DOC25/1162213

Kiersten Fishburn
Planning Secretary
Department of Planning, Housing and Infrastructure
12 Darcy Street
Parramatta NSW 2150

01 July 2025

Attn: Shiraz Ahmed

Dear Ms Fishburn.

New Edmondson Park High School (SSD 62028458): Details of External Walls and Cladding Condition B4

I refer to New Edmondson Park High School approved on the 20 December 2024.

As per the requirements of Condition B4, the details of external walls and cladding are provided to the Planning Secretary for information.

> *B4. Prior to the commencement of construction of external building walls and cladding within the relevant stage, the Applicant must provide the Certifier with documented evidence that the products and systems proposed for use or used in the construction of external walls, including finishes and claddings such as synthetic or aluminium composite panels, comply with the requirements of the BCA. The Applicant must provide a copy of the documentation given to the Certifier to the Planning Secretary within seven days after the Certifier accepts it.*

The Project Certifier accepted the submitted details and documentation on 30 June 2025 as evidenced in the attached email.

Yours sincerely

Jono Tiernan
Project Director
School Infrastructure
NSW Department of Education
Level 8, 259 George Street Sydney NSW 2000 GPO Box 33 Sydney NSW 2001 T 02 9273 9200
www.schoolinfrastructure.nsw.gov.au

Certificate of Conformity

Global-Mark Pty Ltd,
Suite 4.07
32 Delhi Rd
North Ryde NSW 2113
Australia
Tel: +61 2 9886 0222
www.Global-Mark.com.au

Certificate Holder:
FVA Group PTY LTD
18-20 Donald St
Lithgow NSW 2790
Tel: +61 2 6352 2355
https://fv.com.au

Certificate number: CM30151 Rev 0

THIS IS TO CERTIFY THAT

GENESIS Wall Cladding Panels

Type and/or use of product:	**Description of product:**
GENESIS wall cladding panels are used in external wall cladding and internal wall lining, in all building types (BCA Volumes 1 & 2).	GENESIS through coloured Compressed Fibre Cement panels are supplied in 8mm thickness (with 12mm option for Raw panels) and installed as a ventilated facade cladding system onto a steel sub-frame with a propriety fixing system allowing for thermal expansion.

COMPLIES WITH THE FOLLOWING BCA PROVISIONS AND STATE OR TERRITORY VARIATION(S) — **BCA 2022**

	Volume One		**Volume Two including Housing Provisions**	
Performance Requirement(s)	**B1P1**	Structural reliability	**H1P1**	Structural stability and resistance
	B1P2	Structural resistance		
	F3P1	Weatherproofing	**H2P2**	Weatherproofing
Deemed-to-Satisfy Provision(s):	**C2D10 (6)(d)**	Non-combustible building elements	**H3D2 (1)(d)**	Fire hazard properties and non-combustible building elements
	G5D3	Construction in bushfire prone areas – Protection of residential buildings	**H7D4 (2)(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: 02/04/2024

Date of expiry: 02/04/2027

	G5D4	Construction in bushfire prone areas – Protection of certain Class 9 buildings		
State or territory variation(s):	**NSW G5D3**	Construction in bushfire prone areas – Protection of residential buildings	**NSW H7D4 (2)(a)**	Construction in bushfire prone areas
	NSW G5D4	Construction in bushfire prone areas – Protection of certain Class 9 buildings		
	VIC G5D4	Construction in bushfire prone areas – Protection of certain Class 9 buildings		

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** **Volume 1 – B1P2** The GENESIS panel system, as described has maximum design wind load limits documented within the GENESIS Installation Manual, dated June 2023 (refer Appendix B2). Wind load limits, construction detail and fixing must follow the relevant details contained within the GENESIS Installation Manual. 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 GENESIS external wall must be constructed using either a pliable building membrane or Rigid Air Barrier, subject to the following: 1. the Flexible Wall Wrap or Rigid Air Barrier must present an Air & Water barrier for the purposes of weatherproofing, and 2. the system remains weatherproof up to Serviceability wind loads of +1.65 kPa & -2.5 kPa, and 3. Design & installation complies fully with GENESIS Installation Manual, dated June 2023 (refer Appendix B2), and 4. Design accommodates deflection movements due to all design loads & temperature variations, and 5. Installation Contractor complies with manufacturer's instructions for sealants, shop drawings & project specifications, and	**1, 2, 3, 4, 5, 6 & 9**

	6. 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 7. Perforated "Breather" wall wrap membranes must not be used.	
	Volume 1 – C2D10 & Volume 2 - H3D2 Non-combustibility relates to GENESIS wall cladding panels only. This Certification is based upon the system being installed using components & accessories specified in the GENESIS Installation Manual, dated June 2023 (refer Appendix B2). Substitution of wall system components & / or accessories may be permitted, however the general performance specifications of components & / or accessories must be maintained for this certificate to remain valid.	**1, 2, 3, 4, 5, 6, 7, 8, 9 & 10**
	Volume 1 – C2D10 Timber battens and timber framing must not be used for compliance with non-combustibility requirements.	**2, 3, 4, 5, 6, 7, 8 & 9**
	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.	**2, 3, 4, 5, 6, 7, 8 & 9**
	Volume 1 – C2D10 (6) In external wall applications, pliable building membranes / "Sarking-type materials" must not exceed 1mm in thickness and must have a Flammability index not greater than 5. Rigid Air Barriers must be non-combustible and remain compliant with C2D10 (6)(f).	**2, 3, 4, 5, 6, 7, 8 & 9**
	Volume 1 – G5D3 & Volume 2 – H7D4 (2)(a) In Bushfire prone areas, when the building is constructed in accordance with AS3959:2018 including Amendment 1 & 2, GENESIS cladding panels 8mm thick are permitted for use as external wall cladding in buildings subject to Bushfire Attack Level in all zones up to and including BAL-29. In Bushfire prone areas, when the building is constructed in accordance with AS3959:2018 including Amendment 1 & 2, GENESIS Raw cladding panels 12mm thick are permitted for use as external wall cladding in buildings subject to Bushfire Attack Level in all zones up to and including BAL-40.	**1, 2, 3 & 10a or deck immediately adjacent or connected to building Class 1, 2 or 3**
	Volume 1 – G5D4 In designated bushfire prone areas when the building is constructed in accordance with Specification 43, GENESIS Cladding panels are permitted for use as external wall cladding in buildings subject to Bushfire Attack Level not exceeding BAL-12.5. Construction in BAL-19, BAL-29, BAL-40 and BAL-FZ fall outside the scope of application of the clause.	**Class 9a, 9b, 9c and Class 10a buildings or decks immediately adjacent or connected to Class 9a, 9b or 9c buildings**
	Volume 1 – NSW G5D3 & Volume 2 – NSW H7D4 (2)(a) In designated bushfire prone areas, subject to Bushfire Attack Level BAL-LOW, BAL-12.5, BAL-19 and BAL-29, determined in accordance with the Planning for Bush Fire Protection 2019 including addendum November 2022, when the building is constructed in accordance with AS3959: 2018	**1, 2, 3, Class 4 part of a building & 10a building or deck immediately adjacent or connected to building Class 1, 2, 3 or Class 4 part of a building**

including Amendments 1 & 2, except as modified by Planning for Bush Fire Protection 2019 including addendum November 2022, GENESIS cladding panels are permitted for use. The compliance assessment of the certified system is limited to sections 7.5 and 8.3.2 of the Planning for Bush Fire Protection 2019, including addendum November 2022. Site specific conditions arising from: - 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 have not been considered for the compliance assessment.	
Volume 1 – NSW G5D4 In designated bushfire prone areas GENESIS Cladding Panels are permitted for use as external wall cladding in buildings subject to a Bushfire Attack Level not exceeding BAL-12.5, determined in accordance with Planning for Bush Fire Protection including addendum November 2022, when the building is constructed in accordance with: 1) For class 9 building, Specification 43 except as modified by Planning for Bush Fire Protection, or 2) For class 10a building or deck AS3959: 2018 including Amendment 1 & 2 except as modified by Planning for Bush Fire Protection including addendum November 2022 and S43C13 The compliance assessment of the certified system is limited to sections 7.5 and 8.3.2 of the Planning for Bush Fire Protection. 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 this compliance assessment. Construction in BAL-19, BAL-29, BAL-40 and BAL-FZ fall outside the scope of application of the clause.	**Class 9 building that is a special fire protection purpose; and a Class 10a building or deck immediately adjacent or connected to such building**
Volume 1 – VIC G5D4 In designated bushfire prone areas when the building is constructed in accordance with Specification 43, GENESIS Cladding panels are permitted for use as external wall cladding in buildings subject to Bushfire Attack Level not exceeding BAL-12.5. Construction in BAL-19, BAL-29, BAL-40 and BAL-FZ fall outside the scope of application of the clause.	**Class 4 part of a building, 9a, 9b, 9c and Class 10a buildings or decks immediately adjacent or connected to Class 4 part of a building, 9a, 9b or 9c buildings**
General 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 and installed by suitably qualified and trained building professionals, in accordance with manufacturer guidelines and the GENESIS Installation Manual, dated June 2023 (refer Appendix B2).	**1, 2, 3, 4, 5, 6, 7, 8, 9 & 10**

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.

