

assessment report

Title:

The Fire Resistance
Performance of PRT and PRC,
Side and Centre-Opening,
'Vandal Resistant', Lift Landing
Doorsets

WF Assessment Report No:

183968A

Prepared for:

Klefer SA

Kilkis Industrial Area
Stavroxiri
Greece

Date:

23rd June 2009

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Executive Summary

Objective	This report provides an appraisal of the fire resistance performance of PRT and PRC, side and centre-opening, 'Vandal Resistant' lift landing doorsets, which are similar to previously fire tested assemblies.
Report Sponsor	Klefer SA
Address	Kilkis Industrial Area Stavroxiri Greece
Summary of Conclusions	It can be concluded that the proposed doorsets would be expected to provide 120 minutes integrity performance (and therefore the required E120 classification) if subjected to fire resistance tests in accordance with BS EN 81-58: 2003.
Valid until	1 st July 2014

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Introduction

This report provides an appraisal of the fire resistance performance of PRT and PRC, side and centre-opening, 'Vandal Resistant' lift landing doorsets.

The doorsets are required to provide 120 minutes integrity performance if subjected to a fire resistance test in accordance with BS EN 81-58: 2003.

FTSG

The data referred to in the supporting data section has been considered for the purpose of this appraisal which has been prepared in accordance with the Fire Test Study Group Resolution No. 82: 2001.

Assumptions

It is assumed that the wall constructions to which the doorsets will be mounted will be of reinforced concrete or masonry, capable of providing effective structural support for the required period.

It is also assumed that the general construction of the doorsets and the materials used in the construction will, unless specifically detailed in this report, be identical to those of the tested assemblies.

The doorsets are required to provide fire resistance when the landing side only is exposed to the heating conditions of a fire resistance test.

It is assumed that the doorsets will be installed by competent installers in a similar manner to that used when installing the fire tested assembly.

Proposals

The construction of the proposed doorsets shall be closely based upon the assembly previously fire tested under the reference WF Report No. 149298.

However, in order provide the proposed 'Vandal Resistant' assemblies, additional reinforcement to the door panels shall be included. An additional 1.2 mm thick steel hollow section shall be welded along each vertical edge of the panels, on the shaft face. For the side-opening doorsets, the steel hollow section along the closing edge of the fast door panel shall have dimensions of 35 mm by 35 mm and the section along the trailing edge shall have dimensions of 30 mm by 20 mm. A 30 mm by 20 mm shall be fixed along both edges of all other panels. In addition, for the fast panel only, a 1.2 mm steel plate shall be screw fixed in between the new reinforcement tube on the closing edge of the panel and the existing central reinforcement.

The centre-opening doorsets shall be of similar construction to that described above, with the exception that for the fast panels, the hollow sections along the meeting edges shall have dimensions of 30 mm by 20 mm and the hollow section along the opposite edge of the same panel shall have dimensions of 35 mm by 35 mm.

In addition to the above, for all door panels, a profiled steel security guide having dimensions of 200 mm long by 50 mm high by 2.5 mm thick shall be fixed along the lower edge of each panel, its lower flange engaging the sill recess.

The 1 mm thick Advin Bifire foil insulation incorporated on the unexposed face of the door panels and frame shall be omitted.

Further details of these proposed modifications are shown in the drawings appended to this report.

In addition to the changes described above, the doorset may incorporate other optional modifications which are summarised as follows:

- a) The doorset may be of a 2, 4, 6 or 8 panel centre-opening configuration or a 1, 2, 3 or 4 panel side-opening configuration.
- b) The clear opening sizes may fall within the range of dimensions specified below:

Reference	Clear Opening Size Range (mm)			
	Min. Width	Max. Width	Min. Height	Max. Height
PRT1H	600	800	2000	2600
PRT2H	600	1600	2000	2600
PRT3H	600	2000	2000	2600
PRT4H	600	2500	2000	2600
PRC2H	600	1600	2000	2600
PRC4H	600	3000	2000	2600
PRC6H	1200	3100	2000	2600
PRC8H	1400	3100	2000	2600

- c) The doorset may incorporate a side-panel or control box.
- d) The door frame may be installed in any of the following three ways:
 - Inside the reveal of the opening with an adjustable steel profile surrounding the perimeter.
 - Inside the reveal of the opening with the perimeter of the doorset infilled with concrete.
 - Face fixed to the 'shaft' face of the wall.

Basic Test Evidence

WF Report No. 149298

A fire resistance test conducted in accordance with BS EN 81-58: 2003, on a specimen of a six-panel, centre-opening, lift landing doorset.

The doorset, which incorporated six mild steel door panels, was installed over an aperture within a brickwork wall of overall nominal dimensions 2480 mm high by 2600 mm wide to give a clear opening size of 2300 mm high by 2400 mm wide. The doorset was faced fixed to the unexposed surface of the wall such that the landing side was exposed to the heating conditions of the test.

The door panels and door frame were clad on the unexposed face with a 1 mm thick foil referenced Advin Bifire.

The specimen satisfied the integrity performance requirements of the Standard for a period of 122 minutes after which time the test was discontinued. The 15 kW/m² radiation requirement was also satisfied for the test duration of 122 minutes.

WF Report No. 152014

A fire resistance test conducted in accordance with BS EN 81-58: 2003, on a specimen of a four-panel, side-opening, lift landing doorset.

The doorset, which incorporated four mild steel door panels, was installed over an aperture within a brickwork wall to give a clear opening size of 2300 mm high by 2400 mm wide. The doorset was faced fixed to the unexposed surface of the wall such that the landing side was exposed to the heating conditions of the test.

The door panels and door frame were insulated on the unexposed face with a 20 mm thick material referenced LIFTBIFIRE E1 120/20.

The specimen satisfied the integrity performance requirements of the Standard for a period of 39 minutes after which time sustained flaming issued from the insulation to the door panels. The 15 kW/m² radiation requirement was satisfied for the test duration of 120 minutes.

Assessed Performance

Vandal Resistant Construction

The proposed modifications are introduced primarily to improve the security of the doorsets. As such, the changes generally increase the strength and rigidity of the door panels, which can only be beneficial in terms of the fire resistance performance.

The proposed door panels shall be constructed in an identical manner to those previously fire tested and the additional reinforcement does not, in any way, detract from the basic panel specification. All tested door panels comprise 1.2 mm thick mild steel which is profiled along the vertical edges. The inclusion of the steel hollow sections inside the returned edges would be expected to stiffen the panels and provide increased resistance to thermally induced distortion.

