

Natural Materials in Historic Buildings

Then Now When

Conservation + Architecture + Sustainability

Natural Materials

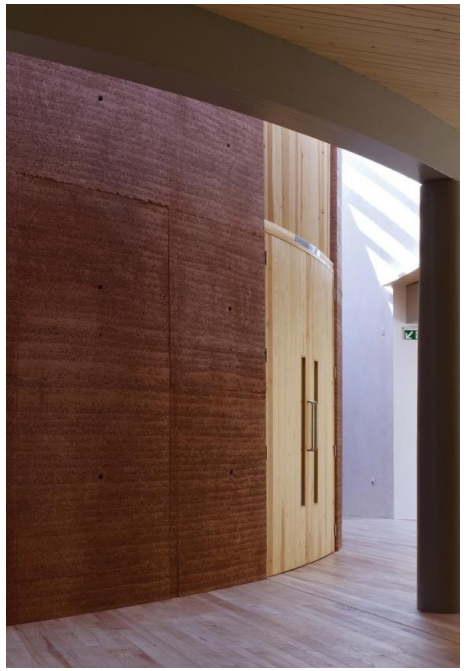
Those that do not require significant processing, and that are from naturally occurring sources, rather than oil-derived or require a high input of energy to manufacture





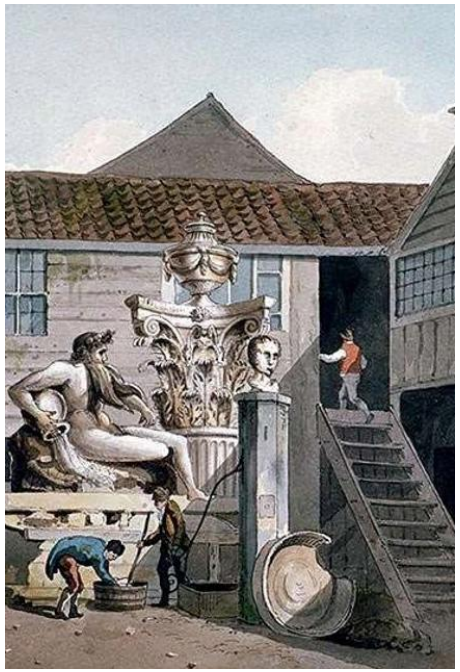
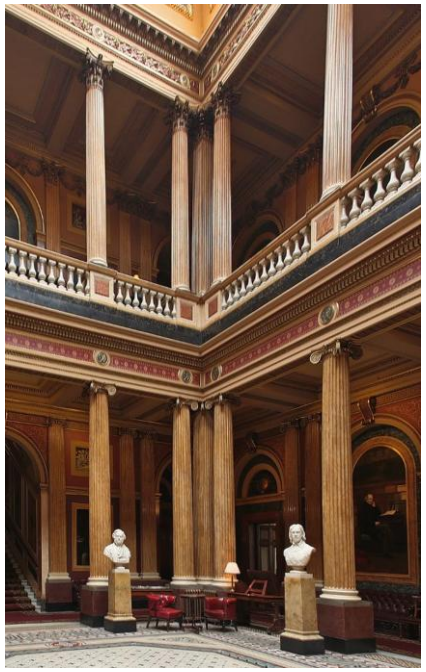
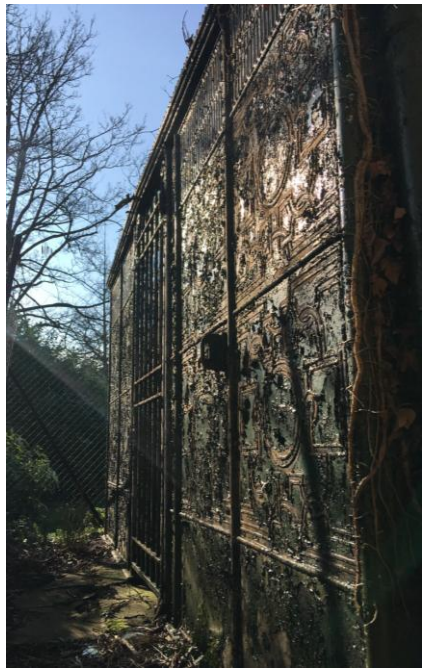






Historic Buildings and *a Combination of* Materials



Historic Buildings

For our purposes, buildings in Bath and its surrounding area, typically of solid wall construction.





