

28 April 2025

Planning Secretary
Department of Planning,
Housing and Infrastructure

Waterloo Metro Quarter Southern Precinct (SSD 10437)
Consent Condition E5 External Walls and Cladding Flammability

Dear Planning Secretary,

This letter encloses a copy of the documentation given to the Certifying Authority to the Planning Secretary in accordance with SSD10437 consent condition E5 External Walls and Cladding Flammability within seven days of acceptance from the Certifying Authority.

Yours sincerely,



Ryan Thomas
Project Director
Waterloo Metro Quarter
78-82 Wyndham Street, Alexandria, NSW

28/04/2025

Waterloo Collective
Building 4 – Social Housing
129 Wellington Street
Waterloo

Attn: Nairy Topouzian

Dear Nairy,

**Re: Project Number 201049.03 – Building 4
DA Condition E4 & E5 – External Wall & Cladding Flammability**

We have reviewed the OC documentations provided against requirements of various Construction Certificates and the provisions of the Building Code of Australia (BCA) 2022 and can confirm compliance with the requirements of DA Condition E4.

The following Cladding system form part of the exterior envelope of Building 4:

- Brick Veneer
- Glazing
- Aluminium

The following Statements has been relied upon:

- John Holland Cladding Flammability letter dated 19 March 2025
- Aconex correspondence JH-GCOR-032032

Yours faithfully



Iliyas Shah
Building Surveyor
McKenzie Group Consulting (NSW) Pty Ltd
ACN 093 211 995

19/03/2025
Geoffrey Pearce
McKenzie Group Consulting
Level 6, 189 Kent Street, Sydney


Subject: External Walls and Cladding Flammability
Project: Waterloo OSD

Dear Geoffrey,

John Holland confirms with respect to DA condition E4 (External Walls and Cladding Flammability) that all external walls to Building 4 have been constructed in accordance with the FEBQ v16 (FRNSW ref no. FRN23/1165) and Fire Engineering Report (Rev D dated 24/02/2025).

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

Yours faithfully



Eugene Choo
Project Manager

Ilyas Shah
MCKENZIE GROUP CONSULTING (NATIONAL)

Building 4 Cladding Flamability
GENERAL CORRESPONDEN...

11/04/2025
MGC-GCOR-000221

Aike Sakeson
JOHN HOLLAND PTY LTD

Re: Building 4 Cladding Flamability
GENERAL CORRESPONDEN...

16/04/2025
JH-GCOR-032032

Waterloo OSD Southern Precinct & Basement

Level 3 65 Pirrama Road
Pyrmont
NSW 2009 Australia

**JOHN
HOLLAND**

MAIL TYPE

General Correspondence

MAIL NUMBER

JH-GCOR-032032

REFERENCE NUMBER

MGC-GCOR-000221

Re: Building 4 Cladding Flamability

From Mr Aike Sakeson - John Holland Pty Ltd

To Mr Ilyas Shah - McKenzie Group Consulting (NATIONAL)

Cc (4) Mr Eugene Choo - John Holland Pty Ltd (+3 more...)

Sent Wednesday, 16 April 2025 4:10:30 PM AEST (GMT +10:00)

Status N/A

DETAILS

Area Building 4 (Social)

Discipline PCA

Package/Work lot

MESSAGE

Hi Ilyas,

Confirm the three types nominated below and confirming that there is no ACPs on the project.

Nairy has issued you the technical data and certificates to validate the non-combustibility of the aluminium cladding.

Regards,

Aike Sakeson

Project Engineer
Waterloo Station



84 – 88 Botany Road

Alexandria NSW 2017
M. +61 448 083 232
E. aike.sakeson@jhg.com.au
W. johnholland.com.au

From: I Shah
Sent: 11/04/2025 12:39:02 PM AEST (GMT +10:00)
To: Aike Sakeson
Cc: Eugene Choo, Geoffrey Pearce, Dylan Turner, Nairy Topouzian
Mail Number: MGC-GCOR-000221
Subject: Building 4 Cladding Flamability

Area:	Building 4 (Social)
Discipline:	PCA
Package/Work lot:	

Hi Aike,

Reference is made to our discussion in relation to Building 4 DA Condition E4/E5.

Can you please provide a written statement confirming **all material used** on the exterior envelope of Building 4.

My understanding is the envelope is restricted to:

1. Brick
2. Glass/glazing
3. Aluminium

Please also confirm no Aluminum Composite Panels (ACP's) has been used.

There are some decorative features as well such as blades. Please also include in the statement material of all decorative features attached to the exterior envelope/cladding system. Please provide fire test data for materials outside of 1-3 listed above.

EXTERNAL WALLS AND CLADDING FLAMMABILITY

- E4. Prior to the issue of any Occupation Certificate, evidence shall be submitted to the Certifying Authority demonstrating all external walls of the new building, including cladding, comply with the relevant requirements of the BCA, consistent with the requirements of condition B17.
- E5. The Applicant must provide a copy of the documentation given to the Certifying Authority to the Planning Secretary within seven days after the Certifying Authority accepts it.

Regards
iliyas Shah
Mckenzie Group



Certificate of Conformity

Certification Body:



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:

FVA Group Pty Ltd
18-20 Donald St
Lithgow NSW 2790
Ph: +61 2 6352 2355
www.fv.com.au

Certificate number: CM30017 Rev 2

THIS IS TO CERTIFY THAT

VITRADUAL

Type and/or use of product:

VITRADUAL panels are used in external wall cladding, in all building types (NCC Volume 1 & 2)

Description of product:

VITRADUAL panels are 3 mm thick PVDF coil coated solid Aluminium panels installed with metal fixing system. Standard panel sizes include widths of 1,250mm & 1,500mm and lengths of 2,500mm, 3,200mm & 4,000mm. Custom panel sizes up to 1,500mm x 4,000mm.

COMPLIES WITH THE FOLLOWING BCA PROVISIONS AND STATE OR TERRITORY VARIATION(S)

BCA 2022

	Volume One		Volume Two and Housing Provisions (HP)	
Performance Requirement(s)	B1P1	Structural Provisions	H1P1	Structural stability and resistance to actions
	B1P2	Structural Provisions		
	F3P1	Damp and Weatherproofing	H2P2	Weatherproofing
Deemed-to-Satisfy Provision(s):	B1D4 (e)	Structural Resistance	HP 2.2.4 (k)	Structural Resistance
	C2D10 (6)(e)	Non-Combustible Material		
	G5D3	Construction in bushfire prone areas Protection – residential buildings	H7D4 (2)(a)	Construction in bushfire prone areas
	G5D4	Construction in bushfire prone areas Protection – certain Class 9 buildings		

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: 29/06/2023

Date of expiry: 29/06/2026



State or territory variation(s):	NT B1D4 (e) QLD B1D4 (e) WA B1D4 (e)	Structural Resistance	WA 2.2.4 (k)	Structural Resistance
	NSW G5D3 NSW G5D4 VIC G5D4 SA G5D5	Bushfire: Protection – residential buildings Bushfire: Protection – certain Class 9 buildings Bushfire: Protection – certain Class 9 buildings Bushfire attack levels	NSW H7D4 (2)(a) QLD H7D4 (3) SA H7D4 (3)	Construction in bushfire prone areas Construction in bushfire prone areas Construction in bushfire prone areas

SUBJECT TO THE FOLLOWING LIMITATIONS AND CONDITIONS AND THE PRODUCT TECHNICAL DATA IN APPENDIX A AND EVALUATION STATEMENTS IN APPENDIX B

Limitations and conditions:	Building classification/s:
Volume 1 – B1P1 & Volume 2 – H1P1 Vitradual panel system as described has maximum design wind load limits documented within the Vitradual Technical Manual, dated March 2020. Wind load limits, construction detail and fixing must follow the relevant details contained within the Vitradual Technical Manual, dated March 2020. Supporting structures & connections (including stud frame & sub framing members) must be designed / specified to withstand project loads including but not limited to ULS & SLS wind loads.	1, 2, 3, 4, 5, 6, 7, 8, 9 & 10
Volume 1 – B1P1 (2) (e), (f) & (i) & Volume 2 – H1P1 (2) (e), (f) & (i) Snow, liquid pressure and earth pressure actions are excluded.	1, 2, 3, 4, 5, 6, 7, 8, 9 & 10
Volume 1 – B1P4 & Volume 2 – H1P2 Compliance for flood hazard areas is excluded.	1, 2, 3, 4, 5, 6, 7, 8, 9 & 10
Volume 1 F3P1 & Volume 2 H2P2 A VitraDual external wall must be constructed using either a pliable building membrane or Rigid Air Barrier, subject to the following: <ol style="list-style-type: none"> 1. the Flexible Wall Wrap or Rigid Air Barrier must present an Air & Water barrier for the purposes of weatherproofing, and 2. When a Flexible wall wrap (Water Barrier) is used, the system remains weatherproof up to Serviceability wind loads of +1.5 kPa & -1.8 kPa, and 3. When a Rigid Air Barrier is used for a wall wrap, the system remains weatherproof up to Serviceability wind loads of +3.5 kPa & -4.0 kPa, and 4. Design & installation complies fully with Vitradual Technical Manual, dated March 2020, and 5. Design accommodates deflection movements due to all design loads & temperature variations, and 6. Installation Contractor complies with manufacturer's instructions for sealants, shop drawings & project specifications, and 7. Fixings are installed in accordance with manufacturer's instructions & procedures, fixings to be weathertight and not restrict thermal or wind movements of the façade, and 	1, 2, 3, 4, 5, 6 & 9

