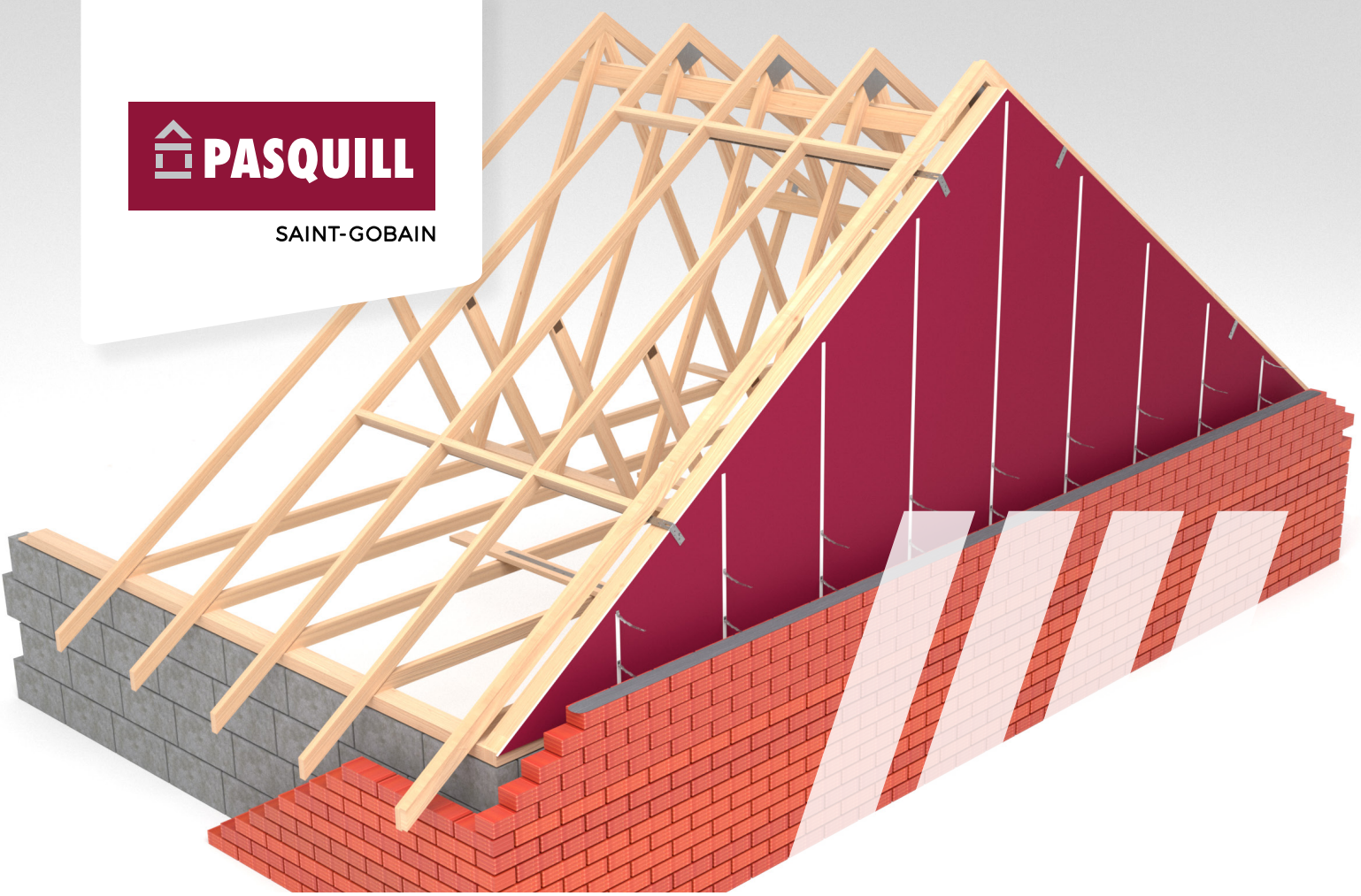




SAINT-GOBAIN



Brands for the offsite industry

Gable Restraint System Technical Guide

UP TO 5 STOREYS



**CONSTRUCTION
PRODUCTS**

Gable Restraint System

ITW Construction Products' Cullen brand of timber engineering connectors has been synonymous with innovation and quality for over forty years. In collaboration with national housebuilders, the Trussed Rafter Association and industry partners, ITW's technical experts have created an innovative system featuring the Cullen Gable Restraint Bracket for a complete solution to connect timber gables to masonry walls.

The details have been developed to safely transfer lateral wind load

on the masonry and timber gable ends into the braced roof diaphragm. This provides a verified connection between timber gable panels to masonry walls. The details give an option to have a continuous wall plate or a stepped wallplate with the gable wall plate being raised to suit the bottom chord depth of the truss. Either of the details meets the requirement of Building Regulations 2010 approved document A, Scottish Building regulations domestic, NHBC Standards for houses

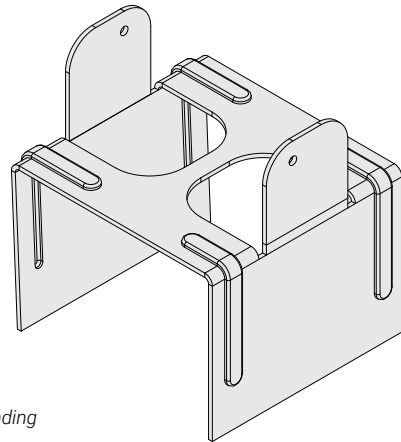
of five storeys or less in England and Wales and four storeys or less in Scotland. Both details are accepted by NHBC.

This NHBC accepted "whole system" solution incorporating the Cullen Gable Restraint Bracket and restraint straps including Paslode nail fixings with all centres, spacings and connections already calculated means that whenever our detail is followed the system is underwritten by ITW Construction Products.

Please note the GRB forms part of a system and must be used in conjunction with the system straps and fixings as shown below.

The Gable Restraint System is comprised of the following specified products:

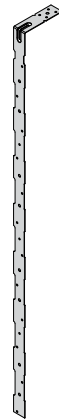
GRB-100



Patent Pending

Establishes a verified connection between a timber gable and a masonry wall.

VRS-900-100



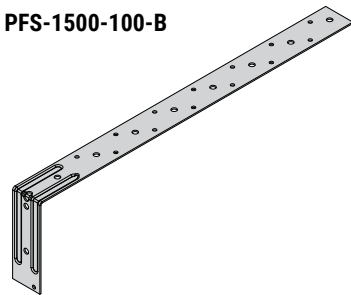
Provides a secure method of fixing wall plates to timber and masonry walls.

RST-3



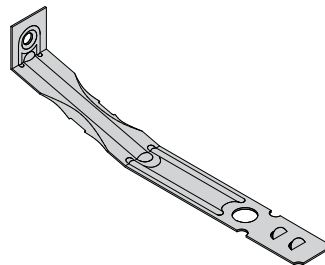
A high-performance strap developed to resist uplift and provide lateral restraint for timber gables.

