3.10 Portal Frame Construction Details

Fire rated steel frame partition walls can be used to divide portal frame construction into separate fire compartments.

Under normal conditions these walls are non-load bearing but may bear the load of structural elements above the wall in the event of fire. As such a wall with a Structural Adequacy component to the Fire Resistance Level (FRL) should be used and additional structural columns may be required to support the intended loads under fire conditions. The NCC requires all structures to have Structural Reliability (Refer to BCA BP1.1(a)(iii)) whereby local damage such as a fire in one part of the building does not compromise the structural stability of the rest of the building. This indicates that a review of the buildings structural stability in the event of a fire must be completed.

As portal frames are complex structures, advice from fire engineers is recommended to assist with cost effective solutions for issues such as the transmission of heat through structural members crossing fire walls. In this case, a performance based solution is usually implemented.

This section contains details around structural steel beams and columns, as well as purlins and girts. Refer to Section 3.1 for Steel Framed Partitions Walls and Section 6.4 for Fire Encasement systems for protection of structural members.

Fire Rated
Wall Partition Around Steel Beam to Roof Lining

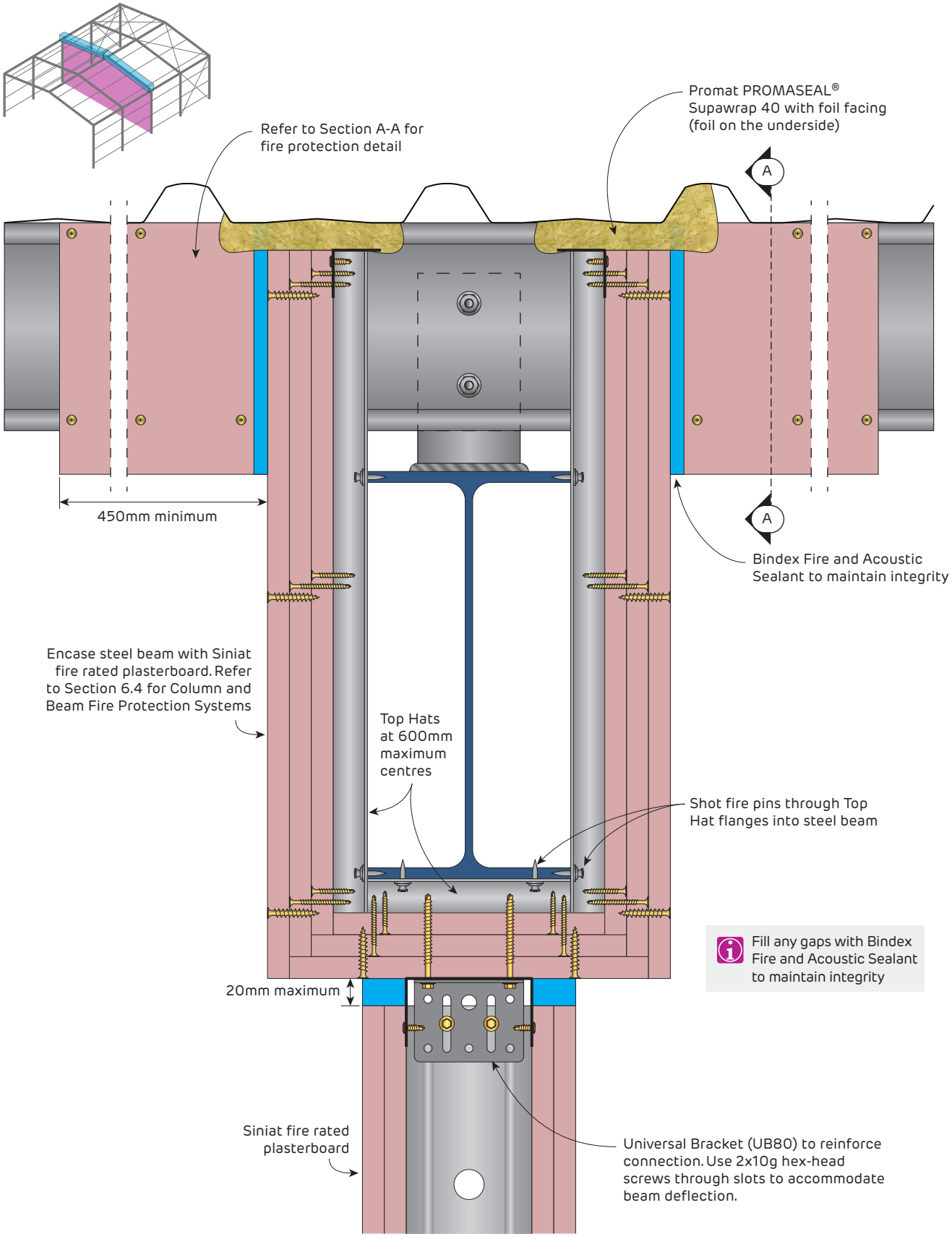


FIGURE 1 Wall Head Detail
Up to FRL 120/120/120
Section

Fire Rated

Wall Partition Around Steel Beam to Roof Lining - Higher Deflection Allowance

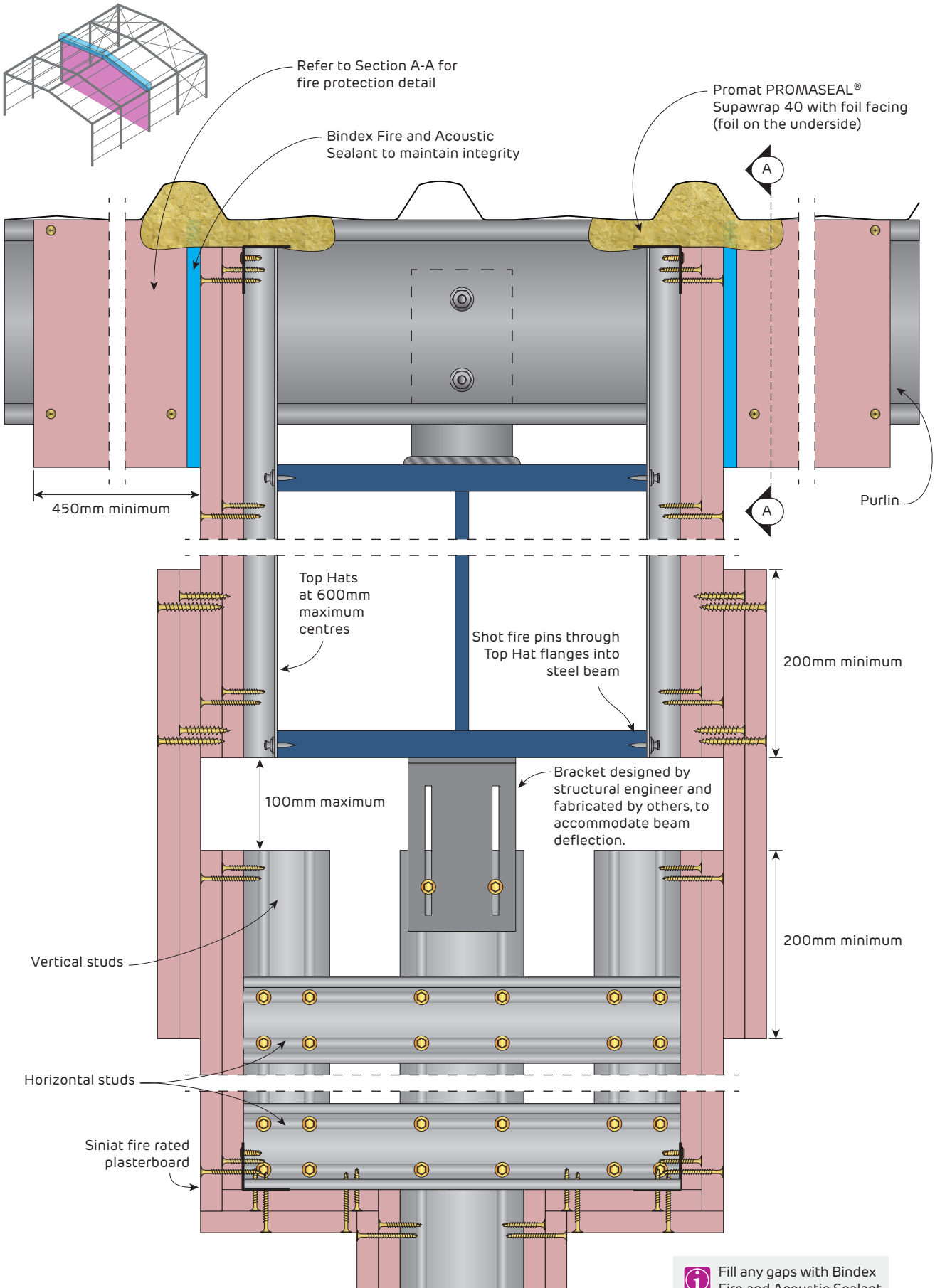
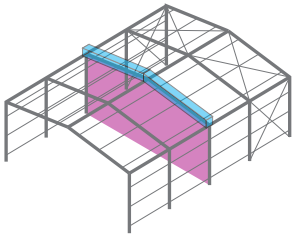


