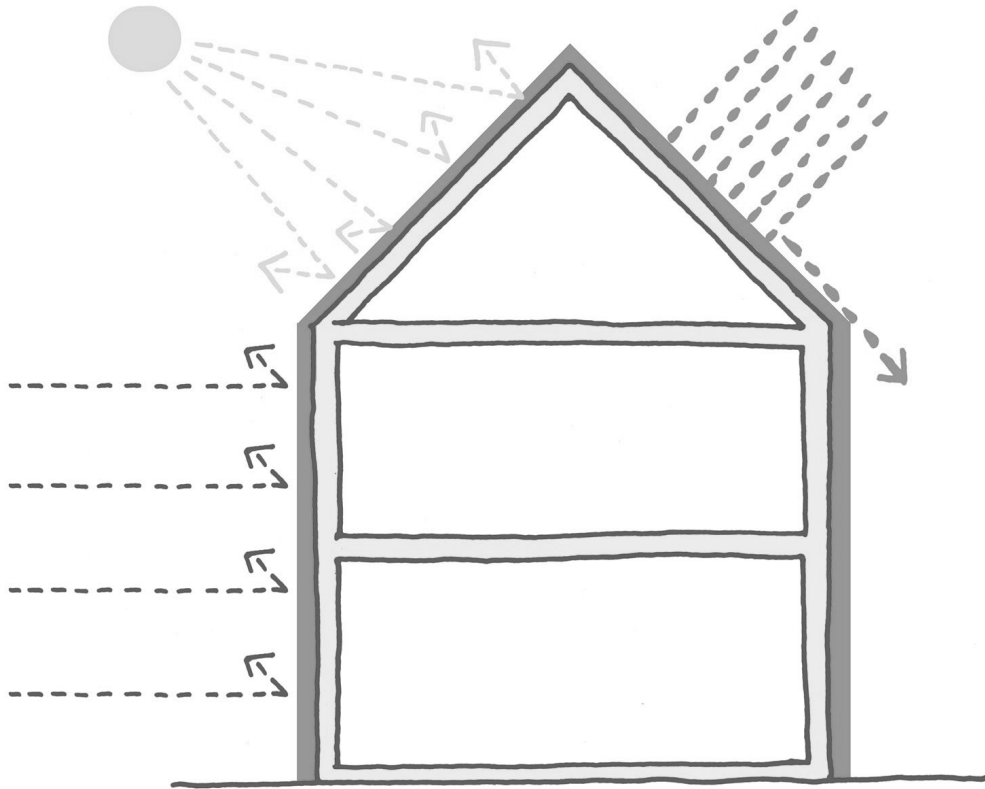


Chapter 11: Envelope Design Concepts

1. In your own words, label the drawing to explain the primary function of the external envelope.



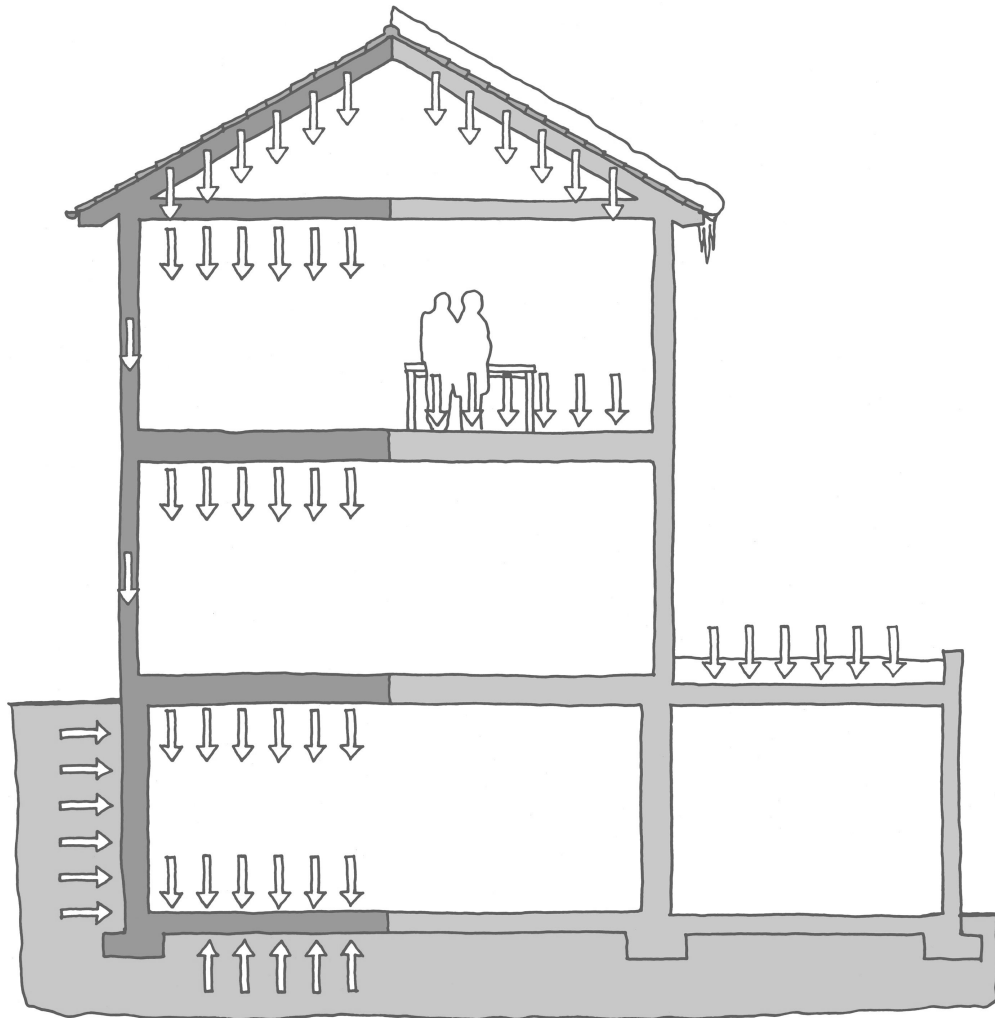
2. How do we make the external envelope 'sustainable'?

