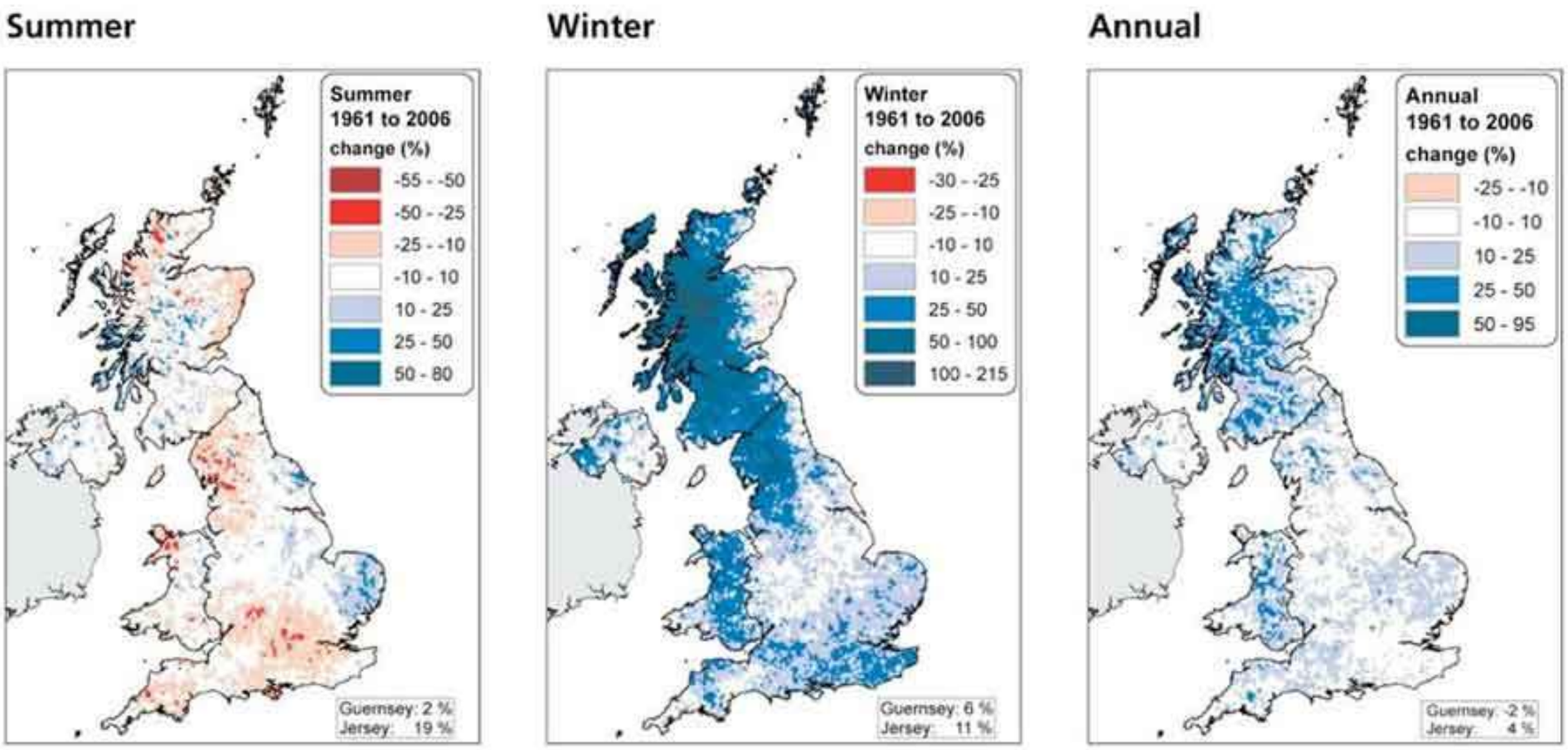
Common Maintenance Problems
what to look for
and how to avoid them

www.underoneroof.scot

Climate – wind, rain temperature and Climate Change. Our winters are getting much wetter

UK CLIMATE PROJECTIONS



Change in average total precipitation (mm) from 1961 to 2006

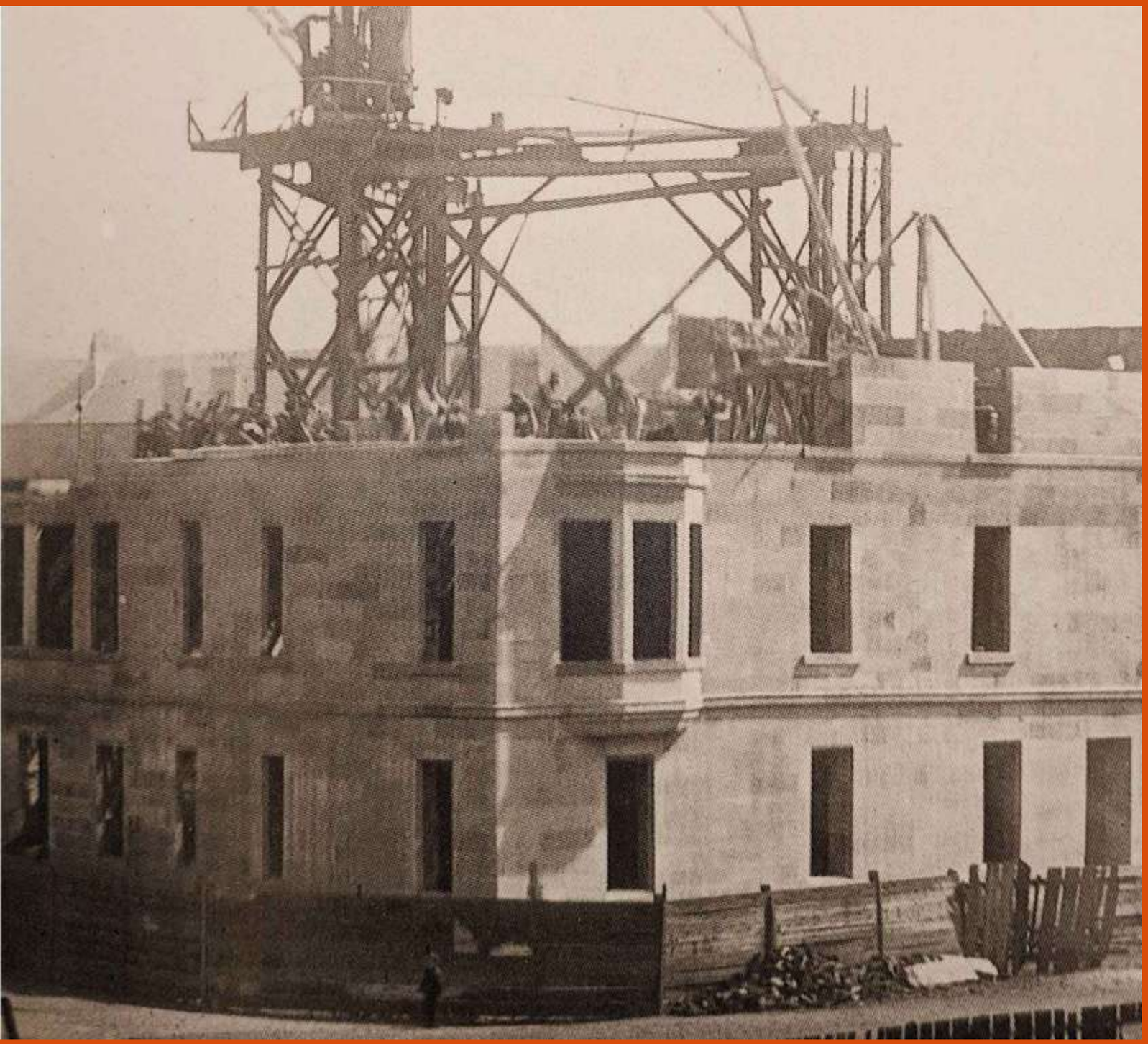
IT’S IMPORTANT TO KEEP YOUR BUILDING DRY.

This is not just a case of fixing holes in the roof but keeping walls dry.

Why?

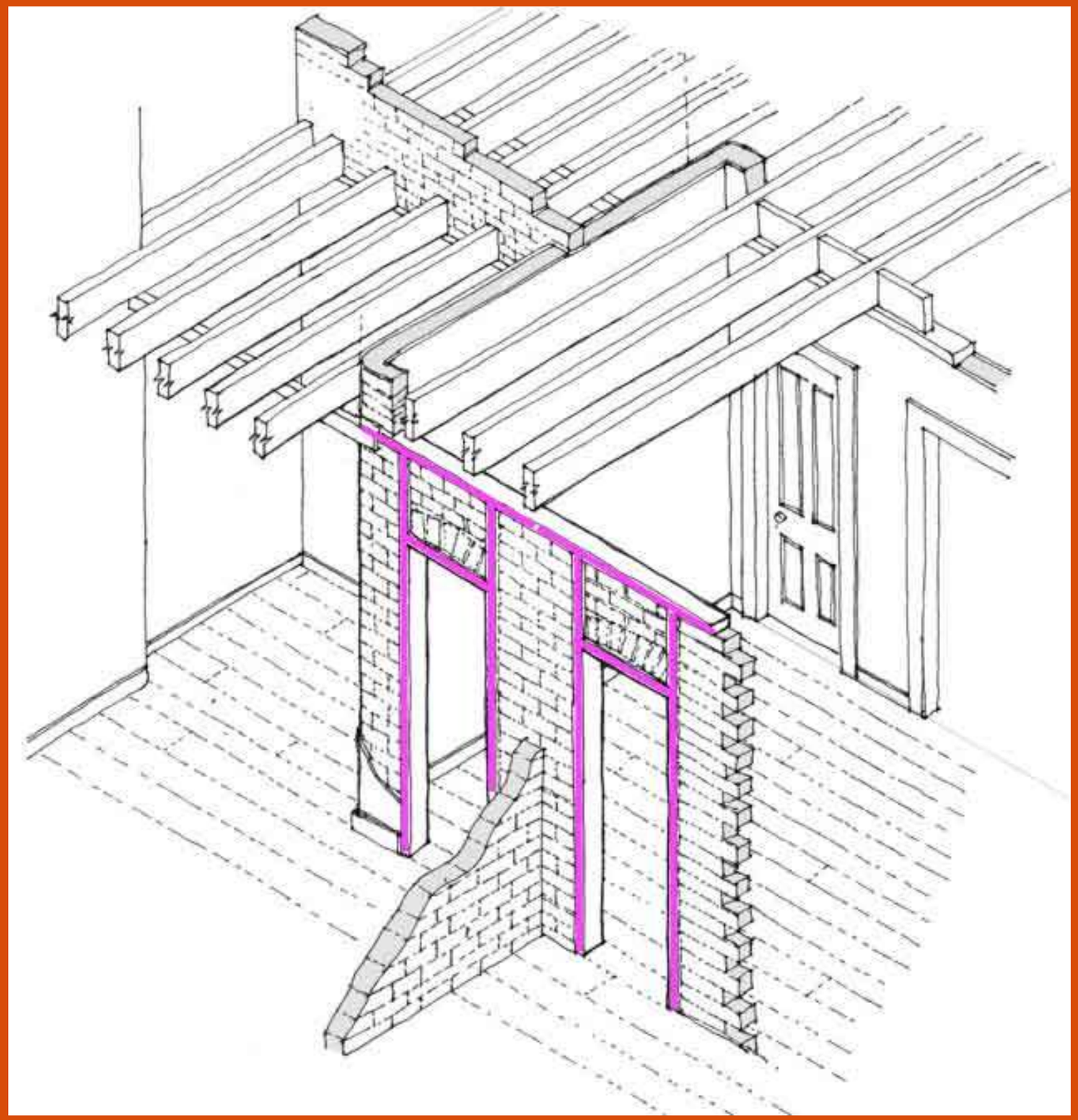
How tenements were built..

How tenements were built..



No scaffolding – joists inserted directly into stone walls and used as working platform

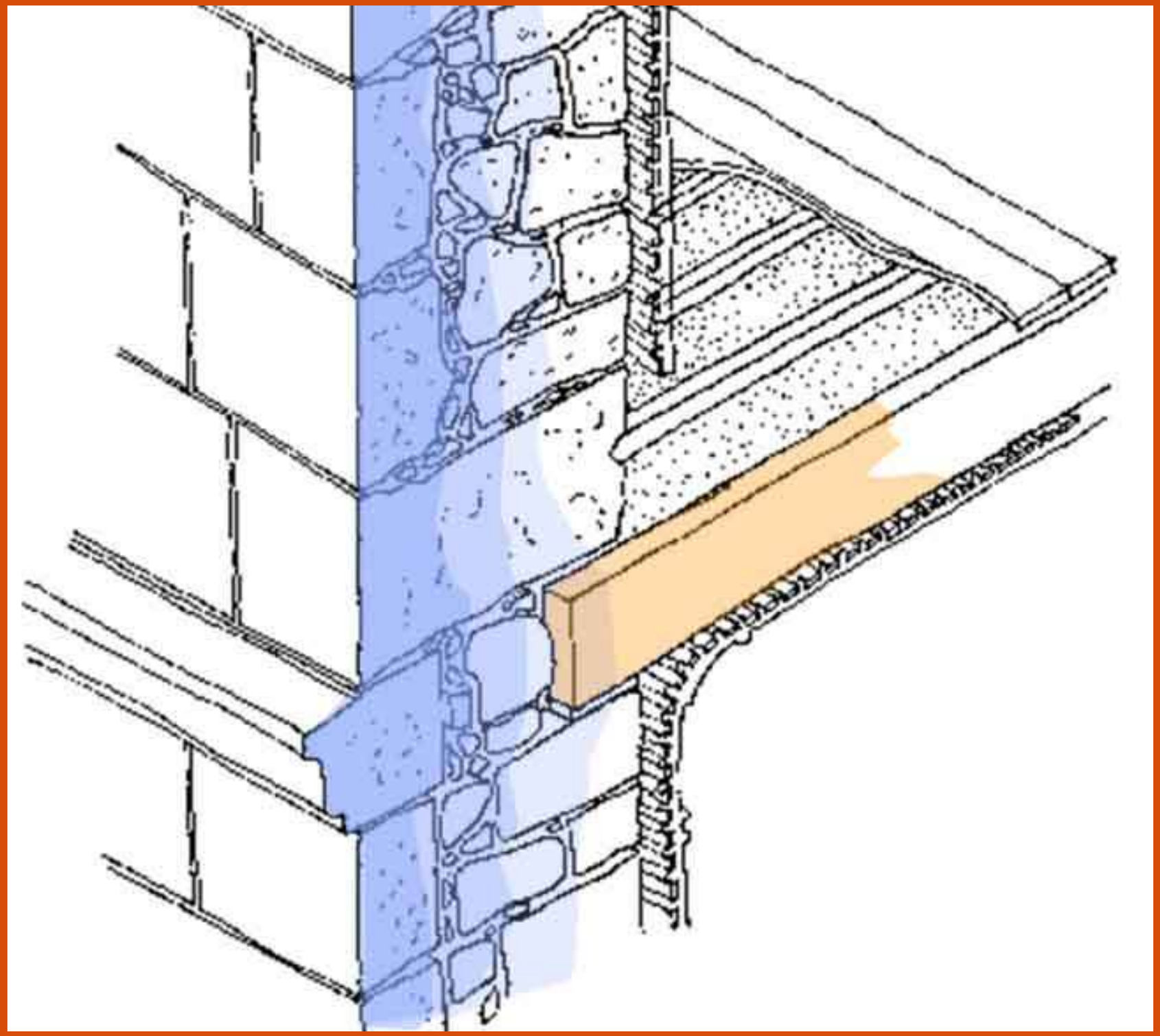
“H” Frames



Timber frames used to support joists at mid point during build. These are load bearing – moving doors is tricky!

