

# COLD ROOF VS WARM ROOF

Which is Best?



**COLD ROOF**



**WARM ROOF**



City & Guilds

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# Introduction:

This activity supports learners in understanding the key differences between **warm roof** and **cold roof** construction. Using labelled images from your 3D model, students identify and place terminology such as insulation layers, ventilation gaps, vapour control layers, rafters, ceiling joists, and roof coverings. The activity builds confidence with structural sequencing, thermal performance concepts, and correct industry terminology.

# Aim:

To develop learners' ability to **recognise, label, and explain** the components of warm and cold roof systems using visual prompts and construction terminology.

# Learning Objectives

By the end of this activity, learners will be able to:

- Identify the key components of a **warm roof** and a **cold roof**.
- Correctly label structural and thermal elements using industry-standard terminology.
- Explain the functional differences between warm and cold roof designs.
- Describe how insulation placement affects ventilation, moisture control, and heat loss.
- Apply knowledge to real-world scenarios and construction drawings.

# Activity Overview:

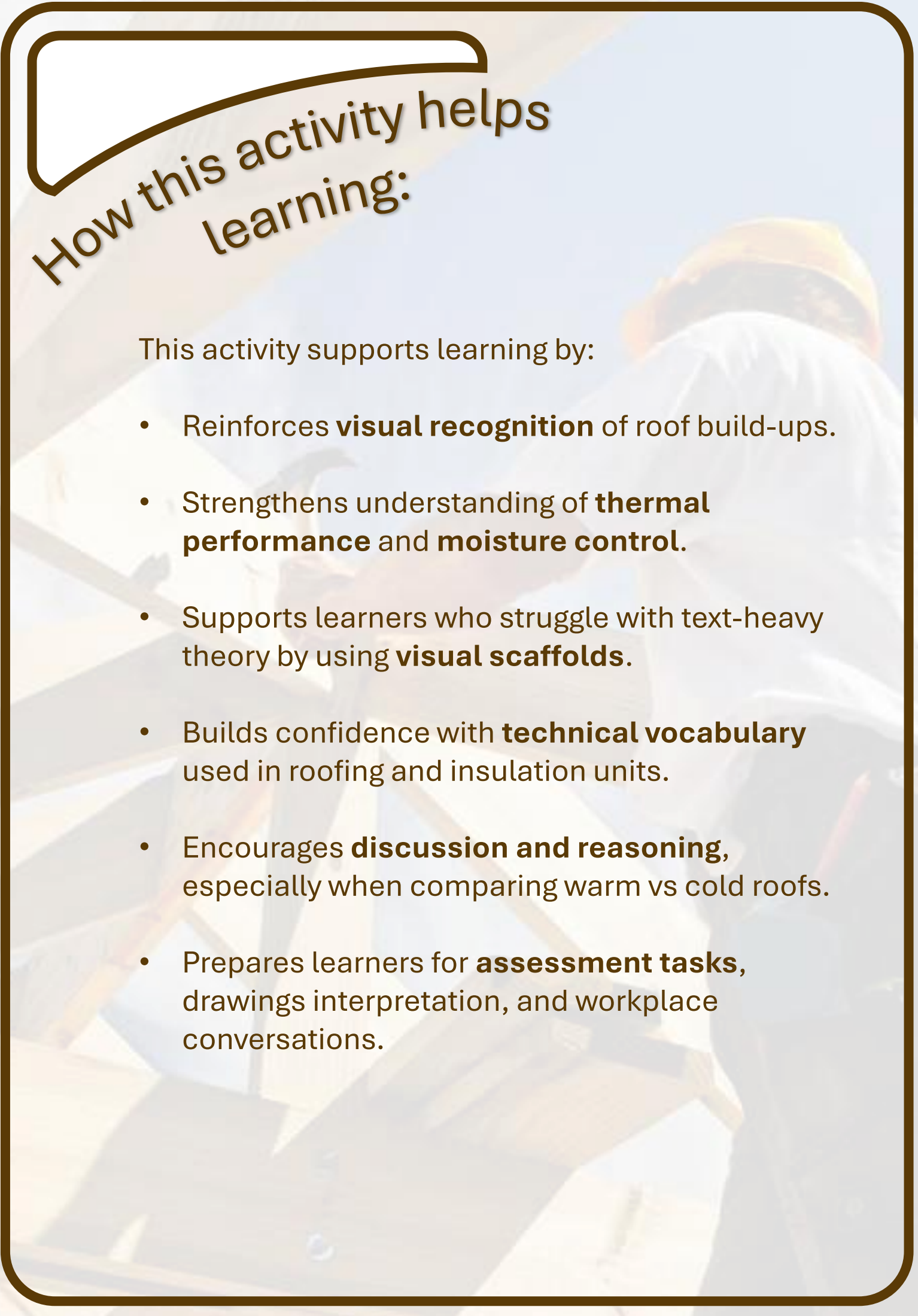
Learners are presented with two images:

