optima

Doors

Designer's Guide

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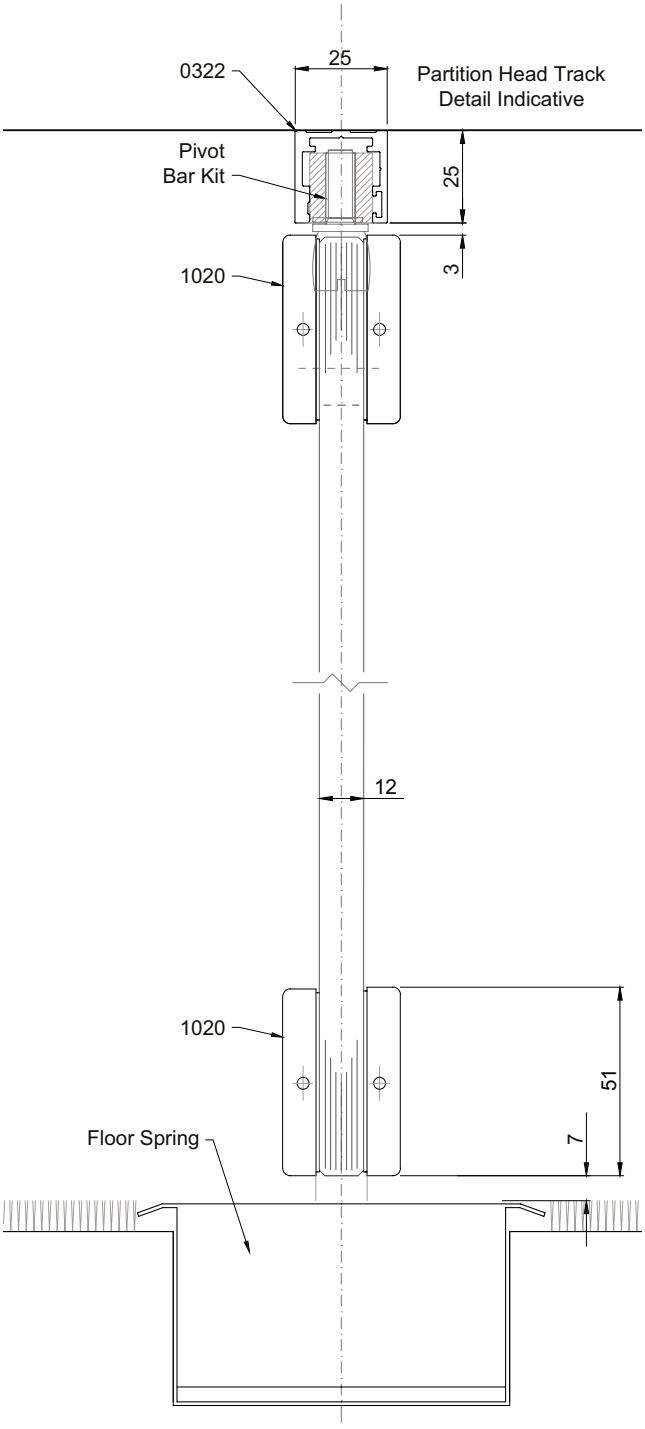
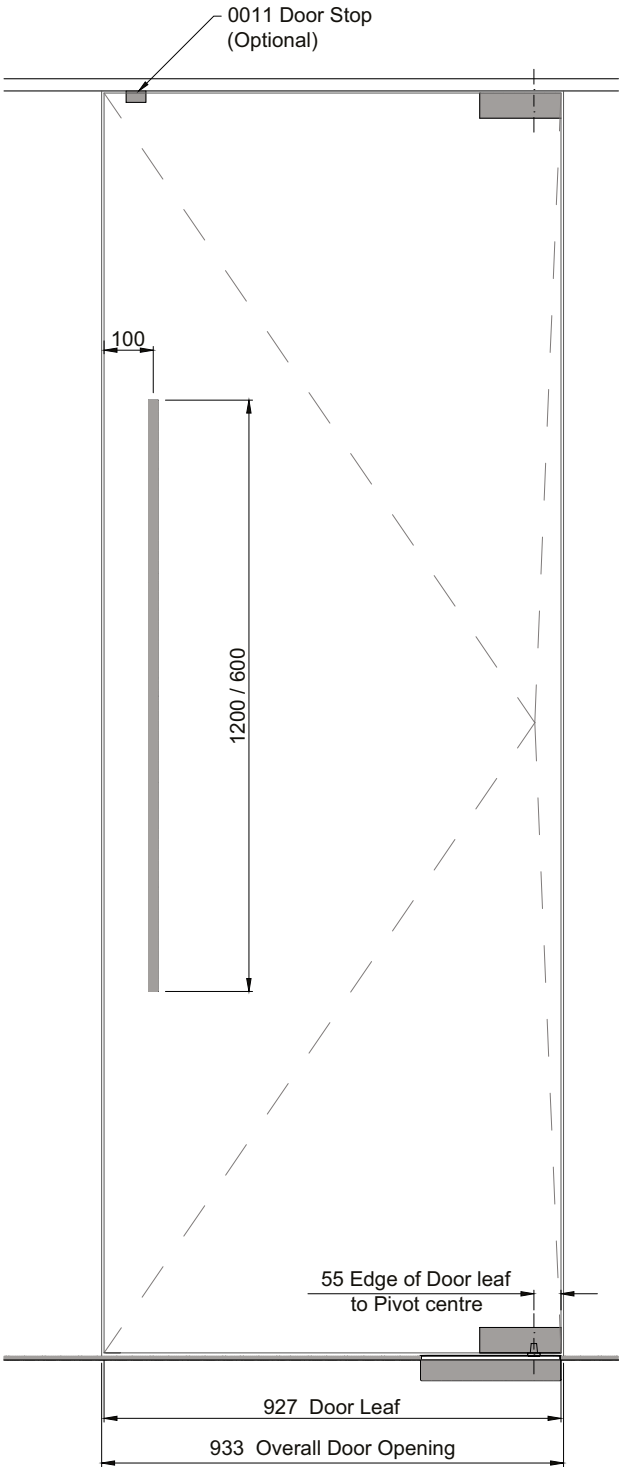
Door Sets: Vertical Section/Elevation



