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Title

Field of Application for:

Halspan® Prima 30 Doorsets

Part 2: Steel or Aluminium based frames

For 30 minutes Fire Resistance

Report No.:

FEA/F97174 Part 2 Revision J

Issue Date:

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Valid Until:

18th October 2027

Job Reference:

WF516654

Prepared for:

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This field of application report FEA/F97174 Revision J is Part 2 of the suite of (Prima 30 Halspan) assessments, other parts of the suite address other doorset designs.

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4 Technical Specification

4.1 General

The technical specification for the proposed door assembly is given in the following sections and is based on the test evidence for the door designs, summarised in Section 3.

4.2 Intended Use

The intended use of the proposed door assembly is summarised below:

A pedestrian doorset including any frame, door leaf or leaves which is provided to give a fire resisting capability when used for the closing of permanent openings in fire resisting separating elements, which together with the building hardware and any seals (whether provided for the purpose of fire resistance or smoke control or for other purposes such as draught or acoustics) form the assembly.

4.3 Door Leaf

Doorsets constructed using the different leaf types can include various design features as summarised below.

Specific sections within this assessment must be referred to for design limitations and construction requirements.

Section 5 gives the description of each leaf type in terms of its specification (e.g. composition and density)

The door leaves to be covered are:

Leaf 1 – Prima 30 – 44mm thick

Leaf 2 – Prima 30 – 54mm thick

Leaf 3 – Prima 30 – 44mm thick (Bond Up) – (38mm thick core with 3mm thick additional facings)

4.3.1 Leaf 1 – Halspan Prima 30 – 44mm thick

The basic construction for door leaves of this design comprises a 44mm thick particleboard, lipped on vertical edges. See section 5 for further constructional detail.

Minimum Door Leaf Thickness:

- With permitted decorative facing/finishes – 44mm.

Minimum Door Blank Thickness:

- Without decorative facings/finishes – 43mm.

The door designs can include:

1. Glazing – Test RF01073
2. Grooving – Backfilled with cement frame types only (M1, M2, & M3).
3. Decorative facings
4. Decorative planted on timber mouldings
5. Edge protectors – Double meeting edges only

7 Door Frame Construction

The following section described all aspects relating to the frame types permitted in this assessment and the following bullet points outline what sections cover each item of discussion.

- Section 7.1: Frame types tested, basic construction, any permitted frame mode alterations, applicable leaf types, and permitted installation requirements for each frame.
- Section 7.2 & 7.3: Frame types and their applicable supporting constructions.
- Section 7.4: Assessed alternative frame dimensions and justification for amalgamating tested frame designs.
- Section 7.5: Overpanel frame design.

7.1 Details for Frame M1-M5 & Installation Requirements

Door frames may be of a wraparound type, enclosing the supporting construction edge and the rear of the frame must be a contact fit with the structural opening. Alternatively, frames may sit within the structural opening and in the case of frame M5, aluminium architraves must be fitted to both sides of the frame to partition junction. Aluminium frames must be manufactured from grade 6063-16 aluminium.

Frame Specification for Frame M1-M5	
Frame (Test report)	Description of Construction
M1 (RF01073 & RF01074)	**Overall Construction:** The frame is made from steel wrap around or flush frame with integral stop and single rebate and backfill with cement mortar. **Fixing Method**: The frame must be fixed into the supporting construction using a minimum 25mm wide x 2mm thick steel U bracket to suit the frame depth at each fixing position with 4.5mm wide x 50mm long screws and plastic wall plugs at maximum of 500 centres, showing in figure 3 below. **Wall Type:** Masonry wall. **Frame to Supporting Construction Fire Stopping Method:** Not Required. **Tested Frame Dimensions:** 1.5mm thick steel x 180mm wide x 45mm thick including a 15mm deep x 50mm wide rebate. **Assessed Sizes:** See section 7.4.1. **Frame Design:** The frame may be a wraparound frame design as tested or installed flush with the supporting construction, as shown in figure 2 below.

