Melbourne
Sydney
Brisbane
Canberra
Perth
Townsville
Darwin
www.philipchun.com

PHILIP CHUN
Building Compliance

Ref: 021-217335_TAFE_Kingswood_ExternalWallDC_Confirmation_Letter(Conds A18&B4)

28 November 2022

TAFE NSW
Level 2, Building A
19 Mary Ann Street
Ultimo NSW 2007

Attention: **Cameron Lang**
Investment Project Director

Re: TAFE NSW Kingswood Campus – Institute of Applied Technology - Construction
2-44 O'Connell Street, Kingswood NSW 2747
Section 6.28 Crown Design Verification Certificate (CDVC4)

This letter is to confirm that Philip Chun has received and reviewed the external wall design certificate and supporting documentation attached with the design certificate (as provided in Appendix A).

We can confirm the design and selection of external materials including the entire external wall build-up as proposed complies with the provisions of the BCA specially the following BCA Clauses and relevant Australian Standards.

- C1.9 "Non-combustible building elements"
- C1.14 "Ancillary elements"
- Clause 2.4 of Specification C1.1 "Method of attachment not to reduce the fire-resistance of building elements" and
- AS1530.1-1994 "Methods for fire tests on building materials, components and structures — Combustibility test for materials".

The design therefore satisfies the requirements of DA Condition A18 and B4 of SSD-8571481.

should you have any queries in regard to the above, please do not hesitate to contact the undersigned.

Regards,

Frank De Pasquale
Senior Associate
PHILIP CHUN BC NSW Pty Ltd

EXTERNAL WALL SYSTEM CERTIFICATE (DESIGN)

External & Common Wall Components (Type A & B Construction)

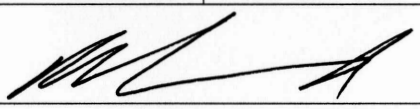
Project Name:	Institute of Applied Technology for Construction building and carpark
Project Address:	TAFE NSW Kingswood Campus, 2-44 O'Connell Street, Kingswood NSW 2747
Part of the building certified:	Clad external walls

- I confirm that the table provided and attached to this certificate identifies all of the proposed external wall systems and wall elements designed for the subject development, including the component elements of those systems, and any attachments thereto.
- I have undertaken a reasonable investigation as to the compliance of these systems and components with the requirements of the BCA 2019 Amdt 1, such as reviewing product technical information, fire test reports, code mark certificates, fire-engineer's reports and external specialist consultant advice.
- I am satisfied that, based on my research and advice provided by other experts, that the wall systems and components comply with the combustibility requirements of the BCA 2019 Amdt 1.
- The combustibility requirements referred to above mean:
    - BCA Clauses C1.9 and C1.14,
    - BCA Specification C1.1 Clause 2.4,
    - Clause C1.10 as it relates to sarking, and
    - AS1530.1-1994 Combustibility test for materials, OR
    - Where a Performance Solution is proposed in accordance with Part A2.2 of the BCA, CP2 and CP4.
- Supporting documents that can be used to demonstrate compliance for each wall type with the relevant sections of the BCA have been provided.
- I confirm that the external wall design complies with the relevant requirements of the BCA and therefore with Condition A18 of the Development Consent *SSD-8571481*.
- I am a suitably qualified person and my qualifications and accreditations are listed below.
- To the best of my knowledge the information contained in this statement is true and accurate.

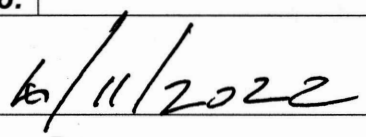
Relevant qualifications and accreditations of installation certifier:	Kristian Milosevski Director - Zipclad

External Wall System Certificate (Design)	*Certificate No:*	GCA-01
	Date:	4th November 2022

Name:	Michael Shand		
Company:	GCA Engineering		
Address:	Suite 1.01, Level 1, Pier 8/9, 23 Hickson Road Walsh Bay NSW 2000		
Email address:	mike@gcaustralia.com.au		
Phone No.	0402 924 705	***Fax No:***	



Signature



Date

ZIPCLAD

EXTERNAL WALL ELEMENTS TABLE

The table below must be completed for all wall types.

LINING / CLADDING MATERIAL *(Note. Nominate every type of external cladding and/or wall material)*

External/Cladding Material (Eg Fibre cement, Aluminium composite panel, masonry etc)	**Elevation(s)**	**Structural frame material**	**Manufacturer** (Eg, Alucobond, Vitracore etc)	**Product Name** (Eg, Alucobond Plus, Vitracore G3 etc)	**Test certificate, Codemark certificate or Fire Engineering Report** (List all documents evidencing compliance)	**Nominated or proprietary installation requirements** (relevant installation details or guidelines must be listed below and attached)
Glass Reinforced Concrete panels	Lower Ground & Upper Ground elevations	Concrete filled blockwork / 'Rondo Maxiframe' steel studs	Hebei Longteng Technology Co. Ltd	N/A	R22C03-1a R22C03-2a	Refer shop drawings
Solid Aluminium plank cladding	Level 1 elevations	'Rondo Maxiframe' steel studs	HVG Facades	'ZINTL'	56715500B	Refer shop drawings
3mm aluminium sheet	Lower Ground Floor only	'Rondo Maxiframe' steel studs	HVG Facades	'MondoClad'	CM30124	Refer shop drawings

INSULATION *(list all types incorporated in the external wall systems)*

Material Rockwool etc	**Elevation**	**Manufacture** (Eg, CSR etc)	**Product Name**	**Test certificate reference**
Rockwool	ALL	PAROC	Pro Slab WR 640	IGNL-4142-01R I01 R01
Insulation Batt	ALL	NSB	Glasswool	IGNL-6056-01C I01 R00

SARKING *(list all types incorporated in the external wall systems)*

Manufacture (Eg, CSR etc)	**Elevation**	**Product Name**	**Test certificate reference**
TBA	ALL	FIREFLY	REPORT No.: FNC12071

OTHER SUPPORTING DOCUMENTATION

List below

Manufacturer / Product	Document	Reference Number	Date

RESEARCH ENGINEERING DEVELOPMENT FAÇADE CONSULTANTS LIMITED -
Fire and Facade Testing Laboratory
雄略幕牆顧問有限公司 - 消防及幕牆檢測實驗中心
DD134, Lung Kwu Tan, Tuen Mun, N.T., Hong Kong

HOKLAS 091 TEST

FIRE RESISTANCE TEST IN ACCORDANCE WITH AS 1530.1 - 1994 (reconfirmed 2016) "Methods for fire tests on building materials, components and structures Part 1 – Combustibility test for materials" on 'Yongchao' GRC Panel

Test Report No.: R22C03-1A

Identification No.: Q22B09-1

Issue Date: 7 April 2022

Test Sponsor

Hebei Longteng Technology Co.,Ltd.

XiangChun Garden, Gushu Town, Yutian Countyb

Tangshan City, Hebei Province, China.

APPROVED SIGNATORY: _____

Ir. Dr. Sai-wing Yuen

B.Eng., M.Phil., Ph.D. (Civil), MHKIE (FIRE), RPE

CONTENT

1 PURPOSE OF TEST

This test is used to determine if the material is non-combustible when it is exposed to the conditions of the test specified in Australian Standard 1530.1 - 1994 (reconfirmed 2016) "Methods for fire tests on building materials, components and structures Part 1 – Combustibility test for materials".

2 DESCRIPTION OF SPECIMEN

Five (5) specimens were supplied by the test sponsor and known as 'Yongchao' model no. 21090702 GRC panel. In order to meet the specimen requirement of nominal 50 mm thick as required by the standard, the specimens were submitted with each specimen comprised of one GRC panel (Glass Fibre Reinforced Cement). The composition of panels were stated to be consisted of cement, sand, alkali resistant glass fibre, polymer, pigment, water reducing agent and were stated to be tested for 477 Pitt Street, Sydney Exterior wall GRC panel.

These layers were held together firmly, without compression, by means of fine steel wires to prevent air gaps between layers. RED did not involve in sampling and verification of the composition of the specimen. Each specimen was with nominal dimensions of $45\,/^{+0}_{-2}$ mm diameter by 50 ± 3 mm thick in accordance with the testing requirements and the density of the each specimen was approximately 2,400 kg/m^3, measured by the laboratory.

3 TESTING PROCEDURE

The specimens were exposed to the specified heating conditions in a furnace complied with Clause 2 of AS 1530.1 - 2014 (reconfirmed 2016) and the set up is shown in Figures 1 to 7 of the standard. The furnace was heated and its temperature was stabilized at 750 ± 5 °C with a drift of not more than 2 °C in 10 minutes. One specimen was then inserted in the furnace with the specimen holder; the whole operation was performed in less than 5 seconds. The temperature of the specimen and the furnace was measured by three separate thermocouples continuously during the test and recorded. The flaming time of the specimen was determined by a stop-watch. The procedures were repeated for the other four specimens.

4 CRITERIA OF COMBUSTIBILITY

A material shall be deemed to be combustible under any of the following circumstances specific in Clause 3.4 of AS 1530.1 - 2014 (reconfirmed 2016):

a) The mean duration of sustained flaming, as determined in accordance with Clause 3.2 of AS 1530.1 - 2014 (reconfirmed 2016) is other than zero.

b) The mean furnace temperature rise, as determined in accordance with Clause 3.1 of As 1530.1 - 2014 (reconfirmed 2016), exceed 50°C.

c) The mean specimen surface temperature rise, as determined in accordance with Clause 3.1 of As 1530.1 - 2014 (reconfirmed 2016), exceed 50°C.