Section through typical
Optima AXILE Pulse door

910002a-01

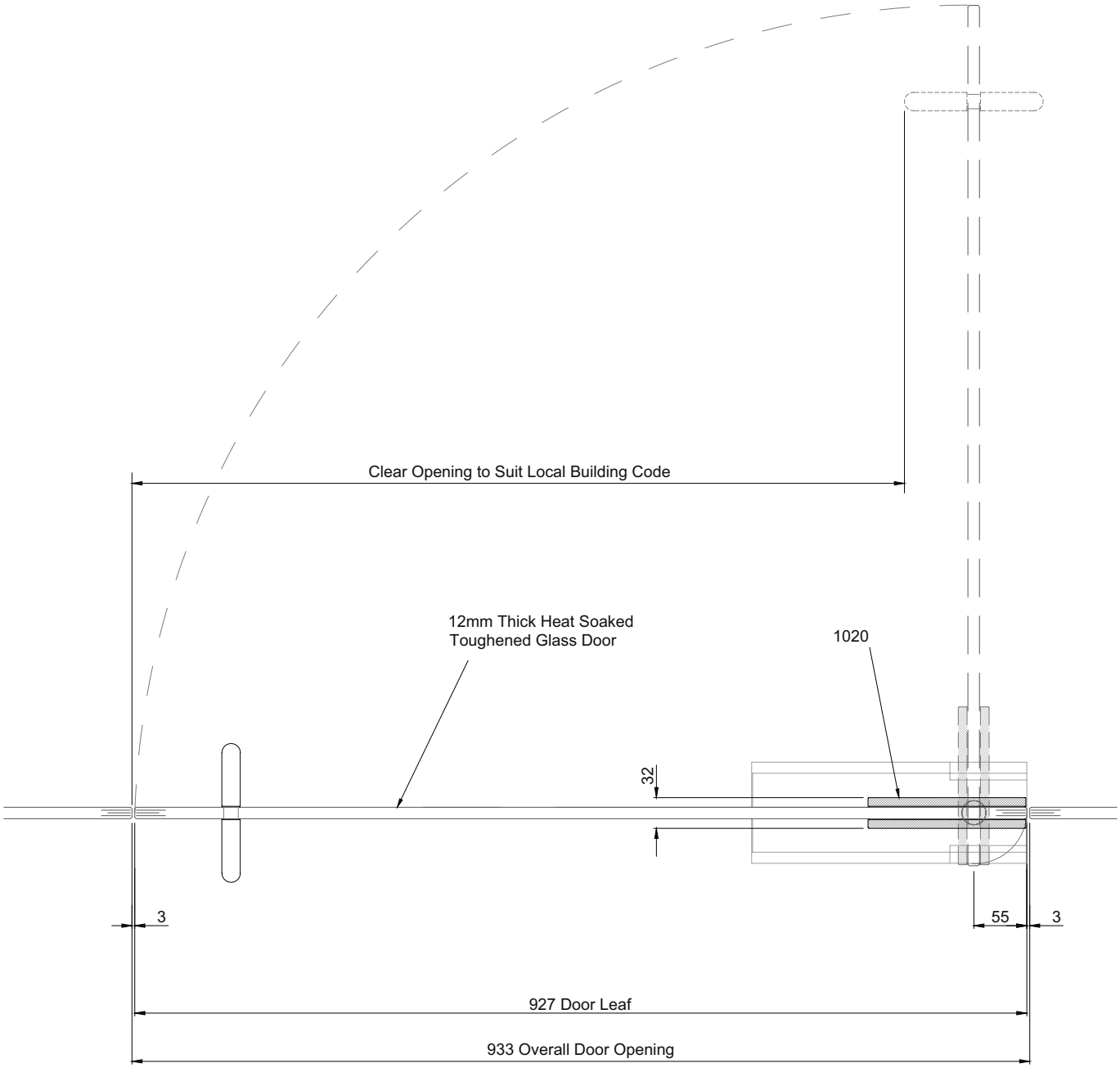


Elevation showing typical
Optima AXILE Pulse door

910002a-02

Door Sets

Door Sets: Horizontal Section

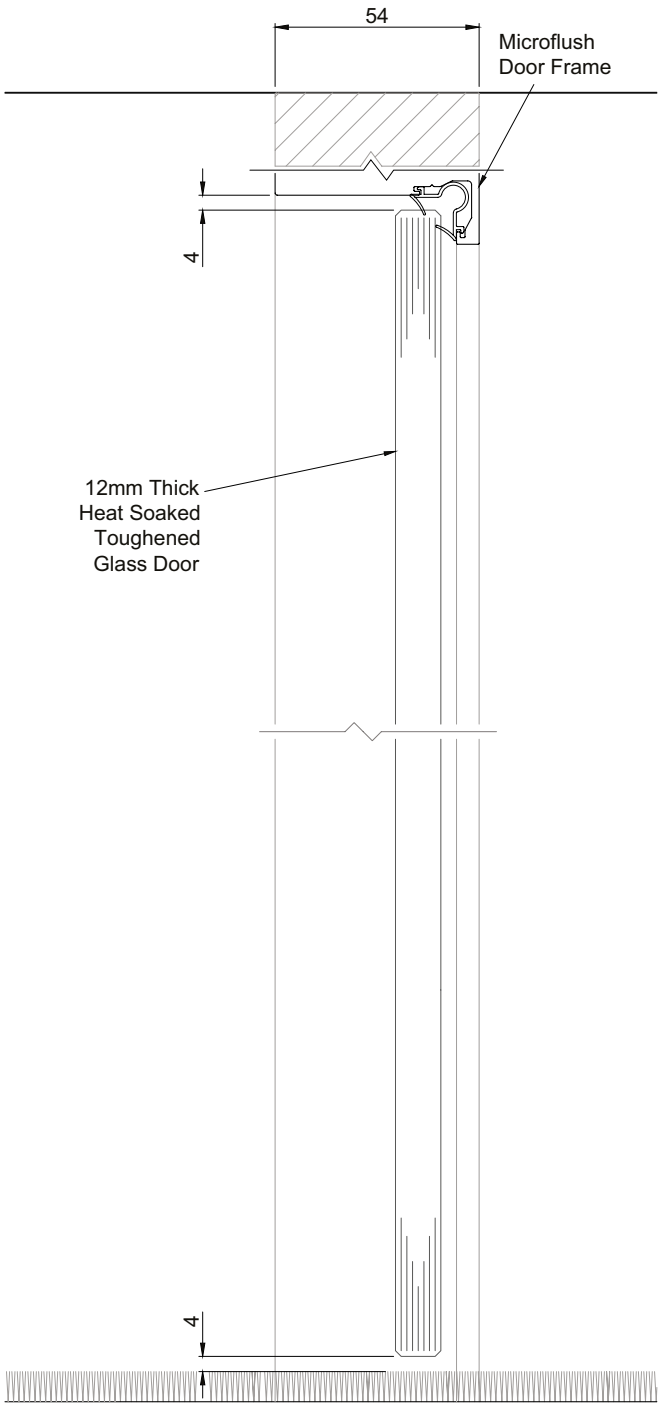


Typical section – Optima AXILE Pulse inline pivoting door

910003a-01

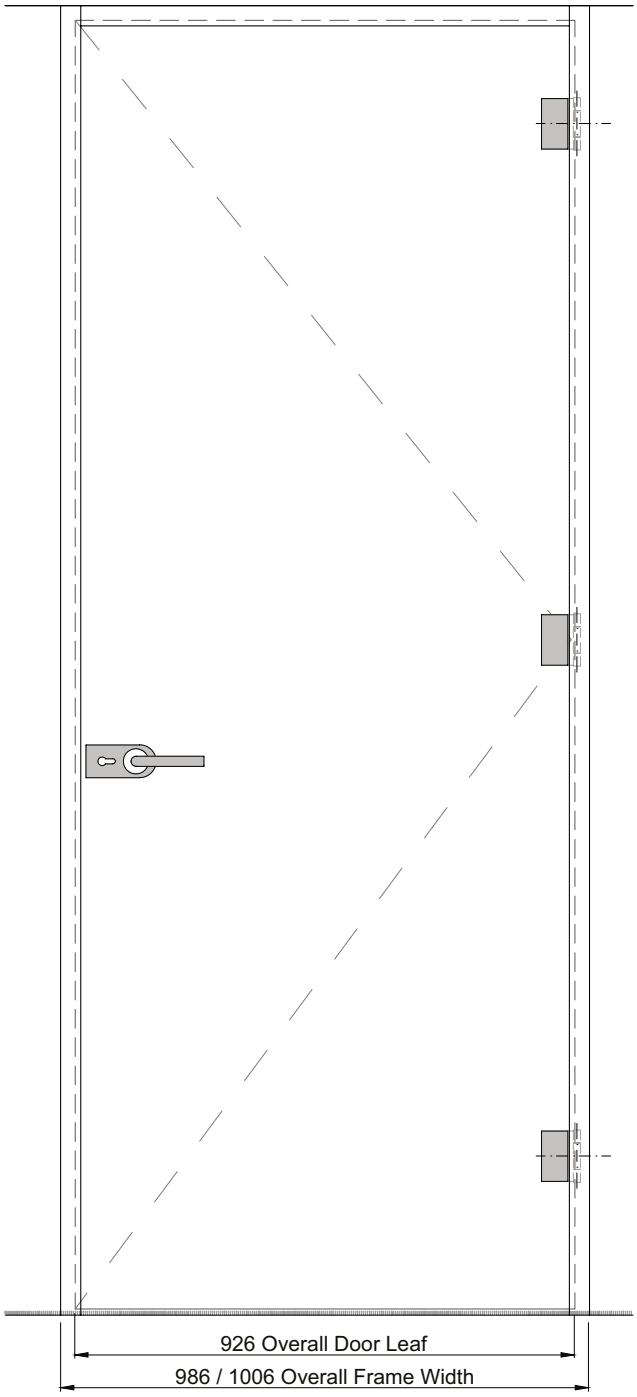
Door Sets

Door Sets: Vertical Section/Elevation



Section through AXILE Clarity door
in Microflush door frame

910004a-01

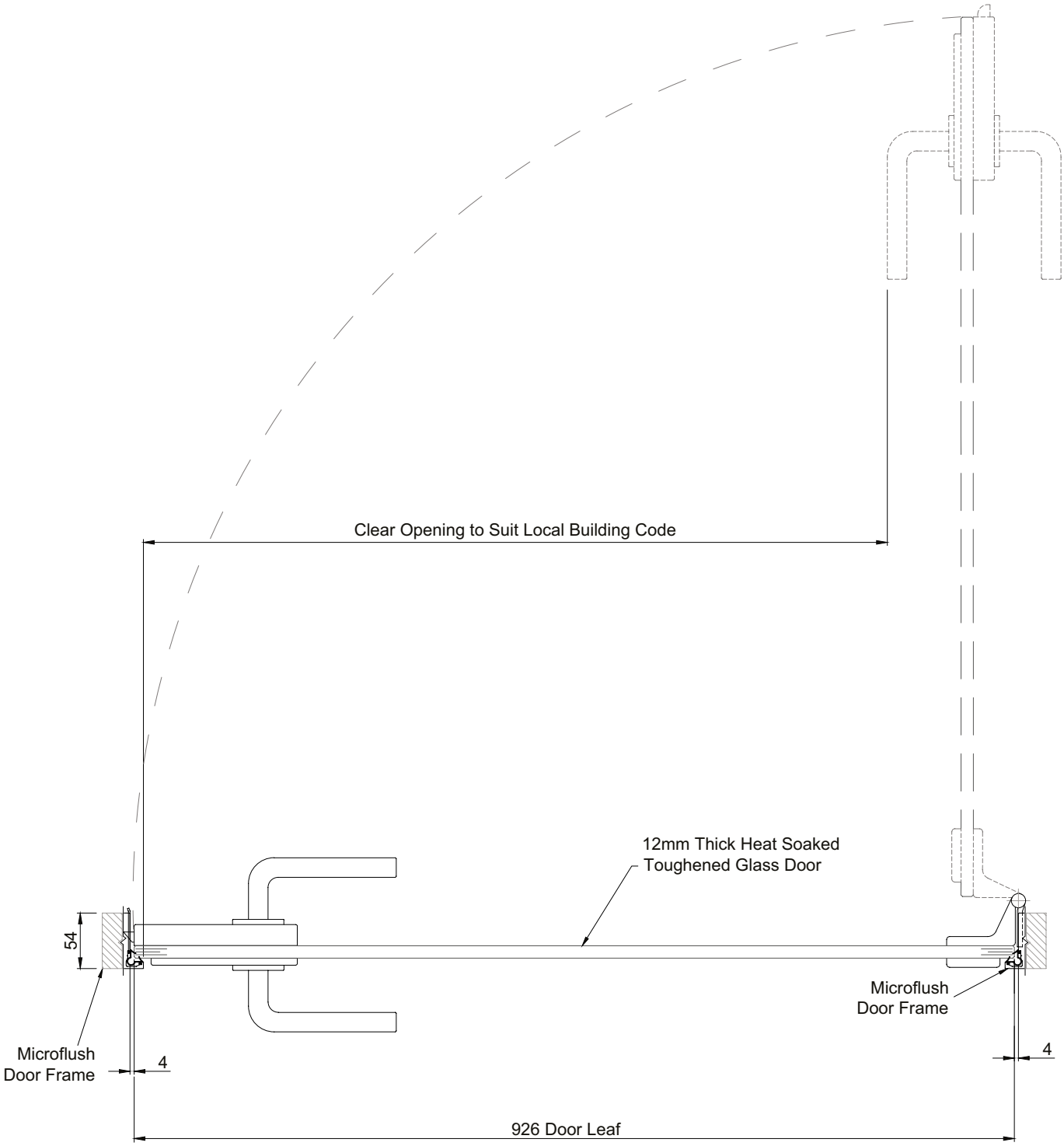


Elevation showing typical Microflush frame
with AXILE Clarity door clear opening
to suit local building code