	<p>8. Perforated “Breather” wall wrap membranes must not be used.</p>	
	<p>Volume 1 - C2D10 This Certification is based upon the system being installed using components & accessories specified in the “System Components” section of the Vitradual Technical Manual, dated March 2020 & the Vitrafix Accessories Brochure dated March 2020 (refer Appendix B2). Substitution of such components & / or accessories may be permitted, however the general performance specifications of components & / or accessories must be maintained for this certificate to remain valid.</p>	<p>2, 3, 4, 5, 6, 7, 8 & 9</p>
	<p>Volume 1 – C2D10 (1) In a building required to be of Type A or B construction, construction elements and their components must be non-combustible for all external walls, common walls and non-loadbearing internal walls that are required to be fire-resisting. This includes the requirement for Rigid Air Barriers to be non-combustible, where used.</p>	<p>2, 3, 4, 5, 6, 7, 8 & 9</p>
	<p>Volume 1 – C2D10 (6) Pliable building membranes / “Sarking-type materials” must not exceed 1mm in thickness and must have a Flammability index not greater than 5.</p>	<p>2, 3, 4, 5, 6, 7, 8 & 9</p>
	<p>Volume 1 – G5D3 & Volume 2 – H7D4 (2)(a) In designated bushfire prone areas, when the building is constructed in accordance with AS3959: 2018 including Amendments 1 & 2, Vitradual is permitted for use as external wall cladding only in buildings subject to Bushfire Attack Level BAL-Low, BAL-12.5 & BAL-19. In Queensland (per QLD G5D2 & QLD H7D4(3)), areas where the classified vegetation is Group F rainforest (excluding wet sclerophyll forest types), mangrove communities and grasslands under 300mm high, are excluded.</p>	<p>1, 2, 3 & 10a or deck immediately adjacent or connected to building class 1, 2 or 3</p>
	<p>Volume 1 – NSW G5D3 & Volume 2 – NSW H7D4 In designated bushfire prone areas, subject to Bushfire Attack Level BAL-Low, BAL-12.5 & BAL-19, determined in accordance with the Planning for Bush Fire Protection, when the building is constructed in accordance with AS3959: 2018 including Amendments 1 & 2, except as modified by Planning for Bush Fire Protection, Vitradual is permitted for use as external wall cladding. The compliance assessment of the certified system is limited to sections 7.5 and 8.3.2 of Planning for Bush Fire Protection. Site specific conditions arising from:</p> <ul style="list-style-type: none"> - the development consent following consultation with the NSW Rural Fire Service under section 4.14 of the Environmental Planning and Assessment Act 1979 if required, or - the development consent with a bushfire safety authority issued under section 100B of the Rural Fires Act 1997 for the purposes of integrated development <p>have not been considered for the compliance assessment.</p>	<p>1, 2, 3, Class 4 part of a building & 10a building or deck immediately adjacent or connected to building of class 1, 2, 3 or Class 4 part of a building</p>



Certificate of Conformity

	<p>Volume 1 – NSW G5D4</p> <p>In designated bushfire prone areas subject to a Bushfire Attack Level (BAL) not exceeding BAL—12.5, determined in accordance with Planning for Bush Fire Protection, when the building is constructed in accordance with:</p> <ol style="list-style-type: none"> 1) For class 9 buildings, Specification 43 except as modified by Planning for Bush Fire Protection, or 2) For class 10a buildings or decks, AS3959: 2018 including Amendments 1 & 2 except as modified by Planning for Bush Fire Protection and S43C13, <p>Vitradual is permitted for use as external wall cladding.</p> <p>The compliance assessment of the certified system is limited to sections 7.5 and 8.3.2 of Planning for Bush Fire Protection.</p> <p>Site specific conditions arising from the development consent with a bushfire safety authority issued under section 100B of the Rural Fires Act 1997 for the purposes of integrated development are site specific and have not been considered for the compliance assessment.</p>	<p>Class 9 building that is a special fire protection purpose; and a Class 10a building or deck immediately adjacent or connected to such building</p>
	<p>General</p> <p>The supporting structures including stud frame & cavity sub framing, plus internal linings shall be designed & specified by a suitably qualified design professional in accordance with manufacturer guidelines. Installation shall be conducted by suitably qualified and trained building professionals. Design, Specification and Installation shall be in accordance with the Vitradual Technical Manual, dated March 2020 (refer Appendix B2).</p>	<p>1, 2, 3, 4, 5, 6, 7, 8, 9 & 10</p>



Certificate of Conformity

APPENDIX A – PRODUCT TECHNICAL DATA

A1 Type and intended use of product

Refer to page 1 of this certificate.

A2 Description of product

Refer to page 1 of this certificate.

This product is NOT an Aluminium Composite Panel (ACP).

A3 Product specification

Refer to items 1 & 2 listed in Appendix B2:

- VITRADUAL Technical Manual, dated March 2020.
- VITRAFIX Accessories Brochure, dated March 2020.

A4 Manufacturer and manufacturing plant(s)

FVA Group Pty Ltd

18-20 Donald Street

Lithgow NSW 2790

Ph: + 61 2 6352 2355

www.fv.com.au

A5 Installation requirements

Refer to items listed in Appendix B2:

- VITRADUAL Technical Manual, dated March 2020.
- VITRAFIX Accessories Brochure, dated March 2020.

A6 Other relevant technical data

Refer to items listed in Appendix B2:

- VITRADUAL Technical Manual, dated March 2020.
- VITRAFIX Accessories Brochure, dated March 2020.
- Any referenced documents within the above listed technical literature.

APPENDIX B – EVALUATION STATEMENTS

B1 Evaluation methods

The following assessment methods have been used to determine compliance with BCA 2022

Code Clause	Assessment Method(s)	Evidence of suitability	Evidence reference in B2
BCA Volume One B1P1	A2G2 (2) (a), (b)(ii) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume Two H1P1	A2G2 (2) (a), (b)(ii) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume One B1P2	A2G2 (2) (a), (b)(ii) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume One F3P1	A2G2 (2) (a), (b)(i) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 10, 11, 12 & 13
BCA Volume Two H2P2	A2G2 (2) (a), (b)(i) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 10, 11, 12 & 13
BCA Volume One B1D4 (e)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Housing Provisions 2.2.4 (k)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume One C2D10 (6)(e)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One G5D3	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One G5D4	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume Two H7D4 (2)(a)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One NT B1D4 (e) QLD B1D4 (e) WA B1D4 (e)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Housing Provisions WA 2.2.4 (k)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume One NSW G5D3	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One NSW G5D4 VIC G5D4	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One SA G5D5	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume Two NSW H7D4 (2)(a) QLD H7D4 (3) SA H7D4 (3)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9

B2 Reports

The following reports have been used as evidence to determine compliance with BCA 2022:

Ref	Author	Reference	Date / Revision	Description	NATA Registration
1.	Fairview	VitraDual – Technical Information	March 2020	Product Technical Manual	-
2.	Fairview	VitraFix – Accessories Brochure	March 2020	Accessories Brochure	-
3.	Enertren	FAR-106 Vitradual Structural Design	12 December 2019	Structural Assessment Report	-
4.	Enertren	FAR-092 Span Tables	23 January 2019	Structural Span Tables	-
5.	SGS Australia	N-0519-0921	25 October 2019	Material Investigation Report	-
6.	CSIRO	FNC 11690	16 August 2016	Fire Test Report	165
7.	AWTA	16-002875	7 June 2016	Fire Test Report	1356
8.	Red Fire Engineers	JV19-00103-v2	27 March 2020	Fire Assessment Report	-
9.	Exova WarringtonFire UK	WF 400695v2	5 June 2018	Fire Classification Report	UKAS 0249
10.	BG&E Facades	FVA Cladding Products - VitraDual	27 August 2018	Weather tightness assessment report	-
11.	FacadeLab NZ	18-02	20 April 2018	Weather tightness test report	IANZ 1091
12.	VIPAC Engineers	30B-19-0059-TRP-6774697-1	1 April 2020	Weather tightness test report	676
13.	VIPAC Engineers	30B-19-0059-TRP-6774698-0	2 April 2020	Weather tightness test report	676

The Certificate Holder has chosen not to make the above identified evidence of compliance publicly available, due to the documents being considered commercial in confidence.

End of Certificate.



vitradual™

NON-COMBUSTIBLE CASSETTE CLADDING / MANUFACTURED BY FAIRVIEW

TECHNICAL INFORMATION

WWW.FV.COM.AU





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DOCUMENT TRACKING

VERSION #	DATE	CHANGES
1.0	06/03/20	Initial issue
1.1	07/10/20	Content & format updated
1.2	02/12/20	Install diagram updated & other minor changes
1.3	12/08/21	Text correction & install considerations updated
1.4	01/03/22	Installation clarifications

1. ABOUT THIS GUIDE

This guide has been developed to effectively assist fabricators and contractors to work with Fairview's aluminium panel: Vitradual.

The information and recommendations contained herein are believed to be correct at time of publishing, March 2022.

Fairview reserves the right to revise the contents of this guide.

2. INTRODUCTION

2.1 ABOUT VITRADUAL

Vitradual is a 3mm non-combustible solid aluminium cassette cladding system that forms part of Fairview's range of BCA compliant, deemed non-combustible cladding solutions; perfectly suitable for Type A and B constructions where non-combustible products are required.

Vitradual is a high impact resistant, solid panel which can be fabricated, curved and rolled. The prefinished large format cladding panels feature the same PVDF coating system as Fairview's leading aluminium panel Vitracore G2; well proven for its superior quality, extensive colour range and design integrity.

2.2 KEY FEATURES

Vitradual's versatility is achieved due to the combination of high-quality considerations and industry leading components. It is an ideal product for application in Type A and B developments where non-combustible building materials are critical.

Vitradual is one of the few large format cladding panels that are deemed non-combustible when tested to AS1530.1 and AS1530.3.

PRODUCT DNA

Pre-finished solid aluminium panel.

FINISH

Vitradual uses only the highly recognised PVDF Kynar 500® or FEVE paints known for their high durability, providing the optimum resistance to weather and industrial pollution.

FIXING SYSTEM

A cassette style concealed fixing system which is the same to fabricate and install as traditional ACPs.

APPLICATION

Type A and B constructions where non-combustible materials are required such as mixed-use developments, residential construction, and large-scale government infrastructure projects like hospitals.

WARRANTY

15-year warranty, subject to standard terms and conditions.

360VIEW

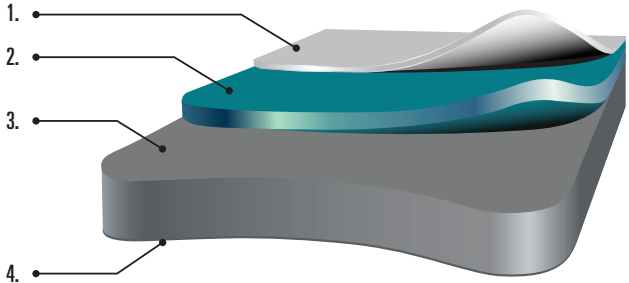
The highly unique, quality control process Fairview has developed to govern our rigorous approach to design and manufacture, material testing, regulatory compliance and product warranty.

3. PRODUCT SPECIFICATION

3.1 TYPICAL COMPOSITION

- 1. Protective film
- 2. PVDF-Kynar 500® coating system
- 3. 3mm Aluminium
- 4. Protective rear coating

The material is rigid, resistant to blows, breakage and pressure, and has high bending, buckling and breaking strengths.



DIMENSIONS

Thickness: 3mm
 Weight: 8.1kg/m²

* Vitradual is not an ACP Panel and has no polyethylene content.

