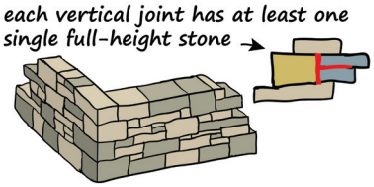
Fine-coursed

All stone blocks are uniform in size and joints are continuous and thin. Some walls have two alternating heights of block, which may also be of contrasting finish or material.



Broken ashlar

No effort is made to run the stone blocks in courses, with any horizontal courses being short and interrupted frequently. Several sizes of stone are used, with corner stones (quoins) used for strength.



Snecked

Roughly squared stones of three sizes are laid in horizontal courses. The largest ('risers') intercept multiple courses. The middle-sized 'levellers' make up the wall majority, with 'snecks' filling in gaps.

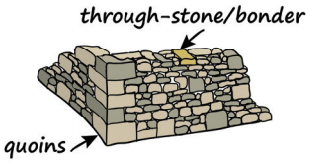
Case Study 1 - Rufus Castle

The Isle of Portland is famous for its quarried stone; most notably used for London landmarks, including Buckingham Palace. Rufus Castle, on the right, is believed to be the first building to be constructed with Portland stone, although it has been rebuilt several times; the current structure dating from around 1450. To model it, we need to look closely; the stone is snecked, but has unique holes interspersed throughout; some are putlog holes (for scaffold poles) and others are gun-ports. As the surface is a little rough, my ideal material choice would be scribed plaster or clay on a plasticard base for the walls, with additional clay detailing for the corbels. The latter are known as machicolations - items were dropped between them onto any attackers below!

Rufus Castle, Isle of Portland

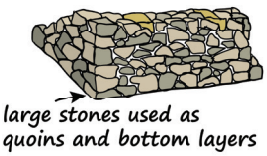
Rubblework

Despite often classed as being of 'lower status', rubble walls require highly skilled stonemasons - it is no mean feat to build a sturdy wall out of randomly shaped stones! Whilst stonemasons will have a 'knack' for picking the right stone for each location, quite often the stones will still be worked to knock off large protrusions. Rubblework is often used as a backing for neater facades.



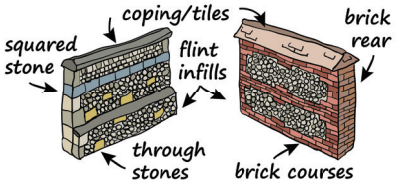
Squared rubble

Stones are hammer-dressed to make them roughly rectangular, but are often randomly sized. There are three classes 'first' through to 'third' which denote increasingly rougher stonework.



Random rubble

Stones vary in size and shape. Large full-width stones and quoins are used to tie such walls together due to the rough stonework. Gaps are filled with small stones and plenty of mortar.



Flint rubble

Where flint is available, this is primarily used as infill material for brick/stone walls. Some are 'knapped' (split open for aesthetics), and some also squared off. Mortar joints are often very thick.

Stonework - Other Elements

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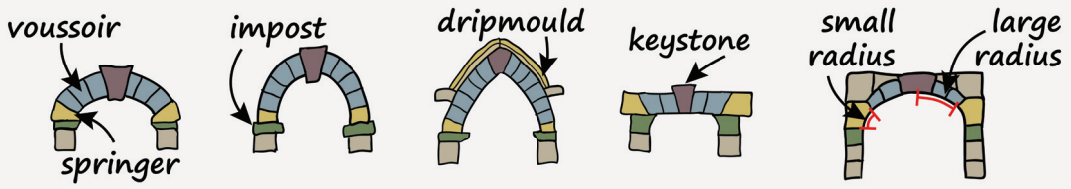
Case Study 2 - Ruined Church Wall

St Andrew's Church was the first parish church to be built on the Isle of Portland, having originated in the 12th century. It was rebuilt and extended several times over its life, but despite several attempts to stabilise the cliff below, landslides in 1665 and 1734 (the latter being Britain's second biggest landslide) sealed its fate by wiping out the graveyard and sections of the church. Or rather it should have; amazingly, despite the continued threat of landslides, the church was extended yet again! However, in 1753 it was decided the cost of repairs was too great, and once a new church was built elsewhere, the church was demolished soon after 1756.

