Queensland Government

Department of Housing and Public Works

Form 15—Compliance certificate for building design or specification

Version 4 – July 2017

NOTE: This is to be used for the purposes of section 10 of the *Building Act 1975* and/or section 46 of the *Building Regulation 2006.*

RESTRICTION: A building certifier (class B) can only give a compliance certificate about whether building work complies with the BCA or a provision of the Queensland Development Code (QDC). A building certifier (Class B) can not give a certificate regarding QDC boundary clearance and site cover provisions.

1. Property description

This section need only be completed if details of street address and property description are applicable.

E.g. in the case of (standard/generic) pool design/shell manufacture and/or patio and carport systems this section may not be applicable.

The description must identify all land the subject of the application.

The lot and plan details (e.g. SP/RP) are shown on title documents or a rates notice.

If the plan is not registered by title, provide previous lot and plan details.

Street address (include no., street, suburb/locality and postcode)

N/A

N/A **Postcode**

Lot and plan details (attach list if necessary)

N/A

In which local government area is the land situated?

N/A

2. Description of component/s certified

Clearly describe the extent of work covered by this certificate, e.g. all structural aspects of the steel roof beams.

Cavity Slider Jamb – Product no. 35953

Cavity Slider Channel – Product no. 37039

Cavity Slider Double Brace – Product no. 36612

3. Basis of certification

Detail the basis for giving the certificate and the extent to which tests, specifications, rules, standards, codes of practice and other publications, were relied upon.

AS 1170.4:2018 – Part 8: Design of Parts and Components

AS 1170.1:2002 – Part 1: Permanent, imposed and other actions

AS 1170.0:2002 – Part 0: General principles

4. Reference documentation

Clearly identify any relevant documentation, e.g. numbered structural engineering plans.

Letter of Advice (Certificate) Dated 06/07/2020 (JCE-A550)

JCE A550– LETTER OF ADVICE – CERTIFICATION OF CAVITY SLIDER DOOR COMPONENTS

LOCAL GOVERNMENT USE ONLY

Date received		Reference Number/s	

5. Building certifier reference number

Building certifier reference number

6. Competent person details

A competent person for building work, means a person who is assessed by the building certifier for the work as competent to practice in an aspect of the building and specification design, of the building work because of the individual's skill, experience and qualifications in the aspect. The competent person must also be registered or licensed under a law applying in the State to practice the aspect.

If no relevant law requires the individual to be licensed or registered to be able to give the help, the certifier must assess the individual as having appropriate experience, qualifications or skills to be able to give the help.

If the chief executive issues any guidelines for assessing a competent person, the building certifier must use the guidelines when assessing the person.

Name (in full)
Konstantin Popov

Company name (if applicable)
J.C. Engineers Pty. Ltd.

Contact person
Brendan Nielsen

Phone no. (business hours)
(07) 5635 4367

Mobile no.

Fax no.

Email address
Konstantin.Popov@jce.engineering

Postal address
89 Scarborough Street, Office 206
SOUTHPORT QLD **Postcode** 4215

Licence or registration number (if applicable)
RPEQ: 18831

7. Signature of competent person

This certificate must be signed by the individual assessed by the building certifier as competent.

Signature

Date
06/07/2020

The *Building Act 1975* is administered by the Department of Housing and Public Works

J.C. Engineers Pty. Ltd.
ABN 32 616 356 908

06 July 2020
Mr. John Theron
Bris Aluminium
12 Saltash Street
VIRGINIA
QLD 4014
johnt@brisaluminium.com

Re: JCE A550 – LETTER OF ADVICE – CERTIFICATION OF CAVITY SLIDER DOOR COMPONENTS

Dear John,

This letter details advice regarding the proposed aluminium cavity slider components as follows:

a. Cavity Slider Jamb – Product no. 35953
b. Cavity Slider Channel – Product no. 37039
c. Cavity Slider Double Brace – Product no. 36612

The analysis and the Letter of Advice are limited to the seismic forces applied to the proposed cavity door slider system when tile is applied to lining affixed to the cavity slider structures.

The following industry standards have been referenced in this letter:

- AS 1170.0:2002 – Part 0: General principles
- AS 1170.1:2002 – Part 1: Permanent, imposed and other actions
- AS 1170.4:2018 – Part 8: Design of Parts and Components

CAVITY SLIDER OVERVIEW

The intent of the proposed Cavity Slider is to be installed as a doorway to bathroom / toilet, with the door sliding inside the wall. The wall should be constructed around the slider to conceal pocket part of the assembly in the wall. One or two sides of the wall lining secured to slider will be finished with ceramic tile (i.e. bathroom side).
J.C. Engineers was requested to examine the compliance of this assembly to Australian Standards, particularly to AS 1170.4:2018 – Part 8: Design of Parts and Components.
The material is Aluminium Alloy 6060-T5. The door is proposed 35mm timber with the height up to 2.75m and proposed width up to 1.5m.
The cavity slider jambs combined with capping (vertical elements in the middle) and cavity slider carcass bracing SCB-23 (black horizontal elements) constitute the cavity for door.
The capping is produced in different sizes to accommodate different thicknesses of walls, typically to fit standard sizes of the steel studs: 64mm, 76mm and 92mm.

