INTERNATIONAL FIRE CONSULTANTS LIMITED

PRIVATE & CONFIDENTIAL

IFC FIELD OF APPLICATION REPORT

Field of Application for FD60 Moralt OutDoor FERRO FireSafe Passiv Door Leaves Installed in Timber Frames

Fire Resistance Standard: BS476: Part 22: 1987

IFC Report PAR/18099/01

Prepared on behalf of:

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NOTE: This report should not be manipulated, abridged or otherwise presented without the written consent of International Fire Consultants Ltd

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ISSUE AND AMENDMENT RECORD

Rev	Date	Author	Review	Section	Amendments
Drafts	September 2018 to February 2019	CPH	MB	-	-
Final	March 2019	CPH	MB	-	-

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1. INTRODUCTION

This report has been prepared by International Fire Consultants Ltd (IFC), on the instruction of Moralt AG, to define the Field of Application for Moralt OutDoor FERRO FireSafe Passiv door leaves installed in timber frames, that are required to provide 60 minutes fire resistance performance, as applicable, when adjudged against BS476: Part 22: 1987.

The methodologies used in preparing this document are based upon the guidance in BS ISO/TR 12470; *'Fire resistance tests - Guidance on the application and extension of results'*.

It is proposed that variations to the tested specifications, as described in the following sections, may be accommodated into assemblies, without reducing their potential to achieve up to 60 minutes integrity rating, if tested in accordance with the method and criteria of BS476: Part 22: 1987. The omission of information on any components or manufacturing methods does not imply a lack of approval of those details but these would need to be the subject of a separate analysis. Only variations specifically mentioned are supported by this assessment document, and all other aspects must otherwise be as proven in tests summarised herein.

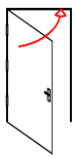
2. TEST EVIDENCE

The test evidence used to support this Field of Application Report is summarised in Appendix E of this report.

3. SCOPE OF APPROVAL

3.1 Door Assembly Configuration

The Moralt OutDoor FERRO FireSafe Passiv door leaves are approved to open towards the fire-risk side only, with the approved leaf sizes and configurations outlined below:

Configuration		Envelope of Approved Leaf Size
	• **Latched** • **Single Acting** • **Single Door** • **Transommed Overpanel (optional)** • **Fanlight (Optional)**	**Figure PAR/18099/01:04 in Appendix C**

Note 1 *Single acting door assemblies in timber frames which include overpanels must have the leaf/overpanel interface separated by a transom (leaf head double rebated);*

3.2 Maximum Assessable Door Leaf Sizes

The calculated envelope of assessed leaf dimensions for the door configuration covered by this Field of Application report is given in Appendix C based upon use of the intumescent seal specifications shown in Appendix B. The maximum leaf sizes are based on the outer most edge of the leaf i.e. the outer limits of the rebate/nib where applicable.

3.3 Door Leaf and Overpanel Specification

The door leaf and overpanel construction for the 98mm thick Moralt OutDoor FERRO FireSafe Passiv is given below.

The leaf construction is based upon the test evidence detailed in Appendix E, and defines variations and tolerances where it is considered that these will not adversely affect overall fire resistance. The construction details are limited to the information available from the test report.

Table 1

Component	Material	Minimum Density	Dimensions
Core	**(Details held on confidential file by IFC Ltd)**		
Stiles/rails			
Facings			
Adhesive			
Leaf thickness	–	–	98mm (-0.5mm/+4mm)
Optional additional decorative finishes	Timber veneer or decorative plastic based laminate (to leaf faces only)	–	Maximum 2mm thick
	Paint or varnish	–	Maximum 0.5mm thick

Note 3 *There is an option to fit 1mm thick Sto-Shield AES glass fibre/plastic mesh between two of the core facing boards to help resist the passage of radiation waves.*

Note 4 *The tested leaf edge detail included double rebates to the hanging, closing and top edges, first rebate from the push face of the leaf measuring 35mm wide x 15mm deep, the second rebate measuring 40mm wide x 15mm deep with the remaining 'snib' of the leaf measuring 15mm high x 23mm thick which oversails the door frame at the pull edge (see **PAR/18099/01:01-02**).*

3.4 Frames

Timber frames, to the specifications given below, may be used across the range of approved sizes and configurations outlined in Appendix C, utilising the intumescent seal specification outlined in Appendix B.

Material	Minimum Density	Minimum Frame Dimensions Head and jambs (see overleaf for transom)
Finger jointed/laminated hardwood (glued using urea formaldehyde) or solid timber	580kg/m³ *Note 5*	55mm wide - (excluding rebates) x 98mm deep *Note 6* (See PAR/18099/01:01-02)

Note 5 *Timber must have a minimum measured density at 12% moisture content. The timber must be straight grained and of appropriate quality in accordance with BS EN 942: 2007. The moisture content shall be 10 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).*

Note 6 *These dimensions assume that the frame is installed within the plane of the wall thickness, and screwed directly to it, such that the rear of the frame is protected by the adjacent wall, (and firestopping). (See also Section 3.8 herein).*

The overall frame depth may be increased by the use of extension linings, but the joint between the main frame and the extension lining must not intrude into the plane of the door thickness.

Head/jamb joint : 3No. hardwood dowels (16mm diameter x 90mm long), glued using Polyurethane type adhesive.

Architraves : Loose architraves are optional, and have no fire performance requirements, and so can be freely specified, subject to adequate fire stopping. (See Section 3.8 regarding wall/frame gaps).

Transom members : When a transom is used between a door and an overpanel/ fanlight, the member shall be the same specification as for the main door frame, but it can be in 2-sections, jointed horizontally together using 2no. continuous 20mm x 10mm thick solid hardwood (minimum density 720kg/m³) tongue joints. The transom to have a minimum thickness of 55mm x 98mm deep to match the main frame members.

Where an overpanel is fitted then the interface with the transom is to be double rebated as per the door leaf head.

Where a fanlight is fitted the perimeter detail should be as shown in PAR/18099/01:03.

The transom must be fixed to the jambs with 3No. hardwood dowels (16mm diameter x 90mm long), glued using Polyurethane type adhesive.

