

## INTRODUCTION

### FPA Design Guide for the fire protection of buildings

The FPA Design Guide is a document aimed at protecting businesses against disruption and loss of critical stock and machinery due to fire. It is published by the Fire Protection Association, in association with the InFiReS fire research group.

In 2000, the LPC published the most recent edition of Design Guide for the Fire Protection of Buildings. This was a major work of reference for those most closely concerned with the design and construction of industrial and commercial buildings.

Now published by the FPA, the Design Guide informs architects and designers about the business risk management issues which relate to the fire protection of buildings, issues which supplement in very important ways the life safety requirements contained in the principal legislative controls (Approved Document B). Within the document, there is information on extent of the zone, fire ratings etc expected by insurers and the industry as a whole.

The FPA has subsequently published a number of separate guides covering specific topics, these are available through the FPA website at <http://www.thefpa.co.uk>

## PROMAT DURASTEEL® TECHNOLOGY

Promat DURASTEEL® is a highly specialist product and permits protected zones to be incorporated into ceiling lining roof details to complement the construction of Promat DURASTEEL® fire barriers where compartmentation is required to be maintained.

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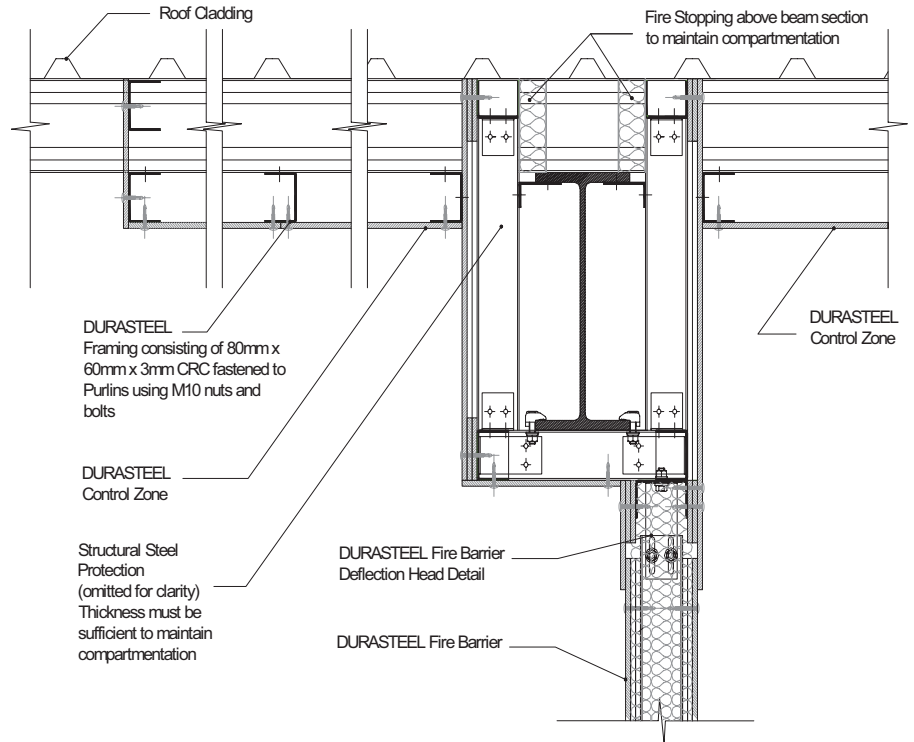
### CONSTRUCTION

The protected zone forms an integral part of the fire protection detail at the head of a separating fire wall. In order for this to function correctly, it must work in conjunction with a number of other specific details that are outlined below, and shown in the drawing.

1. The construction is centred on the main supporting element (usually a portal beam), which will require to be fire protected to provide the structural support for at least the same period as the fire resistance to the fire barrier below. In addition the fire protection must also maintain the fire separation (fire compartmentation) across the beam. When using Promat TD Board® or Vermiculux®, a minimum of 50mm board thickness is required to achieve the 240 minutes fire separation (regardless of the thickness required to provide fire protection to the steel section). Note: The steel protection (Promat TD Board® / Vermiculux®) has been omitted from the drawing above for clarity.

It should also be noted that DURASTEEL® does not provide the fire protection to the structural steel, and its function in this part of the construction is to impart robustness to the beam cladding detail.

2. The DURASTEEL® encasement around the beam section is supported on 3mm CRC sections, with welded connections or with angle cleats and M10 nuts and bolts. The lower transverse framing channels provide the support for the head of the fire barrier and are required at maximum 500mm centres. The supporting channels are fastened to the beam flanges using Lindapter beam fixings or similar fixings. The supporting channels to the sides of the beam are fastened to the upper beam flange using an appropriate 3mm thick steel angle, using shot fired fixings. Longitudinal channels are



**NB: This protected zone is only applicable to roof coverings that will not in themselves, contribute to fire spread. For confirmation of this, consult with the roof manufacturer.**

required along the top and bottom edge of the DURASTEEL® beam cladding.

3. 9.5mm DURASTEEL® panels on the sides of the beams, are installed in the same manner as for the fire barrier, using a double DURASTEEL® fillet. The DURASTEEL® panels extending up to the roofing membrane. (Fillets are not required on the soffit DURASTEEL® panel).
4. If the Promat TD Board® (or Vermiculux®) structural steel protection does not fully encompass the head of the beam up to the roofing membrane, then fully insulating fire stopping

will be required above the beam enclosure. Likewise, any void below the beam must be similarly filled to maintain compartmentation.

5. Note that the fire barrier is supported by the structural beam through the suitable connecting channel mechanism onto the steel beam. The fire barrier cannot be directly fastened to the beam protection or the DURASTEEL®. Provision for any deflection movement that may be required, must also maintain the fire separation, any voids below the beam must be fully insulated and will be detailed into the fire barrier head.

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6. Please note that this protected zone detail is only applicable to roof coverings that will not in themselves, contribute to fire spread. For confirmation of this, consult with the roof manufacturer.
  7. The protected zone extends out on both sides of the fire barrier and is supported on 3mm CRC framing by the roof purlins. The DURASTEEL® lining is typically 27kg/m<sup>2</sup> and the purlins are required to support this load in fire conditions. Consequently it may be necessary for the lining to be extended out to the next adjacent steel beams on either side of the fire barrier.
  8. The cleated or welded 80mm x 60mm x 3mm CRC framing is fastened to the roof purlins with M10 nuts and bolts. 9.5mm DURASTEEL® facing panels are fastened to the CRC's using 38mm TEK screws at 250mm centres. Fixings a minimum of 12mm and maximum 20mm from board edge and a minimum 50mm and maximum 100mm from corners (ie 2 fixings per corner) in accordance with the Etex Building Performance Limited Durasteel corner fixing statement.
- The DURASTEEL® lining is returned to the roof cladding to close the cavity. All DURASTEEL® board edges are backed with CRC's.
9. All gaps, abutments, air and smoke paths to be stopped and sealed with Promaseal® Intumescent Sealant.
  10. The details outlined above are indicative of the design requirements, and the configuration needed will depend upon the specific project conditions.

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**Etex Building Performance Limited**

Marsh Lane, Bristol BS20 0NE | 0800 145 6033  
technical.promat@etexbp.co.uk | www.promat.co.uk

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