

No.26.1 Cold Roof guidance

Introduction

Cold roof construction remains a recognised method of flat roof design and is referenced within BS 6229 and BS 5250. Unlike warm roof construction, the thermal insulation is positioned below the structural roof deck, leaving the deck and waterproofing exposed to external temperatures.

Whilst correctly designed cold roofs can perform satisfactorily, their long-term performance relies heavily upon maintaining effective ventilation within the roof void to minimise the risk of interstitial condensation.

As the waterproofing system manufacturer has no control over the long-term performance of the ventilation strategy or future changes to the building, additional technical limitations apply when considering the suitability of cold roof construction.

Relevant Standards

Cold roof construction should be designed and constructed in accordance with the latest editions of the relevant standards, including but not limited to:

- BS (EN) 6229 – Flat roofs with continuously supported flexible waterproof coverings – Code of Practice.
- BS (EN) 5250 – Management of moisture in buildings – Code of Practice.
- UK Building Regulations (Approved Document C and Part L where applicable).
- Irish Building Regulations - Technical Guidance Document C & Technical Guidance Document L

The responsibility for compliance with these standards remains with the project designer.

Condensation Risk

Unlike warm roof construction, cold roofs depend upon continuous natural ventilation to remove moisture from the roof void.

Warm air generated within the occupied building naturally rises and can pass into the ventilated void through minor discontinuities within the ceiling or vapour control layer. As this warm air cools beneath the roof deck it may reach its dew point, allowing condensation to form on the underside of the structural deck and other cold surfaces.

Persistent condensation may result in:

- Timber decay
- Corrosion of fixings
- Mould growth
- Reduced thermal performance
- Damage to internal finishes

The effectiveness of the ventilation system therefore becomes fundamental to the long-term success of the roof construction.

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Factors Affecting Performance

The performance of a cold roof may be adversely affected by several factors that are outside the control of the waterproofing manufacturer, including:

- Blocked or restricted ventilation openings.
- Insulation obstructing ventilation paths.
- Increased occupancy levels.
- Changes in building use.
- Additional kitchens or bathrooms.
- Increased internal humidity.
- Reduced heating or altered heating patterns.
- Future alterations to the building fabric.

As these conditions may develop after completion of the roof installation, they cannot reasonably be controlled or monitored by the waterproofing manufacturer.

Moy Technical Position

Whilst Moy recognises that cold roof construction remains an acceptable method of roof design under current EN & British Standards, warm roof construction remains the preferred solution wherever practicable due to its significantly reduced risk of interstitial condensation.

Where a cold roof is proposed, Moy will only consider supporting the specification where:

- the roof has been designed in accordance with current BS EN Standards;
- adequate permanent cross ventilation has been incorporated;
- a suitable vapour control strategy has been adopted;
- the roof geometry allows effective natural ventilation throughout the roof void.

To maintain effective natural cross ventilation, **Moy's standard technical acceptance criteria limits supported cold roof constructions to roof geometries where no single elevation exceeds 5 metres in length.**

Beyond this dimension, natural airflow becomes increasingly difficult to maintain across the full roof void, increasing the potential for stagnant air pockets and localised condensation.

Roofs exceeding this limitation should generally be designed as warm roof constructions or be subject to project-specific technical review.

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Warranty Position

The long-term performance of a cold roof depends upon the effectiveness of the ventilation strategy throughout the life of the building.

As ventilation design, future maintenance and changes to building occupancy remain outside the control of Moy Waterproofing Systems, Moy cannot accept responsibility for condensation-related issues arising from:

- inadequate ventilation design;
- blocked ventilation openings;
- changes in occupancy or internal humidity;
- alterations to the building after completion.

Any warranty issued by Moy relates solely to the waterproofing system installed in accordance with Moy recommendations and should not be interpreted as confirmation of the condensation performance of the roof construction.

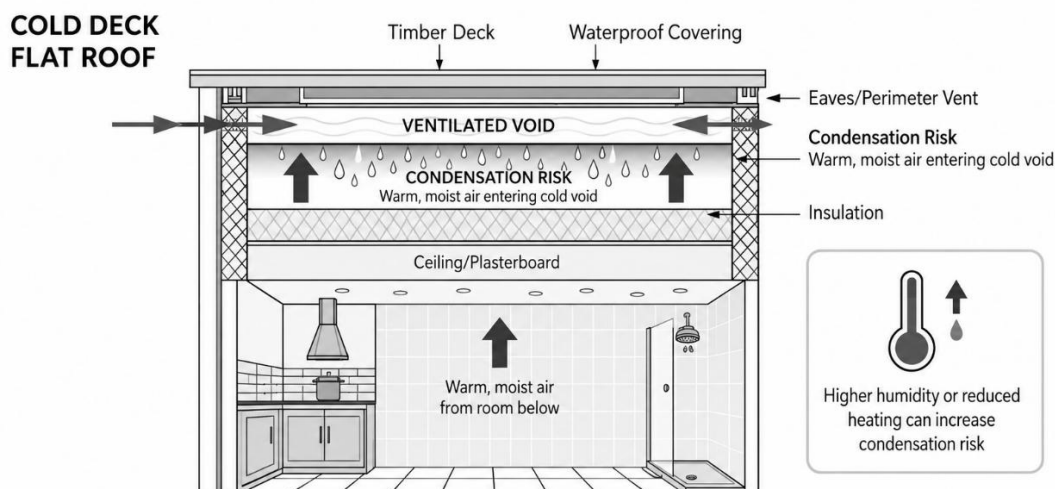
Recommendations

For new-build projects, Moy recommends warm roof construction wherever practical.

Where cold roof construction is unavoidable, designers should ensure:

- ventilation is designed in accordance with BS EN 5250;
- ventilation paths remain continuous throughout the roof void;
- insulation does not obstruct airflow;
- suitable vapour control measures are incorporated;
- roof geometry allows effective cross ventilation.

Early consultation with Moy Technical Services is recommended where cold roof construction is proposed.



This drawing is provided as a general example to illustrate the arrangement and principles of a flat cold roof design—it does not represent a detailed construction, or exact dimensions.

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Conclusion

Cold roof construction can provide satisfactory long-term performance when correctly designed and ventilated. However, its success is dependent upon several factors that extend beyond the waterproofing system itself.

For this reason, Moy adopts a cautious technical approach to supporting cold roof specifications and, as part of its standard technical acceptance criteria, limits supported cold roof constructions to roof geometries where **no single elevation exceeds 5 metres**, unless otherwise agreed following a project-specific technical assessment.