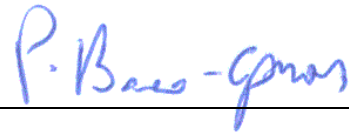


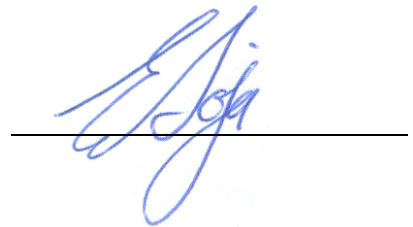
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ASSESSMENT REPORT ON ZEGO[®] FIRE FORM[™] INSULATED CONCRETE FORMWORK (ICF'S)

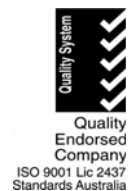
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ASSESSMENT REPORT ON ZEGO® FIRE FORM™ INSULATED CONCRETE FORMWORK (ICF'S)

1. CLIENT

ZEGO Pty Ltd
GPO Box 4774
Sydney 2001
Australia

2. INTRODUCTION

This report gives BRANZ's assessment of the fire resistance of ZEGO's Fire Form™ Insulated Concrete Forms (ICFs) in accordance with AS1530.4-1997 and compliance with AS 3600-2001.

The wall system consists of insulated formwork manufactured from expanded polystyrene with plastic webs. The core is then filled with concrete complying with AS 3600-2001.

3. BACKGROUND

If a concrete wall is built to comply with AS 3600-2001 from, for example, a minimum of 120 mm thick concrete it is deemed to be able to achieve an Insulation rating of 120 minutes if tested in a fire resistance test (Section 5.7.2). If the wall is built to comply with the requirements of section 5.7.4 "Structural Adequacy for walls" it is deemed to achieve Structural Adequacy for 120 minutes. If the wall complies with AS 3600-2001, section 5.7.2 and 5.7.4 it is deemed the wall will maintain the Integrity criteria of the test standard for 120 minutes.

4. DISCUSSION

4.1 General

It is proposed that a ZEGO ICFs wall will comply with AS 3600-2001 except that the ZEGO insulated formwork with plastic webs are used. The ICFs consist of expanded polystyrene panels nominally 60 mm wide with a plastic web slotted into each panel forming a cavity which is then filled with concrete. Other insulating panels available are 52 mm, 64 mm, and 100 mm thick along with fully strippable and reusable panels. The profile of the concrete – ICFs interface consists of 8 mm deep ribbing on 50 % of each side. other

The plastic webs are nominally 19 mm high x 4.5 mm wide and spaced at 192 mm horizontal centres and between 107 and 193 mm vertical centres.

4.2 Fire Resistance

In accordance with AS 1530.4 the failure criteria is as follows:

Structural adequacy – when the specimen fails to maintain the applied load.

Integrity – When the specimen fails structural adequacy. When flaming to the unexposed face occurs, for longer than 10 seconds, when hot gases can pass through the specimen to the unexposed face.

PBC

PBC

ES

ES

Insulation – When the average temperature on the unexposed face rises by more than 140 K or when the maximum temperature is in excess 180 K.

4.3 Structural Adequacy

The cavity of the ICFs over the range of thicknesses represents a larger cross sectional area excluding the area of the plastic webs, than the minimum defined in AS 3600-2001 Table 5.7.2. Therefore it is considered on the condition that the concrete meets the requirements of section 5.7.4 of AS 3600-2001 the ICFs walls would meet the fire resistance rating for structural adequacy listed in table 5.7.2.

4.4 Integrity

In accordance with section 5.7.3, and previous test experience on concrete wall systems, it is considered that insulation failure usually occurs before integrity failure. Therefore it is considered the ICFs system will maintain the integrity criteria of the test standard for at least the insulation ratings of the wall systems.