PFS-1500-100-B



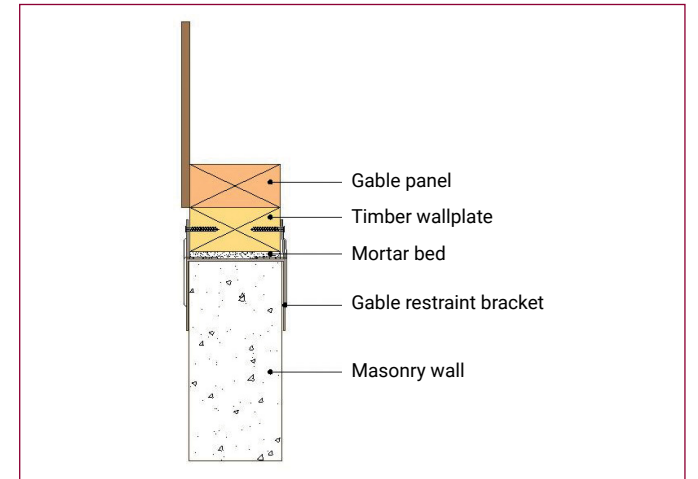
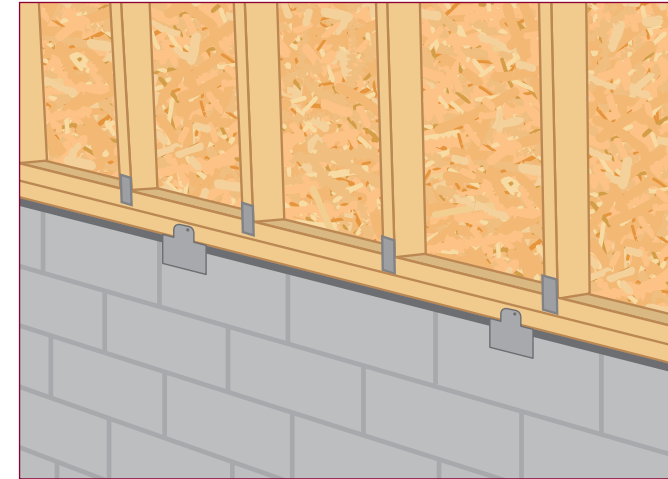
Delivers superior performance and exceptional flexibility, ideal for lateral restraint in floor and roof applications.

FT: The Timber Frame Wall Tie

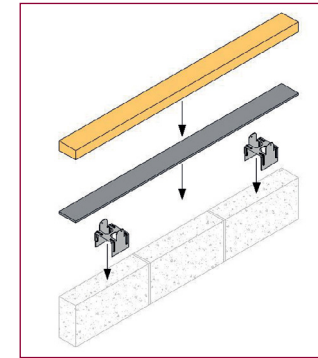


Restrains the external blockwork or brickwork back to the timber frame structure.

Gable Restraint Bracket & Application

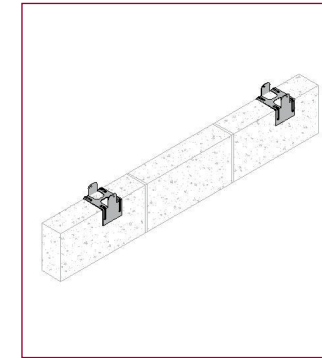


Gable Restraint Bracket Installation



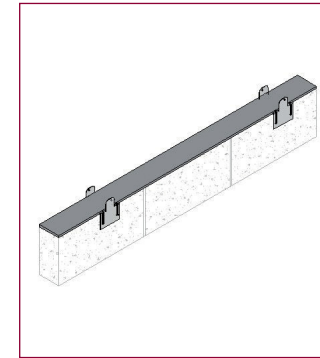
Components:

- Wallplate
- Mortar
- Gable Restraint Brackets
- Wall

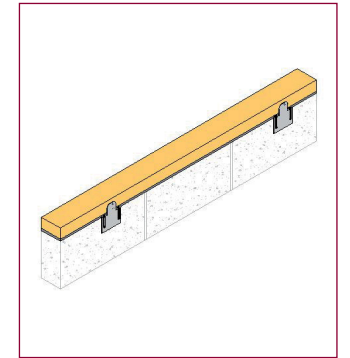


Gable restraint brackets placed on wall at 1200mm* maximum centres (no fixings required).

*for buildings up to 3 storey England & Wales and 2 storey Scotland

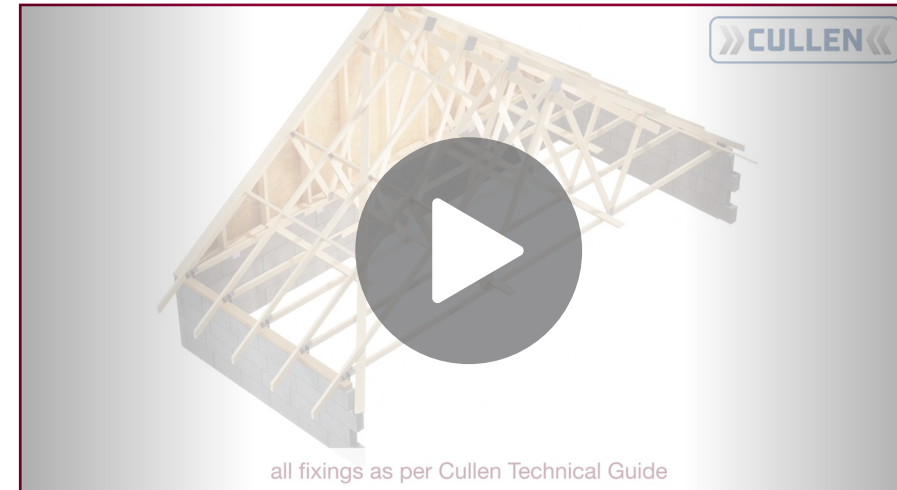


10mm maximum mortar bed on wall prior to wallplate being fixed.



38-75mm wallplate bedded on mortar and fixed to gable restraint brackets with 3.5x40mm wood screws (2 no. per bracket).