3. How much of a building's total energy consumption is due to the embodied energy of its materials?

- building regulations house:
- low-energy house:

4. Why is this important?

5. Label the following diagram.



6. Explain the following terms:

load:

force:

permanent actions:

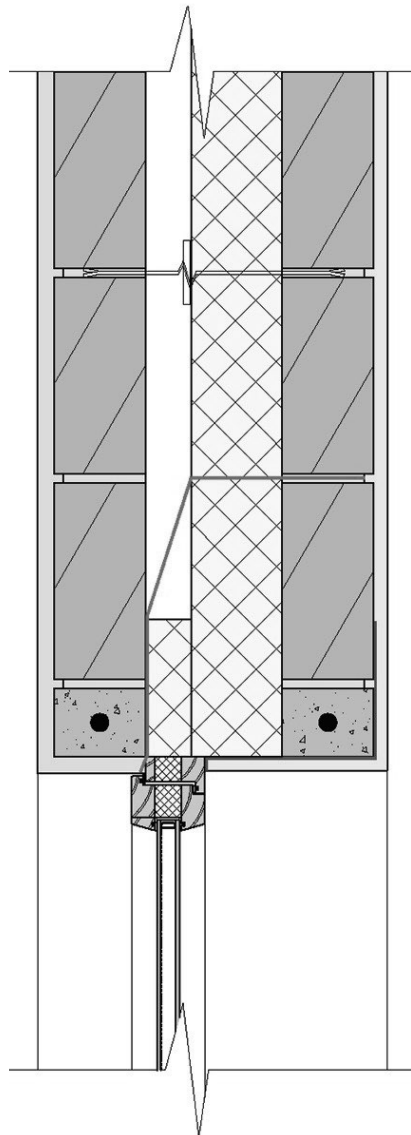
variable actions:

accidental actions:

7. Add members to the structures shown to increase their structural stability:

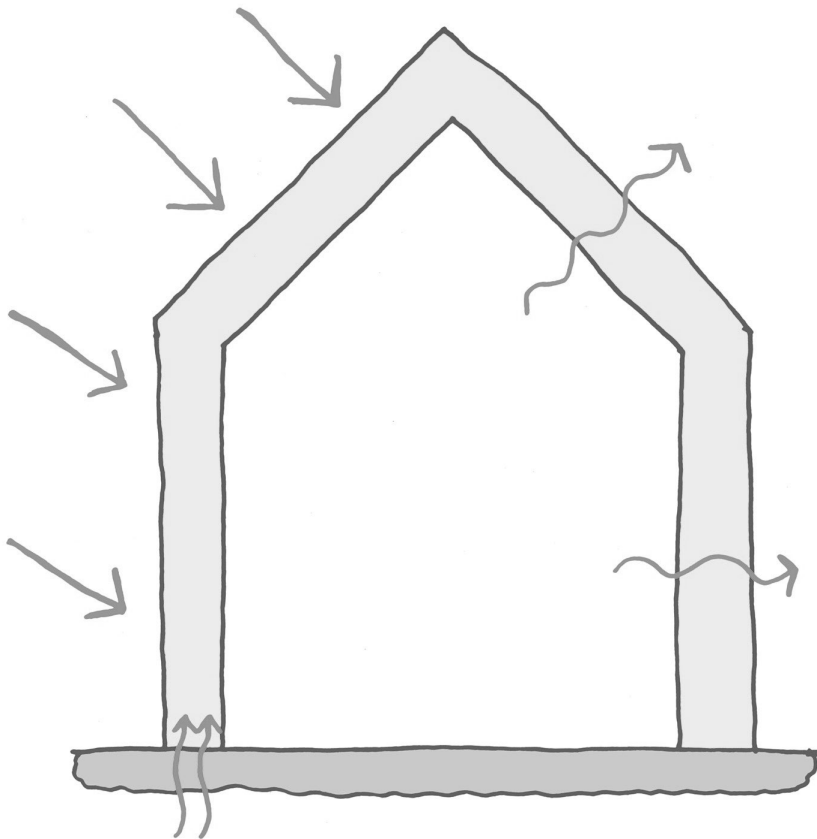
8. List **any three** factors that determine the durability of buildings:

9. Show, by adding to the sketch, how the thermal resistance of the wall buildup shown could be improved. Label and dimension the relevant components.



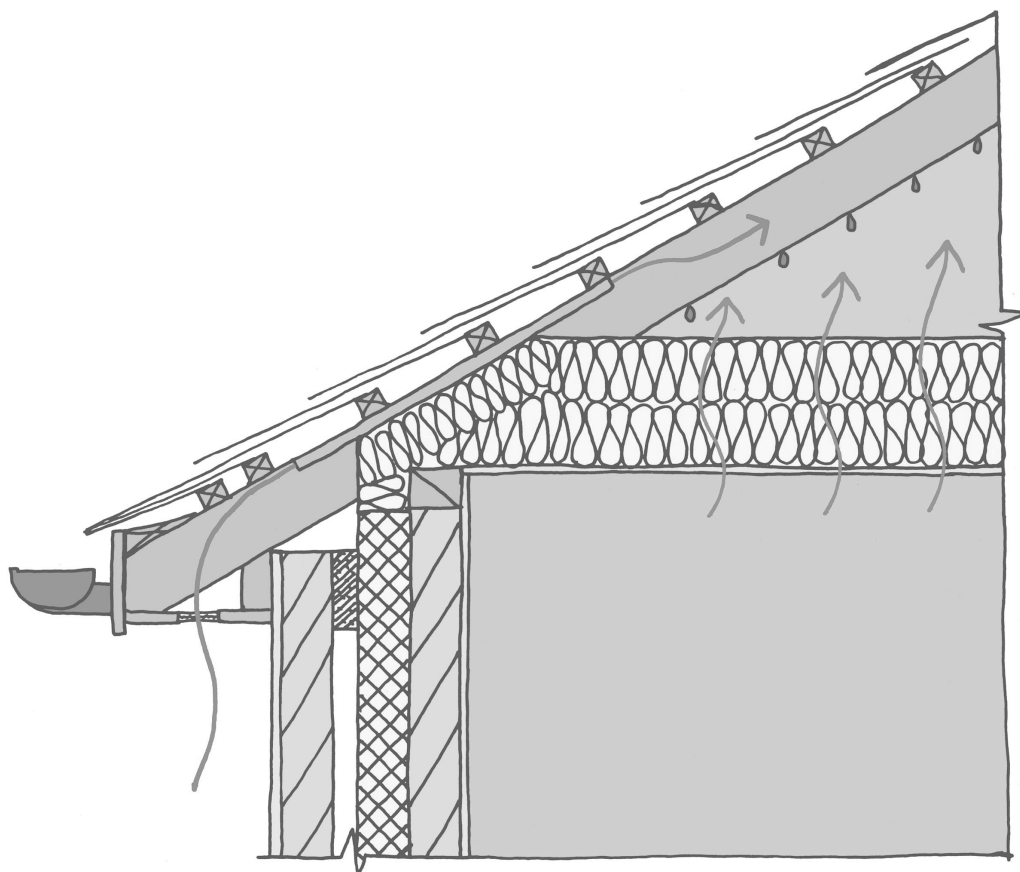
12. Explain two ways by which the wind can cause the external envelope to under perform.