5 DATE OF TEST

23rd March 2022

6 TEST LOCATION

RED Huizhou Laboratory, Route YE60, Shan Pi Village, Lilin Town,
Zhong Kai Gao Xin District, Huizhou City, Guang Dong Province, China

7 RESULTS

Parameter	Symbol or expression	Results					Arithmetic Mean = Σ results / 5
		1	2	3	4	5	
Initial specimen mass (g)	m_{si}	191.7	191.4	190.6	189.9	185.3	N/A
Final specimen mass (g)	m_{sf}	164.3	168.9	167.8	160.0	162.7	N/A
Mass loss (%)	$\Delta m = 100*(m_{si} - m_{sf})/m_{si}$	14.3	11.8	12.0	12.6	12.2	12.6
Total duration of sustained flaming (s)	Cumulative total of duration of flaming	0	0	0	0	0	0
Maximum furnace temperature (°C)	T_{fm}	777	776	779	771	773	N/A
Final furnace temperature (°C)	T_{ff}	777	773	777	765	771	N/A
Furnace temperature rise (°C)	$\Delta T_f = T_{fm} - T_{ff}$	0	3	2	6	2	2.6
Maximum specimen centre temperature (°C)	T_{cm}	710	710	708	695	710	N/A
Final specimen centre temperature (°C)	T_{cf}	710	710	708	695	710	N/A
Specimen centre temperature rise (°C)	$\Delta T_c = T_{cm} - T_{cf}$	0	0	0	0	0	0
Maximum specimen surface temperature (°C)	T_{sm}	758	757	762	761	776	N/A
Final specimen surface temperature (°C)	T_{sf}	756	750	759	751	773	N/A
Specimen surface temperature rise (°C)	$\Delta T_s = T_{sm} - T_{sf}$	2	7	3	10	3	5
Test duration (min)	--	60#	60#	60#	60#	60#	N/A

#Note: All three thermocouples could not reach the equilibrium during melting of specimens. The test was terminated after a heating period of 60 minutes for the safety of equipments.

8 CONCLUSION

A combustibility test for materials in accordance with AS 1530.1 - 2014 (reconfirmed 2016) has been performed on the material as described in this report and the material was **NOT** deemed combustible according to the test criteria specific in Clause 3.4 of AS 1530.1 - 2014 (reconfirmed 2016).

9 LIMITAION

These test results relate only to the behaviour of the test specimens of the material under particular conditions of the test and they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.

APPENDIX – PHOTOS OF THE SPECIMEN

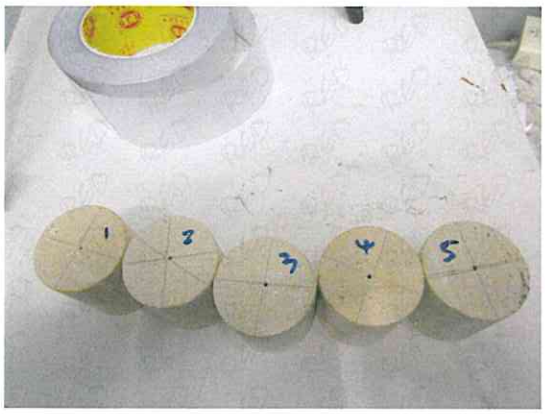


Photo 1 – The specimen before the test.

Photo 2 – The specimen after the test.

-End of Report-

AWTA PRODUCT TESTING

Australian Wool Testing Authority Ltd - trading as AWTA Product Testing
A.B.N 43 006 014 106
1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400 Fax (03) 9371 2499

TEST REPORT

Client : TBA Protective Technologies
Unit 12, 8 Leighton Place
Hornsby NSW 2077

Test Number : 18-005157
Issue Date : 7/09/2018
Print Date : 7/09/2018

Sample Description

Clients Ref : "TBA Firefly Non Combustible Sarking - Breathable EKA 161/1.27m - B"
Woven sarking
Colour : Silver/White
Nominal Composition : Woven glass fibre & Aluminium foil laminate
Nominal Mass per Unit Area/Density : Approx. 230g/m2
Nominal Thickness : 0.2mm

AS/NZS 1530.3-1999

Methods for Fire Tests on Building Materials, Components and Structures
Part 3: Simultaneous Determination of Ignitability,
Flame Propagation, Heat Release and Smoke Release

Face tested:	Face		
Date tested:	06/09/2018		
	Standard Error	Mean	
Ignition time	Nil	Nil	min
Flame propagation time	Nil	Nil	sec
Heat release integral	Nil	Nil	kJ/m²
Smoke release, log d	0.0256	-1.8177	
Optical density, d		0.0154	/ metre
Number of specimens ignited:		0	
Number of specimens tested:		6	
Regulatory Indices:			
Ignitability Index		0	Range 0-20
Spread of Flame Index		0	Range 0-10
Heat Evolved Index		0	Range 0-10
Smoke Developed Index		0-1	Range 0-10

141733 30475

Accredited for compliance with ISO/IEC 17025 - Testing
- Chemical Testing : Accreditation No. 983
- Mechanical Testing : Accreditation No. 985
- Performance & Approvals Testing : Accreditation No. 1356

Samples and their identifying descriptions have been provided by the client unless otherwise stated. AWTA Ltd makes no warranty, implied or otherwise, as to the source of the tested samples. The above test results relate only to the sample or samples tested. This document shall not be reproduced except in full and shall be rendered void if amended or altered. This document, the names AWTA Product Testing and AWTA Ltd may be used in advertising providing the content and format of the advertisement have been approved by the Managing Director of AWTA Ltd.

APPROVED SIGNATORY

MICHAEL A. JACKSON B.Sc.(Hons)
MANAGING DIRECTOR

0204/11/06

AWTA PRODUCT TESTING

Australian Wool Testing Authority Ltd - trading as AWTA Product Testing
A.B.N 43 006 014 106
1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400 Fax (03) 9371 2499

TEST REPORT

Client : TBA Protective Technologies
Unit 12, 8 Leighton Place
Hornsby NSW 2077

Test Number : 18-005157
Issue Date : 7/09/2018
Print Date : 7/09/2018

Since the heat source for this test is a radiator, a reduction in the reflective properties of certain materials by the deposition of dust and soot, by surface damage and by the formation of surface corrosion products, may produce a significant change in the index numbers from those obtained when the materials were tested in a new and clean condition.

The reaction of thin unsupported flexible materials to flame impingement can be assessed in accordance with AS 1530.2. Where materials of thickness less than 2mm that are sufficiently flexible to be bent by hand around a mandrel of 2mm diameter or less are subjected to the test described herein, they should also be subjected to the test in AS 1530.2.

Ignition is initiated by a pilot flame that is held near, but does not touch the specimen . A material that does not ignite during the standard test may ignite if contacted with a pilot flame during the test.

Smoke Developed Index is reported as 0-1 due to the inability of the smoke measurement equipment to resolve an index of zero.

The specimens were mounted to simulate use in an unsupported or free hanging mode. The results may be significantly different when mounted to simulate a wall cladding or upholstery application .

To allow free movement of sample during testing all corners were folded away from the clamps.

Each test specimen was sandwiched between two layers of galvanised welded square mesh made from wire of nominal diameter 0.8mm and nominal spacing 12mm in both directions, stapled through at four points, each 100mm from the centre of the sample and the assembly clamped in four places.

These results only apply to the specimen mounted, as described in this report. The result of this fire test may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.

Accredited for compliance with ISO/IEC 17025 - Testing
- Chemical Testing : Accreditation No. 983
- Mechanical Testing : Accreditation No. 985
- Performance & Approvals Testing : Accreditation No. 1356

Samples and their identifying descriptions have been provided by the client unless otherwise stated. AWTA Ltd makes no warranty, implied or otherwise, as to the source of the tested samples. The above test results relate only to the sample or samples tested. This document shall not be reproduced except in full and shall be rendered void if amended or altered. This document, the names AWTA Product Testing and AWTA Ltd may be used in advertising providing the content and format of the advertisement have been approved by the Managing Director of AWTA Ltd.

APPROVED SIGNATORY

MICHAEL A. JACKSON B.Sc.(Hons)
MANAGING DIRECTOR

TBA FIREFLY
PASSIVE FIRE PROTECTION

TBA Textiles Pty Ltd
ABN: 44 084 489 529
Issue Date: 28/01/2022

46

PHONE: (07) 5411 4209 (Option 2)
OR (02) 8004 3333 (Option 2)

WEBSITE: tbafirefly.com.au
EMAIL: sales@tbafirefly.com.au

TBA FIREFLY™ BREATHABLE NON-COMBUSTIBLE SARKING

EXTRA INFORMATION

All reports and MSDS are readily available by contacting us directly on 07 5411 4209 Option 2

When required, TBA Firefly™ Reinforced TAPE AFRT 75mm x 50m, shall be used to seal joints between the adjacent runs of TBA Firefly™ Breathable Non-Combustible Sarking.

PHYSICAL CHARACTERISTICS

Width: 1250mm
Length: 50m
Thickness: 0.2mm
m² per roll: 62.5
Weight per roll (kg): 14.5
Product Code: EKA161-B

DESCRIPTION

TBA Firefly™ Breathable Non-Combustible Sarking is an extra heavy duty radiant barrier, consisting of a layer of woven glass fabric with aluminium foil laminate.

It is designed to be used as a vapour permeable membrane or reflective insulation in commercial wall applications. With superior tensile strength and tear resistance, it provides a robust barrier to dirt, dust, draughts, wind and is suitable for use in bush fire prone areas to provide protection against burning embers.

The TBA Firefly™ Breathable Non-Combustible sarking is a Class 3 Vapour Permeable Membrane (in accordance with AS/NZS 4200.1:2017 5.3.4 Vapour control classification), suitable for use in Climate Zones 6, 7 & 8 according to F6.2 (a)(iii) of NCC 2019 (including Amendment 1)

TBA Firefly™ Breathable Non-Combustible Sarking falls under the Bonded Laminated Materials Clause under C1.9 (e)(vii) in NCC 2019 including Amendment 1 and under C1.9 (e)(vi) in NCC 2016 Amendment 1.

CERTIFICATION

AS1530.1 Non-Combustibility Test: Each layer of the TBA Firefly™ Breathable Non-Combustible Sarking has been tested to AS1530.1 and each layer is not deemed combustible.

AS1530.2 Flammability Index Test: This product achieved a flammability index of 1.

AS1530.3 Spread of Flame Index and Smoke Developed Index Test: As this product falls under the Bonded Laminated Materials Clause, it must be subjected to an AS1530.3 test and achieve a result of 0 for Spread of Flame Index and no more than 3 for Smoke Developed Index. This product achieved 0 and 0-1 respectively.

SARKING REQUIREMENTS OF NCC 2019 (Including Amendment 1)

Please Note: AS/NZS 4200.1:2017 was Adopted in NCC 2019. AS/NZS 4200.1:1994 is relevant to all prior versions.