Fanlight perimeter framing : Perimeter frames around head and sides of fanlights shall be the same material specification as for the main door frame. The frame section shall be minimum 50mm thick x 98mm deep *Note 6* (See also Section 3.5 regarding fanlights)

Overpanel perimeter framing	:	Perimeter frames around head and sides of overpanels shall be the same material specification as for the main door frame. The frame section shall be minimum 55mm thick x 98mm deep *Note 6* (See also Section 3.6 regarding overpanels)
Thresholds	:	See Section D.4.4

3.5 Glazed Fanlights

A glazed fanlight may be fitted over each approved door assembly, subject to the use of glass, glazing media and beads as defined in Sections 3.5.1 - 3.5.3; and the parameters summarised in Section 3.5.4. (This does not imply that glazing can be included in the door leaf; which is NOT approved).

3.5.1 Glazed units in fanlights

The following glazed units are approved for use in fanlights, herein, which are compatible with the identified approved glazing system given in Section 3.5.2, although some restrictions on size may be given in subsequent sections. The triple glazed unit must be constructed/formed in the manner proven in fire testing.

- Pilkington Pyrostop 60 – 171

NB. The 52mm thick triple glazed unit must be orientated with the fire rated glass fitted towards the 'pull face' of the assembly; which must be the 'fire risk' face.

Expansion allowances for the glass shall be as recommended by the glass manufacturer.

3.5.2 Glazing materials and systems in fanlights

The following glazing material is approved for use with glazed units considered herein, which are compatible with the identified approved glass units above, although some restrictions on size may be given in subsequent sections.

- 52mm x 2mm Intumescent Seals Ltd 'Therm-A-Line' liner to be fitted around the entire perimeter of the glazed aperture, pinned to the framing, and opposing the edge of the triple glazed unit;
- 14mm high x 2mm thick ceramic fibre based flexible glazing tape to be fitted between the rear face of the unexposed face glazing bead and the triple glazed unit;
- Flame retardant silicone based sealant may be used to 'point' the top corner of the glazing bead adjacent to the glass, if required. A non-fire rated sealant may be used if applied to the known fire-risk side of the glazed unit.

(See **Figure PAR/18099/01:03** in Appendix A).

3.5.3 Bead profiles in fanlights and installation

The approved bead size and profile, and relevant fixing details, are shown on **Figure PAR/18099/01:03** in Appendix A, which also defines any limitations of the glazing system and bead profile.

Planted and integral glazing beads shall be formed from timber with a minimum measured density of 580kg/m³, at 12% moisture content. The timber must be straight grained and of appropriate quality in accordance with BS EN 942: 2007. The moisture content shall be 10 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).

Beads, on either face of the glazed unit, may either have a 'flat' upper surface (perpendicular to the glass) or have up to a 21 degree chamfer; whilst maintaining the limitation shown in **Figure PAR/18099/01:03** in Appendix A. If required, they may also incorporate a 3mm x 3mm rebate adjacent to the glass which may be filled with silicone, of the appropriate type referenced in Section 3.5.2.

Glazing beads on either face may be integral with the perimeter framing or planted. However, beads fitted to the face of the glazed unit that is exposed to the furnace conditions, whether they are integral or planted, must incorporate minimum 45mm long x 4mm diameter steel screws, fitted at nominally 30 degrees to the plane of the glass, positioned minimum 80mm from all corners and at minimum 250mm centres thereafter.

3.5.4 Assessed sizes for glazing in fanlights

Based upon the size of apertures tested, the following limitations apply to glazed apertures considered herein:

Maximum area of aperture	1.23m^2
Maximum height of aperture	1270mm
Maximum width of aperture	To suit maximum width of door

The maximum height and width cannot be used simultaneously; and the maximum area is the defining parameter. Approval of a fanlight size by IFC does not indicate that such a size can be fabricated, this should be checked with the manufacturer, and will be subject to the ability of the supporting construction providing adequate restraint/support.

3.6 Transommed Overpanels

Overpanels are only permitted when separated from the door leaf by a transom member. Intumescent seals at the panel/frame interface shall be as defined in Appendix B. All perimeter framing, including transom members, shall be in accordance with Section 3.4 with a double rebated interface between the overpanel edge and the perimeter frame. The installation shall be as defined in Section 3.8.

The size of overpanels is limited to the full width of the leaf contained within the door assembly and a maximum height of 1000mm.

Approval of an overpanel size by IFC does not indicate that such a size can be fabricated, this should be checked with the manufacturer, and will be subject to the ability of the supporting construction providing adequate restraint/support.

3.7 Hardware

Some of the various items of hardware to be used with the proposed door assemblies will have a positive contribution to the overall performance ('essential hardware') and others are classed as 'non-essential'. However, in all cases it must be ensured that choice of items, or their installation within the assemblies, does not have a detrimental effect upon their achievement of the required period of fire resistance.

General guidance for all items of hardware is outlined in Appendix D, based upon the range of items tested. All hardware beyond the scope of the general guidance must have been subjected to fire resistance testing, and/or assessed by IFC Ltd to support its use in doors of a similar construction to that proposed

3.8 Installation, Supporting Construction and Door Edge Gaps

The frames must be fixed back to the supporting construction with steel fixings at centres not exceeding 600mm on the vertical edges and a minimum 200mm from the top and bottom. This applies to door frames and also to frames for fanlights/overpanels. Screws shall be of sufficient length to penetrate the wall by at least 40mm and shall be positioned such that they are not exploited by charring of the frame, irrespective of the direction of test exposure; (this may necessitate a twin line of screws). Packers shall be used at all fixing positions. (See also the installation details outlined as Note 6 in Section 3.4).

Alternatively, the frame may be fitted to the face of a blockwork wall (i.e. the overall frame must be larger than the structural opening) and securely affixed using 80 x 80 x 80mm steel brackets positioned 150mm from each corner and maximum 733mm centres thereafter on the frame jambs only. If steel brackets are used then a 120 x 120mm section of wood fibre insulation board (minimum density 130kg/m^3) needs to cover the steel brackets and the entire rear face of the door frame (and across the leaf head) and be securely fixed to the structural surround.

The supporting construction may be timber or steel stud plasterboard partition, blockwork, brickwork or concrete walls, but shall be of a type that has been tested or assessed to provide in excess of 60 minutes fire resistance, at the required size, when incorporating door openings. If fitted into timber or steel stud partitions, the method of forming the door assembly aperture must be as tested by the partition and/or door assembly manufacturer.