Historic Buildings

However…







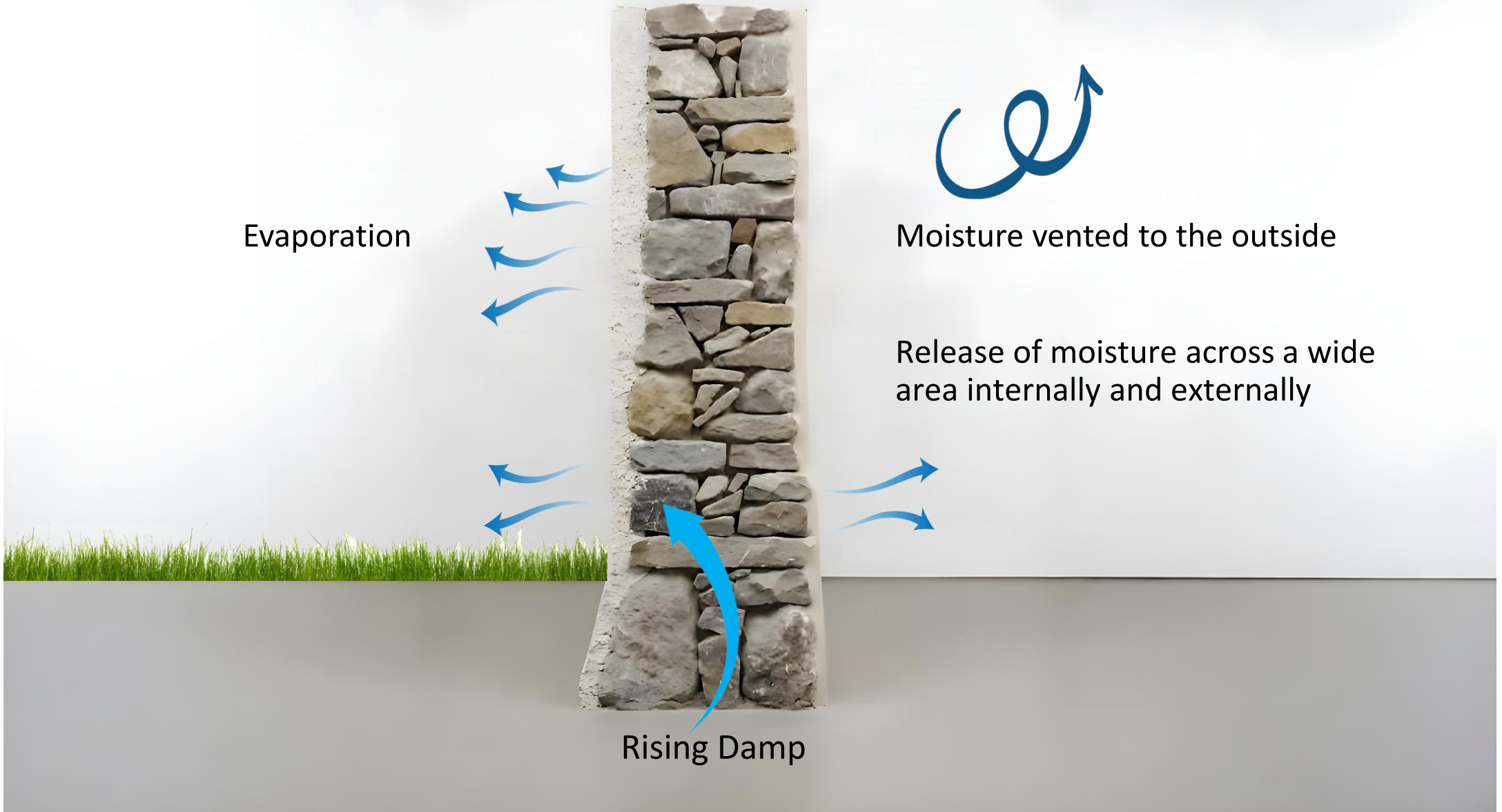
How Historic Walls Work



How Historic Walls Work



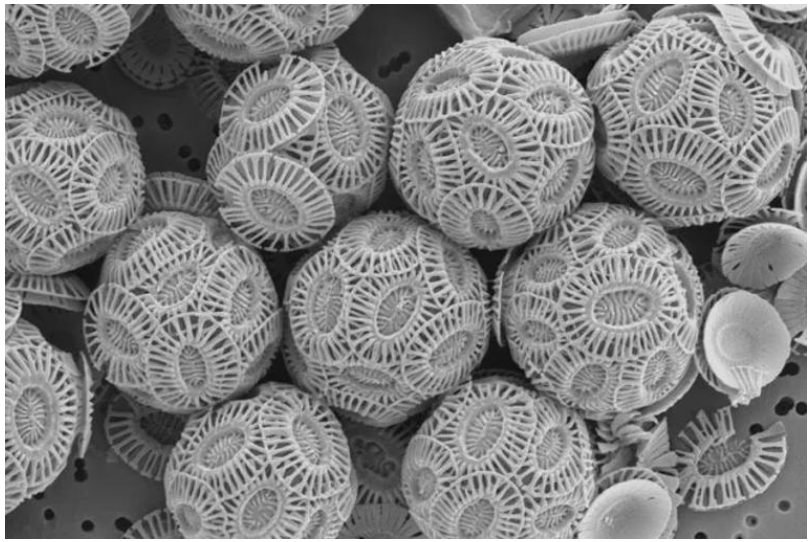
How Historic Walls Work