4.5 Insulation

If the wall complies with section 5.7.2 then it is considered it would not exceed the insulation criteria of the test standard before that listed in Table 5.7.2 from AS 3600-2001 which is reproduced as follows:

ZEGO ICFs structural cavity concrete thickness	AS3600-2001	
	Effective thickness	Fire resistance rating
104 mm	100	90 minutes
120 mm	120	120 minutes
150 mm	150	180 minutes
184 mm	170	240 minutes

5. CONCLUSION

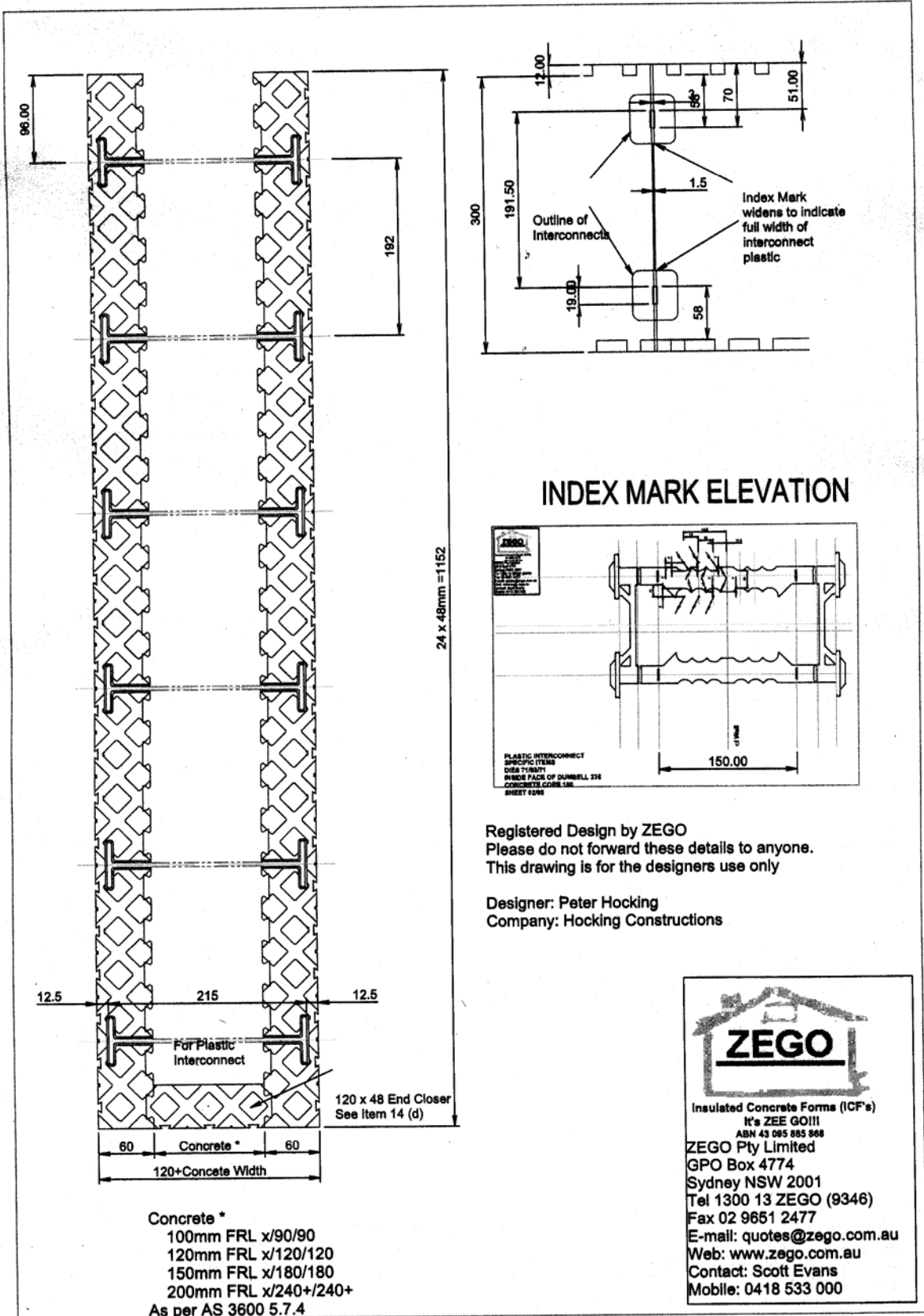
It is considered that a concrete wall manufactured using the ZEGO® Fire Form™ ICFs system would provide at least the fire resistance in accordance with AS 1530.4-1997 as given in AS 3600-2001 for the appropriate concrete core thickness as shown in the following table.