Figure 1:Tested Frame

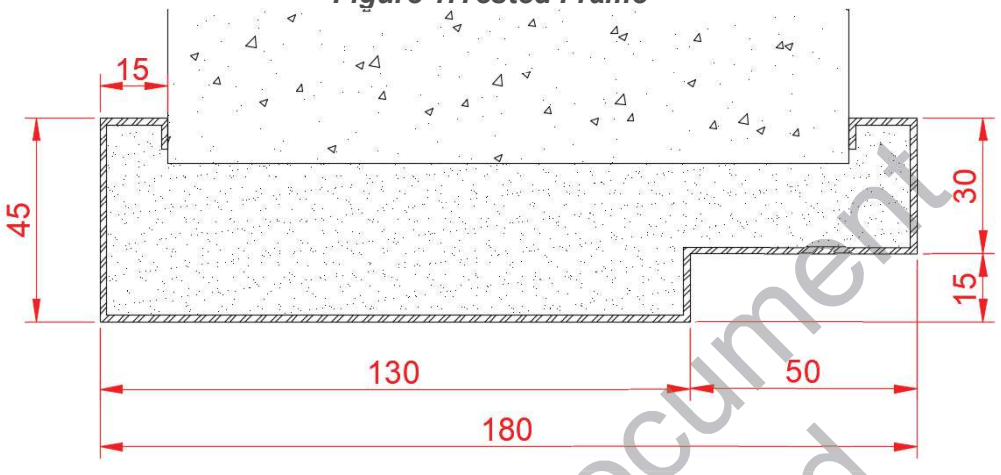


Figure 2: Alternative Frame Application

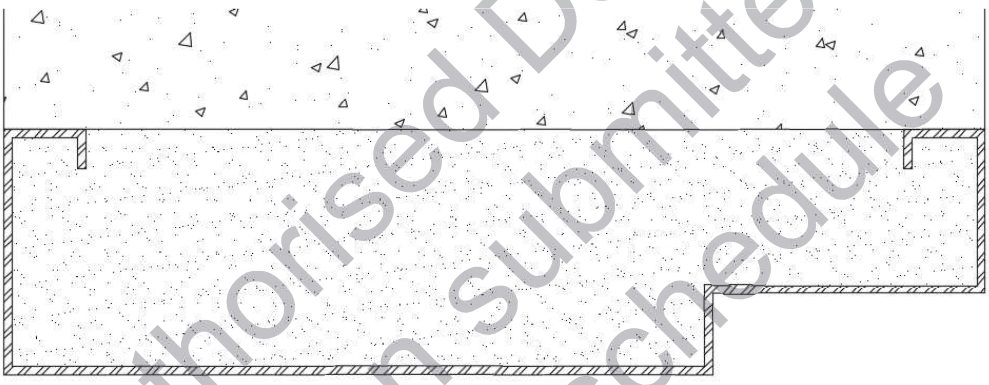
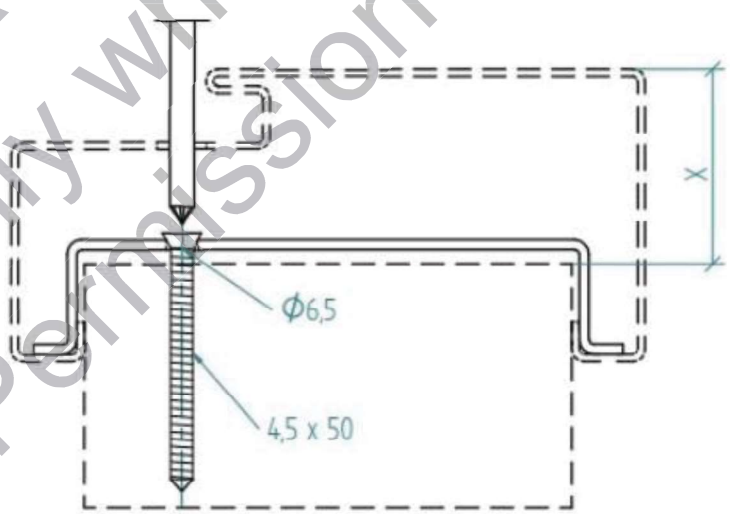


Figure 3: Fixing Application



M2 (RF02082 Doorset B)	**Overall Construction:** Steel flush or wrap around frame with integral stop and double rebate and backfilled with sand and cement mortar mix. **Fixing Method:** The frame must be fixed into the supporting construction using a 25mm wide x 2mm thick steel U bracket to suit the frame depth at each fixing position with 4.5mm wide x 50mm long screws and plastic wall plugs at maximum of 500 centres, showing in figure 6 below. **Wall Type:** Masonry wall. **Frame to Supporting Construction Fire Stopping Method:** Not Required. **Tested Frame Dimensions:** 1.5mm thick steel x 185mm wide x 60mm thick including a 15mm deep x 63mm wide rebate. **Assessed Sizes:** See section 7.4.1. **Frame Design:** The frame may be installed flush with the supporting construction as tested or wrap around frame design, as shown in figure 5 below.