910004a-02

Door Sets

Door Sets: Horizontal Section

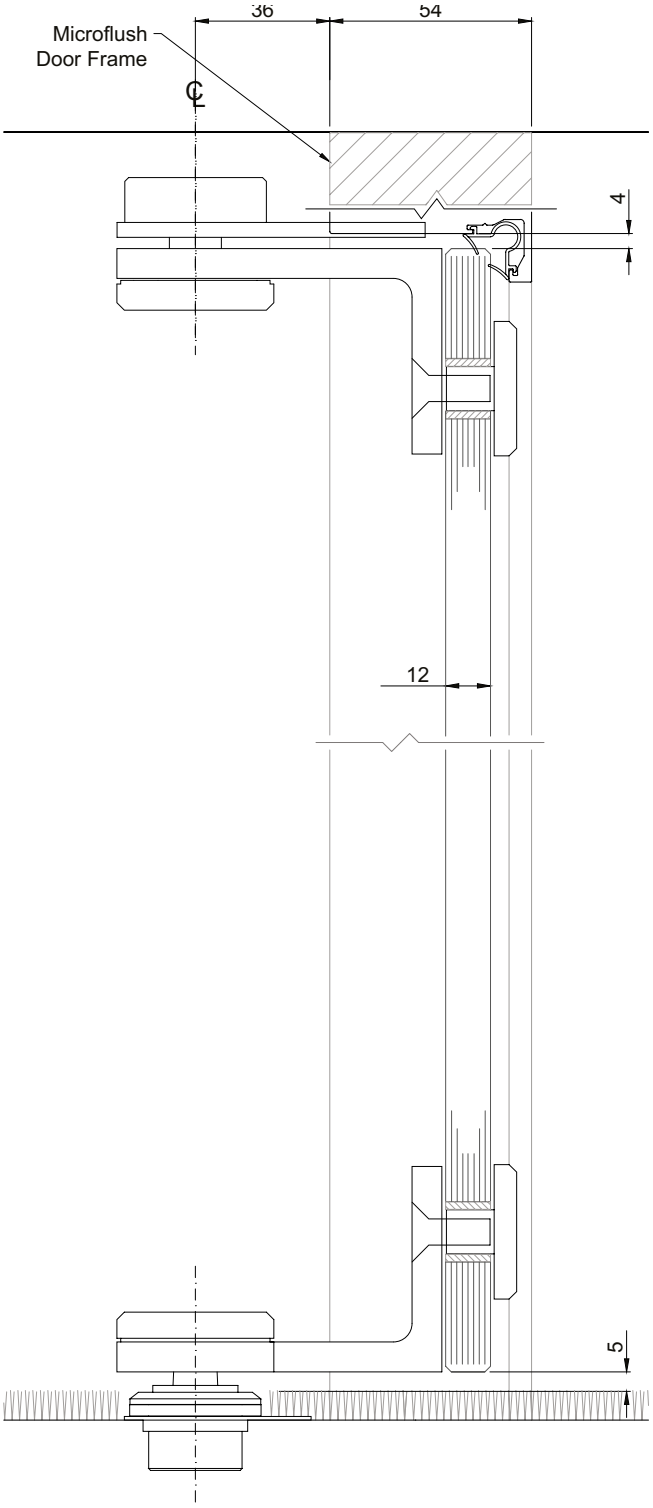


Typical section – AXILE Clarity hinged door in Microflush frame

910005a-01

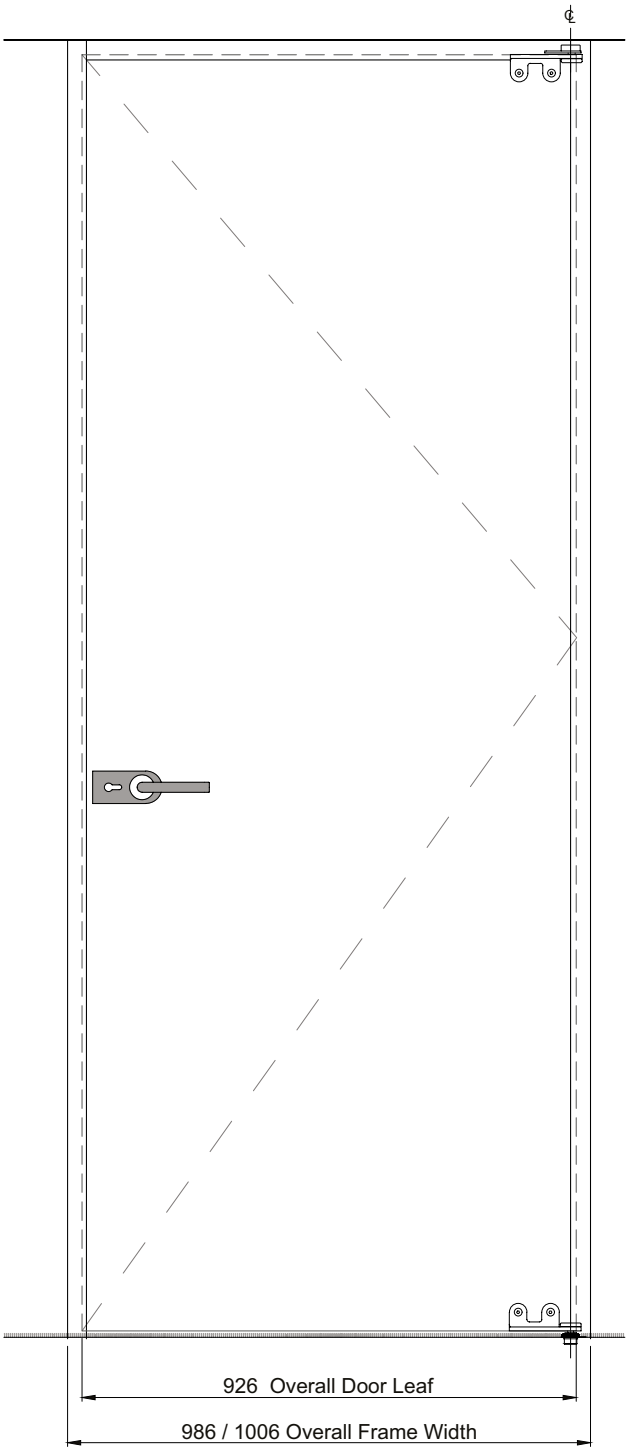
Door Sets

Door Sets: Vertical Section/Elevation



Section through typical Optima AXILE Clarity with quad pivot in Microflush frame

910006a-01

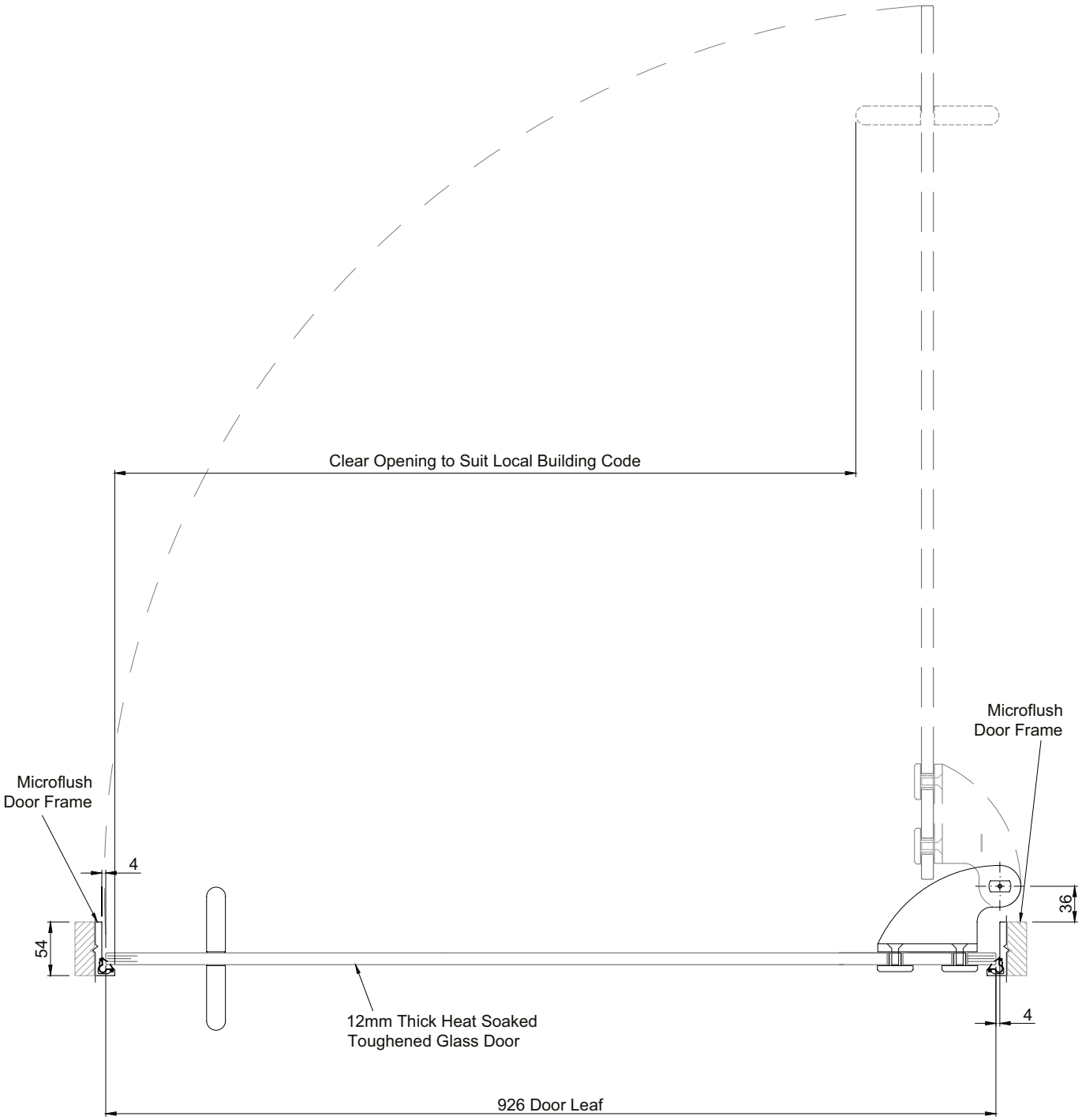


Elevation showing typical Optima AXILE Clarity quad pivot door in Microflush frame clear opening to suit local building code

910006a-02

Door Sets

Door Sets: Horizontal Section

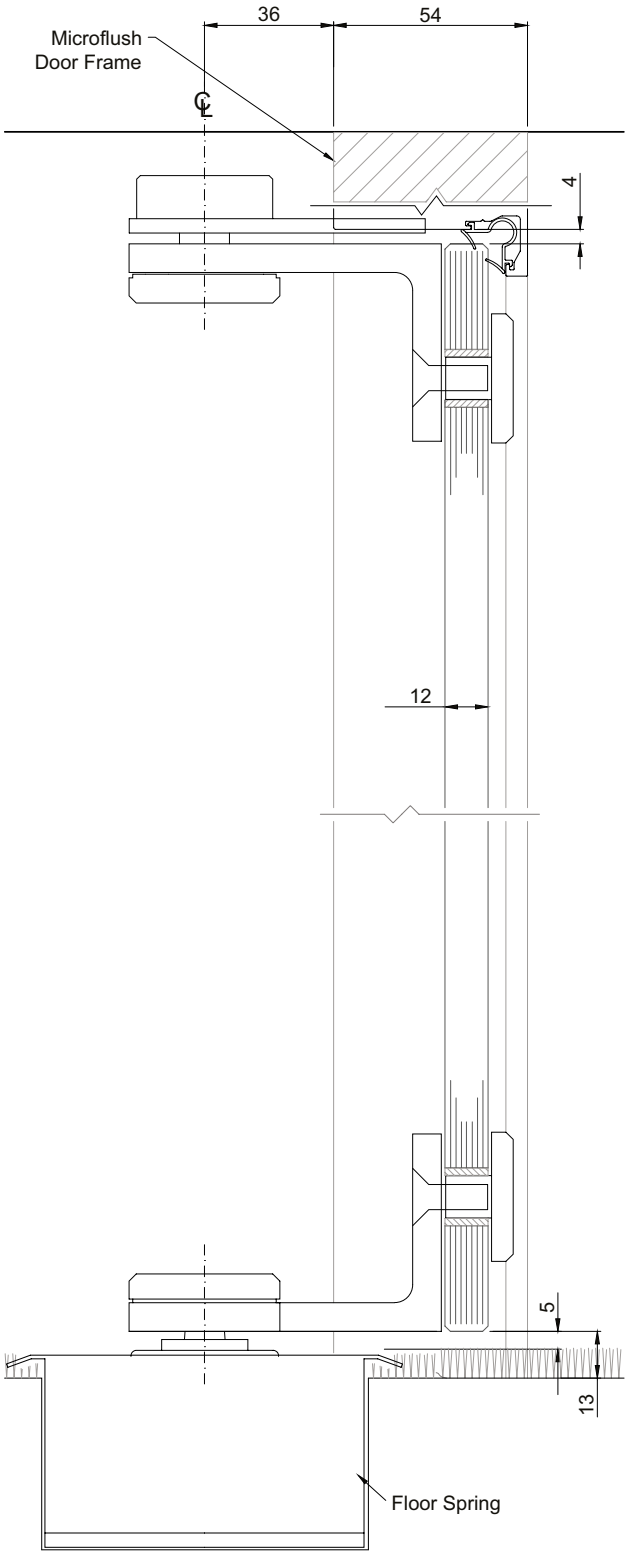


Typical section – Optima AXILE Clarity quad pivot door in Microflush frame

910007a-01

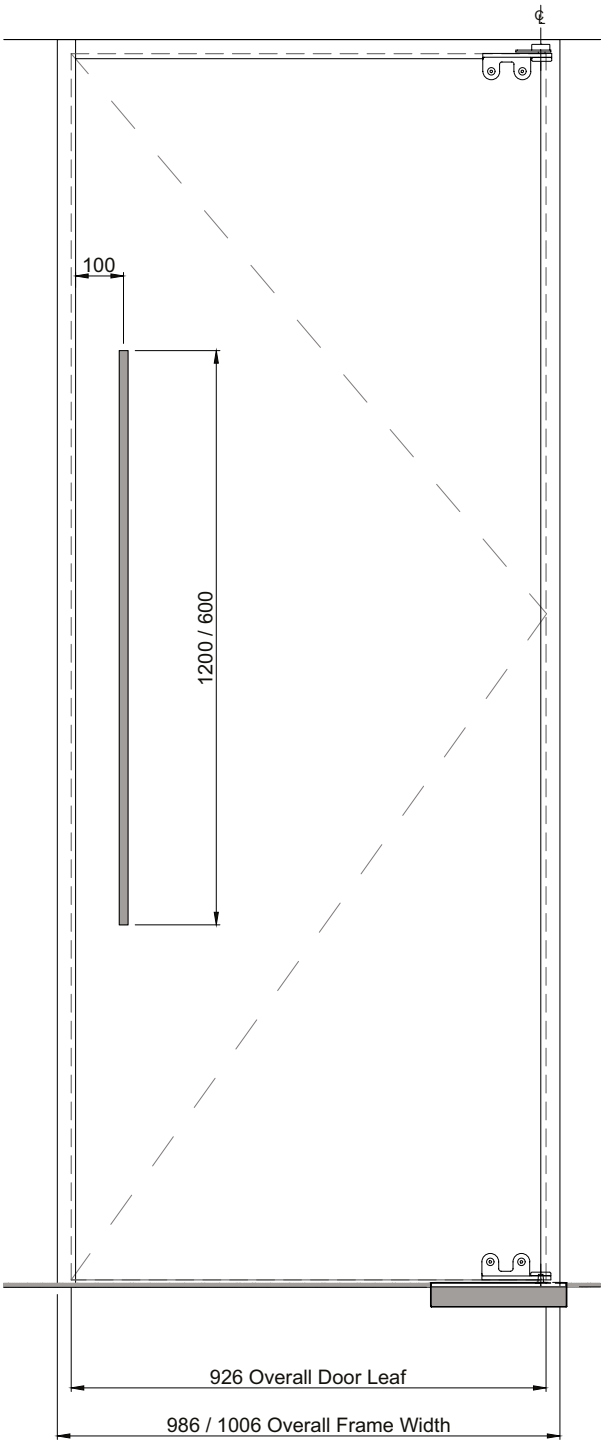
Door Sets

Door Sets: Vertical Section/Elevation



Section through typical Optima AXILE Clarity glass door with quad pivot in Microflush frame

910008a-01

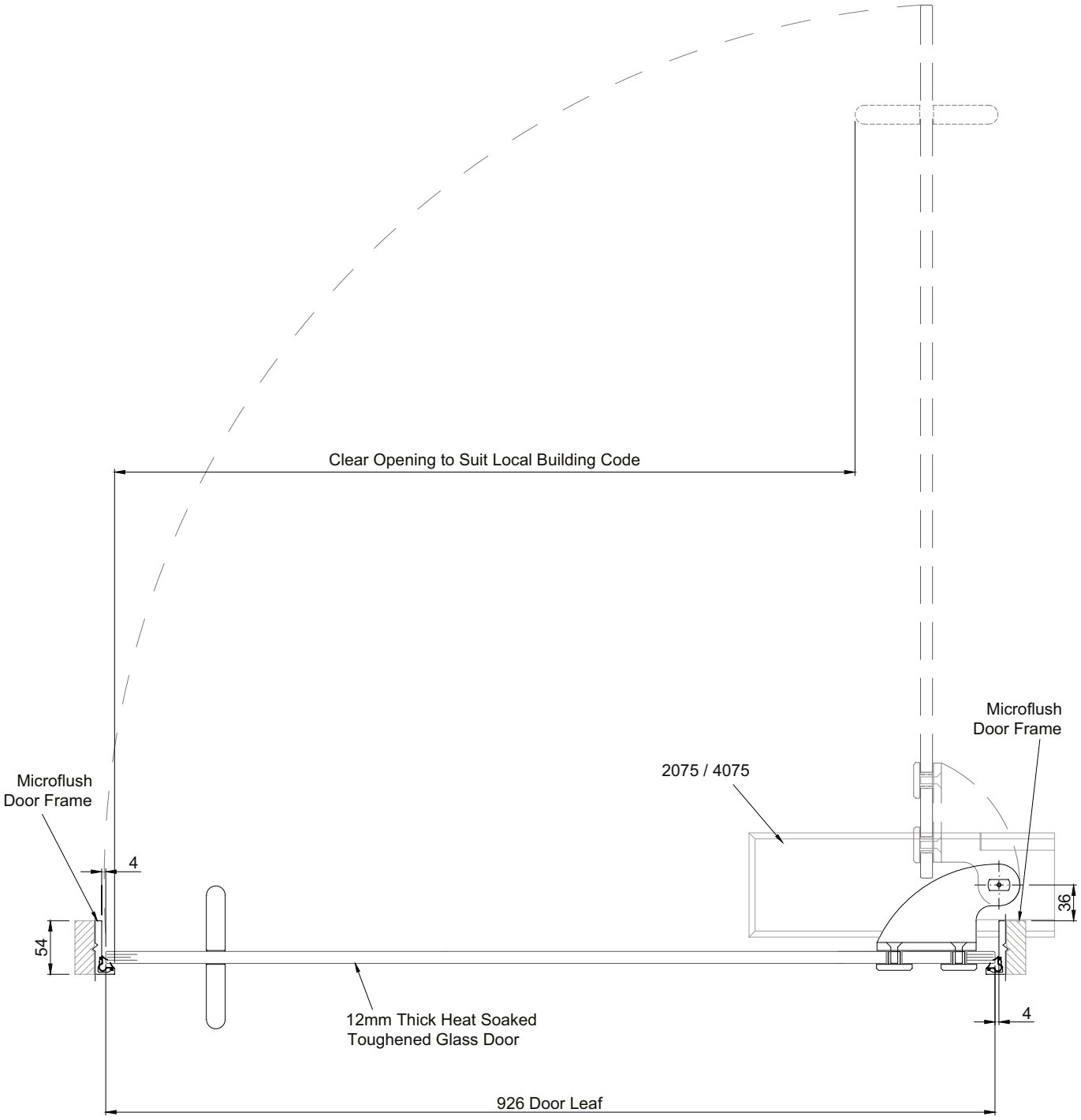


Elevation showing Optima AXILE Clarity quad pivot door in Microflush frame clear opening to suit local building code