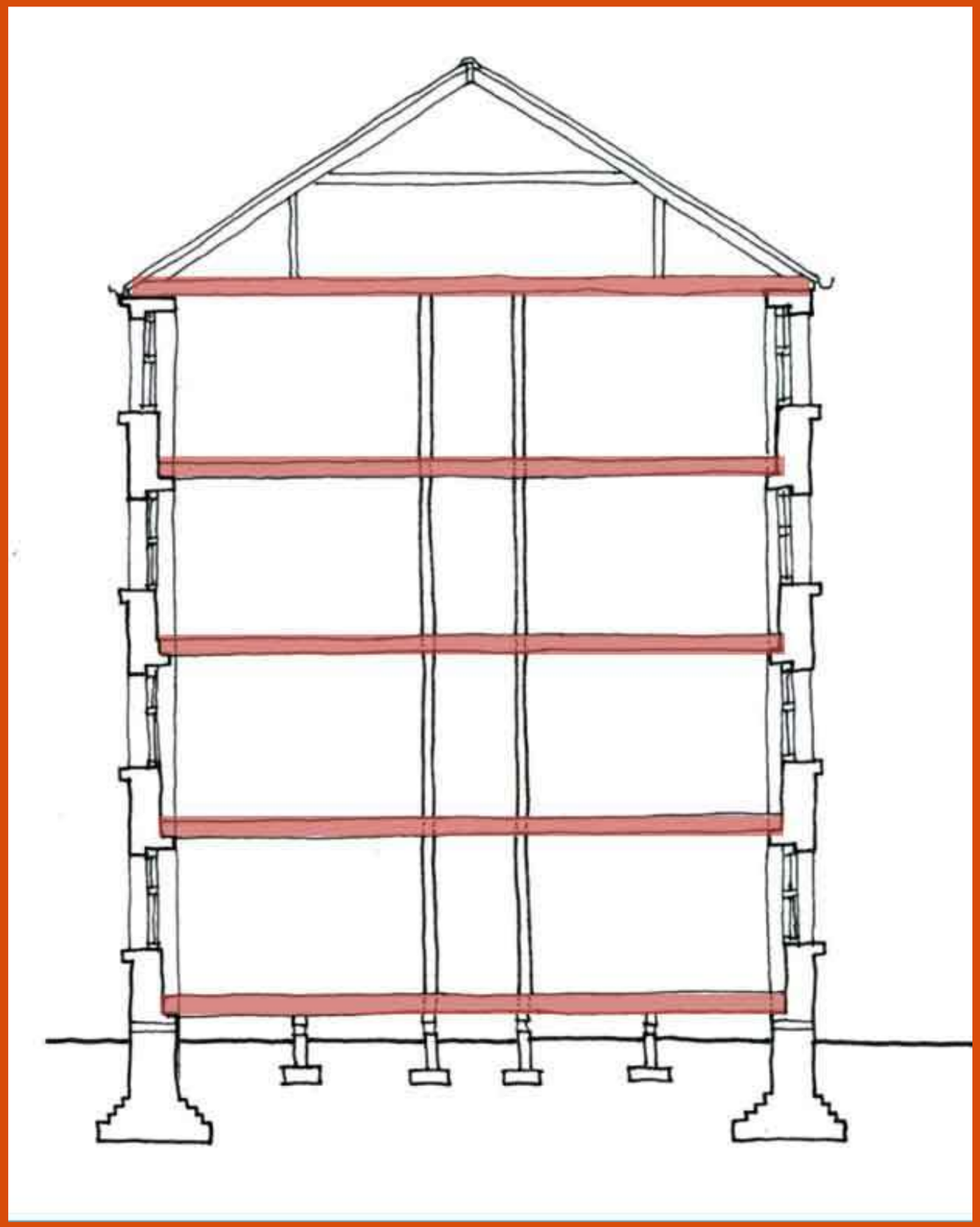
http://www.underoneroof.scot/articles/1016

Look out for timber stiffeners used particularly in upper walls
http://www.underoneroof.scot/articles/1016

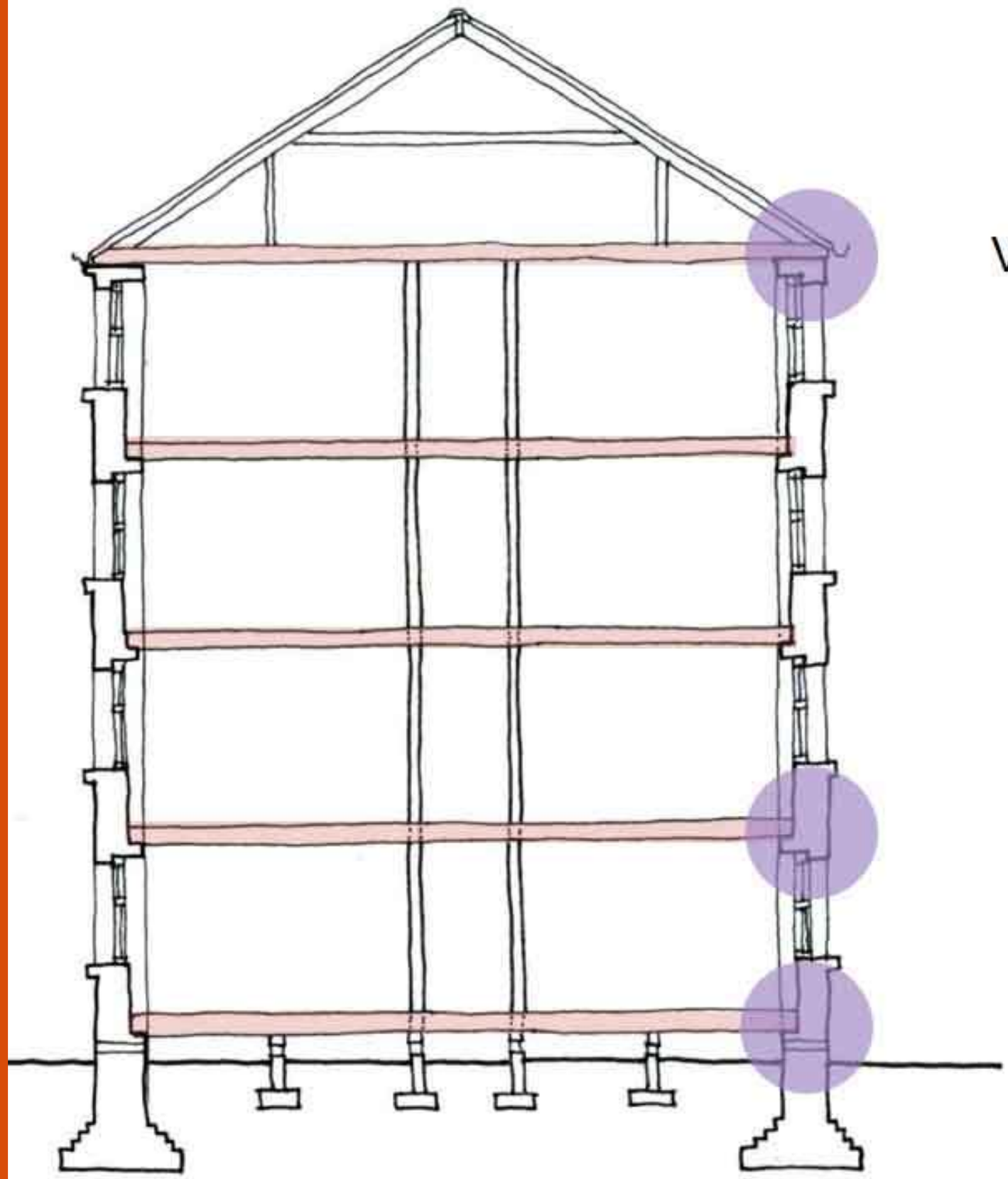


Wet walls lead to damp and rot in structural joist ends

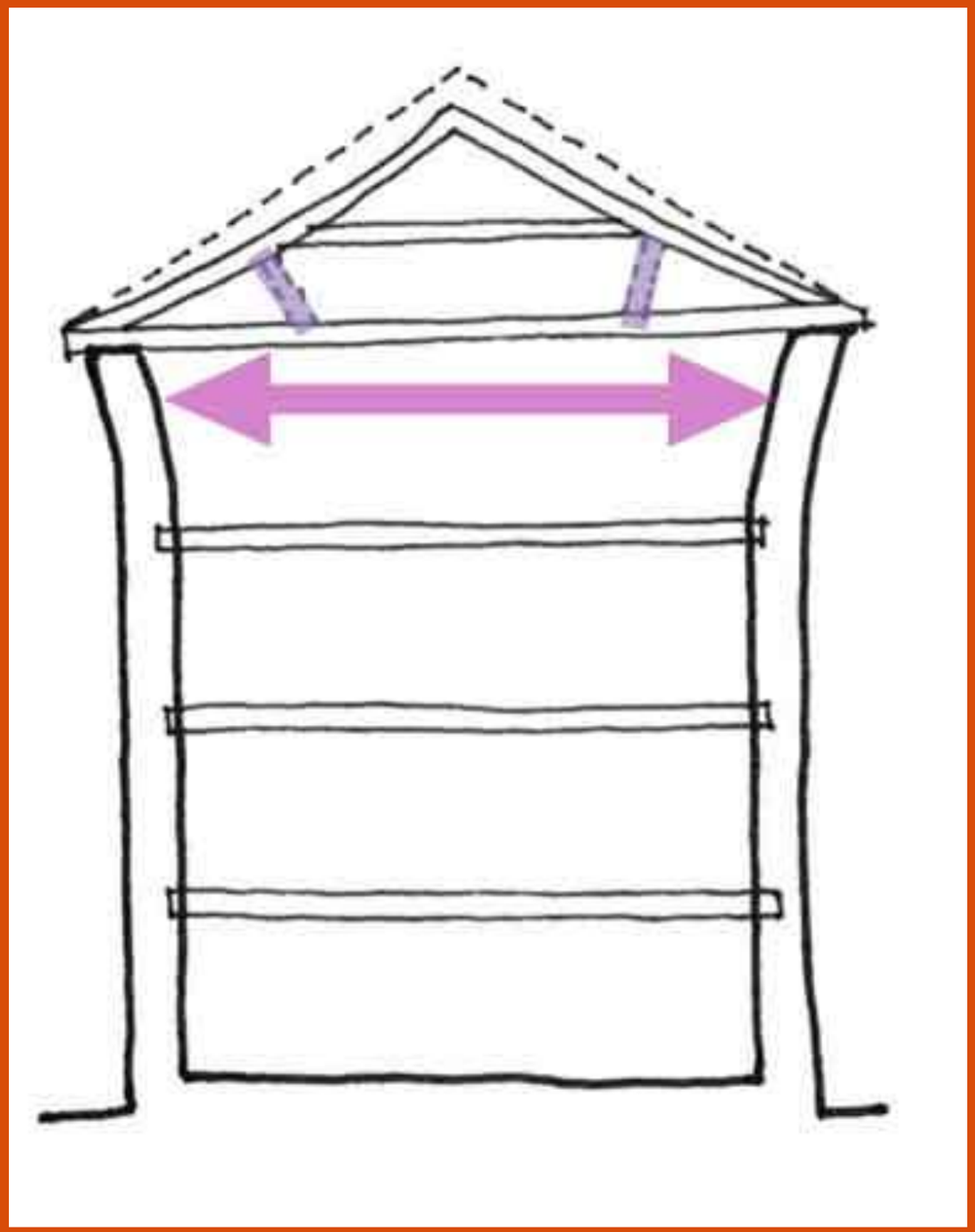
Rot in joists can lead to major structural problems



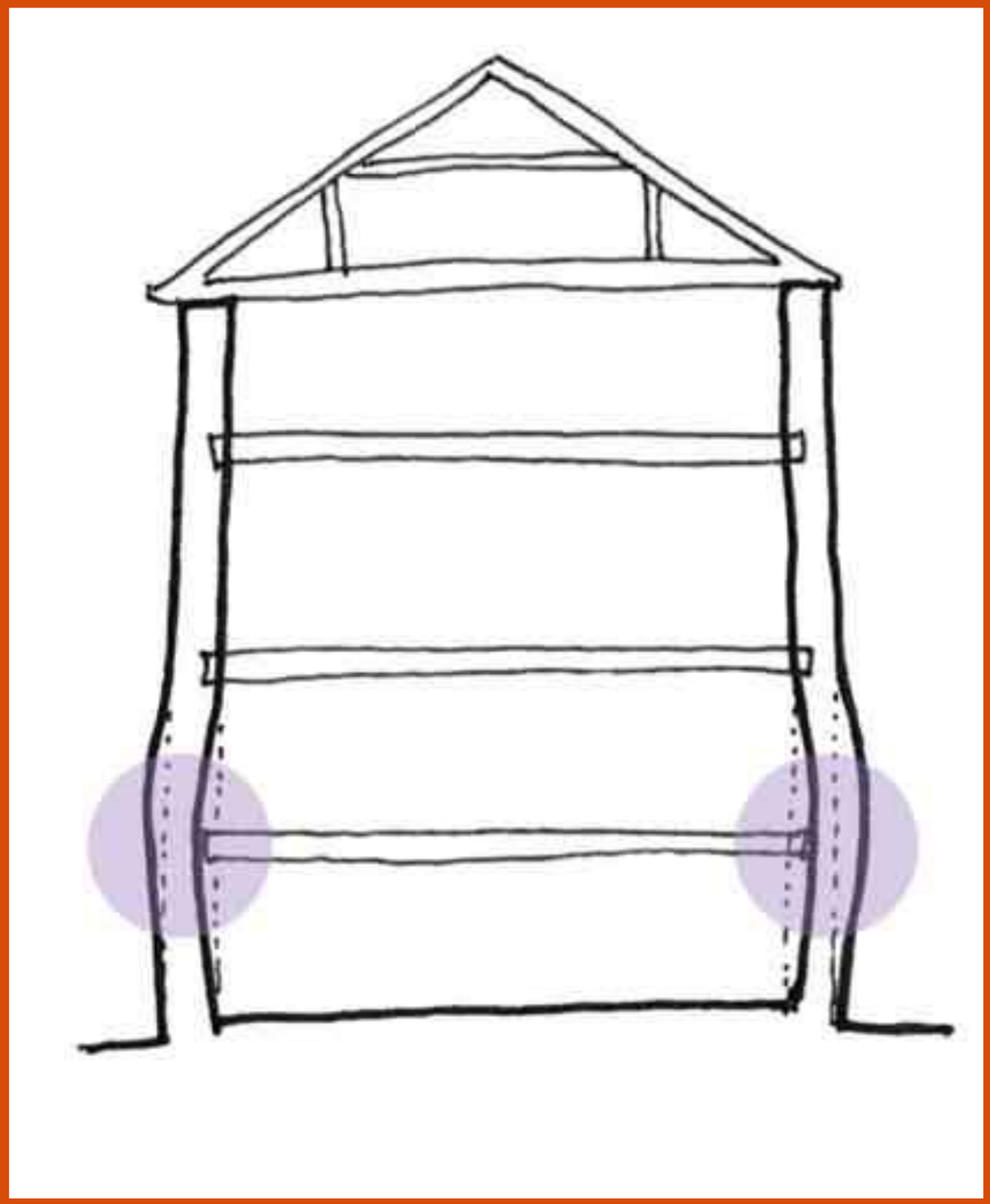
Large one piece joists span front to back and tie in the walls



Vulnerable points



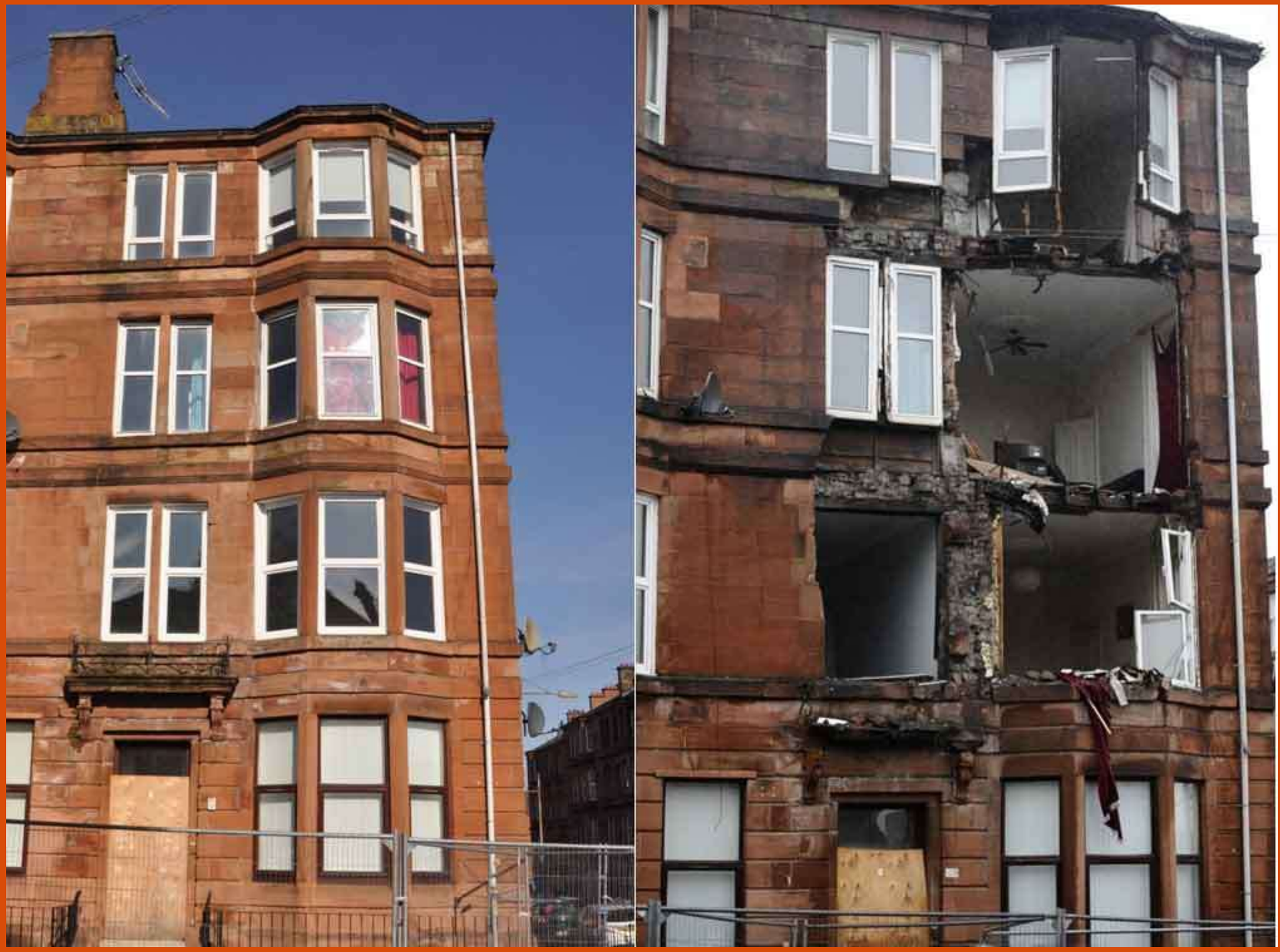
Removal of roof ties to create dormers can lead to additional pressure on joist ends



