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Studworks Boral Wall Profile

PRODUCT PERFORMANCE SOLUTION

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- NCC Vol 1 BCA 2016 Amendment 1
- NCC Vol 1 BCA 2019



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1 INTRODUCTION

Ignis Solutions has been engaged to provide a product compliance performance solution of the Studworks lightweight non-loadbearing steel wall frame in accordance with the National Construction Code Volume One Building Code of Australia Amendment 1 2016 as well as Version 2019.

This performance solution satisfies the requirements of the BCA 2016 Amendment 1 Clause A0.3(a)(ii) and BCA 2019 Part A2.2(1)(b) where the performance solution is achieved by the solution is at least equivalent to the deemed to satisfy provisions.

FIGURE 1:

BCA 2016 PERFORMANCE SOLUTION AND ASSESSMENT METHOD

A0.3 Performance Solutions

- (a) A *Performance Solution* must—
- (i) comply with the *Performance Requirements*; or
 - (ii) be at least *equivalent* to the *Deemed-to-Satisfy Provisions*, and be assessed according to one or more of the *Assessment Methods*.

A0.5 Assessment Methods

The following *Assessment Methods*, or any combination of them, can be used to determine that a *Performance Solution* or a *Deemed-to-Satisfy Solution* complies with the *Performance Requirements*, as appropriate:

- (d) Comparison with the *Deemed-to-Satisfy Provisions*.

FIGURE 2:

BCA 2019 PERFORMANCE SOLUTION AND ASSESSMENT METHOD

A2.2 Performance Solution

- (1) A *Performance Solution* is achieved by demonstrating—
- (a) compliance with all relevant *Performance Requirements*; or
 - (b) the solution is at least *equivalent* to the *Deemed-to-Satisfy Provisions*.
- (2) A *Performance Solution* must be shown to comply with the relevant *Performance Requirements* through one or a combination of the following *Assessment Methods*:
- (d) Comparison with the *Deemed-to-Satisfy Provisions*.

The performance based wall system, is compared to a tested wall system with an equivalent stud arrangement. Based on the analysis, the Studworks studs are suitable

The proposed Studworks stud wall system in the above detail is considered to comply with the requirements of the National Construction Code Volume One Building Code of Australia 2016 Amendment 1 as well as National Construction Code Volume One Building Code of Australia 2019.

This performance solution satisfies the requirements of the BCA 2016 Amendment 1 Clause A0.3(a)(ii) and BCA 2019 Part A2.2(1)(b) where the performance solution is achieved by the solution is at least equivalent to the deemed to satisfy provisions.



2 NATIONAL CONSTRUCTION CODE COMPLIANCE

2.1 Introduction

Ignis Solutions has been engaged to evaluate the use of the Studworks lightweight steel wall frame inline with BCA fire safety compliance where the studs are proposed to be used within a non-loadbearing wall systems achieving a Fire Resistance Level.

In accordance with Specification A2.3 and Schedule 5 Clause 2(c) of the BCA, a building element meets the requirements of the BCA if it differs in only a minor degree from a prototype tested under the Standard Fire Test.



The Studworks wall profile studs are available in a stud depth of 51mm, 64mm, 76mm and 92mm. An example of the stud is detailed adjacent to the above paragraph.

It is proposed to evaluate the use of the Studworks wall profile within a Boral tested wall system in its capacity to maintain the required FRL. Within a wall system 'other steel components of equivalent performance may be used, however it is the responsibility of the manufacturer of the steel component to substantiate equivalent performance to the recommended component'.

Compliance of lightweight wall systems used in walls achieving a Fire Resistance Level are to comply with BCA Performance Requirement CP2. Performance Requirements CP2 can be addressed directly through a performance solution This Performance Solutions considers compliance against Performance Requirement CP2 as detailed below.

FIGURE 3:

PERFORMANCE REQUIREMENT CP2 – FIRE SPREAD

CP2 Spread of fire

- (a) A building must have elements which will, to the degree necessary, avoid the spread of fire—
- (i) to exits; and
 - (ii) to sole-occupancy units and public corridors; and

Application:

CP2(a)(ii) only applies to a Class 2 or 3 building or Class 4 part of a building.

- (ii) between buildings; and
 - (iv) in a building.
- (b) Avoidance of the spread of fire referred to in (a) must be appropriate to—
- (i) the function or use of the building; and
 - (ii) the fire load; and
 - (iii) the potential fire intensity; and
 - (iv) the fire hazard; and
 - (v) the number of storeys in the building; and
 - (vi) its proximity to other property; and
 - (vii) any active fire safety systems installed in the building; and
 - (viii) the size of any fire compartment; and
 - (ix) fire brigade intervention; and
 - (x) other elements they support; and
 - (xi) the evacuation time.

Source: ABCB NCC 2016 and 2019

2.2 CP2 Fire Spread

The Studworks wall profile studs have been tested in accordance with AS 1391-2007 by Melbourne Testing Services in their test report MT-17/433 dated 07 June 2017. The test demonstrated a suitable structural ability for the studs to be used within a wall system. The tested wall systems included a 51mm, 64mm, 76mm and 92mm stud width. The Base Material Thickness (BMT) included 0.50mm and the deflection



head is 0.71mm BMT. The BMT and stud thickness does not vary the FRL achieved, this is established by the bounding thickness and layers of the fire rated plasterboard.

The National Construction Code (NCC) establishes the design and installation requirements for buildings within Australia. Class 2 to 9 buildings (being commercial based buildings) are addressed within Volume One.