910008a-02

Door Sets

Door Sets: Horizontal Section

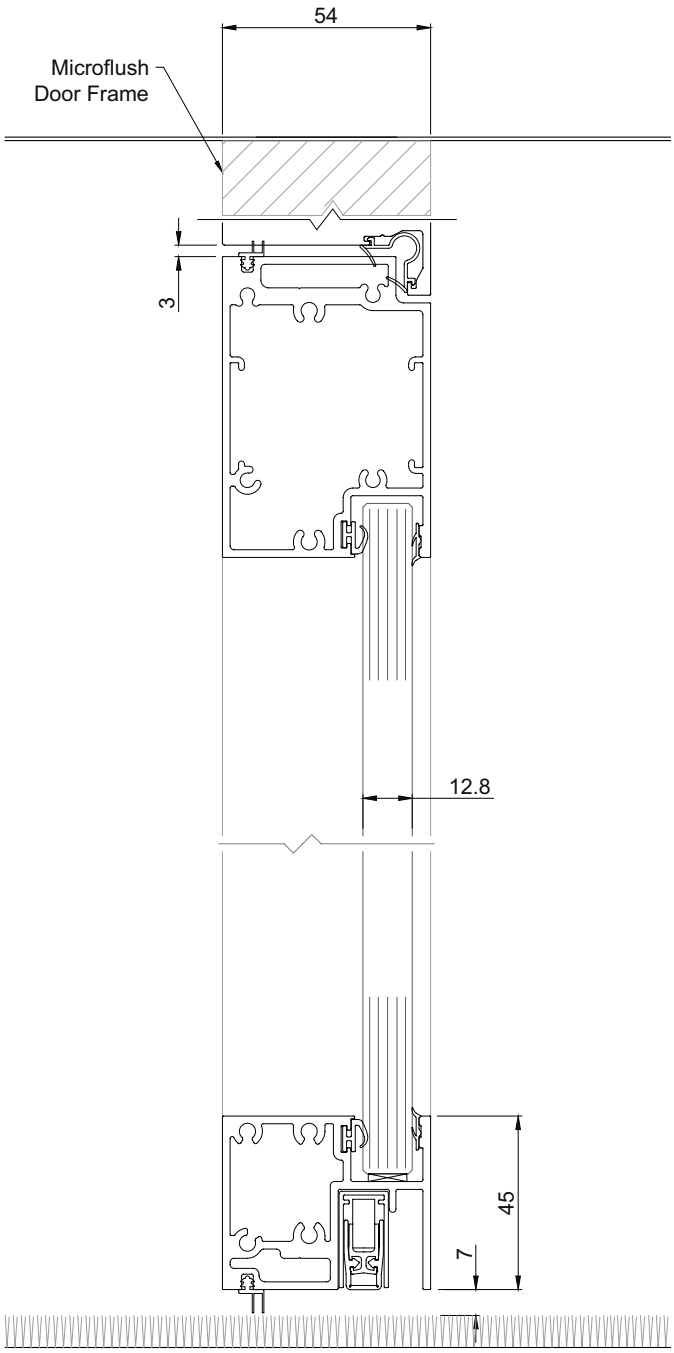


Typical section – Optima AXILE Clarity quad pivot door in Microflush frame

910009a-01

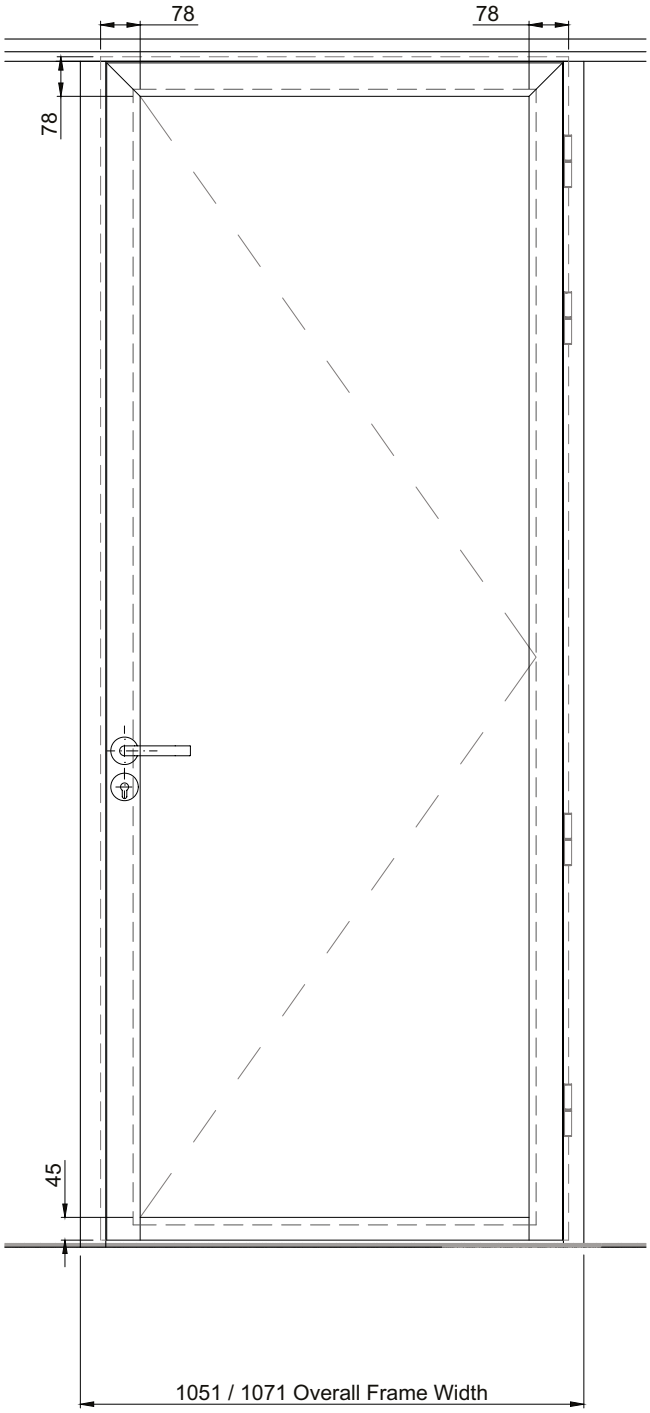
Door Sets

Door Sets: Vertical Section/Elevation



Section through single glazed ASIA Affinity door on hinges

910010a-01

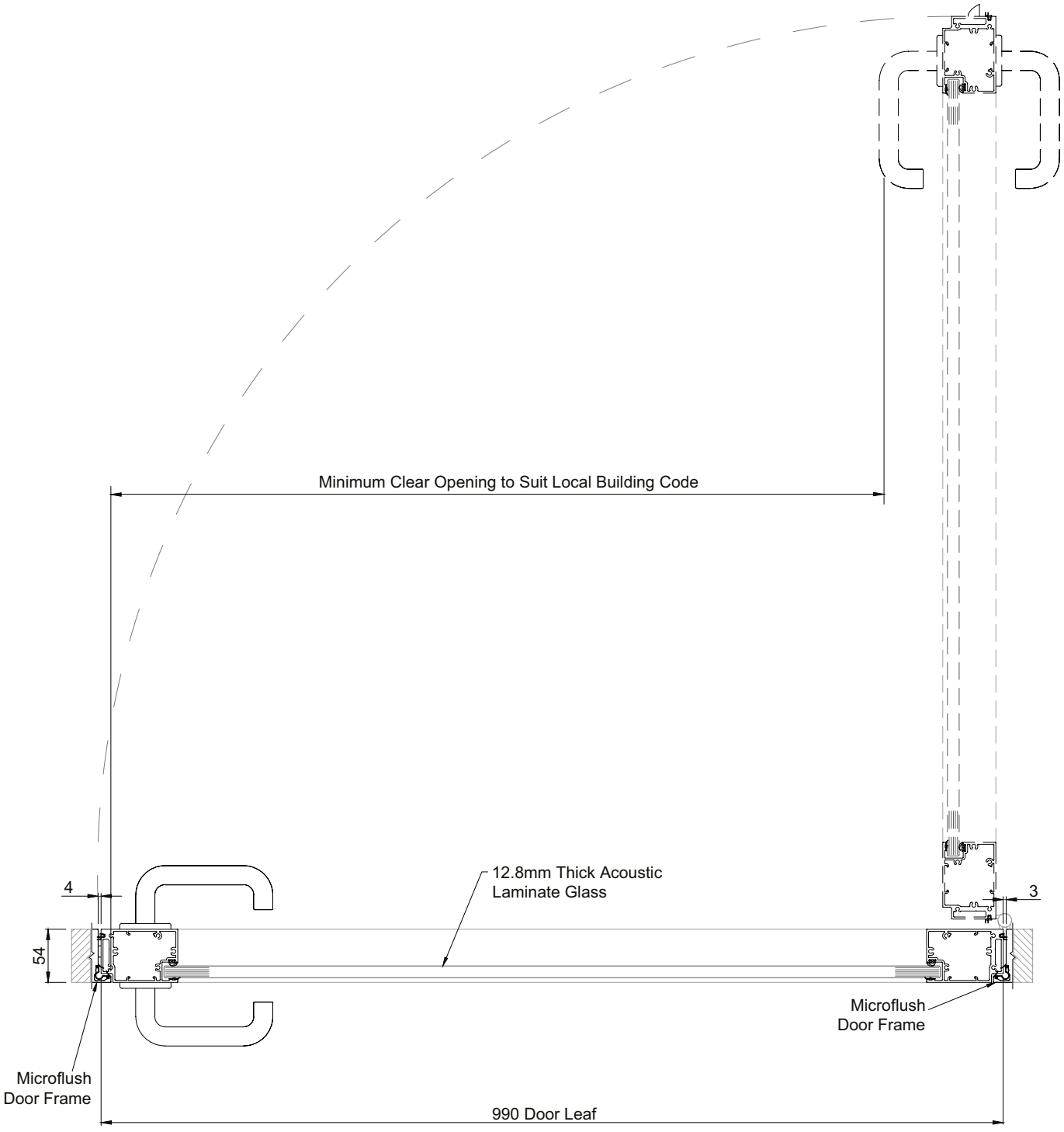


Elevation showing single glazed ASIA Affinity door on hinges clear opening to suit local building code