Figure 4:Tested Frame

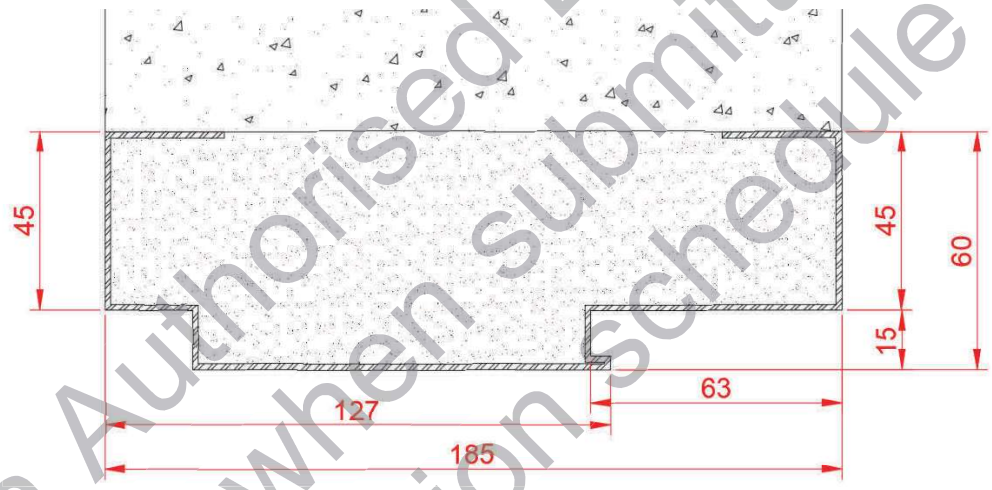


Figure 5: Alternative Frame Application

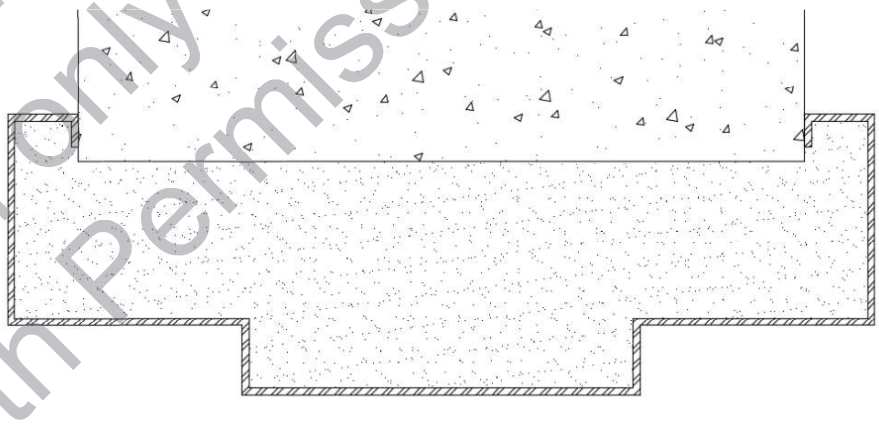


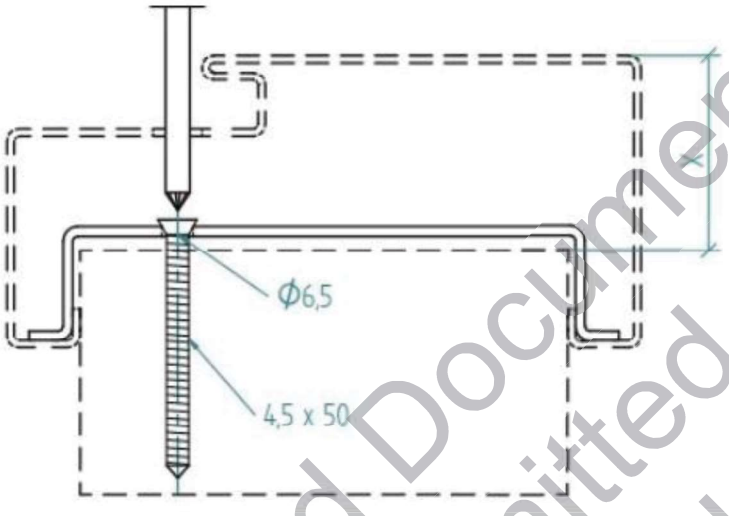
	Figure 6: Fixing Application 
M3 Steel hollow frame wrapped stop side only – (WARRES No. 111201) & RF04021	**Overall Construction:** Pre - rolled galvanised steel hollow frame including integral stop and wrapped around wall on one side only.[1] **Fixing Method:** Frame type must be fitted into the supporting construction using a minimum 25mm wide x 2mm thick steel U bracket to suit the frame depth at each fixing position with 80mm long masonry steel screws and wall plugs at a maximum of 500mm centres. **Wall Type:** Masonry wall. **Frame to Supporting Construction Fire Stopping Method:** Fire rated Intumescent mastic successfully tested to BS 476: Part 22: 1987 or BS EN 1634-1 and achieved 30 minutes fire resistance integrity or greater, suitable for application between a steel door frame and masonry blockwork supporting construction may be fitted at the frame to supporting construction interfaces. **Tested Frame Dimensions:** All frame sections were constructed from 2mm thick steel with the frame measuring 75mm wide x 151mm deep including a 48mm wide x 13mm deep rebate for an integral stop. **Assessed Sizes:** See section 7.4.1. **Frame Design:** The frame may be installed wrapped around on the stop side as tested in report WARRES No. 111201, as seen in figure 7, or wrapped around the rebated side as tested in report RF04021, as shown in figure 8 below. The frame design tested in test report WARRES No. 111201 (Pre - rolled galvanised steel hollow frame including integral stop and wrapped around wall on stop side only) has been amalgamated with the frame type in test report RF04021 Doorset B (Galvanised hollow steel frame with integral stop and integral architrave) as the test evidence and frame designs have been show comparable to one another. See justification in section 7.4.2.

Figure 7:Tested Frame WARRES No. 111201

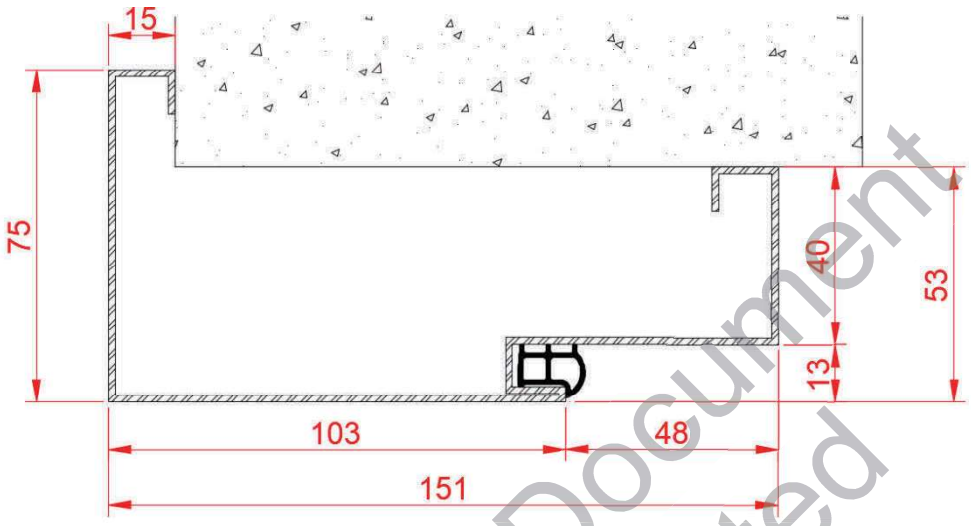
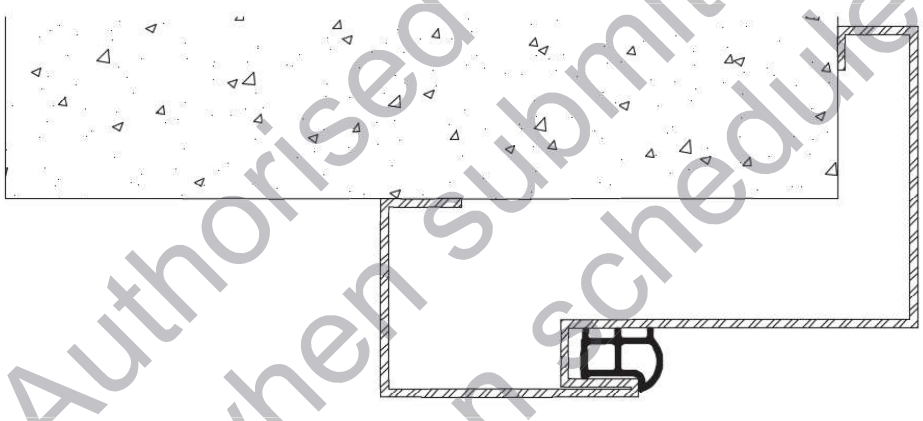