FIGURE 2 Wall Head Detail
Up to FRL 120/120/120 - Section

Fill any gaps with Bindex Fire and Acoustic Sealant to maintain integrity

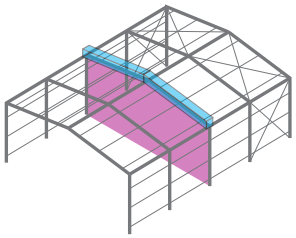
Fire Rated
Wall Partition Around Steel Beam to Roof Lining



Fill any gaps with Bindex Fire and Acoustic Sealant to maintain integrity

SECTION A-A Wall Head Detail for C Purlin
Up to FRL 120/120/120
Section

Fire Rated
Wall Partition Around Steel Beam to Roof Lining



Fill any gaps with Bindex Fire and Acoustic Sealant to maintain integrity

SECTION A-A Wall Head Detail for Z Purlin
Up to FRL 120/120/120
Section

Fire Rated
Wall Partition Around Steel Column to Precast Concrete

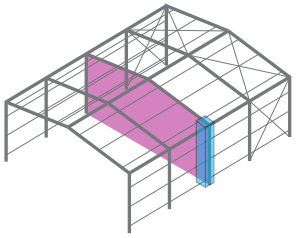


FIGURE 3 Wall End to Precast Wall
Up to FRL 120/120/120
Plan

Fire Rated
Wall Partition Around Steel Column to Wall Cladding

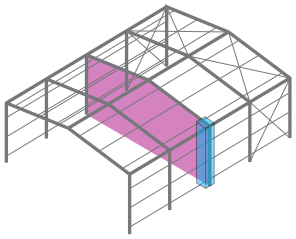
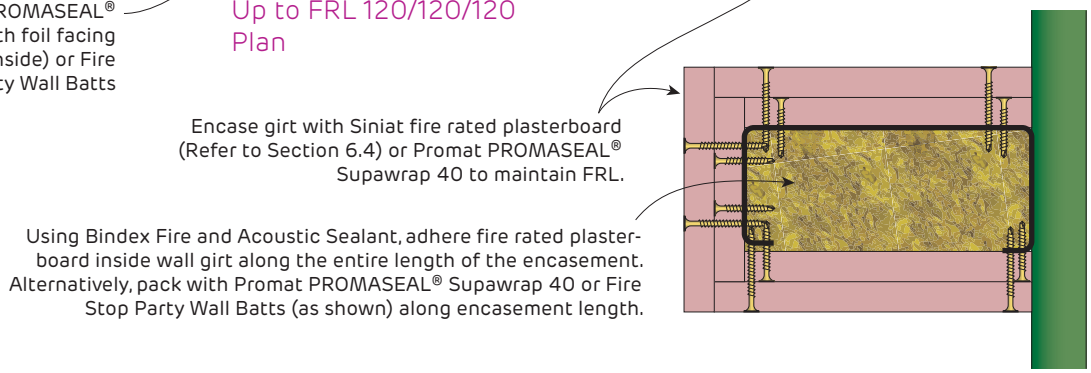
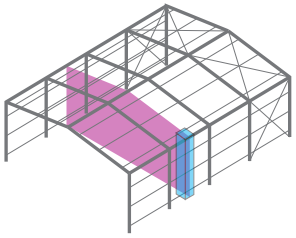


