

# Certificate of Test

This is to certify that the construction outlined in the specification below has been tested in accordance with the methods specified in the following standard:

BS 476: Part 8: 1972

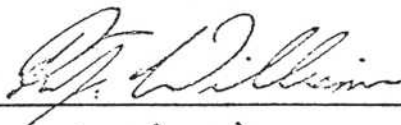
This construction has satisfied the following criteria for fire resistance for the periods stated:

- i      **Stability** \_\_\_\_\_ <sup>55</sup> **minutes**
- ii     **Integrity** \_\_\_\_\_ <sup>48</sup> **minutes**
- iii    **Insulation** \_\_\_\_\_ <sup>48</sup> **minutes**

## Brief Specification

The full specification and test details are as documented in report FR \_\_\_\_\_<sup>833 B</sup>

At the request of Sealmaster Ltd., a test was performed on a single leaf, single action doorset of leaf size 2040 mm high by 826 mm wide by 45 mm thick. Full details of the door, manufactured by Crosby Doors Ltd., are contained in report FR 621 A. The door was hung in a softwood frame with an 18 mm planted stop on 1.5 pairs of 100 mm steel butt hinges. A mortice latch with aluminium handles was fitted. The head and stiles of the leaf were centrally fitted with a Sealmaster N50 intumescent seal with smoke blade interrupted at ironmongery positions. 4 No. Sealmaster intumescent plugs were fitted to each hinge blade.



\_\_\_\_\_  
Officer responsible for test



\_\_\_\_\_  
Deputy Director (Research)

5rd August 1984.

\_\_\_\_\_  
Date of test



HUGHENDEN VALLEY, HIGH WYCOMBE, BUCKS.

TEST NO: FR 833 B  
PROJECT NO: 254 - 332 - 0  
DATE OF TEST: 3rd August 1984  
SPONSOR: Sealmaster Ltd.  
TESTING AUTHORITY: TRADA

#### FOREWORD

This test was performed at the request of the sponsor to determine the fire resistance performance of a latched, single acting, single leaf doorset when tested in accordance with the conditions specified in BS476: Part 8: 1972. The doorset was mounted in a plasterboard clad, timber stud partition forming one side of the test furnace. It was hung to open towards the furnace as this was considered the more severe exposure.

#### CONSTRUCTION

The doorset was supplied for test by the sponsor. It consisted of a flaxboard cored doorleaf, fitted with an intumescent seal incorporating a smoke seal, and hung in a softwood frame.

The door leaf was of overall size 2040mm high by 826mm wide and 45mm thick and was manufactured by Crosby Doors Ltd. Similarly constructed doors had previously been tested to BS476: Part 8: 1972 under TRADA reference FR621A and had achieved a 30/30 performance.

The door leaf was hung in an 89mm by 44mm softwood frame with an 18mm deep planted doorstop, on 1.5 pairs Crompton 100mm deep steel butt hinges. A Legge latch with aluminium lever handles was fitted. The head and stiles of the leaf were centrally grooved to accept a Sealmaster N30 intumescent seal (BP mix) with smoke blade, which was interrupted at ironmongery positions. The hinges were additionally protected by the inclusion of 4No. Sealmaster intumescent plugs in each hinge blade.

A non-combustible threshold completed the construction, details of which are shown in Figure No.833B-1, 2 and 3.

#### TEST PROCEDURE

Before the test the satisfactory operation of the door was checked and the gaps between the door and frame recorded. The moisture content of the door and frame was measured with a Protimeter. That of the door was found to be 12% and that of the frame was 13%.

Thermocouples were fitted in accordance with BS476: Part 8: 1972. Six suitably distributed thermocouples monitored the furnace temperature and five disc type surface thermocouples were fixed to the unexposed face of the door to monitor the insulation performance. The door gaps and thermocouple positions are shown in Figure No.833B-4.