Although the tested door panels are provided with vertical reinforcement, there is little by way of horizontal reinforcement to resist bowing across the panel width. Although this has proved not to be a problem for any of the previous fire tests, the inclusion of the steel back plate between the outer edge of the fast panels and the central reinforcement will brace the outer edge of the panel and should assist in reducing bowing across the width of the panels.

In addition to the tested shoe guides, each door panel shall incorporate a steel security guide along the lower edge. Although no concerns have been noted with respect to deformation of the door panels along the lower edge during any of the previous fire tests, the additional security guide can only be beneficial in not only reinforcing the lower edge of the panel but also increasing the restraint provided by the sill at this position.

The proposed modifications are therefore expected to increase the stability of the doorsets under fire test conditions and are expected to have a slightly beneficial influence on the fire performance.

As such, it is not expected that the incorporation of such modifications, should detract from the previously achieved fire performance.

Omission of Advin Bifire

The previously fire tested doorset was required to satisfy the radiation performance criteria of EN 81-58: 2003. The door panels and frame were therefore clad on the unexposed face with 1 mm thick Advin Bifire which is a foil facing which is designed to reduce the radiation from the unexposed face.

Since the proposed doorset is required to satisfy the integrity performance criteria only, it is proposed that this foil facing may be omitted.

Due to the flexibility and thinness of the insulation material, this did not provide any mechanical function or stiffness to the door panels during the fire test.

It is possible that the incorporation of this material may have reduced the temperature to which the components within the mechanism were exposed, thereby minimising the risk of flaming from such components.

The test referenced WF No. 146516 has, however, demonstrated that the mechanism components are not susceptible flaming when used in conjunction with an uninsulated doorset, for up to a period of 120 minutes.

The omission of this foil facing may therefore be positively appraised.

Centre-Opening Doorsets

The fire test reported under the reference WF Report No. 149298 was performed on a specimen of a six-panel, centre-opening doorset. The proposal requires the use of centre-opening doorsets incorporating 2, 4 or 8 door panels.

The method of interlocking the adjacent panels for all proposed configurations shall remain the same, regardless of whether additional panels are introduced or omitted. It is therefore not expected that a change in the number of door panels will significantly influence the ability of the doorset to provide the required fire performance.

The number of interlocks within the doorset could influence the rate of leakage but this will, to a great extent, be dependent upon the overall size of the assembly within each configuration, since the leakage is expressed per metre width of doorset. The likely influence of a change in the number of panels on the overall leakage shall therefore be considered in the section of this report relating to clear opening size.

Side-Opening Doorsets

Although the exact specification of doorset has not been subjected to a fire resistance test in a side-opening configuration, a doorset of similar specification but incorporating an insulation material on the unexposed face, has been tested and reported under the reference WF Report No. 152014 in a four-panel, side-opening configuration.

Integrity failure of this doorset occurred after a period of 39 minutes. This failure was caused by flaming of the insulation material. Since no other mode of integrity failure occurred during the required period of 120 minutes, the proposal to omit the insulation from the unexposed face should effectively eliminate this mode of integrity failure.

The insulation fixed to the unexposed face of the panels and frame was of a much greater thickness than that used on the doorset tested under the reference WF Report No. 149298 (20 mm compared with 1 mm) since it was designed to enable the doorset to satisfy the insulation performance requirement.

One of the main advantages of an uninsulated lift landing doorset is its ability to dissipate heat relatively quickly on the unexposed face, thereby preventing undue stresses and distortion caused by differential temperatures within its components.

It is therefore expected that the side opening configuration tested and reported under the reference WF Report No. 152014 represents a slightly more onerous specification than that proposed, since the incorporation of the insulation material will have retained heat within the steel door panel components. The incorporation of the insulation boards could also promote a greater temperature differential between the exposed face of the door panels and the returned edges positioned on the unexposed face of the insulation.

The previous fire test on the four-panel, side-opening doorset is therefore deemed to have demonstrated its ability to provide the required fire performance, albeit when the insulation is omitted.

The proposal also requires the use of similar doorsets but incorporating 1, 2 or 3 door panels. The method of interlocking the adjacent panels for all proposed configurations shall remain the same, regardless of whether panels are introduced or omitted. It is therefore not expected that a change in the number of door panels will significantly influence the ability of the doorset to provide the required fire performance.

The number of interlocks within the doorset could influence the rate of leakage but this will, to a great extent, be dependent upon the overall size of the assembly within each configuration, since the leakage is expressed per metre width of doorset. The likely influence of a change in the number of panels on the overall leakage shall therefore be considered in the section of this report relating to clear opening size.

Clear Opening Size – Centre-Opening Doorsets

The maximum leakage of the tested six-panel, centre-opening doorset during the required 120 minute period was 0.6 m³/m/hr, which is significantly less than the maximum permitted of 3 m³/m/hr.

In accordance with the direct field of application provided within the standard, the clear opening size for this six-panel doorset may be increased by up to 15 % in height and the clear opening width may be increased or decreased by up to 30%, without detracting from the achieved integrity performance.

The tested clear opening height of 2300 mm may therefore be increased to a maximum of 2645 mm (or 2600 mm as required by the sponsor) and the tested clear opening width of 2400 mm may be increased to a maximum of 3120 mm (or 3100 mm as required by the sponsor). According to the direct field of application, the clear opening width can be reduced to a minimum of 1680 mm. However, given that the rate of leakage recorded from the proposed doorset was significantly less than the maximum permitted, it is considered reasonable for this to be further reduced to 1200 mm, as proposed.

For all alternative configurations of centre-opening doorset, the clear opening height shall remain between the appraised range of 2000 mm and 2600 mm.

In terms of the clear opening width, since the performance criteria is expressed as the leakage per metre width of doorset, the number or interlocks incorporated per metre width of doorset could be critical to the overall rate of leakage, the length of the horizontal gaps remaining constant.

The tested six-panel, centre-opening doorset incorporated 7 interlocks across the 2400 mm clear opening, which equates to 2.9 interlocks per metre width. The number of interlocks per metre width for all of the proposed centre-opening configurations, at both the maximum and minimum clear opening sizes, has been calculated and are tabulated below:

Reference	Interlocks per metre width	
	At Min. Width	At Max. Width
PRC2H	5	1.9
PRC4H	8.3	1.7
PRC6H	5.8	2.3
PRC8H	6.4	2.9

The four-panel, centre-opening doorset shall therefore incorporate the largest number of gaps per metre width of clear opening, when used at the minimum proposed width of 600 mm.

Although the number of interlocks per metre width may be increased from the tested 2.9 to 8.3, a 186% increase, the required increase in leakage in order to cause integrity failure would be much greater at 400%.