The GENESIS Cladding Panels are Compressed Fibre Cement sheeting panels manufactured in accordance with EN 12467 and AS/NZS 2908.2:2000. GENESIS fibre cement cladding panels may be face fixed to metal support frames using proprietary colour matched fixings or fixed by concealed fixing to a suitable framing system.

GENESIS Product Technical information is provided in the following Product Technical Data Sheets:

- GENESIS Classic TDS, Sept 2023
- GENESIS Depth TDS, June 2021
- GENESIS Groove TDS, Sept 2023
- GENESIS Hewn TDS, Sept 2023
- GENESIS Infuse TDS, Sept 2023
- GENESIS Raw TDS, Sept 2023
- GENESIS Raw 12mm TDS, Sept 2023
- GENESIS Rustik TDS, Sept 2023

A3 Product specification

Refer to the technical literature identified in Appendix A5 of this certificate.

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 the following GENESIS product technical literature:

- GENESIS Installation Manual, dated June 2023
- GENESIS Edge Sealer data sheet, dated 12 September 2023
- GENESIS Facade EPDM Gasket Tape technical data sheet, dated 12 September 2023
- GENESIS Product Technical Data Sheets, listed in Appendix A2

A6 Other relevant technical data

Any referenced documents within the technical literature identified in Appendices A2, A5 & B2.

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 1	B1P1	A2G2 (2) (a) & (c)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 & 23
BCA Volume 1	B1P2	A2G2 (2) (a) & (c)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 & 23
BCA Volume 2	H1P1	A2G2 (2) (a) & (c)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 & 23
BCA Volume 1	F3P1	A2G2 (2) (a), (b)(i) & (c)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 13, 14 & 23
BCA Volume 2	H2P2	A2G2 (2) (a), (b)(i) & (c)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 13, 14 & 23
BCA Volume 1	C2D10 (6)(d)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14 & 21
BCA Volume 2	H3D2 (1)(d)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14 & 21
BCA Volume 1	G5D3	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 21 & 22
BCA Volume 2	H7D4 (2)(a)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 21 & 22
BCA Volume 1	G5D4	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 21 & 22
BCA Volume 1	NSW G5D3	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 21 & 22
BCA Volume 2	NSW H7D4 (2)(a)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 21 & 22
BCA Volume 1	NSW G5D4	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 21 & 22
BCA Volume 1	VIC G5D4	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test reports & Engineering Reports	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 21 & 22

B2 Reports

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

Ref	Author	Reference	Date	Description	NATA Registration
1.	Fairview Architectural	GENESIS Installation Manual	Jun 2023	Product installation manual	–
2.	Fairview Architectural	GENESIS Compliance Statement	Aug 2023	Product compliance statement	–
3.	Fairview Architectural	GENESIS Classic TDS	Sep 2023	Product technical data sheet	–
4.	Fairview Architectural	GENESIS Depth TDS	Jun 2021	Product technical data sheet	–
5.	Fairview Architectural	GENESIS Groove TDS	Sep 2023	Product technical data sheet	–
6.	Fairview Architectural	GENESIS Hewn TDS	Sep 2023	Product technical data sheet	–
7.	Fairview Architectural	GENESIS Infuse TDS	Sep 2023	Product technical data sheet	–
8.	Fairview Architectural	GENESIS Raw TDS	Sep 2023	Product technical data sheet	–
9.	Fairview Architectural	GENESIS Raw 12mm TDS	Sep 2023	Product technical data sheet	–
10.	Fairview Architectural	GENESIS Rustik TDS	Sep 2023	Product technical data sheet	–
11.	Fairview Architectural	GENESIS Edge Sealant TDS	Sep 2023	Product technical data sheet	–
12.	Fairview Architectural	GENESIS Facade EPDM Gasket Tape TDS	Sep 2023	Product technical data sheet	–
13.	Enertren	FAR–118 v3	13 Jun 2023	Engineering Compliance Report	–
14.	Enertren	FAR–130 v1	21 Sep 2023	Engineering Compliance Report	–
15.	BEMAC Laboratories	11146	14 Nov 2022	Structural Connection Test Report	1393
16.	MPA Hannover	171427 – ETAG 034	3 Jul 2017	Structural Impact Test Report	ILAC / DAkkS D-PL-11220-01-00
17.	MPA Hannover	173381 R1 – ETAG 034	24 Sep 2018	Structural Impact Test Report	ILAC / DAkkS D-PL-11220-01-00
18.	MPA Hannover	173382 – ETAG 034	3 Jul 2017	Structural Impact Test Report	ILAC / DAkkS D-PL-11220-01-00
19.	MPA Hannover	173382 – Statement	13 Sep 2018	Product Classification Statement on Test Report	ILAC / DAkkS D-PL-11220-01-00
20.	MPA Hannover	173385 – ETAG 034	3 Jul 2017	Structural Impact Test Report	ILAC / DAkkS D-PL-11220-01-00
21.	AWTA	21-006068	3 Dec 2021	Fire Test Report	983
22.	IGNIS Labs	IGNL-6204-16-01 I01 R01	3 Nov 2022	Fire Assessment Report	20534
23.	VIPAC Engineers	30B-22-0015-TRP-36480-1	12 Jul 2022	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.

NBRS

3RD June 2025

Richard Crookes Construction
L14 558 Pacific Highway
St Leonards NSW 2065

Attention: Leigh Woodley

Dear Leigh,

DESIGN COMPLIANCE STATEMENT – SSDA CONDITION B4.
Project Name: Edmonson Park High School
DA No: SSD-62028458
Project Address: 145 Buchan Ave, Edmondson Park, NSW 2174 (Lot 2, DP 1287903)

We can confirm that the design is generally in compliance with the relevant sections of the National Construction Code / Building Code of Australia 2022 and associated standards.

We also confirm that the architectural documents are generally consistent with the development consent approved plans, Fire Engineering Report 24224-R01 Issue No.7 prepared by Innova dated 30 April 2025 and Detail Design Report – Facade Engineering, Revision 2, by Northrop Consulting Engineers, dated 28 January 2025, including but not limited to AS 1562.1:2018 Design and installation of metal roof and wall cladding and Fairview Genesis CodeMark Certificate CM30151 Rev 0, issued on 02 April 2024.

SSDA Condition B4 - External Walls and Cladding.

Extract below:

"Prior to the commencement of construction of external building walls and cladding within the relevant stage, the Applicant must provide the Certifier with documented evidence that the products and systems proposed for use or used in the construction of external walls, including finishes and claddings such as synthetic or aluminium composite panels, comply with the requirements of the BCA."

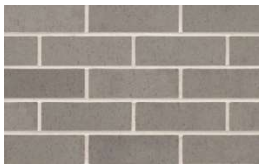
External walls and cladding will be using the following materials:

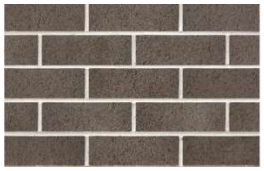
1. Brick veneer walls
2. Fairview Genesis - CFC cladding
3. Metal Wall Cladding – Lysaght Snapseam and Spandeck

NBRS & PARTNERS PTY LTD
ABN 16 002 247 565
Nom. Architect: Andrew Duffin – NSW 5602

4 Glen Street, Milsons Point NSW 2061 Australia
nbrs.com.au | architects@nbrs.com.au
p. +61 2 9922 2344

1. Brick veneer walls

BWK01	FACE BRICKWORK TYPE 01	0331 - Brick and Block Construction	Type: Hollow core - Extruded Brick Face type: Smooth Dim. (mm): 230 x 110 x 76 Colour: Urban One Chiffon SKU 210700010760000501100 Solar absorptance : 0.74 Durability class - Exposure grade. - General Purpose Category: DW1 Inherent FRL: 120/120/90 Comp. Strength: >15 (f'uc) (MPa) Coefficient of exp. (mm/m): < 1.0 Joint type: Lightly ironed Facework mortar colour: with white sand colour to match brickwork Requirements: Refer drawings for sill detail & flashing. Exposed top of all brickwork walls and all window and door heads to be finshed with 110mm high header course. Weepholes: All weepholes to be screened with high performance bushfire compliant BAL-19 weephole screens. Proprietary item: High Performance Bushfire Weepa (11-HPBW) weepa.com.au / +61 7 3844 3744 Refer to Structural Engineer's documentation for structural requirements. Builder to provide 1m x 1m sample wall for Architect's approval prior to execution of remainder of brick walls to allow cement mortar colour to cure for 5 days.	