The furnace was operated to follow as closely as possible the time/temperature relationship specified in BS476: Part 8: 1972 and the temperatures recorded are shown graphically in Figure No.833B-5.

The furnace pressure was measured 200mm from the top of the furnace and was controlled after the first five minutes to provide a positive pressure of approximately 1.5mm watergauge for the duration of the test. This represents a pressure of approximately 1.0mm watergauge at the head of the door.

At the conclusion of the test the furnace was shut down and the specimen hosed with water.

Observations were made during the test and these are recorded below.

#### OBSERVATIONS

Time (minutes)	Comment	Pressure (mm watergauge)
00.0	Test started.	
04.0	Slight smoke leakage from top hanging corner.	
05.0	Thud from leaf. Smoke leakage from around top third of leaf.	
09.0	Smoke leaking from top hanging corner.	
10.0		1.5
13.0	Smoke continuing to leak from top hanging corner.	
21.0	Top closing corner of leaf moved 4.5mm in towards furnace.	1.5

28.0	Top closing corner of leaf moved 6.5mm in towards furnace.	1.5
39.0	Crackling sound from leaf.	1.5
41.0	Scorching of top hanging corner of leaf.	
42.0	Glow visible at top closing corner.	
43.0	Cotton pad integrity test performed at top closing corner - no failure.	
44.0	Scorching visible at top hanging corner.	
46.0	Cotton pad integrity test performed at top closing corner - no failure. Glow visible at bottom of closing edge.	
47.0	Intermittent flaming from bottom of closing edge.	
48.0	Cotton pad integrity test performed at top closing corner - flaming constituting integrity failure. Complete leaf head flaming.	1.5
50.0	Scorch mark visible half way down hanging edge.	
51.0	Scorch mark visible half way down centre of leaf.	
52.0	Pieces of leaf head falling away.	
53.0	Burnthrough at centre of bottom lipping.	
55.0	Leaf blanked off.	
66.0	Test terminated.	

#### ANALYSIS

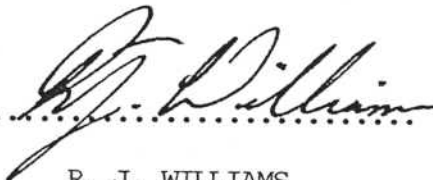
The doorset failed integrity at 48 minutes when hot gases from the top closing corner ignited a cotton pad. Insulation failure was deemed to have occurred simultaneously. The doorset remained in position and satisfied the stability criterion for the 55 minutes duration of test.

Analysis of the remains was not possible since the method of terminating the test was to blank the door off to permit another test to continue. The doorset was therefore destroyed. It is apparent, however, that the seals enabled the full potential of the doorset to be realised since shortly after the edge failure the door itself had almost burned through.