Furthermore, although this doorset may incorporate more gaps per metre width than the tested assembly, the associated reduction in panel width will reduce their susceptibility to thermally induced distortion. It could therefore be argued that although the number of gaps is increased, each of the interlocks and the meeting edge junction of this doorset will be less susceptible to leakage when considered individually.

Given the very low rate of leakage recorded during the previous fire test, coupled with the required reduction in panel width for some of the doorsets proposed, the proposed ranges of clear opening size may be positively appraised.

Clear Opening Size – Side-Opening Doorsets

During the latter few minutes of the test on the four-panel, side-opening doorset, the concrete lintel within the wall construction started to 'spall' and this caused the formation of a through gap within the wall. For this reason, there was a sharp increase in leakage during the latter 4 minutes of the required period. Up until this occurrence, the maximum recorded leakage was just less than 0.6 m³/m/hr. Although the maximum permissible leakage of 3 m³/m/hr was not exceeded during the test, even after spalling of the lintel had commenced, since the increase in leakage during the last few minutes of the test was not related to the performance of the doorset itself, the maximum recorded leakage during this test may be regarded as 0.6 m³/m/hr.

In accordance with the direct field of application provided within the standard, the clear opening size for this four-panel doorset may be increased by up to 15 % in height and the clear opening width may be increased or decreased by up to 30%, without detracting from the integrity performance.

The tested clear opening height of 2300 mm may therefore be increased to a maximum of 2645 mm (or 2600 mm as required by the sponsor) and the tested clear opening width of 2000 mm may be increased to a maximum of 2600 mm (or 2500 mm as required by the sponsor). According to the direct field of application, the clear opening width can be reduced to a minimum of 1400 mm. However, given that the rate of leakage recorded from the proposed doorset was significantly less than the maximum permitted, it is considered reasonable for this to be further reduced to 600 mm, as proposed.

For all alternative configurations of side-opening doorset, the clear opening height shall remain between the appraised range of 2000 mm and 2600 mm.

In terms of the clear opening width, since the performance criteria is expressed as the leakage per metre width of doorset, the number or interlocks incorporated per metre width of doorset could be critical to the overall rate of leakage, the length of the horizontal gaps remaining constant.

The tested four-panel, side-opening doorset incorporated 5 interlocks across the 2000 mm clear opening, which equates to 2.5 interlocks per metre width. The number of interlocks per metre width for all of the proposed side-opening configurations, at both the maximum and minimum clear opening sizes, has been calculated and are tabulated below:

Reference	Interlocks per metre width	
	At Min. Width	At Max. Width
PRT1H	3.3	2.5
PRT2H	5	1.9
PRT3H	6.7	2
PRT4H	8.3	2

The four-panel, side-opening doorset shall therefore incorporate the largest number of gaps per metre width of clear opening, when used at the minimum proposed width of 600 mm.

Although the number of interlocks per metre width may be increased from the tested 2.5 to 8.3, a 232% increase, the required increase in leakage in order to cause integrity failure would be much greater at 400%.

Furthermore, although this doorset may incorporate more gaps per metre width than the tested assembly, the associated reduction in panel width will reduce their susceptibility to thermally induced distortion. It could therefore be argued that although the number of gaps is increased, each of the interlocks and the slamming edge junction of this doorset will be less susceptible to leakage when considered individually.

Given the very low rate of leakage recorded during the previous fire test, coupled with the required reduction in panel width for some of the doorsets proposed, the proposed ranges of clear opening size may be positively appraised.

Side-Panels/ Control Box

The proposal requires the use of a side-panel or control box adjacent to the doorsets.

The control box and side-panel have been previously successfully included on the doorset tested under the reference WF No. 146516 without detriment to the fire performance for a period of at least 120 minutes. Although this test was conducted on a doorset from a slightly different range compared with that proposed, the test has demonstrated that the incorporation of such items will not detract from the performance of an uninsulated door of similar construction.

This tested doorset incorporated a side panel of 650 mm width which it is proposed may be increased to a maximum of 1000 mm for the purposes of this appraisal. Since the previous fire test has demonstrated that the incorporation of the side-panel did not detract from the required fire performance of 120 minutes, the proposed 350 mm increase in width may be positively appraised.

All proposed configurations may therefore be positively appraised.

Installation

The doorsets successfully tested and reported under the references WF Report Nos. 149298 and 152014 were mounted to the 'shaft' face of the wall construction. This proposed method of installation has therefore proven to be suitable for use.

Another option is for the doorset to be installed inside the clear opening, with an adjustable steel profile incorporated between the frame sections and the wall to prevent leakage and the formation of through gaps during the test. This method of installation was used for the test referenced WF No. 146516, which was performed on a doorset of slightly different construction, but has still demonstrated the suitability of such a method of installation.

A variation on this method of installation is where the doorsets are installed in a similar manner but without the adjustable steel profile and the interface between the frame and the wall is then infilled with concrete or mortar. The nominal gap between the frame and the wall shall be 10 mm and the concrete/mortar infill shall be applied through the full thickness of the frame.

The sealing of the perimeter of the doorset in this manner should provide an improved performance with respect to leakage. Although the tested adjustable profile shall abut the wall construction there may still be some small through gaps between the profile and the wall, depending upon the flatness of the wall.

The use of a concrete or mortar backfill should, however, ensure a tight seal between the wall and the doorset which can only enhance the integrity performance of the doorset.

All proposed methods of installation may therefore be positively appraised.

Conclusions

It is expected that the 'Vandal Resistant', side and centre-opening, 'PRT and PRC' doorsets discussed within this report, should be capable of providing 120 minutes integrity performance if subjected to a fire resistance test in accordance with BS EN 81-58: 2003.

Validity

This assessment is issued on the basis of test data and information available at the time of issue. If contradictory evidence becomes available to warringtonfire the assessment will be unconditionally withdrawn and Klefer SA will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested because actual test data is deemed to take precedence over an expressed opinion. The assessment is valid initially for a period of five years i.e. until 1st July 2014, after which time it is recommended that it be returned for re-appraisal.

The appraisal is only valid provided that no other modifications are made to the tested construction other than those described in this report.

Summary of Primary Supporting Data

WF Report No. 149298

A fire resistance test conducted in accordance with BS EN 81-58: 2003, on a specimen of a six-panel, centre-opening, lift landing doorset.

The doorset, which incorporated six mild steel door panels, was installed over an aperture within a brickwork wall of overall nominal dimensions 2480 mm high by 2600 mm wide to give a clear opening size of 2300 mm high by 2400 mm wide. The doorset was faced fixed to the unexposed surface of the wall such that the landing side was exposed to the heating conditions of the test.

The door panels and door frame were clad on the unexposed face with a 1 mm thick foil referenced Advin Bifire.