Figure 8: Tested Frame RF04021Doorset B



M4 - Steel hollow wrap around frame (CFR1905171, CFR1912021 & WF412658)	**Overall Construction:** Steel 2 part hollow frame or filled with Seal Tight Solutions ST99 FR foam in 1 part of the frame reveal section only, wrap around frame with both sections of frame fixed together using Ø3.8 x 38 steel countersunk screws at 150mm down from the head and 200mm up from threshold fixed through the integral stop. **Fixing Method:** The frame must be fixed into the supporting construction using 2No. Ø5 x 75mm long countersunk steel screws at a minimum of 500 centres and 50 from corners and 2No fitted 105mm from each corner and 2No. fitted equally spaced between them in the head. 12mm magnesium oxide packing boards must be fitted at each fixing position. If fitted into a solid wall construction appropriate masonry screws with wall plugs must be used. **Wall Type:** Masonry wall, steel or timber stud partitions. For steel stud partitions a timber infill with a minimum density 450kg/m³ must be fitted around the aperture within the stud with minimum dimensions of 38mm x the internal width of the studwork **Frame to Supporting Construction Fire Stopping Method:** For the hollow frame design the frame must be capped with Fire rated Intumescent mastic successfully tested to BS 476: Part 22: 1987 or BS EN 1634-1 and achieved 30 minutes fire resistance integrity or greater, suitable for application between a steel door frame and the selected supporting construction type on both sides at the interface between the frame and wall. **Tested Frame Dimensions:** Tested frame dimensions: Rebated section was constructed from 1.5mm thick steel and measured 93mm wide x 68mm deep and including a 13mm deep x 54mm wide rebate and the secondary section was constructed from 1.5mm thick steel and measured 70mm wide x 65mm. **Assessed Sizes:** See section 7.4.1. **Frame Design:** The frame must be installed as a hollow wrap around design, see section 9, or including Seal Tight Solutions ST99 FR foam in 1 part of the frame reveal section only, as shown in figure 9a below. The frame design tested in test report CFR1905171 (steel telescopic 2 part hollow wrap around frame with integral stop) has been amalgamated with test reports CFR1912021 and WF412658 (2 section Steel folded wrap around frame with ST99 Foam infill to the full depth of the architrave on the fire side only), as the test evidence and frame designs have been show comparable to one another following certain restrictions on door leaf size and intumescent used. See justification in section 7.4.2.

Figure 9a: Hollow Frame with Foam Infill

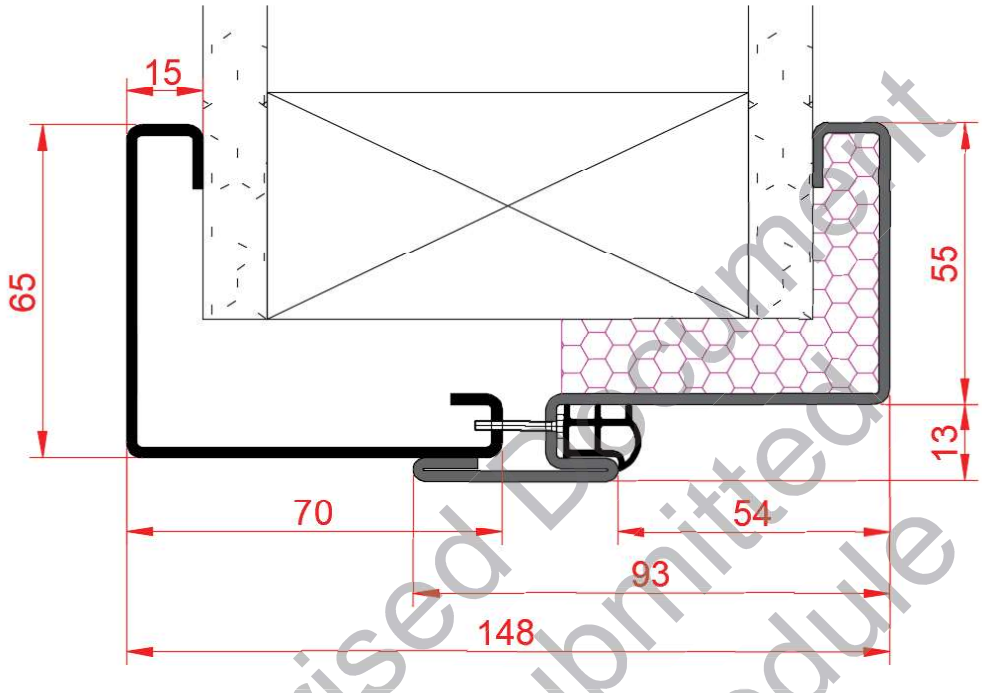
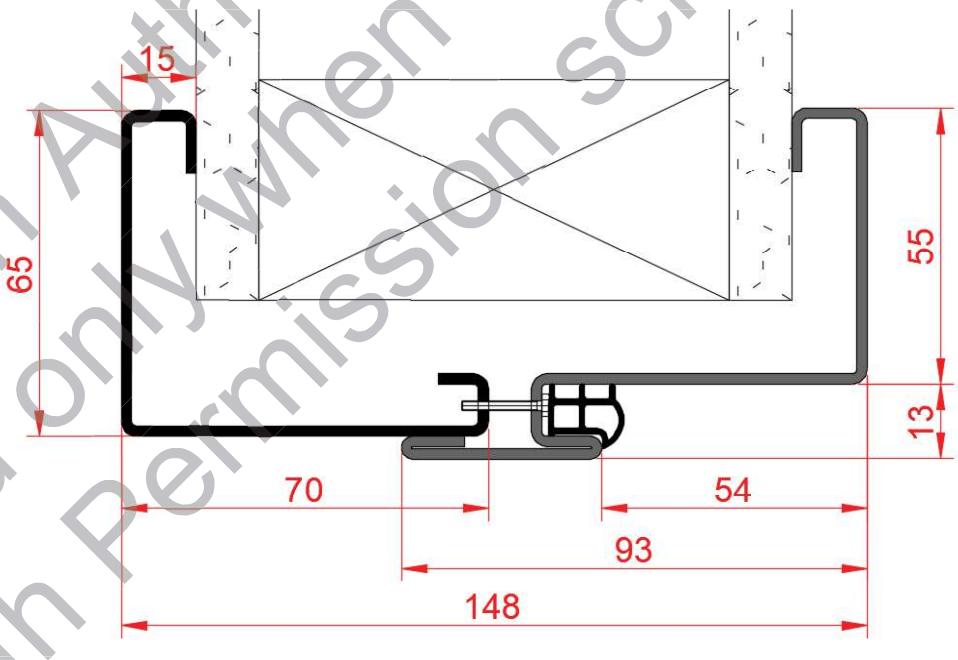