FIGURE 4 Wall End to Wall Cladding
Up to FRL 120/120/120
Plan



SECTION B-B Fire Protection of Wall Girt
Section

Fire Rated
Wall Partition to Wall Cladding



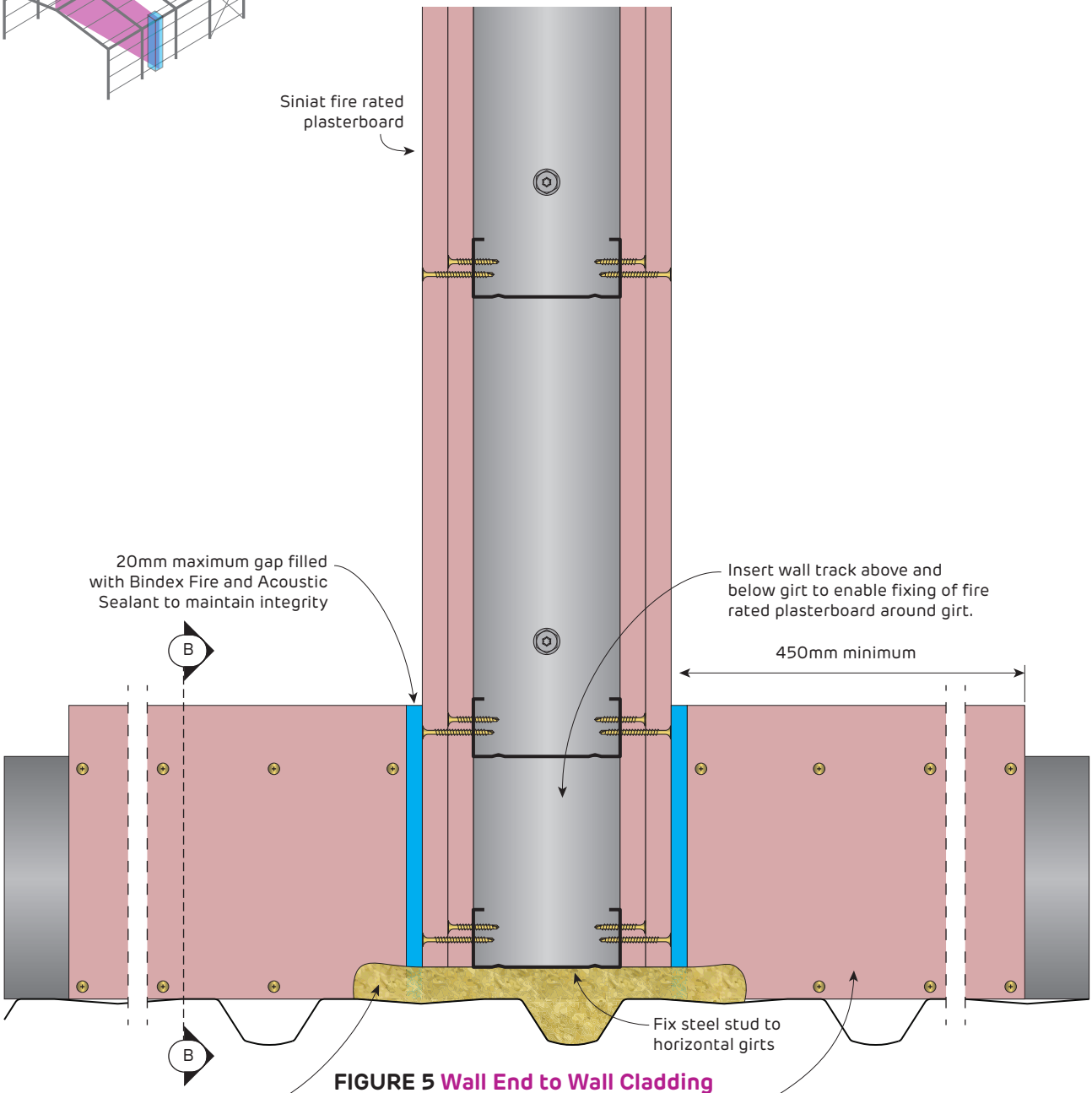
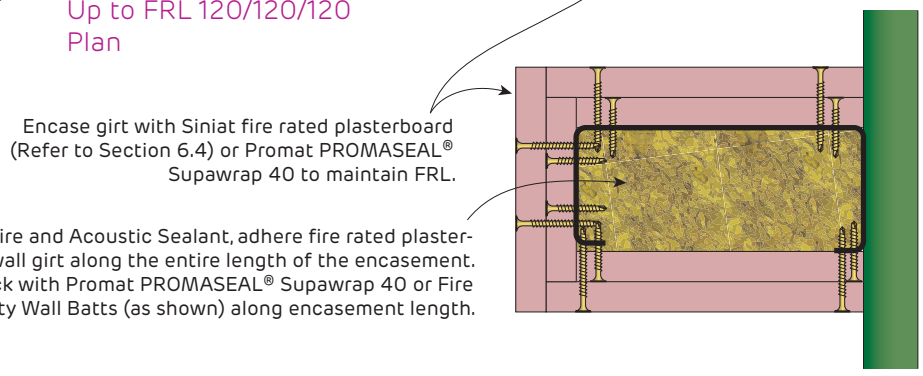