- A **Warm Roof** cross-section
- A **Cold Roof** cross-section

Students must place the correct labels onto each image. Labels may include:

- Roof cover board
- Decking
- Roof joists
- Insulation (between rafters / above rafters / at ceiling level)
- Vapour control layer
- Ventilation gap
- Block & Brick walls
- Plasterboard ceiling

The activity can be completed individually, in pairs, or as a competitive team challenge.



## How this activity helps learning:

This activity supports learning by:

- Reinforces **visual recognition** of roof build-ups.
- Strengthens understanding of **thermal performance** and **moisture control**.
- Supports learners who struggle with text-heavy theory by using **visual scaffolds**.
- Builds confidence with **technical vocabulary** used in roofing and insulation units.
- Encourages **discussion and reasoning**, especially when comparing warm vs cold roofs.
- Prepares learners for **assessment tasks**, drawings interpretation, and workplace conversations.

# Student Instructions:

1. Look at the two roof diagrams: **Warm Roof** and **Cold Roof**.
2. Review the set of labels provided.
3. Match each label to the correct location on the diagram.
4. Check your choices with a partner and explain your reasoning.
5. Complete the comparison questions:
  - What is the main difference between warm and cold roofs?
  - Where is the insulation placed in each system?
  - Why does one require ventilation and the other does not?
6. Hand in your completed sheet or upload a photo to Teams.

# Lecturer Instructions.

- Introduce the concept of warm vs cold roofs using the 3D model.
- Demonstrate insulation placement and ventilation requirements.
- Distribute the labelling sheets and terminology cards.
- Circulate and prompt learners with guiding questions.
- Use the 3D model to clarify misconceptions.
- Finish with a group discussion comparing the two systems.
- Optional: run a timed challenge or team competition.

# Scaffolding Options:

- Provide a **word bank** with simplified definitions.
- Use **colour-coded labels** (e.g., insulation = yellow, structure = brown, ventilation = blue).
- Offer a **partially labelled diagram** for SEND or Level 1 learners.
- Provide a **warm vs cold roof comparison table** to support reasoning.
- Use “**drag-and-drop**” digital versions for learners who struggle with handwriting.
- Provide **sentence starters** for explanation tasks.
- Offer a **visual glossary** of all components.

# Differentiation Strategies.

## **For SEND / Level 1**

- Provide fewer labels.
- Use larger, high-contrast diagrams.
- Offer matching cards instead of free-placement labels.
- Allow learners to work in supported pairs.
- Provide simplified definitions and icons.

## **For Level 2 / Higher Ability**

- Remove the word bank.
- Add distractor labels to increase challenge.
- Ask learners to annotate the diagrams with functions (e.g., “prevents heat loss”).
- Include extension questions on condensation risk and building regulations.
- Ask learners to sketch their own warm/cold roof cross-section from memory.

## Assessment Opportunities

- **Formative:**
  - Observation during the activity
  - Correct placement of labels
  - Verbal questioning
  - Peer discussion and reasoning
- **Summative:**
  - Completed labelled diagrams
  - Written comparison of warm vs cold roofs
  - Short quiz on insulation placement and ventilation
  - Application task: “Which roof type would you choose for X scenario and why?”