Walling Material



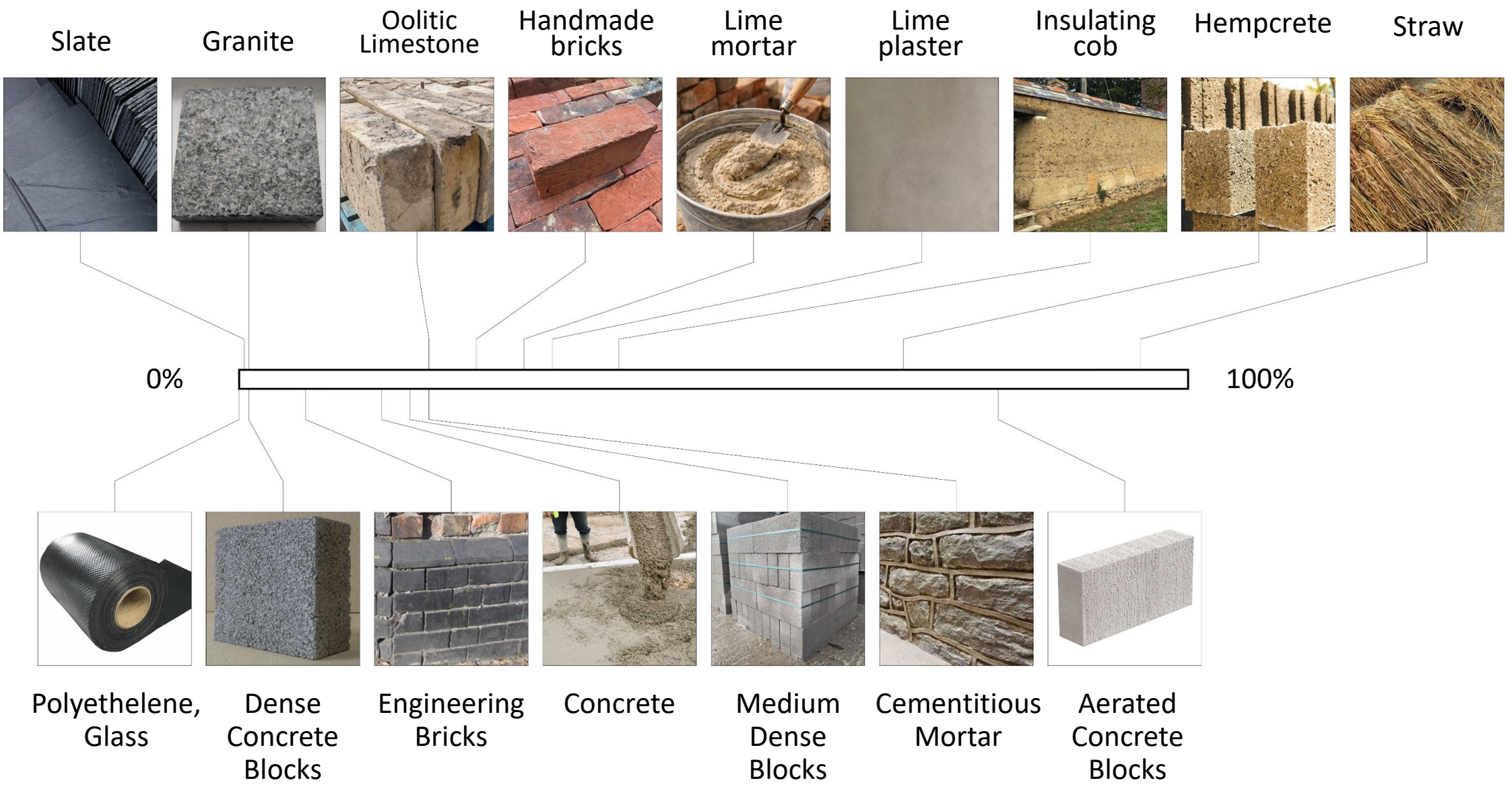
Oolitic limestone, with it's dual-porosity pore structure. Intra oolitic pores range from 0.1 to 1mm in diameter and form an irregular network