Gable Restraint Bracket Installation Video



all fixings as per Cullen Technical Guide

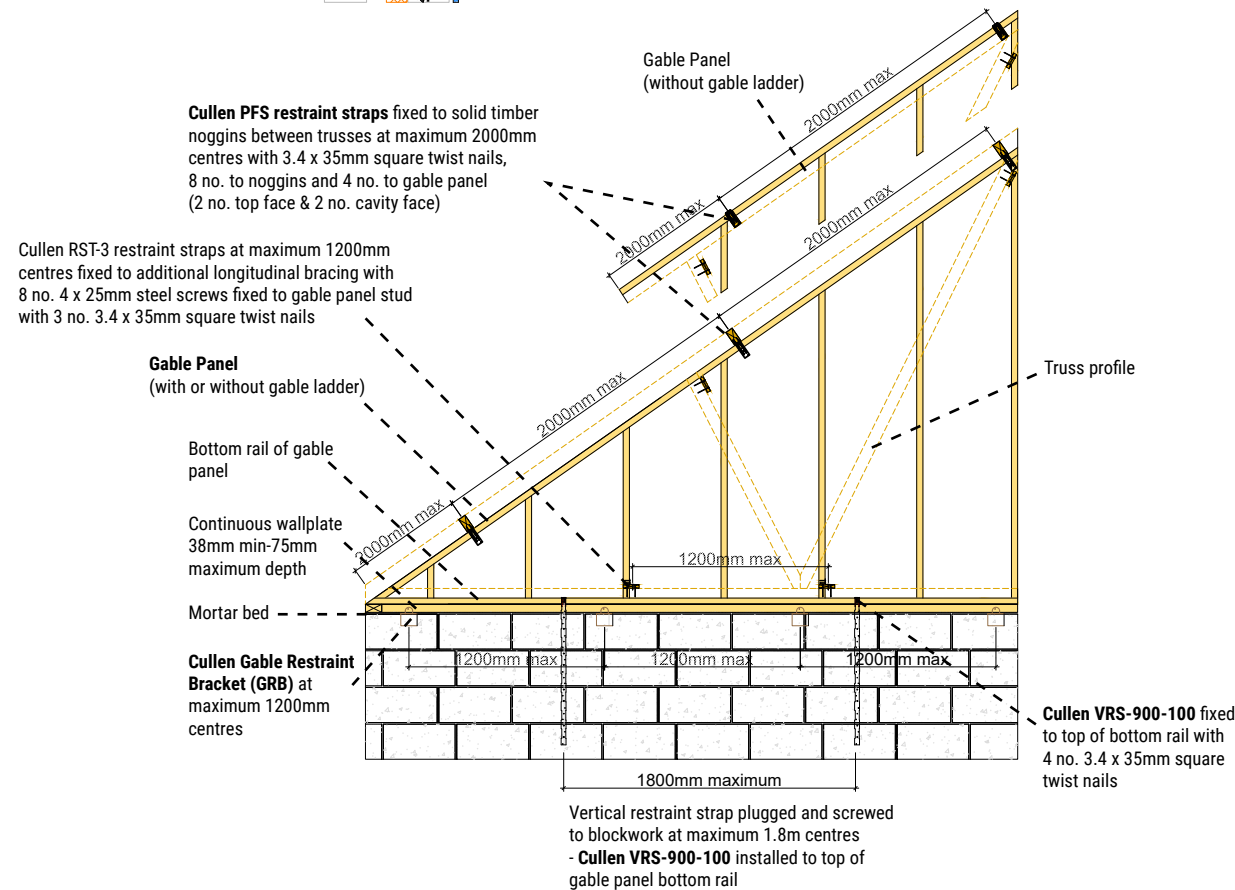
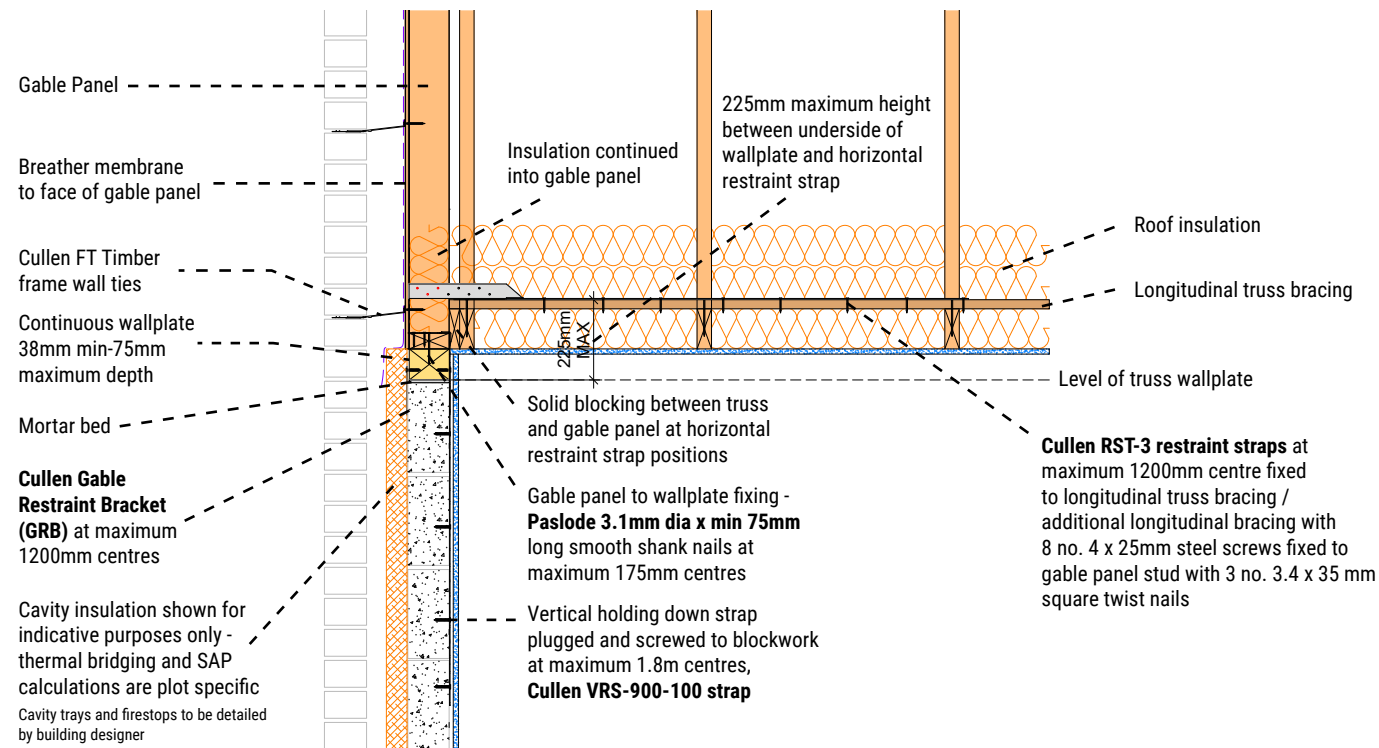