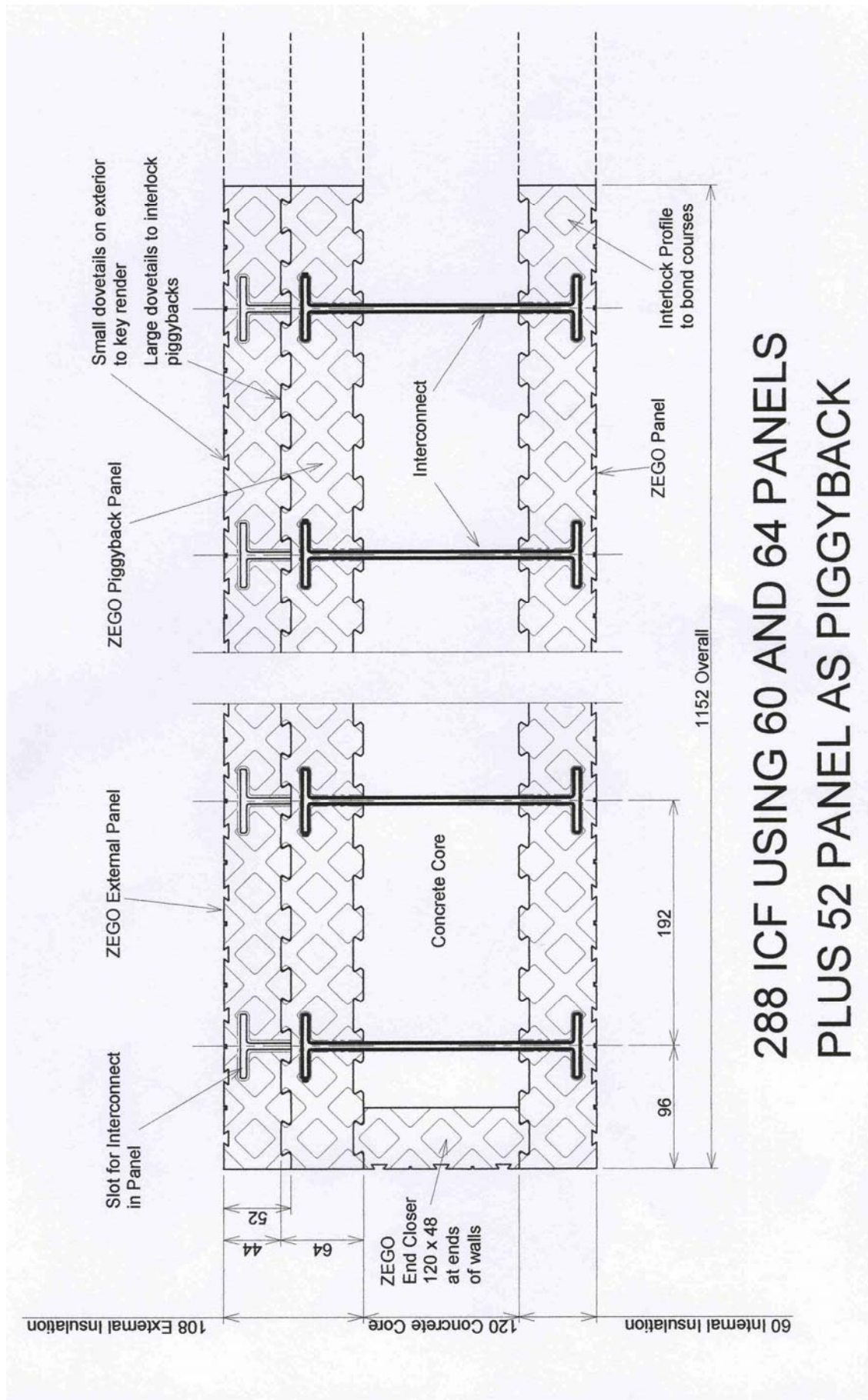
ICFs Cavity thickness	AS3600-2001 Fire resistance rating
104 mm	90 minutes
120 mm	120 minutes
150 mm	180 minutes
184 mm	240 minutes

6. LIMITATIONS

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The wall will be designed in accordance with AS 3600-2001.





288 ICF USING 60 AND 64 PANELS PLUS 52 PANEL AS PIGGYBACK

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