	NCC References	NCC Requirements	Referenced Test Method	TBA Firefly™ Breathable Non-Combustible Sarking Results	Report Reference
Non-Combustibility (AS1530.1), Spread Of Flame Index & Smoke Developed Index (AS1530.3)	C1.9 (e)(vii)	Each Lamina, including any core, is non-combustible; and	AS1530.1 test on foil layer	Non-Combustible	CSIRO FNC12071
			AS1530.1 test on Fortaglas layer	Non-Combustible	CSIRO FNC 11220
		each adhesive layer does not exceed 1mm in thickness and the total thickness of the adhesive layers does not exceed 2mm; and	N/A	0.22 mm total thickness of product	N/A
		the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively.	AS1530.3	Spread-of-Flame Index: 0 Smoke-Developed Index: 0-1	AWTA 18-005157
Flammability Index (AS1530.2)	C1.9 (e)(vi)	Sarking-type materials that do not exceed 1mm in thickness and have a Flammability Index not greater than 5	AS1530.2	1	AWTA 16-003139
Vapour Permeable/ Vapour Barrier	F6.2 (a)(iii)	Where a pliable building membrane is installed in an external wall, it must be a **vapour permeable** membrane for climate zones 6,7 and 8. Also refer to - AS/NZS 4200.1:2017 5.3.4 Vapour control classification	ASTM E96	Class 3 (Vapour Permeable)	AWTA 19-002276
Water Barrier/ Non-Water Barrier	F1.0 and F1.6	F1.0: Performance Solution to be determined in accordance with NCC A2.2 (3) and A2.4(3)	AS/NZS 4201.4 or Performance Solution	Water Barrier (Performance Solution Completed by Arcadis). Product acts as a water barrier when installed vertically.	Arcadis 2020-128
		F1.6: Sarking-type material used for weatherproofing of roofs and walls must comply with AS/NZS 4200.1:2017 and AS 4200.2			
Windload	N/A	As required by the Façade Engineer for each specific building based upon but not limited to, building type and geographical location	AS/NZS 4284	This product was tested as a stand-alone product and achieved the following results Positive Load Sustained: 4.0 kPa Negative Load Sustained: -4.0 kPa	Ian Bennie and Associates 2019-004-R2

SARKING REQUIREMENTS OF NCC 2016 (Including Amendment 1)

	NCC References	NCC Requirements	Referenced Test Method	TBA Firefly™ Breathable Non-Combustible Sarking Results	Report References
Non-Combustibility (AS1530.1), Spread Of Flame Index & Smoke Developed Index (AS1530.3)	C1.9 (e)(vi)	Each Lamina, including any core, is non-combustible; and	AS1530.1 test on foil layer	Non-Combustible	CSIRO FNC12071
			AS1530.1 test on fabric layer	Non-Combustible	CSIRO FNC 11220
		each adhesive layer does not exceed 1mm in thickness and the total thickness of the adhesive layers does not exceed 2mm; and	N/A	0.22 mm total thickness of product	N/A
		the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminatedmaterial as a whole do not exceed 0 and 3 respectively.	AS1530.3	Spread-of-Flame Index: 0 Smoke-Developed Index: 0-1	AWTA 18-005157
Vapour Barrier Classification	AS/NZS 4200.1:1994	AS/NZS 4200.1:1994 Clause 6.2	ASTM E96	Low	AWTA 19-002276
Water Barrier/ Non-Water Barrier	F1.0 and F1.6	F1.0: Performance Solution to be determined in accordance with A0.7	AS/NZS 4201.4 or Performance Solution	Water Barrier (Performance Solution Completed by Arcadis)	Arcadis 2020-128
		F1.6: Sarking-type material used for weatherproofing of roofs and walls must comply with AS/NZS 4200:1994 Parts 1 and 2.			
Windload	N/A	As required by the Façade Engineer for each specific building based upon but not limited to, building type and geographical location	AS/NZS 4284	This product was tested as a stand-alone product and achieved the following results Positive Load Sustained: 4.0 kPa Negative Load Sustained: -4.0 kPa	Ian Bennie and Associates 2019-004-R2

AWTA PRODUCT TESTING

Australian Wool Testing Authority Ltd - trading as AWTA Product Testing
A.B.N 43 006 014 106
1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400 Fax (03) 9371 2499

TEST REPORT

Client : TBA Protective Technologies
Unit 12, 8 Leighton Place
Hornsby NSW 2077

Test Number : 18-005157
Issue Date : 7/09/2018
Print Date : 7/09/2018

Sample Description

Clients Ref : "TBA Firefly Non Combustible Sarking - Breathable EKA 161/1.27m - B"
Woven sarking
Colour : Silver/White
Nominal Composition : Woven glass fibre & Aluminium foil laminate
Nominal Mass per Unit Area/Density : Approx. 230g/m2
Nominal Thickness : 0.2mm

AS/NZS 1530.3-1999

Methods for Fire Tests on Building Materials, Components and Structures
Part 3: Simultaneous Determination of Ignitability,
Flame Propagation, Heat Release and Smoke Release

Face tested:	Face		
Date tested:	06/09/2018		
	Standard Error	Mean	
Ignition time	Nil	Nil	min
Flame propagation time	Nil	Nil	sec
Heat release integral	Nil	Nil	kJ/m²
Smoke release, log d	0.0256	-1.8177	
Optical density, d		0.0154	/ metre
Number of specimens ignited:		0	
Number of specimens tested:		6	
Regulatory Indices:			
Ignitability Index		0	Range 0-20
Spread of Flame Index		0	Range 0-10
Heat Evolved Index		0	Range 0-10
Smoke Developed Index		0-1	Range 0-10

141733 30475

Accredited for compliance with ISO/IEC 17025 - Testing
- Chemical Testing : Accreditation No. 983
- Mechanical Testing : Accreditation No. 985
- Performance & Approvals Testing : Accreditation No. 1356

Samples and their identifying descriptions have been provided by the client unless otherwise stated. AWTA Ltd makes no warranty, implied or otherwise, as to the source of the tested samples. The above test results relate only to the sample or samples tested. This document shall not be reproduced except in full and shall be rendered void if amended or altered. This document, the names AWTA Product Testing and AWTA Ltd may be used in advertising providing the content and format of the advertisement have been approved by the Managing Director of AWTA Ltd.

APPROVED SIGNATORY

MICHAEL A. JACKSON B.Sc.(Hons)
MANAGING DIRECTOR

0204/11/06

AWTA PRODUCT TESTING

Australian Wool Testing Authority Ltd - trading as AWTA Product Testing
A.B.N 43 006 014 106
1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400 Fax (03) 9371 2499

TEST REPORT

Client : TBA Protective Technologies
Unit 12, 8 Leighton Place
Hornsby NSW 2077

Test Number : 18-005157
Issue Date : 7/09/2018
Print Date : 7/09/2018

Since the heat source for this test is a radiator, a reduction in the reflective properties of certain materials by the deposition of dust and soot, by surface damage and by the formation of surface corrosion products, may produce a significant change in the index numbers from those obtained when the materials were tested in a new and clean condition.

The reaction of thin unsupported flexible materials to flame impingement can be assessed in accordance with AS 1530.2. Where materials of thickness less than 2mm that are sufficiently flexible to be bent by hand around a mandrel of 2mm diameter or less are subjected to the test described herein, they should also be subjected to the test in AS 1530.2.

Ignition is initiated by a pilot flame that is held near, but does not touch the specimen . A material that does not ignite during the standard test may ignite if contacted with a pilot flame during the test.

Smoke Developed Index is reported as 0-1 due to the inability of the smoke measurement equipment to resolve an index of zero.

The specimens were mounted to simulate use in an unsupported or free hanging mode. The results may be significantly different when mounted to simulate a wall cladding or upholstery application .

To allow free movement of sample during testing all corners were folded away from the clamps.

Each test specimen was sandwiched between two layers of galvanised welded square mesh made from wire of nominal diameter 0.8mm and nominal spacing 12mm in both directions, stapled through at four points, each 100mm from the centre of the sample and the assembly clamped in four places.

These results only apply to the specimen mounted, as described in this report. The result of this fire test may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.

Accredited for compliance with ISO/IEC 17025 - Testing
- Chemical Testing : Accreditation No. 983
- Mechanical Testing : Accreditation No. 985
- Performance & Approvals Testing : Accreditation No. 1356

Samples and their identifying descriptions have been provided by the client unless otherwise stated. AWTA Ltd makes no warranty, implied or otherwise, as to the source of the tested samples. The above test results relate only to the sample or samples tested. This document shall not be reproduced except in full and shall be rendered void if amended or altered. This document, the names AWTA Product Testing and AWTA Ltd may be used in advertising providing the content and format of the advertisement have been approved by the Managing Director of AWTA Ltd.

APPROVED SIGNATORY

MICHAEL A. JACKSON B.Sc.(Hons)
MANAGING DIRECTOR

Certificate of Conformity

Certification Body:

global-mark

Global-Mark Pty Ltd,
Suite 4.07,
32 Delhi Road,
North Ryde NSW
2113, Australia
Ph: +61 2 9886 0222
global-mark.com.au

Certificate Holder:

HVG Facades Pty Ltd
25 West Park Drive
Derrimut VIC 3030
Ph: 1300 881 712
hvgfacades.com.au

Certificate number: CM30124 Rev 1

THIS IS TO CERTIFY THAT

MondoClad – Solid Aluminium Panel Cladding System

Type and/or use of product:
MondoClad Solid Aluminium Cladding Panel System is used in external façade cladding applications, in all building types (BCA Volume 1 & 2).

Description of product:
MondoClad Solid Aluminium Cladding Panel System is an aluminium façade panel comprising:

- 3mm thick solid Aluminium cladding panel suitable for fabrication by Routing or Folding for cassette fixing system.
- MondoClad Panels are installed using standard components and accessories as described in MondoClad Fixed Watertight Cassette Specification, June 2021 (refer Appendix A3).