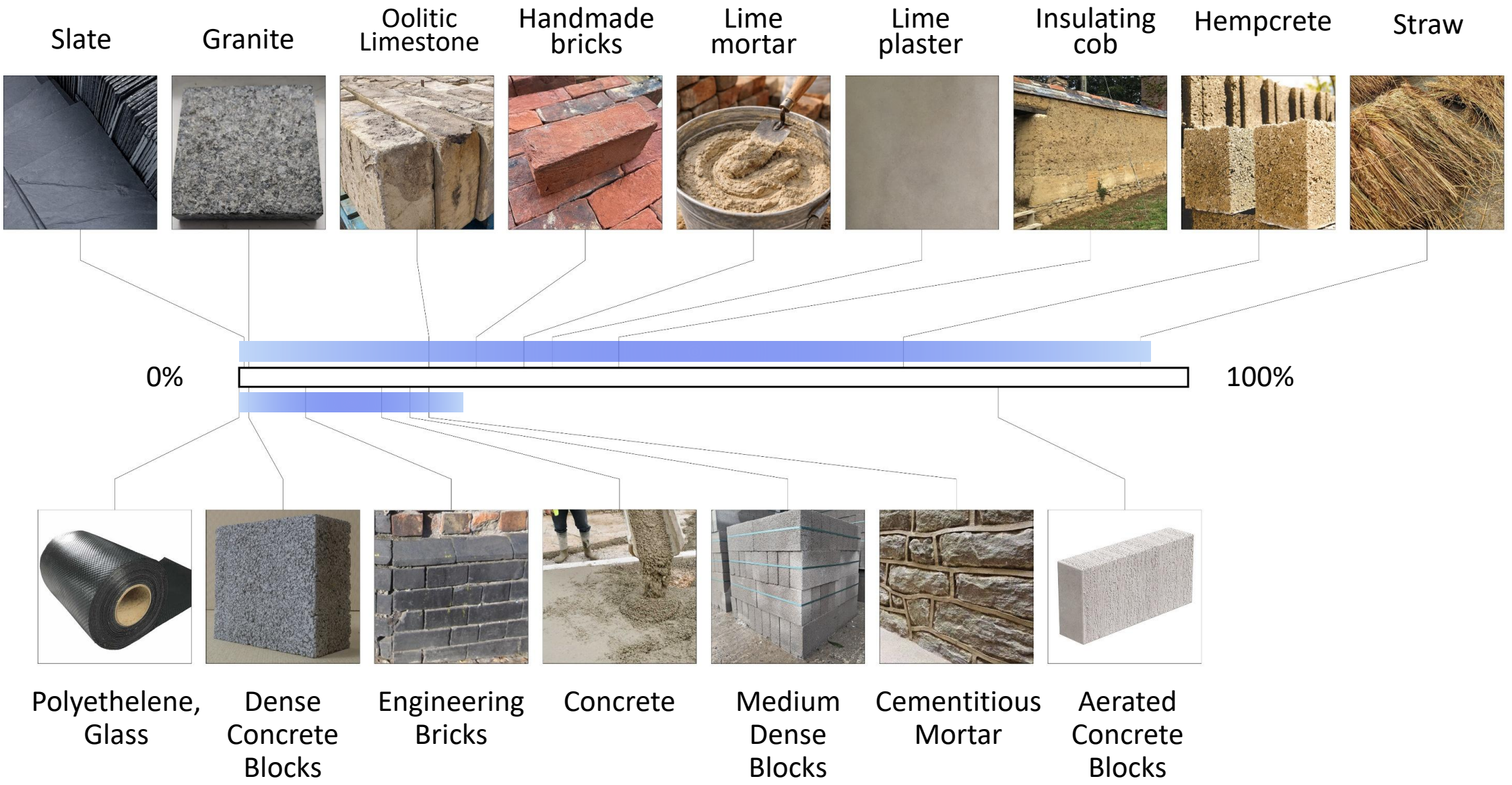
Chalk, made of the plankton husks (coccoliths) compressed together

It is the porosity, and the arrangement of pore structures, that allows water to be