Figure 9b:Tested Hollow Frame Sizes



M5 - Aluminium timber infill	**Overall Construction:** Aluminium frame with sapele timber insert with a minimum density of 640kg/m³, including integral stop and steel FM trim architrave fitted on both sides.

with architrave – (WARRES No. 118289)	**Fixing Method:** Frame type must be fitted into the supporting construction using 2No. 25mm x 4mm screws fixed through the timber insert in the stud and into the sapele timber within the frame by a minimum 20mm penetration into the sapele insert at 300mm centres. The FM trim architrave must be fixed to the partition using 25mm x 4mm long self-tapping screws at 300mm centres by a minimum 20mm penetration **Wall Type:** Tested bespoke steel stud system only. **Frame to Supporting Construction Fire Stopping Method:** Not required. **Tested Frame Dimensions:** All frame sections were constructed from 2mm thick aluminium with the frame measuring 37mm x 94mm including a 51mm wide x 13mm deep rebate for an integral stop. Aluminium architrave FM trim measured 2mm thick x 35mm wide x 7.7mm deep and the plastic FM bead measured 1mm thick x 10mm wide x 6mm deep. Sapele insert measured 87mm deep x 20mm wide.[2] The frame design tested in test report WARRES No. 118289 (Aluminium timber infill with architrave) has been discontinued but a new comparable design has been permitted, as show in figure 11 below. See justification in section 7.4.2.

Figure 10: Tested Frame Application

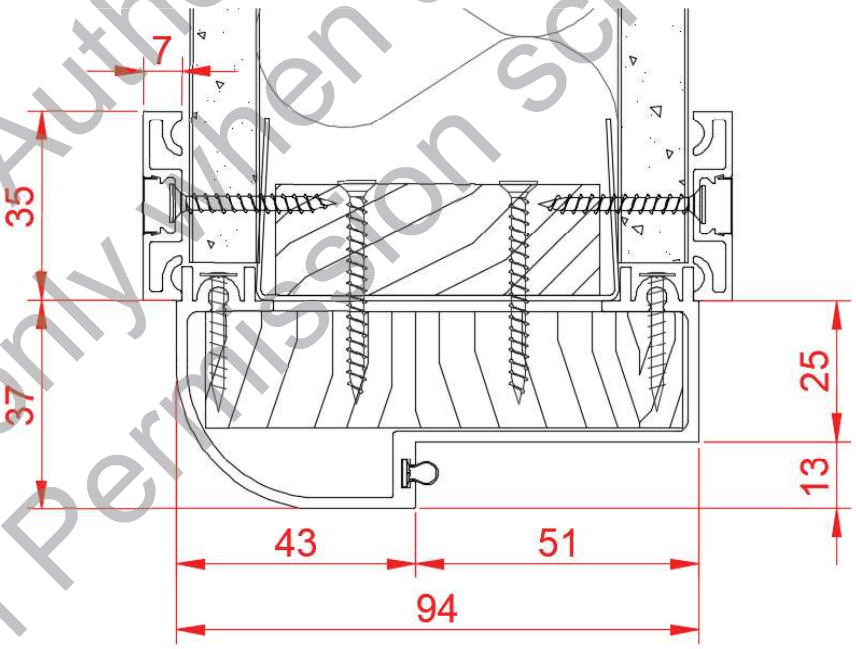
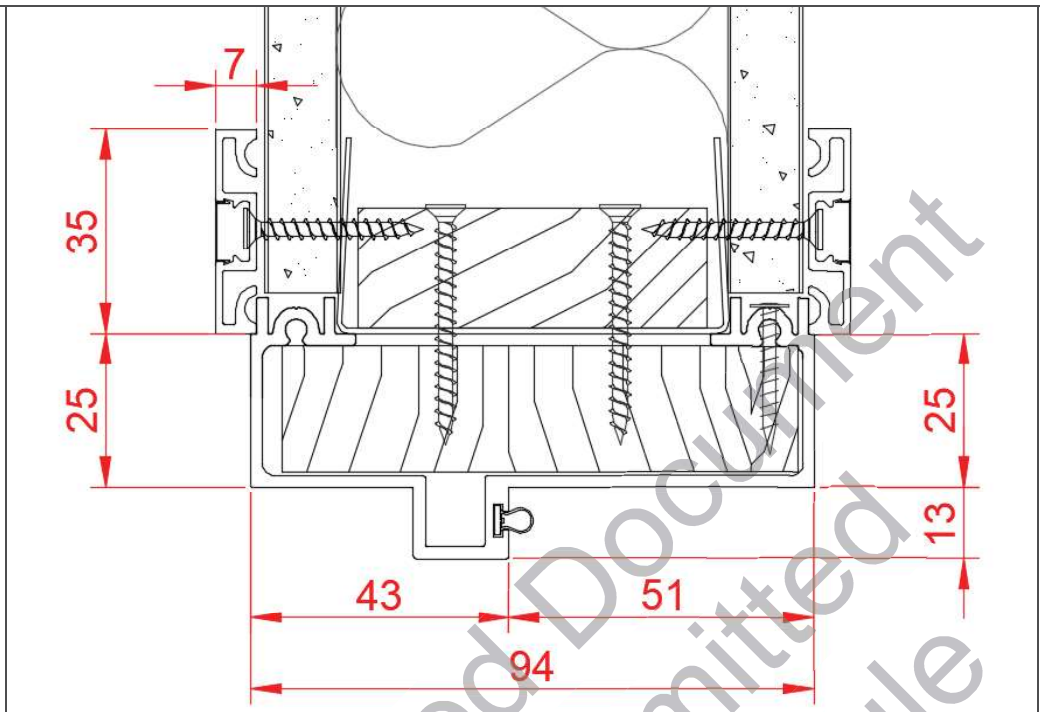


Figure 11: Alternative Frame Application



[1]Hollow frame M3 listed above have been assessed to permit the use of backfilling with mortar. Analysis on all the tests listed in the assessment have shown that backfilling the frame has a positive effect on the fire resistance performance of the doorset, reducing the heat transfer through the frame, and in turn, preventing erosion along the edges of the door leaf opposite any framed element.