Scan or click to view installation videos

Gable Restraint System

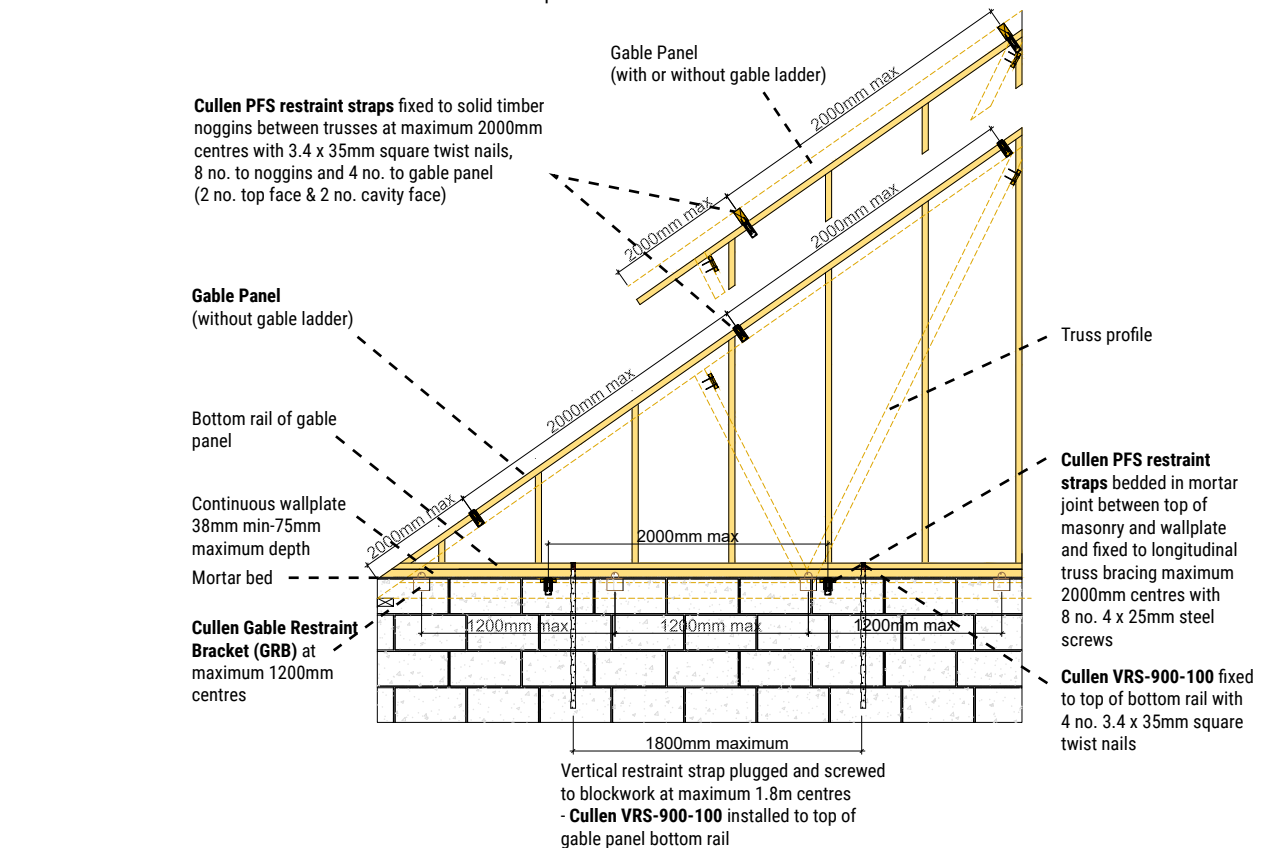
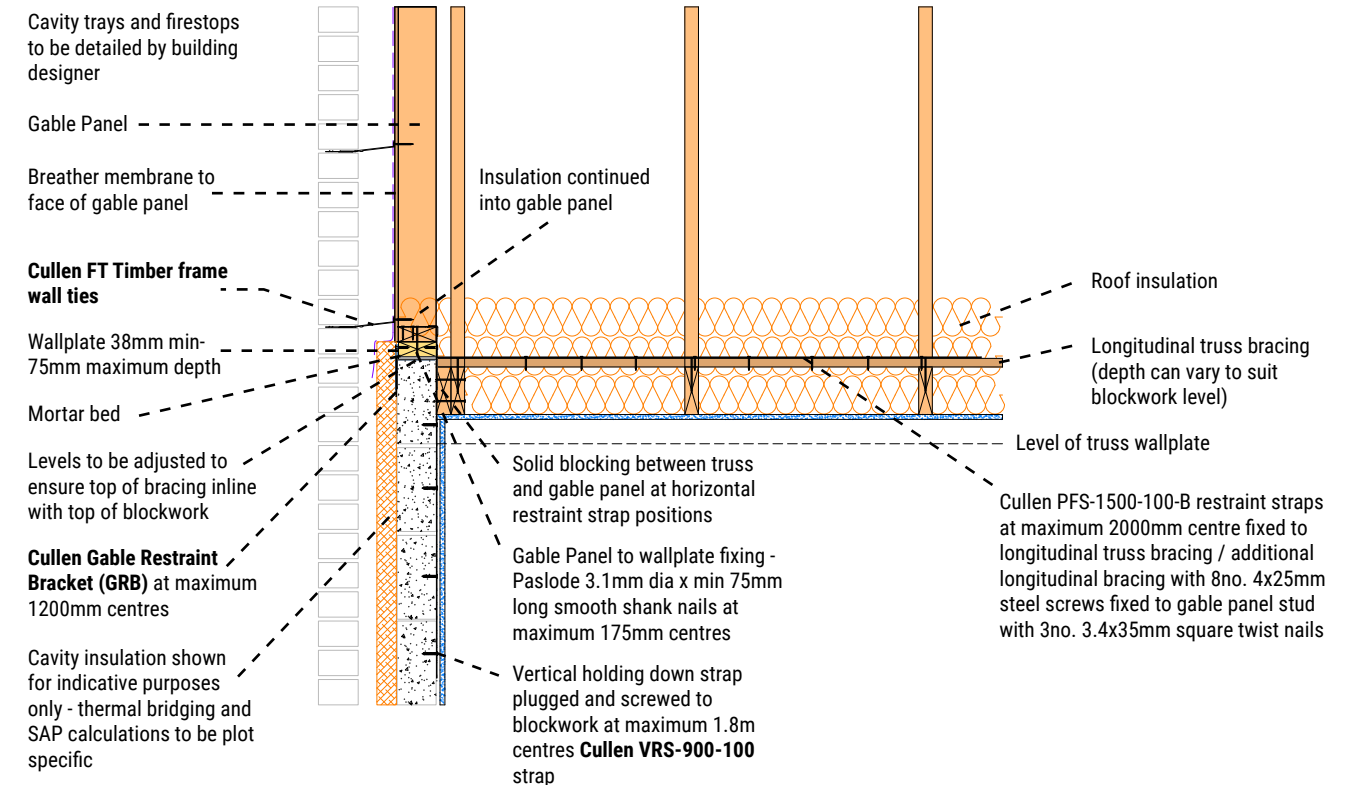
Class 1 Buildings / houses of single occupancy **three storeys** or less England & Wales and **two storeys** or less Scotland

Timber Gable to Masonry fixing detail to cold roofs – continuous wallplate



Class 1 Buildings / houses of single occupancy **three storeys** or less England & Wales and **two storeys** or less Scotland