absorbed. It is then transmitted through the material by osmosis.

Porosity of Natural and Man-Made Materials



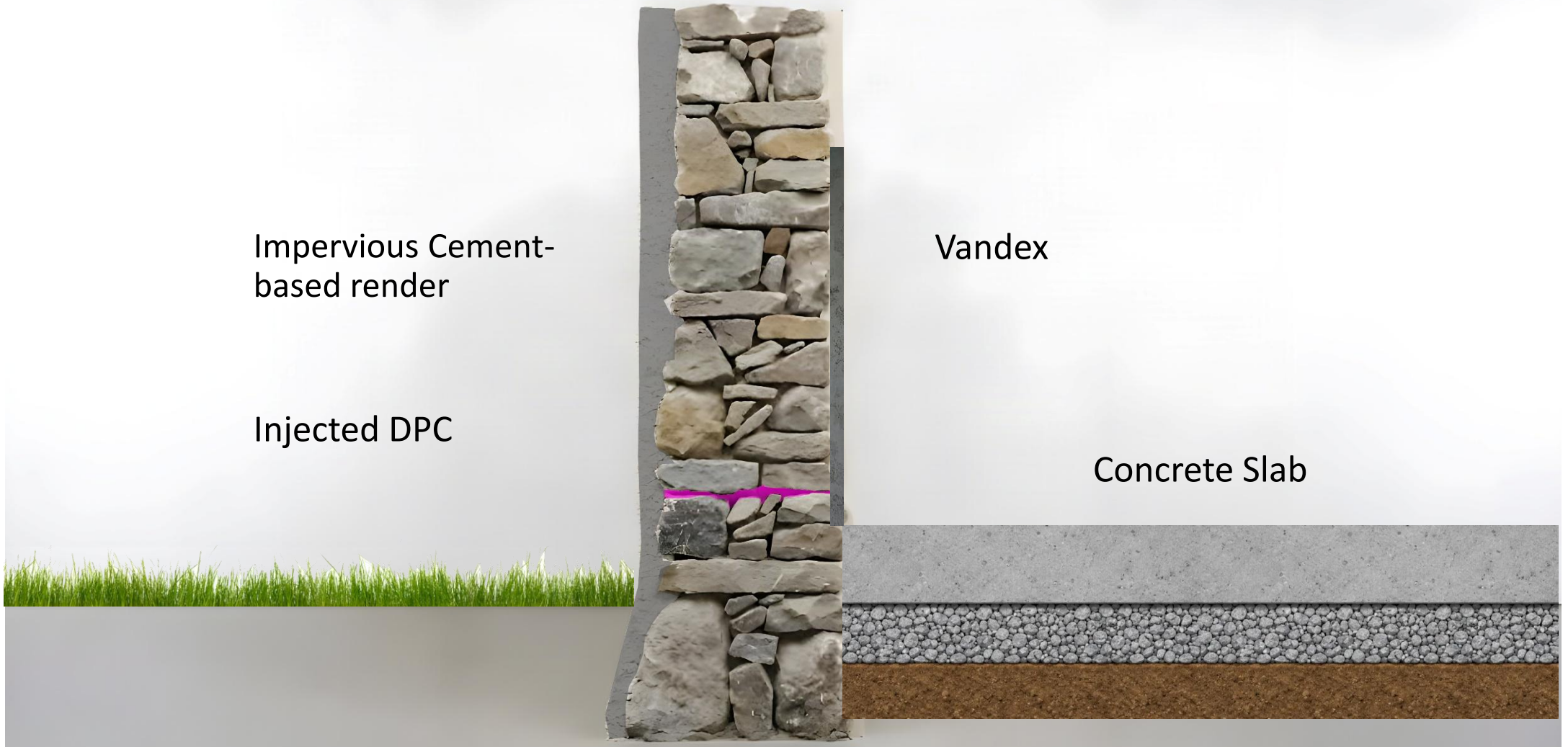
Porosity of Natural and Man-Made Materials