[2] Frame M5 is bespoke and the sizes stated in the table above must be maintained, as per the test evidence.

All permitted frame type sizes are given in section 7.4.1.

The following table shows which frame types are permitted with each leaf type.

Frame		Leaf		
Reference	Material	1:	2:	3:
		44mm thick	54mm thick	44mm thick (Bond Up)
M1	Steel	✓	✓	×
M2	Steel	✓	✓	✓
M3	Steel	✓	✓	×
M4	Steel	✓[1]	✓	×
M5	Aluminium	✓	✓	×

[1] Only permitted with the smaller door leaf sizes given in section 4.5.

7.2 Supporting Construction

7.2.1 Wall Types

Prima 30 has been tested in the following wall types see table in section 7.3 for permitted options. However, consideration of the wall type must be given. The frame needs to be fixed back to a supporting construction which will remain in place for the duration of the fire resistance period. The following aspects of the different supporting constructions need to be considered.

- Masonry, concrete and solid blockwork – are considered as rigid constructions and are solid throughout the depth of the wall and have inherent fire resistance. These walls are denoted as rigid constructions in BS EN 1363 Part 1 as they deflect very little during a fire test. Due to the solid nature of the wall firestopping as detailed above will be adequate. Highly perforated blockwork is not covered by this category and specific test evidence must be referenced to ensure adequate support during the fire exposure period.
- Steel stud partitions – are considered as flexible constructions and incorporate large voids in their construction. These walls deflect during a fire test. Specific evidence is required to ensure the stud supporting the door frame is stabilised to reduce deflection during the fire test and the aperture is adequately lined to prevent gases getting into the void.
- Timber stud partitions – tend not to distort significantly during a fire test. A timber stud does not need to be stabilised during the fire test and the aperture will only need to be lined if the timber stud is not fully protecting the void in the partition. The overall thickness of the plasterboard clad timber stud partition shall not be smaller than that demonstrated under test conditions and therefore, the minimum partition thickness is 100mm.
- Bespoke walls and partitions will require specific test evidence.

Doorsets comprising of frame M5 must be installed into the flexible partition system successfully tested in report WARRES No. 118289. Detailed drawings of the wall design tested in report WARRES No. 118289 are given in figures 12, 13, 14 and 15 below;