CONCLUSION

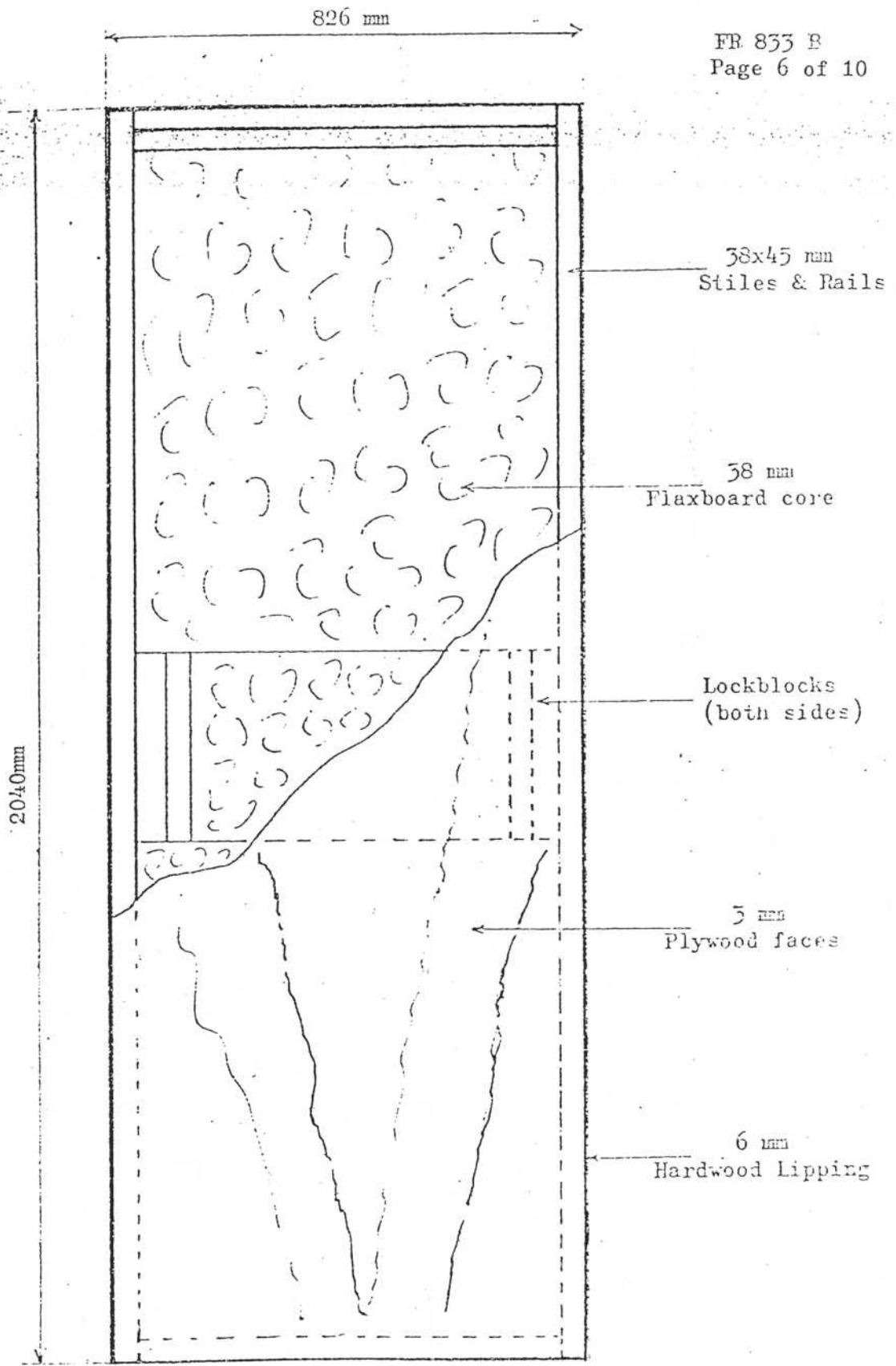
When tested in accordance with the provisions of BS476: Part 8: 1972, the single acting, latched, single leaf doorset described in the construction section of this report achieved the following fire resistance performance ratings:

Stability:	55 minutes
Integrity:	48 minutes
Insulation:	48 minutes



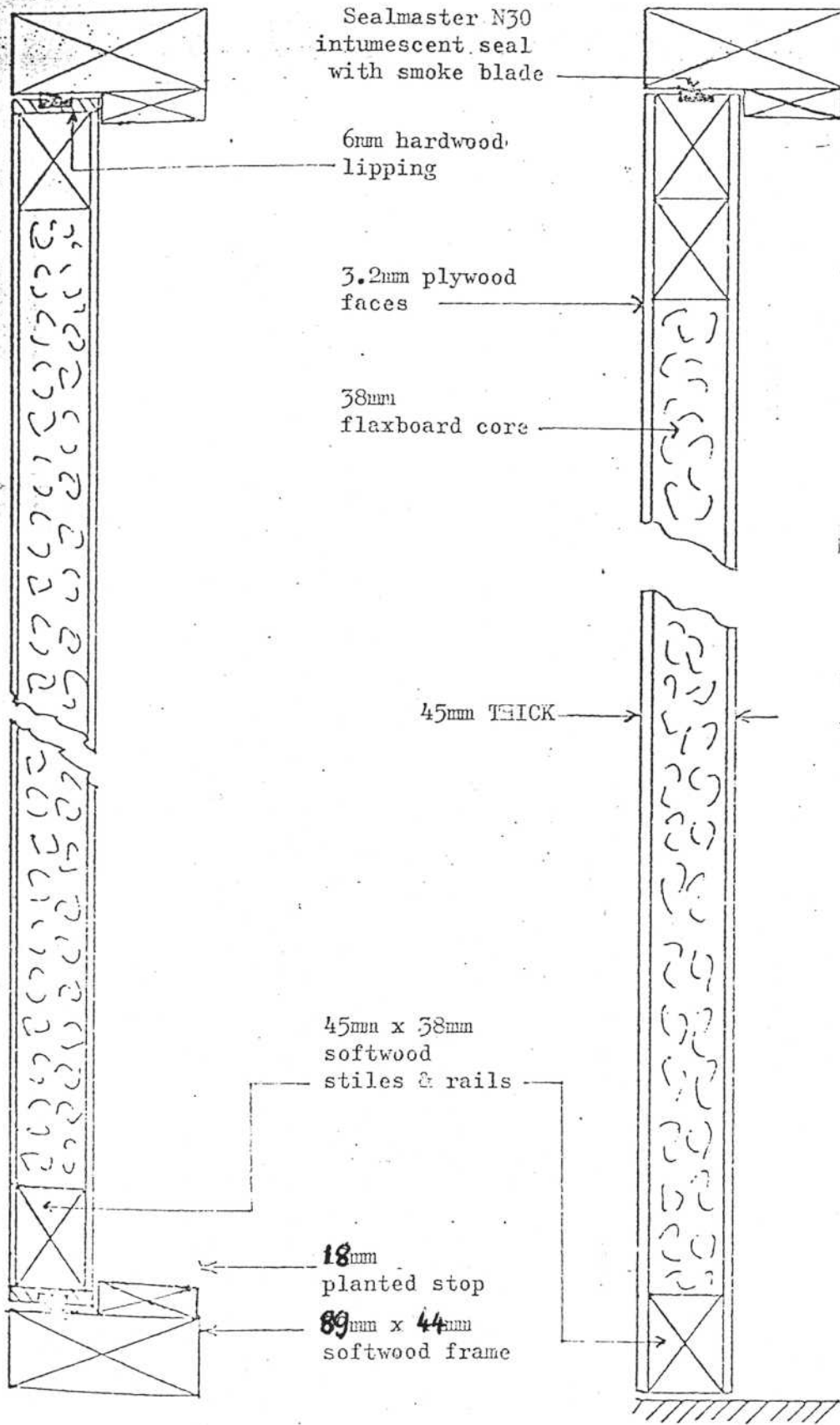
R. J. WILLIAMS  
Officer responsible for test