Walls at first floor carrying weight of walls above are very vulnerable if joist ends rot.

http://www.underoneroof.scot/articles/997/

Case study – note bulge



Case study - then a high wind came along

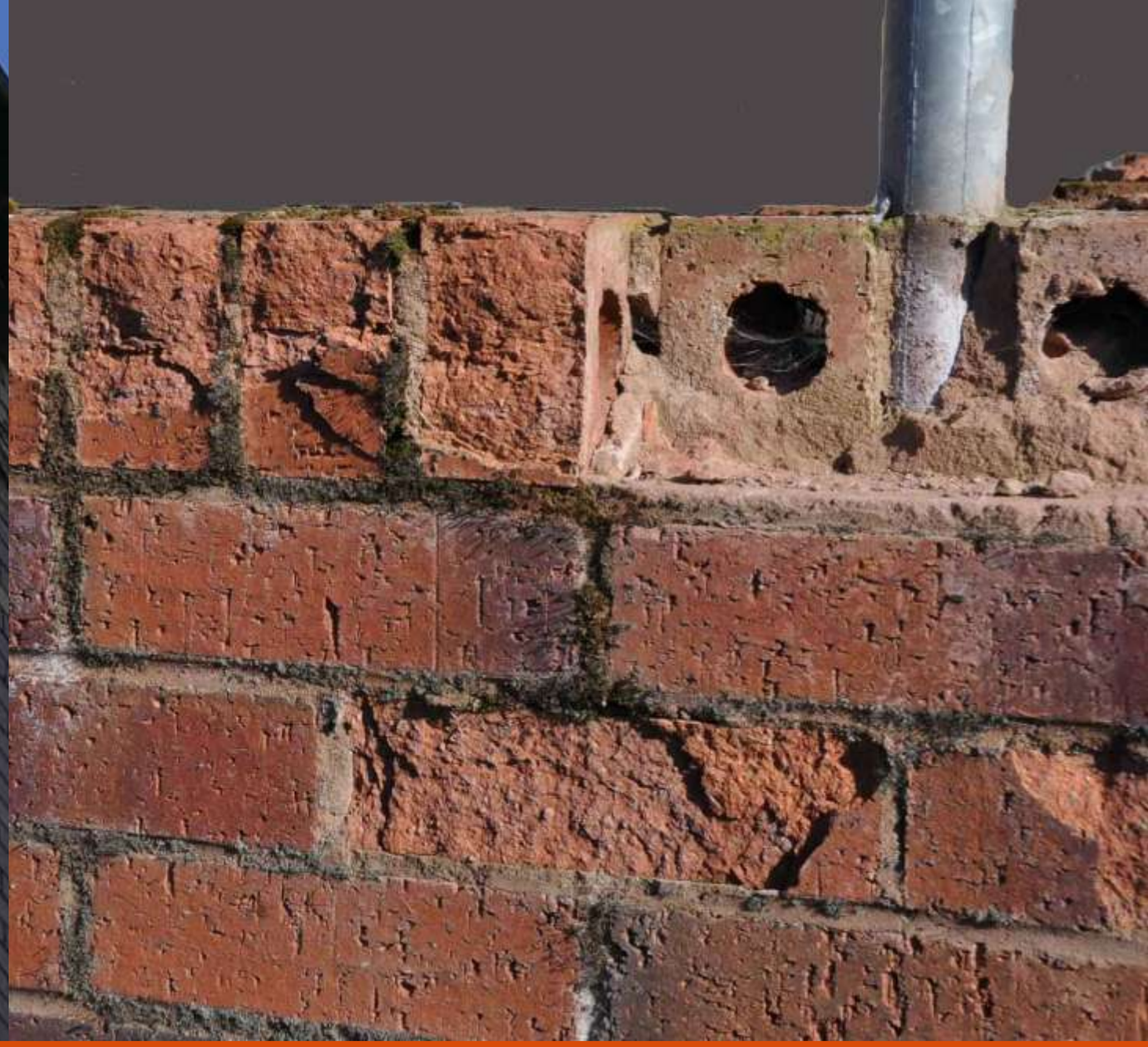
Case Study – the building today

Was the cause of collaps the high winds or rotten joist ends – insurance implications

Dampness in walls can lead to rot in inner timber safe lintol leading to cracked external stone lintel

Steel angle lintol repair

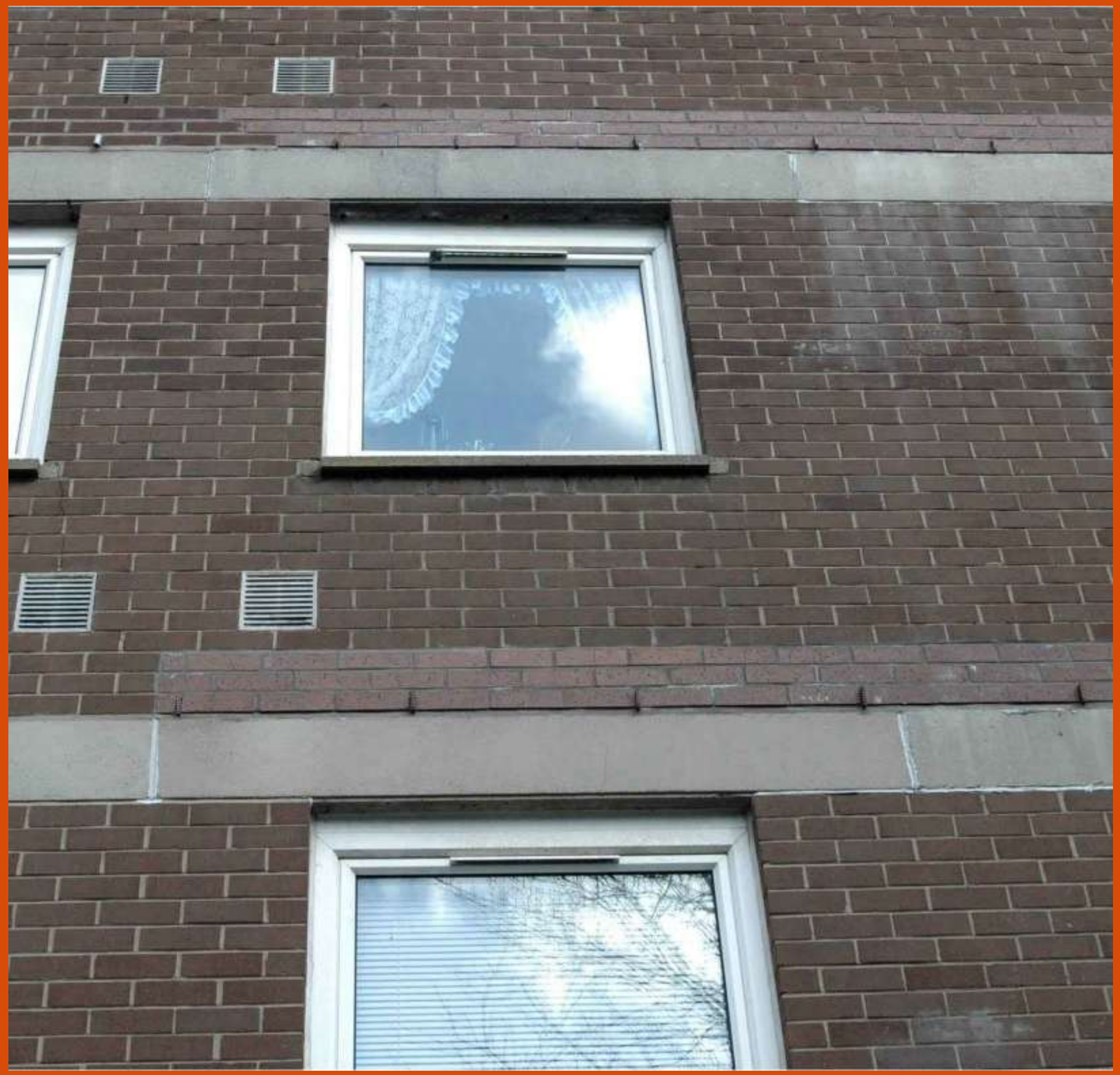
Better looking solution – indenting new stone lintel



Damp bricks can suffer from frost attack

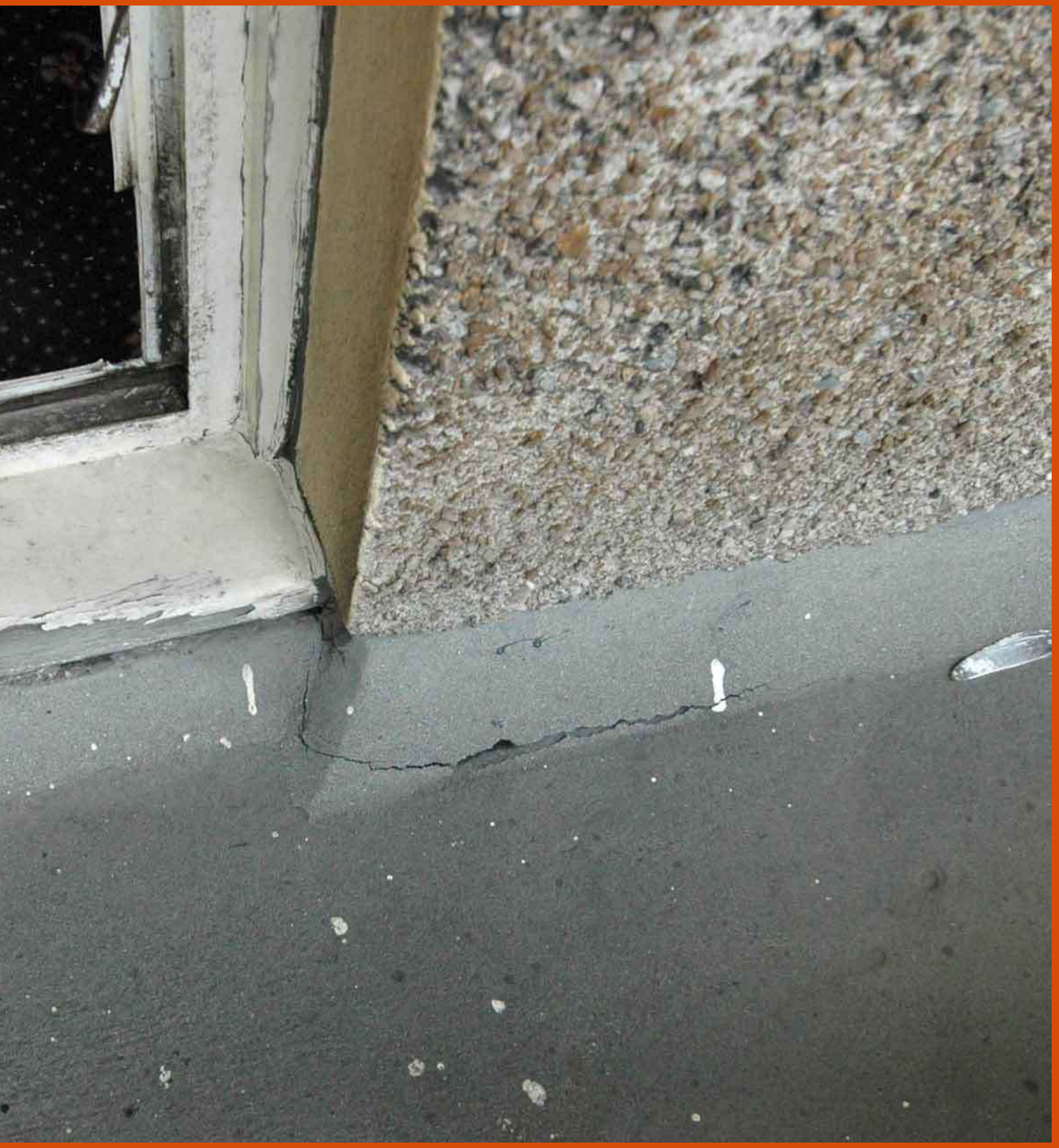
Cavity brick walls have DPCs above anything that goes through both skins of the wall. Shown here above concrete lintels.

Sections of brick have been removed here to allow these DPCs to be repaired.



Moisture gets behind render through cracks. This can lead to whole areas of mortar spalling.

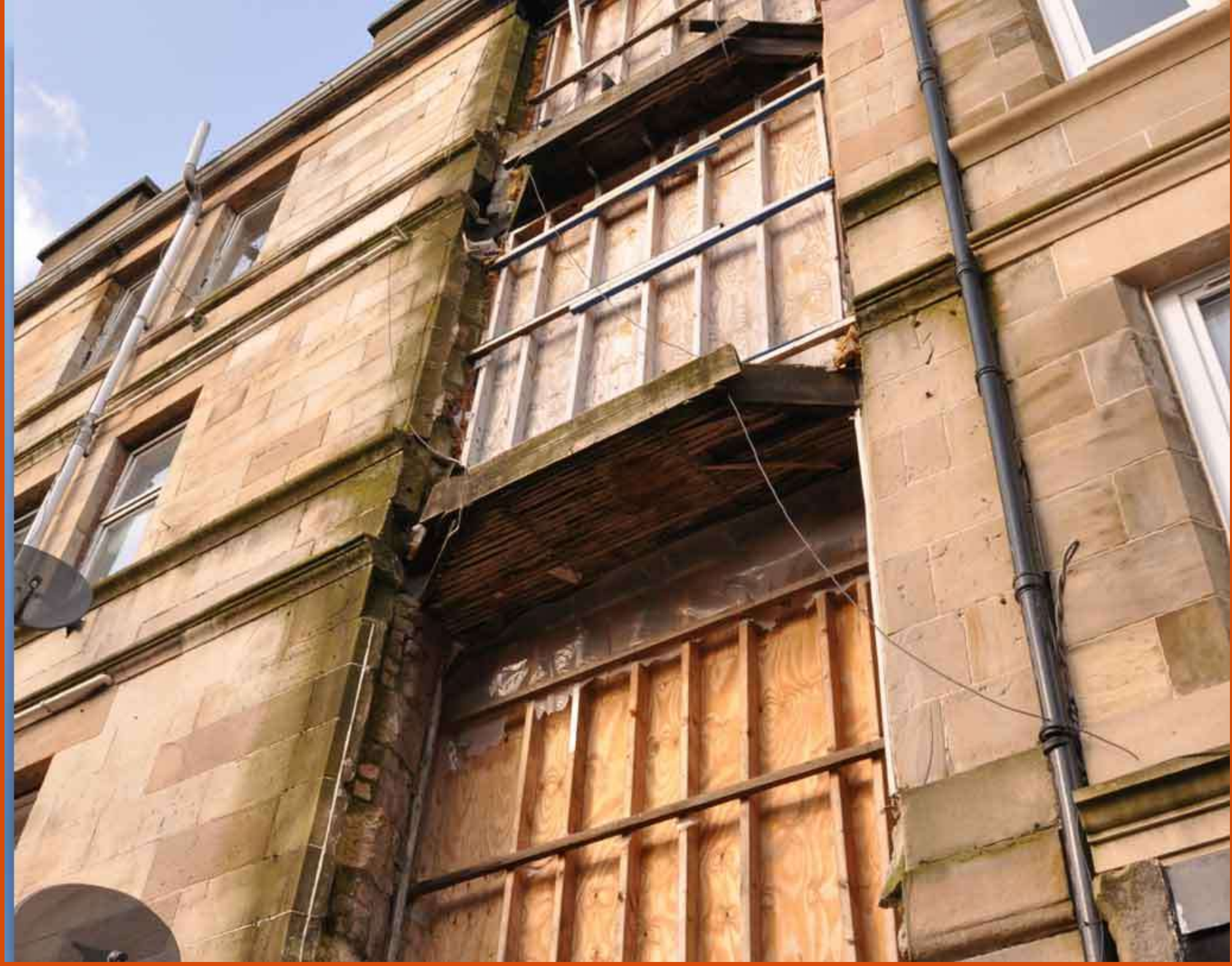
Tap suspicious render and it will sound hollow