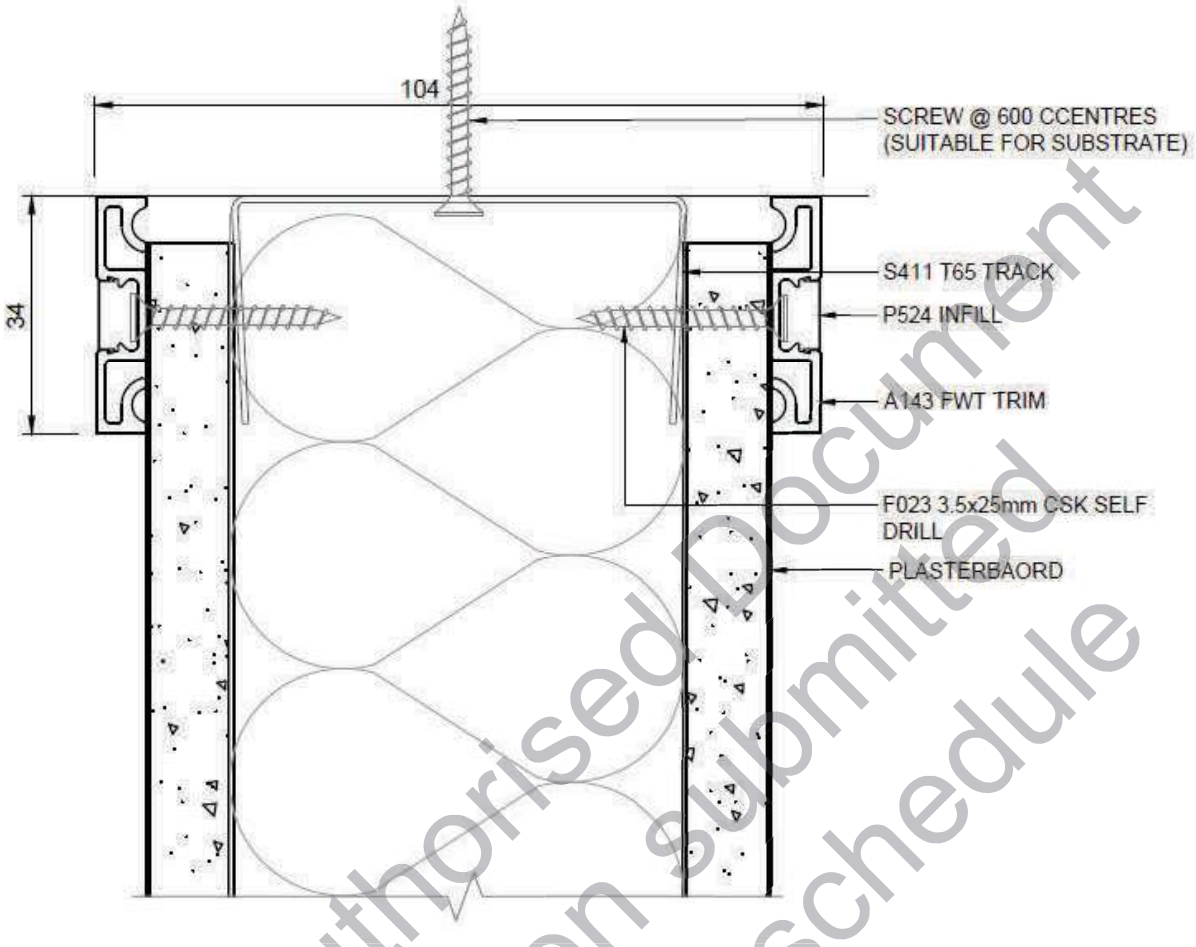


Figure 12 – Wall Head Detail

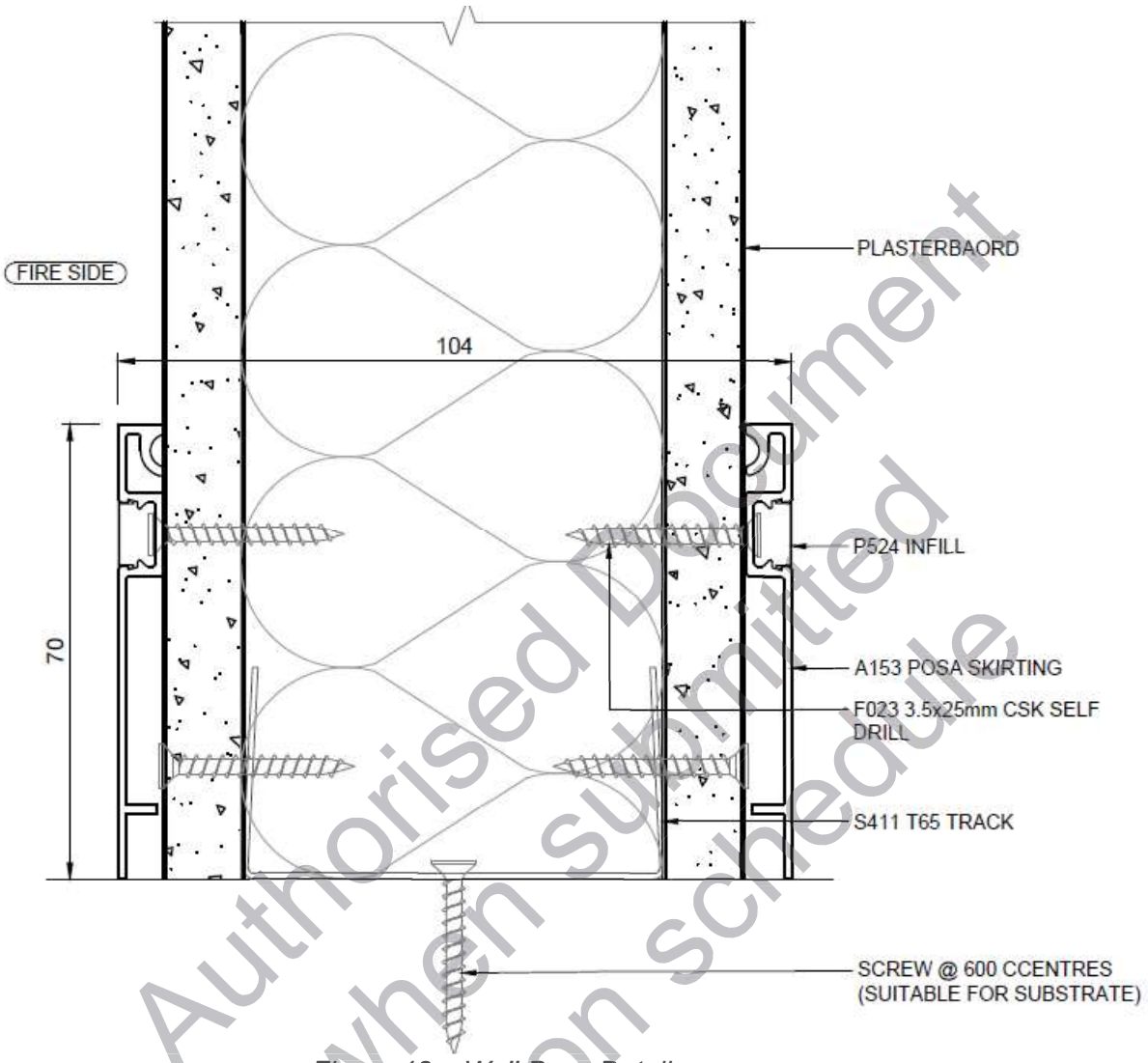


Figure 13 – Wall Base Detail

