Introduction

This section provides guidance on meeting the performance requirements for Gable spandrel panels. Gable spandrel panels can be used as a continuation of the internal skin of masonry cavity blockwork.

6.7.1 Compliance

The design, specification and construction of gable spandrel panels shall meet the performance requirements of this section.

6.7.2 Information to be provided

The Designer shall provide sufficient design details to demonstrate it meets the requirements of this section.

A full set of design drawings and specifications should be made available to the Warranty provider and all other interested parties prior to the associated works starting on site. This may include:

1. A full set of detailed drawings, including:
   a. Plan layouts indicating dimensions.
   b. Elevations with dimensions shown.
   c. Detailing around junctions such as with masonry walls, ceiling lines or at ridges.
2. Engineers drawings, calculations and fixing schedules for each connection made on site.
3. Details of any cladding material fixed back to the spandrel panel including type, size, location of fixings provision of cavities. Where masonry cladding is present on the external leaf, details of wall tie and movement joint provision.
4. Location and method of how vertical and lateral restraint is to be provided, and its interaction with the roof structure.
5. Details of proposed cavity barriers including location, materials and technical assessments (third party product conformity certificate).

6.7.3 Structural design

Gable end spandrel panels shall be appropriately designed by an Engineer to accommodate loads identified within the design.

The following should be taken into account:

- Design and loads.
- Timber strength class and grading.
- Timber durability and preservative treatment.

Design and loads

Gable spandrel panels should be designed in accordance with BS EN 1995-1-1. The panels must be designed to:

- Resist wind loadings acting on the end walls and also loads applied by the claddings.
- Withstand all applied vertical and horizontal loads, on a site by site basis.

Timber strength class and grading

BS EN 338 should be used by the designer to determine the suitable strength class for structural timber components.

All structural timber should be:

- Machine graded to BS EN 14081 or, visually graded to BS 4978 for softwoods or BS 5756 for hardwoods.
- Dry graded.
- Marked in accordance with BS EN 14081.

All load-bearing solid timber studs, rails, binders and sole plates should be of a minimum dry graded C16.

Timber durability and preservative treatment

Timber and joinery used in the construction shall either have adequate natural durability or be preservative treated against fungal decay and insect attack with the preservative treatment being in accordance with BS 8417.

BS 8417 provides information to establish the appropriate type of treatment according to the particular element and conditions of use. Tables 1 to 3 of BS 8417 must be referred too to identify ‘Use classes, ‘Service Factor code’ and durability class of wood for the desired service life.

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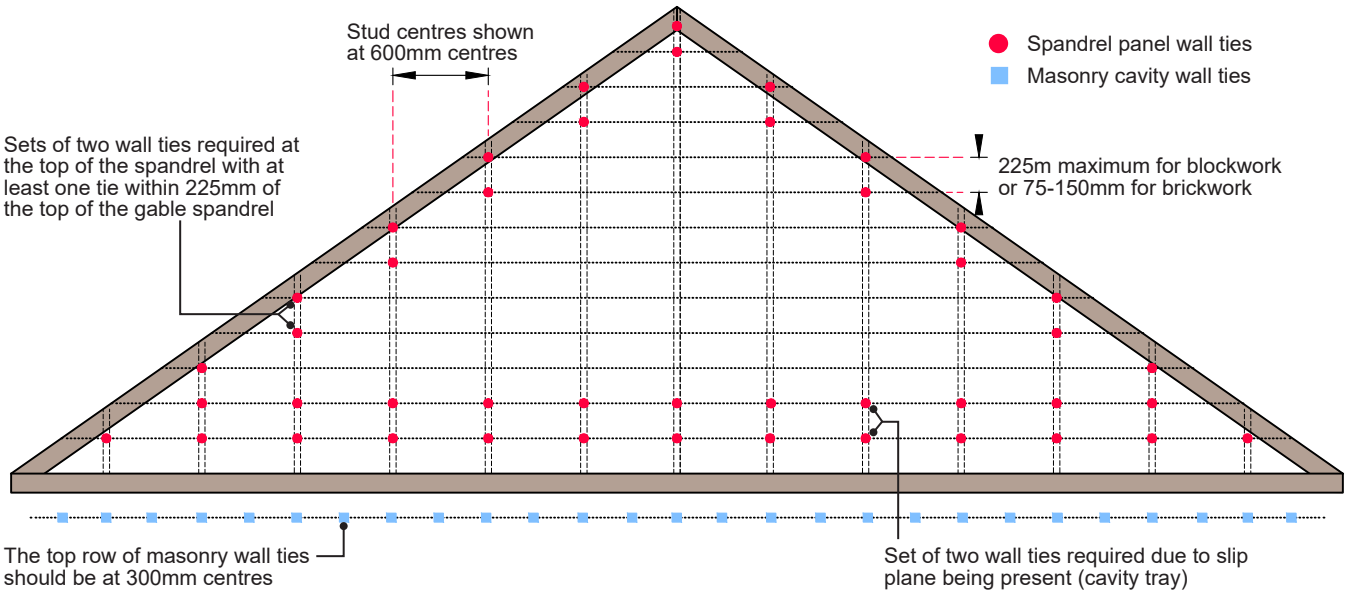
6.7.4 Wall tie locations