13. In your own words, label the drawing to explain three ways water can penetrate a structure.



14. What is the difference between water in liquid form and water vapour?

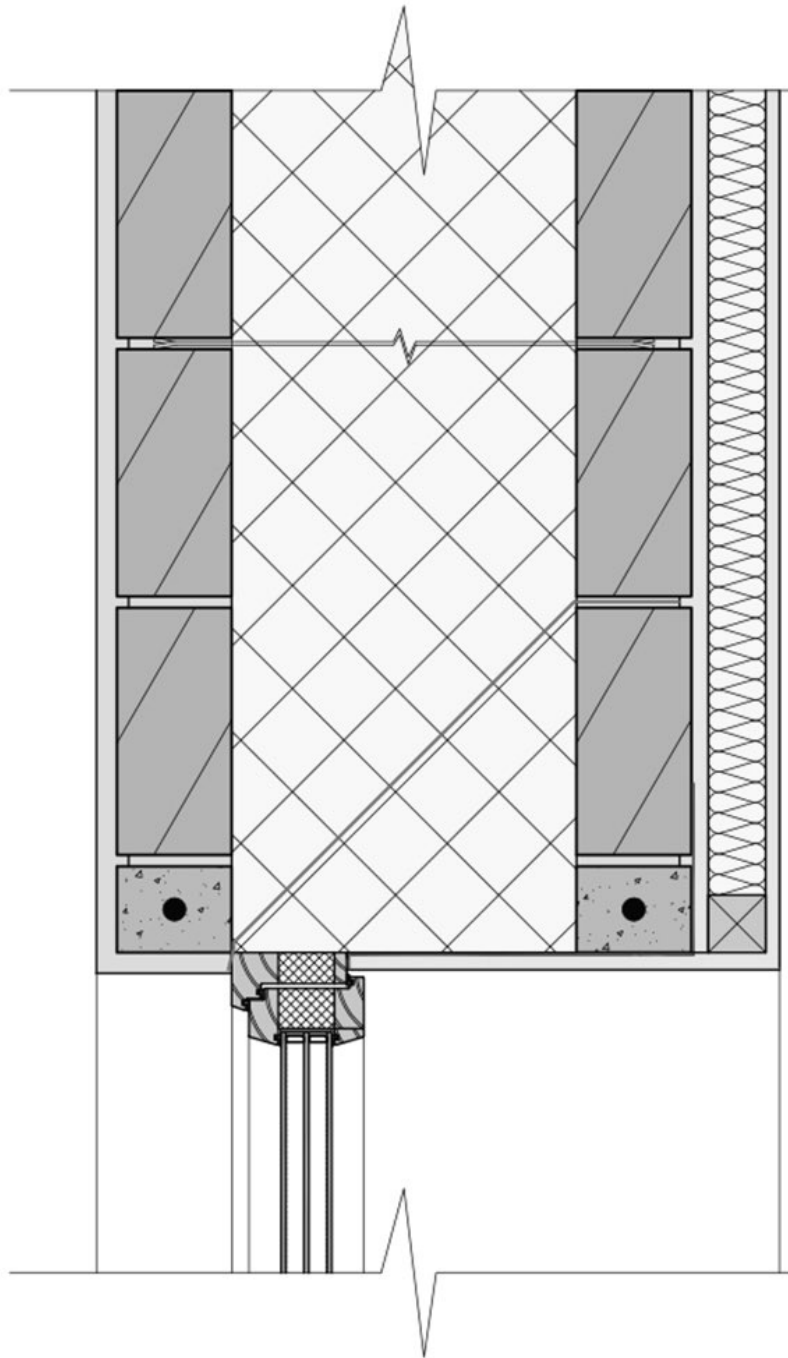
15. Explain, using notes, what is happening here:



16. Explain, in your own words and using a neat annotated sketch, how 'breathable' materials work.

17. Explain, in your own words, why it is important the external envelope is airtight.

18. Indicate, using a blue pen, the position of the airtight layer. Label each material.



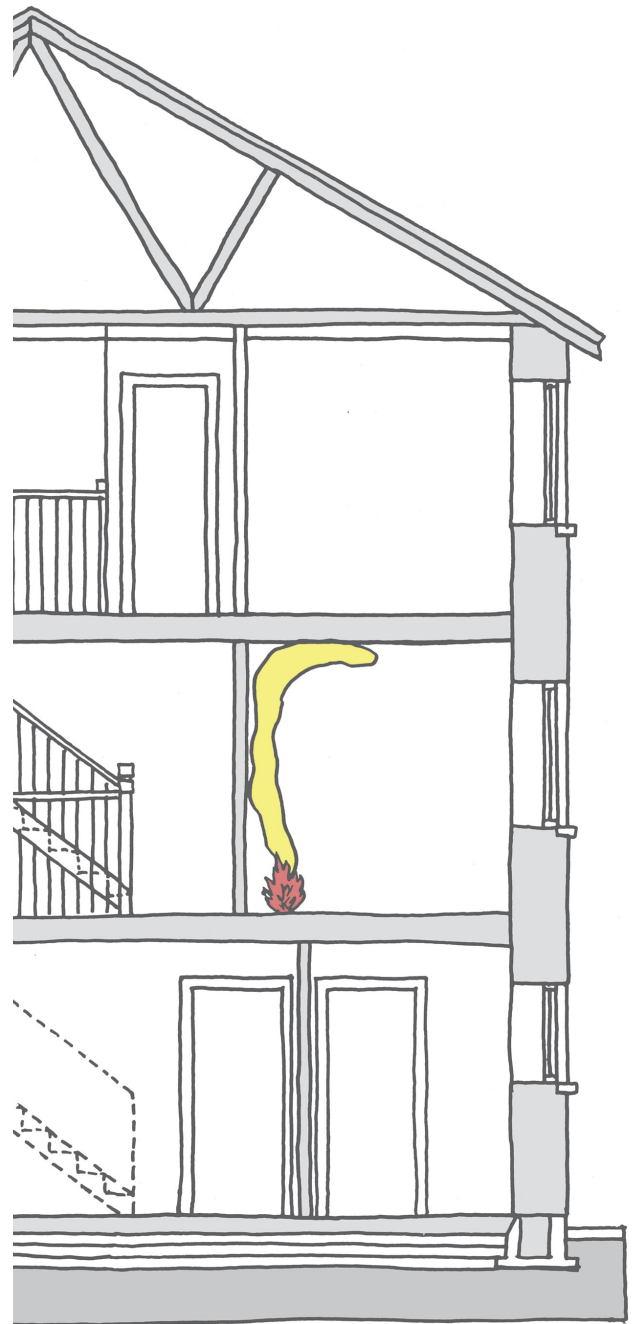
19. Explain, in your own words, the purpose of a service cavity.

20. How is the spread of fire prevented in the image shown.

ceiling:

internal wall:

floor:



21. Explain, in your own words, any two elements that contribute to the aesthetic appearance of a building.