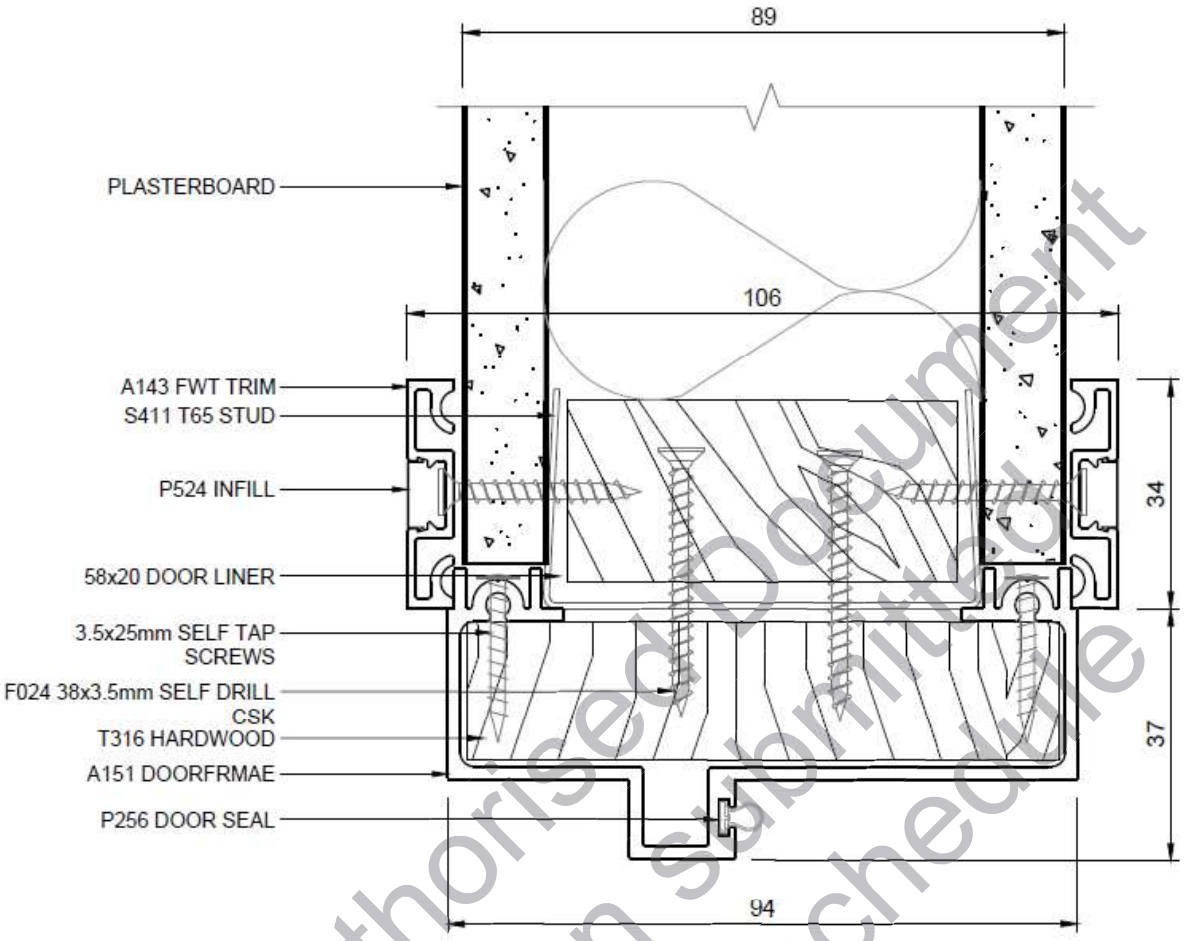


Figure 14 – Door Frame Head & Wall Detail

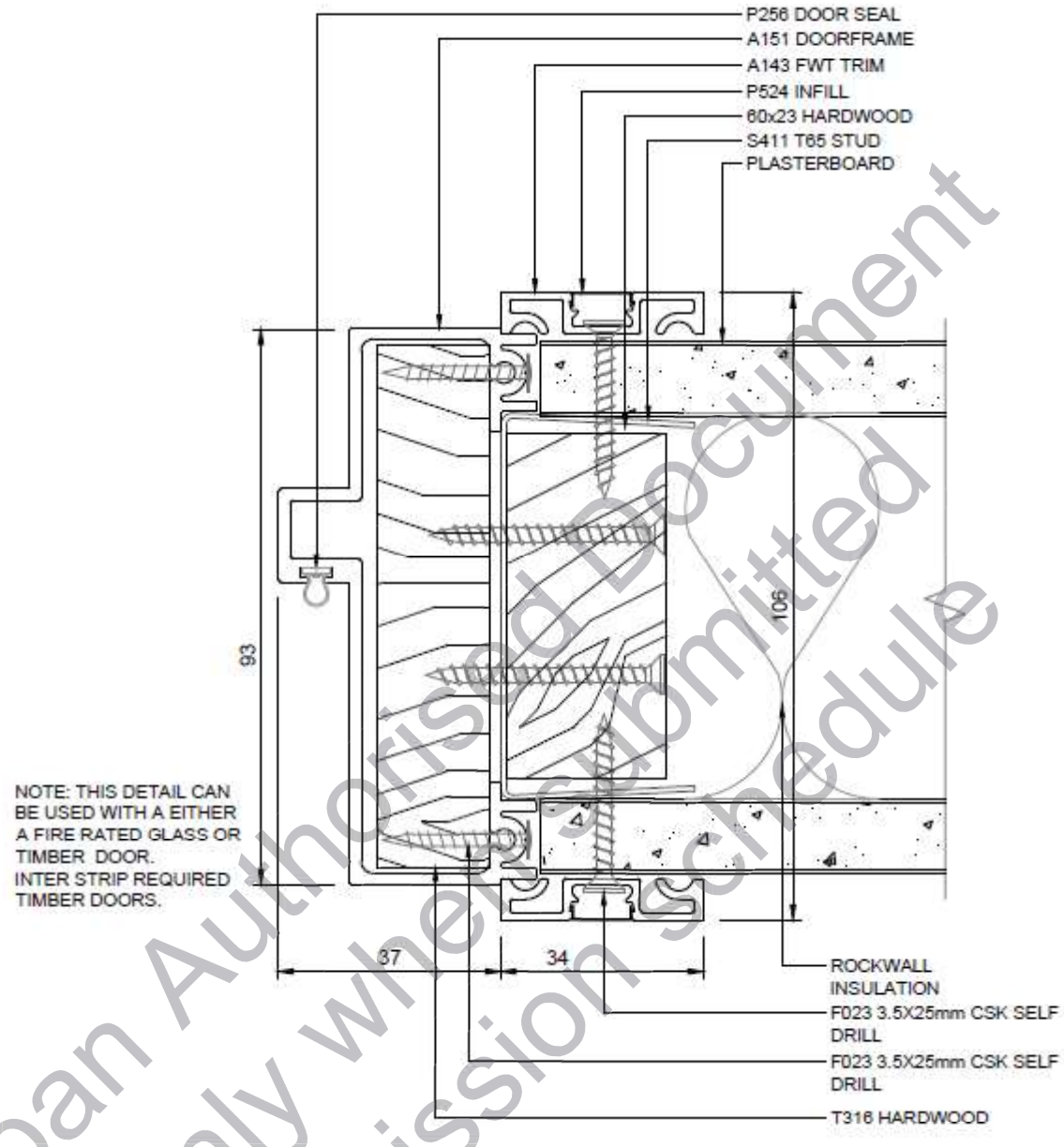


Figure 15 – Door Frame Jamb & Wall Detail