Despite the ruins being hit by a bomb during WWII, the majority of the footings can still be seen, along with some waist-high walls and the 1470-75 bell tower's chamfered pointed arch pictured. Some ornate stone pieces can be found in the nearby Portland Museum. Masonry is rubblework, with ashlar dressings.

Ruins of St Andrew's Church, Isle of Portland

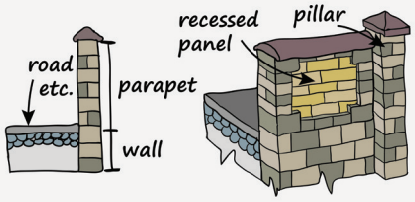
Other Wall Elements

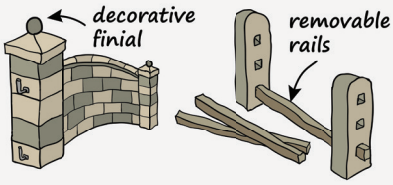


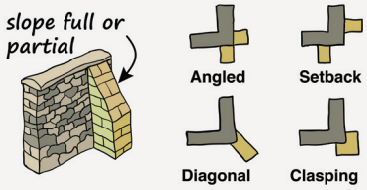
Segmental Shallow arch | **Semi-circular** Half circle arch | **Gothic** Pointed arch | **Flat** Horizontal 'arch' | **Four-centred** Arch with two radii

Archways

Typically, arches are made of a few core components; an impost protrudes from the wall and supports the arch itself, voussoirs are the wedge-shaped stones forming the arch (the first above the impost is called a 'springer'), and a keystone is the top block supporting both sides of the arch. A dripmould may be present to divert rainwater.







Parapets

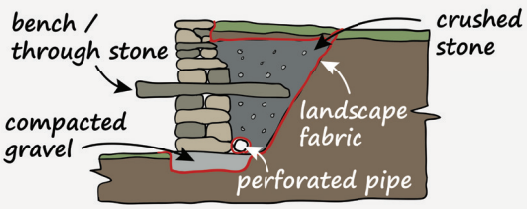
Parapets are extensions of a wall that provide a barrier; such as found atop a roof, path or road. Most are plain, but some are embattled, like crenellations.

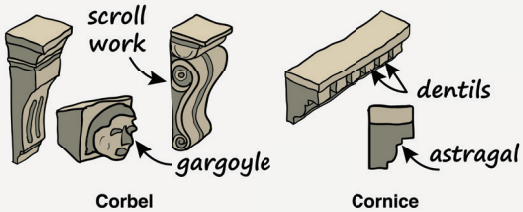
Gateposts

Stone gateposts are usually associated with estates. However, they can also be found on field entrances, some with holes to accept removable wooden rails.

Buttresses

Usually found on older structures, buttresses prevent lateral movement. There are many types, including 'flying' buttresses found between structures.





Retaining Walls

Embankment walls need to be built in a specific way to avoid failure. On a model that is irrelevant, but it's worth noting that the base width is at least half the height of the wall.

Corbels & Cornices

Corbels are essentially brackets built into the wall to support an overhanging structure above, whilst cornices are decorative mouldings. The former is often found supporting the latter.

Stonework - Dry Stone Walling

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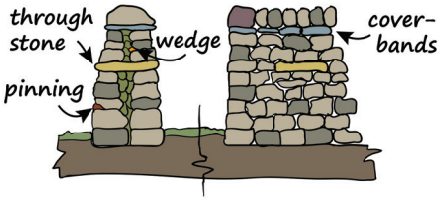
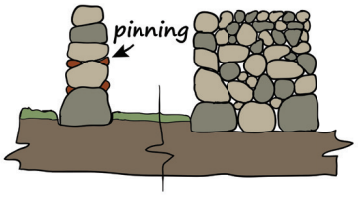


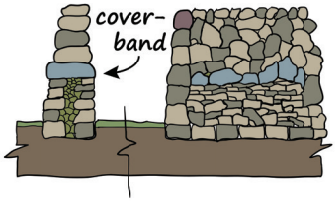
Double stack

A common design, two rows of stones are held together by large 'through stones'. In South Wales, large flat 'coverbands' support the coping stones.