The specimen satisfied the integrity performance requirements of the Standard for a period of 122 minutes after which time the test was discontinued. The 15 kW/m² radiation requirement was also satisfied for the test duration of 122 minutes.

Test Date : 4th November 2005

Test Sponsor : Tecnomama SA*

**WF Report No.
152014**

A fire resistance test conducted in accordance with BS EN 81-58: 2003, on a specimen of a four-panel, side-opening, lift landing doorset.

The doorset, which incorporated four mild steel door panels, was installed over an aperture within a brickwork wall to give a clear opening size of 2300 mm high by 2400 mm wide. The doorset was faced fixed to the unexposed surface of the wall such that the landing side was exposed to the heating conditions of the test.

The door panels and door frame were insulated on the unexposed face with a 20 mm thick material referenced LIFTBIFIRE E1 120/20.

The specimen satisfied the integrity performance requirements of the Standard for a period of 39 minutes after which time sustained flaming issued from the insulation to the door panels. The 15 kW/m² radiation requirement was satisfied for the test duration of 120 minutes.

Test Date : 23rd March 2006

Test Sponsor : Tecnolama SA*

**WF Report No.
146516**

A report on a fire resistance test performed in accordance with BS EN 81-58: 2003, on a two panel, centre opening, lift landing doorset.

The doorset, which incorporated two mild steel door panels, was installed over an aperture within a brickwork wall of overall nominal dimensions 2190 mm high by 2200 mm wide to give a clear opening size of 2000 mm high by 900 mm wide. The specimen incorporated a fixed infill panel adjacent to each of the door panels and a control box was incorporated on one side of the doorset only, behind the infill panel. The doorset was faced fixed to the unexposed surface of the wall such that the landing side was exposed to the heating conditions of the test.

The specimen satisfied the integrity performance requirements for a period of 120 minutes

Test Date : 27th June 2005

Test Sponsor : Tecnolama SA*

*Permission has been provided for the use of all reports

Declaration by Klefer SA

We the undersigned confirm that we have read and complied with the obligations placed on us by the UK Fire Test Study Group Resolution No. 82: 2001.

We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which the assessment is being made.

We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.

We are not aware of any information that could adversely affect the conclusions of this assessment.

If we subsequently become aware of any such information we agree to cease using the assessment and ask warringtonfire to withdraw the assessment.

Signed:

For and on behalf of:

Signatories


Responsible Officer
D Hankinson* - Senior Certification Engineer


Approved
C Johnson* - Senior Certification Engineer

* For and on behalf of warringtonfire

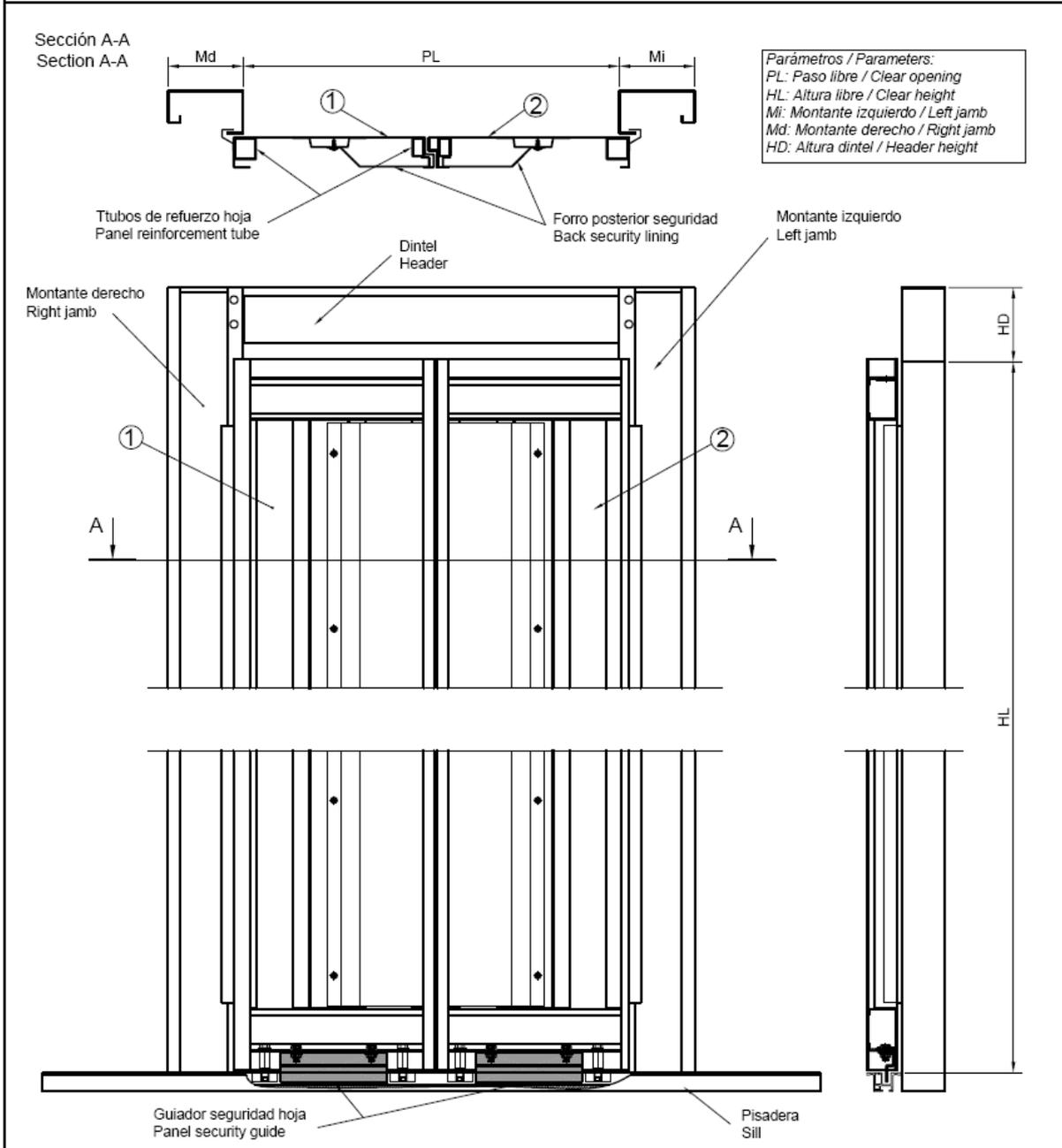
Report Issued: 23 rd June 2009

The assessment report is not valid unless it incorporates the declaration duly signed by the applicant.