RJW/LAS/260984



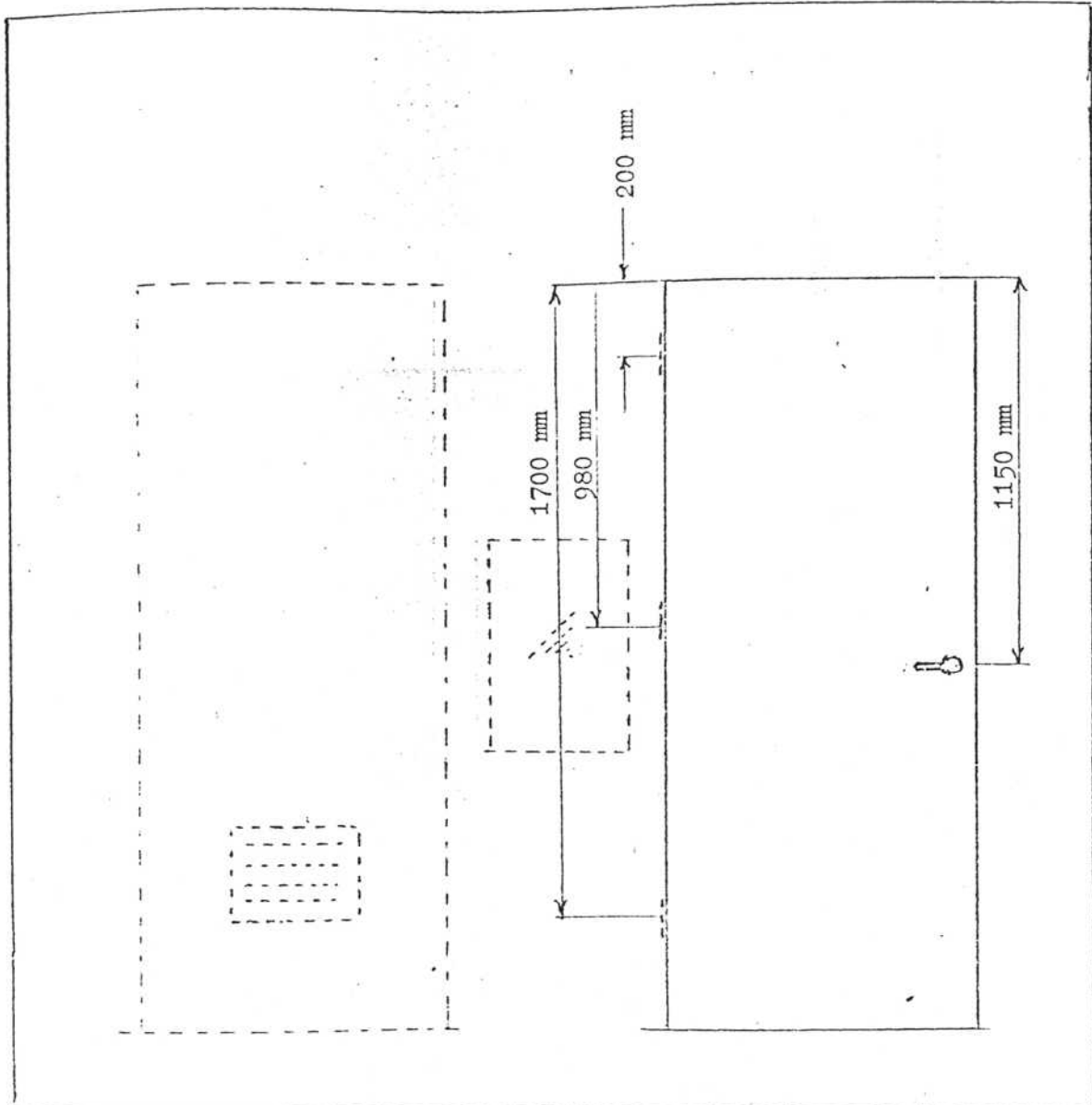
Elevation of Door.

FIGURE : 855B - 1.



Horizontal Section.