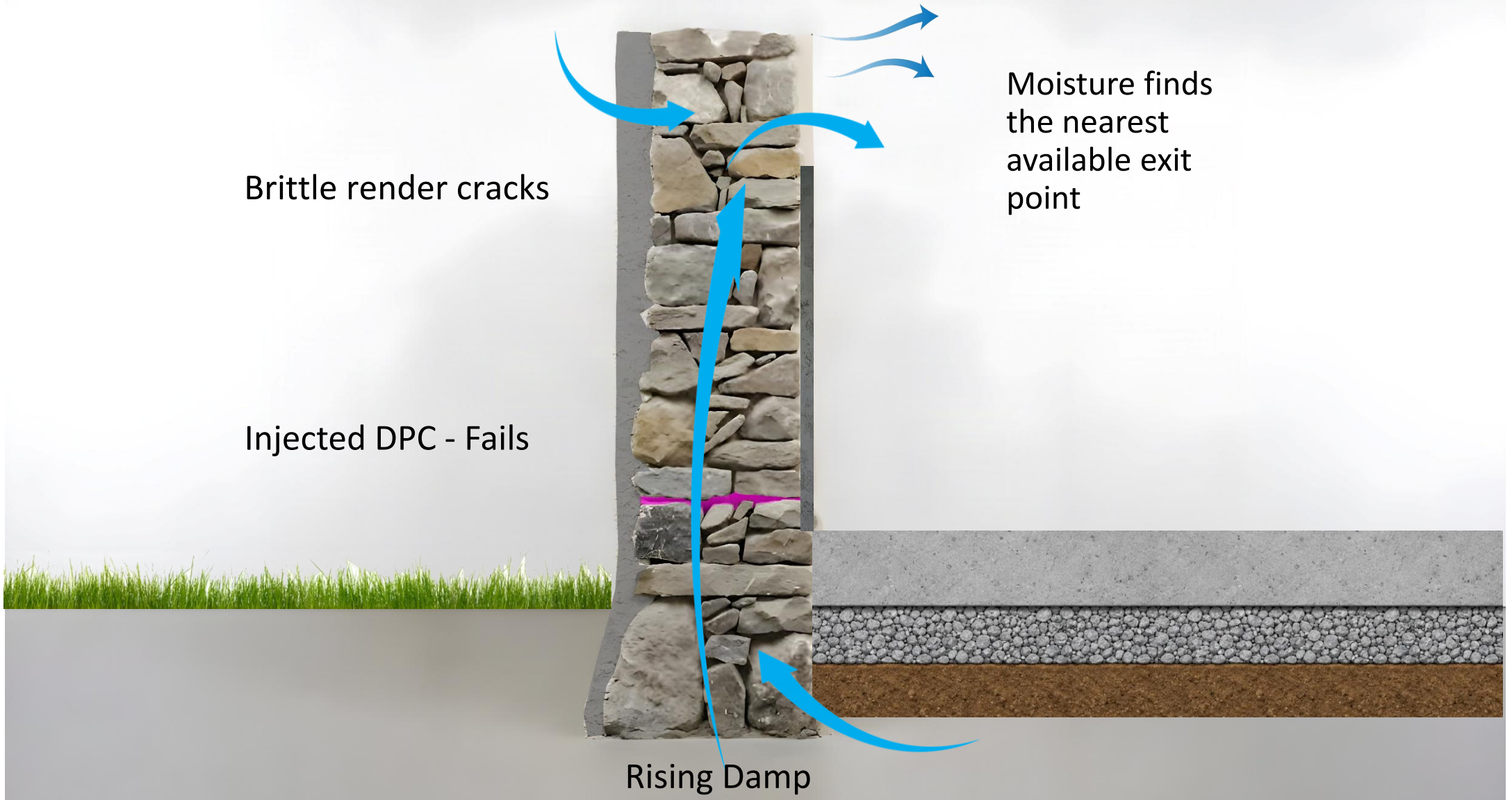
Unsuitable Interventions



Unsuitable Interventions



Unsuitable Interventions



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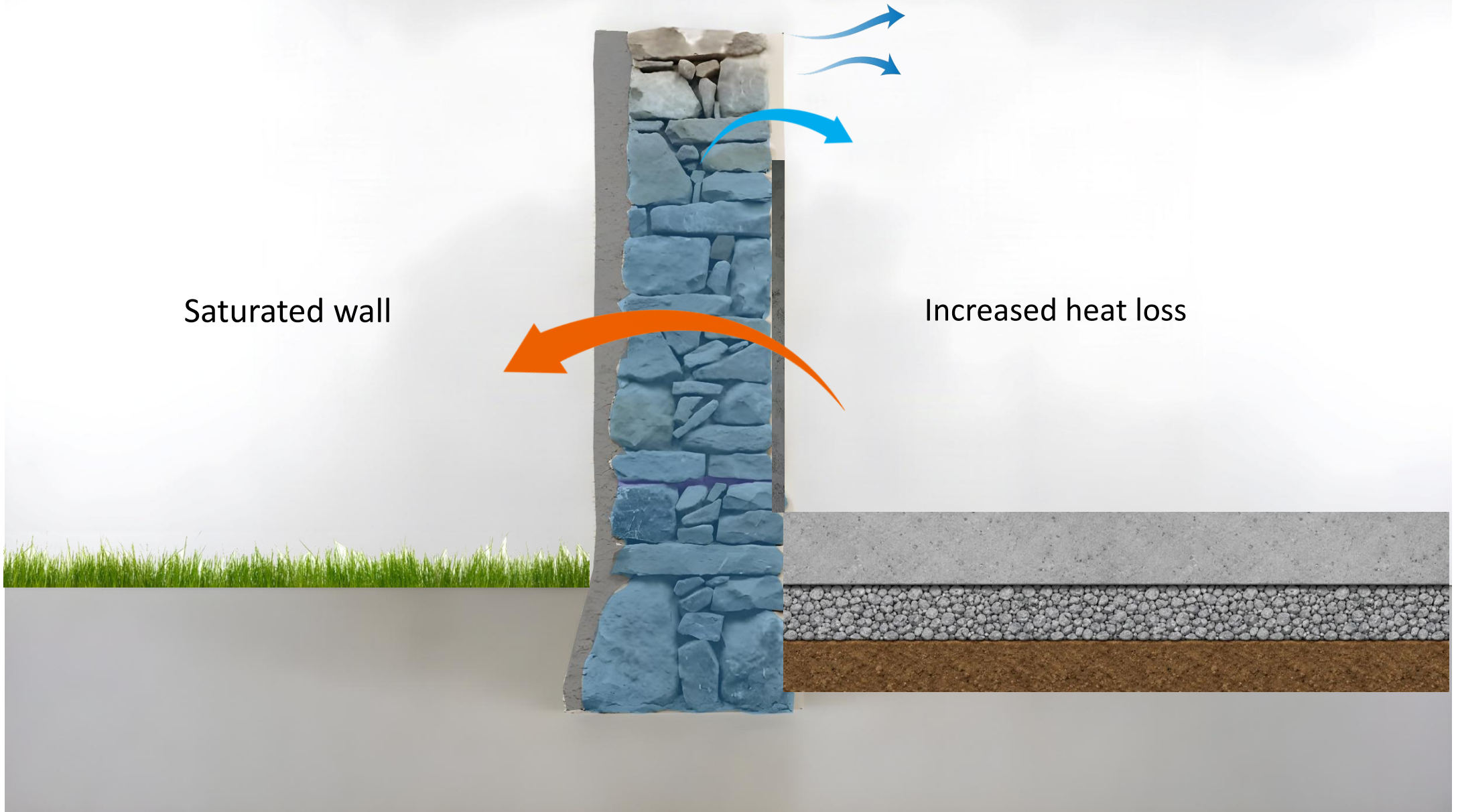