Timber Gable to Masonry fixing detail to cold roofs – raised gable wallplate

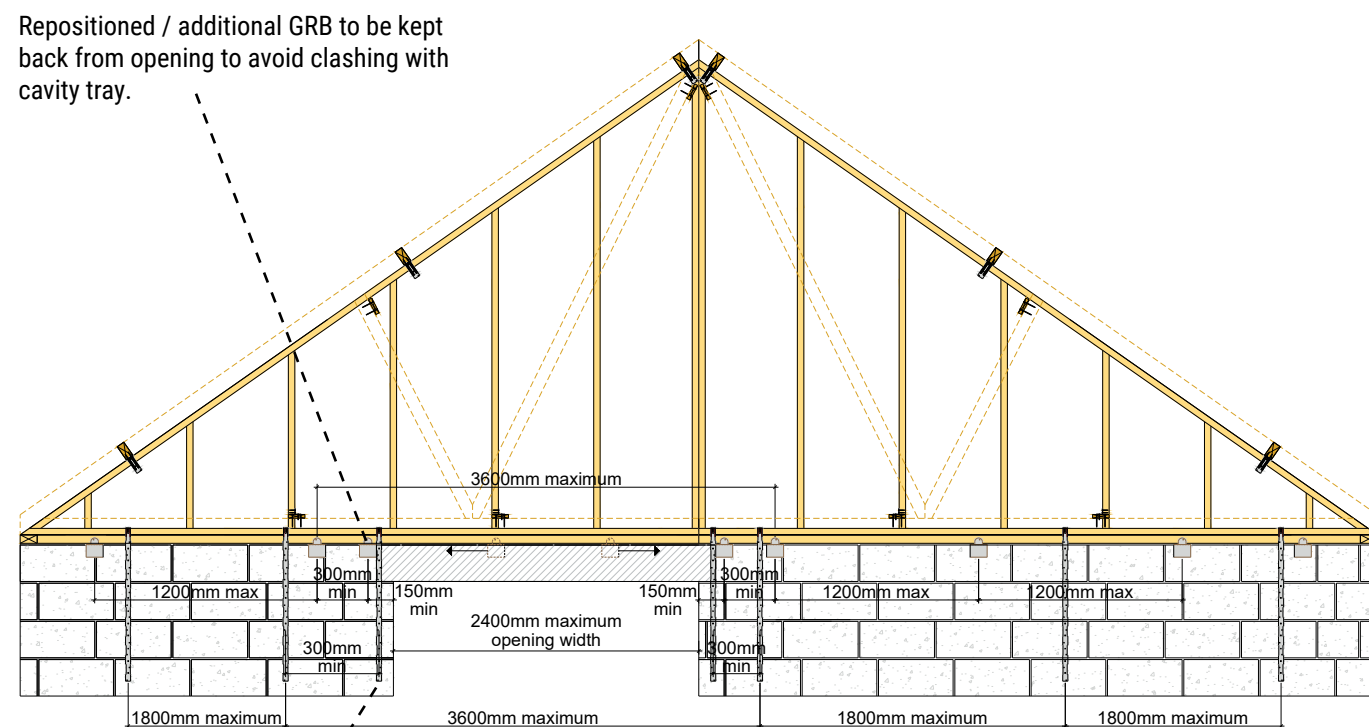


Gable Restraint System

Class 1 Buildings / houses of single occupancy **three storeys** or less England & Wales and **two storeys** or less Scotland

Openings within gable walls

When GRB & VRS restraint straps clash with opening positions and cavity trays above openings please position to suit the following – these details can be applied to continuous & raised wallplate.



Repositioned / additional GRB to be kept back from opening to avoid clashing with cavity tray.

Repositioned / additional VRS holding down strap either side of opening.

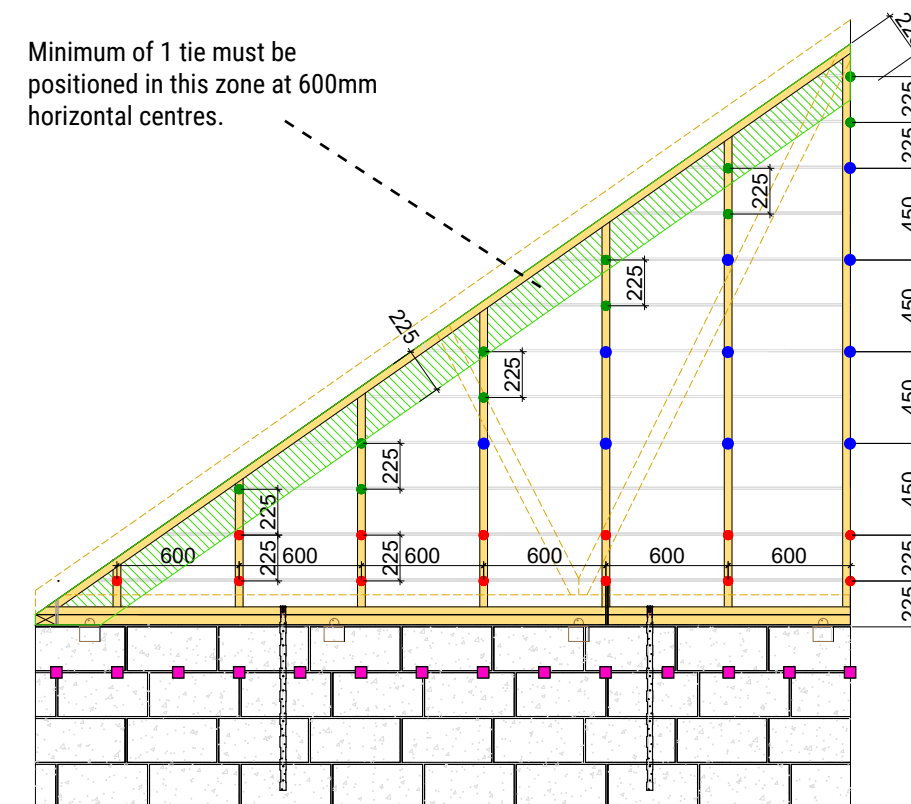
Where large door / window openings GRB's / VRS restraint straps to be repositioned / additional installed either side of the opening with maximum and minimum centres shown above.

Timber Gable to Masonry Blockwork External - wall tie requirements

Maximum Net Surface Wind Pressure

Cullen FT-100 = 1.279kN/m² 3.7 ties/m²
(450mm vertical & 600mm horizontal centres)

Cullen FT-100 = 2.558kN/m² 7.4 ties/m²
(225mm vertical & 600mm horizontal centres)



Minimum of 1 tie must be positioned in this zone at 600mm horizontal centres.

Minimum of 1 tie must be positioned in this zone at 600mm horizontal centres.

- 2 sets of wall ties with at least 1 tie positioned within 225mm of top of gable panel. Ties positioned at maximum of 225mm vertical & 600mm horizontal centres.
- Wall ties for general area positioned at maximum of 450mm vertical & 600mm horizontal centres (vertical centres can be reduced to 225mm if required by Building Designer).
- 2 sets of wall ties positioned at maximum of 225mm vertical & 600mm horizontal centres from bottom of gable panel.
- Top row of masonry wall ties provided at 300mm centres maximum.