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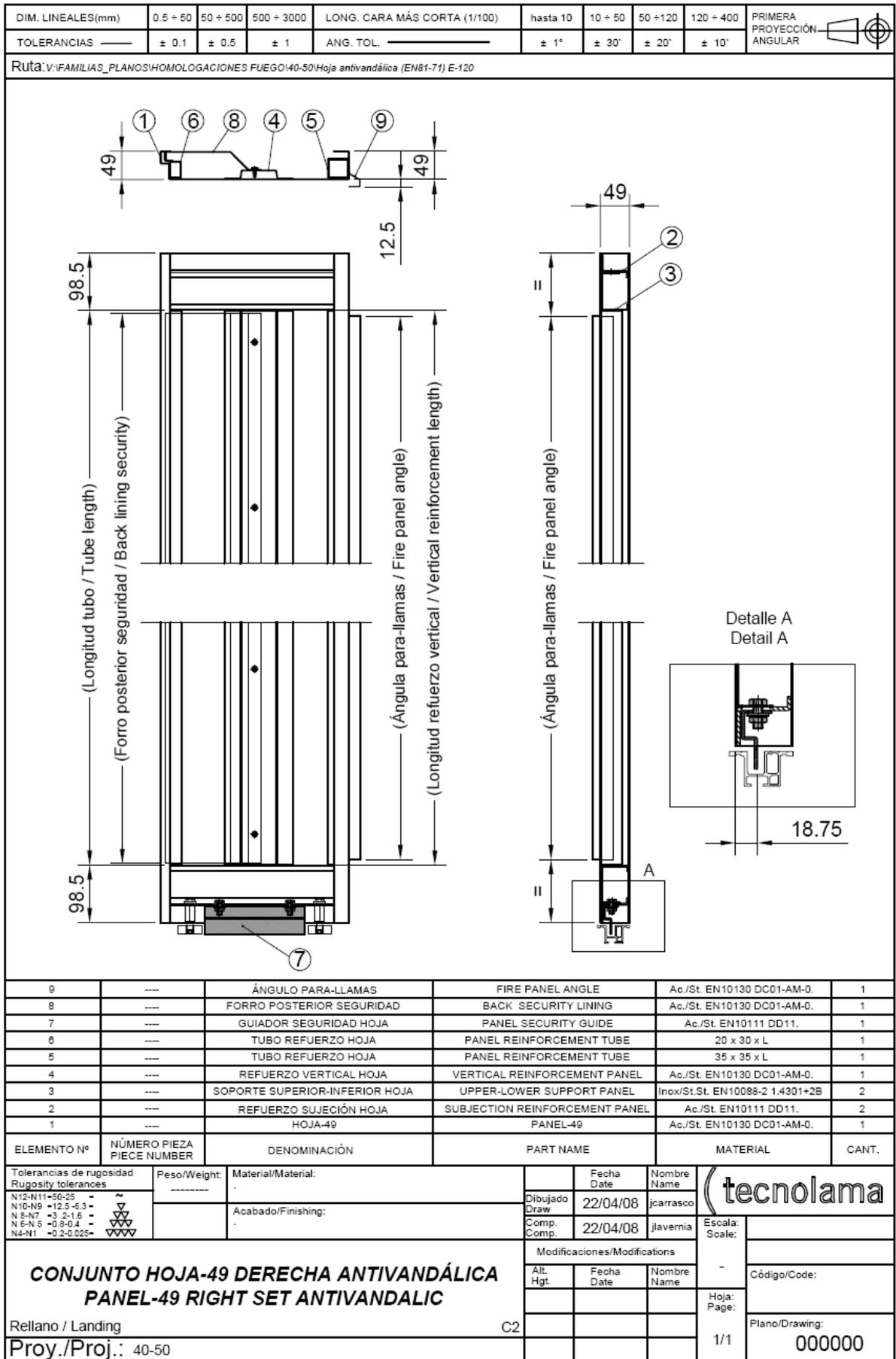
DIM. LINEALES / LINEAR DIM. (mm)			DIM. ANGULARES / ANGULAR DIM. (°)					00 COTA DE INSPECCION MAIN DIM.	PRIMERA PROYECCION ANGULAR
DIMENSION	0.5 + 50	>50 + 500	>500 + 3000	LONG. CARA MAS CORTA SHORTER SIDE LENGTH (mm)	<=10	>10 + 50	>50 + 120		
TOLERANCIA TOLERANCE	±0.1	±0.5	±1.0	TOLERANCIA TOLERANCE (°)	±1°	±30'	±20'	±10'	

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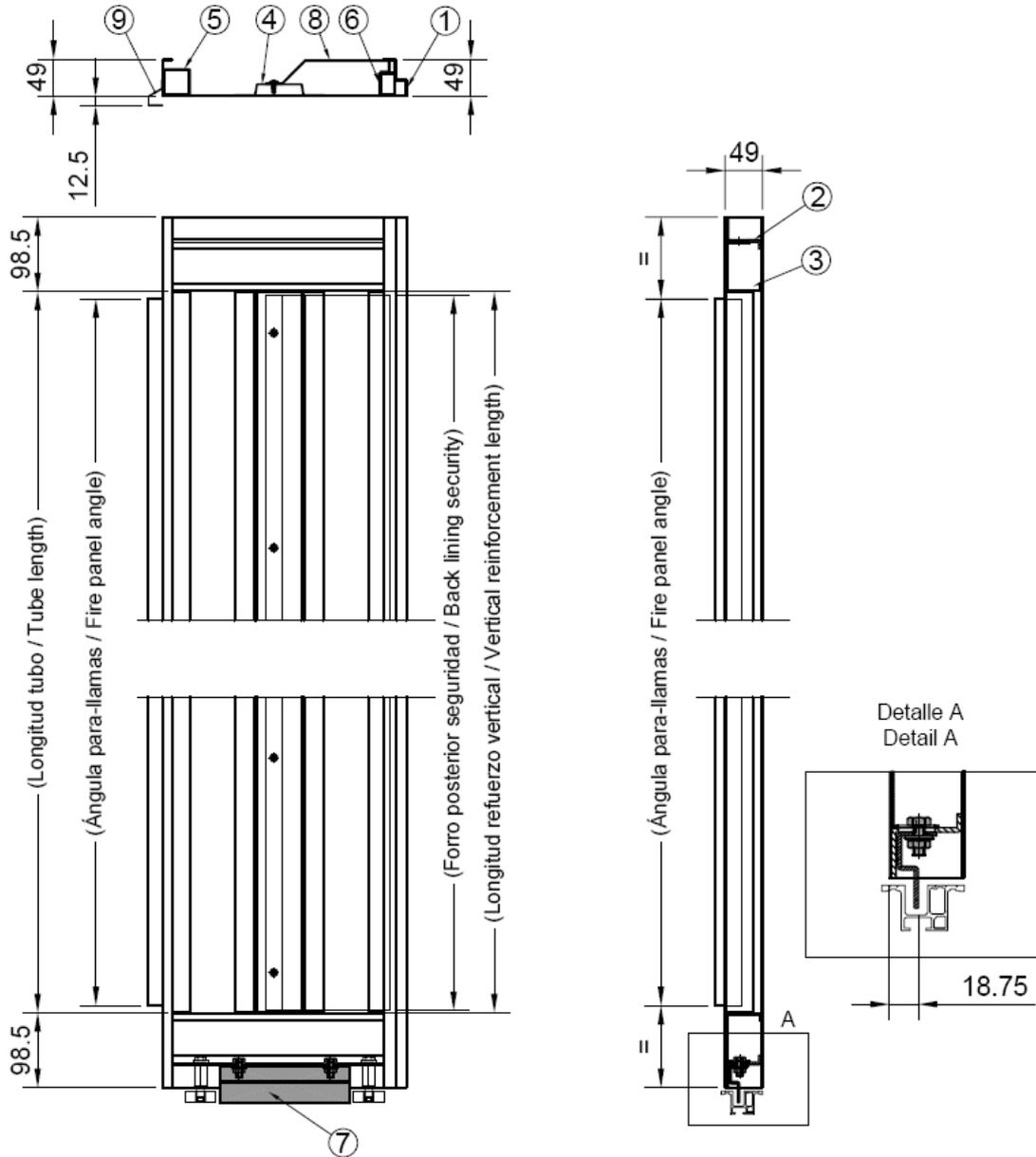
2	----	CONJUNTO HOJA-49 IZQUIERDA ANTIVANDÁLICA	PANEL-49 LEFT SET ANTIVANDALIC	XXX	1
1	----	CONJUNTO HOJA-49 DERECHA ANTIVANDÁLICA	PANEL-49 RIGHT SET ANTIVANDALIC	XXX	1
ELEMENTO Nº	NÚMERO PIEZA PIECE NUMBER	DENOMINACIÓN	PART NAME	MATERIAL	CANT.