910010a-02

Door Sets

Door Sets: Horizontal Section

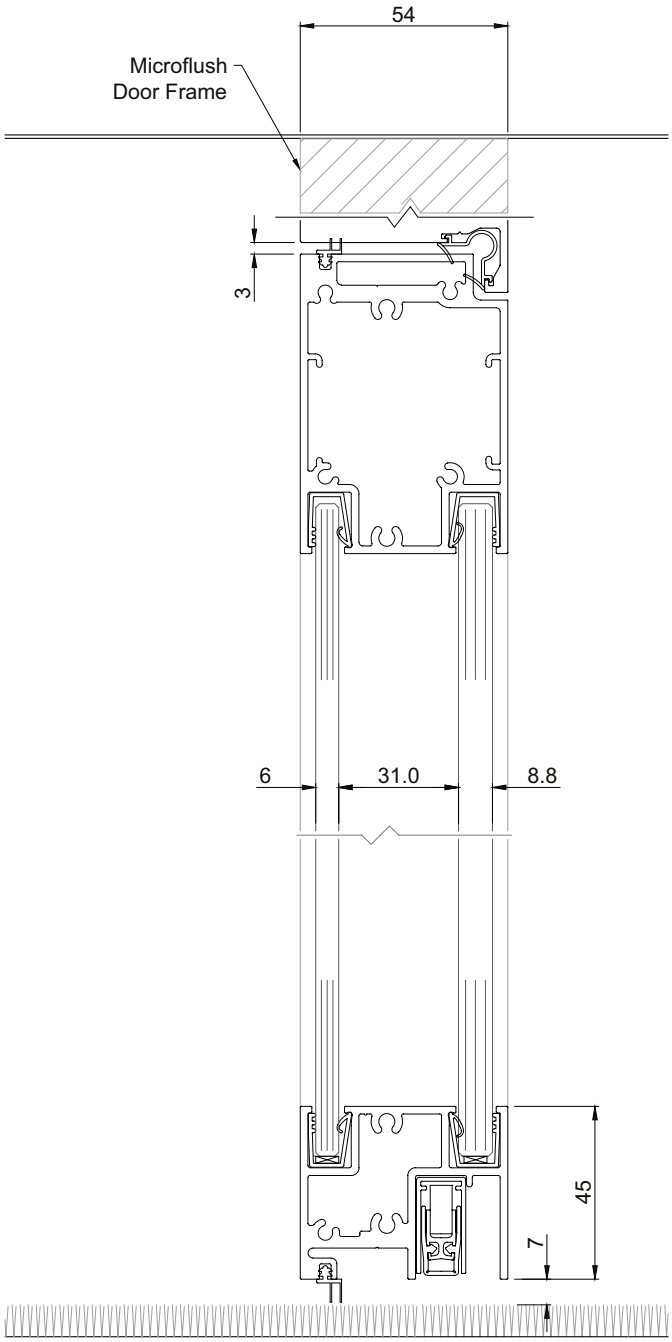


Typical section – single glazed ASIA Affinity door on hinges

910011a-01

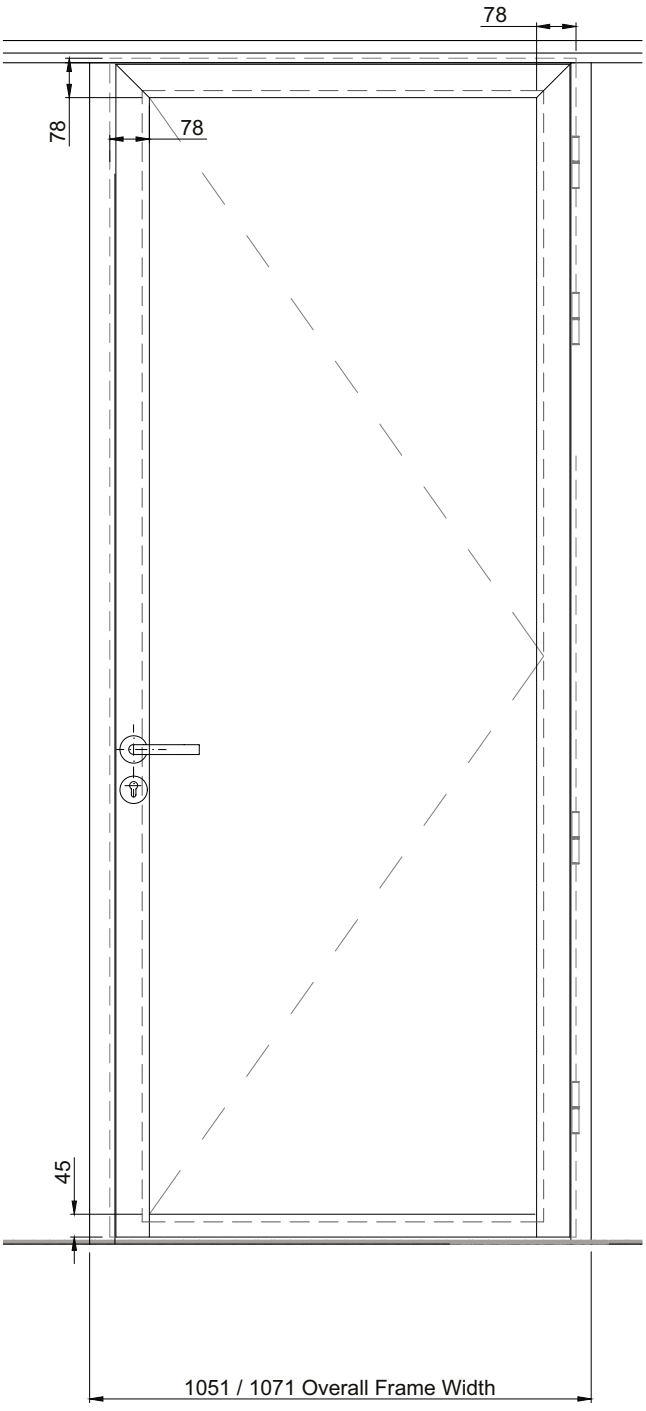
Door Sets

Door Sets: Vertical Section/Elevation



Section through double glazed
ASIA Affinity door on hinges

910012a-01

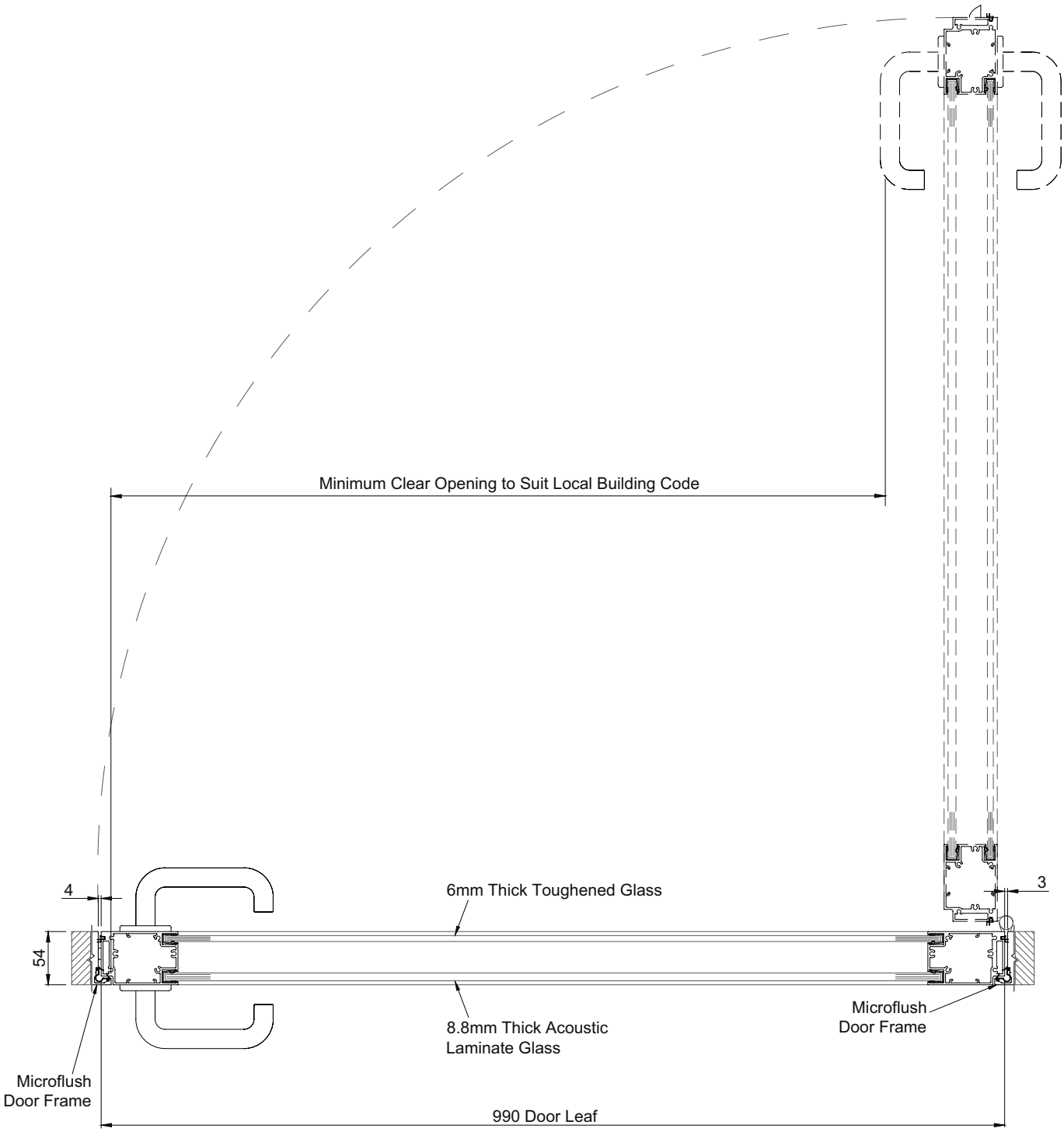


Elevation showing double glazed ASIA
Affinity door on hinges clear opening
to suit local building code

910012a-02

Door Sets

Door Sets: Horizontal Section

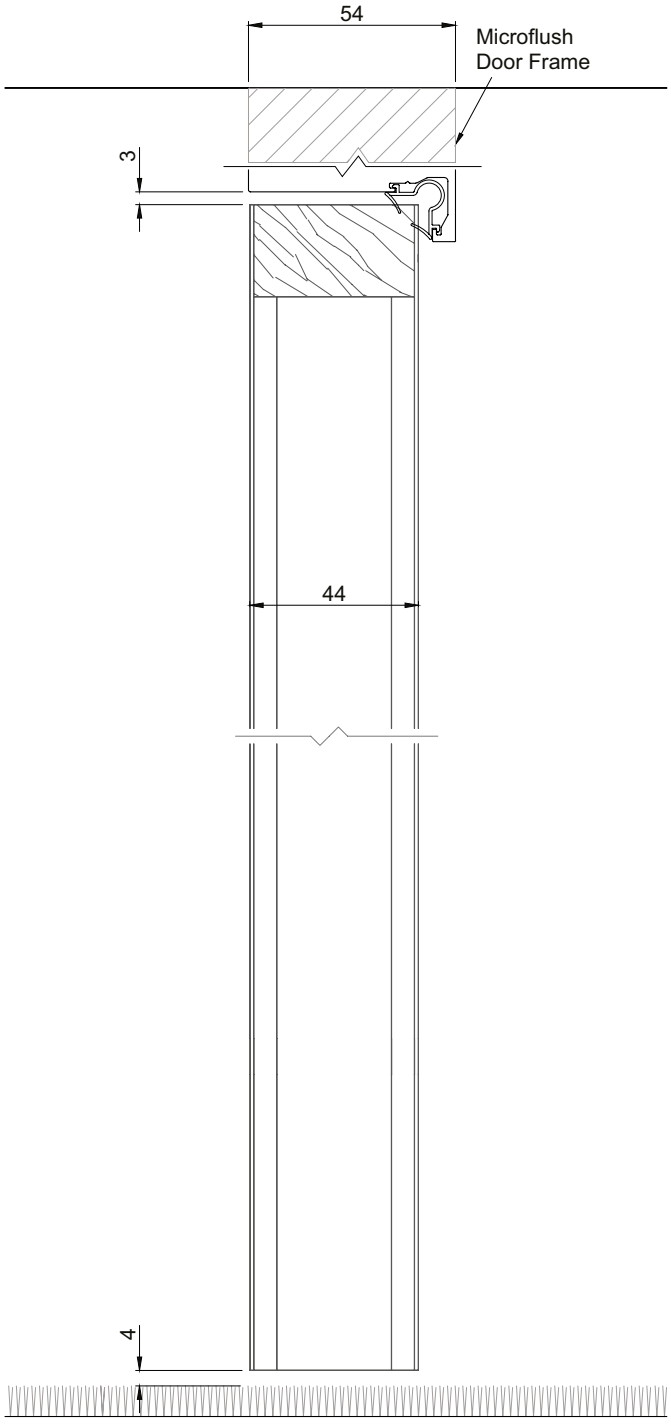


Typical section – double glazed ASIA Affinity door on hinges

910013a-01

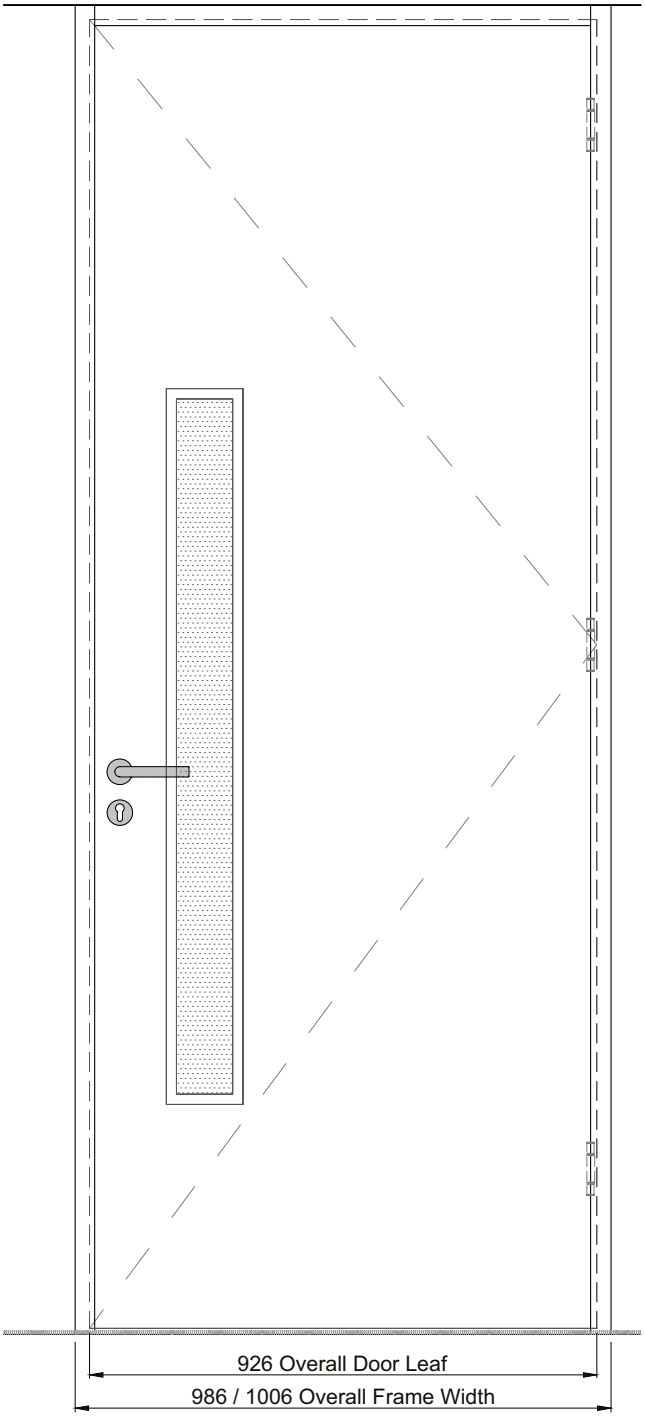
Door Sets

Door Sets: Vertical Section/Elevation



Section through typical Optima 44mm thick hinged timber door in Microflush frame

910014a-01

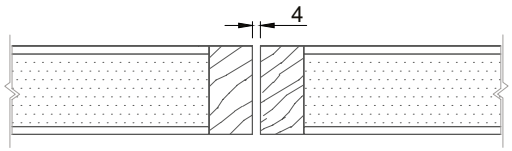


Elevation showing typical 44mm thick hinged timber door in Microflush frame clear opening to suit local building code