Note 7 *Reference to steel stud partitions is in the context of permanent elements, such as those designed and proven by the plasterboard manufacturers, with plasterboard on both faces of the studs. This report does not approve use of the proposed door assemblies in proprietary 'demountable' partitions, which must be subject to a full and independent appraisal of the particular system and door assemblies therein.*

There shall be no feature rebates or shadow gaps at the junction of the frame and wall with timber frames (such features could, however, be assessed on an individual basis).

The approval in this report does not apply where the wall/partition includes decorative 'cladding' on the face of the fire-resisting construction, (e.g. timber panelling on battens, or plasterboard on studs/dabs), such that any part of the frame is aligned within the plane of this decorative cladding. This detail is likely to adversely affect the fire resistance of the door assembly, and IFC should be consulted for specific advice, to determine upgrading measures that will be required in such cases.

The gap sealing between the supporting construction and timber frames should follow the recommendations of Tables 4 and 5 in BS8214: 2016, *'Timber-based fire door assemblies – Code of practice'*, using a product proven in such timber applications, or tested, assessed or Third Party Certificated solutions may also be utilised using a product proven in such timber applications, and with reference to the correct depth of seal to suit the width of gap between wall and frame. The gap sealing shall be positioned on the plane of the door leaf (unless combustible packers are employed).

The gap between the door and the frame shall be 1.5–4mm. Gaps under the door(s) shall not exceed 6mm for fire performance, although, if smoke control is also required, these gaps shall only be 3mm, or smoke seals shall be included (see also Section 3.10 regarding suitability of smoke seals).

Overpanels shall be secured into the frame using steel screws fixed through the rear of the frame members, passing at least 40mm into the centre line of the overpanel thickness. (Screws must not be fixed through the overpanel into the stops, or vice versa). Screws must be no more than 100mm from each corner of the overpanel, and at maximum 400mm centres, with a minimum of 2no screws per overpanel edge. This specification applies to overpanels used with a transom. The gap between overpanel and frame should not exceed 3mm.

3.9 Intumescent Seals

The intumescent seal specifications, widths, and positions are shown in Appendix B, based upon tested details.

Intumescent protection is required for specific items of building hardware and this is detailed in Appendix D based upon details tested.

3.10 Ambient Temperature Smoke Seals

Where required, independent smoke seals of a type that have been tested in accordance with BS EN 1634-3: 2004 (ambient temperature) or BS476: Part 31: Section 31.1: 1983 and shown not to leak by more than $3m^3/m/hr$ at 25Pa may be used in conjunction with the proposed door assemblies to provide smoke control.

The orientation of the smoke seals, door edge gaps, degree of hardware interruption, and leaf configuration, will need to be as tested in accordance with BS EN 1634-3: 2004 (ambient temperature) or BS476: Part 31: Section 31.1: 1983 to achieve the desired level of smoke control, unless these conflict with the intumescent seal widths and positions as described in Appendix B, in which case, the latter shall take precedence, and smoke control may be affected.

Test evidence to BS476: Part 22: 1987 (or EN1634-1) shall be available to demonstrate that the smoke seals will not adversely affect the overall fire resistance of timber door assemblies, when fitted in the proposed arrangements.

4. CONCLUSION

If the proposed door assemblies, utilising Moralt OutDoor FERRO FireSafe Passiv door leaves installed in timber frames, were manufactured and installed within the limitations of this Field of Application Report and tested for fire resistance, it is expected that they would satisfy the integrity criteria of BS476: Part 22: 1987 for 60 minutes. Door assemblies must be fitted with an approved latch, which must engage upon self-closing, from any angle of opening.

The doors can also be assessed to Section 6 of BS476: Part 22: 1987 for a 60 minute performance rating for both integrity and insulation.

The assessed fire resistance only applies if doors are tested when opening towards the furnace. Glazed units, where fitted, must also be installed so that the fire-rated element is orientated on the face nearest the furnace. It is the responsibility of the end-user to agree these principles with the Approving Authority, for each specific project where the doors may be installed.

5. DECLARATION BY THE APPLICANT

We the undersigned, confirm that, except for that information declared to International Fire Consultants Ltd previously during the original engineering evaluation process, the components, products, and/or assemblies evaluated within IFC Field of Application Report **PAR/18099/01** have not been altered in any way; and have not subsequently, to our knowledge, been included in a fire test [to BS476: Part 22: 1987 or EN 1634-1: 2014] in the form and/or configurations proposed.

We also confirm that we have supplied all information and assurances requested of us, for the purpose of writing this Field of Application Report, and are not aware of any other information that would adversely influence or affect the conclusions of this report.

We agree that if fire test evidence or other information subsequently becomes available, to supply this to IFC in full and seek immediate review of the continuing validity of the original report from IFC. If after review IFC conclude that the original evaluation and report is no longer appropriate, we agree to withdraw it and any references to it from circulation and advise clients and agents accordingly.

Signature: _____

Position: _____

Company: **Moralt AG**

6. LIMITATIONS

This report addresses itself solely to the ability of the proposed assemblies described to satisfy the criteria of the fire resistance test and does not imply any suitability for use with respect to other unspecified criteria.

This document only considers the door assemblies described, herein, and assumes that the surrounding construction will provide no less restraint than the tested assembly and that it will remain in place and be substantially intact for the full fire resistance period.

This report is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available, IFC reserves the right to withdraw the report unconditionally but not retrospectively.

Where the constructional information in this report is taken from details provided to International Fire Consultants Ltd (IFC) and/or from fire resistance test reports referenced herein, it is, therefore, limited to the information given in those documents. It is necessarily dependent upon the accuracy and completeness of that information. Where constructional or manufacturing details are not specified, or discussed, herein, it should not, therefore, be taken to infer approval of variation in such details from those tested or otherwise approved.