FIGURE 5 Wall End to Wall Cladding
Up to FRL 120/120/120
Plan



Fill any gaps with Bindex Fire and Acoustic Sealant to maintain integrity

SECTION B-B Fire Protection of Wall Girt
Section

Fire Rated
Wall Head Details Around C or Z Purlins

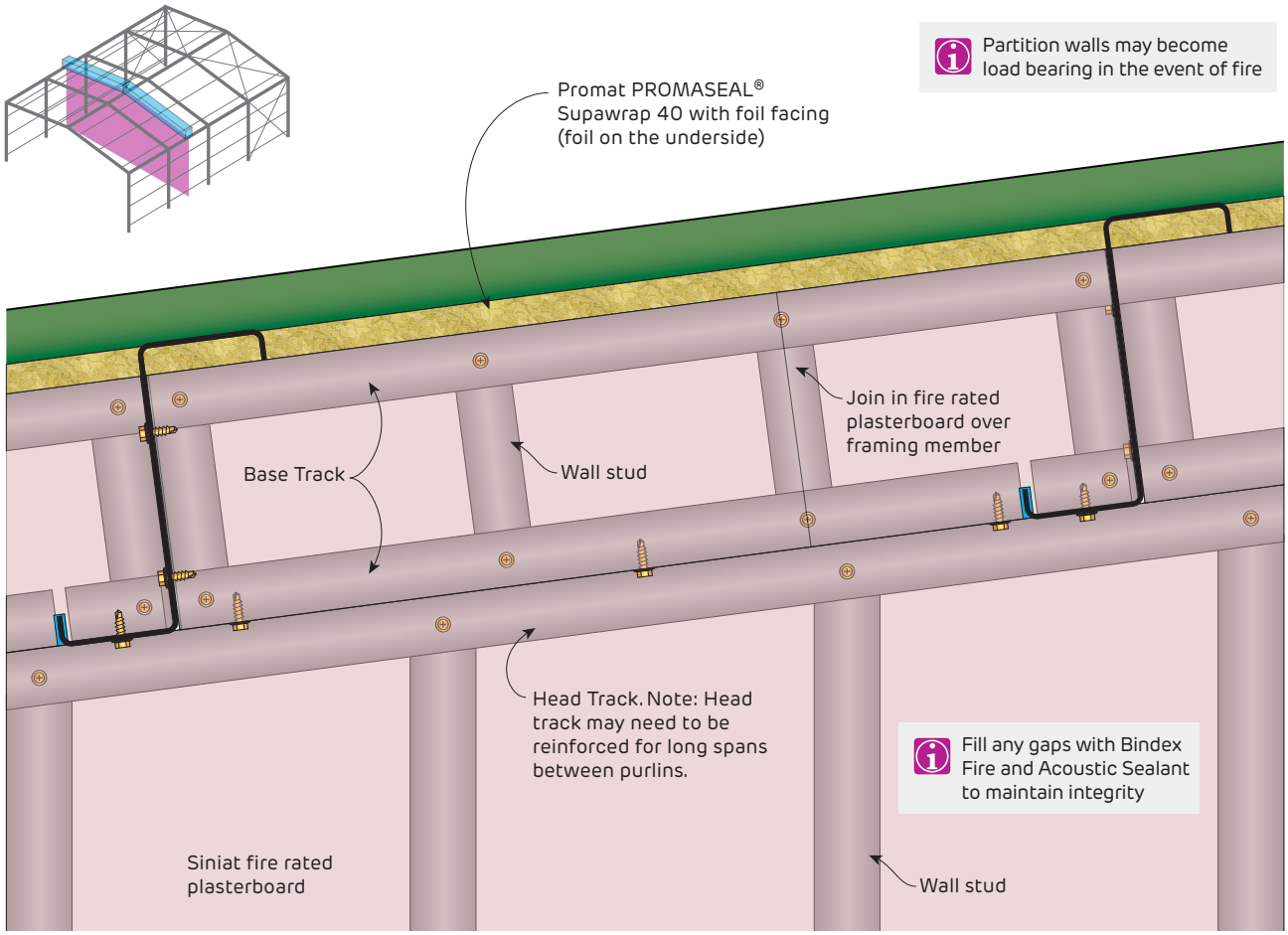


FIGURE 6 Partition Wall to Roof - Perpendicular to C or Z Purlins
Up to FRL 120/120/120
Section