COMPLIES WITH THE FOLLOWING BCA PROVISIONS AND STATE OR TERRITORY VARIATION(S) — **BCA 2019 + A1**

	Volume One including Amendment 1		Volume Two including Amendment 1	
Performance Requirement(s)	**FP1.4**	Weatherproofing	**P2.2.2**	Weatherproofing
Deemed-to-Satisfy Provision(s):	**C1.9 (e) (v)**	Non-Combustible Building Elements		
	G5.2	Construction in Bushfire Prone Areas	**3.10.5.0 (c)**	Construction in Bushfire Prone Areas
State or territory variation(s):	**NSW G5.2**	Construction in Bushfire Prone Areas	**NSW 3.10.5.0 (c)**	Construction in Bushfire Prone Areas
	QLD G5.1	Construction in Bushfire Prone Areas	**QLD 3.10.5.0 (a)**	Construction in Bushfire Prone Areas

Scope of certification: The CodeMark Scheme is a building product certification scheme. The rules of the Scheme are available at the ABCB website www.abcb.gov.au. This Certificate of Conformity is to confirm that the relevant requirements of the Building Code of Australia (BCA) as claimed against have been met. The responsibility for the product performance and its fitness for the intended use remain with the certificate holder. The certification is not transferrable to a manufacturer not listed on Appendix A of this certificate.
Disclaimer: The Scheme Owner, Scheme Administrator and Scheme Accreditation Body do not make any representations, warranties or guarantees, and accept no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained within this certificate; and the Scheme Owner, Scheme Administrator and Scheme Accreditation Body disclaim to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages and costs arising as a result of the use of the product(s) referred to in this certificate.
The purpose of Global-Mark **construction site audits** is to confirm the practicability of installing the product; and to confirm the appropriateness and accuracy of installation instructions
In placing **the CodeMark mark** on the product/system, the certificate holder makes a declaration of compliance with the certification standard(s) and confirms that the product is identical to the product certified herein. In issuing this Certificate of Approval Global-Mark has relied on the **expertise of external bodies** (laboratories, and technical experts).

Herve Michoux
Global-Mark Managing Director

Peter Gardner
Unrestricted Building Certifier

Date of issue: 26/08/2020

Date of expiry: 14/11/2023

ABCB

JAS-ANZ

CERTIFICATE

Material Fire Test Certificate

IGNL-6056-01C I01 R00

DATE OF TEST	06.05.2022
ISSUE DATE	17.05.2022
EXPIRY DATE	16.05.2027

AS 1530.1:1994
Combustibility test for materials

SPONSOR
Network Building Supplies
71 Marigold Street
Revesby, NSW 2212

TEST BODY
Ignis Labs Pty Ltd
ABN 36 620 256 617
3 Cooper Place
Queanbeyan NSW 2620
Australia
www.ignislabs.com.au
(02) 6111 2909
Test body is the test location

Specimen Identification

NSB Glasswool Partition roll

Specimen Description

The sponsor described the specimen as 14 kg/m³ density glasswool blanket. It is composed of glasswool insulation. It has a nominal density of 14 kg/m³ and a nominal thickness of 50 mm. It is yellow in colour and its end use is as acoustic insulation.

The received specimens were a yellow-coloured glasswool insulation material. The material was provided by the sponsor as a whole sheet from which the cylindrical test specimens were fabricated by Ignis Labs. The specimens had a measured nominal density of 16 kg/m³

Ignis Labs was not responsible for the sampling stage. All specimens were sampled by the test sponsor. The test results apply to the specimens as received.

The test specimens are cylindrical, and each has:

(a)	Nominal diameter (mm):	44.25
(b)	Nominal height (mm):	51.97
(c)	Nominal volume (cm³)	79.89
(d)	Nominal Mass (g):	1.27
(e)	Colour:	Yellow

Test Method

Five (5) specimens were tested in accordance with Australian Standard 1530 Methods for fire tests on building materials, components and structures, Part 1 – 1994: Combustible test for Materials. The test apparatus is constructed in accordance with the requirements of ISO 1182:2010 which has been verified to be equivalent to the apparatus requirements of AS 1530.1:1994 with the exception that a suitable alternative insulating material was used to fill the annular space between the furnace tubes, as specified in Clause 4.2 of ISO 1182:2010.

Observations

All specimens exhibited similar behaviour, and none ignited during the test. The specimens exhibited shrinkage at the test temperature and therefore, in accordance with Clause A4 of AS 1530.1-1994, the information recorded by specimen thermocouples was not used to determine the combustibility. After the test, the specimens had melted into a solid mass.

Results

The specimen achieved the following results:

	Symbol	Arithmetic
Mean furnace thermocouple temperature rise:	ΔTf	2.78 °C
Mean specimen centre thermocouple temperature rise:	ΔTc	N/A
Mean specimen surface thermocouple temperature rise:	ΔTs	N/A
Mean duration of sustained flaming:		0 s
Mean mass loss:		6.88 %

Combustibility

The specimens are NOT deemed COMBUSTIBLE according to the test criteria specified in Clause 3.4 of AS 1530.1-1994

NATA Accredited Laboratory
Number: 20534 Site number: 24604
Accredited for compliance with
ISO/IEC 17025 - Testing

Test Supervisor
Darren Laker

Technical Lead
Jessica Ying

SUMMARY OF MEASUREMENTS AND OBSERVATIONS OF SPECIMENS UNDER TEST

Parameter	Symbol or expression	Unit Symbol	Specimen Results				
			1	2	3	4	5
Atmospheric temperature	-	°C	19.60	18.10	17.40	17.60	17.90
Humidity	-	%RH	36.00	39.80	40.60	39.70	39.80
Height	h	mm	51.92	51.26	52.08	52.36	52.23
Diameter	d	mm	44.39	43.80	44.24	44.60	44.22
Initial specimen volume	V	cm^3	80.31	77.20	80.01	81.76	80.17
Initial specimen mass	msi	g	1.11	1.26	1.31	1.29	1.37
Density	r	kg/m^3	13.79	16.35	16.34	15.79	17.04
Sample holder weight	w	g	14.48	14.63	14.22	14.44	14.58
Final specimen mass	msf	g	1.04	1.17	1.21	1.21	1.27
Mass loss	Δm=(msi-msf)/msi*100	%	6.41	7.31	7.47	6.49	6.73
Total duration of sustained flaming	Cumulative total of duration of flaming	s	0.00	0.00	0.00	0.00	0.00
Initial furnace thermocouple temperature	Tfi	°C	752.60	748.80	754.30	747.60	747.50
Maximum furnace thermocouple temperature	Tfm	°C	767.00	763.80	762.50	761.60	766.30
Final furnace thermocouple temperature	Tff	°C	764.44	761.46	758.40	758.79	764.20
Furnace thermocouple temperature rise	ΔTf=Tfm-Tff	°C	2.56	2.34	4.10	2.81	2.10
Maximum specimen centre thermocouple temperature	Tcm	°C	697.30	693.70	691.80	690.60	696.00
Final specimen centre thermocouple temperature	Tcf	°C	693.66	689.17	687.60	685.89	692.30
Specimen centre thermocouple temperature rise	ΔTc=Tcm-Tcf	°C	3.64	4.53	4.20	4.71	3.70
Maximum specimen surface thermocouple temperature	Tsm	°C	757.00	753.30	748.50	744.10	747.00
Final specimen surface thermocouple temperature	Tsf	°C	752.93	749.11	743.26	736.66	742.22
Specimen surface thermocouple temperature rise	ΔTs=Tsm-Tsf	°C	4.07	4.19	5.24	7.44	4.78
Test duration	t	min	40.00	30.00	30.00	30.00	30.00

IGNL-6056-01C I01 R00

END OF TEST CERTIFICATE

ABN 69 000 289 207

NATIONAL
57–87 Lockwood Road Erskine Park NSW 2759
(PO Box 324 St Marys NSW 1790)

NATIONAL TECHNICAL SERVICES

TO	**Rondo – NSW**	FROM:	**Alexander Becker**
ATTN:	**Daniel Barmes**	DATE:	**Friday, 21 October 2022**
EMAIL:	**daniel.barmes@rondo.com.au**	PAGES:	**1 of 8 (including attachments)**
CC:		REF:	**9846-22-001B**

KINGSWOOD TAFE

External Wall Framing – 150mm

Daniel,

Further to your enquiry regarding the above project, we can advise the following framing details:

REVISION NOTE:

A. **The single studs at 300mm c/c were changed to back-to-back studs at 600mm c/c to accommodate installation of GRC cladding requiring 600mm centres.**
B. **H560 Top Hat design was added per customer's request.**

DESIGN NOTES AND LIMITATIONS:

Please refer to drawings ***9846-22-001B-F-150EW*** and ***9846-22-001B-F-150EO*** for general notes and limitations, and see below for additional project specific notes and limitations:

1. The contractor shall be responsible to ensure that all linings and/or claddings are installed in accordance with manufacturer requirements. Particular attention shall be given to the fastener requirements in external applications.
2. External wall studs have been designed to withstand wind pressures calculated as a combination of external and internal pressures, with all local pressure and other applicable factors applied accordingly. For specific design of walls subject to external pressure from both sides, refer to Rondo Technical Services.

DESIGN CRITERIA:

Wind Loads

External net design wind pressures have been calculated in accordance with the wind report **'Wind Load Assessment AS1170', Date: 22/04/2022**, provided by **ZipClad**. Please find the attached wind report for wind loading parameters.

Corner zones have been calculated to apply over the dimensions shown on the "TYPICAL WALL FRAMING ELEVATION" of drawing ***9846-22-001B-F-150EW*** attached. Corner zones are measured from the primary corners of the building structure.

Seismic Loads

Seismic loads have been calculated in accordance with AS 1170.4 'Earthquake actions in Australia' to the design data nominated on drawing number ***9846-22-001B-F-150EW***. Seismic loads are not the controlling limit state for this design.

Deflection Criteria

The following service design loading deflection limit has been adopted for external wall framing:

Critical lining: **GRC Cladding – 70kg/m² (to bear on supporting structure below)** – deflection limited to span / 360.

DESIGN SPECIFICATION:

External Non-Load Bearing Walls:

Refer to attached drawing number ***9846-22-001B-F-150EW*** for external wall framing design and details.

Additional notes to consider:

- External stud wall framing is non-load bearing. All vertical roof loads on the top level are assumed to be supported off primary framing members.
- Top hats supporting cladding must be fixed to Rondo stud wall framing in a manner that ensures an even distribution of wind pressures to each stud. Horizontal top hats spanning across and fixed to the face of every stud are recommended to achieve this distribution. Should vertical top hats be used to support cladding, then a secondary layer of horizontal top hats will be required.