The analysis and conclusions within this report are based upon the likely fire resisting performance of a complete door assembly that is manufactured and installed in accordance with this document, and offered for fire resistance testing in 'perfect' condition. In practice, management procedures must be in place in any building where the door assemblies are installed, to ensure that no parts of the assembly are damaged or faulty. Further, the doors must open and close without the use of undue force. The edge gaps/alignment of door leaves must be in accordance with the tolerances defined, herein, when the doors are closed. Any such shortfalls in respect to the condition of the assemblies will invalidate the approval by IFC, and may seriously affect the ability of the assemblies to provide the required level of fire resistance performance. Determination of what constitutes wear or damage, and any corrective actions in order to return assemblies to the required condition, should only be carried out following consultation with the manufacturer and IFC.

Where the assessed constructions have not been subject to an on-site audit by International Fire Consultants Ltd, it is the responsibility of anyone using this report to confirm that all aspects of the assemblies fully comply with the descriptions and limitations, herein.

Any materials specified in this report have been selected and judged primarily on their fire performance. IFC do not claim expertise in areas other than fire safety. Whilst observing all possible care in the specification of solutions, we would draw the reader's attention to the fact that during the construction and procurement process, the materials used should be subjected to more general examination regarding the wider Health and Safety, and CoSHH Regulations. Designers, manufacturers and installers are reminded of their responsibilities under the CDM Regulations; but particularly with regard to installation and maintenance of heavy or inaccessible items.

This assessment considers the fire resistance performance of the door assemblies when tested with the leaves in the closed position, within the frame reveal; either retained by the latch, (and fitted with a self-closing device), or locked shut, as applicable. The door assemblies will only provide the assessed fire performance when in a similar configuration; and it is the responsibility of the building occupants/owner to ensure that this is the case.

IFC have a duty of care to advise that a Harmonised Product Standards relating to fire resisting external door assemblies is in place, and CE Marking of such assemblies is compulsory wherever they are marketed in the EU. The approval herein, by IFC, refers to fire resistance against the test conditions referenced in a National Standard, (i.e.BS476: Part 22:1987) and are not intended to superseded the need for CE Marking; which shall be addressed by others.

This Report is provided to the sponsor on the basis that it is a professional independent engineering opinion as to what the fire performance of the construction/system would be should it to be tested to the named standard. It is IFC's experience that such an opinion is normally acceptable in support of an application for building approvals, certainly throughout the UK and in many parts of Europe and the rest of the world.

However, unless IFC have been commissioned to liaise with the Authorities that have jurisdiction for the building in question for the purpose of obtaining the necessary approvals, IFC cannot assure that the document will satisfy the requirements of the particular building regulations for any building being constructed.

It is, therefore, the responsibility of the sponsor to establish whether this evidence is appropriate for the application for which it is being supplied and IFC cannot take responsibility for any costs incurred as a result of any rejection of the document for reasons outside of our control. Early submittal of the Report to the Authorities will minimise any risks in this respect.

7. VALIDITY

This Field of Application Report has been prepared based on International Fire Consultants Ltd's present knowledge of the products described, the stated testing regime and the submitted test evidence. For this reason, anyone using this document after March 2024 should confirm its ongoing validity.

This Field of Application Report is not valid unless it incorporates the declaration by the applicant given in Section 5 duly signed by the applicant.

Prepared by:

Chris Houchen BSc. AIFireE
Associate Director
International Fire Consultants Ltd (IFC)

Checked by:

Mark Billingham
Technical Manager
International Fire Consultants Ltd (IFC)

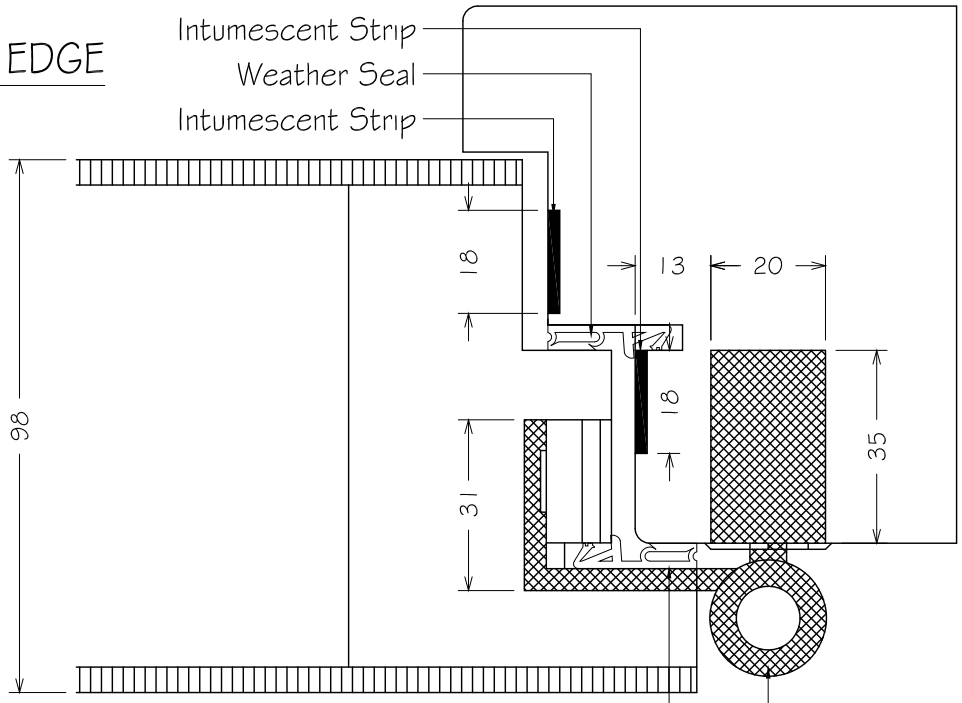
APPENDIX A

Figures PAR/18099/01:01 to 03

Construction Details and Fanlight Details

The figures in this Appendix are not included in the sequential page numbering of this report