Tolerancias de rugosidad Rugosity tolerances		Peso/Weight: -----	Material/Material: --	Fecha Date	Nombre Name	tecnolama	
N12-N11 -50-25 ~ N10-N9 -12.5-6.3 ~ N 8-N7 -3.2-1.6 - N 6-N 5 -0.8-0.4 - N4-N1 -0.2-0.025- VVVV		Acabado/Finishing: --	Dibujado Draw	13/05/08	igracia		
CONJUNTO MARCO Y HOJAS ANTIVANDÁLICA PANEL & FRAME SET ANTIVANDALIC Rellano / Landing C2			Comp. Comp.	13/05/08	jlavemia	Escala: Scale:	
			Modificaciones/Modifications			Alt. Hgt.	Fecha Date
PROYECTO: 40-50						Hoja: Page: 1/1	Plano/Drawing: 000000



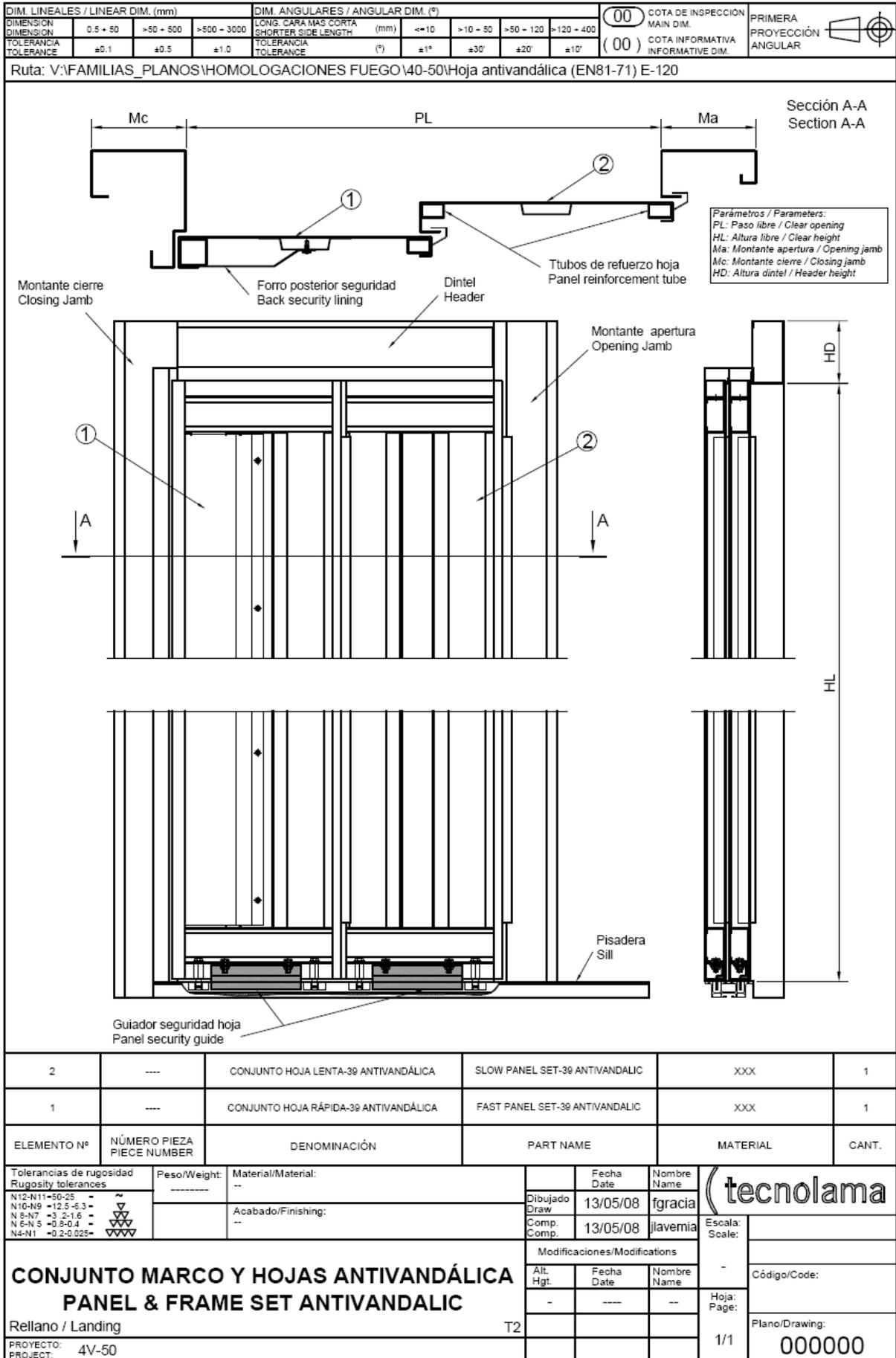
DIM. LINEALES(mm)	0.6 ÷ 50	50 ÷ 500	500 ÷ 3000	LONG. CARA MÁS CORTA (1/100)	hasta 10	10 ÷ 50	50 ÷ 120	120 ÷ 400	PRIMERA PROYECCIÓN ANGULAR	
TOLERANCIAS	± 0.1	± 0.5	± 1	ANG. TOL.	± 1°	± 30'	± 20'	± 10'		