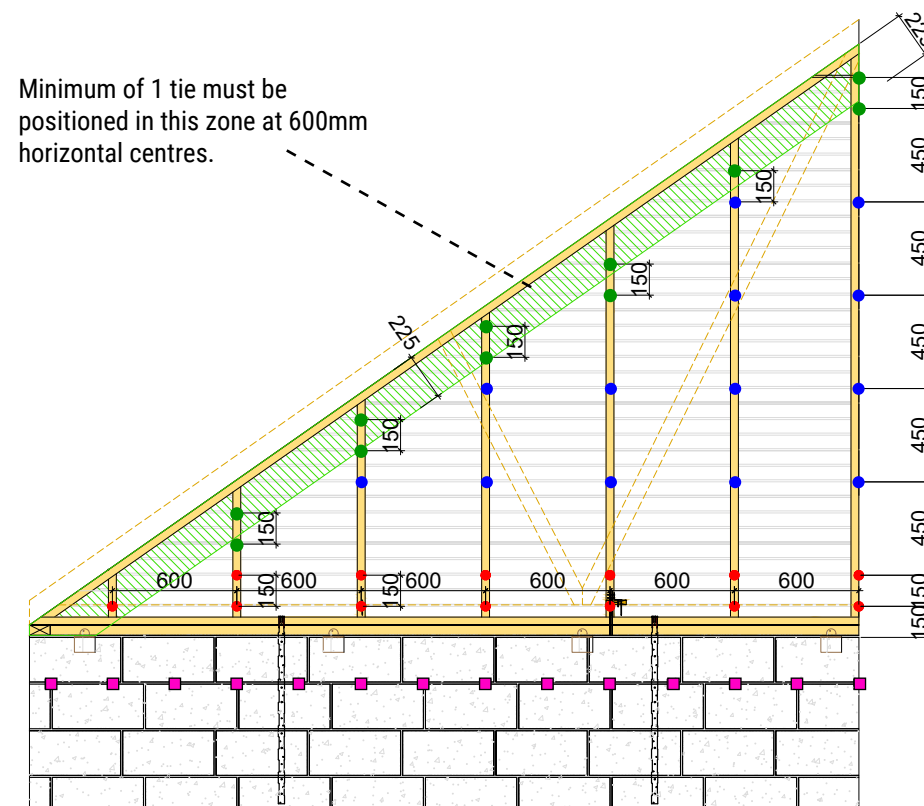
Gable Restraint System

Timber Gable to Masonry Brickwork External - wall tie requirements

Maximum Net Surface Wind Pressure

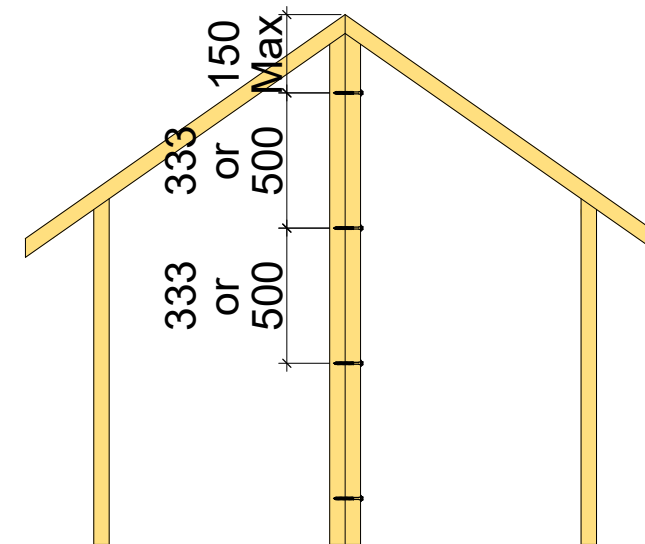
Cullen FT-100 = 1.279kN/m² 3.7 ties/m²
(450mm vertical & 600mm horizontal centres)

Cullen FT-100 = 2.558kN/m² 7.4 ties/m²
(225mm vertical & 600mm horizontal centres)



Minimum of 1 tie must be positioned in this zone at 600mm horizontal centres.

- 2 sets of wall ties with at least 1 tie positioned within 225mm of top of gable panel. Ties positioned at maximum of 150mm vertical & 600mm horizontal centres.
- Wall ties for general area positioned at maximum of 450mm vertical & 600mm horizontal centres (vertical centres can be reduced to 225mm if required by Building Designer)
- 2 sets of wall ties positioned at maximum of 150mm vertical & 600mm horizontal centres from bottom of gable panel.
- Top row of masonry wall ties provided at 300mm centres maximum.



Jointing of panels

Fixing must be positioned maximum of 150mm from edge of panel (top & bottom)

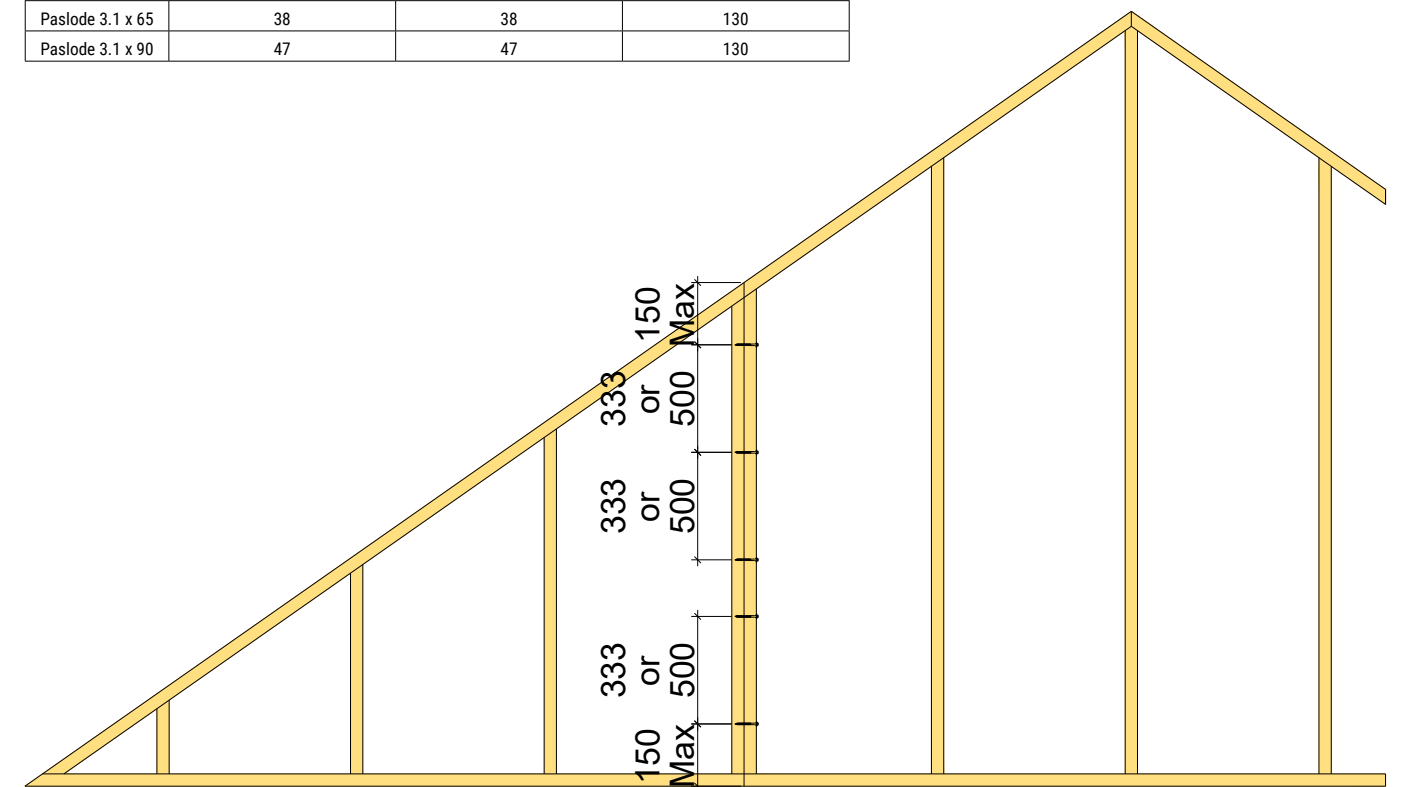
38 x 89mm panels - PSTS-6.5 x 65mm screws at maximum of 333mm centres