3 APPLICATION OF RESULTS

For the purpose of compliance with the NCC Volume One, the Studworks wall profile is considered to differ in only a minor degree. The following clauses are considered applicable to the compliance:

Volume One – Building Code of Australia

- **Clause A0.5 (a)** complying with the Deemed-to-Satisfy Provisions
- **Clause A2.2 and A5.2(1)(e)** as evidence to support that the Studworks wall profile studs meet the nominated Performance Requirements through the Deemed-to-Satisfy Solution under an Engineering Evaluation Certificate by a Professional Engineer.
- **Specification A2.3 and Schedule 5 Fire Resistance of Building elements** - The Studworks wall profile studs has been proven to differ in only a minor degree from a prototype tested under the standard fire test and the FRL attributed to the building element is confirmed as follows for the various wall systems.

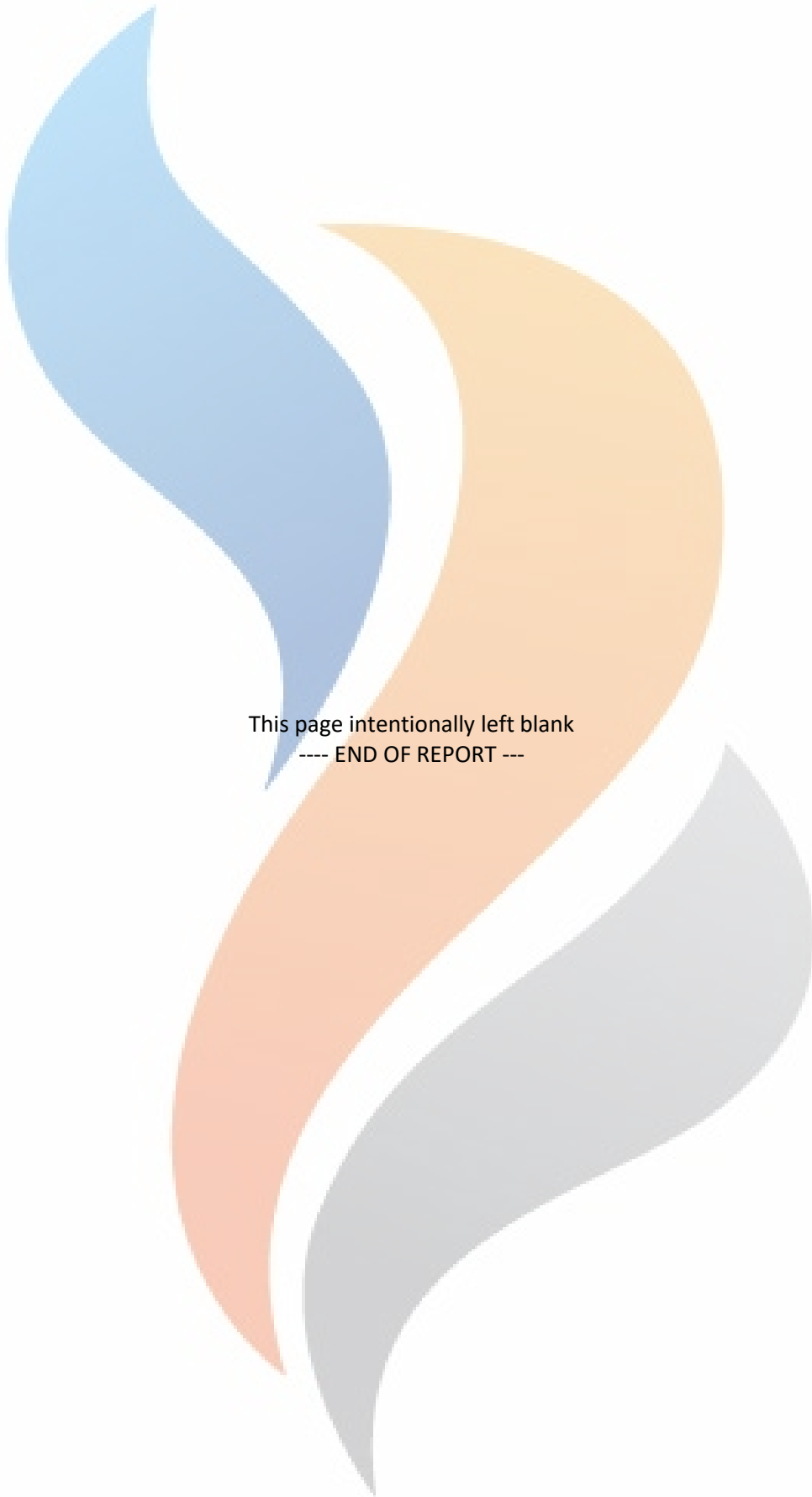
The following single stud frames have been evaluated. Based on the Boral tested wall systems, the thickness of the single studs does not vary the FRL achieved. The following table details the thickness and location of fire rated plasterboard on either side of the studs.

FRL (-/x/x) 10mm both sides	FRL (-/x/x) 13mm both sides	FRL (-/x/x) 16mm both sides	FRL (-/x/x) 2 x 16mm both sides
-/-	-/60/60	-/90/90	-/120/120

4 CONCLUSION

The application of this assessment is considered directly against satisfying the Performance Requirements CP2 and CP8 of the National Construction Code Volume One Building Code of Australia 2016 Amendment 1 as well as the 2019 version.

This report can be directly applied to buildings in accordance with BCA Clause A2.2 of 2016 Amendment 1 or Clause A5.2 of 2019 as a standalone report or as a reference report where the subject building is subject a number of additional performance solutions.



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