HANGING EDGE



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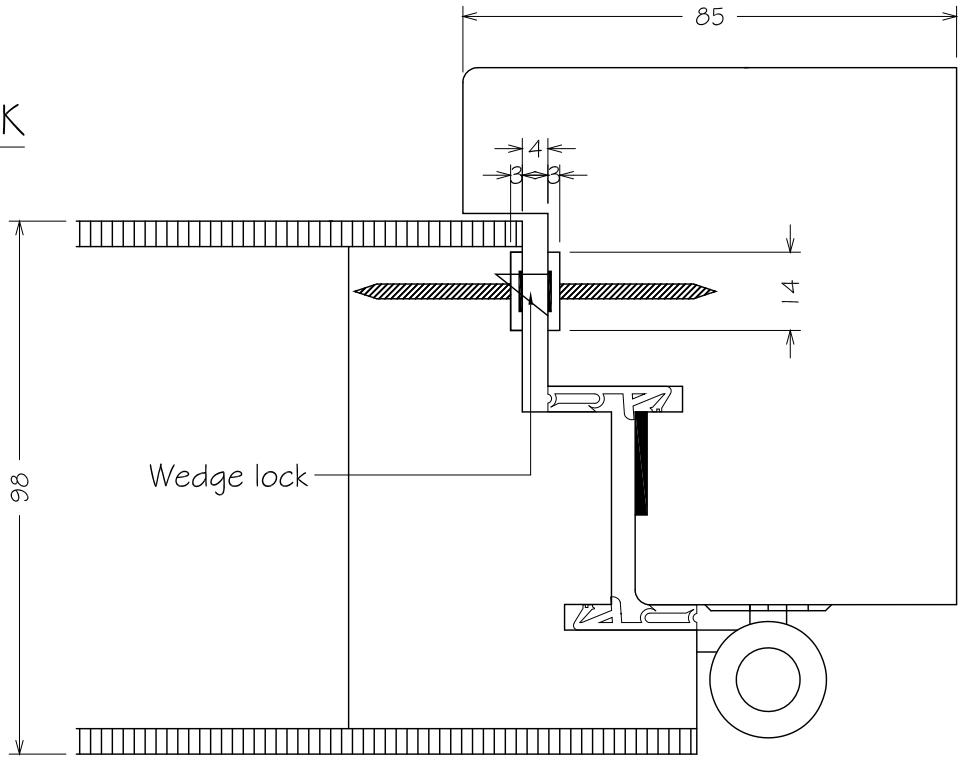

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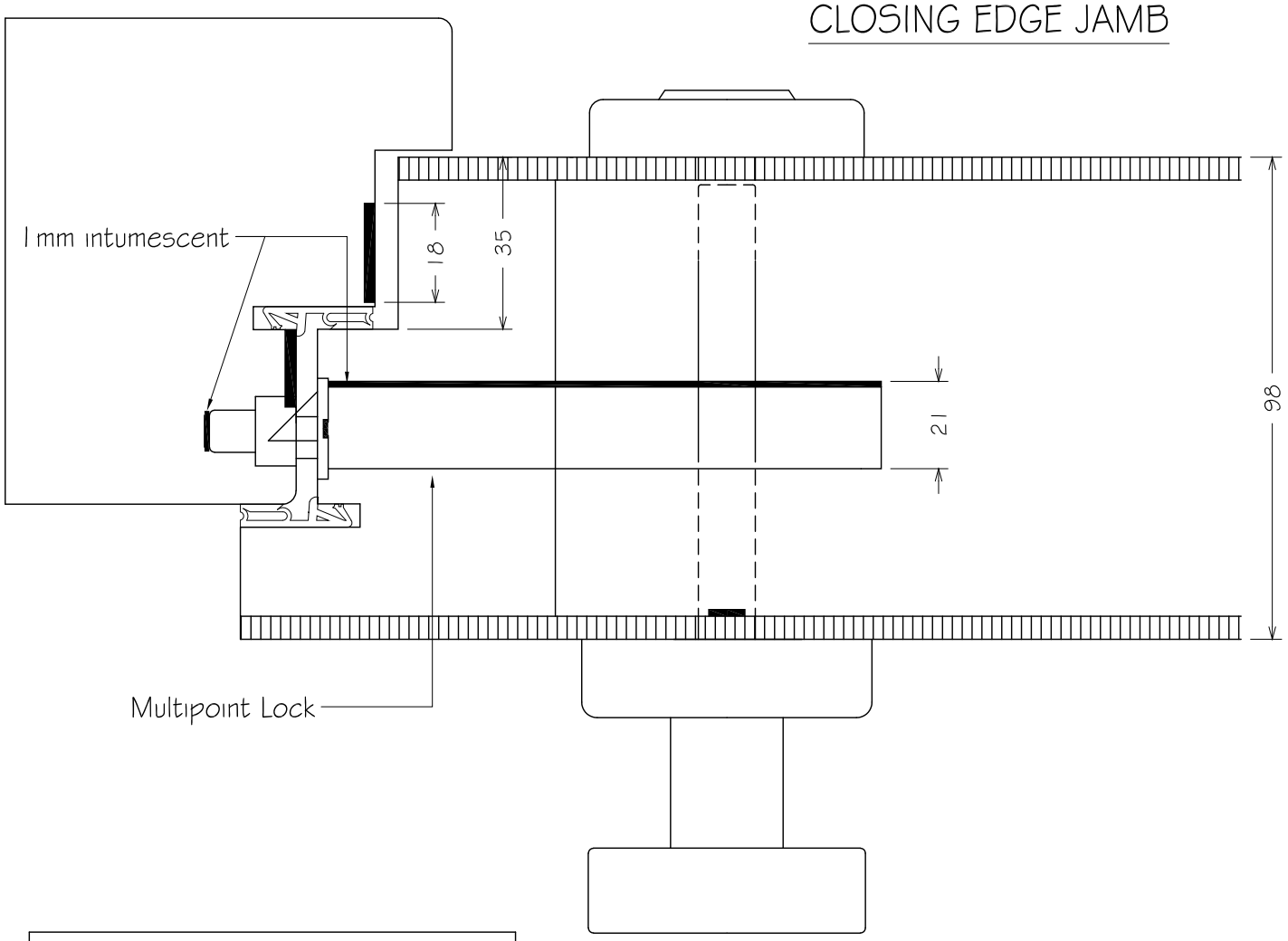
Field of Application Report
PAR/18099/01
Moralt AG
FD60 Moralt OutDoor FERRO
FireSafe Passiv Door Leaves
Installed in Timber Frames