BWK02	FACE BRICKWORK TYPE 2	0331 - Brick and Block Construction	Type: Hollow core – Extruded Brick Face type: Smooth Dim. (mm): 230 x 110 x 76 Colour: Urban One Pepper SKU 410700012110000523100 Solar absorptance: 0.76 Durability class - Exposure grade. - General Purpose Category: DW1 Inherent FRL: 120/120/90 Comp. Strength: >15 (f'uc) (MPa) Coefficient of exp. (mm/m): < 1.0 Joint type: Lightly ironed Facework mortar colour: white sand colour to match brickwork Requirements: Refer drawings for sill detail & flashing. Exposed top of all brickwork walls and all window and door heads to be finshed with 110mm high header course. Weepholes: All weepholes to be screened with high performance bushfire compliant BAL-19 weephole screens. Proprietary item: High Performance Bushfire Weepa (11-HPBW) weepa.com.au / +61 7 3844 3744 Builder to provide 1m x 1m sample wall for Architect's approval prior to execution of remainder of brick walls to allow cement mortar colour to cure for 5 days.	

2. FAIRVIEW Genesis - Compressed Fibre Cement Cladding [CFC]

CFC	COMPRESSED FIBRE CEMENT CLADDING	0431 - Cladding Combined	Product / Type: FAIRVIEW Genesis Proprietary compressed fibre cement sheet system including support framing, capping's and trims Cladding material: Smooth and even Compressed Fibre Cement sheets with factory sealed edges, free of imperfections such as chips. - Category: Type A Category 5 to AS/NZS 2908.2. - Thickness: 8mm - Mass: Nom 16.2 kg/m2 - Edge type: Square Finish: Prefinished. Provide graffiti proof treatment to panels at student level. - Fixing: Screw – concealed Flashings Requirement: Provide flashings at penetrations, window and door openings, base of walls and the like to ensure that any moisture that penetrates the cladding system will drain to the outside of the building. Installation Type: Ventilated façade (or rain screen) method with sealed joints. 35mm air cavity gap. Joint width: 10mm. Provide proprietary black profiled aluminium backing trims for horizontal joints. Install the cladding system, including panels and framing strictly in accordance with the manufacturer's recommended details. The installation is to be carried out by installers approved by the panel manufacturer. Base detail: Provide a perforated panel to allow air to enter the cavity space while preventing the entry of vermin and embers. Ensure vermin mesh max. aperture size is no greater than 2mm. Overhang the base of the panel beyond the framing to form a drip. Window heads: Provide a perforated panel to allow air to enter the cavity space while preventing the entry of vermin and embers, max. aperture size is no greater than 2mm. Provide a drip flashing. Window sills: Provide a perforated panel to allow air to enter the cavity space while preventing the entry of vermin and embers, max. aperture size is no greater than 2mm.	

			Downpipes: Do not fix downpipe brackets to panels. Ensure there is galvanised steel sub-framing behind downpipes for the fixing of downpipe brackets. Completion Warranty: Provide a warranty for materials (including both panel and panel finish) and installation for 15 years. Maintenance manual: Submit a maintenance manual containing a technical specification of the cladding system and setting out the manufacturer's recommendations for maintenance. Cleaning: When the installation is complete remove extraneous matter and marks. Protect as necessary and have the finished work undamaged on completion. Support: Provide support framing consisting: - Horizontal backing strips at horizontal panel joints - Vertical joint & intermediate top hats (nominally 35mm deep) on structural top hat framing (nominally 15mm deep). Water barrier: Non combustible barrier as recommended by system manufacturer for climate type. Requirements: - Non combustible to C1.12 of the BCA - Group 1 rating to AS3837 - Set out in even panels with joints coinciding with framing or as documented. - Provide wall wrap/ sarking behind system. - Provide a thermal break with an R 0.2m2 K/W behind external cladding where the cladding and internal lining make direct contact with the same steel frame. Refer to TB01.	
OSCB	OPEN STATE CAVITY BARRIER	0431 - Cladding Combined	Open State Cavity Barrier Product description: Siderise RH 'Open State' horizontal cavity barriers consist of a non-combustible stone wool lamella core, with reinforced aluminium foil faces. This primary seal has a reaction to fire performance to Class 'A1'. The exposed leading edge is also sealed with aluminium foil. Whilst the base material is water repellent and non-hygroscopic, this predominantly enclosed arrangement affords an added degree of weather protection to the core material. Siderise RH 'Open State' horizontal cavity barriers incorporate a continuous reactive intumescent strip which is bonded to the leading edge. The intumescent material has a reaction to fire performance to Class 'E'. In the event of exposure to fire, the intumescent rapidly expands and fully seals the purposely designed ventilation gap formed atthe time of installation, between the barrier and the rear of the cladding. Product: RH25-120/120 - colour code: white Final product selection to be confirmed and approved by Fire Engineer, Facade Engineer and BCA Consultant. Supplier: Trafalgar Fire	

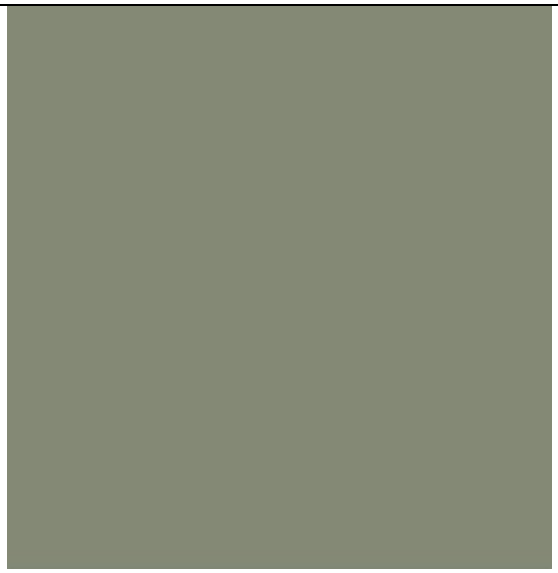
NBRS

3. Metal Wall Cladding – Lysaght Snapseam and Spandeck

MC01	METAL CLADDING - MONUMENT	0431 - Cladding Combined 0423 - Roofing-Profiled Sheet Metal	Description Type: Proprietary system of Standing seam cladding Material: Aluminium/zinc alloy coated steel with powdercoated finish Profile: Ribbed with 38 mm deep ribs Sheet cover: 265 mm Thickness (base metal) (mm): 0.55. Mass (kg/m): 1.86 Solar absorptance: 0.73 Solar reflectance Index: 27 Cladding:Proprietary Item equal to **Lysaght Snapseam** Finish: Colorbond Classic Finish Colour: MONUMENT Provide a warranty for materials and installation of 10 years. Fixing: Snapseam lapping to manufacturer's details and specification, including but not limited to AS 1562.1:2018	

MC02	METAL CLADDING - SOUTHERLY	0431 - Cladding Combined 0423 - Roofing-Profiled Sheet Metal	Description Type: A proprietary system of Standing seam cladding Material: Aluminium/zinc alloy coated steel with powdercoated finish Profile: Ribbed with 38 mm deep ribs Sheet cover: 265 mm Thickness (base metal) (mm): 0.55. Solar absorptance: 0.40 Solar reflectance index: 71 Cladding:Proprietary Item equal to **Lysaght Snapseam** Finish: Colorbond Classic Finish Colour: SOUTHERLY Provide a warranty for materials and installation of 10 years. Fixing: Snapseam lapping to manufacturer's details and specification.	
MC03	METAL CLADDING - PAPERBARK	0431 - Cladding Combined 0423 - Roofing-Profiled Sheet Metal	Description Type: A proprietary system of Standing seam cladding Material: Aluminium/zinc alloy coated steel with powdercoated finish Profile: Ribbed with 38 mm deep ribs Sheet cover: 265 mm Thickness (base metal) (mm): 0.55. Solar absorptance: 0.43 Solarreflectance index: 67 Cladding:Proprietary Item equal to **Lysaght Snapseam** Finish: Colorbond Classic Finish Colour: PAPERBARK Provide a warranty for materials and installation of 10 years. Fixing: Snapseam lapping to manufacturer's	

			details and specification	
MC04	METAL CLADDING - MANOR RED	0431 - Cladding Combined 0423 - Roofing-Profiled Sheet Metal	Description Type: A proprietary system of Standing seam cladding Material: Aluminium/zinc alloy coated steel with powdercoated finish Profile: Ribbed with 38 mm deep ribs Sheet cover: 265 mm Thickness (base metal) (mm): 0.55. Solar absorptance: 0.70 Solar reflectance index: 31 Cladding:Proprietary Item equal to **Lysaght Snapseam** Finish: Colorbond Classic Finish Colour: MANOR RED Provide a warranty for materials and installation of 10 years. Fixing: Snapseam lapping to manufacturer's details and specification, including but not limited to AS 1562.1:2018	