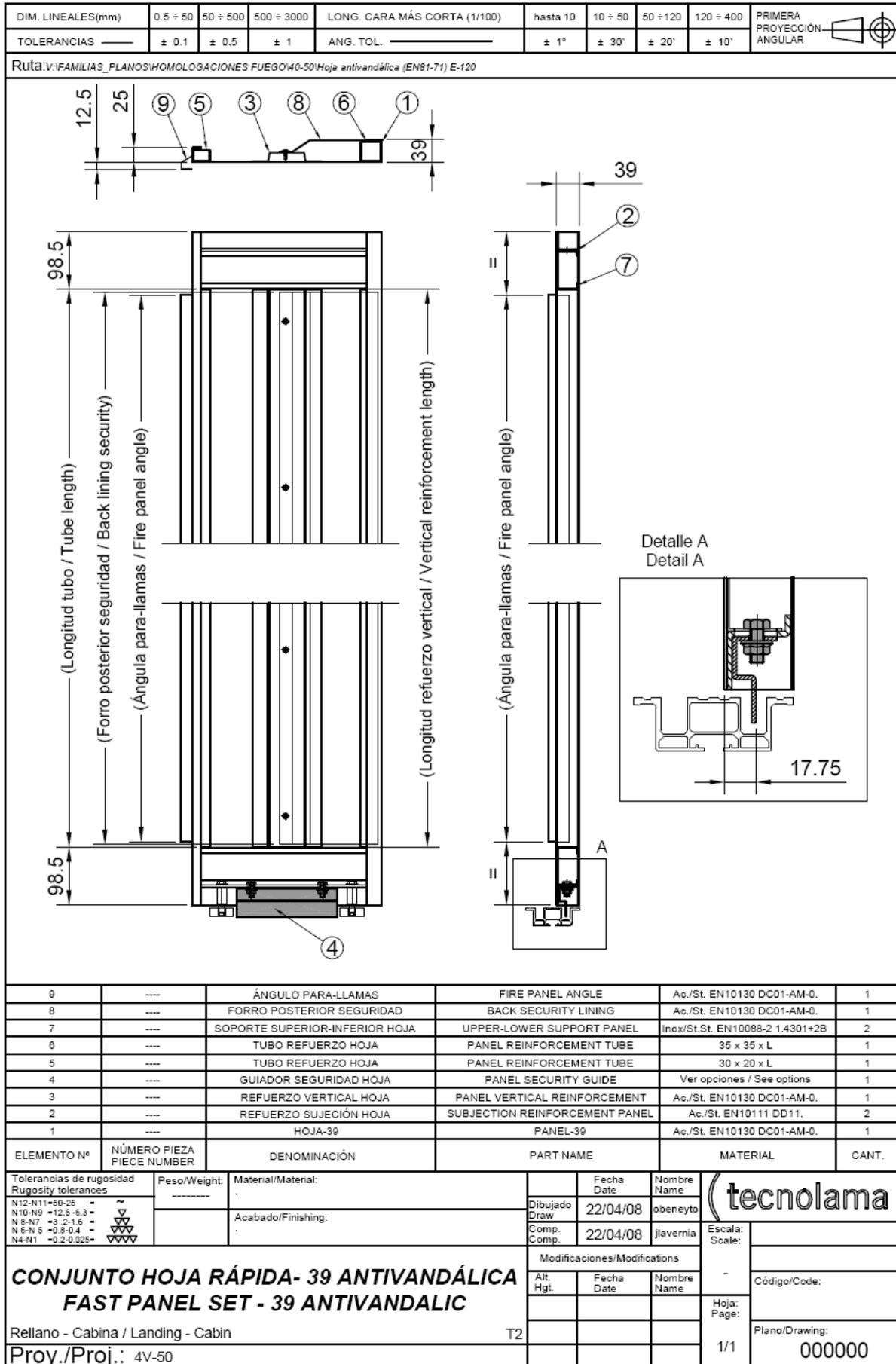
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9	---	ÁNGULO PARA-LLAMAS	FIRE PANEL ANGLE	Ac./St. EN10130 DC01-AM-0.	1
8	---	FORRO POSTERIOR SEGURIDAD	BACK SECURITY LINING	Ac./St. EN10130 DC01-AM-0.	1
7	---	GUIADOR SEGURIDAD HOJA	PANEL SECURITY GUIDE	Ac./St. EN10111 DD11.	1
6	---	TUBO REFUERZO HOJA	PANEL REINFORCEMENT TUBE	20 x 30 x L	1
5	---	TUBO REFUERZO HOJA	PANEL REINFORCEMENT TUBE	35 x 35 x L	1
4	---	REFUERZO VERTICAL HOJA	VERTICAL REINFORCEMENT PANEL	Ac./St. EN10130 DC01-AM-0.	1
3	---	SOPORTE SUPERIOR-INFERIOR HOJA	UPPER-LOWER SUPPORT PANEL	Inox/St.St. EN10088-2 1.4301+2B	2
2	---	REFUERZO SUJECCIÓN HOJA	SUBJECTION REINFORCEMENT PANEL	Ac./St. EN10111 DD11.	2
1	---	HOJA-49	PANEL-49	Ac./St. EN10130 DC01-AM-0.	1