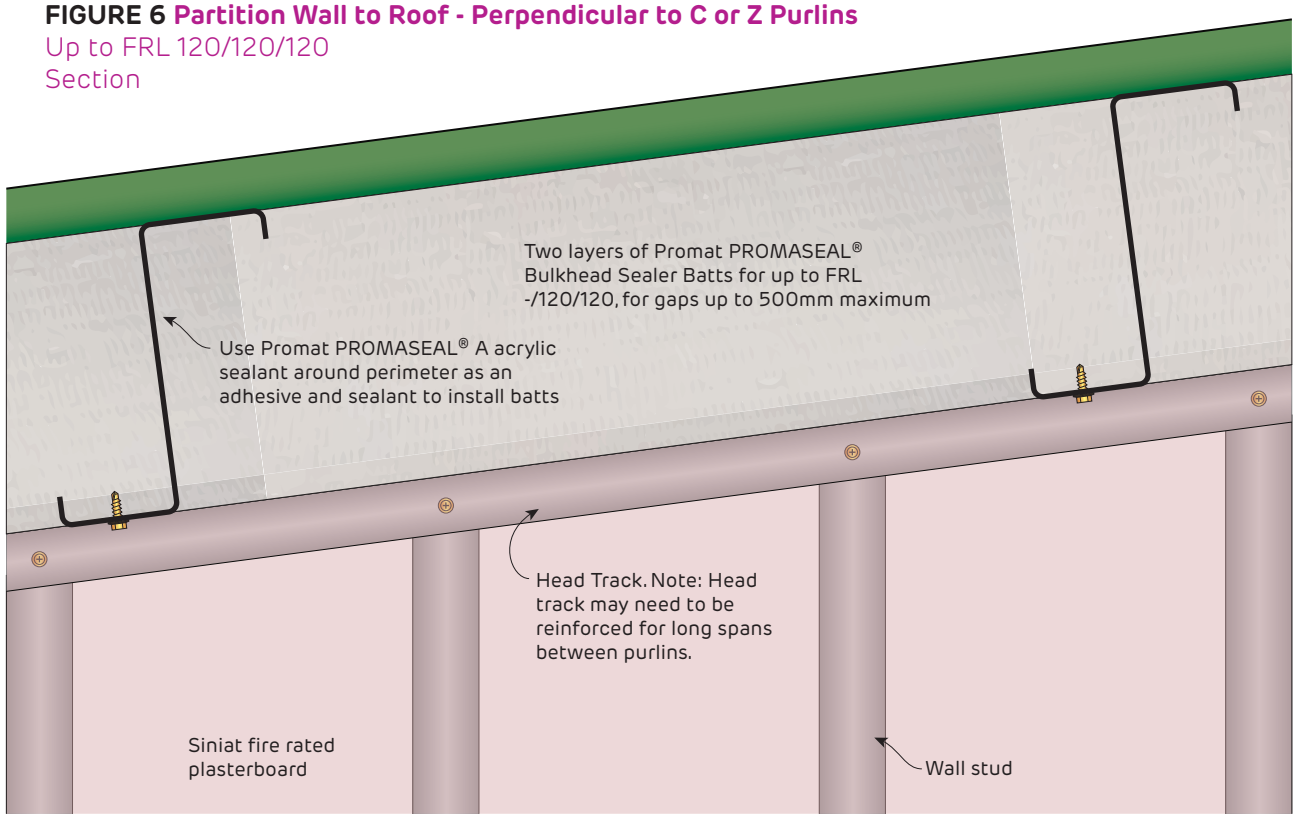


FIGURE 7 Partition Wall to Roof - Perpendicular to C or Z Purlins
Up to FRL 120/120/120
Section

Fire Rated