MC05	METAL CLADDING - PALE EUCALYPT	0431 - Cladding Combined 0423 - Roofing-Profiled Sheet Metal	Description Type: Proprietary system of Standing seam cladding Material: Aluminium/zinc alloy coated steel with powdercoated finish Profile: Ribbed with 38 mm deep ribs Sheet cover: 265 mm Thickness (base metal) (mm): 0.55. Solar absorptance: 0.60 Solar reflectance index: 44 Cladding:Proprietary Item equal to **Lysaght Snapseam** Finish: Colorbond Classic Finish Colour: PALE EUCALYPT Provide a warranty for materials and installation of 10 years. Fixing: Snapseam lapping to manufacturer's details and specification, including but not limited to AS 1562.1:2018	
MC06	METAL CLADDING - DEEP OCEAN	0431 - Cladding Combined 0423 - Roofing-Profiled Sheet Metal	Description Type: A proprietary system of Standing seam cladding Material: Aluminium/zinc alloy coated steel with powdercoated finish Profile: Ribbed with 38 mm deep ribs Sheet cover: 265 mm Thickness (base metal) (mm): 0.55. Solar absorptance: 0.60 Solar reflectance index: 44 Cladding:Proprietary Item equal to **Lysaght Snapseam** Finish: Colorbond Classic Finish Colour: DEEP OCEAN Provide a warranty for materials and installation of 10	

			years. Fixing: Snapseam lapping to manufacturer's details and specification, including but not limited to AS 1562.1:2018	
MC07	METAL CLADDING - MONUMENT	0431 - Cladding Combined 0423 - Roofing-Profiled Sheet Metal	Description Type: A proprietary system of Standing seam cladding Material: Aluminium/zinc alloy coated steel with powdercoated finish Profile: Ribbed with 38 mm deep ribs Sheet cover: 265 mm Thickness (base metal) (mm): 0.55. Solar absorptance: 0.60 Solar reflectance index: 44 Cladding:Proprietary Item equal to **Lysaght Snapseam** Finish: Colorbond Classic Finish Colour: MONUMENT Provide a warranty for materials and installation of 10 years. Fixing: Snapseam lapping to manufacturer's details and specification, including but not limited to AS 1562.1:2018	

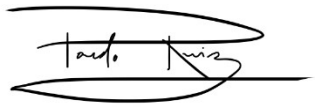
MC10	METAL CLADDING - SPANDECK	0431 - Cladding Combined 0423 - Roofing-Profiled Sheet Metal	Description Type: Proprietary system of preformed ribbed sheets with purpose-made accessories. Material: Aluminium/zinc alloy coated steel with pre-painted finish. Profile: Ribbed with 24mm deep ribs Thickness (base metal) (mm): 0.48 - Type: Proprietary concealed fixing clips fixed to wall framing with self-tapping wafer head screws. - Size and spacing: In accordance with the cladding manufacturer's recommendations Installation: In accordance with the cladding manufacturer's recommendations, including but not limited to AS 1562.1:2018 Top hat cladding framing: 50mm Framed wall thermal break strips: - Application: To steel framing with lightweight external cladding. - R-Value: ≥ 0.2. Proprietary item: - Cladding: Lysaght Spandeck - Finish: Colorbond Classic Finish - Colour: SOUTHERLY -Requirement: Facade engineer to provide certification of facade to FP1.4.	

It is noted that this compliance statement does not cover specialist services design which has been undertaken by the various services consultants, and this statement is to be read in conjunction with the consultants' design statements provided.

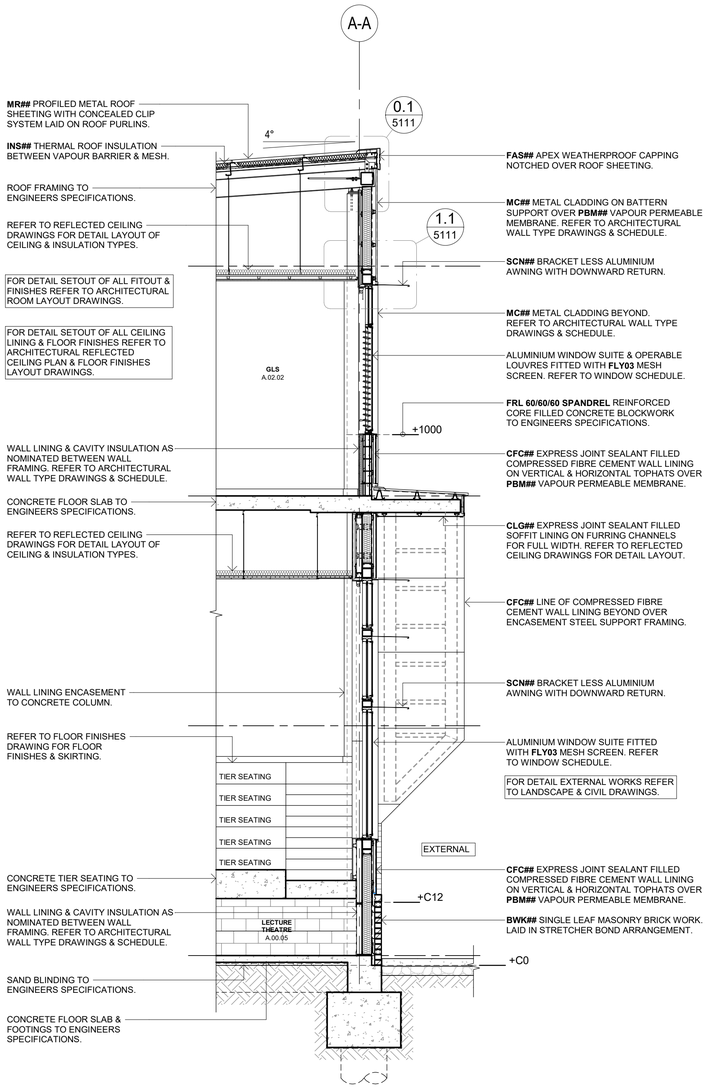
NBRS

Your independent detailed inspection of the documentation should be undertaken to verify these statements prior to your certification.

Yours Faithfully



Paulo Ruiz
Registered Architect #11120
NBRSARCHITECTURE



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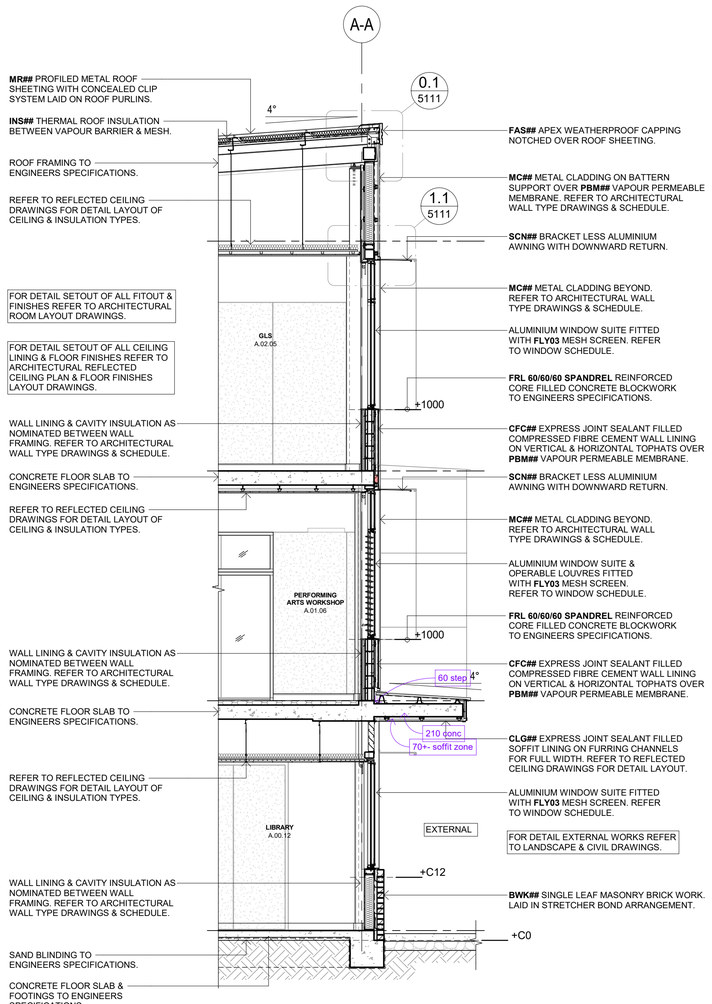