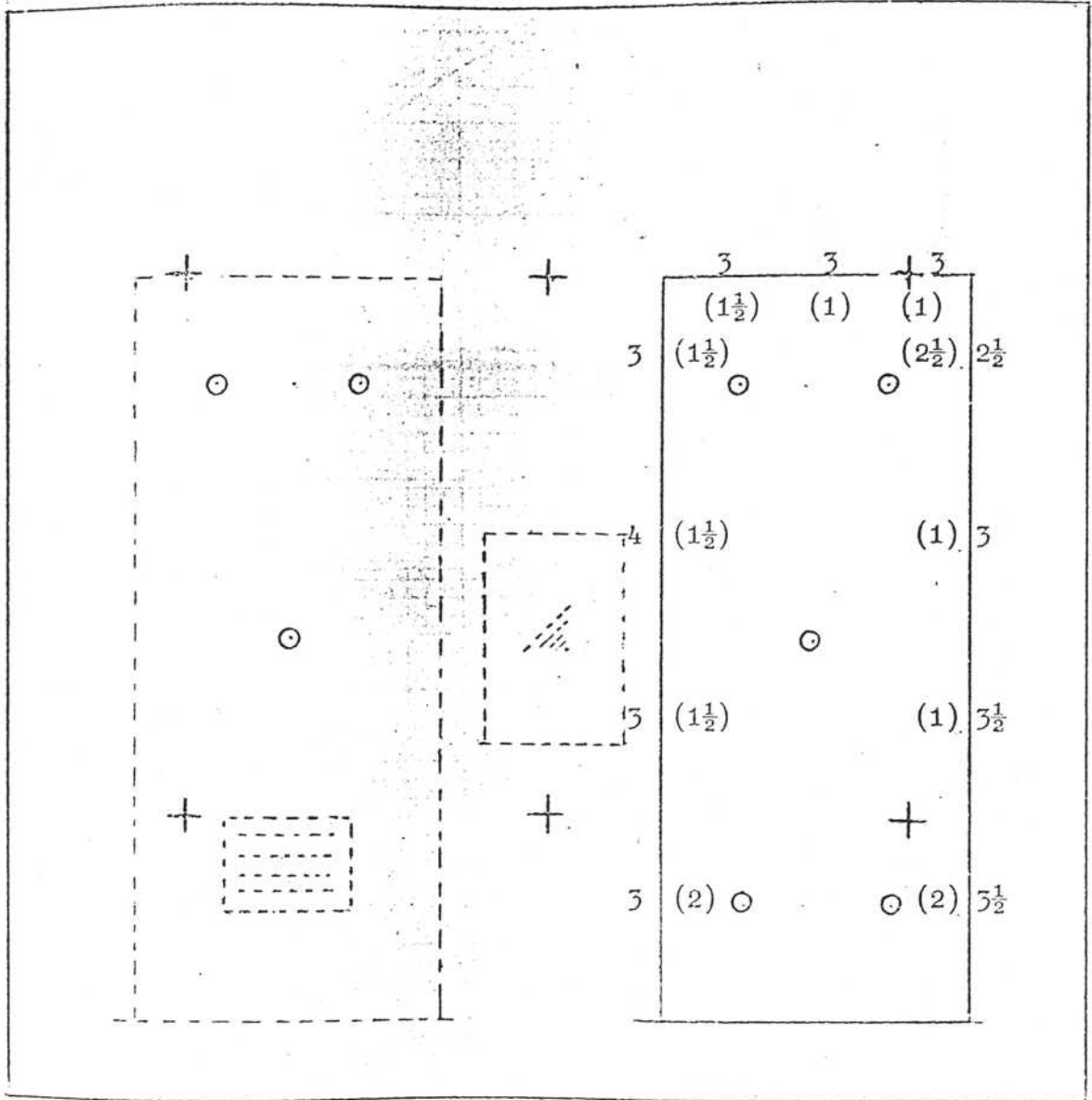
Vertical Section.



- Hihges : Crompton, 100mm steel butt.
- Latch : Legge mortice.
- Handles : Aluminium lever.

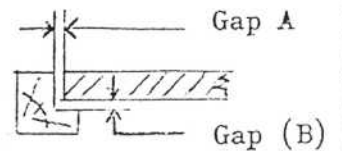
POSITION OF IRONMONGERY.





+ : Furnace Thermocouples.

O : Unexposed surface Thermocouples.



POSITION OF THERMOCOUPLES  
and  
DOOR GAPS ( in mm ).

re