# Word Bank.

## Structural Components

- Rafters
- Ceiling joists
- Wall plate
- Ridge board
- Decking
- Sarking
- Roof covering
- Battens
- Counter-battens
- Fascia
- Soffit
- Eaves
- Verge
- Purlin
- Truss
- Tie beam
- Plasterboard ceiling

## Thermal & Moisture Control Components

- Insulation
- Rigid insulation board
- Mineral wool insulation
- Vapour control layer (VCL)
- Breather membrane
- Underlay
- Ventilation gap
- Air barrier
- Thermal bridge
- Cold bridging
- Warm roof build-up
- Cold roof build-up

## Ventilation & Airflow

- Eaves ventilation
- Ridge ventilation
- Cross-ventilation
- Airflow path
- Moisture movement
- Condensation risk
- Roof void ventilation
- Ventilation openings

## Fixings & Fasteners

- Nails
- Screws
- Fixing brackets
- Timber connectors
- Mechanical fixings

## Processes & Concepts

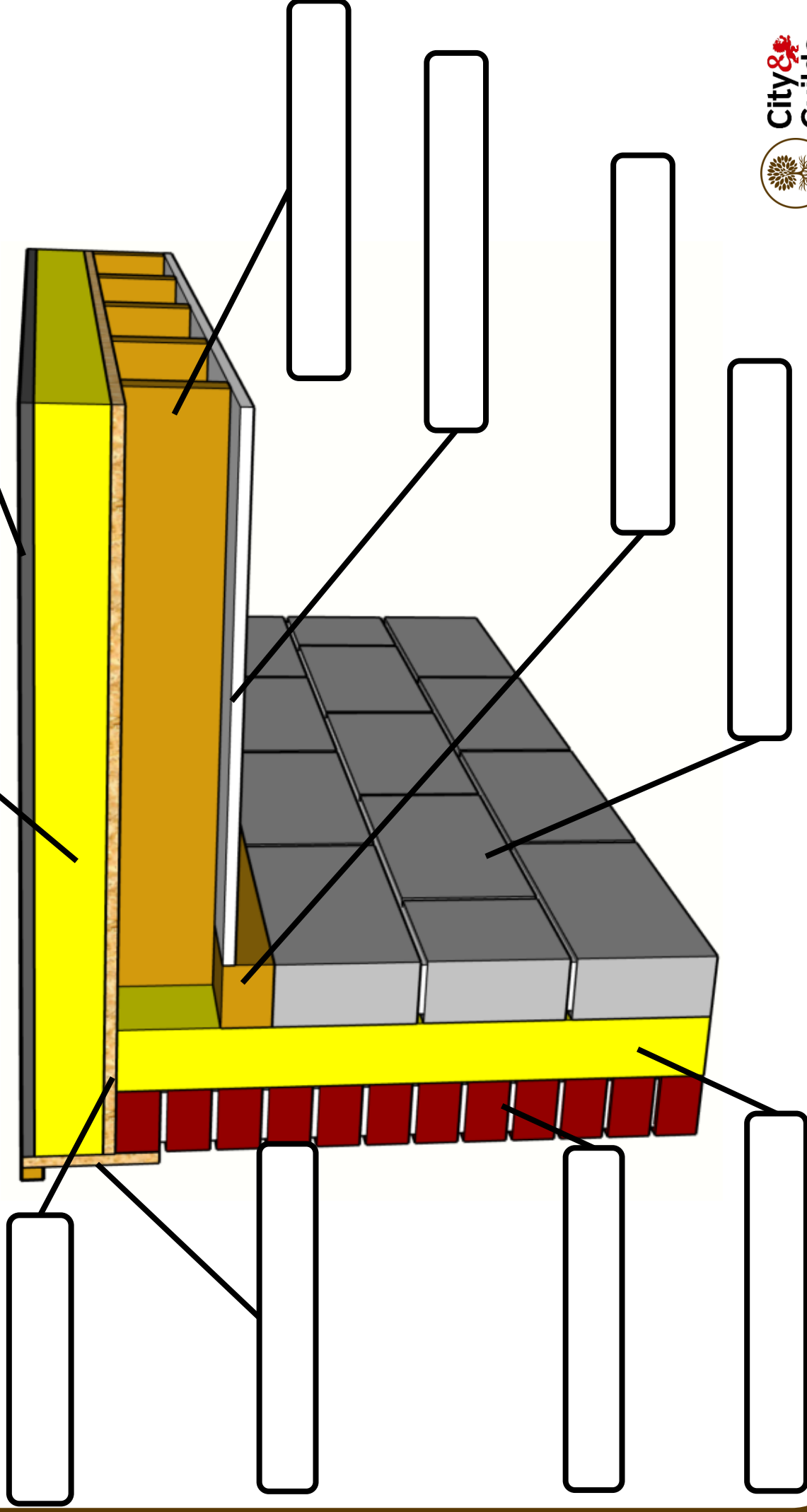
- Insulation placement
- Warm roof principle
- Cold roof principle
- Ventilation requirement
- Moisture prevention
- Heat retention
- Building regulations
- Roof construction sequence
- Layer build-up
- Roof void