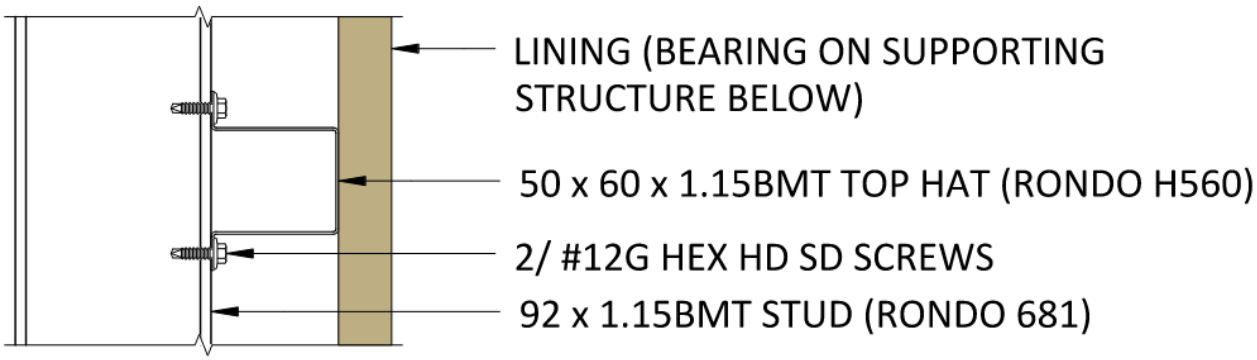
External Top hat Framing to Rondo External Non-Load Bearing Walls:

Horizontal Top Hat (Layer One Connection to Rondo External Wall Studs):

Span & Spacing: Refer to the table below

Connection: 2/#12G Hex HD Tek Screws at **all spans and spacings of Rondo MAXIFAME external wall studs**, 1/#12G screw per side to unlipped leg (Minimum connecting Rondo MAXIFRAME steel stud thickness of 1.15BMT considered).

ULS Wind Pressure (kPa)	Horizontal Top Hat		
	Rondo Part No.	Max Span	Max Spacing
±1.61	H560	600	800 (REFER NOTE 7)



Top Hat Corrosion Protection Notes and Limitations:

1. A vapour permeable barrier, as specified by the Architect / Project Façade Engineer, shall be installed in accordance with the manufacturer's requirements and recommendations for all external wall and / or top hat framing applications to ensure that **all Rondo steel framing components** are installed within the building envelope.
2. The allowance / façade system detailing for structural / thermal movement is to be confirmed by the Project / Facade Engineer, particularly regarding incremental / differential structural floor movement.
3. The first and last row of horizontal top hat framing (layer one) shall be provided 120mm from the supporting structure in which the Rondo Slotted Head Track or Rondo Base Track is connected to.
4. Unless noted otherwise, the framing specified has a coating designation of Z275, in accordance with AS/NZS1397. That is, zinc coating of mass 275g/m2.
5. Linings and/or claddings shall be installed in accordance with manufacturer requirements.
6. All sections as manufactured by Rondo Building Services Pty Ltd; substitution with alternative components is not permitted.
7. **Minimum of four horizontal top hat rows per wall height.**
8. Deflection limit of L/360 considered.
9. Nominated self-drilling screws shall comply with as 3566 & shall be class 4 coating minimum, unless noted otherwise.
10. Rondo accepts no responsibility for any performance solution designs provided by the Project Façade Engineer.

External Window and Door Openings:

Refer to attached drawing number ***9846-22-001B-F-150EO*** for external openings framing design and details.

Jamb, header and sill framing details have been designed in accordance with framing details noted above to maximum wall heights as nominated in ***9846-22-001B-F-150EW***. It is assumed that the surrounding wall frame is constructed as indicated, with any window or door openings located on a greater wall height to be re-checked and designed accordingly.

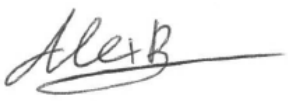
Note the following exclusions/assumptions regarding the openings framing details:

- This specification excludes all openings with “step-up” in sill heights or corner windows where the opening facade is angled. In these cases, structural steel framing or alternative braced framework will be required.

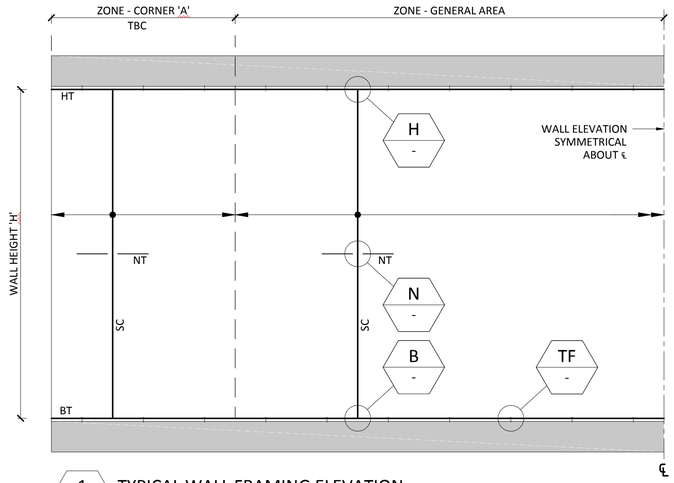
- Openings with widths larger than those specified in ***9846-22-001B-F-150EO*** will require structural steel framing or an alternative braced framework where possible. For specific confirmation, refer to Rondo Technical Services.

If you should require further assistance, please do not hesitate to contact us.

Regards,



Alexander Becker
Rondo Building Services Pty Ltd
Design Engineer
B.E. Civil (Hons)

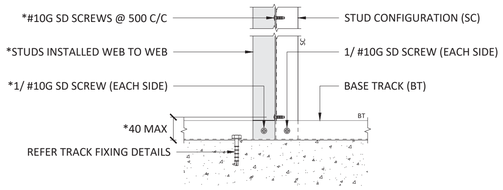


1 – TYPICAL WALL FRAMING ELEVATION
SCALE NTS

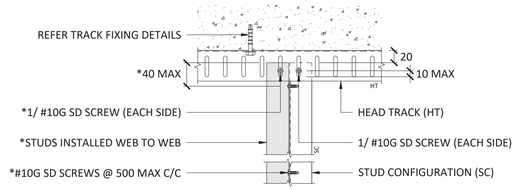
MEMBER AND CONNECTION SCHEDULE

ITEM	LEVEL	MAX ULS	"H"	DEFLECTION LIMIT	STUD CONFIG 'SC'	STUD C/C	NOGGINGS			BASE TRACK			HEAD TRACK			FIXING SPACING 'SP'
							TYPE 'NT'	ROWS	DETAIL	TRACK 'BT'	DETAIL	FIXING DETAIL	TRACK 'HT'	DETAIL	FIXING DETAIL	
1	LG-UG	1.61kPa	4300	H/360	2/#691 150x1.15BMT STUDS BACK-TO-BACK	600	#217 150x0.70BMT DOUBLE PUNCH	2	N1	#690 150x50x1.15BMT TRACK	B1	TF5	#S690 150x1.15BMT SLOTTED DHT	H1	TF5	600
2	L1	1.61kPa	4500	H/360	2/#691 150x1.15BMT STUDS BACK-TO-BACK	600	#217 150x0.70BMT DOUBLE PUNCH	2	N1	#690 150x50x1.15BMT TRACK	B1	TF5	#S690 150x1.15BMT SLOTTED DHT	H2	TF7	600

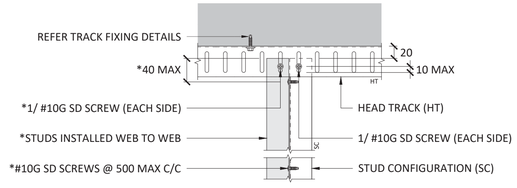
NOTE: THE MAX ULS WERE PROVIDED THROUGH THE WIND REPORT 'WIND LOAD ASSESSMENT TO AS1170', PROVIDED BY ZIPCLAD (22/04/2022). PLEASE FIND THE ATTACHED WIND REPORT