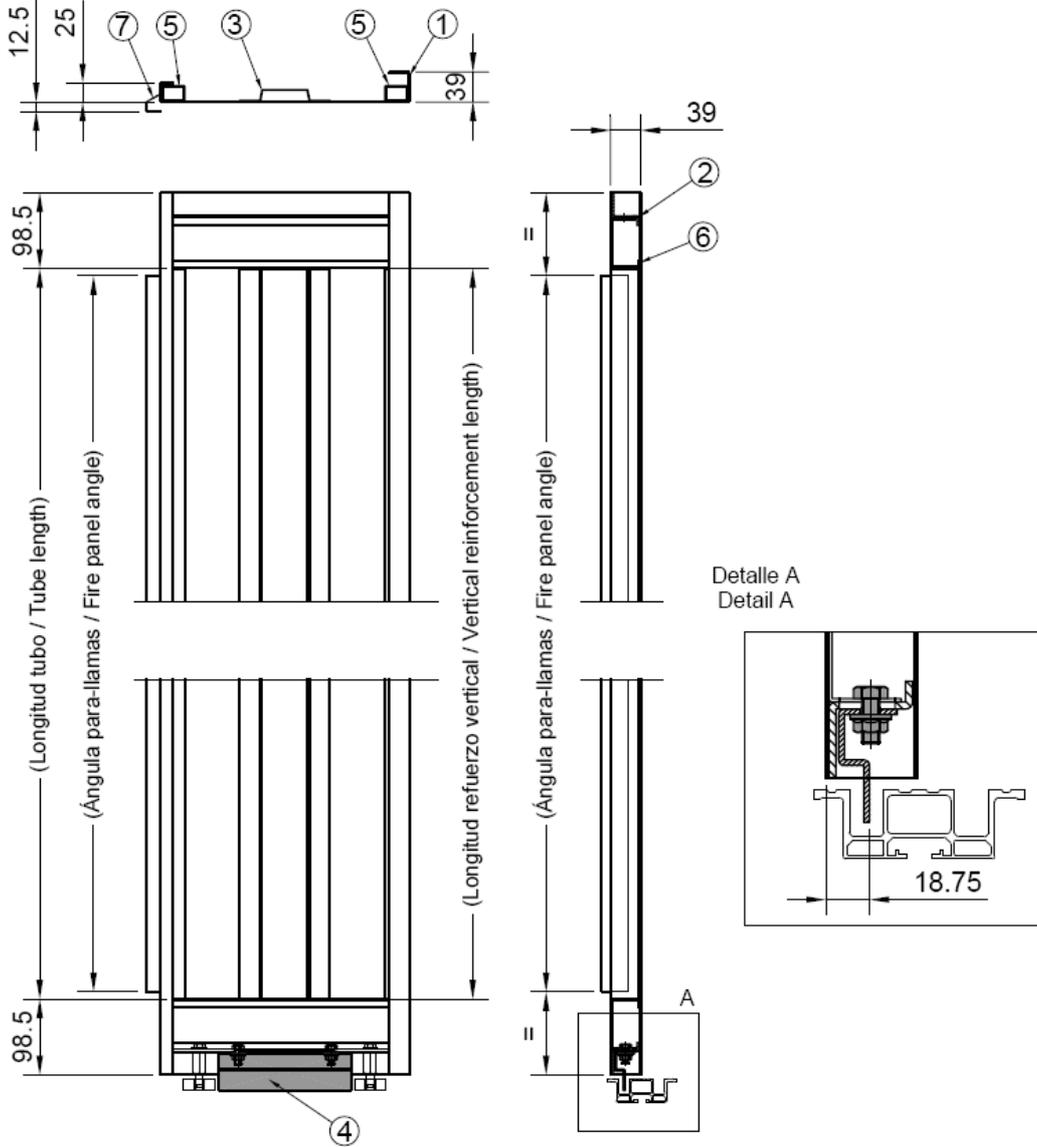
ELEMENTO Nº	NÚMERO PIEZA PIECE NUMBER	DENOMINACIÓN	PART NAME	MATERIAL	CANT.
Tolerancias de rugosidad Rugosity tolerances		Material/Material:		Fecha Date	Nombre Name
N12-N11 = 50-25 N10-N9 = 12.5-6.3 N 8-N7 = 3-2-1.6 N 6-N 5 = 0.8-0.4 N4-N1 = 0.2-0.025		Acabado/Finishing:		Dibujado Draw	22/04/08
				Comp. Comp.	22/04/08
CONJUNTO HOJA-49 IZQUIERDA ANTIVANDÁLICA					
PANEL-49 LEFT SET ANTIVANDALIC					
Rellano / Landing			C2	Modificaciones/Modifications	
Proj./Proj.: 40-50				Alt. Hgt.	Fecha Date
				Nombre Name	Hoja: Page:
					1/1
					Plano/Drawing: 000000





DIM. LINEALES(mm)	0,5 - 50	50 + 500	500 + 3000	LONG. CARA MÁS CORTA (1/100)	hasta 10	10 + 50	50 + 120	120 + 400	PRIMERA PROYECCIÓN ANGULAR
TOLERANCIAS	± 0.1	± 0.5	± 1	ANG. TOL.	± 1°	± 30'	± 20'	± 10'	

Ruta: V:\FAMILIAS_FLANOS\HOMOLOGACIONES FUEGO\40-50\Hoja antivandálica (EN81-71) E-120



7	----	ÁNGULO PARA-LLAMAS	FIRE PANEL ANGLE	Ac./St. EN10130 DC01-AM-0.	1
6	----	SOPORTE SUPERIOR-INFERIOR HOJA	UPPER-LOWER SUPPORT PANEL	Inox/St.St. EN10088-2 1.4301+2B	2
5	----	TUBO REFUERZO HOJA	PANEL REINFORCEMENT TUBE	30 x 20 x L	2
4	----	GUIADOR SEGURIDAD HOJA	PANEL SECURITY GUIDE	Ver opciones / See options	1
3	----	REFUERZO VERTICAL HOJA	VERTICAL REINFORCEMENT PANEL	Ac./St. EN10130 DC01-AM-0.	1
2	----	REFUERZO SUJECCIÓN HOJA	SUBJECTION REINFORCEMENT PANEL	Ac./St. EN10111 DD11.	2
1	----	HOJA-39	PANEL-39	Ac./St. EN10130 DC01-AM-0.	1

ELEMENTO Nº	NÚMERO PIEZA PIECE NUMBER	DENOMINACIÓN	PART NAME	MATERIAL	CANT.
Tolerancias de rugosidad Rugosity tolerances		Peso/Weight:	Material/Material:	Fecha Date	Nombre Name
N12-N11 -50-25 - N10-N9 -12.5-6.3 - N 8-N7 -3.2-1.6 - N 6-N 5 -0.8-0.4 - N4-N1 -0.2-0.025-		-----	Acabado/Finishing:	22/04/08	obeneyto
				22/04/08	jlavernia
CONJUNTO HOJA LENTA - 39 ANTIVANDÁLICA					
SLOW PANEL SET - 39 ANTIVANDALIC					
Rellano - Cabina / Landing - Cabin			T2		
Proy./Proj.: 4V-50				Modificaciones/Modifications	
			Alt. Hgt.	Fecha Date	Nombre Name
				Hoja: Page:	Código/Code:
				1/1	Plano/Drawing: 000000



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