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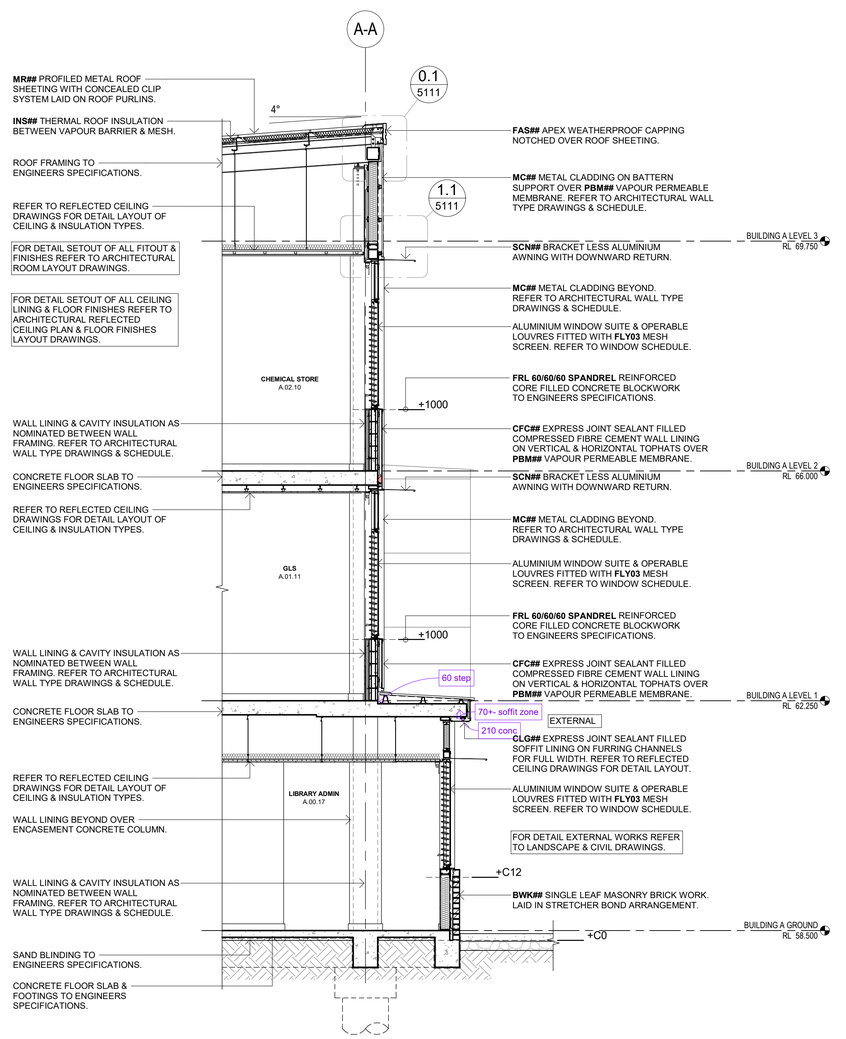

3 1001 BUILDING A - DETAIL WALL SECTION

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CONSTRUCTION PHASE

Issue

No.	Date	Description	Chkd
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B	19.12.2024	75% DD - ISSUE FOR REVIEW	NBRS
C	13.01.2025	90% DD - ISSUE FOR REVIEW	NBRS
D	28.01.2025	ISSUE FOR 100% DD	PR
1	07.03.2025	IFC PROGRESS ISSUE	PR
2	06.05.2025	ISSUE FOR CC3	PR

Changes to this Revision

NOTE
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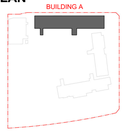
KEY PLAN



Drawing Title
BUILDING A - DETAIL WALL SECTIONS - SHEET 01

Project
New High School in Edmondson Park

at
Lot 2, DP 1287903 Buchan Ave, Edmondson Park, NSW 2174

for
SINSW

NBRS
+61 2 9922 2344 nbrs.com.au
Nominated Architects:
Andrew Duffin NSW 5602
Jonathan West NSW 9899
NBRS & Partners Pty Ltd VIC 51197 ABN 16 002 247 565

Date 6/05/2025 5:03:23 PM
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NBRS Project # 24179

Drawing Reference EPHS-NBRS-B00A-XX-DR-A-5101
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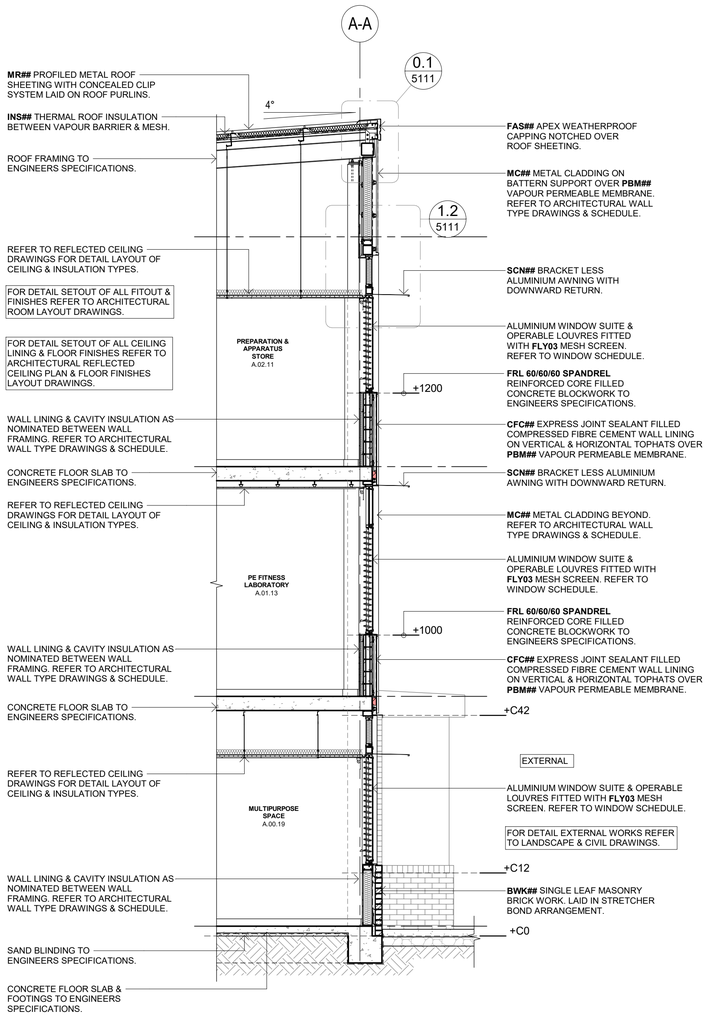

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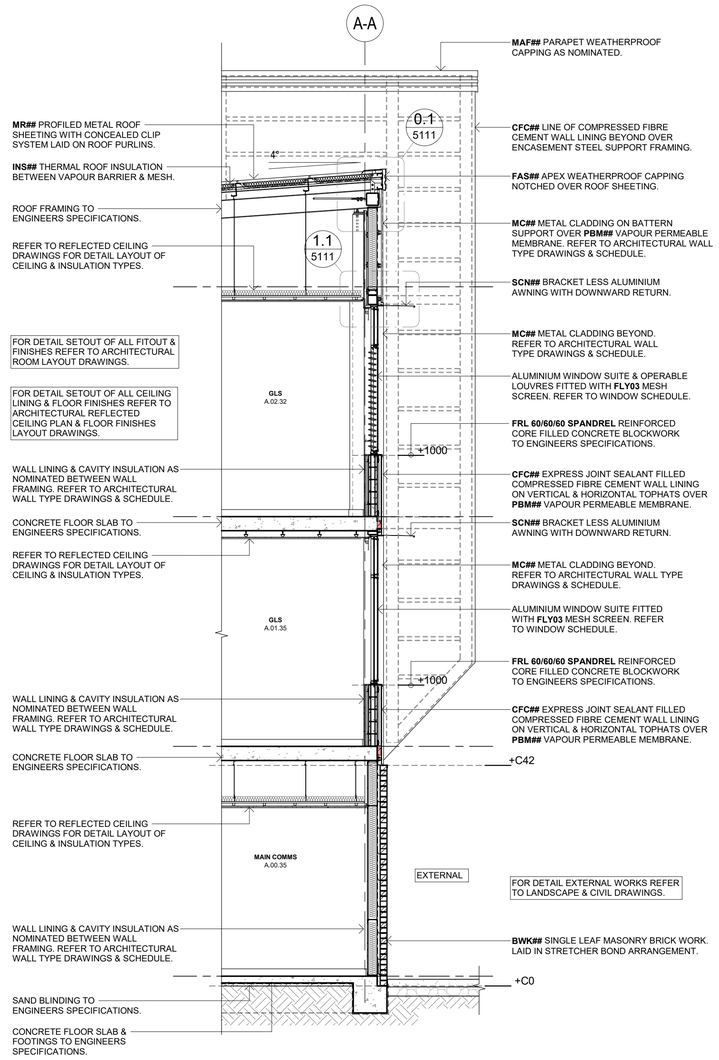