Where masonry cladding is specified, wall ties shall be of the correct type and be suitable for the intended purpose and location. Wall ties shall be spaced as per the Engineers specification and site specific conditions.

Wall ties between the spandrel panel and brick or block outer leaf should have the ties fixed into the timber vertical studs of the spandrel panel. The spacing of wall ties should be increased at the top of the wall and where a potential slip plane is present (horizontal cavity trays at the base of the spandrel panel).



Notes:

- For the general spandrel panel area, wall ties should be at every stud centre and at 450mm max vertical centres.
- The stud positions should be clearly marked on the breather membrane to assist in correct installation of wall ties.
- Block coursing shown in the above image. Wall tie spacings to be determined by the Engineer.

6.7.5 Restraint requirements

The lateral restraint of the panels, shall be designed by an Engineer to withstand all applied vertical and horizontal loads on a site by site basis to suit the structural requirements of each project.

Gable spandrel panels shall also have adequate vertical restraint in accordance with the Engineers design.

Spandrel panels require lateral restraint at rafter level and along the base of the panel. Lateral restraint could be provided by:

- Timber members (e.g. the longitudinal bracing secured to the spandrel with timber ledgers/noggings), fixed into at least two studs within the panels.
- Metal restraint straps fixed to the panel and to noggings, or timber bracing fixed across the trusses.

Gable spandrel panels must resist wind loads acting on the gable end walls and loads transferred from elsewhere e.g. from the roof structure, bracing etc. These loads are transmitted through the panel from the roof structure, bracing etc. via lateral restraints.

The restraint of the panels, should be designed by an Engineer to withstand all applied vertical and horizontal loads, on a site by site basis to suit the structural requirements of each project. The design and supporting calculations should be provided to the Warranty surveyor.

Other points to consider:

- Intermediate restraint may also be necessary for larger panels.
- Restraint straps should be located at a minimum 2m centres and should pass at least 3 trusses.
- A timber blocking piece is typically required be required between the truss and spandrel panel.
- Restraint strap to be fixed to a panel stud, with fixings capable of resisting a minimum 8kN force (based on restraint straps at maximum centres).