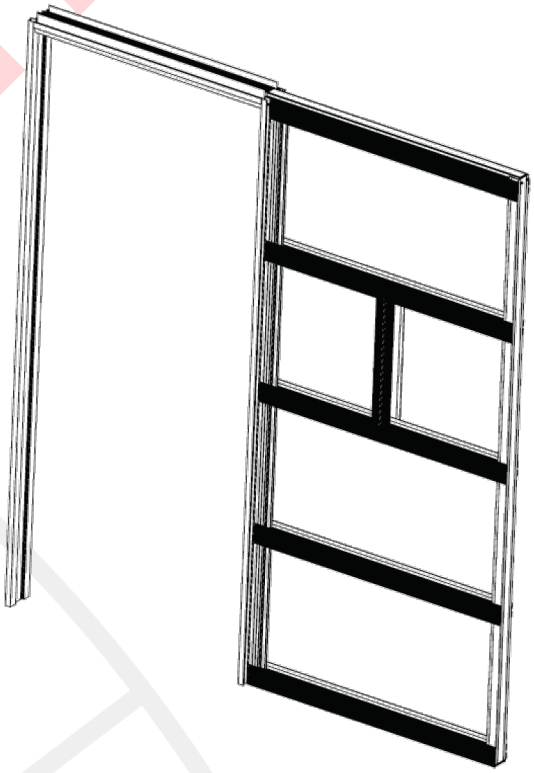


Figure 1 Cavity Slider overview.

The overview of the cavity is in Figure 1.

ANALYSIS

The door slider is installed and secured to the steel stud frame made to fit the cavity slider. The frame is required to be adequately designed to stand dynamic loads including forces resulting from door deceleration when it fully opens or closes. In the seismic event, the door will impose its loads to the header of the opening of the frame, which should also be adequately designed.

Design of the frame is beyond the scope of this Letter of Advice.
The perimeter elements of the slider, as well as the door track are secured to the wall frame continuously, which in turn enables them to fully transfer loads from perimeter elements to wall and floor structures without any stress.

There are 2 elements accepting the loads from linings that are not connected continuously. They are:

1. Cavity Slider Jamb (Figure 2)
2. Carcass Bracing SCB-23 (Figure 3)

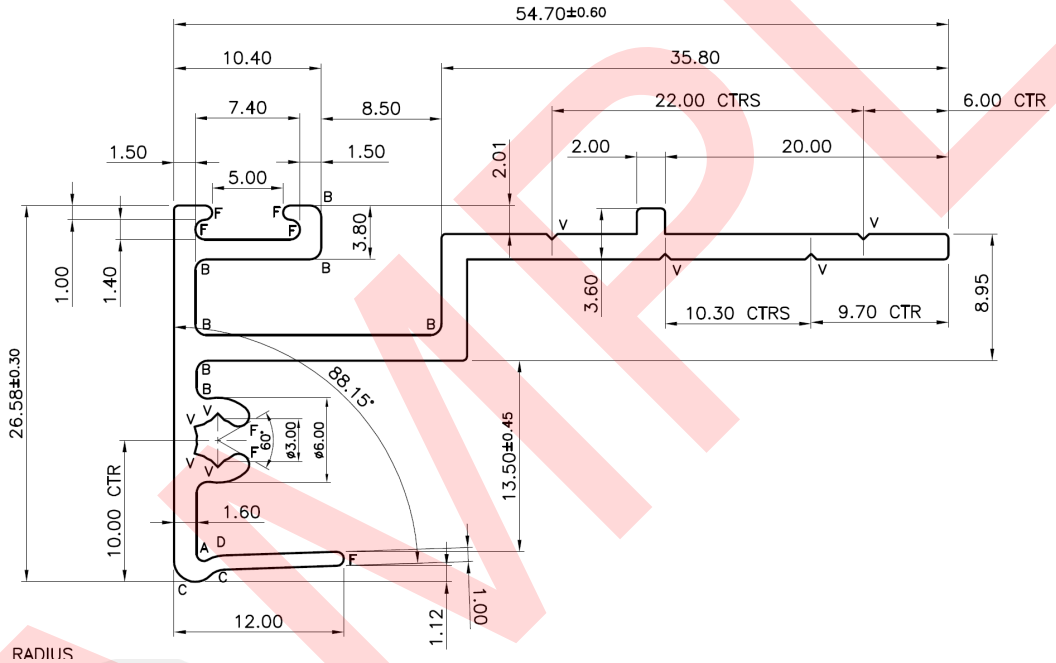


Figure 2 Cavity Slider Jamb RST 64/17

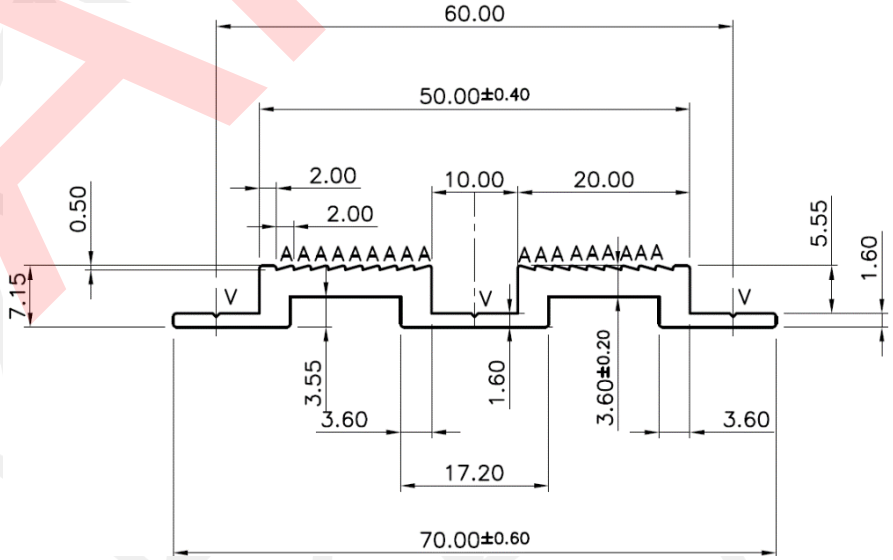


Figure 3 Cavity Carcass Bracing SCB-23

The cavity slider jamb accepts the load from the braces and transfers it to the floor and lintel (Connection points) The brace accepts the load from lining (i.e. plasterboard, tile etc.)

The analysis of the cladding system was conducted in accordance with the Australian Standards and the Industry practice. The loadings are referenced in the AS/NZS 1170.1 and AS/NZS 1170.4 and combined in accordance with the load combination set in AS/NZS 1170.0.

The design criteria are to ensure that the loads resulting from seismic activity:

a. will not cause stress in slider components leading to plastic (non-rigid) deformations, and
b. deflection of the elements will not exceed limits imposed by the Australian Standards.

The stress is the function of the moment and shear force acting on the element and its geometrical and mechanical properties.

Deflections are as per AS/NZS 1170.0:2002 Table C1. The allowable deflection limit for walls subject to out-of-plane external action is L/200. Refer to Figure 4.

TABLE C1
SUGGESTED SERVICEABILITY LIMIT STATE CRITERIA

Element	Phenomenon controlled	Serviceability parameter	Applied action	Element response (see Notes 1 and 2)
Roof cladding				
Metal roof cladding	Indentation	Residual deformation	Q = 1 kN	Span/600 but <0.5 mm
	De-coupling	Mid-span deflection	$[G, \psi_s Q]$	Span/120
Concrete or ceramic roof cladding	Cracking	Mid-span deflection	$[G, \psi_s Q]$	Span/400
Roof-supporting elements				
Roof members (trusses, rafters, etc.)	Sag	Mid-span deflection	$[G, \psi_l Q]$	Span/300
Roof elements supporting brittle claddings	Cracking	Mid-span deflection	$[G, \psi_s Q]$ or $[W_s]$	Span/400
Ceiling and ceiling supports				
Ceilings with matt or gloss paint finish	Ripple	Mid-span deflection	G	Span/500 (see Note 3)
Ceilings with textured finish	Ripple	Mid-span deflection	G	Span/300
Suspended ceilings	Ripple	Mid-span deflection	G	Span/360
Ceiling support framing	Sag	Mid-span deflection	G	Span/360
Ceilings with plaster finish	Cracking	Mid-span deflection	$[G, \psi_s Q]$ or $[W_s]$	Span/200
Wall elements				
Columns	Side sway	Deflection at top	W_s	Height/500
Portal frames (frame racking action)	Roof damage	Deflection at top	$[W_s]$ or $[E_s]$	Spacing/200 (Note 4)
Lintel beams (vertical sag)	Doors/windows jam	Mid-span deflection	W_s	Span/240 but <12 mm (see Note 5)
Walls—General (face loaded)	Discerned movement	Mid-height deflection	W_s	Height/150
	Impact: soft body (neighbours notice)	Mid-height deflection	Q = 0.7 kN	Height/200 but <12 mm (see Note 6)
	Supported elements rattle	Mid-height deflection	W_s	Height/1000
Walls—Specific claddings (see Note 7):				
Brittle cladding (ceramic) face loaded	Cracking	Mid-height deflection	W_s	Height/500
Masonry walls (in plane)	Noticeable cracking	Deflection at top	$[W_s]$ or $[E_s]$	Height/600
(face loading)	Noticeable cracking	Deflection at top	$[W_s]$ or $[E_s]$	Height/400
Plaster/gypsum walls (in plane)	Lining damage	Mid-height deflection	W_s	Height/300
(face loading)	Lining damage	Mid-height deflection	$[W_s]$ or $[E_s]$	Height/200
Movable partitions (soft body impact)	System damage	Deflection at top	Q = 0.7 kN	Height/160
Glazing systems	Bowing	Mid-span deflection	W_s	Span/400
Windows, facades, curtain walls	Facade damage	Mid-span deflection	$[W_s]$ or $[E_s]$	Span/250
Fixed glazing systems	Glass damage	Deflection	$[W_s]$ or $[E_s]$	2 × glass clearance (see Note 3)