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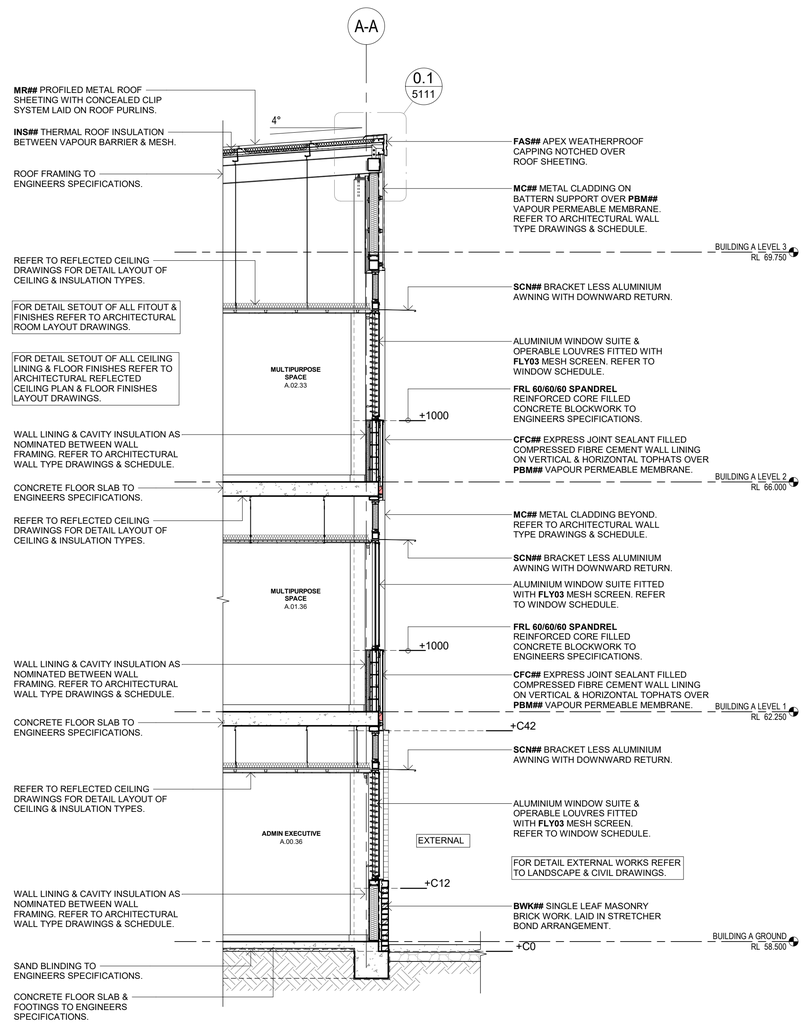

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C	13.01.2025	90% DD - ISSUE FOR REVIEW	NBRS
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1	07.03.2025	IFC PROGRESS ISSUE	PR
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Changes to this Revision

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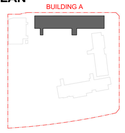

Drawing Title
BUILDING A - DETAIL WALL SECTIONS - SHEET 02

Project
New High School in Edmondson Park

at
Lot 2, DP 1287903 Buchan Ave, Edmondson Park, NSW 2174

for
SINSW

NBRS
+61 2 9922 2344
nbrs.com.au
Nominated Architects:
Andrew Duffin NSW 5602
Jonathan West NSW 9899
NBRS & Partners Pty Ltd VIC 51197
ABN 16 002 247 565

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Drawing Reference EPHS-NBRS-B00A-XX-DR-A-5102
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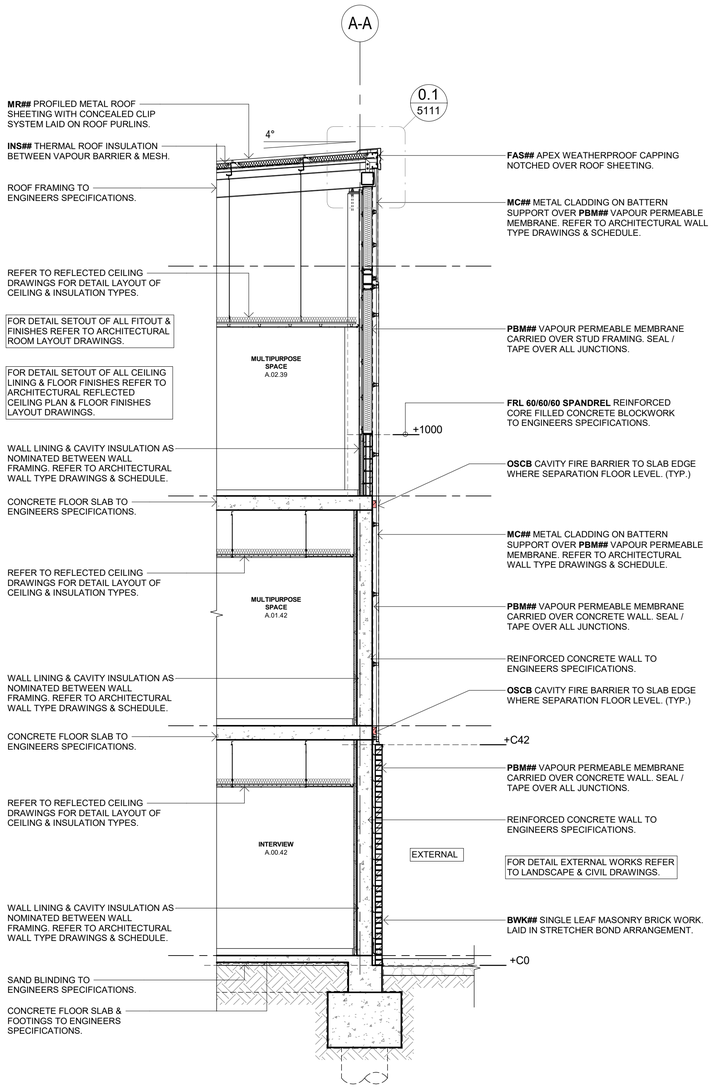

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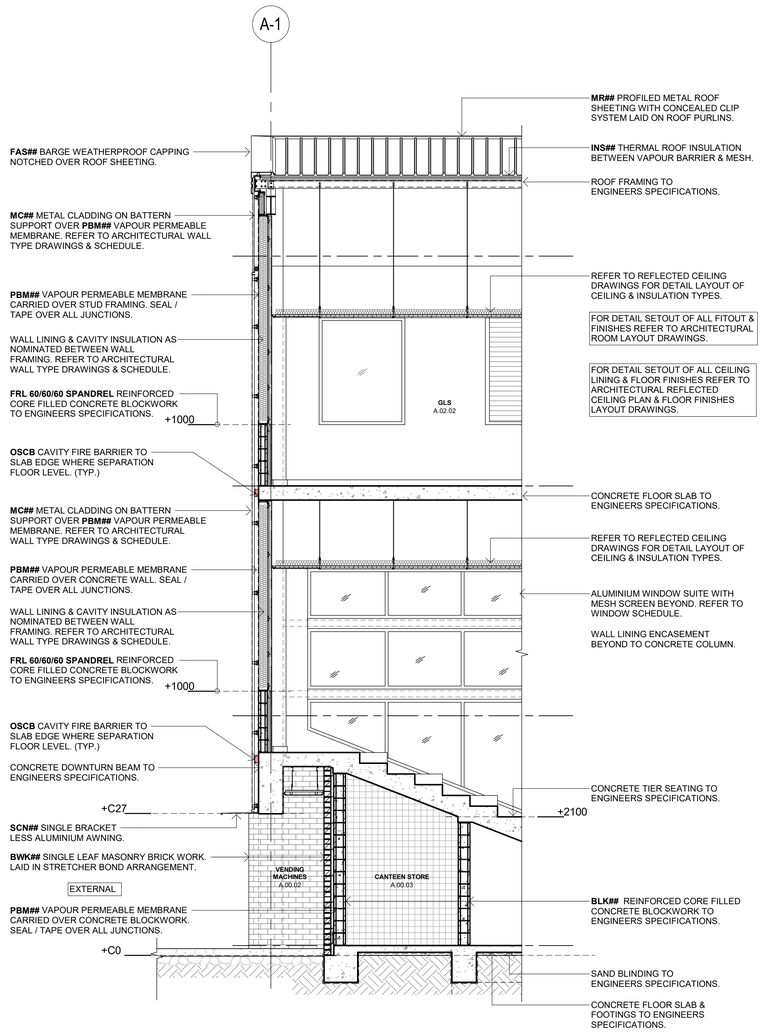