# Sentence Starters.

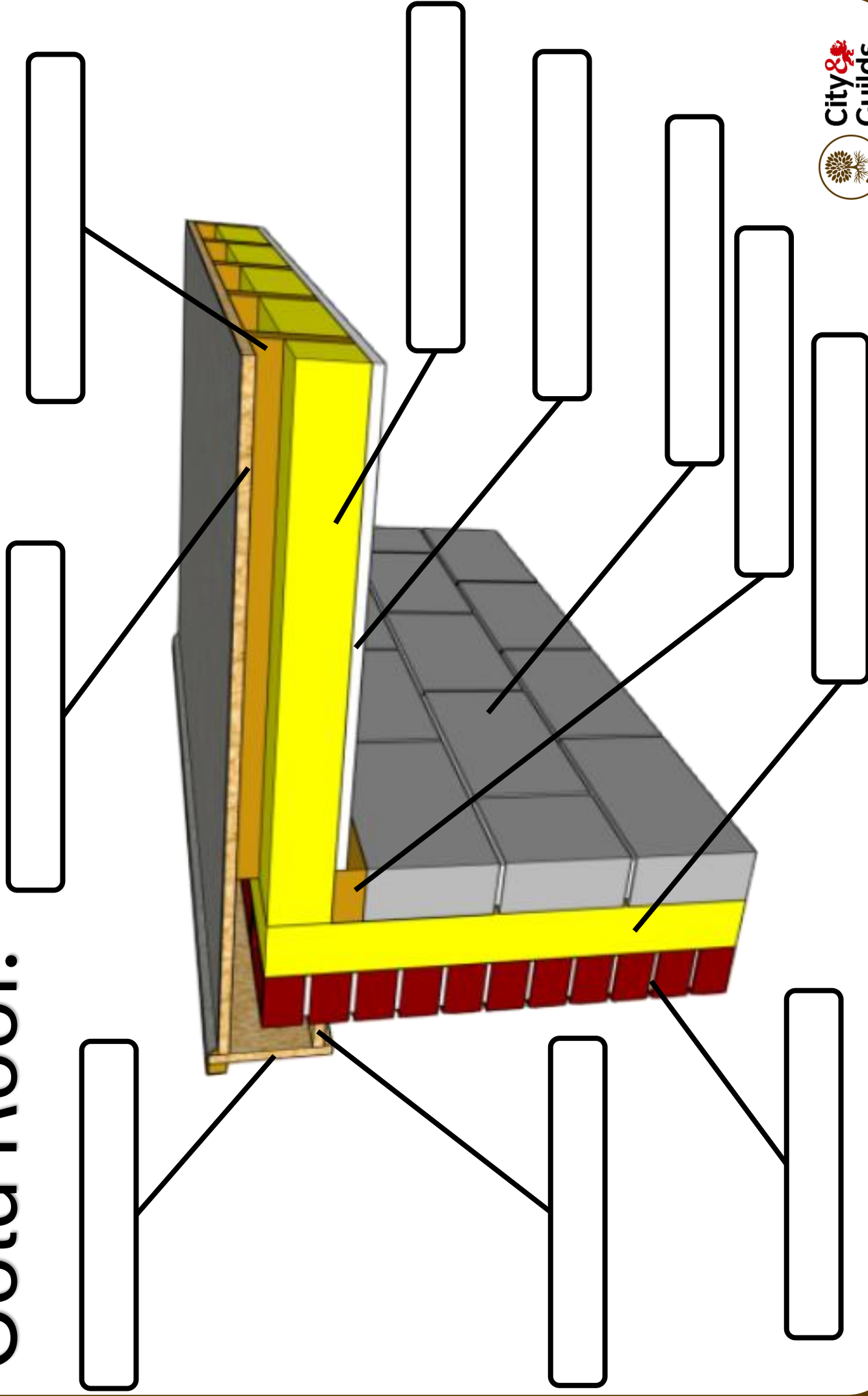
## Sentence Starters (SEND-Friendly)

- “The insulation in a warm roof is placed...”
- “A cold roof requires ventilation because...”
- “The vapour control layer helps by...”
- “One key difference between the two systems is...”