3.2 PANEL SIZES

WIDTH	LENGTH	THICKNESS
1250/1500	2500	3mm
	3200	
	4000	

CUSTOM SIZES ARE AVAILABLE, PLEASE SPEAK TO THE FAIRVIEW TEAM

3.3 MATERIAL DATA

PHYSICAL PROPERTY	VALUE
Tensile Strength – ultimate, Ft _u * (MPa)	<140
Tensile Strength – yield, Ft _y * (MPa)	117
Compressive strength, F _{cy} (MPa)	96
Shear strength – ultimate, F _{su} (MPa)	83
Shear strength – yield, F _{sy} (MPa)	69
Bearing strength – ultimate, F _{bu} (MPa)	276
Bearing strength – yield, F _{by} (MPa)	172
Compressive MOE, E (MPa)	70,000
Fatigue strength (MPa)	60
Modulus of Resilience (Kj/M ³)	130
Embodied carbon (kg-CO ₂ /kg)	8.1

3.4 AVERAGE EXPANSION

MATERIAL	EXPANSION COEFFICIENT (X10 ⁻⁶ /°C)	ELONGATION PER 1000MM ΔT=50°C
Vitradual	23.3	1.2
Zinc	26.7	1.3
Steel	12.2	0.6
Concrete	12	0.6

3.5 ALUMINIUM GRADE

Vitradual is proudly manufactured in 3003 series aluminium. 3003 is an architectural grade aluminium with high end performance in architectural applications. It has high corrosion resistance, strength, machinability and formability, as well as having lower thermal expansion, lower thermal conductivity, and less embodied carbon than other grades used in architectural cladding. This results in a strong, accurate and crisp façade that has high oil canning resistance.

If desired, Vitradual can be supplied in 5052 grade aluminium.

4. FINISH

4.1 COATING SPECIFICATIONS

TYPICAL COATING TYPE

Vitradual uses only the highly recognised PVDF Kynar 500® or FEVE paints known for their high durability. These premium paints provide optimum resistance to weather and industrial pollution on commercial, industrial, infrastructure, and residential developments.

More than 50 years of South Florida Exposure Testing is continuing to confirm the superior chemical and physical properties of fluoropolymer coatings.

For a full list of standard Vitradual colours, refer to our Solid and Metallics Colour Charts.

The Vitradual range also offers the following finishes:

- REPEL - a self-cleaning surface coating.
- VitraArt - for personalised design and imagery.

VITRADUAL KYNAR 500® PVDF DATA

CLASSIFICATION	TEST STANDARD	RESULT	COMMENTS
Nominal Coating thickness	TP-ET-02	45.7 µm	±3.9µm
Colour Uniformity	ASTM D2244-16	ΔE = 0.06	Pass
Specular Gloss	ASTM D523-14	G 24.8	Pass
Dry Film Hardness	ASTM D3363-05 (R2011)e2	3H	Pass
Film Adhesion	ASTM D3359-17	Dry: 5B Wet: 5B Boiling Water: 5B	Pass
Impact Resistance	AAMA 2605 (8.5)	After impact, no removal	Pass
Abrasion Resistance	ASTM D968-17A	118.6	Pass
Muriatic Acid Resistance (15 min spot)	AAMA 2605 (8.7.1)	5B	Pass
Mortar Resistance (24hr pat test)	AAMA 2605 (8.7.2)	5B	Pass
Nitric Acid Resistance	AAMA 2605 (8.7.3)	ΔE = 0.31	Pass
Detergent Resistance	AAMA 2605 (8.7.4)	5B	Pass
Window Cleaner Resistance	AAMA 2605 (8.7.5)	5B	Pass

5. PERFORMANCE

5.1 FIRE

In today's architecture it is not only appearance and product technical details that matter. Other factors such as sustainability, thermal insulation as well as fire protection also play a key role in product selection.

Vitradual is constructed from 100% aluminium, rather than combustible material such as polyethylene or fire rated mineral. This makes Vitradual, in addition to Vitracore G2, an ideal product for applications where non-combustible panels are required, such as high-rise buildings, schools or hospitals.

TEST STANDARD	RESULT		
AS1530.1	NON-COMBUSTIBLE		
AS1530.3	PASS	Ignitability Index	0
	PASS	Heat Evolved	0
	PASS	Spread of Flame	0
	PASS	Smoke Developed	1

5.2 THERMAL

THERMAL INSULATING PROPERTIES

THERMAL RESISTANCE FROM -50°C TO +80°C		
TEST STANDARD	THERMAL RESISTANCE 1A M2.K/W	HEAT TRANSMISSION COEFFICIENT W/(M2.K)
Panel Thickness (mm)	Thermal Resistance 1A m2.K/W	Heat Transmission Coefficient W/(m2.K)
3	0.0069	5.65

5.3 SUSTAINABILITY

Although one of the most abundant metals in the Earth, aluminium is one of the most recycled materials around. Around 75% of all aluminium produced is still in use, largely because aluminium can be continually recycled. Vitradual has been developed with the health of the environment and the community in mind. Vitradual aluminium has 2.5% less embodied carbon than common alternative aluminium products.

Fairview's Ecoloop facility provides an end-of-life avenue that enables any newly installed aluminium cladding to be repurposed at the end of the buildings life. Find out more about Ecoloop at www.fv.com.au.

6. STRUCTURAL

6.1 WINDLOADING

The following span and fixing table is applicable when Vitradual is installed as per the Vitradual Cassette Fix installation method. Please refer to the complete Vitradual Spanning and Windloading document for full design and construction notes.

This span table is conservative, and does not include panel stiffening or other project specific engineering. Greater panel sizes can easily be achieved on projects if designed by a qualified engineer using the material data provided. Methods to improve spanning and structural strength can include:

- Bonding Aluminium RHS stiffeners to the panel rear.
- Filling the 'V-groove' with a structural sealant prior to folding and attaching the zed angles.
- Bonding an 'L' angle to the rear of panel folds using a structural sealant.

Panel deflection must not exceed span/60.



Panel Dimensions			Maximum Design Wind Pressure on Panel		Total no. of rivets required per panel (and max. 300mm)				Max. spacing of screws fixing cassette to substructure (mm)			
Panel Width b (mm)	Panel Length a (mm)	a/b	Strength Pu (kPa)	Serviceability Ps (kPa)	Dia. 5	Dia. 6	Dia. 7	Dia. 8	No.8	No.10	No.12	No.14
400	400	1	9.000	9.000	8	8	8	8	195	225	260	295
400	450	1.1	9.000	8.846	8	8	8	8	195	225	260	295
400	600	1.5	9.000	5.736	8	8	8	8	195	225	260	295
400	900	2.3	8.367	4.139	8	8	8	8	210	245	280	300
400	1200	3	7.768	3.75	10	8	8	8	230	260	300	300
400	1500	3.8	7.555	3.611	11	10	8	8	235	270	300	300
400	1800	4.5	7.461	3.55	14	11	10	9	240	275	300	300
400	2100	5.3	7.413	3.519	16	13	11	10	240	275	300	300
400	2400	6	7.386	3.502	18	15	13	11	240	275	300	300
400	2700	6.8	7.37	3.491	20	17	14	13	240	275	300	300
400	3000	7.5	7.359	3.484	22	18	16	14	240	275	300	300
400	3300	8.3	7.352	3.48	24	20	17	15	240	275	300	300
400	3600	9	7.347	3.477	26	22	19	17	240	275	300	300
400	4000	10	7.343	3.474	29	24	21	18	240	275	300	300
600	600	1	8.504	3.297	8	8	8	8	140	160	180	210
600	900	1.5	4.813	1.699	8	8	8	8	245	280	300	300
600	1200	2	3.914	1.311	8	8	8	8	300	300	300	300
600	1500	2.5	3.594	1.172	8	8	8	8	300	300	300	300
600	1800	3	3.453	1.111	10	8	8	8	300	300	300	300
600	2100	3.5	3.381	1.08	11	9	8	8	300	300	300	300
600	2400	4	3.34	1.062	12	10	9	8	300	300	300	300
600	2700	4.5	3.316	1.052	14	11	10	9	300	300	300	300
600	3000	5	3.3	1.045	15	13	11	10	300	300	300	300
600	3300	5.5	3.29	1.041	16	14	12	10	300	300	300	300
600	3600	6	3.283	1.038	18	15	13	11	300	300	300	300
600	4000	6.7	3.276	1.035	20	16	14	12	300	300	300	300
900	900	1	3.78	0.977	8	8	8	8	210	240	270	300
900	1200	1.3	2.432	0.588	8	8	8	8	300	300	300	300
900	1500	1.7	1.952	0.45	8	8	8	8	300	300	300	300
900	1800	2	1.74	0.388	8	8	8	8	300	300	300	300
900	2100	2.3	1.632	0.357	8	8	8	8	300	300	300	300
900	2400	2.7	1.571	0.34	9	8	8	8	300	300	300	300
900	2700	3	1.535	0.329	10	8	8	8	300	300	300	300
900	3000	3.3	1.511	0.322	10	9	8	8	300	300	300	300
900	3300	3.7	1.495	0.318	11	9	8	8	300	300	300	300
900	3600	4	1.485	0.315	12	10	9	8	300	300	300	300
900	4000	4.4	1.475	0.312	13	11	10	9	300	300	300	300
1200	1200	1	2.126	0.412	8	8	8	8	280	300	300	300
1200	1500	1.3	1.486	0.274	8	8	8	8	300	300	300	300
1200	1800	1.5	1.203	0.212	8	8	8	8	300	300	300	300
1200	2100	1.8	1.059	0.181	8	8	8	8	300	300	300	300
1200	2400	2	0.979	0.164	8	8	8	8	300	300	300	300
1200	2700	2.3	0.93	0.153	8	8	8	8	300	300	300	300
1200	3000	2.5	0.899	0.147	8	8	8	8	300	300	300	300
1200	3300	2.8	0.878	0.142	9	8	8	8	300	300	300	300
1200	3600	3	0.863	0.139	10	8	8	8	300	300	300	300
1200	4000	3.3	0.85	0.136	10	9	8	8	300	300	300	300

7. DURABILITY

7.1 EVALUATION

Durability is defined in the ABCB handbook as "... the capability of a building or plumbing installation to perform its function over a specified period."

The ABCB handbook also provides this context for consideration: "Durability is not an inherent property of a material or component. It is the outcome of complex interactions among a number of factors."

For building components durability is described in terms of design life. The durability performance of a building by its ability to remain fit-for-purpose over its design life in the environment it is subjected to and with appropriate maintenance.