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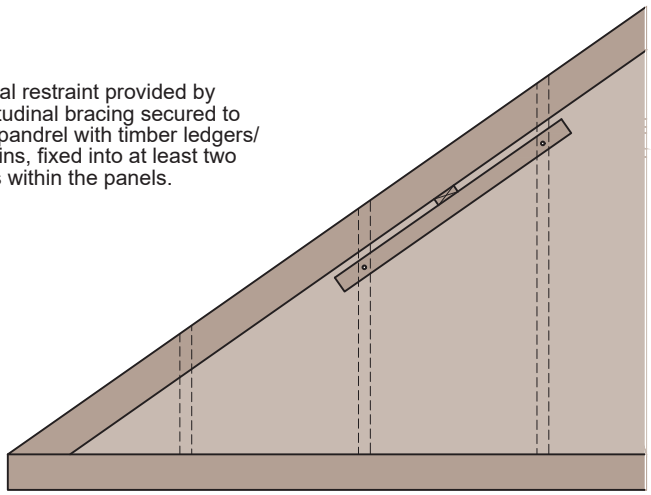
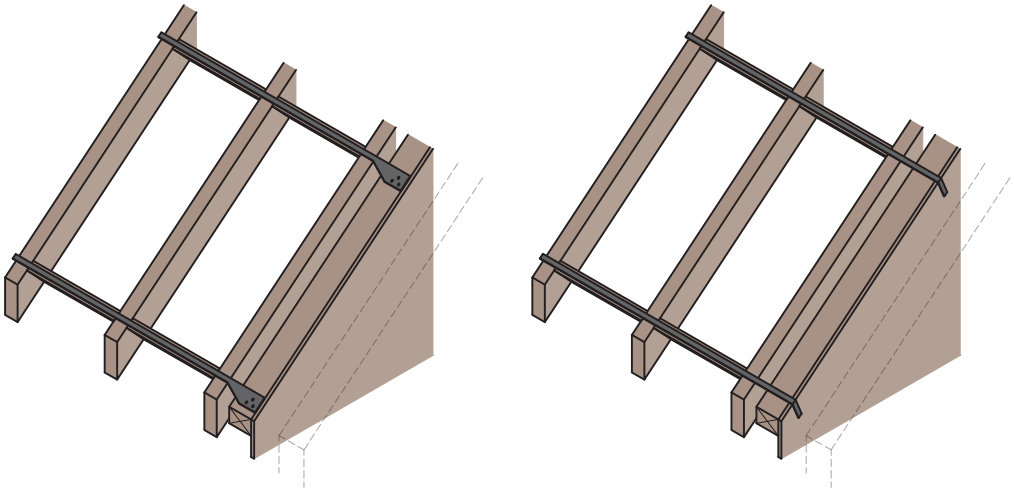
Lateral restraint provided by longitudinal bracing

Lateral restraint provided by longitudinal bracing secured to the spandrel with timber ledgers/ noggins, fixed into at least two studs within the panels.



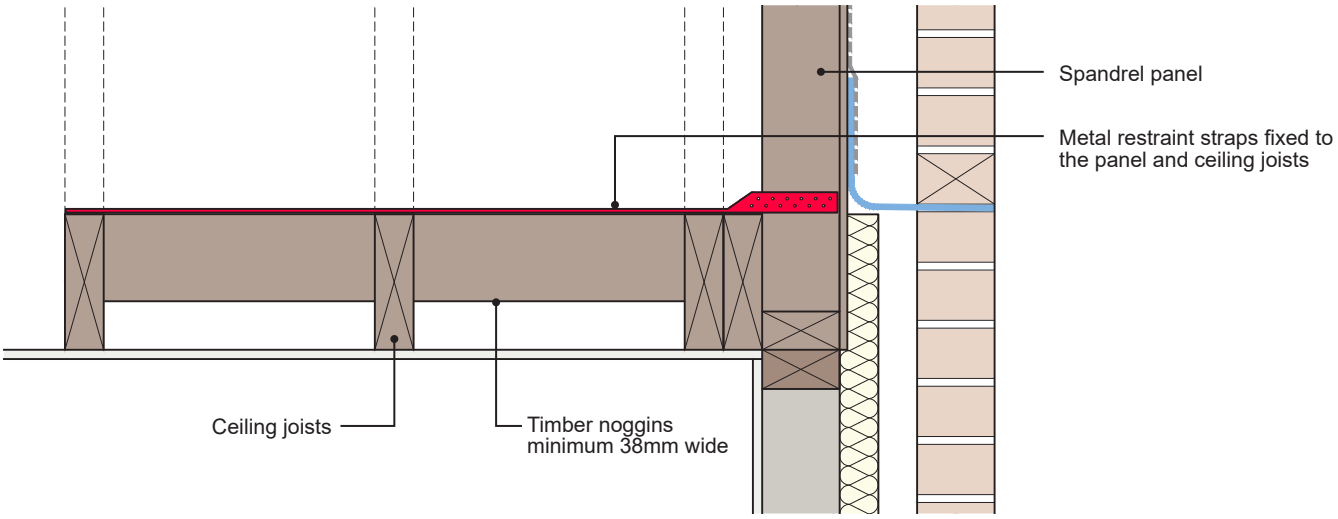
Metal restraint straps fixed to the panel and to noggings



Low level lateral restraint

At low level, lateral restraint is required along the ceiling joists.