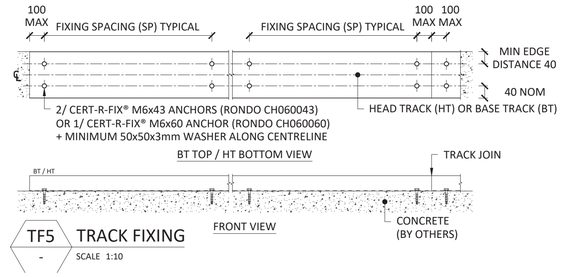
B1 – BASE CONNECTION
SCALE 1:5



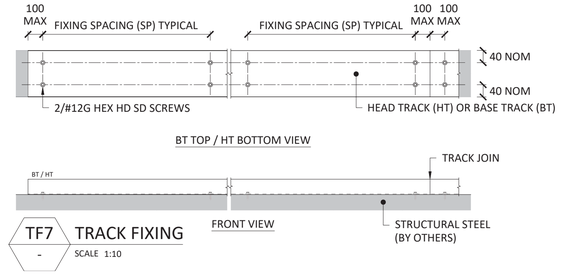
H1 – HEAD CONNECTION
SCALE 1:5



H2 – HEAD CONNECTION
SCALE 1:5



TF5 – TRACK FIXING
SCALE 1:10



TF7 – TRACK FIXING
SCALE 1:10

UNLESS NOTED OTHERWISE:
- ALL DETAILS AS PER RONDO PRO MANUAL
- ALL DIMENSIONS ARE IN mm

DO NOT SCALE OFF THIS DWG

A1

REV	DESCRIPTION	DWN	CHK	DATE
B	CONSTRUCTION	AB	CK	21/10/2022

GENERAL NOTES

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RONDO SPECIFICATION FOR THE PROJECT, & ALL ARCHITECTURAL & OTHER CONSULTANTS' DRAWINGS & SPECIFICATIONS, AS MAY BE ISSUED DURING THE COURSE OF THE PROJECT.
2. ANY DISCREPANCIES SHALL BE REFERRED TO RONDO FOR CLARIFICATION PRIOR TO PROCEEDING WITH THE WORKS.
3. THE ALLOWANCE FOR STRUCTURAL MOVEMENT IS TO BE CONFIRMED BY THE PROJECT ENGINEER PRIOR TO COMMENCING WORK ON SITE.
4. ALL SECTIONS AS MANUFACTURED BY RONDO BUILDING SERVICES PTY. LTD; SUBSTITUTION WITH ALTERNATIVE COMPONENTS IS NOT PERMITTED.
5. DESIGN ASSUMES ALL SECTIONS HAVE BEEN INSTALLED IN ACCORDANCE WITH THE DETAILS CONTAINED HEREIN.
6. THE DESIGN ONLY CONSIDERS THE STRUCTURAL ADEQUACY OF THE RONDO STUD FRAMING SYSTEM. THE SUPPORTING STRUCTURE HAS NOT BEEN CHECKED & THEREFORE REMAINS THE RESPONSIBILITY OF THE PROJECT / STRUCTURAL ENGINEER.
7. SCALING FROM THE DRAWING IS NOT PERMITTED & ALL DIMENSIONS & LENGTHS SPECIFIED ARE TO BE CHECKED & CONFIRMED ON SITE PRIOR TO COMMENCING WORK.
8. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION & ENSURING NO PART IS OVERSTRESSED AT ANY TIME.
9. ALL STUD WALLS ARE NON-LOAD BEARING UNLESS NOTED OTHERWISE.
10. ALL NOGGINGS SHALL BE EQUALLY SPACED OVER STUD LENGTHS, UNLESS NOTED OTHERWISE.
11. SPLICING OF THE STUDS IS NOT PERMITTED, UNLESS NOTED OTHERWISE.
12. THE FRAMING DESIGN HAS BEEN CHECKED IN ACCORDANCE WITH AS/NZS 4600.
13. NOMINATED SELF-DRILLING SCREWS SHALL COMPLY WITH AS 3566 & SHALL BE CLASS 4 COATING MINIMUM, UNLESS NOTED OTHERWISE.
14. ANCHORS SHALL BE AS SPECIFIED OR EQUIVALENT AS CONFIRMED BY THE MANUFACTURER.
15. FIRE & ACOUSTIC PERFORMANCE OF THE FRAMING SYSTEM HAS NOT BEEN CONSIDERED & SHALL BE NOMINATED BY A SUITABLY QUALIFIED CONSULTANT.
16. THE CONNECTION DETAIL HAS BEEN CHECKED FOR THE FOLLOWING PRIMARY STRUCTURE PARAMETERS:
    CONCRETE - MINIMUM GRADE 32MPa
    STEEL - MINIMUM 3.0mm THICK C350 HOLLOW SECTIONS OR;
    STEEL - MINIMUM 3.5mm THICK GRADE 250 HOT ROLLED SECTIONS.
17. * = REQUIRED ONLY WHEN BACK TO BACK STUDS ARE SPECIFIED
18. DETAIL D1 SHALL BE APPLIED WHEN STUDS "SC" ARE LOCATED WITHIN THE 200mm TRACK 'END ZONE' FORMED BY ADJOINING TRACK SECTIONS. DETAIL D1 CAN BE APPLIED TO HEAD TRACK END SPLICE DETAIL.

PROTECTIVE COATING

1. UNLESS NOTED OTHERWISE, THE FRAMING SPECIFIED HAS A COATING DESIGNATION OF Z275, IN ACCORDANCE WITH AS/NZS 1397. THAT IS, ZINC COATING OF MASS 275g/m^2.
2. THE SPECIFIED FRAMING IS NOT RECOMMENDED FOR APPLICATIONS WITHIN 300m OF BREAKING SURF, UNLESS NOTED OTHERWISE. ALL PROJECTS LESS THAN 300m FROM BREAKING SURF SHALL BE REFERRED TO RONDO FOR CLARIFICATION.
3. RONDO RECOMMENDS A VAPOUR PERMEABLE BARRIER, AS SPECIFIED BY THE ARCHITECT, BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALL EXTERNAL WALL FRAMING APPLICATIONS.

DEFLECTION HEADS

1. WHERE NOMINATED, THE DEFLECTION HEAD DETAILS TO CONCRETE HAVE BEEN DESIGNED TO ACCOMMODATE UP TO & INCLUDING 15mm OF DOWNWARD STRUCTURAL MOVEMENT, WITH A CONSTRUCTION TOLERANCE OF 5mm.
2. WHERE DIFFERENTIAL STRUCTURAL MOVEMENT > 10mm IS REQUIRED, REFER TO RONDO FOR SPECIFIC DETAILS & REQUIREMENTS.
3. THE SUBCONTRACTOR SHALL VERIFY THE ADEQUACY OF THIS ALLOWANCE PRIOR TO COMMENCING WORKS ON SITE.

DESIGN DATA

1. THE RONDO FRAMING HEREIN HAS BEEN CHECKED FOR COMPLIANCE WITH THE DESIGN DATA NOMINATED WITHIN THE CORRESPONDING STANDARDS, SPECIFIED BELOW:

DEAD & IMPOSED LOADS TO AS/NZS 1170.1

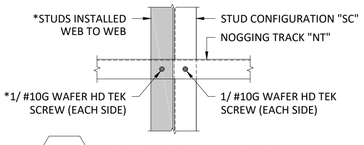
WIND LOADING TO AS/NZS 1170.2

THE MAX ULS WERE PROVIDED THROUGH THE WIND REPORT 'WIND LOAD ASSESSMENT TO AS1170', PROVIDED BY ZIPCLAD (22/04/2022). PLEASE FIND THE ATTACHED WIND REPORT FOR WIND LOADING.

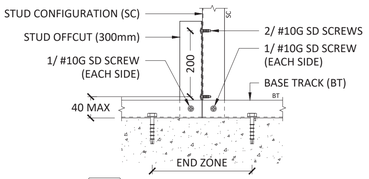
SEISMIC LOADING TO AS/NZS 1170.4 - SECTION 8

BUILDING IMPORTANCE LEVEL	IL3
ANNUAL PROBABILITY OF EXCEEDANCE (ULS)	1/1000
ANNUAL PROBABILITY OF EXCEEDANCE (SLS)	1/25
HAZARD FACTOR	0.08
SITE SUB-SOIL CLASSIFICATION	Ce

2. LOADING OTHER THAN THAT NOMINATED ABOVE HAS NOT BEEN CONSIDERED & IS THEREFORE OUTSIDE THE SCOPE OF THIS DESIGN.



N1 – NOGGING CONNECTION DETAIL
SCALE 1:5



D1 – TRACK END SPLICE
SCALE 1:5 (SEE NOTE 18)

PROJECT: KINGSWOOD TAFE

TITLE: EXTERNAL WALL FRAMING 150x1.15mm

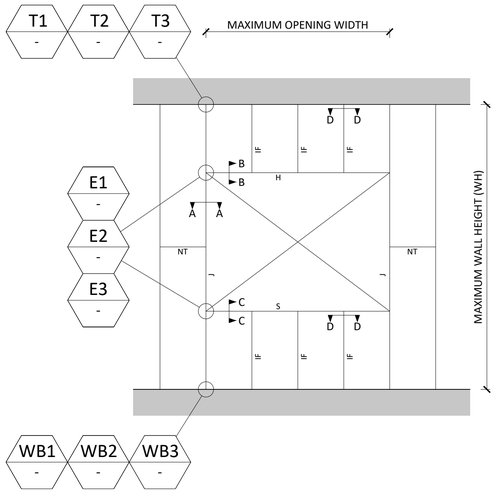
RONDO®

STATUS	DWN	CHK	DATE
CONSTRUCTION	AB	CK	21/10/2022

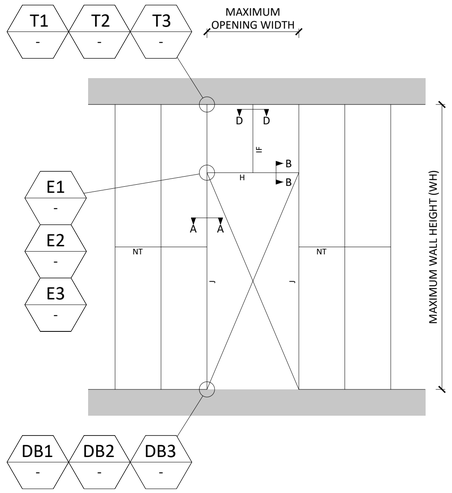
DWG # 9846-22-001B-F-150EW

REV B

REV	DESCRIPTION	DWN	CHK	DATE
B	CONSTRUCTION	AB	DG	21/10/2022



1 WINDOW FRAMING ELEVATION
SCALE NTS



2 DOOR FRAMING ELEVATION
SCALE NTS

MAXIMUM OPENING WIDTHS FOR 150x1.15MM BMT FRAMING

ITEM	LEVEL	ZONE	"H"	DEFLECTION LIMIT	STUD C/C	JAMBS			HEADERS/SILLS		
						J1	J2	J3	H1/S1	H2/S2	H3/S3
1	LG-UG	1.61kPa	4300	H/360	600	950	1750	2750	2040	3600	4040
2	L1	1.61kPa	4500	H/360	600	N/A	1450	2330	1990	3550	3860

NOTE: THE MAX ULS WERE PROVIDED THROUGH THE WIND REPORT 'WIND LOAD ASSESSMENT TO AS1170', PROVIDED BY ZIPCLAD (22/04/2022). PLEASE FIND THE ATTACHED WIND REPORT