Broken seal at junction of balcony and wall can lead to damp

Embedded iron reinforcement breaking off concrete coat as it rusts

Dampness can also affect bay and oriel windows badly

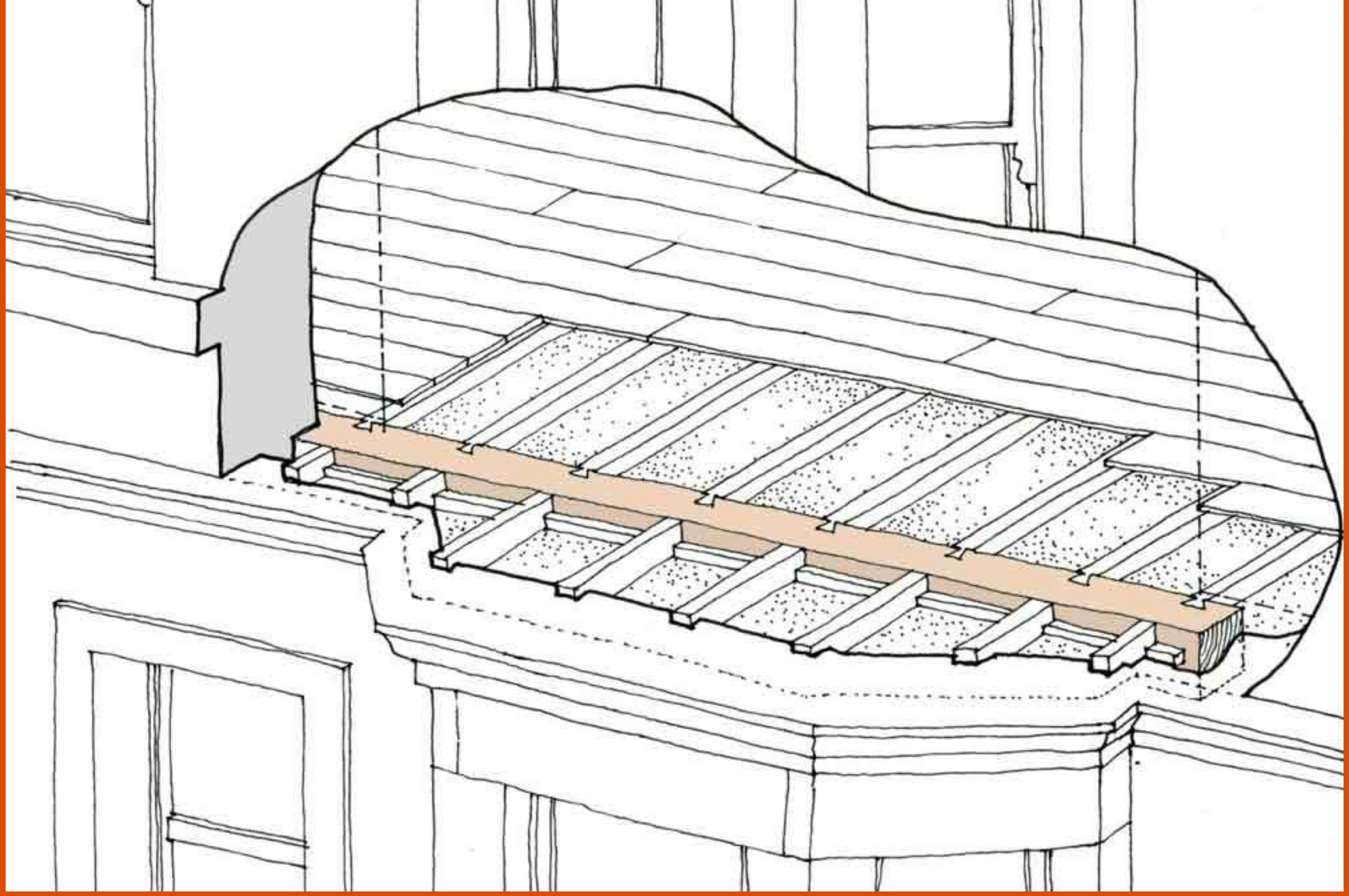


Oriels are pinned with metal cramps that can rust

http://www.underoneroof.scot/articles/1155/

Stone falls and expensive repairs result

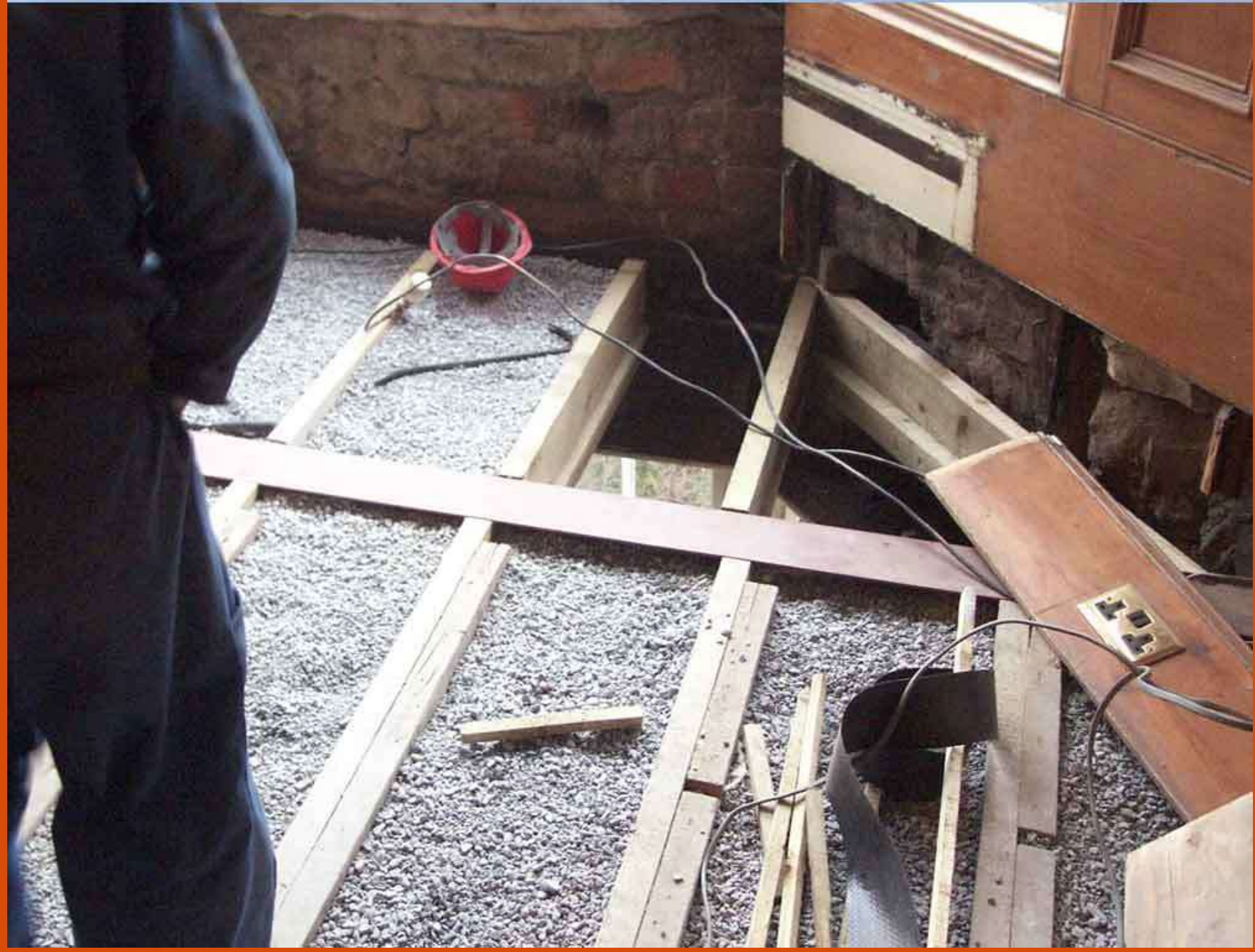
Oriels are often supported by iron pieces



Joists behind oriel windows are supported by a large timber “Bressumer” beams

http://www.underoneroof.scot/articles/1348/

Rot in Bressumer beam ends



Replacing timber Bressumer beam with steel

Rot in joist ends under leaking gutter

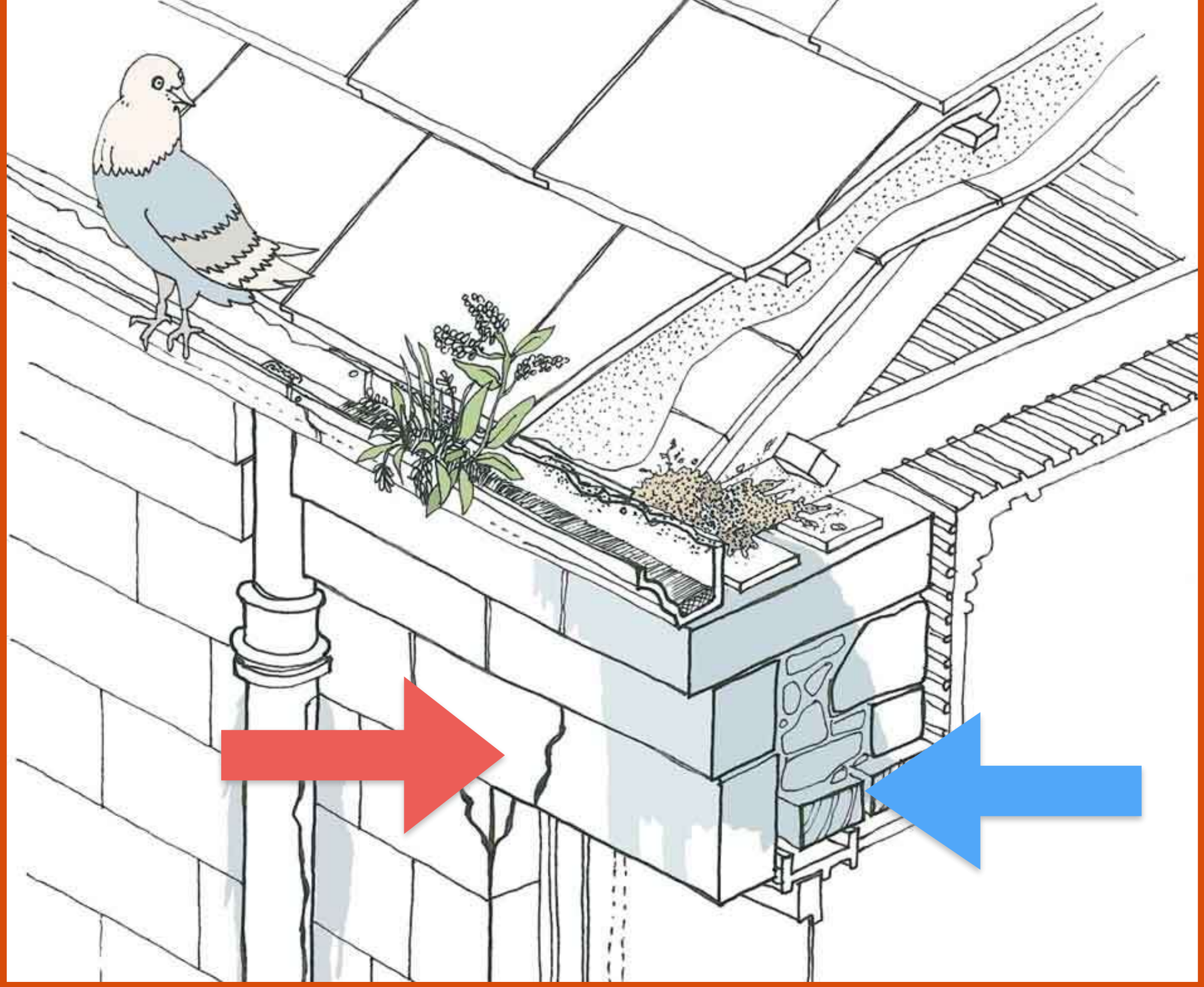
Replacement of rotten roof timbers caused by gutter problems