47 x 97mm panels PSTS-8 x 85mm screws at maximum of 500mm centres

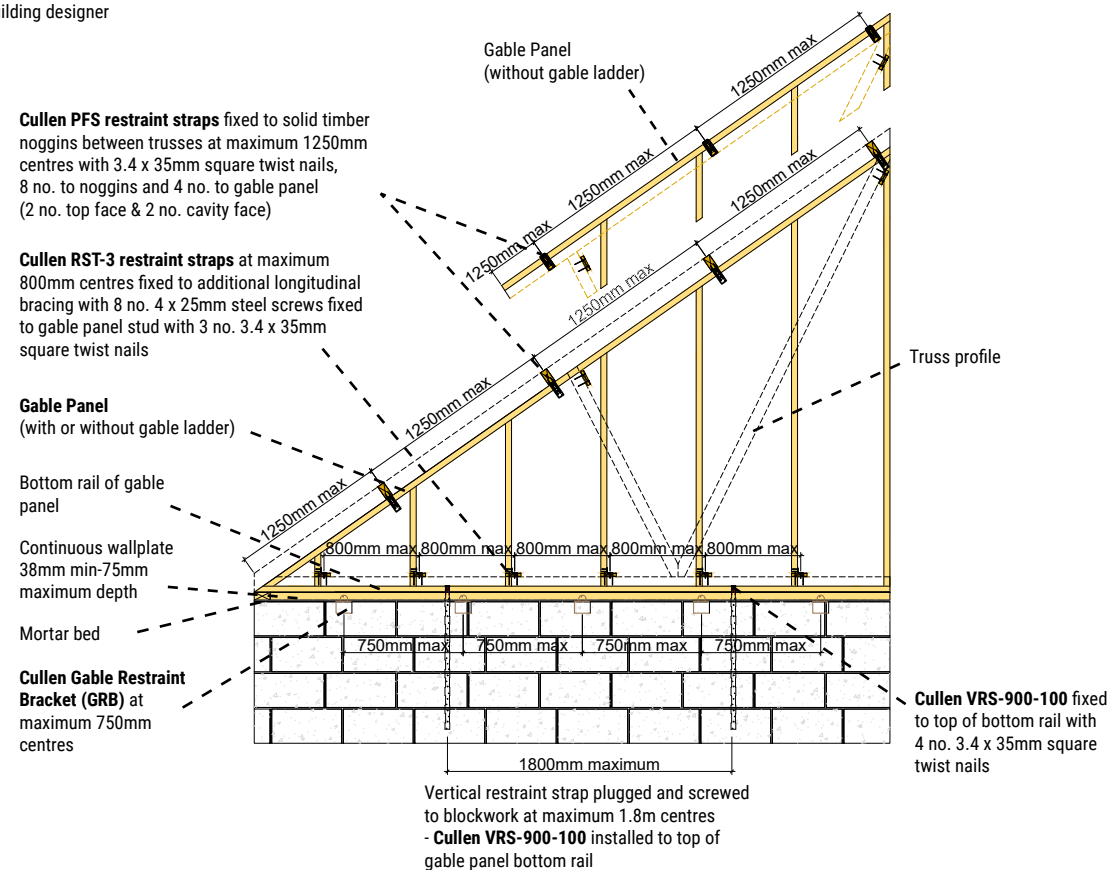
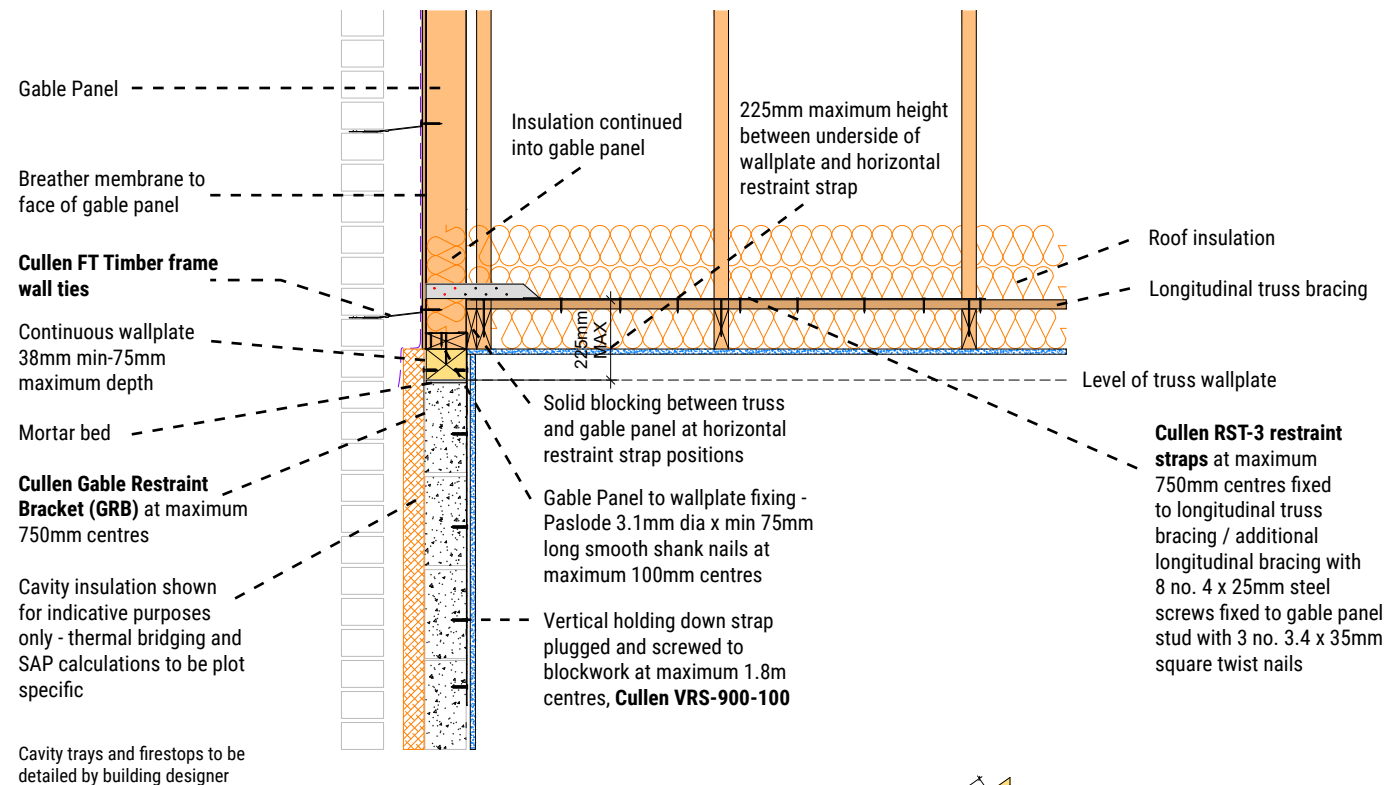
To meet the requirements of EN1995-1-1:2004+A2:2014 "the required vertical connection strength between two panels should be evaluated but should have a design strength of at least 2,5 kN/m".

To achieve this panels are to be fixed using the following Paslode structural timber screws or the Paslode nail fixing.