Wall Head Details Around C or Z Purlins

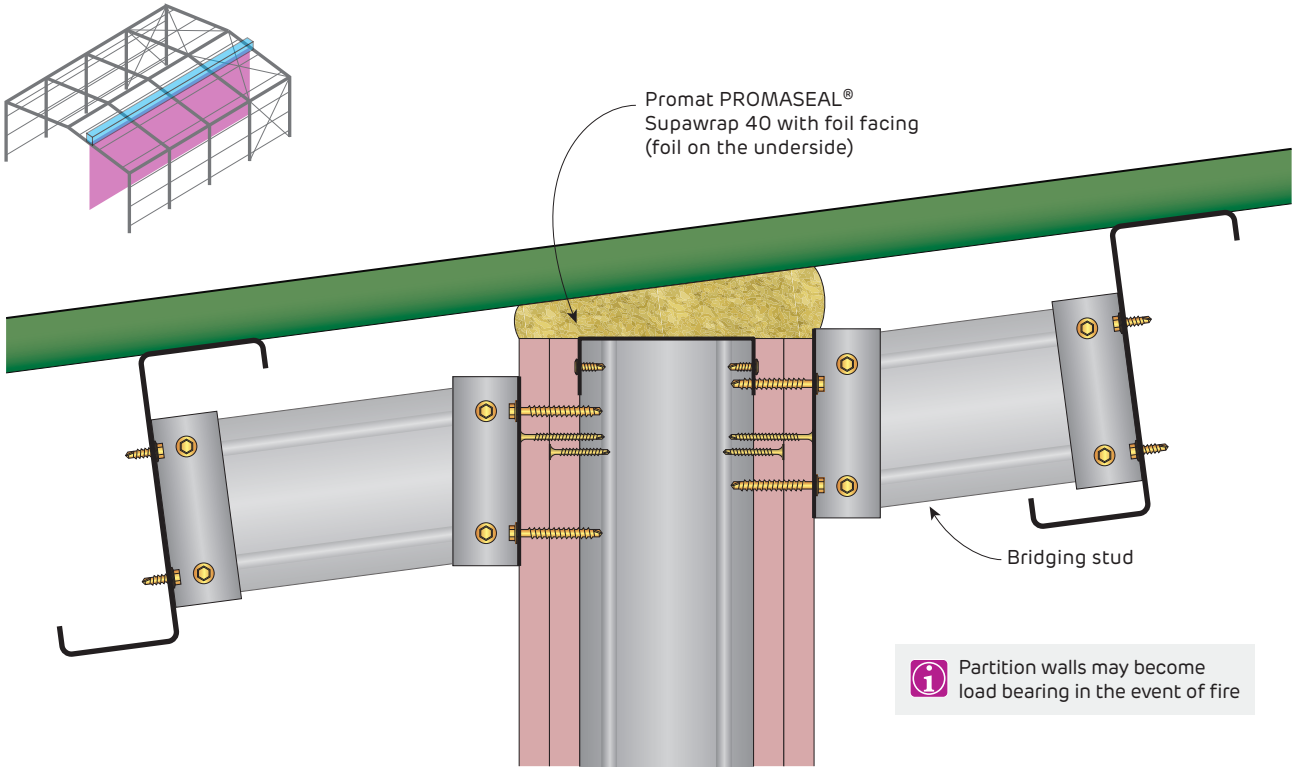


FIGURE 8 Partition Wall to Roof - Parallel to Purlins
Up to FRL 120/120/120
Section