The minimum design life for a wall cladding system on a building with a normal design life category is 15 years (refer to ABCB Handbook table 3.1).

7.2 STRUCTURAL

The NCC referenced standard for actions on buildings AS/NZ 1170 series provides direction for determining the appropriate loads on building components. Typically, a 50-year design life is the basis for structural design.

The design capacity of Vitradual and its supports and fixings, must be determined in accordance with this design life using verification method BV1.

Project specifications for Vitradual that are created in accordance with this document therefore have structural adequacy for a design life of 50 years.

7.3 MATERIALS

Vitradual has been subjected to many tests and assessments concerning its durability, including accelerated weathering of 4000 hours of accelerated salt exposure.

For durability of the paint finishes used on Vitradual, refer to Kynar 500® FSF® documentation available at www.kynar500.com. Kynar 500® resin has been exposed to over 50 years of South Florida exposure testing with excellent results.

For added scrutiny, each batch of manufactured product also undergoes stringent QA checks prior to delivery to ensure ongoing product quality is maintained into the future. Find out more about Fairview's 360 Quality at www.fv.com.au.

8. INSTALLATION CONSIDERATIONS

8.1 INSTALLATION CONSIDERATIONS

- All sheets should be installed in the same direction as marked on the protective film to prevent possible finish variation.
- As minor colour variation can occur between production lots, it is recommended to place total requirement for a project in one order to ensure colour consistency.
- Where aluminium materials come in contact with dissimilar metals, a proper insulator or isolation tape should be applied to insulate between dissimilar materials in order to avoid corrosive and electrolytic action.
- For Cassette Fix, the returns between panel joints should not be caulked before film is removed.
- Please ensure Vitradual is used as part of a compliant wall system, with all components complying with the Deemed-to-Satisfy provisions of the relevant NCC, or approved as part of a performance solution.

8.2 PROTECTIVE FILM

- Make sure no damage will occur to the panel following removal of protective film.
- Remove protective film within 45 days of installation to avoid glue residue on panel surface due to weathering.
- Do not apply PVC tapes, polyurethane sealant or silicone sealant onto Vitradual protective film. The plasticiser contained in these materials can penetrate the protective film and cause a gloss change in the coating.
- Do not apply spray paint or permanent marker to the film as the colour may penetrate the film and affect the panel.

8.3 ACCESSORIES

- Please refer to the Vitrafix brochure.

8.4 SEQUENCE

As a rule, the sequence of installation is as follows:

1. Installation of the water membrane as per manufacturers requirements.
2. Installation of top hats, levelled and fixed as per wind loading requirements.
3. Vitradual panels fabricated and prepared for installation.
4. Installation of fabricated Vitradual panels, fixing through Z angles to tophats as per wind loading requirements.
5. Caulking applied to panel joints as per manufacturers requirements.
6. Removal of protective film within 45 days of installation.

8.5 SEALANT

The standard Vitradual Cassette fix system details a sealed panel joint. A variety of sealants are suitable for use in this application, but the following requirements apply:

- Low modulus +/- 50% flexibility.
- Minimum 10 year warranty in external applications.
- Supplier's confirmation for adhesion to PVDF painted surfaces.
- Approval from Fairview.

Vitradual can be installed unsealed for shadow line joints, but the following must be noted for the warranty to apply:

- Aluminium zed angles to be powder coated, and mitred at panel joints so not to leave openings once installed.
- Exposed fixings must be stainless steel or class 4 galvanised screws. Often these will be required to be colour matched to meet the architectural design intent.
- The waterproof membrane behind the panels must be installed at a high level of quality.
- This is not covered by testing to FP1.4 or Codemark, so an assessment of the façade may be required for approval.

8.6 CAVITY BARRIERS

While Vitradual is non-combustible and will not contribute to the spread of fire, it is good practice to install cavity barriers where a cladding product extends several floors. In order to maintain a drained and ventilated façade it is recommended that open-state cavity barriers be used.

8.7 MOISTURE MANAGEMENT

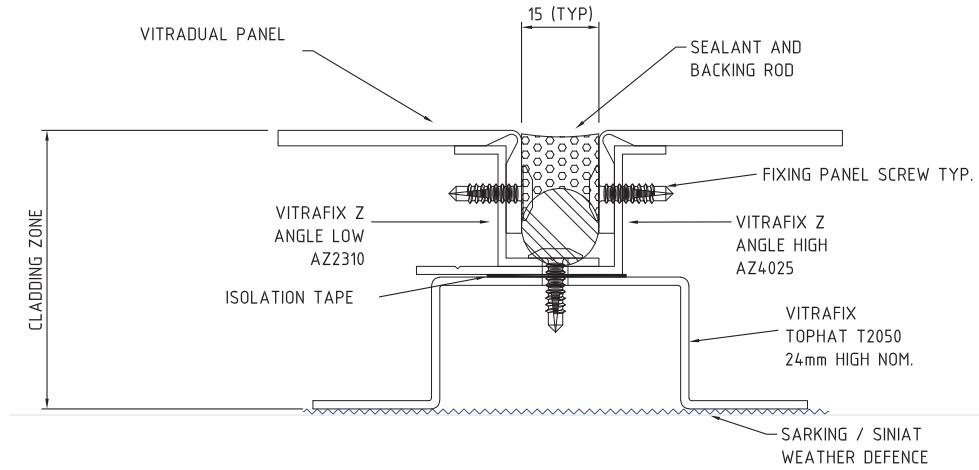
Moisture ingress and condensation is one of the most common causes of defects in Australian buildings today. A drained and ventilated façade cavity is recognised as best practice in providing a high level of moisture management. The Vitradual details reflect this, with openings at top and bottom of walls designed to encourage air flow and allow the cavity to remove any condensation or other moisture.

Where an open cavity is not achievable (such as a window head or base of a fascia), it is recommended weep holes be provided. These are 10mm diameter, located 600mm apart. Note that in areas where there is no condensation risk weep holes may not be required.

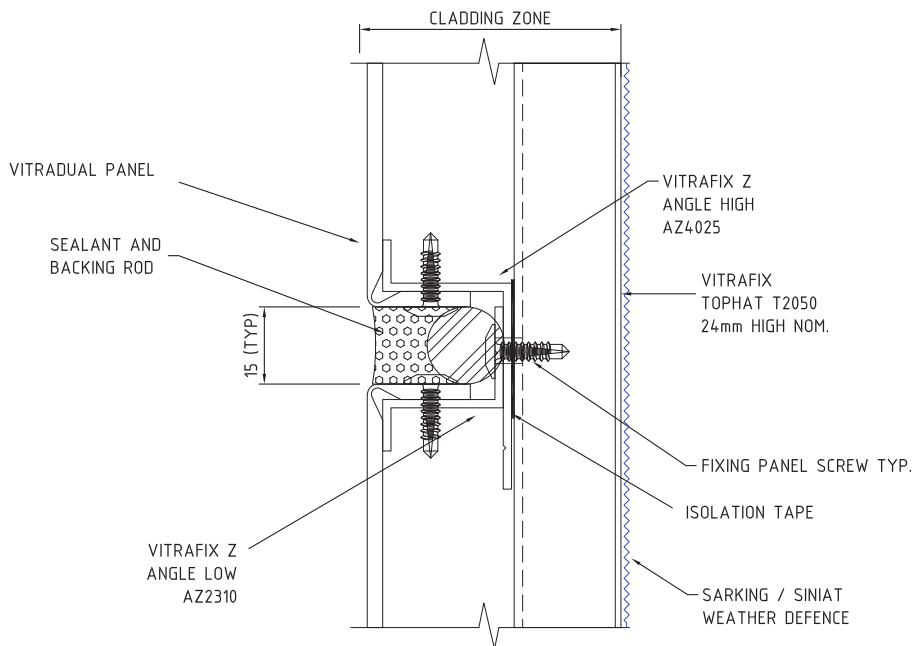
Details 4,7 & 11 include provision for drainage of liquid water, this can be disregarded if the wall system adequately treats this elsewhere.