Recent Example





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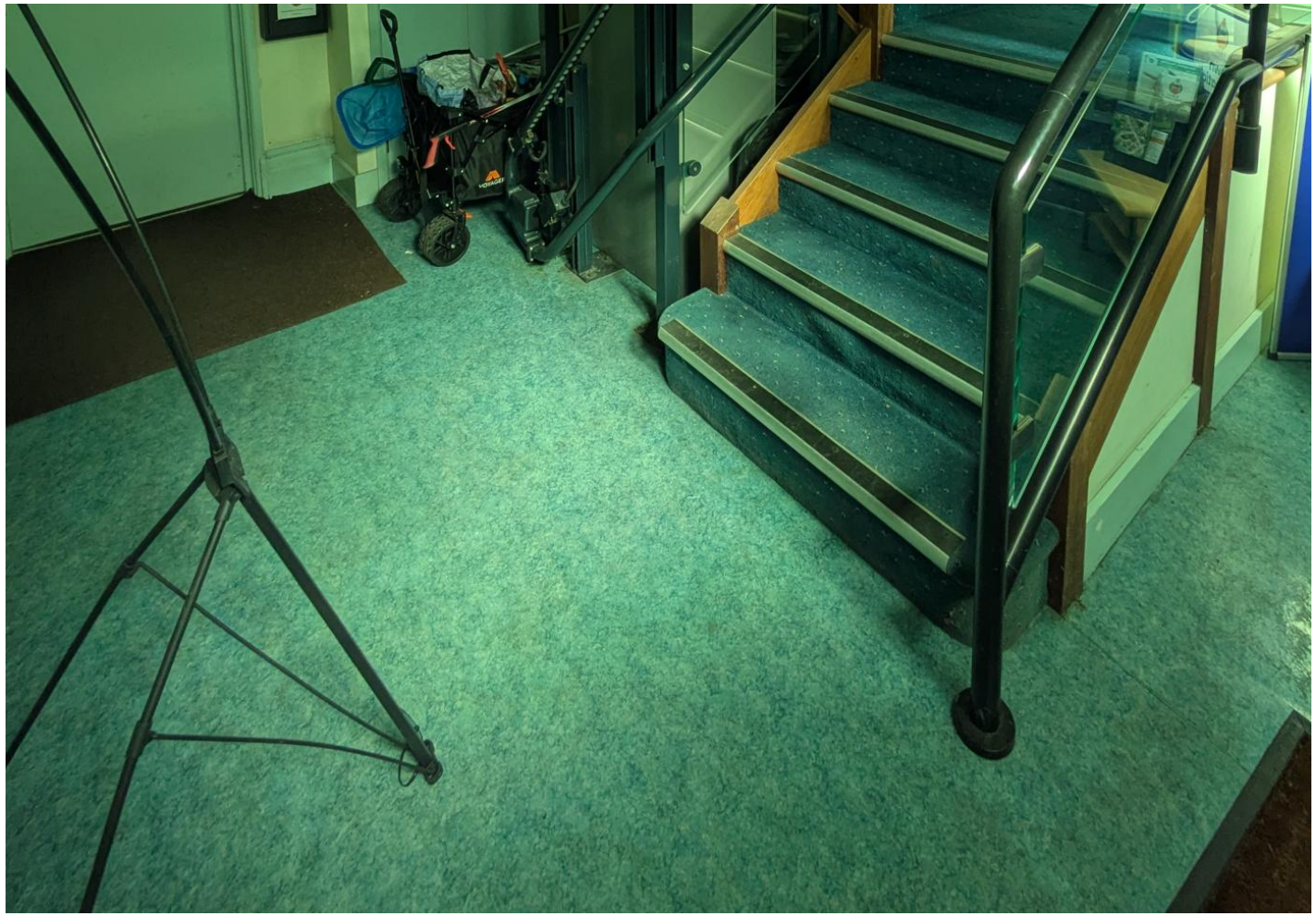
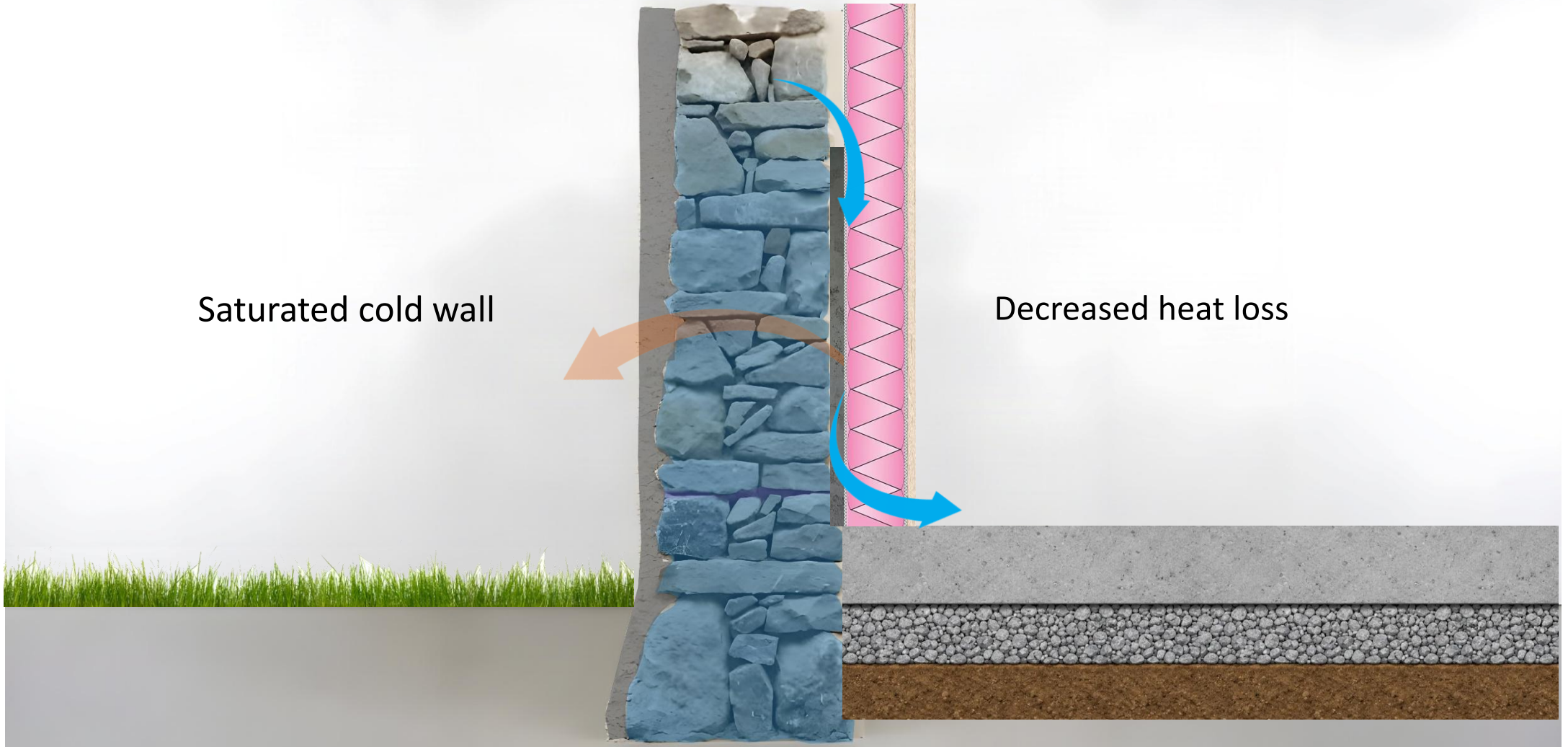