910014a-02

Door Sets

Door Sets: Horizontal Section



Optima 44mm thick hinged timber
double door meeting stiles

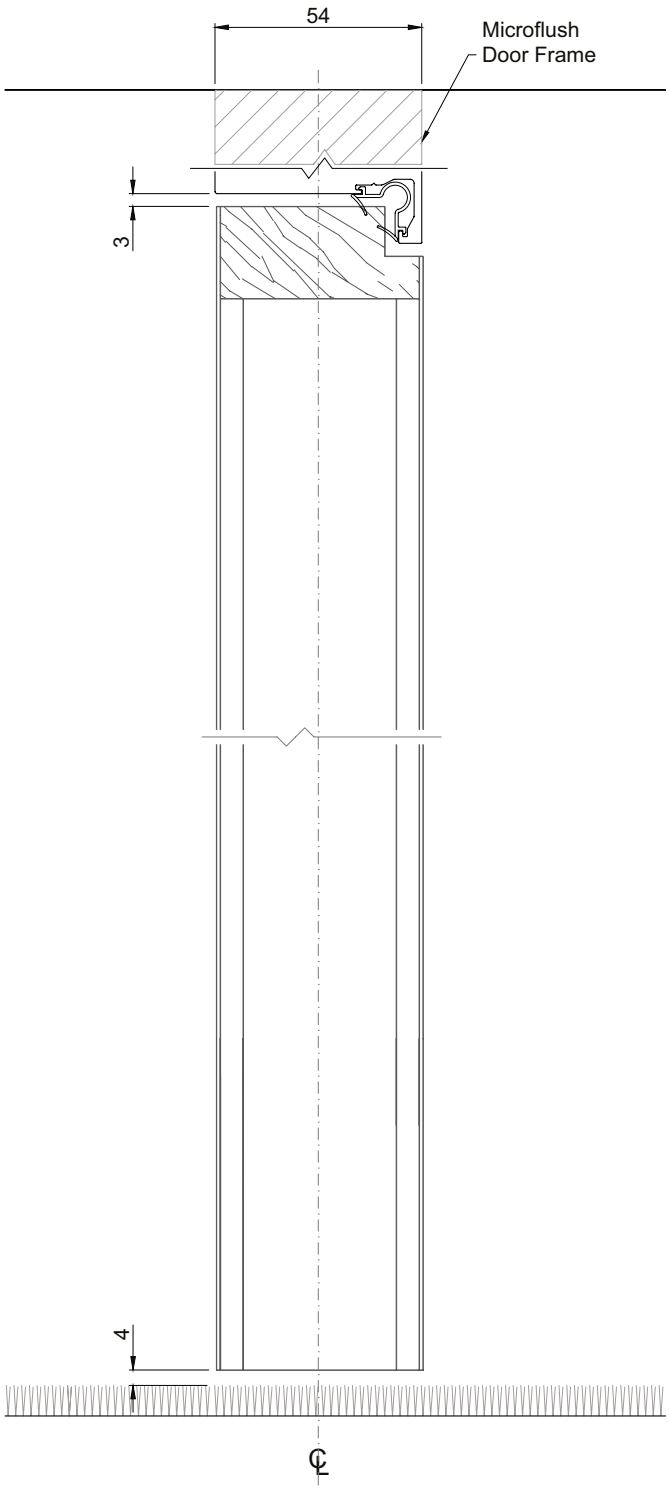
910015a-02

Typical section – Optima 44mm thick hinged timber door in Microflush frame

910015a-01

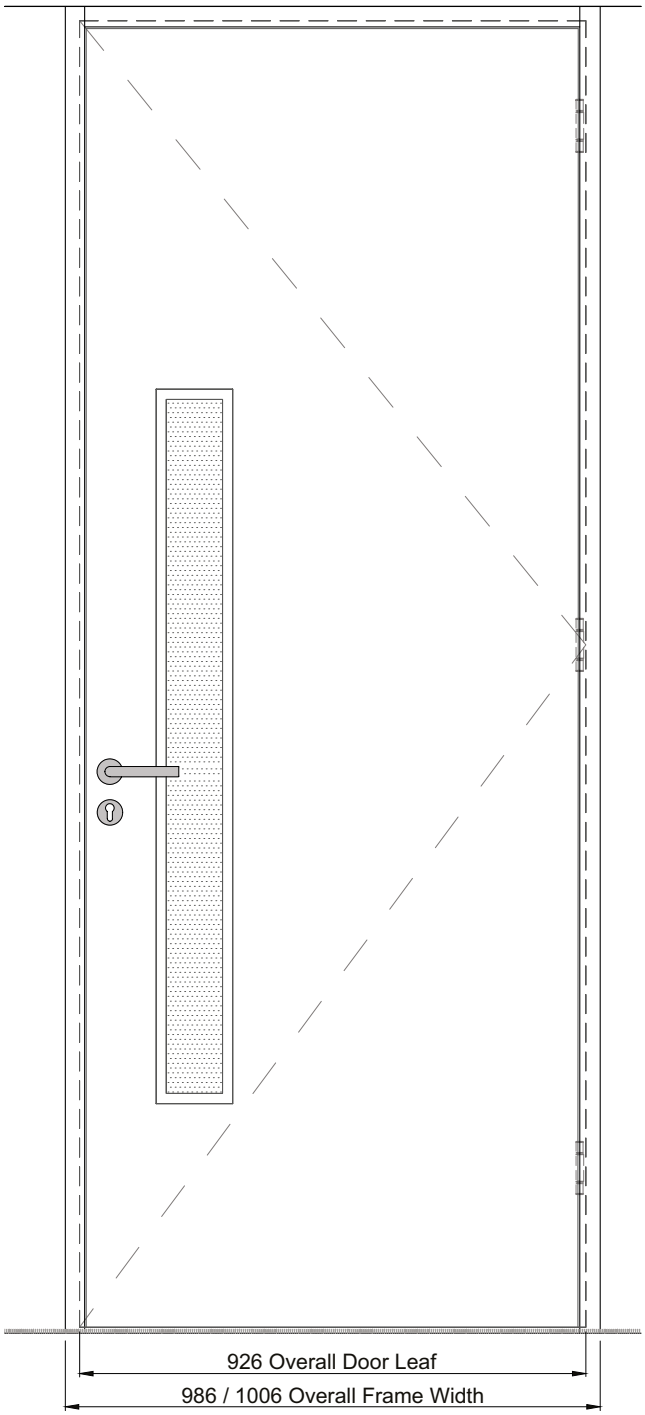
Door Sets

Door Sets: Vertical Section/Elevation



Section through typical Optima 54mm thick hinged timber door in Microflush frame

910016a-01

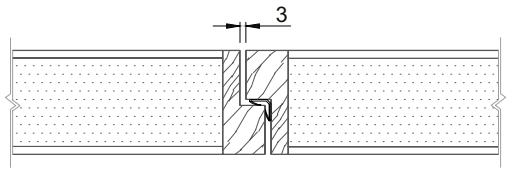


Elevation showing typical Optima 54mm thick hinged timber door in Microflush frame clear opening to suit local building code

910016a-02

Door Sets

Door Sets: Horizontal Section



Optima 54mm thick hinged timber double door meeting stiles

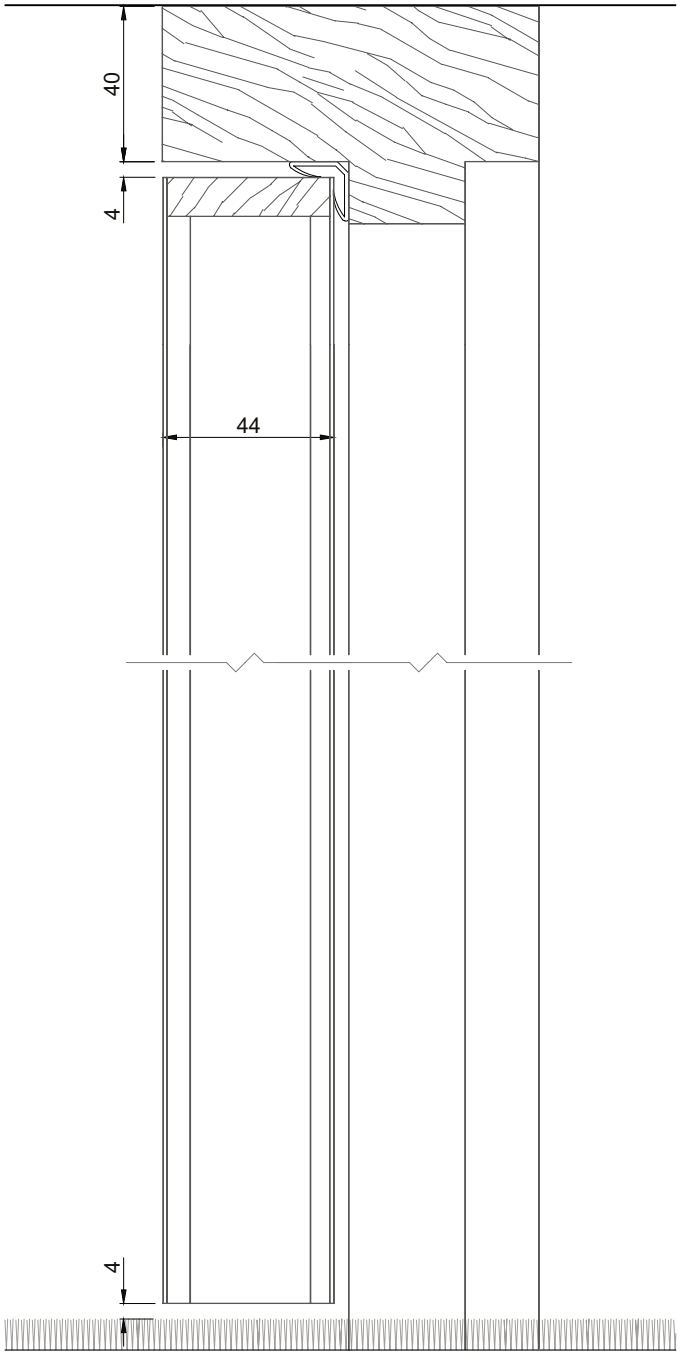
910017a-02

Typical section – Optima 54mm thick hinged timber door in Microflush frame

910017a-01

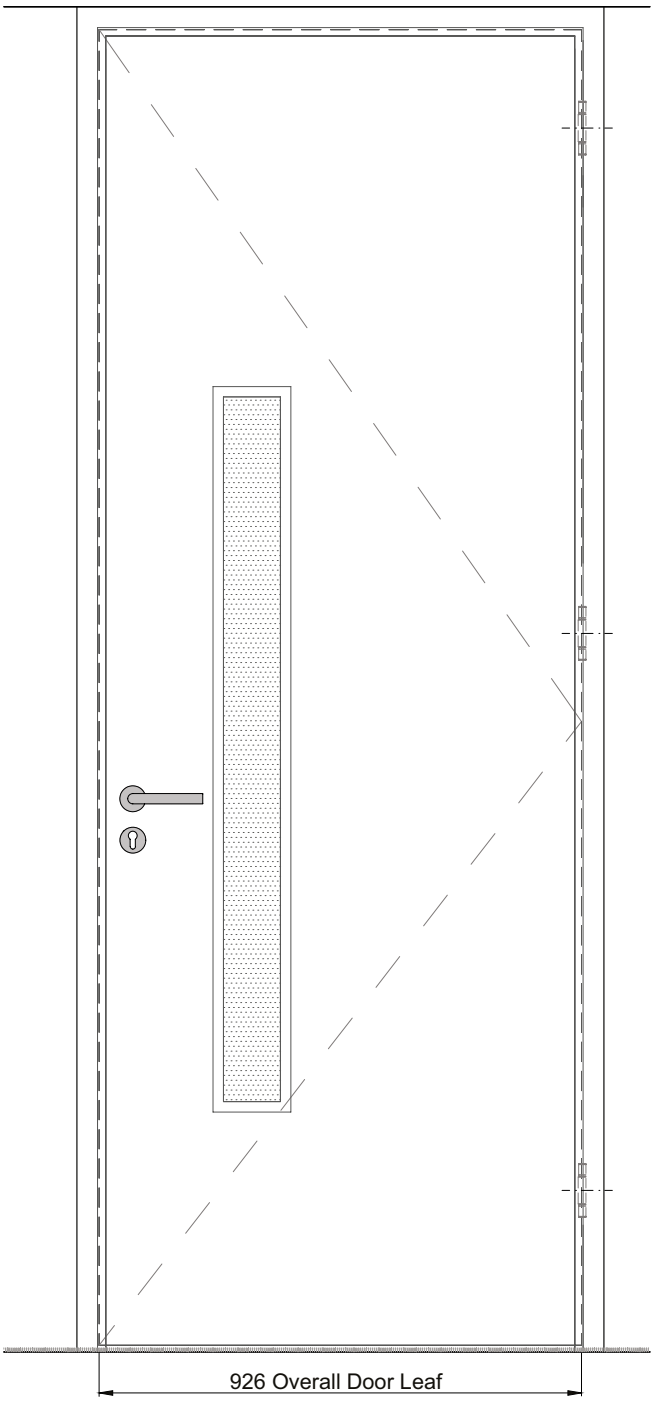
Door Sets

Door Sets: Vertical Section/Elevation



Section through typical hinged timber door in timber frame. Frame profile indicative