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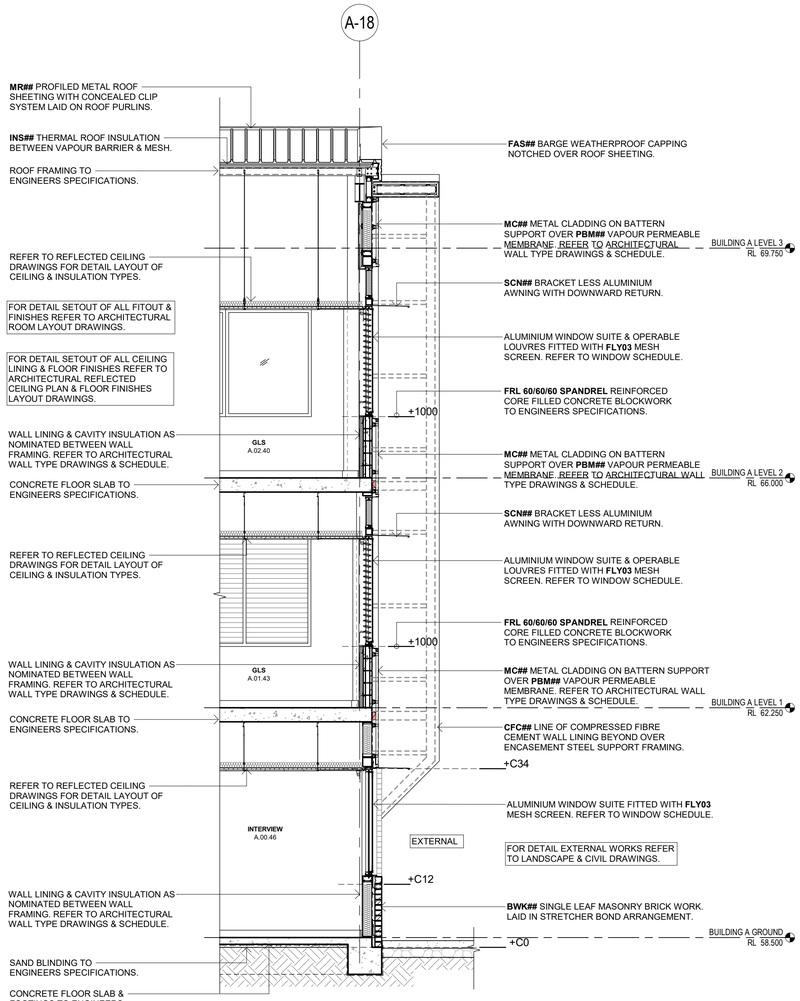

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CONSTRUCTION PHASE

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1	07.03.2025	IFC PROGRESS ISSUE	PR
2	06.05.2025	ISSUE FOR CC3	PR

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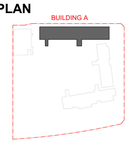

Drawing Title
BUILDING A - DETAIL WALL SECTIONS - SHEET 03

Project
New High School in Edmondson Park

at
Lot 2, DP 1287903 Buchan Ave, Edmondson Park, NSW 2174

for
SINSW

NBRS
+61 2 9922 2344 nbrs.com.au
Nominated Architects:
Andrew Duffin NSW 5602
Jonathan West NSW 9899
NBRS & Partners Pty Ltd VIC 51197 ABN 16 002 247 565

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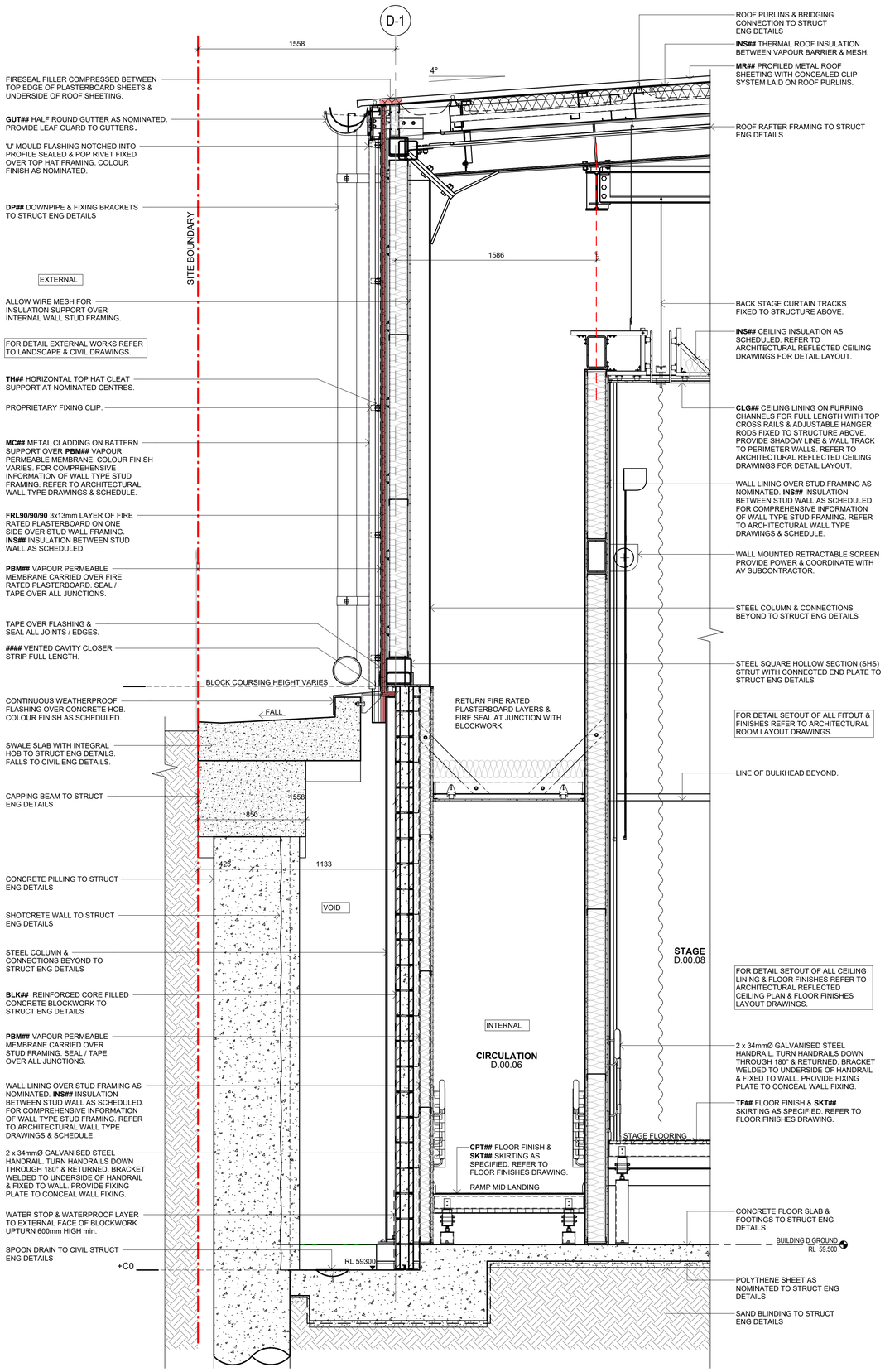

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BUILDING D - DETAIL WALL SECTION