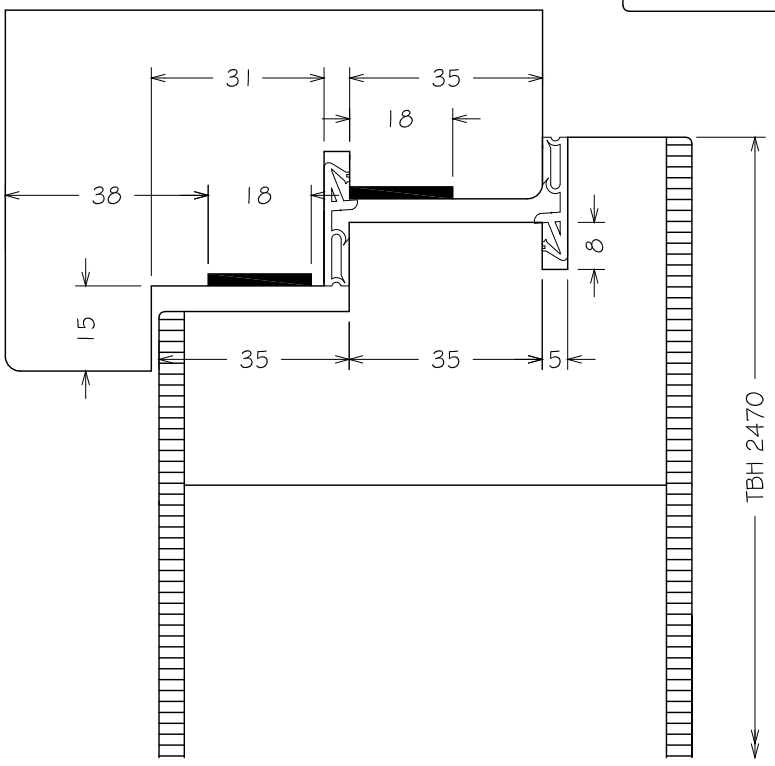
Hanging Edge Jamb
Details

Job number: 18099	
Drawn by: CSP	Checked by: CH
Not To Scale	Drawn: Oct 2018

PAR/18099/01:01

CLOSING EDGE JAMB





FRAME HEAD

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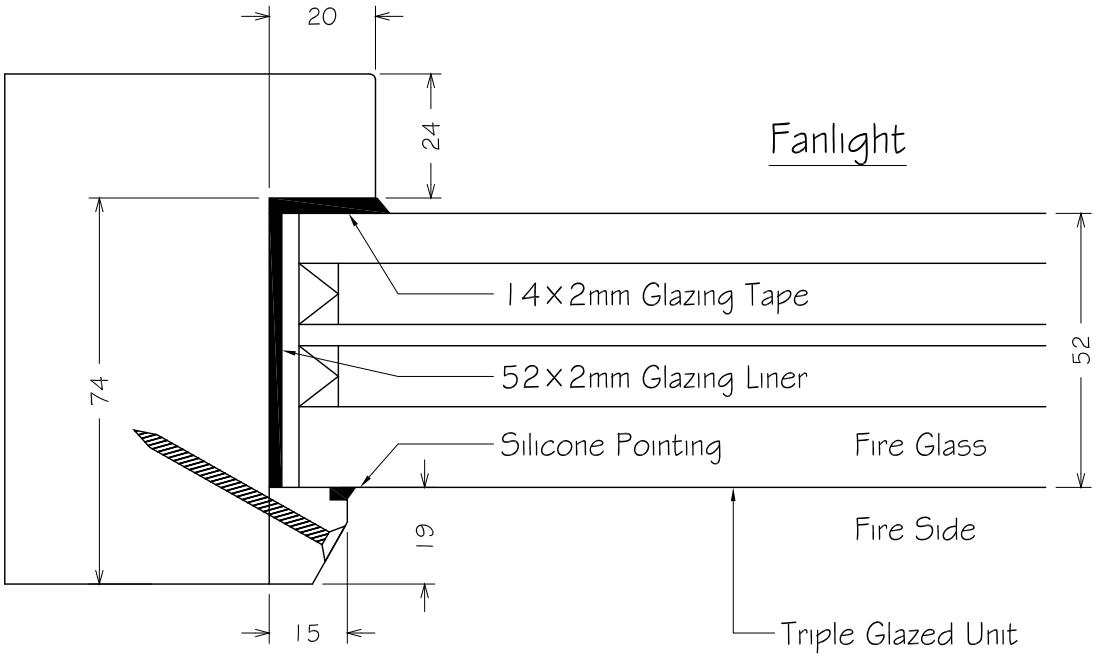
Field of Application Report
PAR/18099/01
Moralt AG
FD60 Moralt OutDoor FERRO
FireSafe Passiv Door Leaves
Installed in Timber Frames

Closing Jamb &
Frame Head Details

Job number: 18099	
Drawn by: CSP	Checked by: CH
Not To Scale	Drawn: Oct 2018

PAR/18099/01:02



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Field of Application Report
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Fanlight Details

Job number: 18099	
Drawn by: CSP	Checked by: CH
Not To Scale	Drawn: Oct 2018

PAR/18099/01:03

APPENDIX B

Assessed Intumescent Seal Specifications for FD60 Moralt OutDoor FERRO FireSafe Passiv Door Leaves Installed in Timber Frames

Location	Standard Specification
Frame J	2no 18 x 1.8mm Promat Promaseal PL-SK seals, one seal recessed into each rebate in the frame reveal. (See Figures PAR/18099/01:01 and 02)
Frame Head (also underside of transom, where fitted)	2no 18 x 1.8mm Promat Promaseal PL-SK seals, one seal recessed into each rebate in the frame reveal. (See Figure PAR/18099/01:02)
Interface between overpanel and frame/transom	2no 18 x 1.8mm Promat Promaseal PL-SK seals, centrally fitted, spaced 10mm apart in either all four edges of the overpanel perimeter or the opposing frame reveal.

Note: In addition to the intumescent strips, listed above, proprietary weather seals may be fitted into grooves within the frame profile, as shown on Figures in Appendix A; all as proven in test DMT-DO-50-430.