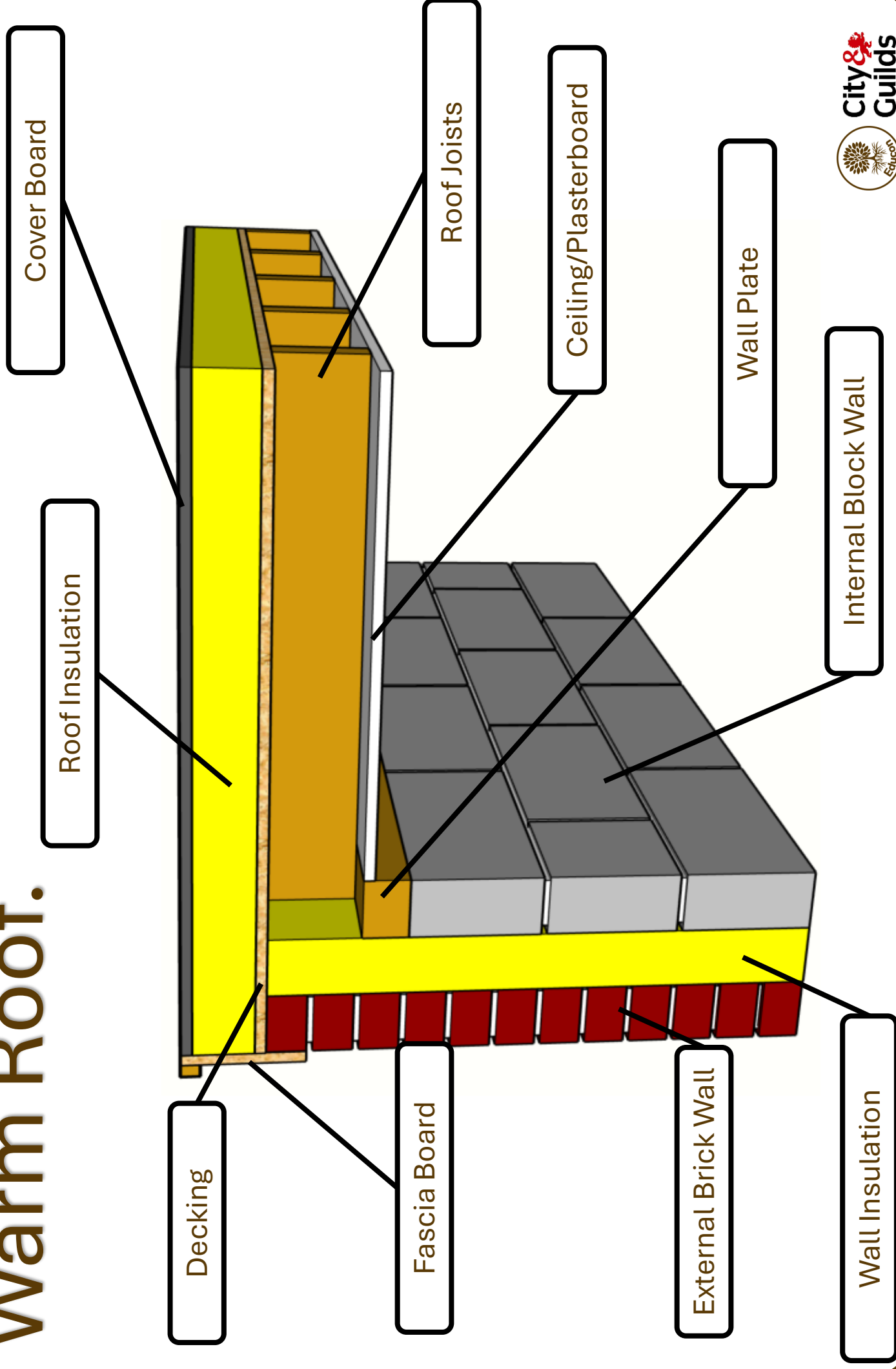
# Warm Roof.