910018a-01

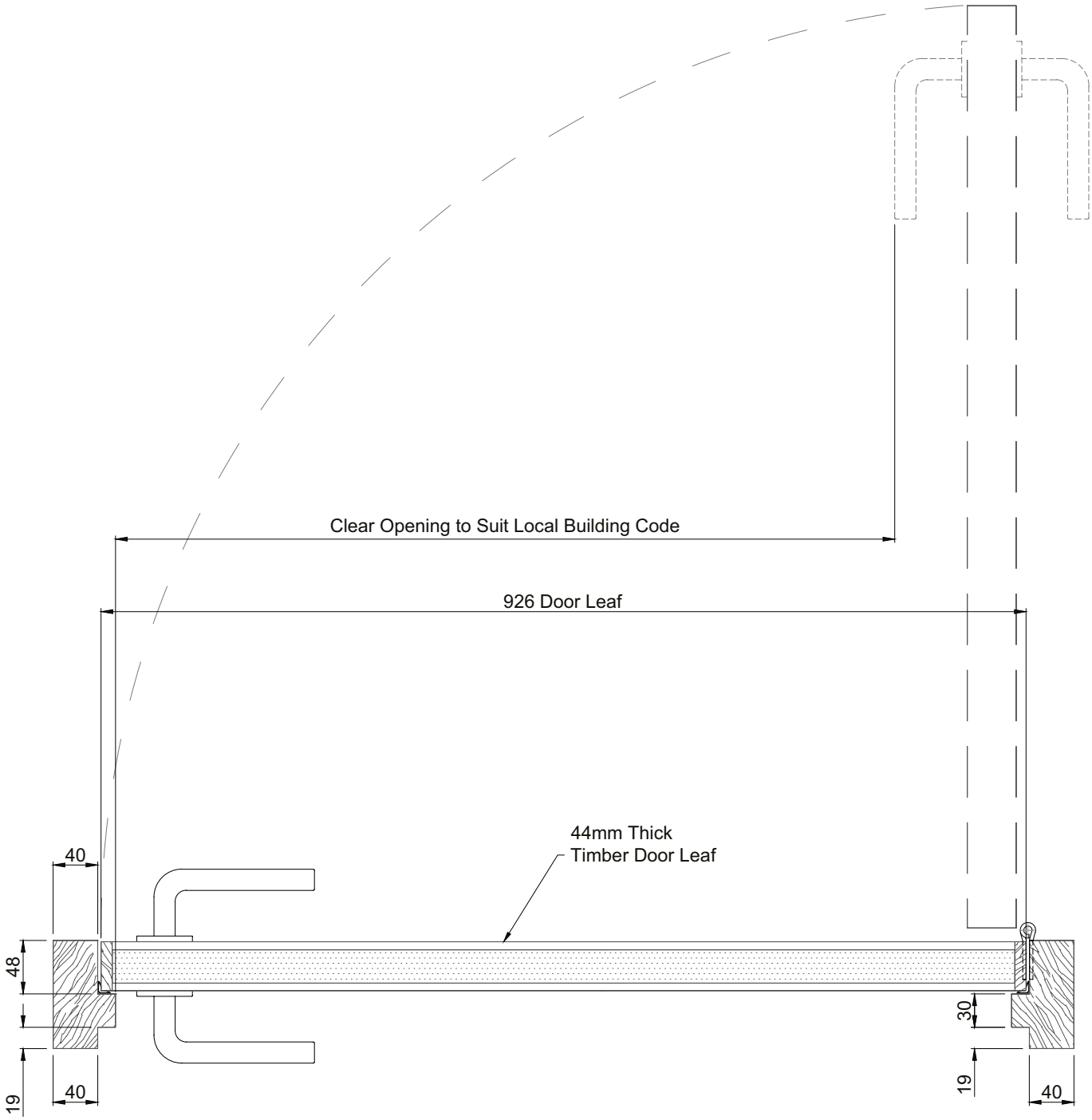


Elevation showing typical hinged timber door in timber frame clear opening to suit local building code

910018a-02

Door Sets

Door Sets: Horizontal Section

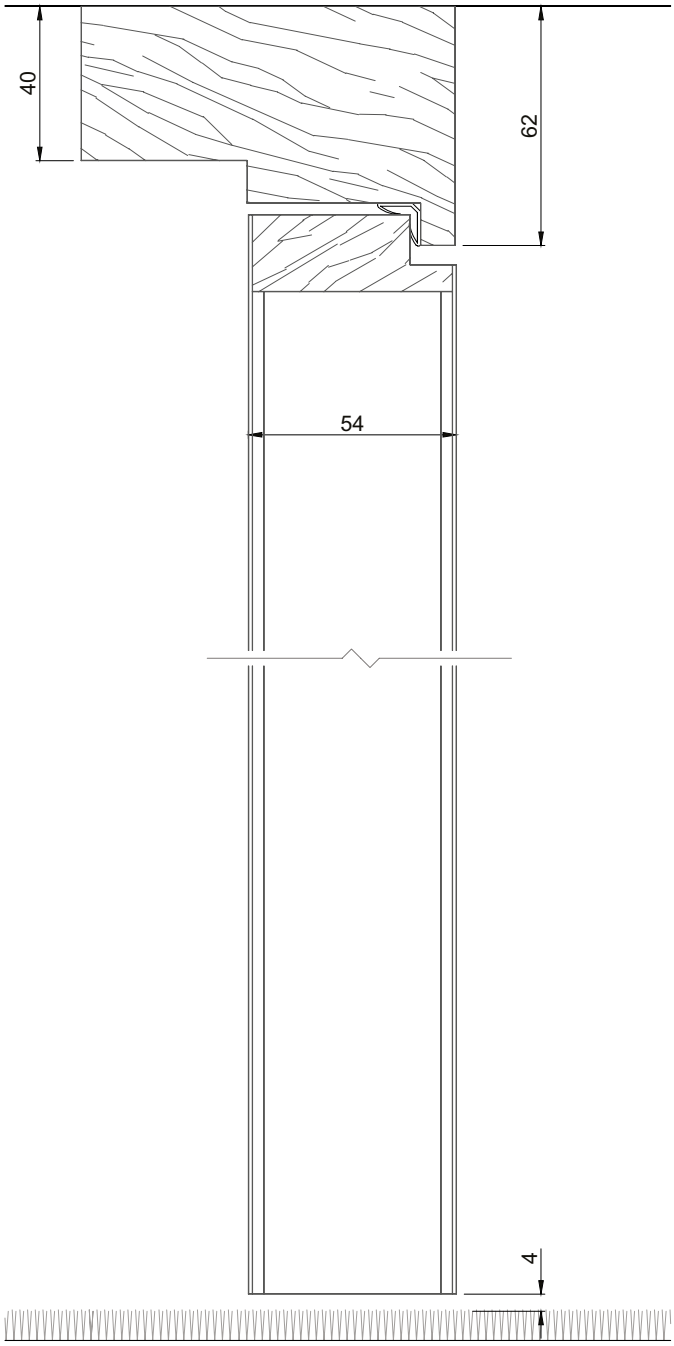


Typical section – hinged timber door in timber frame
Frame profile indicative

910019a-01

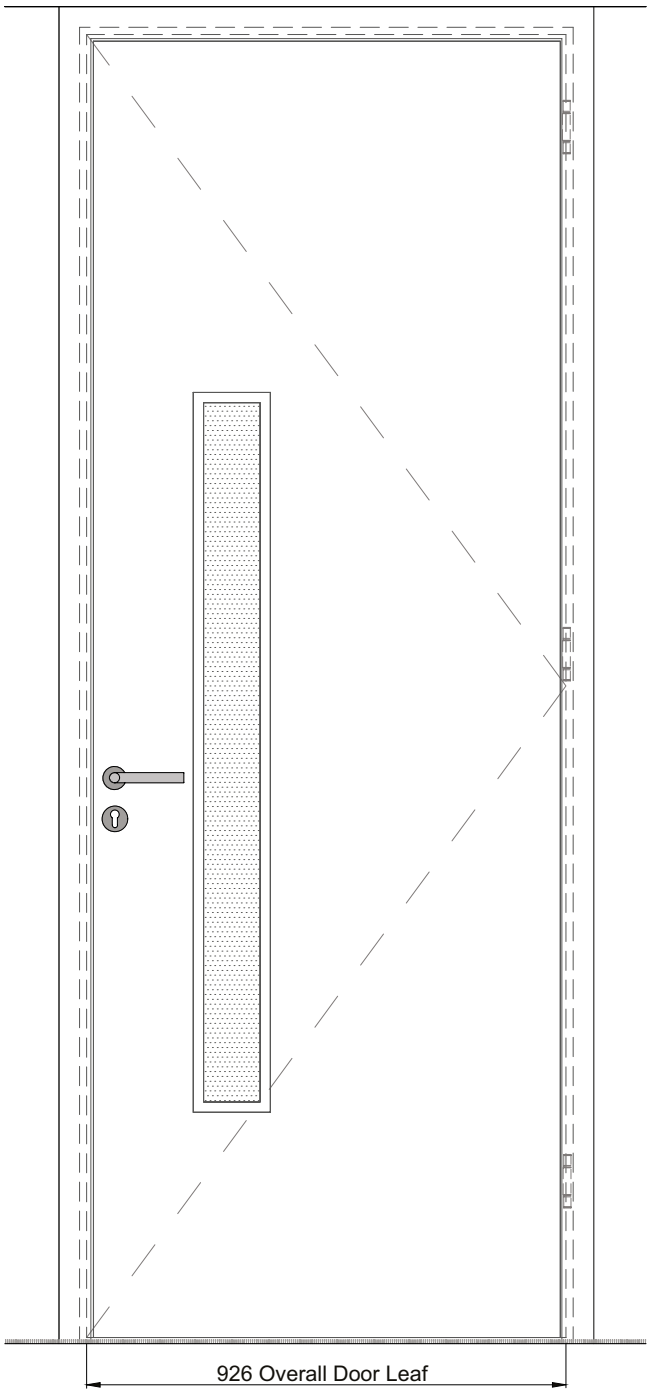
Door Sets

Door Sets: Vertical Section/Elevation



Section through typical 54mm rebated timber door in timber frame. Frame profile indicative

910020a-01

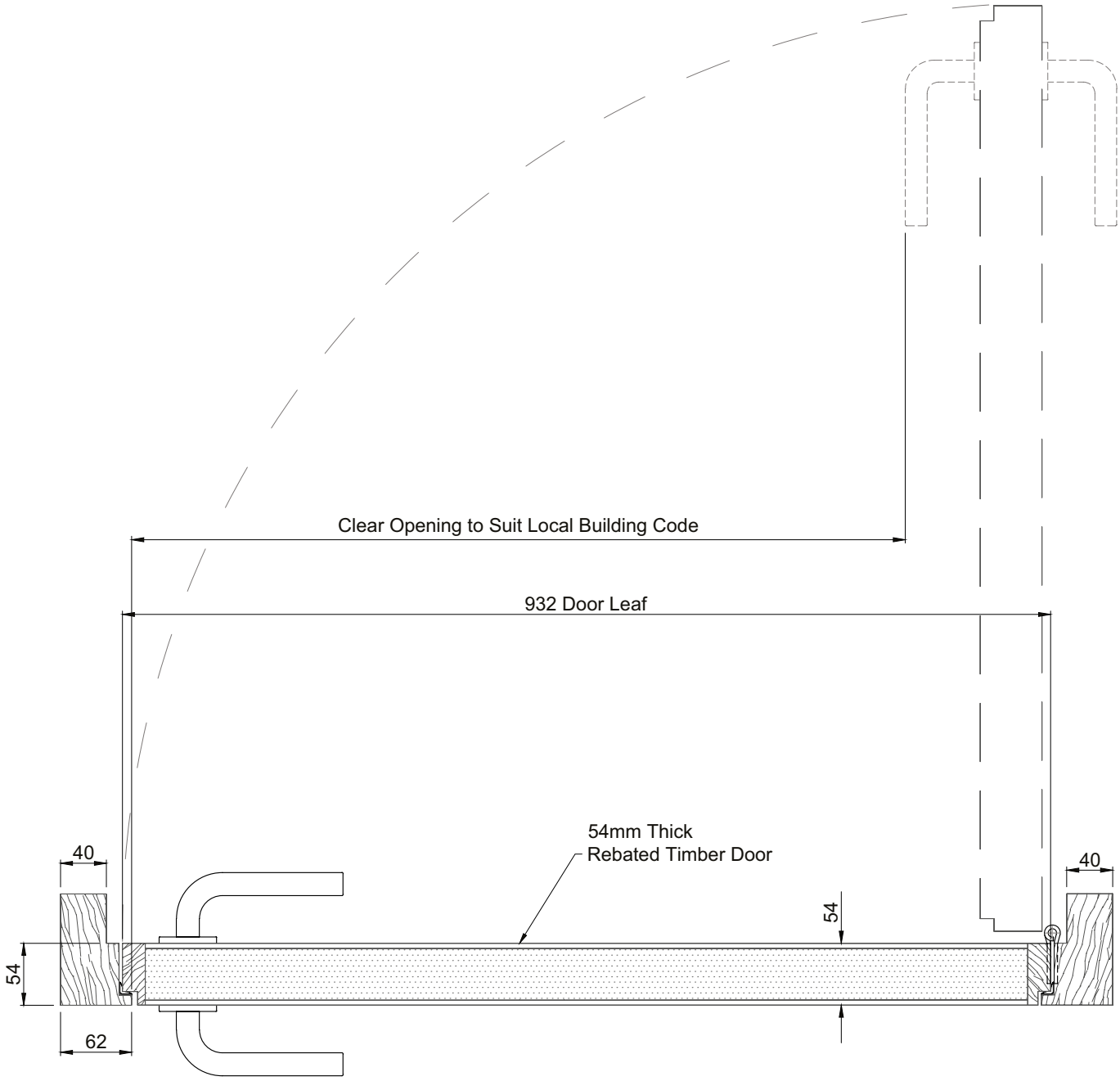


Elevation showing typical 54mm rebated timber door in timber frame clear opening to suit local building code

910020a-02

Door Sets

Door Sets: Horizontal Section



Typical section – 54mm rebated timber door in timber frame
Frame profile indicative

910021a-01

Specification

Size Limitations

The maximum and minimum possible sizes for door sets are limited by a number of factors:

- Compliance with The Building Regulations – Approved Document M (and BS8300:2009) in respect of:
  - Minimum clear opening width
  - Maximum operating forces
- Maximum production height of partition system or door frame

Compliance with the Building Regulations – Approved Document M (and BS8300:2009)

Minimum Clear Opening Width

Door sets are supplied as standard with a view to compliance with Table 2 in Approved Document M (reproduced in full) thus:

Table 2: Minimum Effective Clear Widths of Doors

Direction and width of approach	New Buildings (mm)	Existing Buildings (mm)
Straight-on (without a turn or oblique approach)	800	750
At right angles to an access route at least 1500mm wide	800	750
At right angles to an access route at least 1200mm wide	825	775
External doors to buildings used by the general public	1000	775

Note:
The effective clear width is the width of the opening measured at right angles to the wall in which the door is situated from the outside of the door stop on the door closing side to any obstruction on the hinge side, whether this be projecting door opening furniture, a weather board, the door or the door stop (see Diagram 9). For specific guidance of the effective clear widths of doors in sports accommodation, refer to 'Access for Disabled People'.