APPENDIX C

Figures PAR/18099/01:04

Assessed Leaf Size Envelopes for
Moralt OutDoor FERRO FireSafe
Passiv Door Leaves Installed in
Timber Frames for
60 minutes Fire Resistance

The figures in this Appendix are not included
in the sequential page numbering of this report

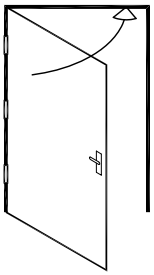
	LSASD	
	A1	A2
Width	926	1192
Height	2916	2385

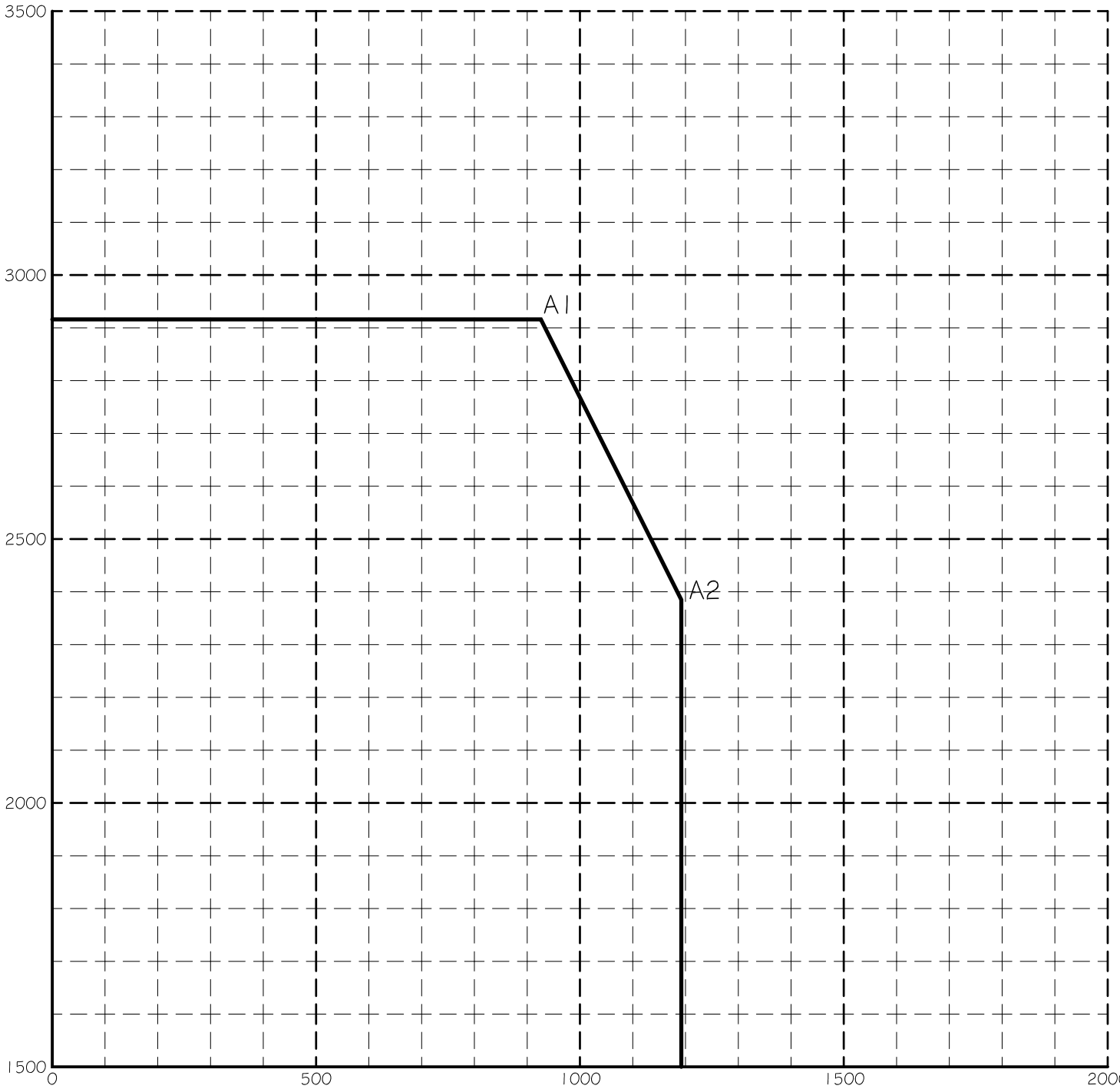
Configuration:

TIMBER FRAMES

Latched
Single Acting
Single Leaf
With Optional Transomed Overpanel

Required Integrity: 60 Minutes





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Field of Application Report
PAR/18099/01
Moralt AG
FD60 Moralt OutDoor FERRO
FireSafe Passiv Door Leaves
Installed in Timber Frames

Envelope of Approved
FD60 Door Leaf Sizes
LSASD
In Timber Frames

Job number: 18099	
Drawn by: CSP	Checked by: CH
Not To Scale	Drawn: Oct 2018

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APPENDIX D

General Guidance on Installation of Hardware

D.1 Hinges

Hinges shall comply with the following specifications:

Hinge types:	Simonswerk GmbH 'BAKA Protect 4010 3D FD', or, VX 7939/160-4 FD
Number of hinges:	Minimum 3no (1½ pairs) per leaf. For leaves over 2600mm high, or as required for weight/size of leaf, 4no. (2 pairs) of hinges should be used.
Positions:	The top hinge must be positioned 240mm down from the head of the leaf to the middle of the hinge and the bottom hinge positioned 240mm up from the foot of the leaf to the middle of the hinge. The middle hinge/s must be equi-spaced between the top and bottom hinges. (All positions ±25mm).
Fixings:	Steel screws, as recommended by the hinge manufacturers, but in no case smaller than 5mm diameter by 45mm long and having thread for the full length. Position of screws (in relation to the door face) in blades of alternative hinge types shall be similar to hinges tested with the proposed door type. Bespoke fixings to secure hinge to frame shall be all as tested.
Hinge blade sizes:	(As per the manufacturer's details).
Hinge materials:	Steel/Stainless Steel.
Additional protection:	No additional protection required under hinge components; but intumescent strips in frame, listed in Appendix B, must be continuous past hinge positions.

Rising butt, cranked butts and spring hinges (single or double action) are not suitable for use on doors approved within the scope of this Field of Application Report.