Keeping walls dry starts at gutter level

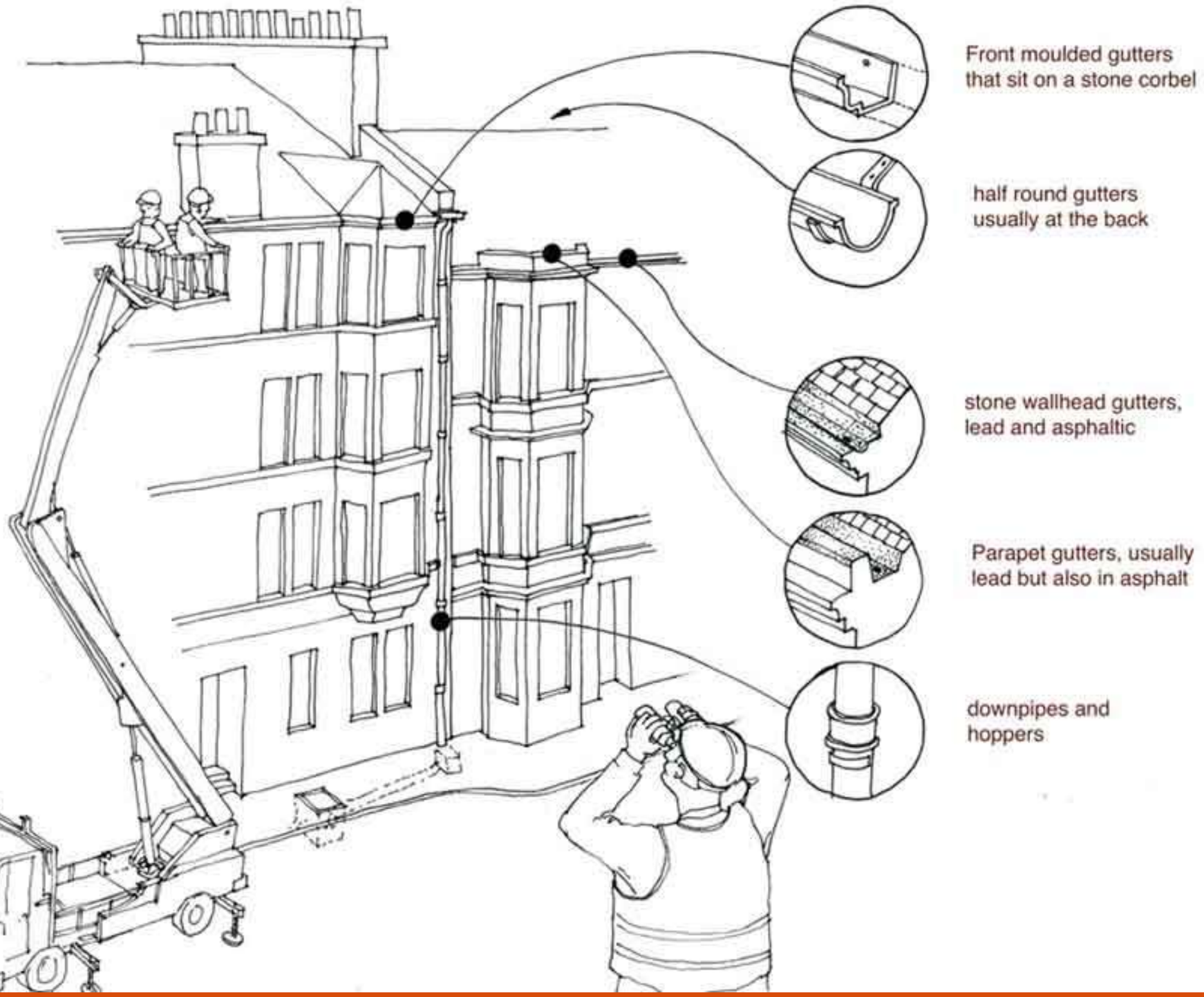
Cute, but birdlife can be a problem…

Bird guano drains into gutters…

Guano provides nutrients for plant growth



TO KEEP WALLS DRY YOU NEED TO:
ensure gutters and downpipes flow free

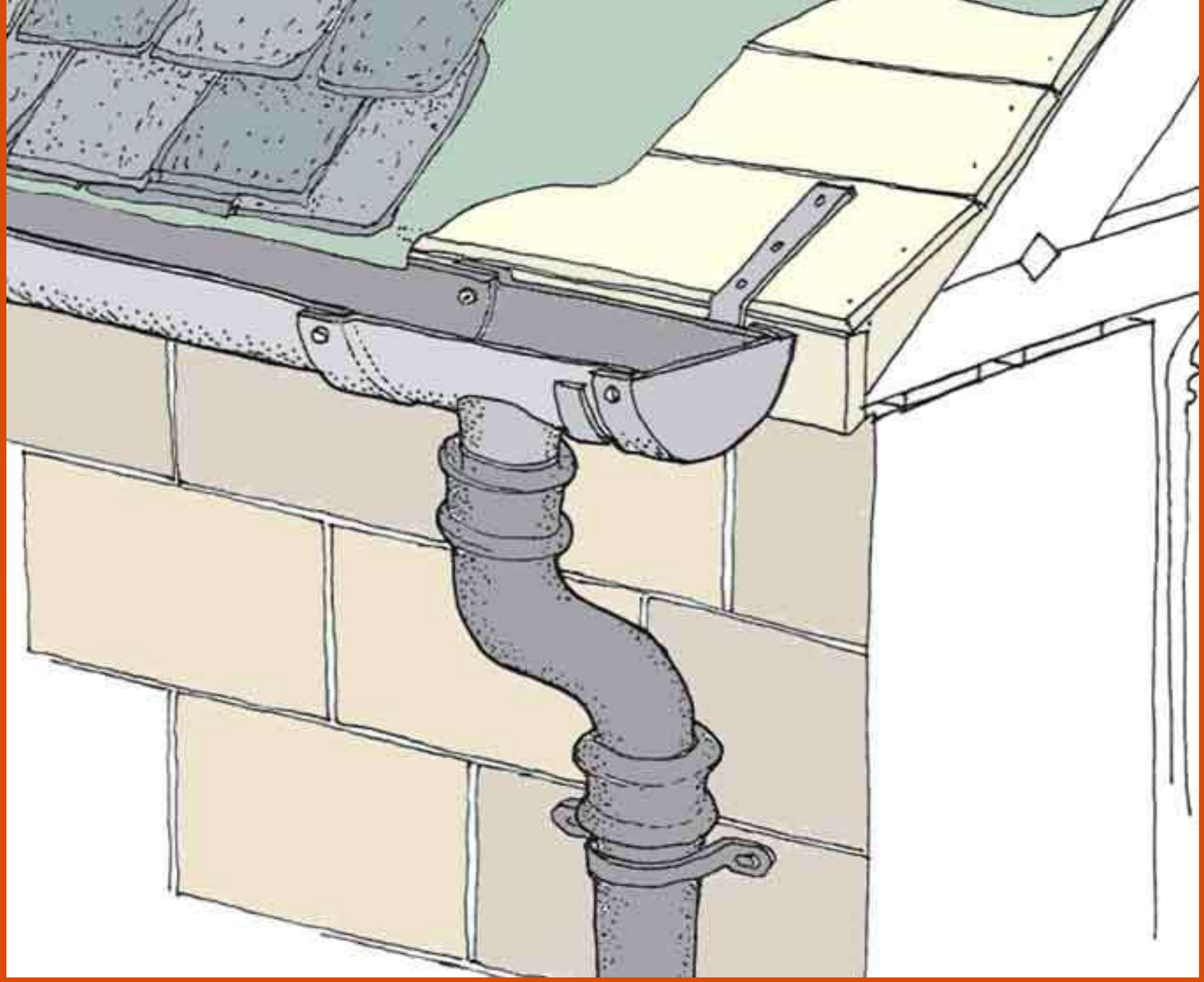


Different gutter types

http://www.underoneroof.scot/articles/1293/

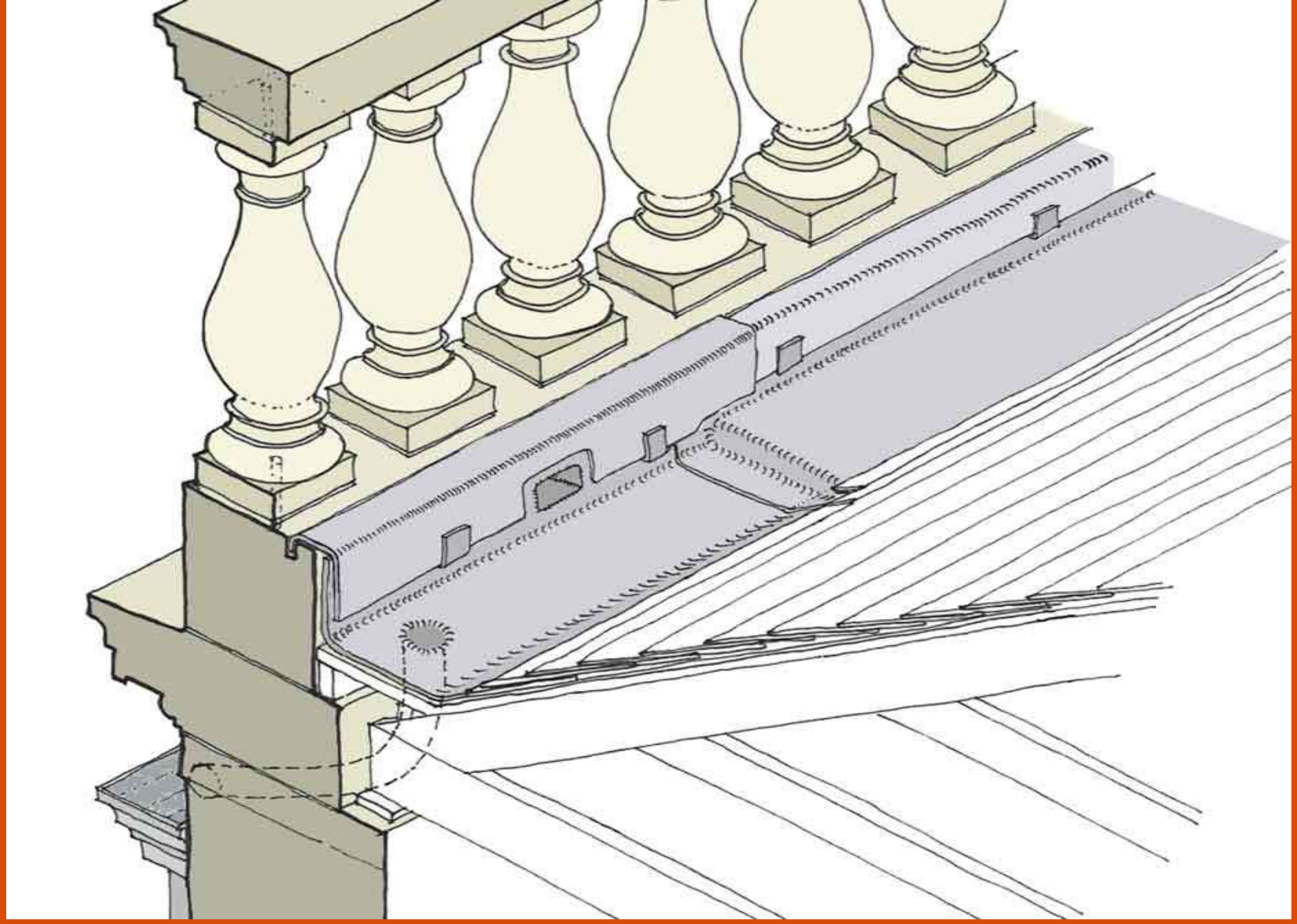
Cast iron gutters – need painting front and back

Cast iron gutters – replacement mouldings are available



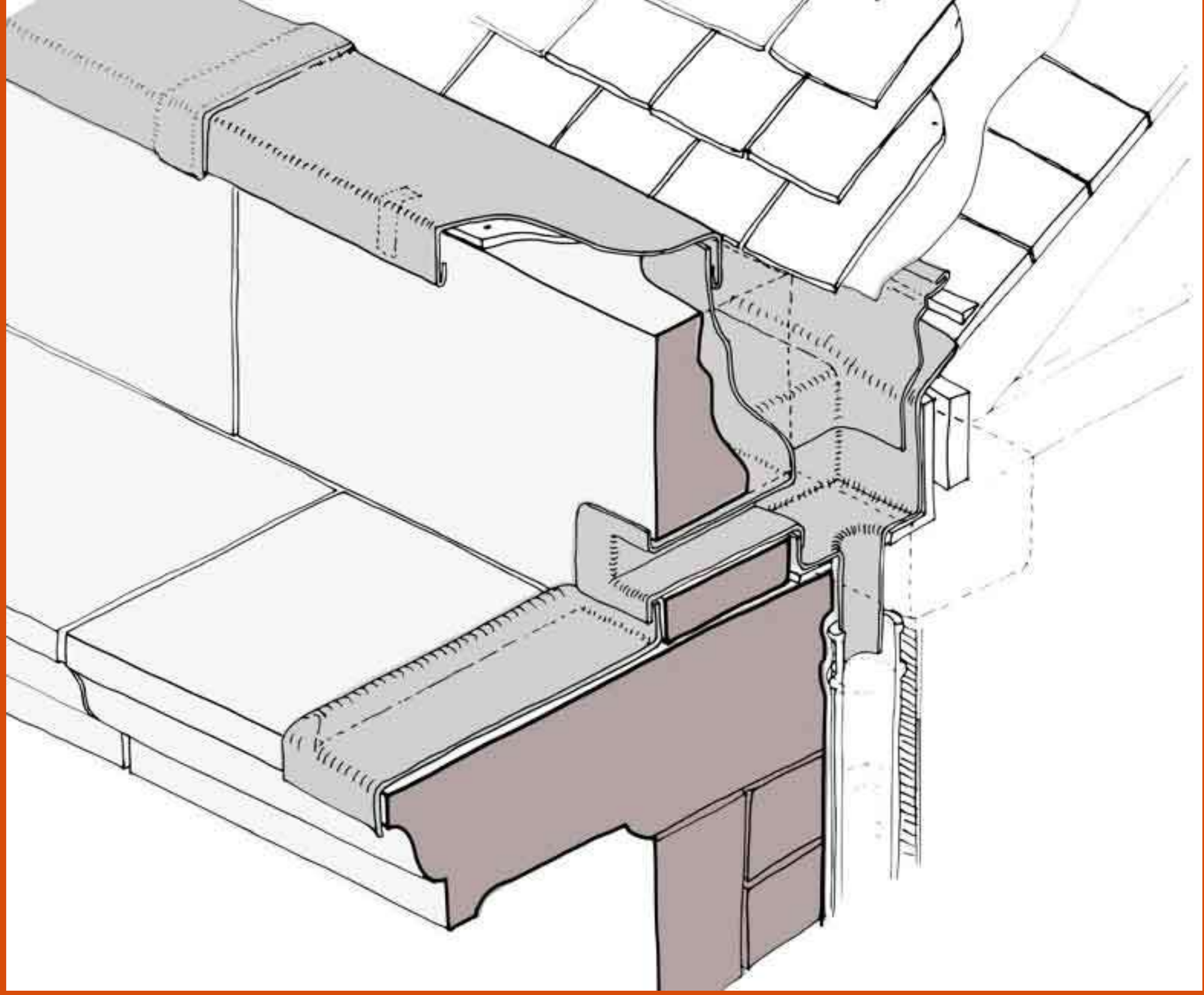
Cast iron gutters have strength to cope with snow etc

http://www.underoneroof.scot/articles/1290/



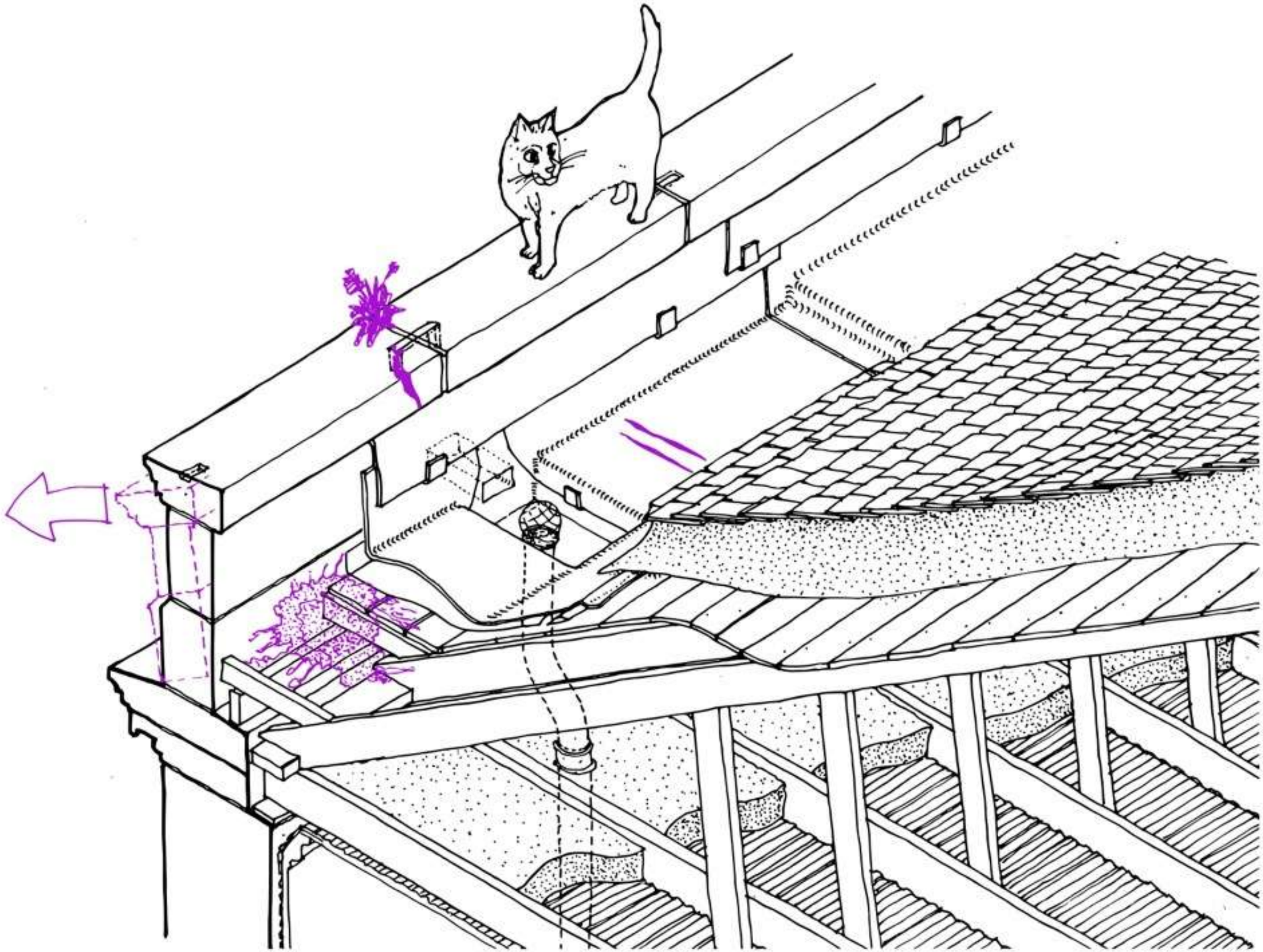
Parapet gutters: problems may be hidden

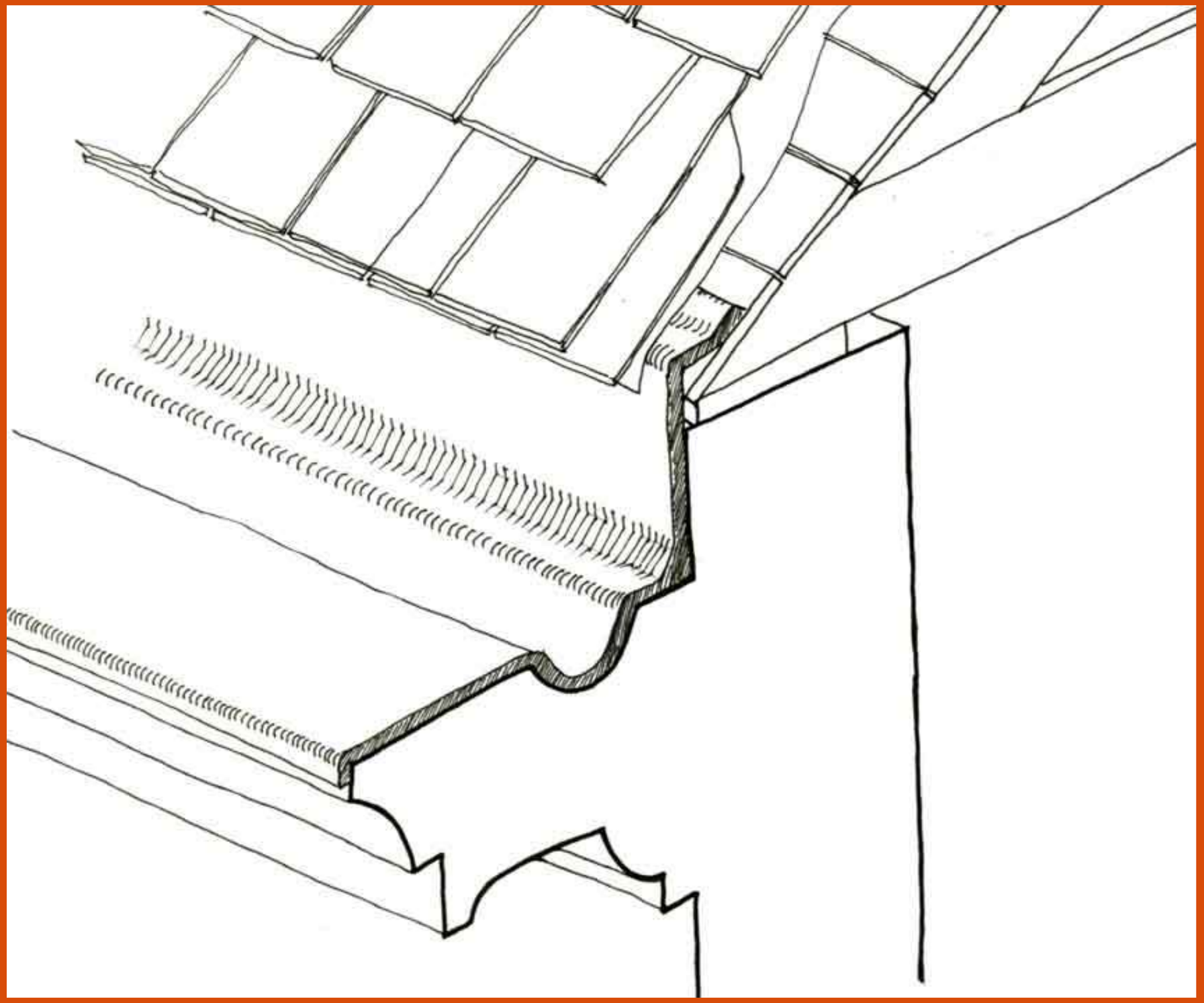
http://www.underoneroof.scot/articles/985/