Maximum Operating Forces

Approved Document M, in a clarification following amendment 1:2005 to BS8300:2001, states:

"For disabled people to have independent access through single or double swing doors, the opening force, when measured at the leading edge of the door, should be not more than 30 N from 0° (the door in the closed position) to 30° open, and not more than 22.5 N from 30° to 60° of the opening cycle."

Door sets are supplied as standard with a view to compliance with these criteria. However, it should be noted that the above statement makes reference to swing doors, whether hinged or pivoting. No specific reference is made in the text of Approved Document M to manually operated sliding doors. Responsibility for implementation of Approved Document M rests with the local Building Control officers and therefore compliance of sliding doors should be seen as subjective.

Maximum Production Height of Partition System or Door Frame

The maximum height of door sets is governed by several factors: extrusion length of aluminium components (door frames, partition system); operating capacity of ironmongery (floor springs, hinges etc.); operating forces (see above).

Typically door sets are supplied with a maximum height of 3000mm. However, this should not be taken to imply that every door can be this tall as other restrictions may also be in effect. Consult the Optima Technical team for specific advice on door sizes.

Specification

Glass Selection

It is important to select glass appropriate to the situation into which it is being installed. All glass used in Optima glazed systems is class A safety glass as defined in BS6206. However, there are a number of glass types that fall into this category, some more appropriate than others for use in door systems and these are explained below.

Toughened Glass

Standard: BS EN 12150

This is annealed glass that has been thermally treated to give it much greater impact resistance, typically seven times greater. Toughened glass satisfies BS6206 in that it breaks safely, shattering into equally sized 'dice'. Toughened glass is the only glass recommended for use where drilling or clamping is required, for example, when used for accommodating door furniture.

It is important to note that the toughening process stimulates Nickel Sulphide (NiS), known as 'inclusions' and which occurs naturally in float glass. The presence of these inclusions can, over time, although very rare, induce a spontaneous fracture of a toughened glass panel. While all glass processors take all practicable steps to supply inclusion-free glass, it is not possible to guarantee their absence.

In order to ensure complete customer confidence in the safety of a glass, Optima recommends the use of Heat Soaked Toughened Glass for doors.
See below for more details.

Heat Soaked Toughened Glass

Standard: BS EN 14179

To significantly reduce the risk of NiS induced spontaneous failure, toughened glass panels can be subjected to an additional process known as Heat Soak Testing. Although not providing a 100% guarantee, this process is used to reveal the presence of NiS inclusions. It is a destructive test, designed to break any panel that is at risk.

Toughened Laminate Glass

Standards: BS EN 12150 (Toughened) and BS EN 12543 (Laminate)

This type of glass combines the benefits of both toughened and laminate glass and would typically involve a 1.5mm PVB interlayer. Because it has the additional benefit of lamination, the glass would not normally require the additional process of heat soaking.

The Optima Technical Sales Team will be happy to assist in the specification of the appropriate glass for your particular project requirements.

Specification

Acoustic Performance

All Optima systems are subjected to sound insulation tests in accordance with EN ISO 717-1:1997 at UKAS accredited laboratories. These are optimised tests of the system only and not aggregate values for door and screen. The result is expressed as an Rw value.

Optima door sets have received UKAS accredited acoustic values as follows (stand-alone door and frame unless noted):

Rw31dB	Test Ref: 745-764	44mm Timber door with chipboard core in Microflush aluminium door frame
Rw33dB	Test Ref: 1088-910	54mm rebated Timber door with chipboard core in Microflush aluminium frame
Rw39dB	Test Ref: F15443/02/P010	ASIA Affinity door single glazed with 12.8mm acoustic laminate glass in Microflush aluminium frame
Rw41dB	Test Ref: F15443/02/P006	ASIA Affinity door double glazed with 8.8mm acoustic laminate glass and 6mm toughened glass in Microflush aluminium frame
All test data subject to installation with the correct configuration and door edge seals. Full details are available on request.		

It should be noted that in an on-site acoustic test, a partition or door set may demonstrate an apparent 3dB to 8dB lesser performance than under laboratory conditions, depending on the partition type and surrounding structure. This can be further affected by ambient noise levels on the receiving side of the test sample and by poorly insulated abutments offering a 'flanking' path for audible sound.

For further information on potential aggregate values for screens with doors, or values for alternative glass types and double leaf doors, consult the Optima Technical Sales Team.

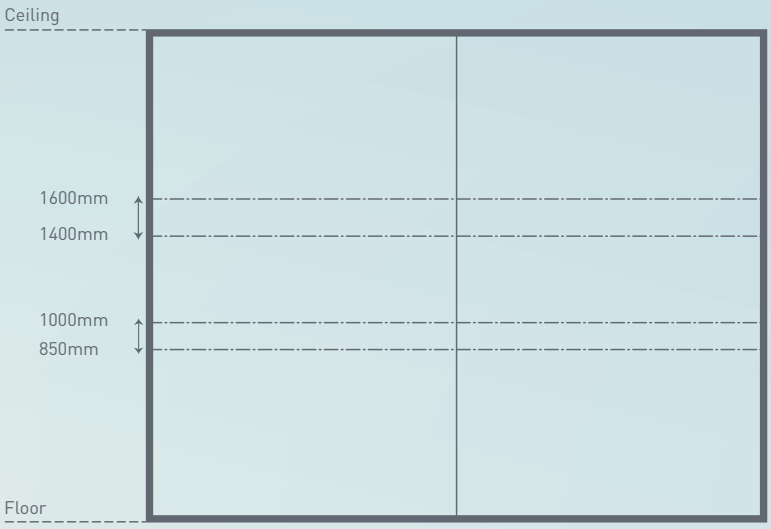
Specification

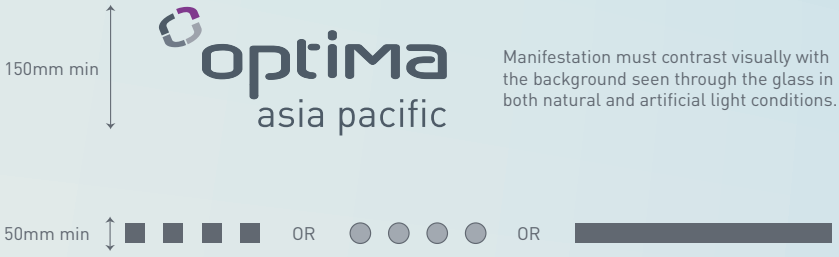
Building Regulations Approved Document K (2013)

Visibility Requirements for Glass Entrance Doors

Approved Document K and BS8300:2009 both make similar recommendations for the visibility of glass doors. These are summarised below.

- The location of glass entrance doors should be easily distinguished, especially when they are within a glazed screen and when the door is both open and shut.
- Manifestation should be clearly contrasting with the background in all weather/lighting conditions.
- Manifestation should be located between 850mm–1000mm and 1400mm–1600mm i.e. in 150mm high bands which could be a solid band, a decorative feature or split bands of 50mm each.
- High contrast strips at the top and on both sides of a glazed door in a glazed screen should be provided.
- If glass doors can remain in the open position, the leading edge should be clearly distinguished and protected by guarding (entrance doors only) to prevent it becoming a collision hazard.





Specification

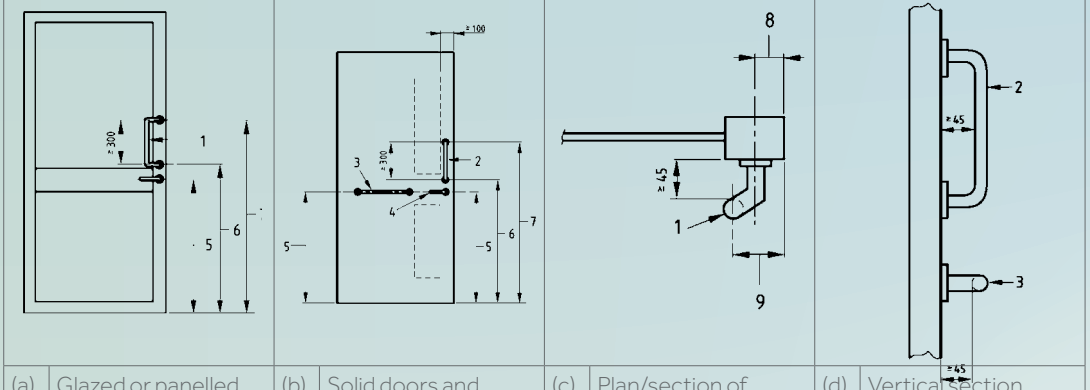
Location and Size of Door Opening and Closing Furniture

BS8300:2009 states that:

"The location and design of lever furniture and pull handles should be in accordance with figure 14 and figure 15 and preferably, consistent throughout a property."

Unless requested otherwise, door furniture will be provided with a view to compliance with these requirements and they are reproduced here:

Figure 14: Location of door opening and closing furniture (mm)



(a)	Glazed or panelled doors with narrow stiles less than 100mm wide	(b)	Solid doors and doors with vision panels having side margins of 100mm or more	(c)	Plan/section of cranked pull handle on a narrow stile	(d)	Vertical section showing a pull handle and horizontal pull rail

Key

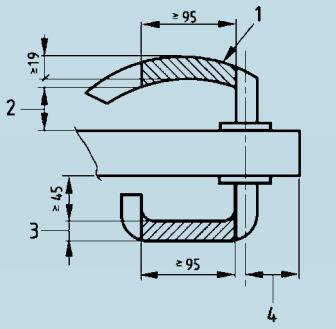
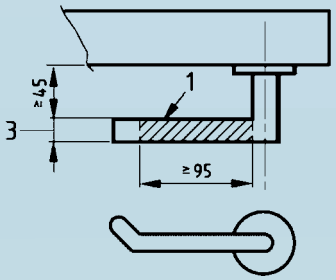
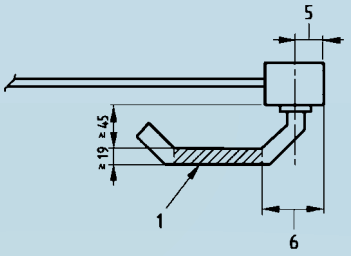
1. Cranked pull handle, 19mm to 35mm diameter
2. Vertical pull handle, 19mm to 35mm diameter
3. Horizontal pull rail to help people close the door behind them.
4. Lever handle
5. 800mm to 1050mm (900mm preferred)
6. Bottom end of pull handle no lower than 700mm and no higher than 1000mm above the floor
7. Top end of pull handle no lower than 1300mm above the floor
8. Fixing centres close to door edge
9. Doors with narrow stiles require cranked pull handles with an offset of not less than 50mm from the door edge

Note 1: The lever handles and pull handles shown on this drawing will not necessarily be used on the same face of a door.

Note 2: Although the conventional 'D' pull handle is shown in the figure, other patterns of pull handle are acceptable, provided they conform to the dimensional criteria.

Specification

Figure 15: Examples of lever furniture showing key dimensions (mm)

		
Lever handles returned towards the door for solid doors and those with side margins of 100mm or wider	Cranked lever handle for solid doors with side margins of 100mm or wider	Lever handle designed for use with a door having a narrow stile less than 100mm wide

Key

1. Hand grip zone (shaded) of at least 95mm (applies to all types of lever handle)
2. Hand grip zone at least 45mm from face of door
3. Lever diameter at least 19mm
4. Lock/latch back set at least 54mm from door edge
5. Reduced lock/latch back set to suit narrow stile
6. Start of hand grip zone at least 63.5mm set back from door edge

Note: Lever designs are indicative only.

CDM Regulations

In the absence of any specific legislation, Optima recommends that designers adopt the following industry-typical design considerations:

Panel Size

- Can the door be transported to site, loaded out to the workface and installed?
- Is there a suitable access route, particularly if the workface is not located on the ground floor?
- Is it still possible to replace the door after the building is in service?

Breakage

- What would be the consequence of a door failure?
- Should a fail safe condition be built into the design?
- Is there risk to building occupants as a result of the breakage?
- Can the door be replaced safely?

Panel Weight

- Can the door be installed manually? Optima generally considers that one man should not be expected to lift more than 25kg for a prolonged duration. However, every lift would have to be properly assessed for risk according to the prevailing circumstances.
- If mechanical means to install would be necessary, can this be achieved if the door needs to be replaced during the lifespan of the building?

Maintenance

- Can the installation be maintained safely and without undue risk?

Every project will throw up its own unique challenges. The Optima Technical Team should be consulted at the earliest opportunity, if there is any doubt that a scheme can be built and maintained safely.

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Doors

Designer's Guide

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