Note: When using Simonswerk GmbH 'BAKA Protect 4010 3D FD' hinges, 2no. additional 'wedge locks' must be fitted in the hanging edge of the door leaf, fitted 440mm down from the leaf head and 440mm up from the bottom of the leaf edge to the centre of the wedge lock. All positions +/- 200mm.

Glutz AG wedge locks referenced 1309.1 are suitable (as tested) or other 'steel based' wedge locks can be considered if of similar size and with appropriate fire test evidence in similar door types.

D.2 Multi-point Locks

ALL doors shall be fitted with a multi-point lock, whereby upon closing, the main latch and the upper and lower locks engage automatically.

Multi-point locks shall comply with the following specifications:

Lock types:	• Glutz AG multipoint lock ref: MINT SV 18945, or; • Winkhaus GmbH & Co.KG multipoint lock ref: STV-AV3-F2060, or; • Karl Fliether GmbH & Co.KG multipoint lock ref: AS 2750, or; • Gretsch Unitas GmbH multipoint lock ref: SECURY automatic with safe T-catch, or, SECURY 2116, shift function E.	
Maximum dimensions:	Forend plate:	2105mm long (the length of the forend may be increased for taller doors if required) x 20mm wide x 10mm thick. The upper lock must be no further than 750mm from the top closing corner.
	Strikeplate:	Main: 250mm long x 30mm wide x 10mm thick Upper/lower: 180mm high x 30mm wide x 10mm thick
	Lock body:	Main: 205mm high x 109mm wide x 15.6mm thick Upper/lower: 110mm high x 40mm wide x 15.6mm thick
Materials:	Latches must have no essential part of their structure made from polymeric or other low melting point (<800°C) materials, and should not contain any flammable materials.	
Additional protection:	1mm Interdens to be fitted under all strike plates and lining the lock/latch bodies (Intumescent strips in frame, listed in Appendix B, must be continuous past lock positions.)	

Other multipoint locks may be used providing they have appropriate fire test evidence justifying their use in timber based door assemblies and their dimensions do not exceed those outlined above.

Over-morticing is to be avoided; mortices shall be as tight as possible to the latch. If gaps occur around the case (but not exceeding 2mm), then these must be made good with intumescent mastic or sheet material. Holes for spindles or cylinders should be kept as small as is compatible with the operation of the hardware.

The lock, and strikes, must be offset in leaf thickness; and alignment shall be all as tested.

D.3 Door Closers

Where required by regulatory guidance or specific fire strategy, each hinged door leaf must be fitted with a self-closing device unless it is normally kept locked shut and labelled with an appropriate sign which complies with BS5499: Part 1: 1990.

D.3.1 Surface mounted door closers

Overhead surface mounted closers are the only type approved for the proposed FD60 doors.

Surface mounted overhead door closers (and accessories such as soffit brackets) may be used if they have been tested, assessed by IFC or otherwise approved for use on FD60 cellulosic door leaves in timber frames. Any accessory that is located within the door reveal must have appropriate test or assessment evidence. It is the responsibility of others to ensure that the selected closer is compatible with the rebated interface between door and frame. It is also the responsibility of others to ensure that adequate fixity can be achieved, into the top rail of the door; and that fixings do not cause delamination of the leaf construction.

It is essential that all closers are of the correct power rating for the width and weight of the door leaves (minimum power size 3). They must be fitted according to the manufacturer's instructions and be adjusted so that they are capable of fully closing the door leaf, against any friction imposed by the latch (and smoke seals, if fitted), from any position of opening.

D.5 Non-Essential Hardware Items

D.5.1 Push plates, kick plates, etc.

Plastic, pvc or metal plates may be surface-mounted to the doors, but, if more than 800mm in length by nominally 200mm wide, they must be attached in a way that would prevent them distorting the door leaf, e.g. glued with thermally softening adhesive or screwed with short aluminium screws and fitted in such a way so they will not be prevented from falling away by being trapped under door stops, glazing beads or handle escutcheons etc.

D.5.2 Pull handles

These may be fixed to the doors, provided that the fixing points are no greater than 800mm apart. Pull handles that are fixed through the leaf should use clearance holes as close fitting as possible to the bolt. Any component that penetrates the leaf must be steel (i.e. no aluminium or plastic connecting bolts or spacers).

D.5.3 Finger Protection

An Athmer oHG finger protection unit reference 'NR-32 Unisafe' has been successfully incorporated on the hanging edge of the unexposed 'push' face of the door design covered within this Field of Application report without having any detrimental effect on the intended fire performance of the door assembly. Other similar finger protection devices may be also used, providing they have suitable fire resistance test evidence when tested on doors of similar construction in a similar orientation.

An Athmer oHG finger protection unit reference 'BS-BU-20' has been successfully incorporated on the hanging edge exposed 'pull' face of the door design covered within this Field of Application report without having any detrimental effect on the intended fire performance of the door assembly. Other similar finger protection devices may be also used, providing they have suitable fire resistance test evidence when tested on doors of similar construction in a similar orientation.

D.5.4 Thresholds

An aluminium threshold has been successfully tested and approved for inclusion in the Moralt OutDoor FERRO FireSafe Passiv door assembly. This is to be recessed within the floor substrate with an aluminium cover plate, the approved threshold is;

- Gutmann AG 'Weser Zero 88' in conjunction with an Athmer oHG Stadi-FA 24/20 WS dropseal.

The maximum threshold gap is 6mm.

D.5.5 Dropseals

An Athmer oHG Stadi-FA 24/20 WS dropseal has been tested and approved for inclusion within the Moralt OutDoor FERRO FireSafe Passiv door assembly.

Alternative manufacturer's dropseals may be used, providing they have successful fire test evidence to demonstrate their use in similar doors for the required period of fire resistance.

Dropseals may be installed into the bottom edge of the door leaf with no additional intumescent protection, providing the groove does not exceed 35mm high x 24mm wide.

APPENDIX E

Summary of Fire Test Evidence

Primary Evidence

Test Report	Configuration Tested	Leaf Size Tested	Test Standard	Integrity/ Insulation
DMT-DO-50-430	Latched, single acting, single door assembly	2470mm high x 1150mm wide x 98mm thick	EN 1634-1: 2014	Integrity: 61 minutes Insulation: 61 minutes