9. INSTALLATION DETAILS

1. TYPICAL VERTICAL PANEL JOINT DETAIL



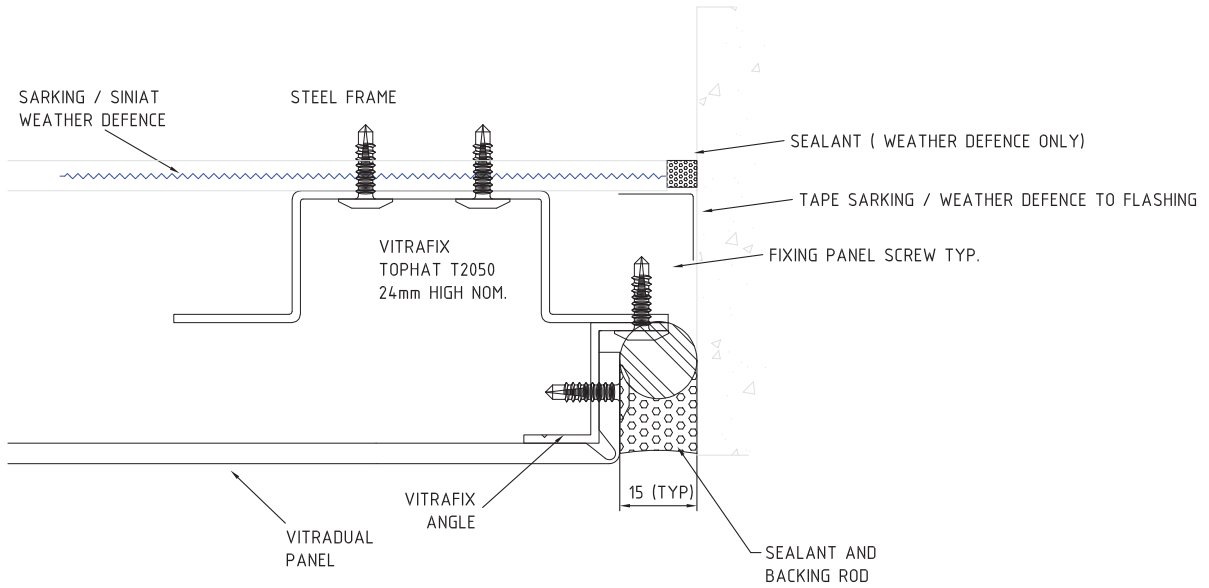
2. HORIZONTAL JOINT DETAIL



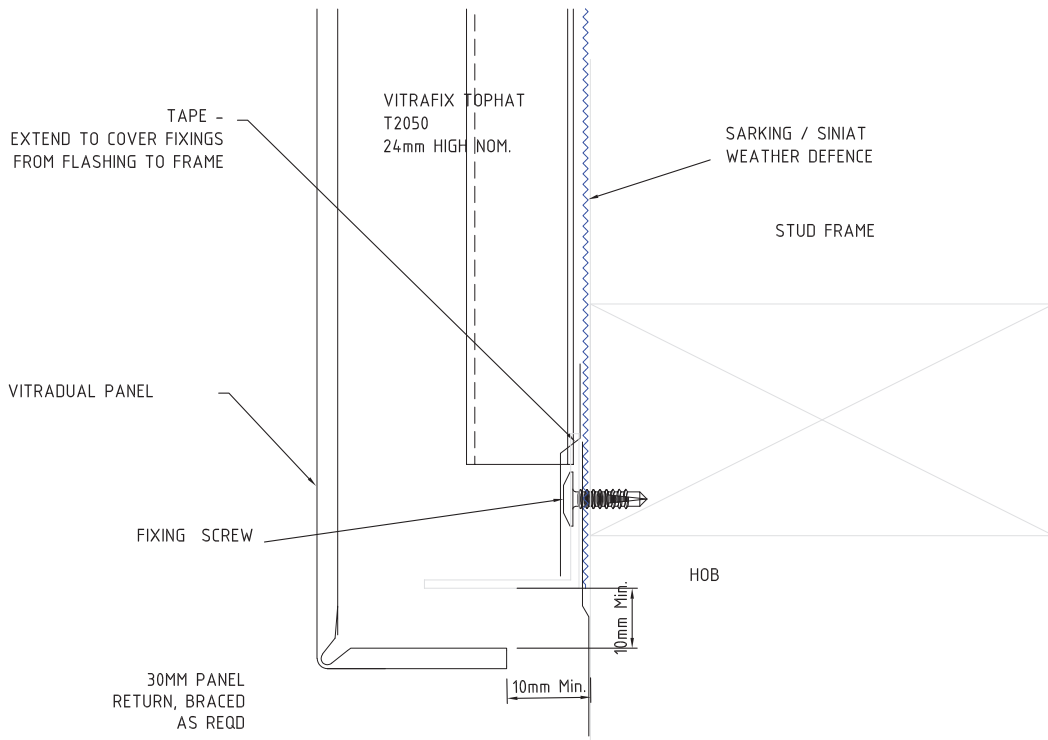
DISCLAIMER:

These details are limited to the generalized design specification for Vitradual, and are intended for use by a technically skilled person only. Use of the same is at their own discretion and risk.

3. WALL JUNCTION DETAIL



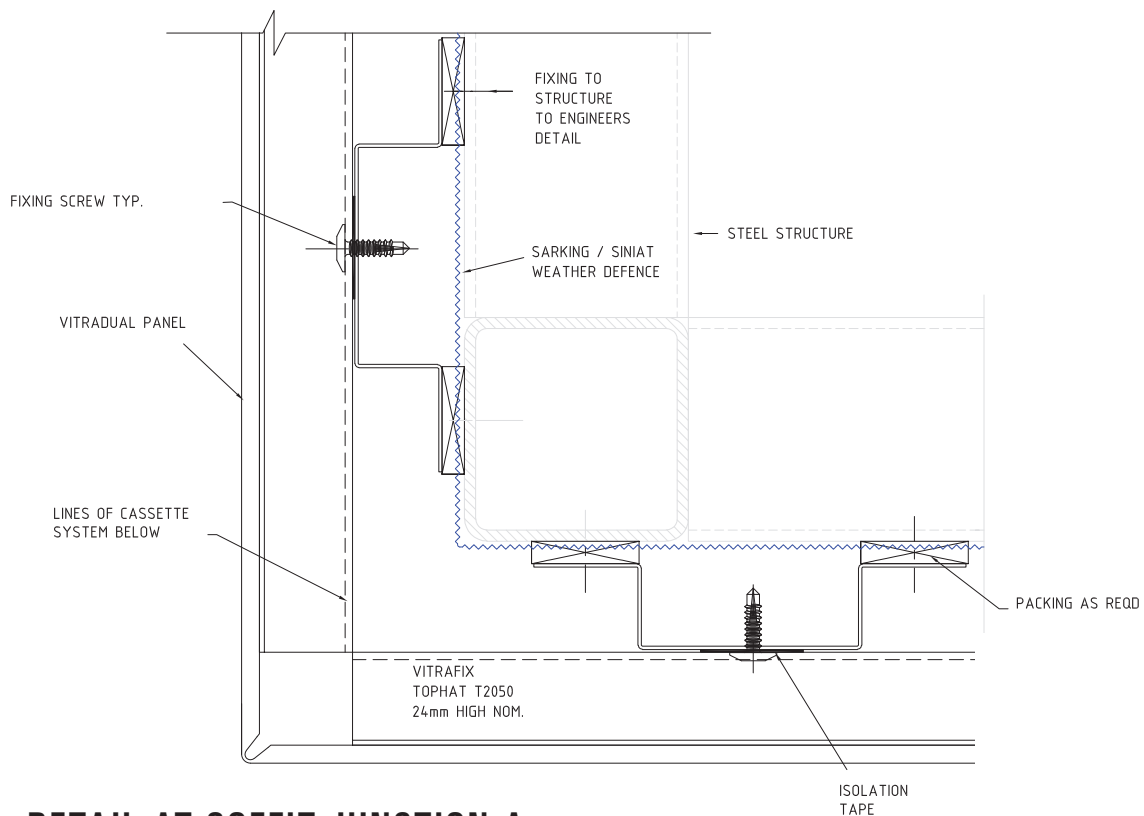
4. BASE DETAIL



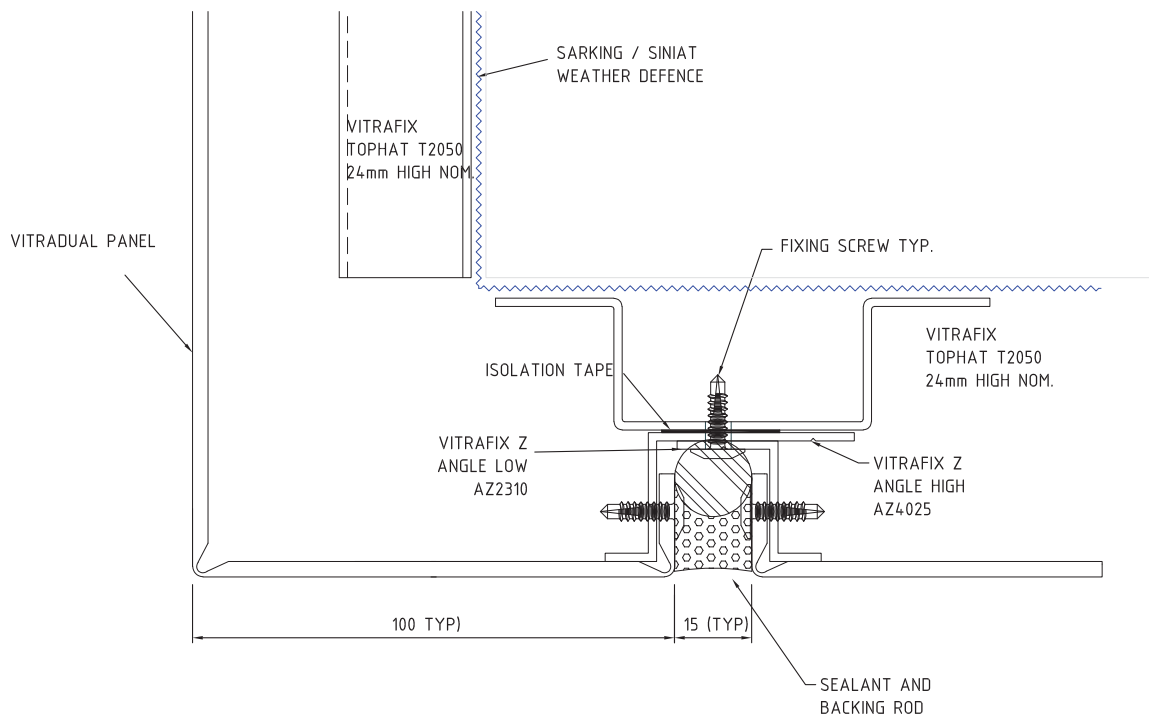
DISCLAIMER:

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5. EXTERNAL CORNER DETAIL



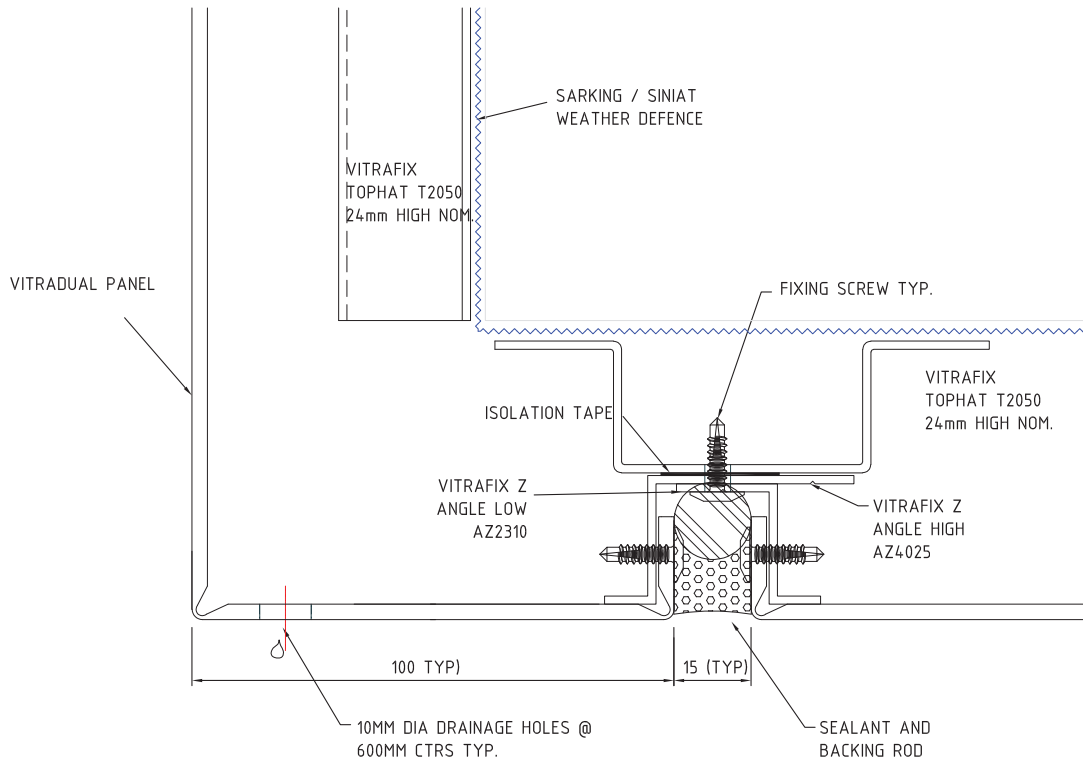
6. DETAIL AT SOFFIT JUNCTION A



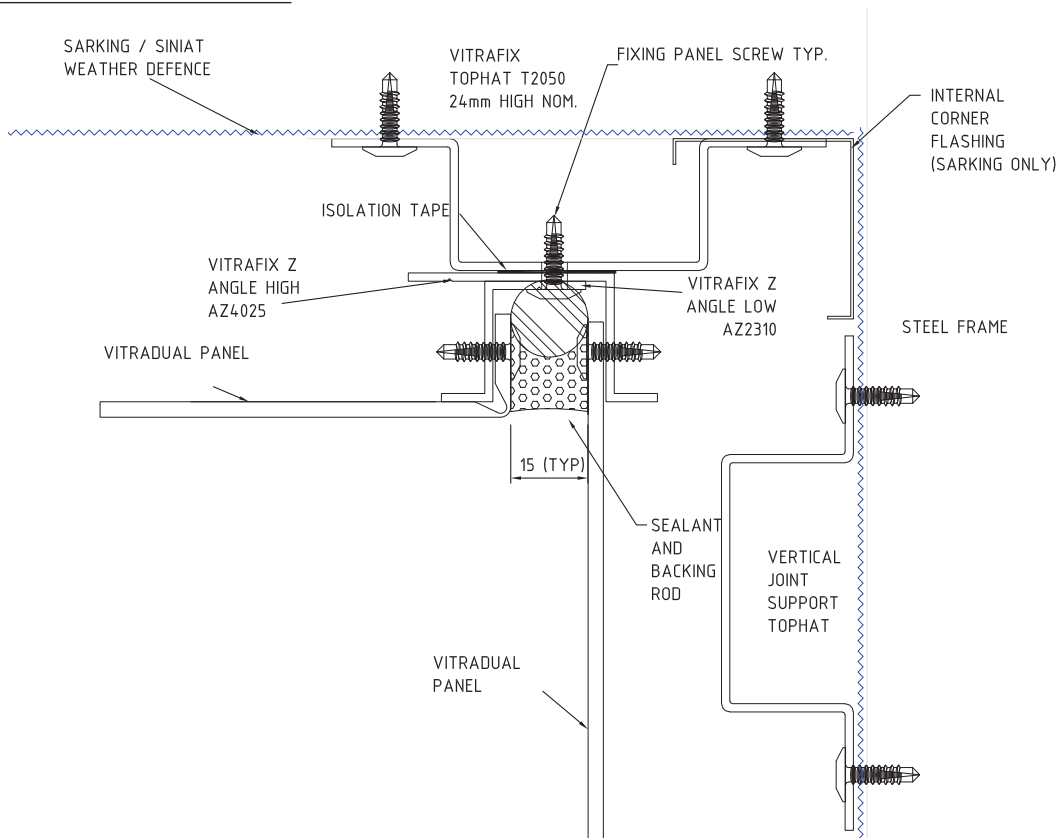
DISCLAIMER:

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7. DETAIL AT SOFFIT JUNCTION B



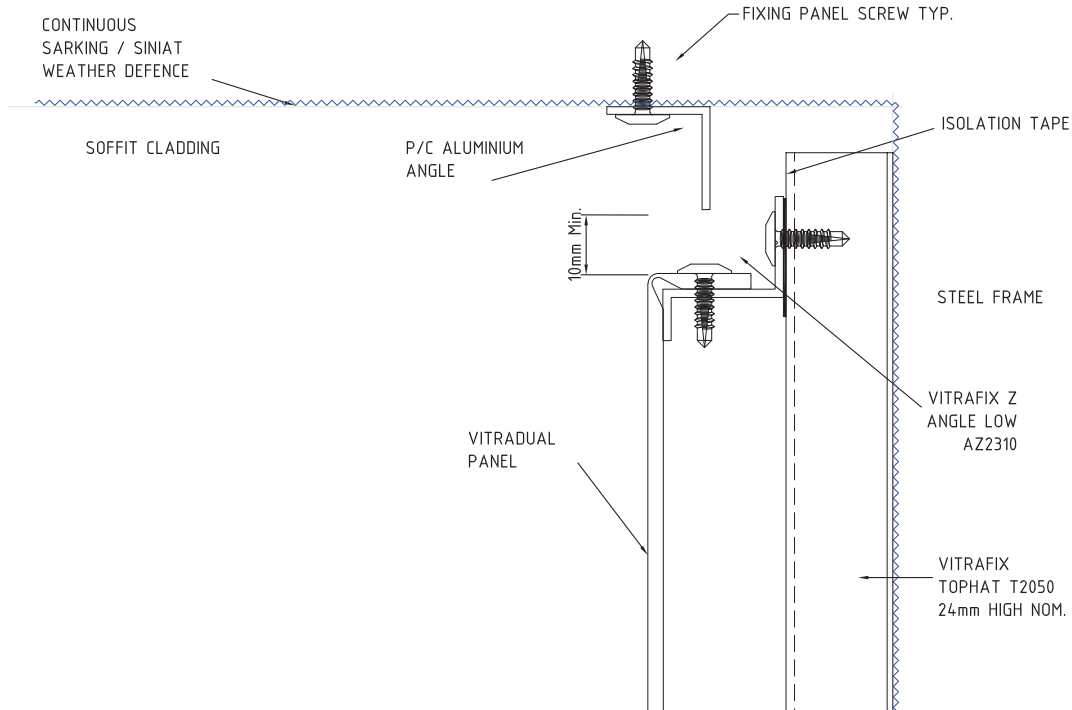
8. REAR SOFFIT DETAIL



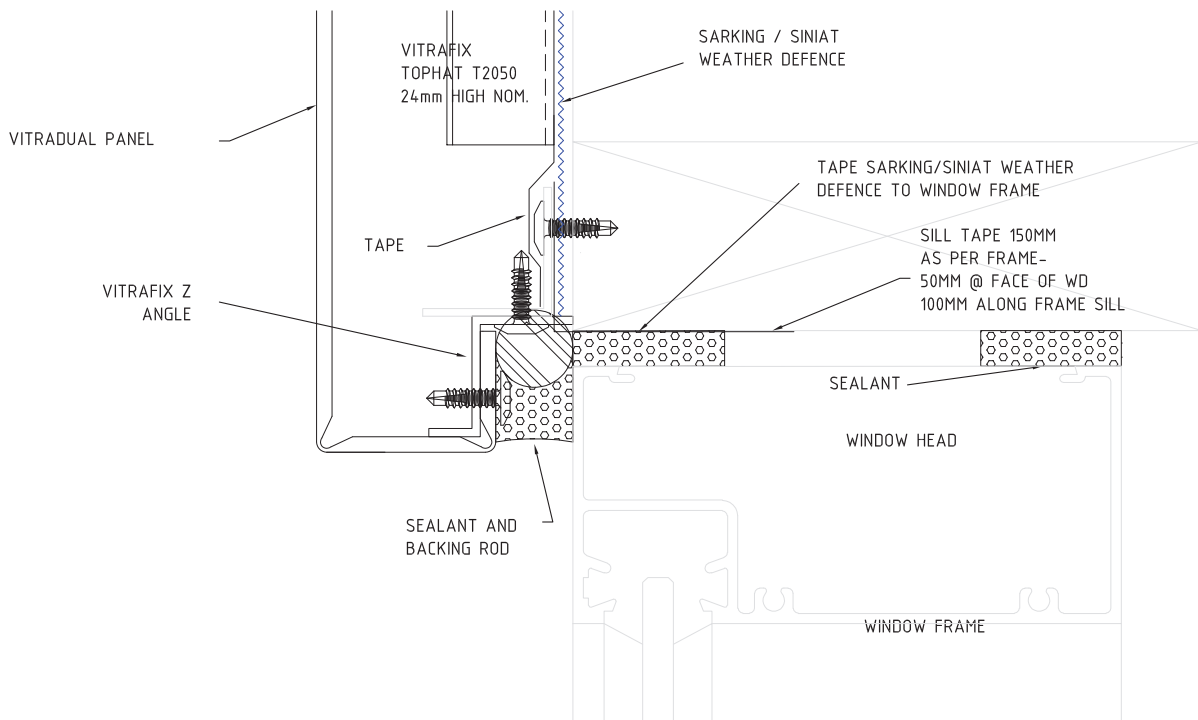
DISCLAIMER:

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9. VENTILATED SOFFIT DETAIL



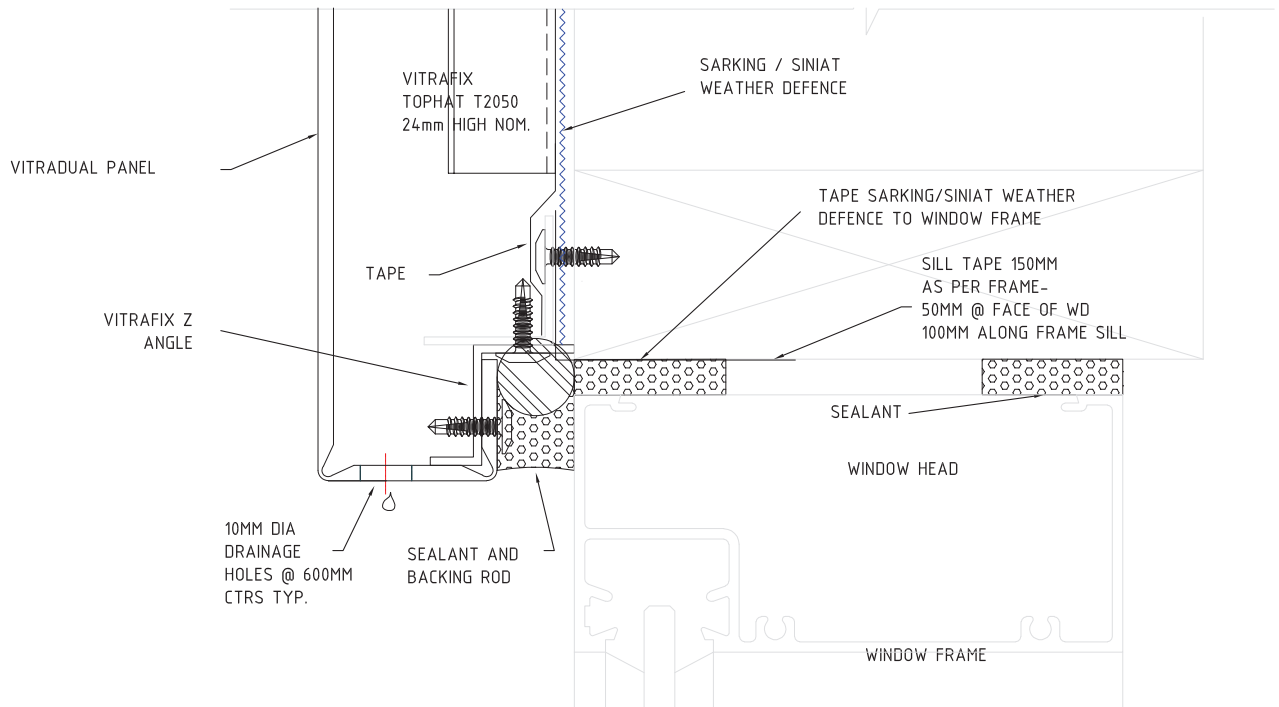
10. WINDOW HEAD DETAIL A



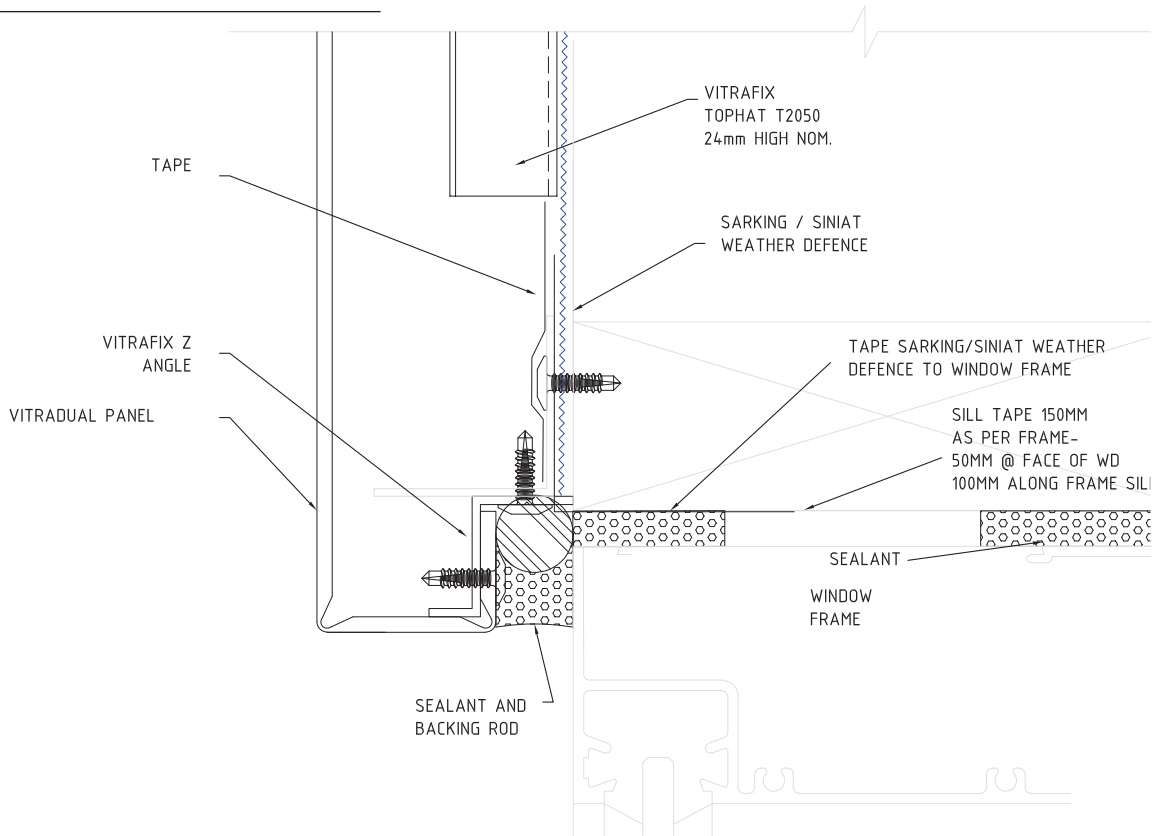
DISCLAIMER:

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11. WINDOW HEAD DETAIL B



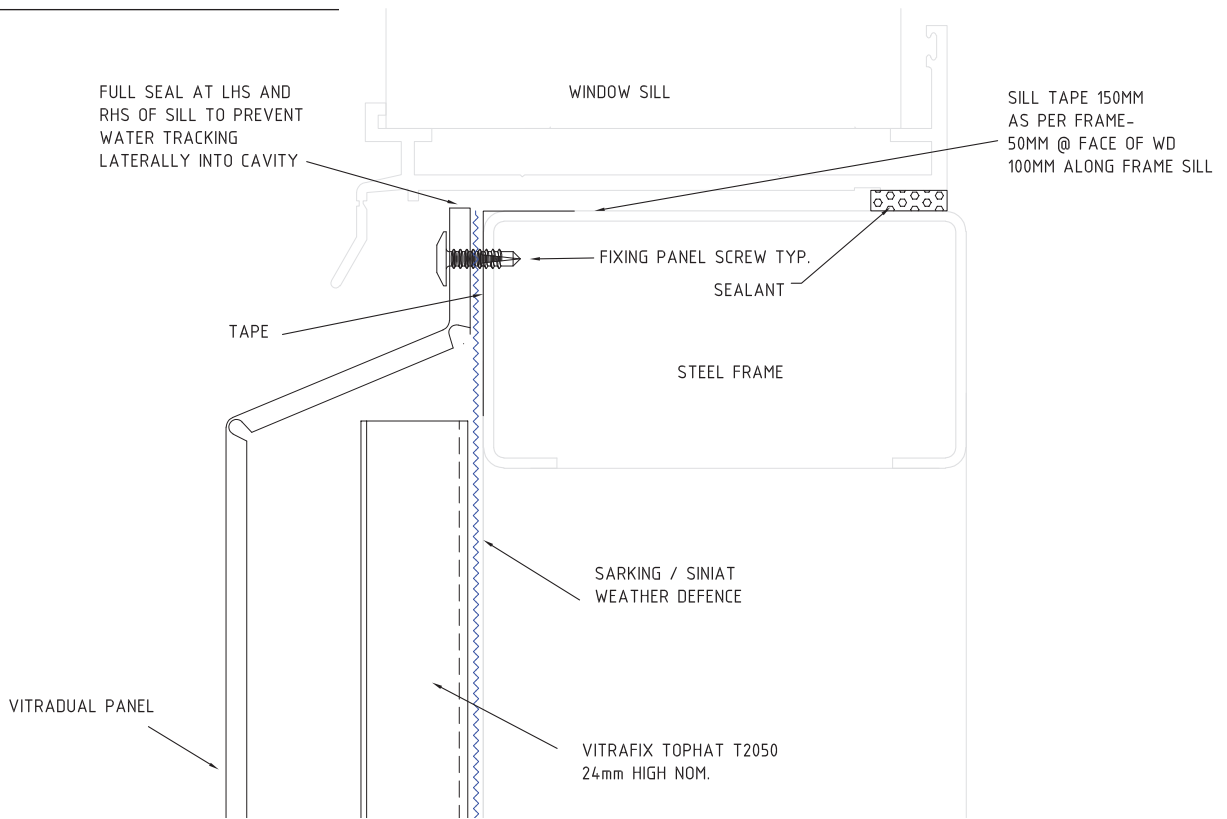
12. WINDOW JAMB DETAIL



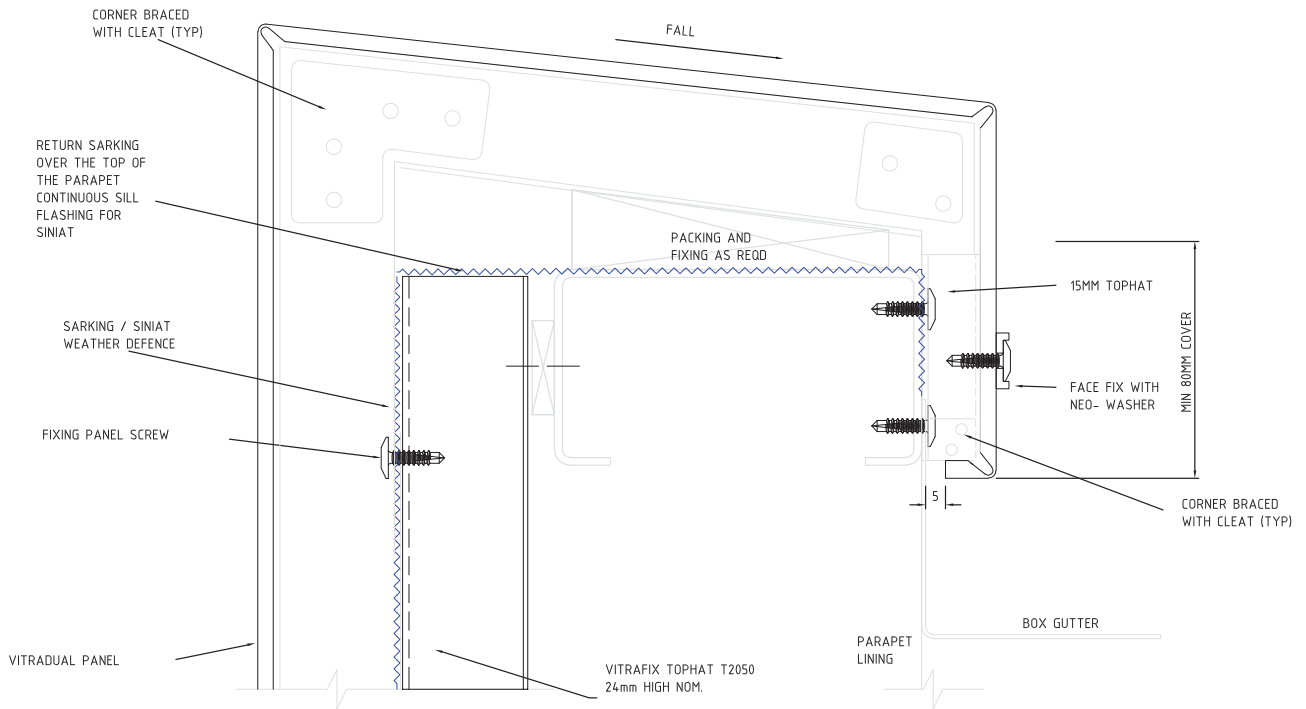
DISCLAIMER:

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13. WINDOW SILL DETAIL

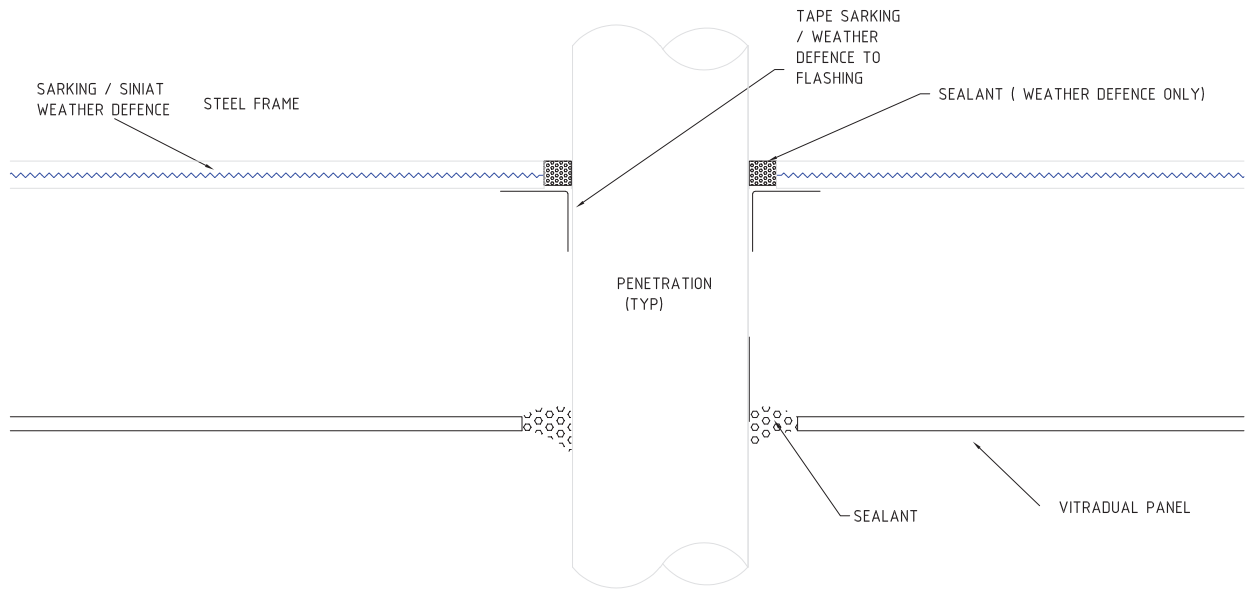


14. PARAPET CAPPING DETAIL



DISCLAIMER:
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15. TYPICAL PENETRATION DETAIL



DISCLAIMER:

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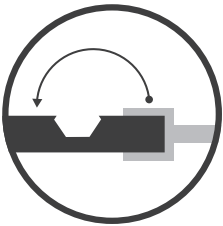
10. FABRICATION DETAIL

10.1 FABRICATION CONSIDERATIONS



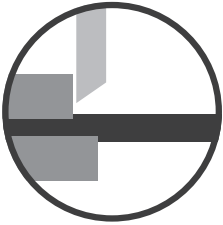
CONTOUR CUTTING

Vitradual panel can be contour cut with water jets, CNC routers, copy routers and jigsaws. Coolant is recommended for router processing. See section 10.4.



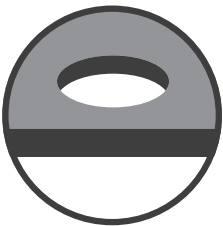
FOLDING

There must be between 0.7mm and 1mm of aluminium left at the base of the routed groove. Too much material can cause stress and result in a larger radius fold than desired. It will also make folding the panel more difficult and prevent the required fold angle from being obtained. Too little material can result in panel cracking. See section 10.3.



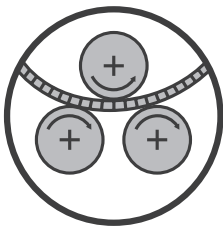
SHEARING

Shearing can be done with a guillotine. Ensure the blanking tools are padded. Shearing causes a slight roll down along the cut edge of the panel.



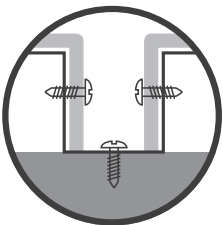
PUNCHING

The punching of flat formed parts from Vitradual is performed in the same way as a solid aluminium sheeting, using sharp tools and dies with minimal cutting clearance. Varying shapes may easily be punched with normal aluminium punching machinery. As with shearing, a slight roll down may occur.



ROLL BENDING

Vitradual panel can be bent with a roll-bending machine. Use polished rollers free of imperfections. Minimum radius of 200mm.



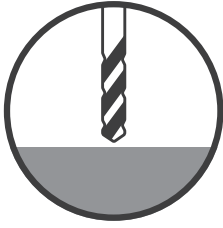
SCREWING

Vitradual can be screwed with conventional stainless steel or C4 galvanised screws for metal. Allow for thermal expansion.



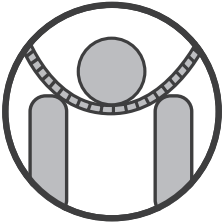
RIVETING

Riveting is possible with the usual equipment and solid rivets or blind rivets. For outdoor use allow for thermal expansion.



DRILLING

Vitradual panel can be drilled with centre point twist drills normally used for aluminium or machines common for metals. Drill material: High-Speed Steel (HSS).



BENDING

Bending is possible with a folding table or brake press. The inside bending radius is roughly 5 times the Vitradual panel thickness. Use protective foils. For serial production, tests should be made on sample panels.

10.2 MACHINING

Vitradual is designed to be machined on a CNC with cutting fluid.

10.3 CNC GROOVE

TOOL	4.76mm Single flute upspiral cutter
FEED	1500mm/minute
SPINDLE	21,000mm/minute

CNC Grooving requires a 3D ramp into the Groove with cutting fluid also required to prevent Vitradual from overheating.

Recommended cutting fluid is TRICK-SOL high performance water soluble cutting oil mixed at a 1:3 ratio oil to water, or equivalent.

Ensure the cutting fluid is correctly applied to the cutting bit during machining.

Leave a minimum of 0.7mm aluminium remaining at base of groove.

10.4 CNC CUTTING

TOOL	4.76mm Single flute upspiral cutter
FEED	1500mm/minute
SPINDLE	21,000mm/minute

CNC cutting requires a 3D ramp into the Groove with cutting fluid also required to prevent Vitradual from overheating.

Recommended cutting fluid is TRICK-SOL high performance water soluble cutting oil mixed at a 1:3 ratio oil to water, or equivalent.

Ensure the cutting fluid is correctly applied to the cutting bit during machining.

11. TYPICAL WARRANTY DETAILS

11.1 WARRANTY CONSIDERATIONS

Vitradual is an incredibly durable material when used in the right application. When assessing an installation for warranty defects, unless given express written authorization from Fairview, check for the following:

- More than a 5° pitch (prevent risk of water pooling).
- Panels installed with directional arrows consistent (unless intentional).
- Maintenance schedule is documented and undertaken.

Please contact your Fairview representative for full warranty terms and conditions or any product specific enquiries.

11.2 KEEP YOUR WARRANTY FRESH

Maintaining your Vitradual finish is an important component to maintaining your warranty. Document each time you clean your Vitradual panels. Cleaning frequencies are based on project location and are provided in the warranty.

RECOMMENDED CLEANING AGENTS

- Mineral spirits
- Organic cleaners
- PH-Neutral solvents

12. MISCELLANEOUS

12.1 MANUFACTURING QUALITY

360 VIEW is the highly unique, quality control process Fairview developed to govern our rigorous approach to design and manufacturing, material testing, regulatory compliance, and product warranty. To find out more visit www.fv.com.au/solutions/compliance.

ACCEPTABLE VARIATION

Width	± 2.0mm
Length	± 4.0mm
Thickness	± 2%
Bow	Maximum 0.5% of the length and/or width
Squareness	Maximum 5.0mm
Surface Defects	The surface shall not have any irregularities such as dents, scratches and other imperfections in accordance with our quality assurance.

12.2 HANDLING AND STORAGE

- Considerable care should be taken in the handling of Vitradual.
- Vitradual panels are sensitive to impact, particularly shocks from small, hard objects, which can dent the aluminium.
- A minimum of two people should be used when sliding large sheets to avoid scratching.
- To prevent surface damage when stacking Vitradual, there should be nothing between the panels.
- Vitradual should be stored in a cool and dry area where temperature is relatively stable.
- Pallets of Vitradual should be stored horizontally with adequate support to prevent sagging.
- Stacked pallets should be identically sized and not more than four (4) pallets high.

12.3 REPORT REGISTER

BCA 2019 VOL1 SECTION	DESCRIPTION	TEST ASSESSMENT	REPORT/REFERENCE NUMBER
C – Fire Resistance	Combustibility	AS 1530.1	FNC11690
	Early Fire Hazard Properties	AS 1530.3	FNE12495
F – Health and Amenity	Weatherproofing	AS 4284	30B-19-0059-TRP-6774697-2 30B-19-0059-TRP-6774698-2
G – Ancillary Provisions	BAL Ratings	IGNIS Assessment	IGNS-5289 Issue 01 Rev00
Additional/ Supporting	Assessment	RED FIRE REPORT NCC2019	190603_JV19-00103_Fairview NCC2019_Vitradual_v1
	Coating Standard	AAMA2605-17	180710004SHF-BP-8
	CodeMark	CodeMark	Please contact us for our current CodeMark number

DISCLAIMER

While the information provided relating to Fairview products is true to the tests and measures available to us, the information provided in this article is general in nature only and does not constitute project-specific building, construction or fire-safety advice. Before acting on any information on this document, you should consider the appropriateness of the information having regard to your project parameters and requirements.

Due to the uncontrollable conditions and methods of job scope, as well as the variable skills and judgment of users/installers, and the quality of equipment, tools, etc; the suggestions and recommendations contained in this manual are provided without warranty.

Fairview products are only deemed suitable or compliant after approval from building and construction professionals associated with specific projects and developments. If you'd like some further insight about this topic, contact Fairview on 1800 007 175 or email helpdesk@fv.com.au. We're here to help.



FAIRVIEW™

DEFINING ARCHITECTURE SINCE 1963

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