Where the blockwork wall extends above the ceiling joists, lateral restraint is required for both the masonry wall and at the base of the spandrel panel.



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Vertical restraint

Gable spandrel panels should also be fixed to the head of the masonry wall. This can be achieved with the use of vertical restraint straps at centres specified by the designer. These are typically placed at a minimum of 1200mm centres and face fixed to coincide with stud positions. The strap length should ensure a minimum of two fixings into the panel framework and three fixings into the blockwork, into a minimum of 2 blocks.

6.7.6 Providing a drained and vented cavity

Gable spandrel panels shall be provided with a drained and vented cavity which:

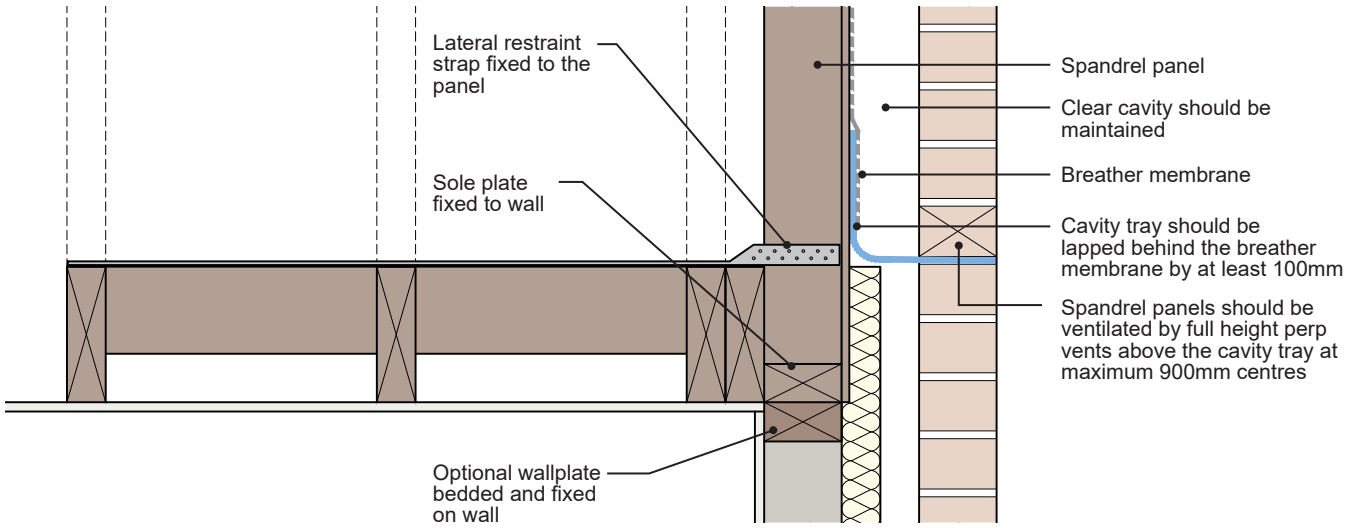
- Resists the passage of moisture to the inside of the home, **and**
- Prevents interstitial condensation.

Gable spandrel panels must incorporate a sheathing board, breather membrane and maintain a minimum of a 50mm clear cavity. Full fill cavity insulation with not be acceptable for Warranty as this prevents the spandrel panel frame from being able to dry out. The stud positions should be clearly marked on the breather membrane to assist in correct installation and positioning of wall ties.

Where blown full fill insulation is being used in the masonry cavity wall, there should be a way of ensuring:

- The insulation does not deform the cavity tray at the base of the spandrel panel.
- The insulation does not spread into the spandrel panel cavity frame area.
- This may be achieved by incorporating a non-deformable cavity closure or a rigid preformed cavity tray.

Horizontal cavity trays at the base of the spandrel may create a potential slip plane, the designer should take this into account or the guidance on wall tie locations on this page may be followed.



6.7.7 Fire considerations

The design of the panel shall achieve compliance with the Building Regulations in regards to fire resistance and fire spread.

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