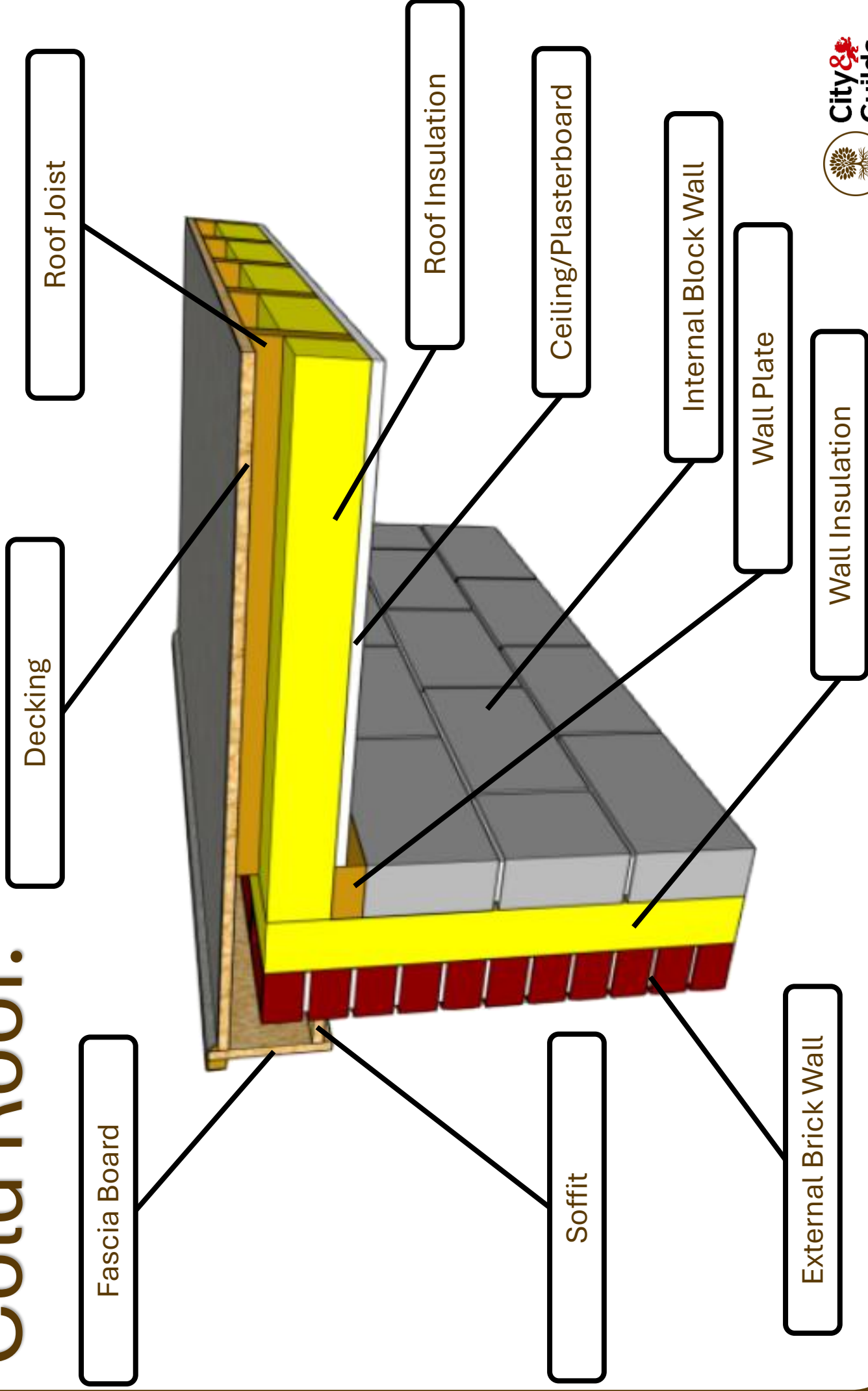
# Cold Roof.



# Warm Roof.



# Cold Roof.



# Thank You.

We would like to say thank you for using this learning material, we hope you found it useful.



If you have any questions regarding this or any other learning material produced by James, or have any suggestions about improvements or ideas please email James Rix at:

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