Outlets and overflows need to be large enough for heavy downpours and kept clear

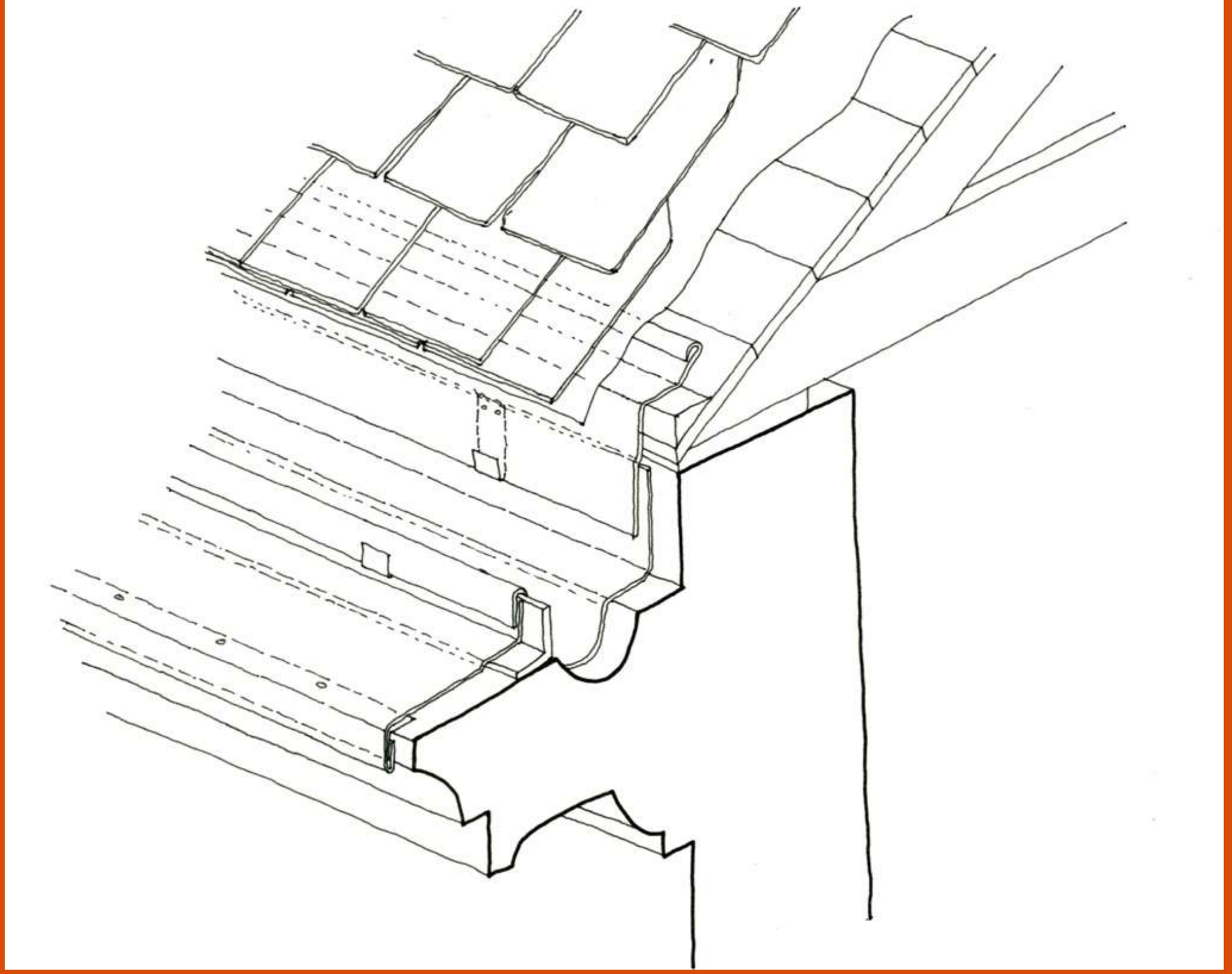
Collapse partially caused by weight of water in gutter during heavy rain storm





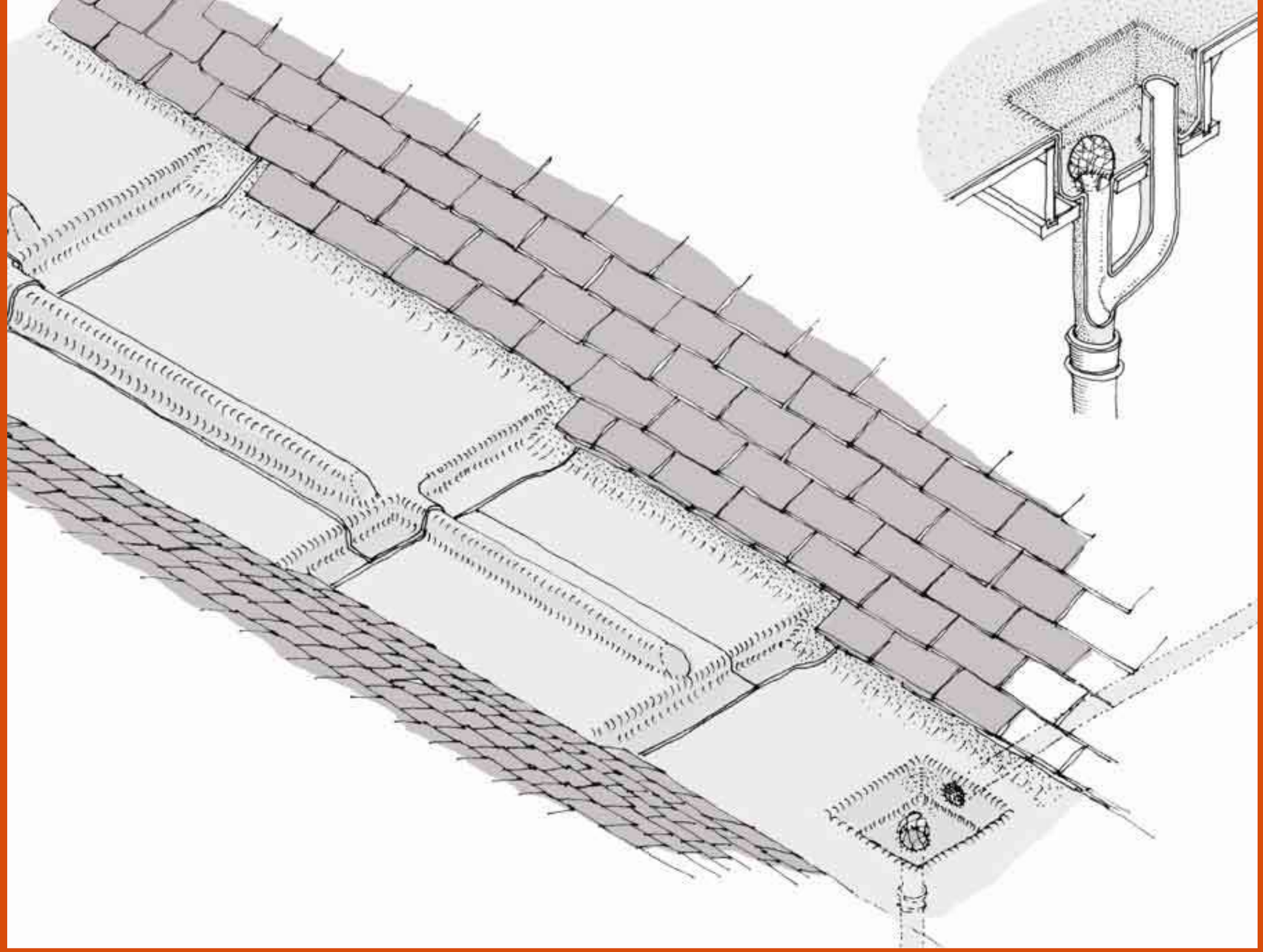
Lead lined stone gutter: note how it should be taken up well under slates and underfelt

http://www.underoneroof.scot/articles/1295/



Stone Gutter with raised lip to cope better with rainstorms

Stone Gutter with raised lip - as built



Central valley gutter – more hidden problems

http://www.underoneroof.scot/articles/1318/

Central valley gutters have internal downpipes

Central valley gutter with overflow – again ensure outlets and overflows are kept clear

Maintenance Regime

clean annually (bird shit, leaves)

paint iron every 5 years

replace gutters when rusty or when loose

increase capacity of shallow gutters

Open joints allow plants to grow, roots dislodge stone

Downpipes also need to be maintained

http://www.underoneroof.scot/articles/983

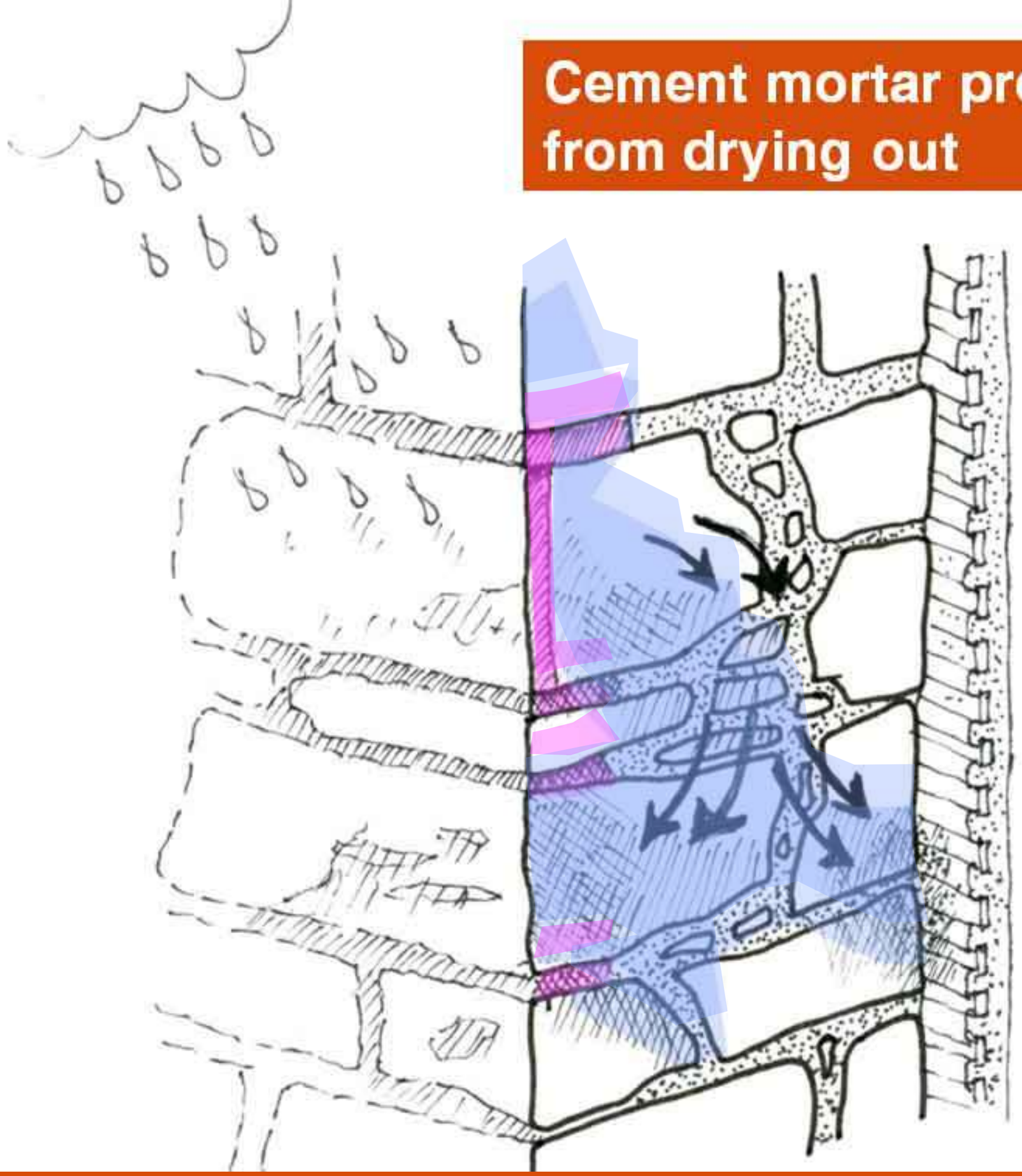
Other ways to keep walls dry

External walls generally:
http://www.underoneroof.scot/articles/1020/
Stone defects:
http://www.underoneroof.scot/articles/986
Pointing:
http://www.underoneroof.scot/articles/1349/

seeds land in open joints, roots dislodge stones:

**Allow walls to breathe
so they can dry out.**

Cement mortar prevents stone from drying out



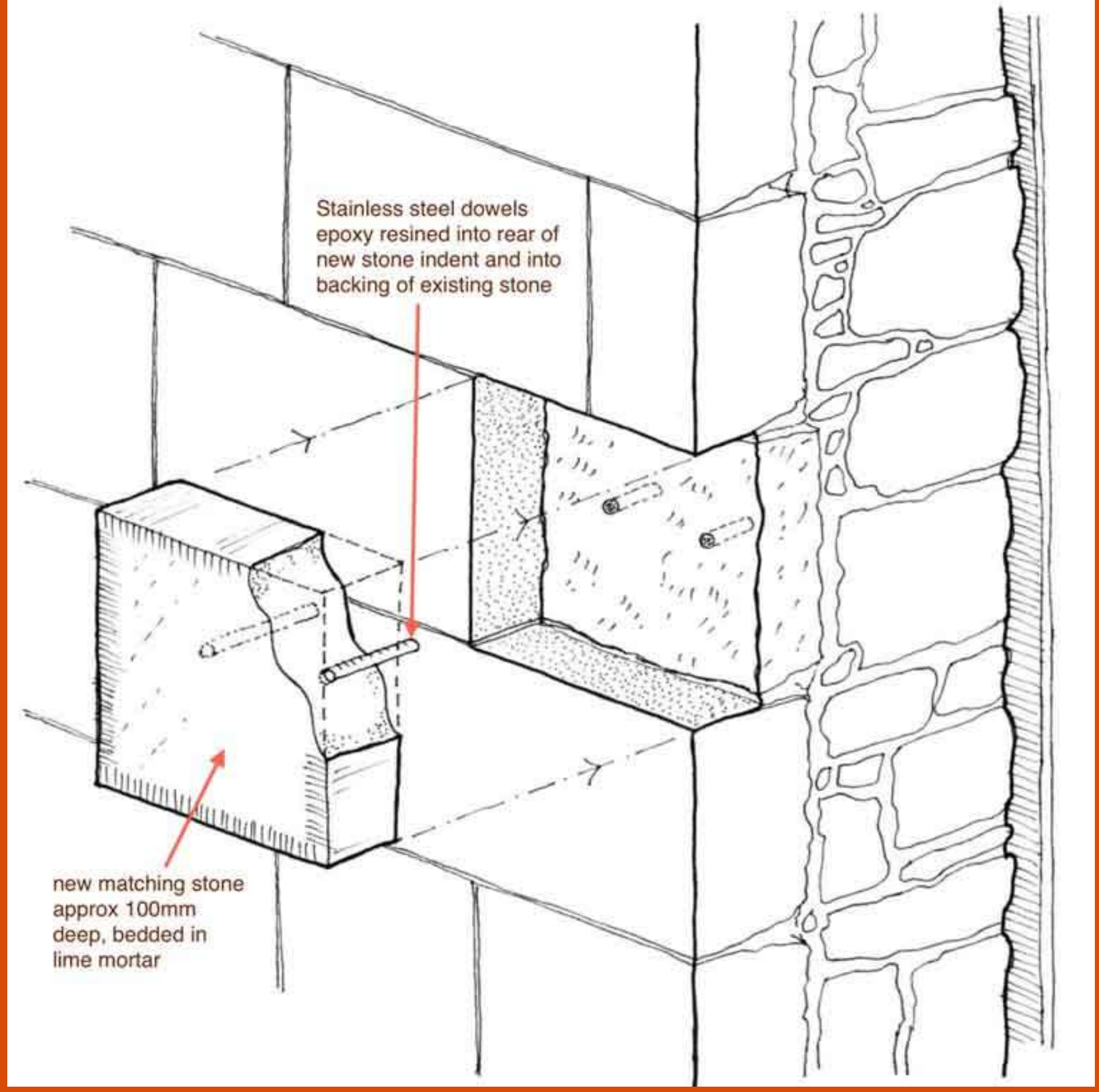
cement pointing also leads to stone decay as moisture cannot escape though cement and escapes instead through face of stone