GENERAL NOTES

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RONDO SPECIFICATION FOR THE PROJECT, & ALL ARCHITECTURAL & OTHER CONSULTANTS' DRAWINGS & SPECIFICATIONS, AS MAY BE ISSUED DURING THE COURSE OF THE PROJECT.
2. ANY DISCREPANCIES SHALL BE REFERRED TO RONDO FOR CLARIFICATION PRIOR TO PROCEEDING WITH THE WORKS.
3. THE ALLOWANCE FOR STRUCTURAL MOVEMENT IS TO BE CONFIRMED BY THE PROJECT ENGINEER PRIOR TO COMMENCING WORK ON SITE.
4. ALL SECTIONS AS MANUFACTURED BY RONDO BUILDING SERVICES PTY. LTD; SUBSTITUTION WITH ALTERNATIVE COMPONENTS IS NOT PERMITTED.
5. DESIGN ASSUMES ALL SECTIONS HAVE BEEN INSTALLED IN ACCORDANCE WITH THE DETAILS CONTAINED HEREIN.
6. THE DESIGN ONLY CONSIDERS THE STRUCTURAL ADEQUACY OF THE RONDO STUD FRAMING SYSTEM. THE SUPPORTING STRUCTURE HAS NOT BEEN CHECKED & THEREFORE REMAINS THE RESPONSIBILITY OF THE PROJECT / STRUCTURAL ENGINEER.
7. SCALING FROM THE DRAWING IS NOT PERMITTED & ALL DIMENSIONS & LENGTHS SPECIFIED ARE TO BE CHECKED & CONFIRMED ON SITE PRIOR TO COMMENCING WORK.
8. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION & ENSURING NO PART IS OVERSTRESSED AT ANY TIME.
9. ALL STUD WALLS ARE NON-LOAD BEARING UNLESS NOTED OTHERWISE.
10. ALL NOGGINGS SHALL BE EQUALLY SPACED OVER STUD LENGTHS, UNLESS NOTED OTHERWISE.
11. SPLICING OF THE STUDS IS NOT PERMITTED, UNLESS NOTED OTHERWISE.
12. THE FRAMING DESIGN HAS BEEN CHECKED IN ACCORDANCE WITH AS/NZS 4600.
13. NOMINATED SELF-DRILLING SCREWS SHALL COMPLY WITH AS 3566 & SHALL BE CLASS 4 COATING MINIMUM, UNLESS NOTED OTHERWISE.
14. ANCHORS SHALL BE AS SPECIFIED OR EQUIVALENT AS CONFIRMED BY THE MANUFACTURER.
15. FIRE & ACOUSTIC PERFORMANCE OF THE FRAMING SYSTEM HAS NOT BEEN CONSIDERED & SHALL BE NOMINATED BY A SUITABLY QUALIFIED CONSULTANT.
16. THE CONNECTION DETAIL HAS BEEN CHECKED FOR THE FOLLOWING PRIMARY STRUCTURE PARAMETERS:
    CONCRETE - MINIMUM GRADE 32MPa
    STEEL - MINIMUM 3.0mm THICK C350 HOLLOW SECTIONS OR;
    STEEL - MINIMUM 3.5mm THICK GRADE 250 HOT ROLLED SECTIONS.

PROTECTIVE COATING

1. UNLESS NOTED OTHERWISE, THE FRAMING SPECIFIED HAS A COATING DESIGNATION OF Z275, IN ACCORDANCE WITH AS/NZS 1397. THAT IS, ZINC COATING OF MASS 275g/m^2.
2. THE SPECIFIED FRAMING IS NOT RECOMMENDED FOR APPLICATIONS WITHIN 300m OF BREAKING SURF, UNLESS NOTED OTHERWISE. ALL PROJECTS LESS THAN 300m FROM BREAKING SURF SHALL BE REFERRED TO RONDO FOR CLARIFICATION.
3. RONDO RECOMMENDS A VAPOUR PERMEABLE BARRIER, AS SPECIFIED BY THE ARCHITECT, BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALL EXTERNAL WALL FRAMING APPLICATIONS.

DEFLECTION HEADS

1. WHERE NOMINATED, THE DEFLECTION HEAD DETAILS TO CONCRETE HAVE BEEN DESIGNED TO ACCOMMODATE UP TO & INCLUDING 15mm OF DOWNWARD STRUCTURAL MOVEMENT, WITH A CONSTRUCTION TOLERANCE OF 5mm.
2. WHERE DIFFERENTIAL STRUCTURAL MOVEMENT > 10mm IS REQUIRED, REFER TO RONDO FOR SPECIFIC DETAILS & REQUIREMENTS.
3. THE SUBCONTRACTOR SHALL VERIFY THE ADEQUACY OF THIS ALLOWANCE PRIOR TO COMMENCING WORKS ON SITE.

DESIGN DATA

1. THE RONDO FRAMING HEREIN HAS BEEN CHECKED FOR COMPLIANCE WITH THE DESIGN DATA NOMINATED WITHIN THE CORRESPONDING STANDARDS, SPECIFIED BELOW:

DEAD & IMPOSED LOADS TO AS/NZS 1170.1

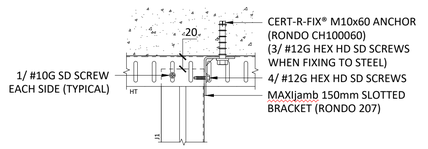
WIND LOADING TO AS/NZS 1170.2

THE MAX ULS WERE PROVIDED THROUGH THE WIND REPORT 'WIND LOAD ASSESSMENT TO AS1170', PROVIDED BY ZIPCLAD (22/04/2022). PLEASE FIND THE ATTACHED WIND REPORT FOR WIND LOADING.

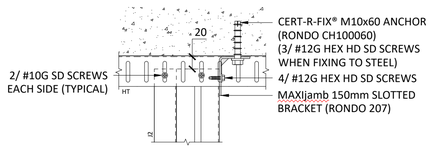
SEISMIC LOADING TO AS/NZS 1170.4 - SECTION 8

BUILDING IMPORTANCE LEVEL	IL3
ANNUAL PROBABILITY OF EXCEEDANCE (ULS)	1/1000
ANNUAL PROBABILITY OF EXCEEDANCE (SLS)	1/25
HAZARD FACTOR	0.08
SITE SUB-SOIL CLASSIFICATION	Ce

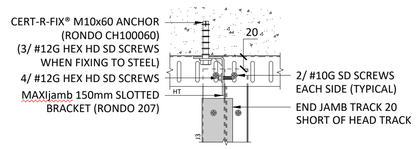
2. LOADING OTHER THAN THAT NOMINATED ABOVE HAS NOT BEEN CONSIDERED & IS THEREFORE OUTSIDE THE SCOPE OF THIS DESIGN.



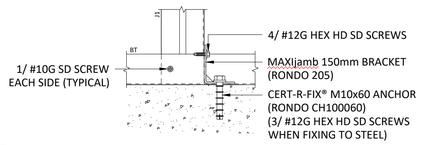
T1 JAMB J1 TOP CONNECTION
SCALE 1:5



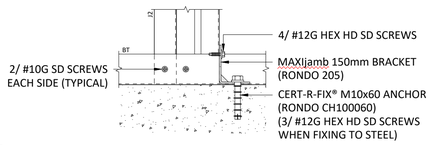
T2 JAMB J2 TOP CONNECTION
SCALE 1:5



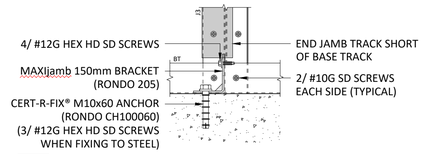
T3 JAMB J3 TOP CONNECTION
SCALE 1:5



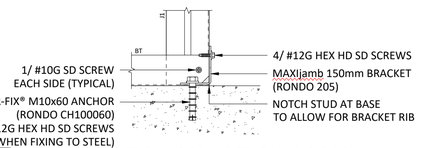
WB1 JAMB J1 BOTTOM CONNECTION (WINDOWS)
SCALE 1:5



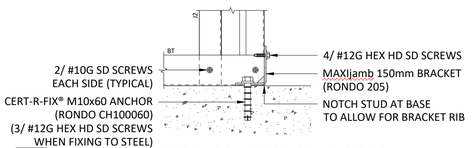
WB2 JAMB J2 BOTTOM CONNECTION (WINDOWS)
SCALE 1:5



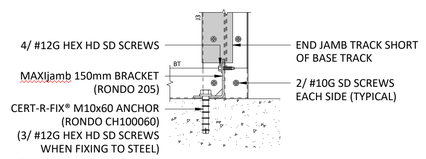
WB3 JAMB J3 BOTTOM CONNECTION (WINDOWS)
SCALE 1:5



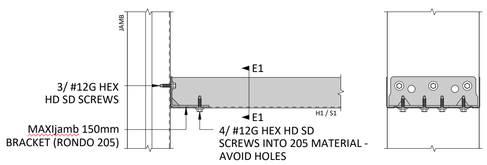
DB1 JAMB J1 BOTTOM CONNECTION (DOORS)
SCALE 1:5



DB2 JAMB J2 BOTTOM CONNECTION (DOORS)
SCALE 1:5

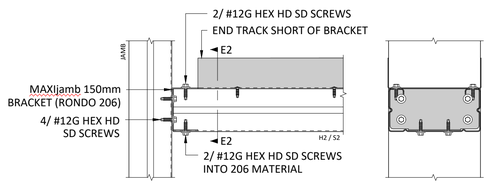


DB3 JAMB J3 BOTTOM CONNECTION (DOORS)
SCALE 1:5



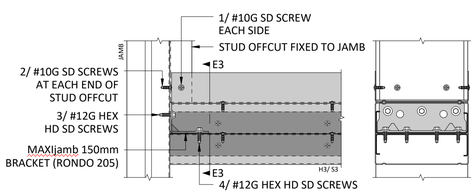
E1 HEADER H1/SILL S1 CONNECTION
SCALE 1:5

SECTION E1-E1



E2 HEADER H2/SILL S2 CONNECTION
SCALE 1:5

SECTION E2-E2

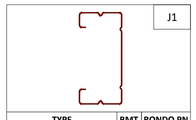


E3 HEADER H3/SILL S3 CONNECTION
SCALE 1:5

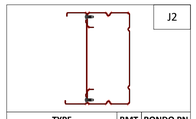
SECTION E3-E3

MEMBER SCHEDULE

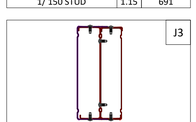
JAMB: SECTION A-A



TYPE	BMT	RONDO PN
1/ 150 MAXIjamb STUD	1.20	204

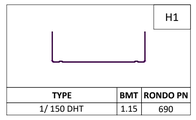


TYPE	BMT	RONDO PN
1/ 150 MAXIjamb STUD	1.20	204
1/ 150 STUD	1.15	691

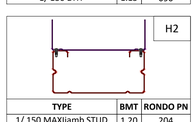


TYPE	BMT	RONDO PN
3/ 150 STUDS	1.15	691
1/ 150 DHT	1.15	690

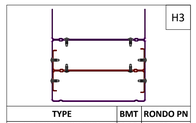
HEADER: SECTION B-B



TYPE	BMT	RONDO PN
1/ 150 DHT	1.15	690

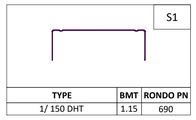


TYPE	BMT	RONDO PN
1/ 150 MAXIjamb STUD	1.20	204
1/ 150 DHT	1.15	690

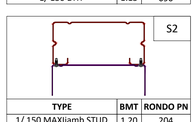


TYPE	BMT	RONDO PN
2/ 150 STUDS (B2B)	1.15	691
3/ 150 DHTS	1.15	690

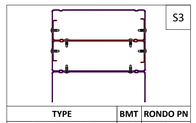
SILL: SECTION C-C



TYPE	BMT	RONDO PN
1/ 150 DHT	1.15	690

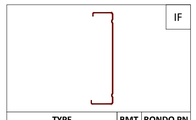


TYPE	BMT	RONDO PN
1/ 150 MAXIjamb STUD	1.20	204
1/ 150 DHT	1.15	690



TYPE	BMT	RONDO PN
2/ 150 STUDS (B2B)	1.15	691
3/ 150 DHTS	1.15	690

INFILL: SECTION D-D



TYPE	BMT	RONDO PN
1/ 150 STUD	1.15	691

NOTES:

1. #10G SD SCREWS AS SHOWN @ 600 C/C
2. BRACKET ANCHORS TO BE INSTALLED THROUGH FIXING HOLE FURTHEST FROM SLAB EDGE

PROJECT: KINGSWOOD TAFE
TITLE: EXTERNAL WALL OPENINGS FRAMING 150x1.15mm

RONDO®

DO NOT SCALE OFF THIS DRAWING
UNLESS NOTED OTHERWISE:
- ALL DETAILS AS PER RONDO PRO MANUAL
- ALL DIMENSIONS ARE IN mm

A1 | STATUS: CONSTRUCTION | DWN: AB | CHK: DG | DATE: 21/10/2022 | DWG #: 9846-22-001B-F-150EO | REV: B

Wind Load Assessment to AS1170

CODES & REGULATIONS REFERENCED

(1) AS/NZS1170.2:2011 Structural Design Actions---Wind Actions

(2) Facade Performance Specification

PROJECT INFORMATION:

- **Project Name:** TAFE, NSW
- **Address:** Sydney, Australia
- **Importance Level:** 3
- **Design Life:** 50 years
- **Terrain Category:** 2.5
- **Building Dimensions:** Height=15m
- **Regional Wind Speed:** V_{1000}=46m/s, V_{25}=37m/s
- **Wind Region:** A2

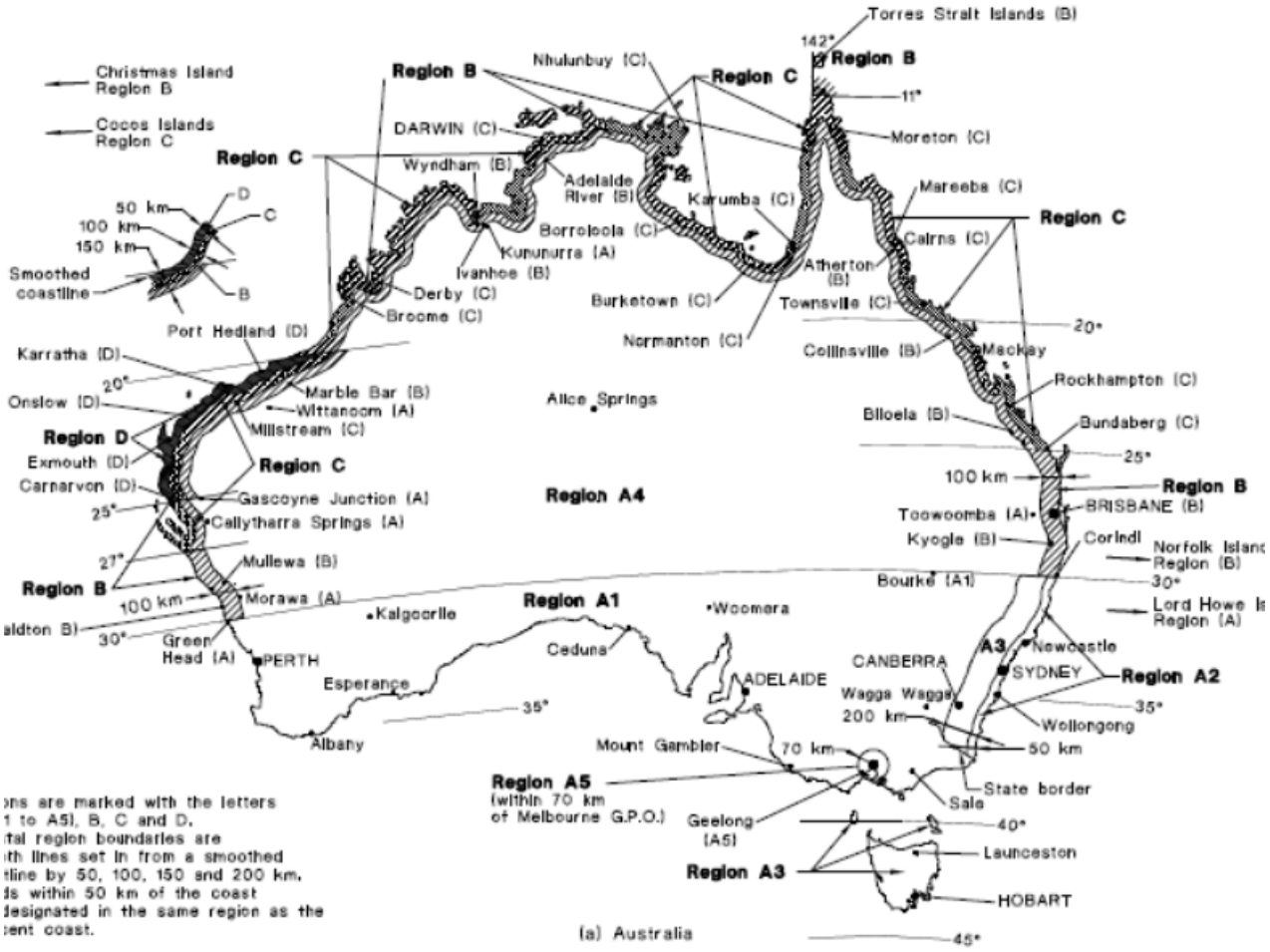


FIGURE 3.1(A) WIND REGIONS

PART A. Wind Load for Curtain Wall

---For SA2 (<0.5a from edge)

Regional wind speed

$V_{1000} := 46 \cdot \frac{m}{s}$ *(For Ultimate Limit State)*

$V_{25} := 37 \cdot \frac{m}{s}$ *(For Serviceability Limit State)*

Terrain/Height multiplier

$M_{z.cat} := \frac{1.05 + 0.89}{2}$ **(Region A2 / Terrain Category 2.5 / Height above ground = 15m)**

Wind directional multiplier

$M_d := 1.0$

Shielding multiplier

$M_s := 1.0$

Topographic multiplier

$M_t := 1.0$

Site wind speed

$V_{sit\_\beta1} := V_{1000} \cdot M_d \cdot M_{z.cat} \cdot M_s \cdot M_t$ $V_{sit\_\beta1} = 44.62 \cdot \frac{m}{s}$ *(For Ultimate Limit State)*

$V_{sit\_\beta2} := V_{25} \cdot M_d \cdot M_{z.cat} \cdot M_s \cdot M_t$ $V_{sit\_\beta2} = 35.89 \cdot \frac{m}{s}$ *(For Serviceability Limit State)*

Design wind speed

$V_{des\_\theta1} := V_{sit\_\beta1}$ $V_{des\_\theta1} = 44.62 \cdot \frac{m}{s}$ *(For Ultimate Limit State)*

$V_{des\_\theta2} := V_{sit\_\beta2}$ $V_{des\_\theta2} = 35.89 \cdot \frac{m}{s}$ *(For Serviceability Limit State)*

Density of air

$\rho_{air} := 1.2 \frac{kg}{m^3}$

External pressure coefficent

$C_{p.e\_pos} := 0.7$ *(Positive)* (AS/NZS 1170.2:2011 Table 5.2A)

$C_{p.e\_neg} := 0.65$ *(Negative)* (AS/NZS 1170.2:2011 Table 5.2C)

Area reduction factor

$K_a := 1.0$

Combination factor

$K_c := 1.0$

Permeable reduction factor

$K_p := 1.0$

Local pressure factor

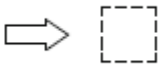
$K_{l\_p} := 1.5$ *(Positive)*

$K_{l\_n} := 2.0$ *(Negative)*

(AS/NZS 1170.2:2011 Table 5.6)

(AS/NZS 1170.2:2011 Table 5.1(A)

All walls equally permeable	−0.3 or 0.0, whichever is the more severe for combined forces



Internal pressure factor

$C_{p.i\_1} := -0.3$

$C_{p.i\_2} := 0$

Aerodynamic shape factor (Internal pressure coefficients to be -0.3 or 0 for equally permeable walls in Table 5.1A)

$C_{fig\_p} := \left(C_{p.e\_pos}\right) \cdot K_a \cdot K_c \cdot K_{l\_p} \cdot K_p - \left(C_{p.i\_1}\right) \cdot K_c$ $C_{fig\_p} = 1.35$ *(Positive)*

$C_{fig\_n} := \left(C_{p.e\_neg}\right) \cdot K_a \cdot K_c \cdot K_{l\_n} \cdot K_p + \left(C_{p.i\_2}\right) \cdot K_c$ $C_{fig\_n} = 1.3$ *(Negative)*

Dynamic response factor

$C_{dyn} := 1.0$

Ultimate Limit State

Positive wind

$W_{u\_p} := 0.5 \cdot \rho_{air} \cdot V_{des\_\theta1}^{2} \cdot C_{fig\_p} \cdot C_{dyn}$ $W_{u\_p} = 1.61 \cdot KPa$

Negative wind

$W_{u\_n} := 0.5 \cdot \rho_{air} \cdot V_{des\_\theta1}^{2} \cdot C_{fig\_n} \cdot C_{dyn}$ $W_{u\_n} = 1.55 \cdot KPa$

Serviceability Limit State

Positive wind

$W_{s\_p} := 0.5 \cdot \rho_{air} \cdot V_{des\_\theta2}^{2} \cdot C_{fig\_p} \cdot C_{dyn}$ $W_{s\_p} = 1.04 \cdot KPa$

Negative wind

$W_{s\_n} := 0.5 \cdot \rho_{air} \cdot V_{des\_\theta2}^{2} \cdot C_{fig\_n} \cdot C_{dyn}$ $W_{s\_n} = 1 \cdot KPa$