Unsuitable Interventions

Saturated cold wall

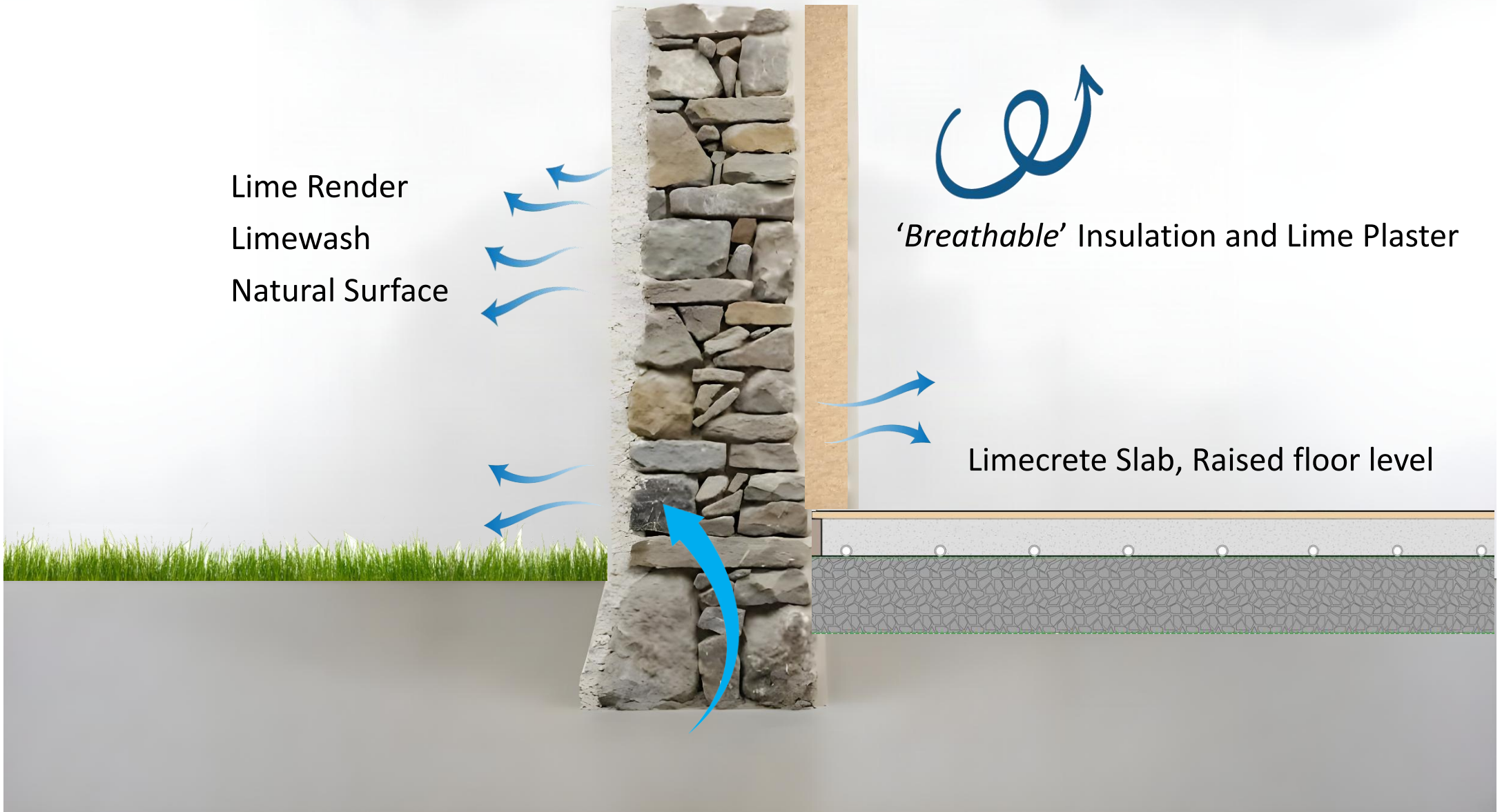
Decreased heat loss



a. Revert to Original State



b. Upgrade Without Compromising Breathability



Summary

Natural building materials excel in their vapour permeability and breathability, making them particularly suitable for historic buildings.

(*This is their Hygrothermal performance*)

Aesthetic Appeal - Historic Appropriateness – Resilience - True thermal performance

Flexibility - Reversibility - Lack of VOCs - Long term cost effectiveness