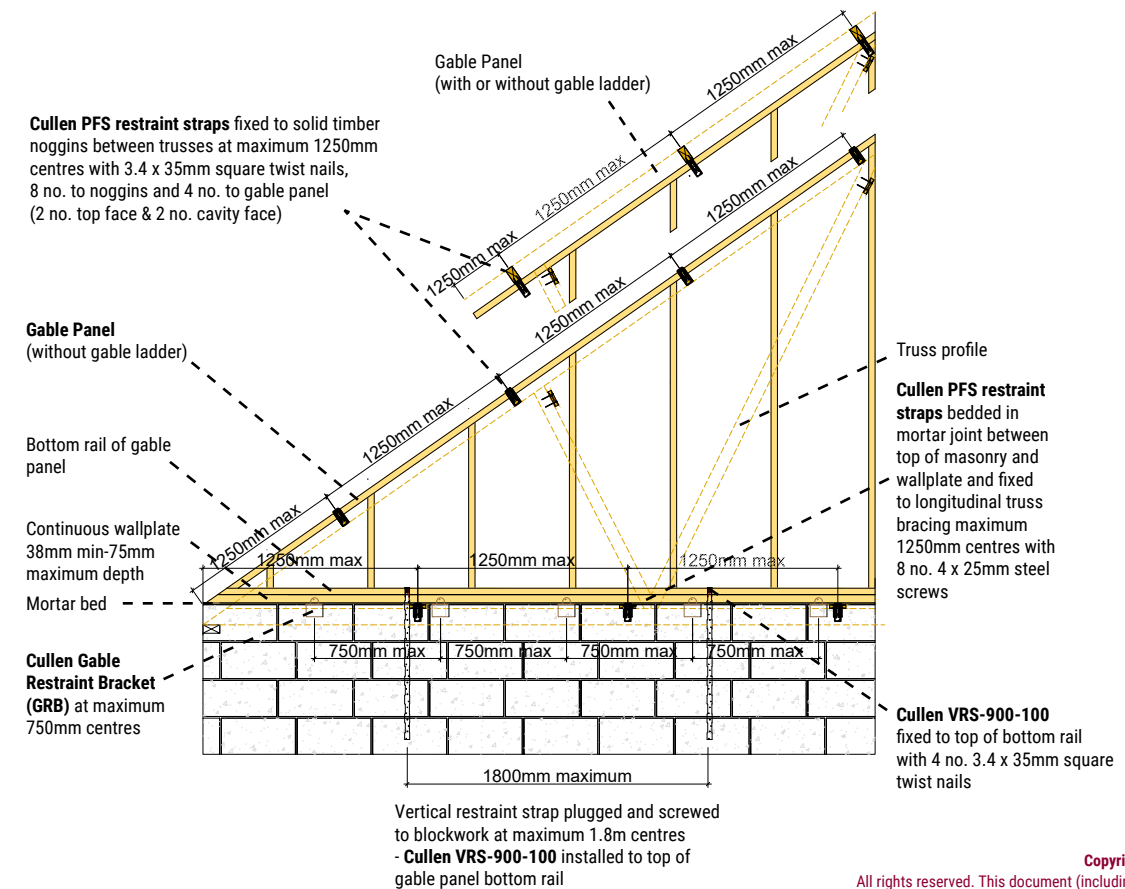
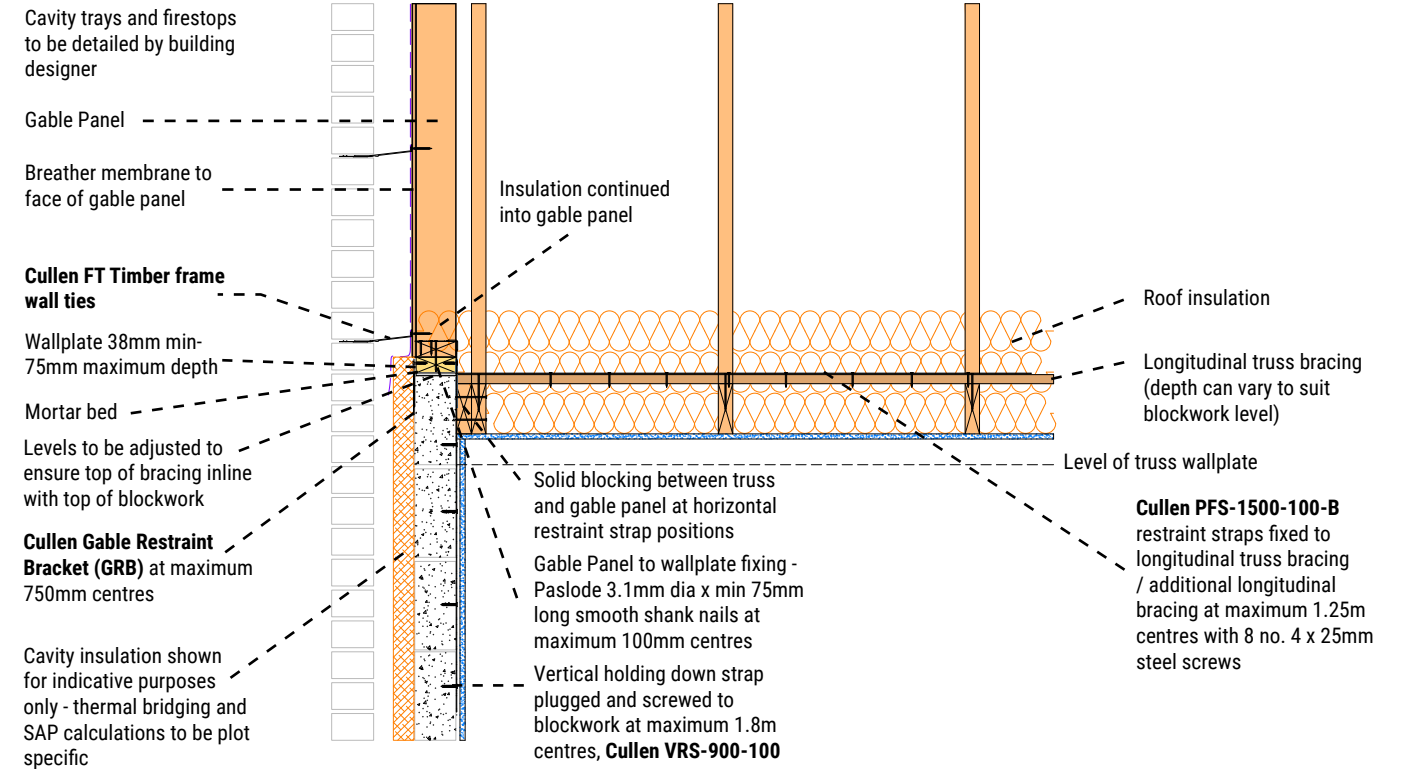
Fixing type	Panel thickness where screw head is located (mm)	Panel thickness where screw point is located (mm)	Fixing Centres (mm)
PSTS-6.5 x 65	38	38	333
PSTS-8 x 85	47	47	500
Paslode 3.1 x 65	38	38	130
Paslode 3.1 x 90	47	47	130



Timber Gable to Masonry fixing detail to cold roofs – continuous wallplate



Timber Gable to Masonry fixing detail to cold roofs – raised gable wallplate





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● Manufacturing Sites

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*Designed with precision,
built with passion*



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May 2024*

*Subject to change at discretion
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