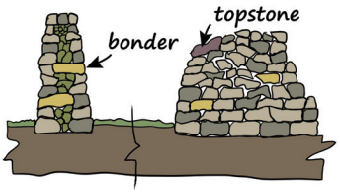
Boulder/Single stack

A wall made of large stones. Voids are filled with small stones. Stone size decreases the further up the wall. Some capstones may be used.



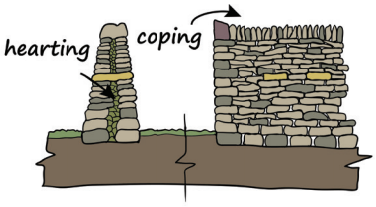
Galloway Dykes

A wall made of a double row of flattish stones at the bottom, with a single row of large stones above. Stone types vary depending on those found in the area.



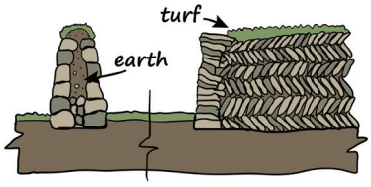
Mendip

A variation of the double row design. Unusually, stones have their longer sides facing outwards, thus 'bonders' are used to improve strength.



Lake District

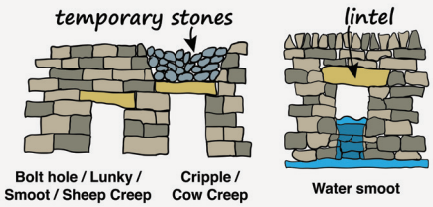
Uses flatter slates and flags. The cross-section can contain one or two 'through stones' depending on the height of the wall. Capping stones stand on-end.



Cornish Hedge

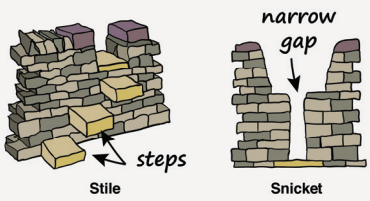
A stone-clad earthen bank topped by turf. The height equals the width of the base, and the top is half of it. Vegetation slowly covers the stone as it matures.

Other Dry Stone Wall Elements



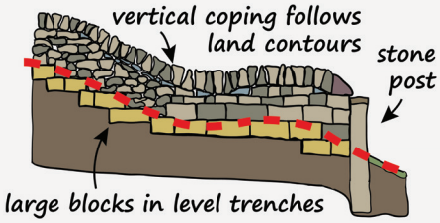
'Bolt/Smoot', 'Cripple', and 'Lunky' Holes

Holes in the wall (with supporting lintels above) allow livestock and wildlife to pass through. A 'bolt/smoot' is a small hole to allow sheep to pass but not horses/cows, whereas 'cripples' are larger holes that often have removable upper stones. A 'water smoot' is used to allow a stream to pass through underneath.



Stiles/snickets

Whilst stiles are often wooden affairs, some are built from stone as part of the wall. 'Snickets' are squeeze-holes that allow people to pass through, but not livestock. Sometimes these are combined with kissing gates. Many variants exist, including another design that features a large flat stone that slides into grooves into stone posts either side.



Building on sloping ground

First, horizontal stepped trenches are dug into the hillside, into which large foundation stones are laid. The body of the wall can then be built up, ensuring stones are laid flat to prevent them slipping downhill. Small shaped stones on top allow coping stones to follow the contour of the land. Sometimes a stone post is used to secure the end of the wall.

I hope that you found this prototype guide useful and informative. For additional information and practical modelling advice on how to construct your own model stone walling, please consider buying a copy of BRM April 2022! My thanks to BRM for allowing me to post the rest of what was unable to fit into the original article into this PDF.

Note that this is not an exhaustive guide - there are as many variations of stone walling as there are counties, if not more! Your best bet is always to observe what you see on your prototype, or in the prototype region.

Many thanks,
Jamie Warne