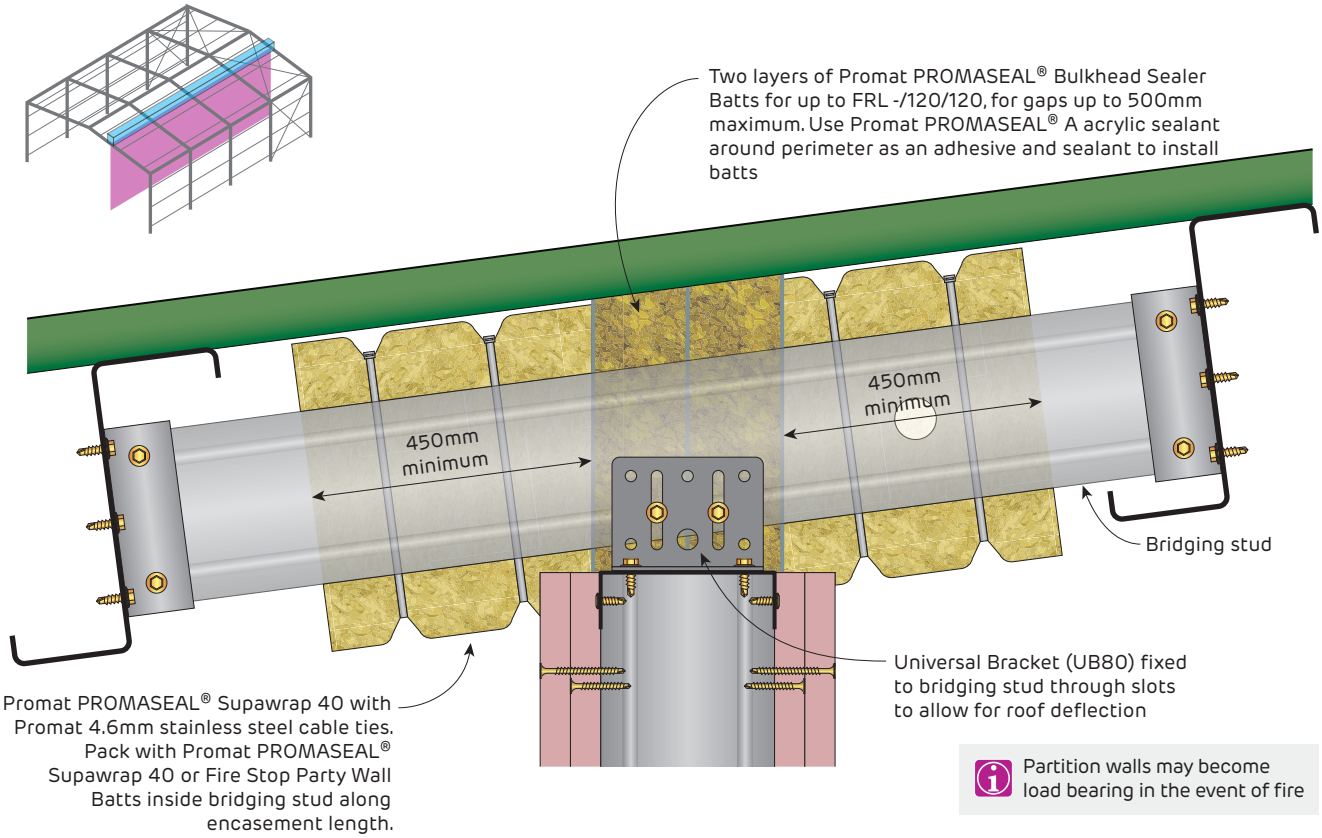


FIGURE 9 Partition Wall to Roof - Parallel to Purlins
Up to FRL 120/120/120
Section