External stone wall construction – sandwich with dressed stone exterior, rubble middle

When the stone is constantly soaked, frost attacks

For the same reason, old cement base linostone repairs cause more decay

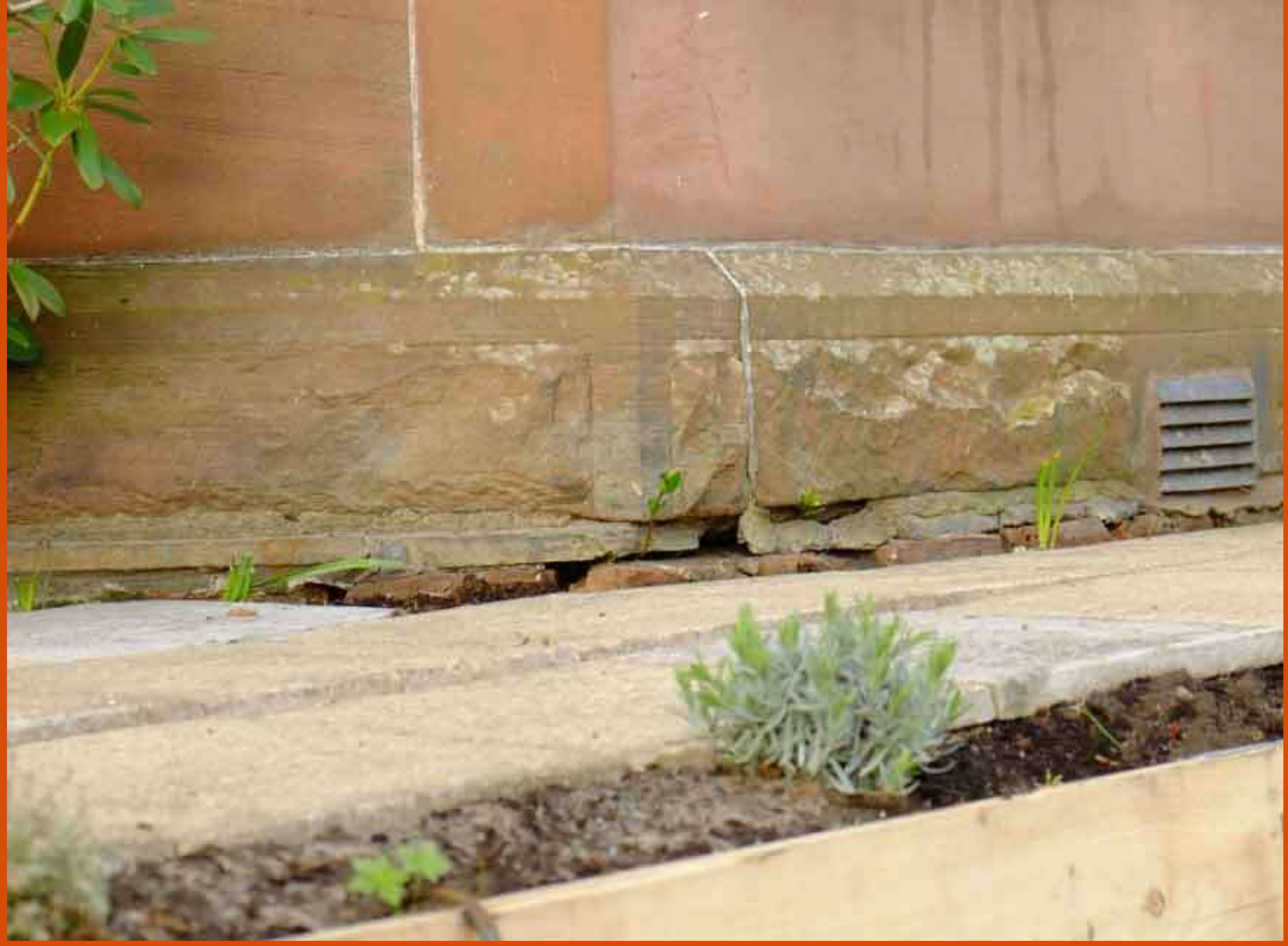
External wall repairs - indenting stone



External wall repairs - indenting stone

External wall repairs - new stone cill

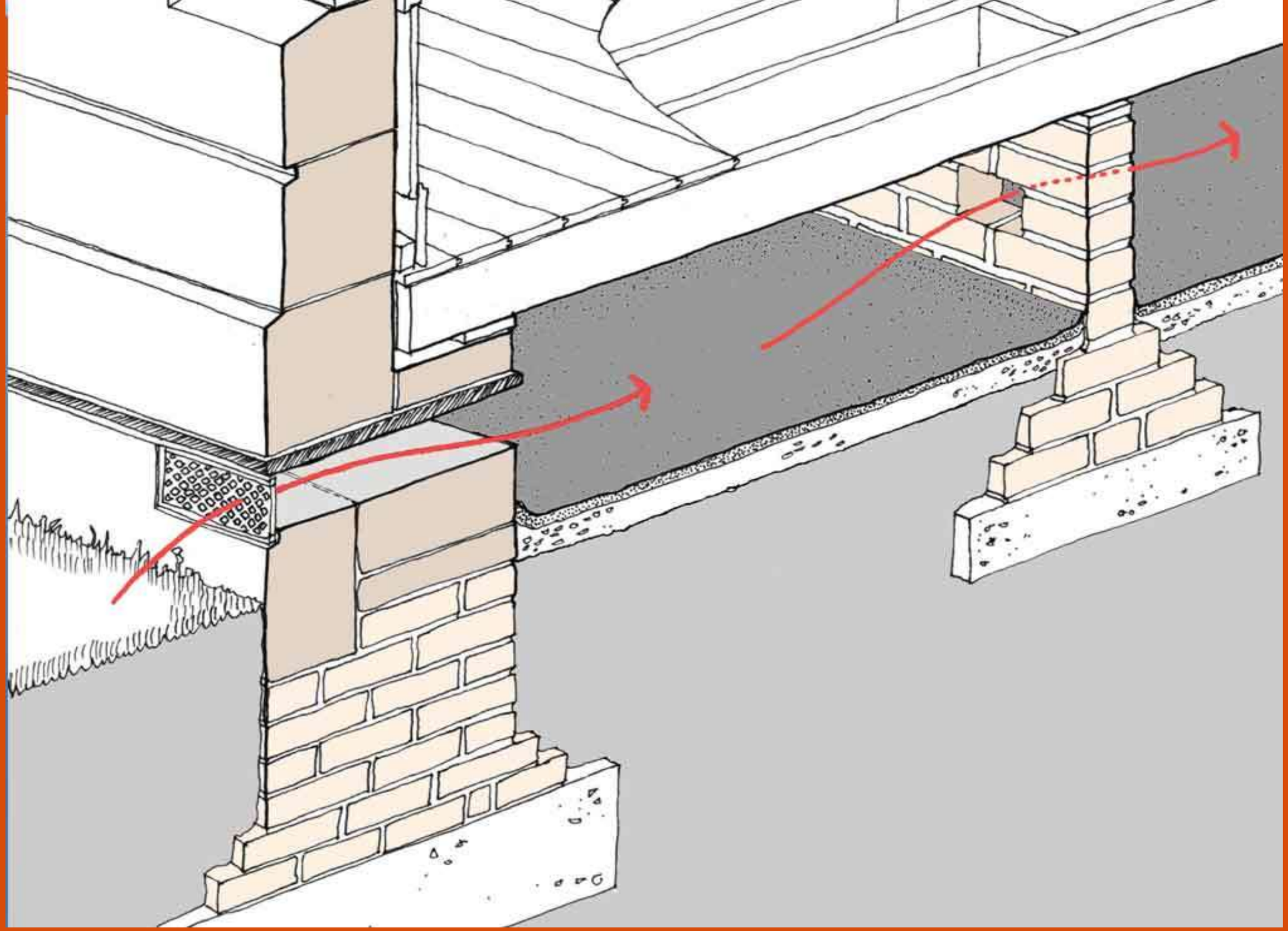
External wall repairs – lime based Lithomex ‘plastic’ repair



Protecting walls at ground level – don’t allow slate DPCs to be bridged by soil build up

http://www.underoneroof.scot/articles/1163

Ground floor joists vulnerable to rising damp



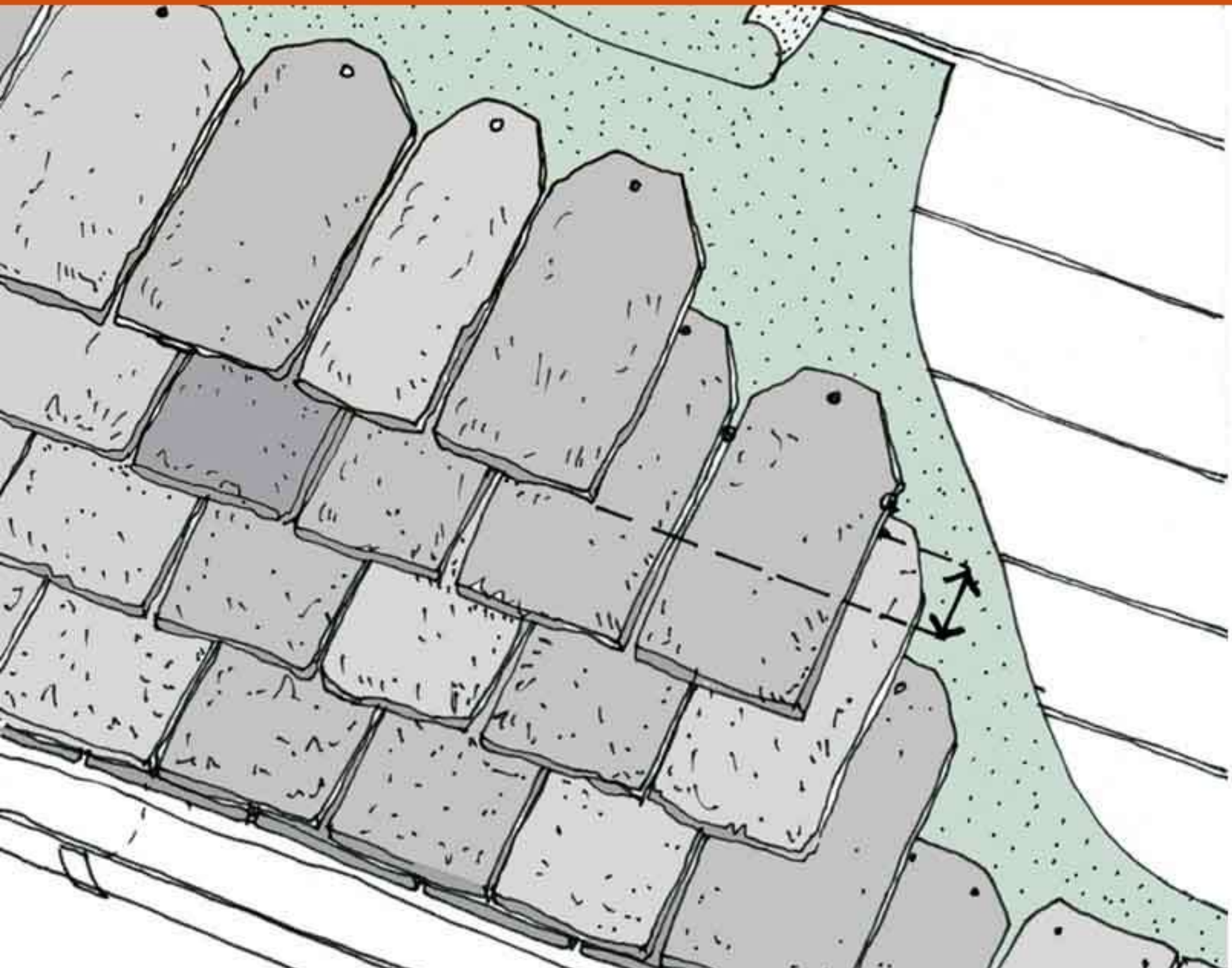
Prevention – keep the solum ventilated

Roof level repairs

Slate roofs:
http://www.underoneroof.scot/articles/1245
Tiled Roofs:
http://www.underoneroof.scot/articles/1164
Flat roofs:
http://www.underoneroof.scot/articles/1165
Ridges:
http://www.underoneroof.scot/articles/1007
Flashings:
http://www.underoneroof.scot/articles/1286
Chimneys and chimneyheads:
http://www.underoneroof.scot/articles/1350

Roof leaks - slate roofs:

Slate roofs can be repaired:



Slates can be moved to allow replacement of breakages

Using a slate ripper to move slates

Ensure breathable felt is used when roof replaced

New slate roof – larger slates at bottom, smaller slates at top

Lead is long lasting but needs proper installation. This roof has inadequate overlaps

http://www.underoneroof.scot/articles/1242

Flat roofs: lead needs to expand or cracks develop

Flat roofs need ventilation to prevent condensation damp

Ridges - help secure the top rows of slates

Ridges – also protect the ridge pole from rot

Flashings – lead is recommended because of its long life

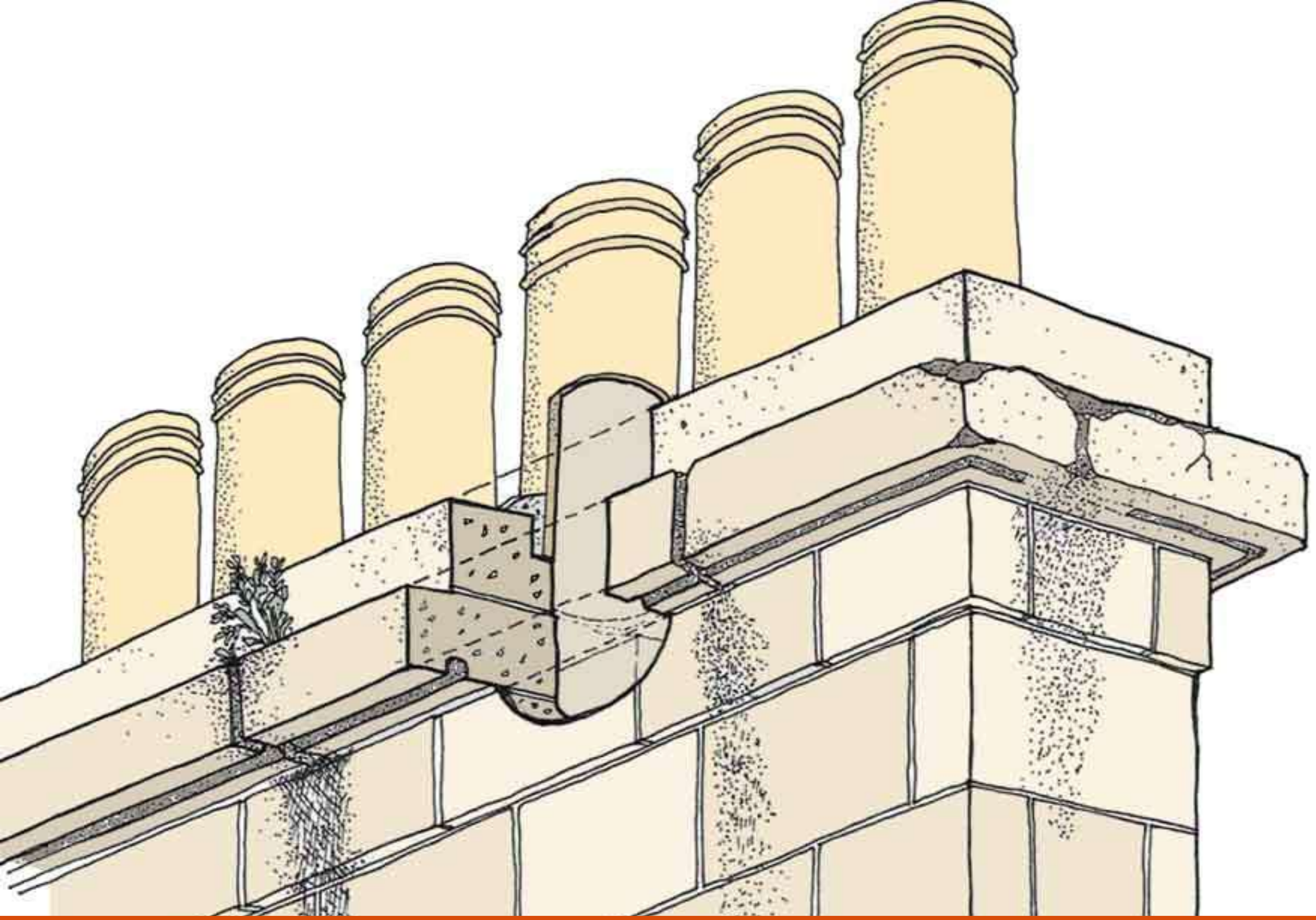
Flashing: a skew covered in lead

Flashing: skew partially covered in lead

Flashings - Lead may be too thin or badly formed

Roofs that were replaced with concrete tiles in the age of 90% grants may now need to be replaced.