Figure 4 AS/NZS 1170.0:2002 (fragment) Table C1

Calculations show that the cavity slider is fully compliant to Australian standard under the following conditions:

- Maximum **height** of the cavity sliding **door** is **2.75m.**
- Maximum width of Carcass **Bracing SCB-23** is **1.5m.**
- The vertical spacing of the Carcass **Bracing SCB-23** does not exceed **300mm** on centre.
- The **plasterboard** is **13mm** maximum thickness.
- The maximum weight of **tiles** does not exceed **13.2 kg/m^2**. (Typically, 5mm tile + 1mm glue)
- Structure **Importance Level 2** (Normal Structures i.e. residential).
- The seismic **hazard design factor** does not exceed **0.15**. (QLD is below the established limit)[1]

Figure 5 shows detailed results on allowable length/height of cavity slider elements.

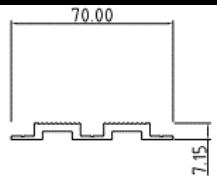
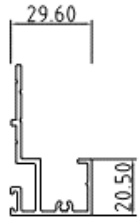
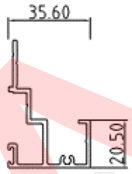
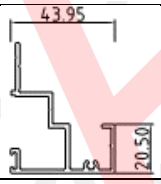
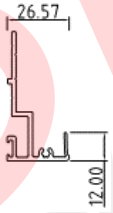
Image	Name	Combination of Elements	Maximum Allowable Height / Length	Utilization ULS	Utilization SLS
			m	%	%
	Carcass Bracing SCB-23	SCB-23	**1.50**	**48**	**98**
	64 SUPREME CAVITY Cavity Capping SCS-64/17	SCS-64/17	**3.10**	**75**	**98**
	76 SUPREME CAVITY Cavity Capping SCS-76/17	SCS-76/17	**3.60**	**76**	**100**
	92 SUPREME CAVITY Cavity Capping SCS-92/17	SCS-92/17	**4.50**	**90**	**98**
	Cavity Slider Jamb RST 64/17	RST-64/17	**3.10**	**50**	**98**

Figure 5 Assessment Results

[1] Refer to AS 1170.4-2007 Earthquake actions in Australia.

For the areas with greater hazard design factor and/or for project with higher importance level individual assessment on case-by-case basis is required.

CONCLUSIONS

The proposed cavity slider described in this letter satisfies AS1170.4 - Seismic Actions if utilised in compliance with conditions outlined above and in the table in Figure 5 – Assessment Results.

For conditions different from the outlined above, individual calculations will be required to confirm compliance.

The proposed arrangements as detailed in this letter are generally in accordance with industry regulations and engineering best practices, when the recommendations detailed in this letter are employed.

The attached Form 15 provides engineering certification for the application of the systems detailed herein.

We would like to thank you for your business and wish you the best for your future works.

Should you have any questions or consider instructions not clear or you have any other concerns, please contact us for further clarification.

Kind regards,

Konstantin Popov
RPEQ 18831
Senior Engineer
0439 672 088
BE(Structural), RPEQ (Structural, Project Management), MIEAust, CPEng.
On behalf of J.C. Engineers Pty. Ltd.