Concrete tiles have an expected length of life of 30 – 40 years

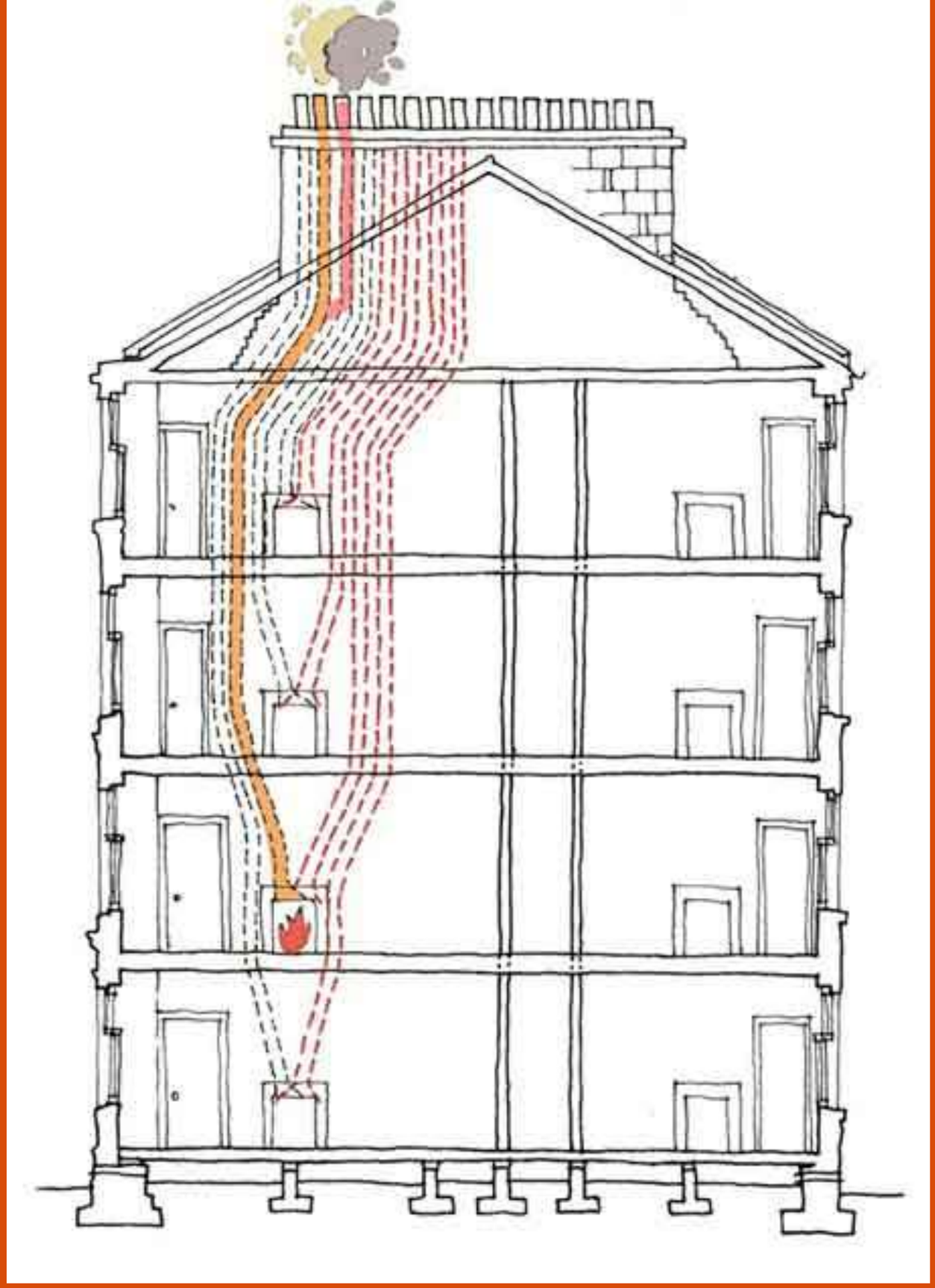


Chimneyheads: highly exposed and at risk from flue gases

Chimneyheads: old repairs often cause high risk

Chimneyheads – testing for loose render by tapping

Chimneyheads – flue and fuel gases cause decay

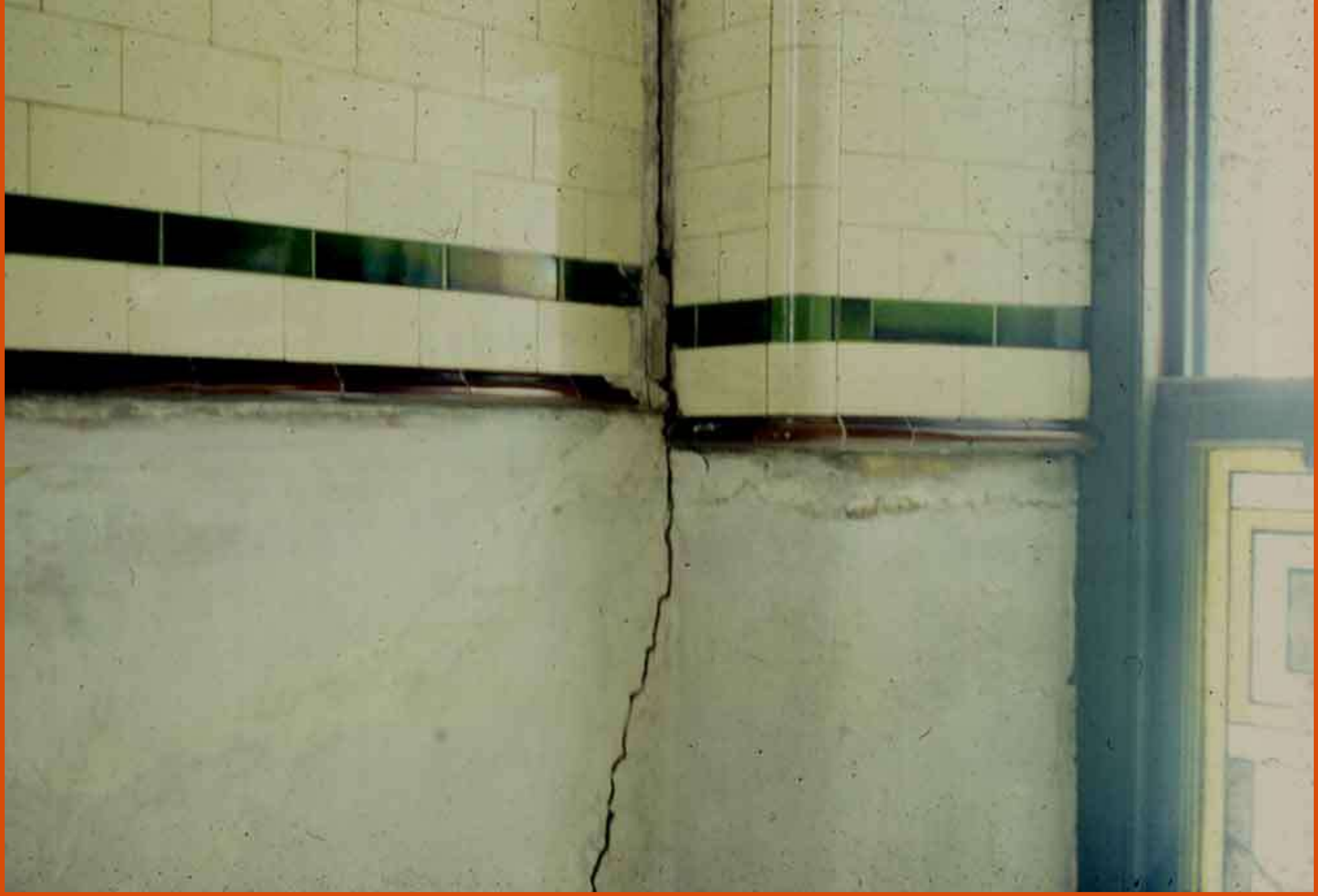


Chimneys: Individual flues

Chimneys - Individual flues are kept separate by bridges

Close and stairs

http://www.underoneroof.scot/articles/993



Separation cracks in closes – heavy outer walls sink more than lighter inner walls

More signs of movement in close

Solution – installing ties between inner close walls and exterior walls

cast iron railings provide strength to stairs

Individual stair treads can move

Open treads may need strengthened

Open treads danger of sudden collapse

Ironwork

Not just decorative

Important safety protection

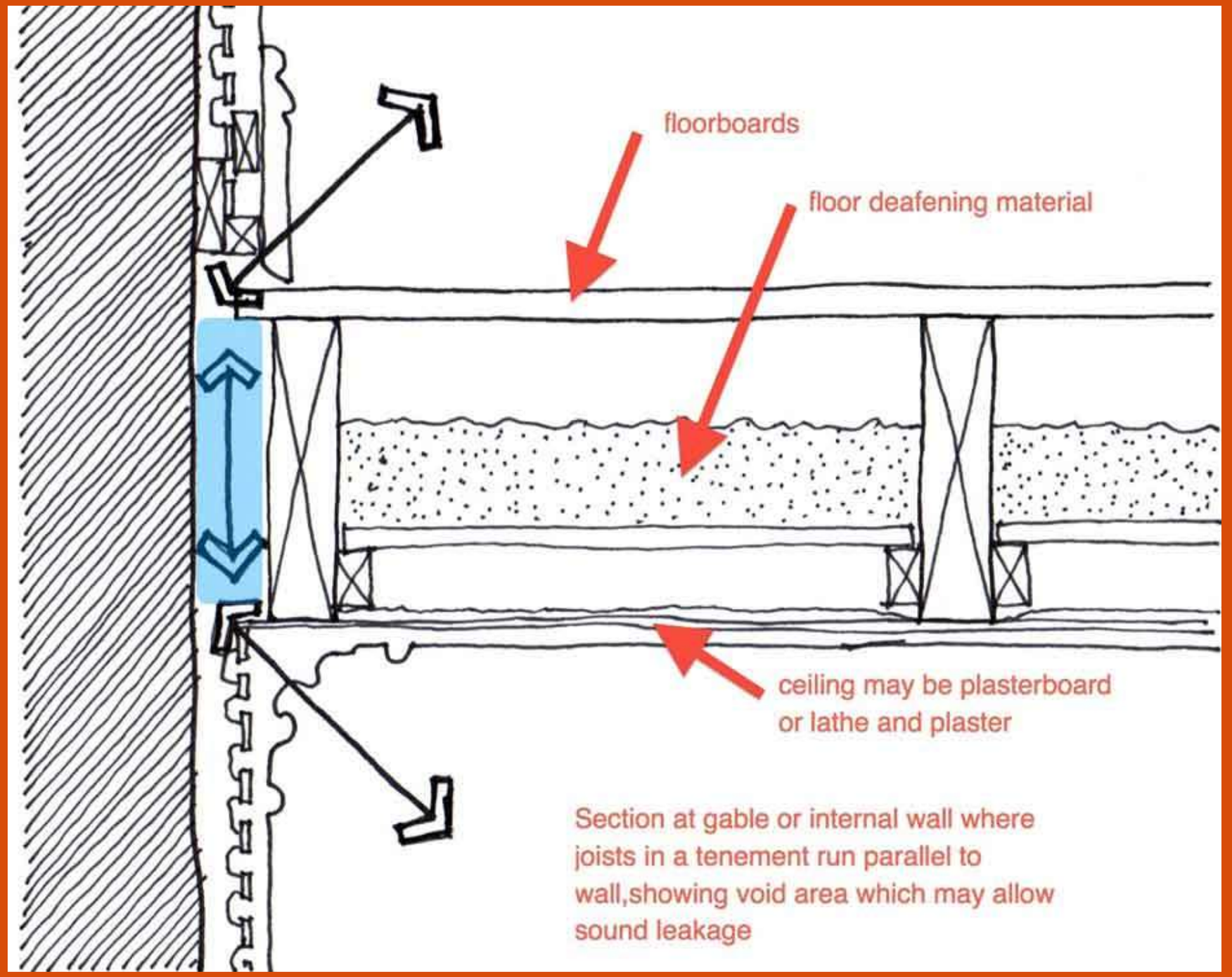
http://www.underoneroof.scot/articles/1563/

Ironwork – rusting can split stone

Ironwork – railings in this condition gave way when someone leant against them and fell into basement and was injured – upcoming court case?

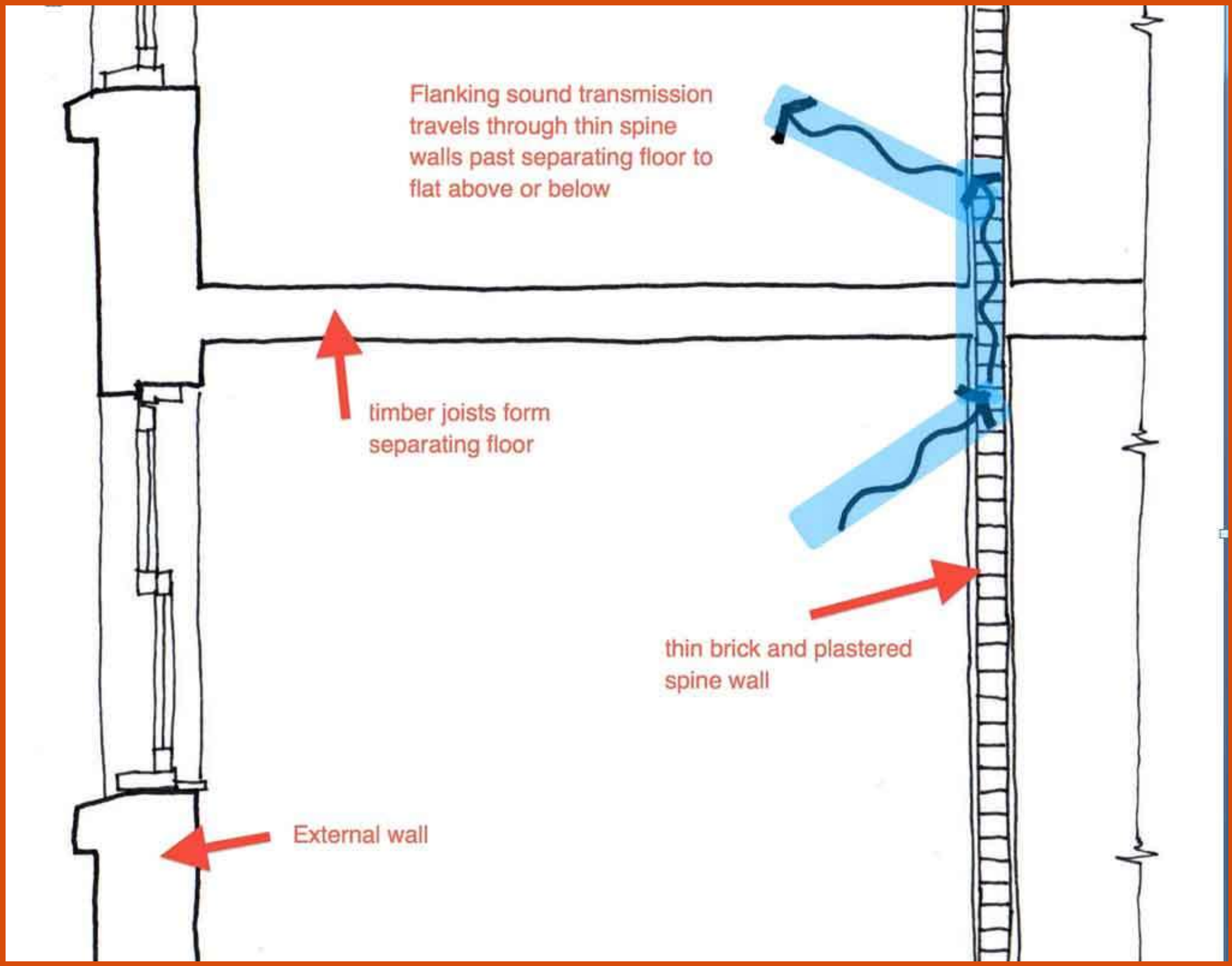
Noise

http://www.underoneroof.scot/articles/1211/



Noise through floors can be due to a lack of deafening where it has not been replaced following repairs or where there are gaps at the wall edge

http://www.underoneroof.scot/articles/1167/



“Flanking” sound can also be a problem where noise travels through inner spine walls

Noise can also travel through the thin walls of presses. These were often left open during the build to allow workers access. People have been known to break in through them!

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