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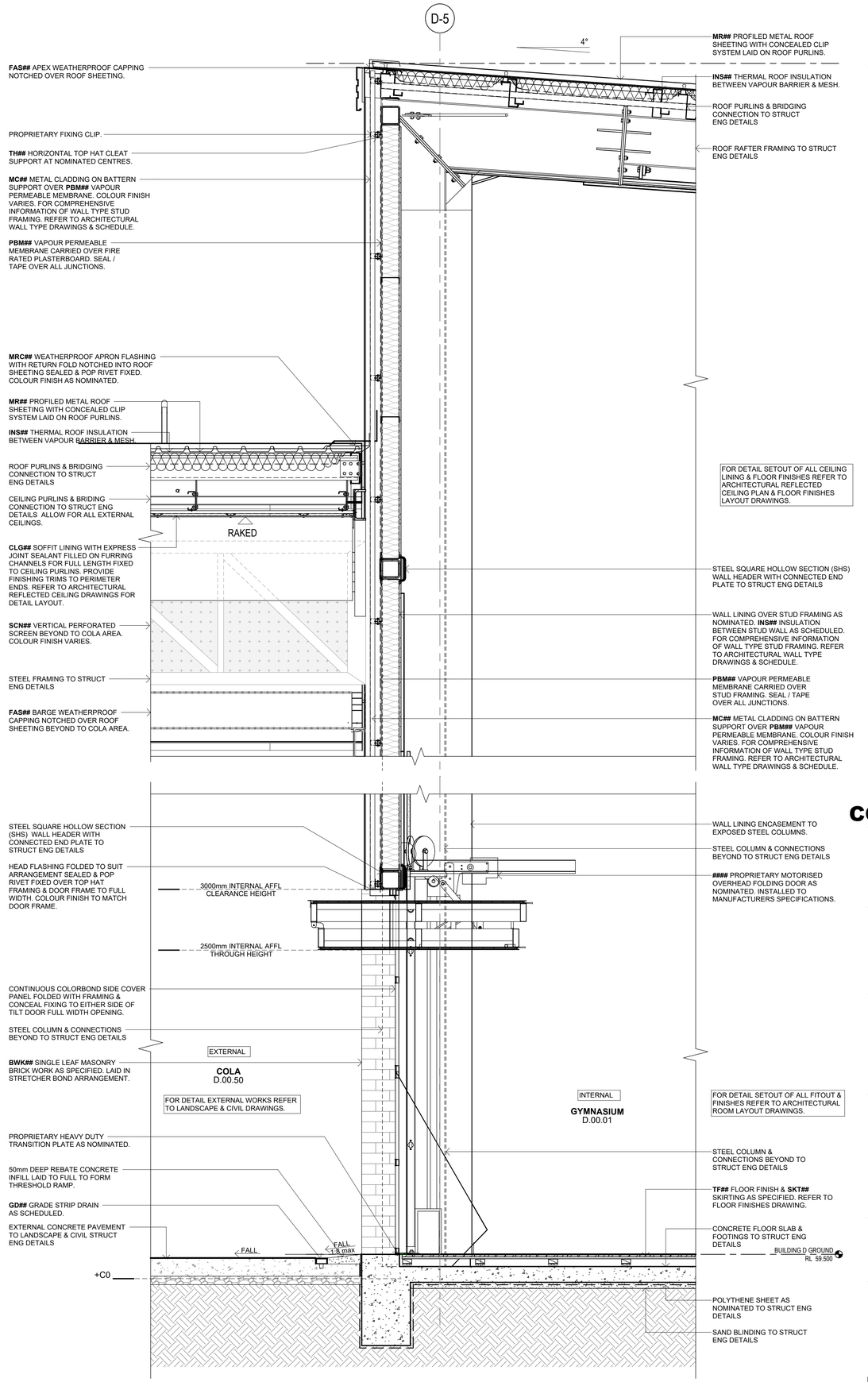

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BUILDING D - DETAIL WALL SECTION

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NBRS

CONSTRUCTION PHASE

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C	13.01.2025	90% DD - ISSUE FOR REVIEW	NBRS
D	28.01.2025	ISSUE FOR 100% DD	PR
1	13.03.2025	IFC PROGRESS ISSUE	PR
2	06.05.2025	ISSUE FOR CC3	PR

Changes to this Revision

NBRS

+61 2 9922 2344 nbrs.com.au

Nominated Architects:
Andrew Duffin NSW 5602
Jonathan West NSW 9899
NBRS & Partners Pty Ltd VIC 51197 ABN 16 002 247 565

Project

New High School in Edmondson Park

at

Lot 2, DP 1287903 Buchan Ave, Edmondson Park, NSW 2174

NSW GOVERNMENT Education

Drawing Title

BUILDING D - DETAIL SECTIONS - SHEET 01

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NBRS Project # 24179

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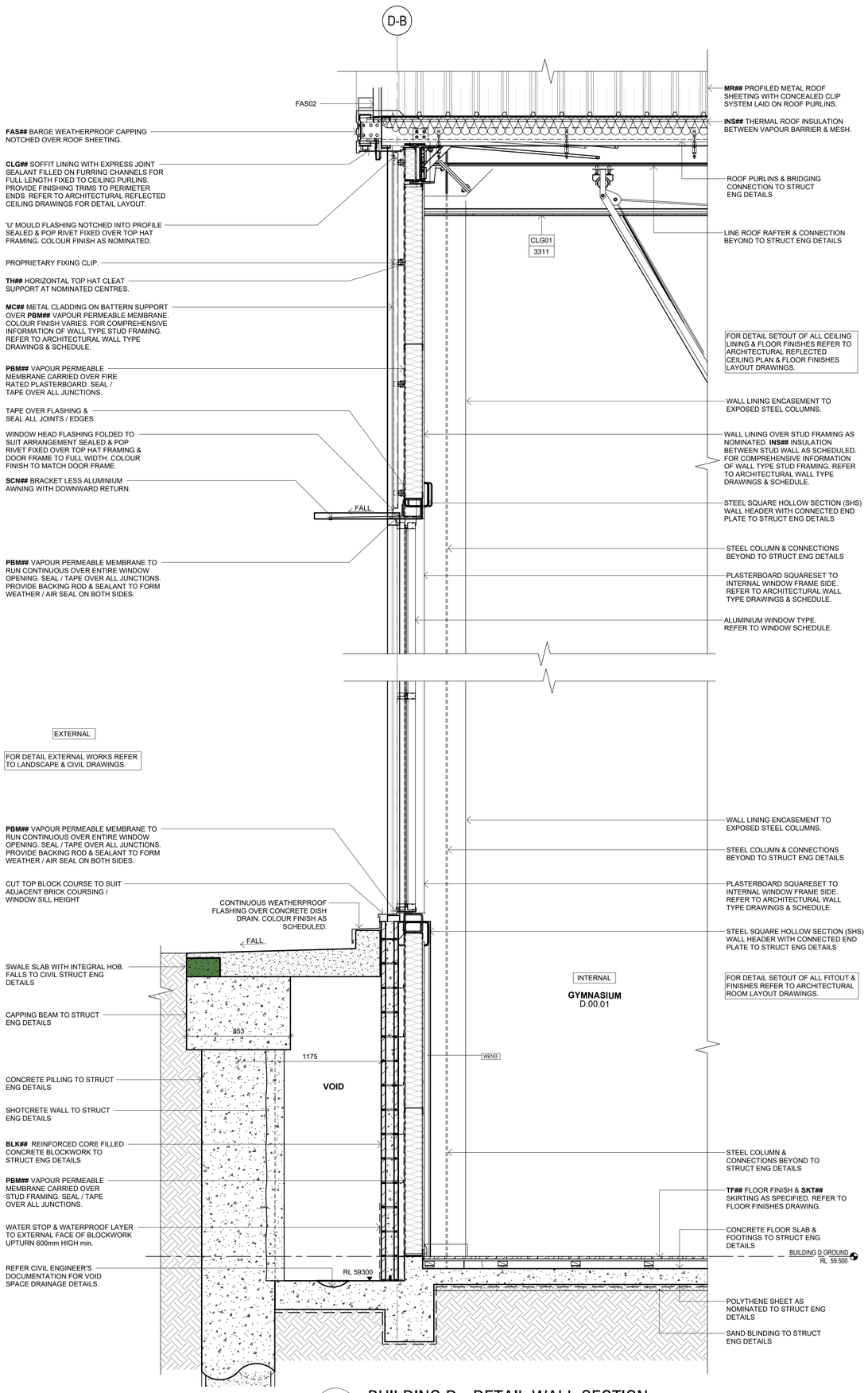

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BUILDING D - DETAIL WALL SECTION

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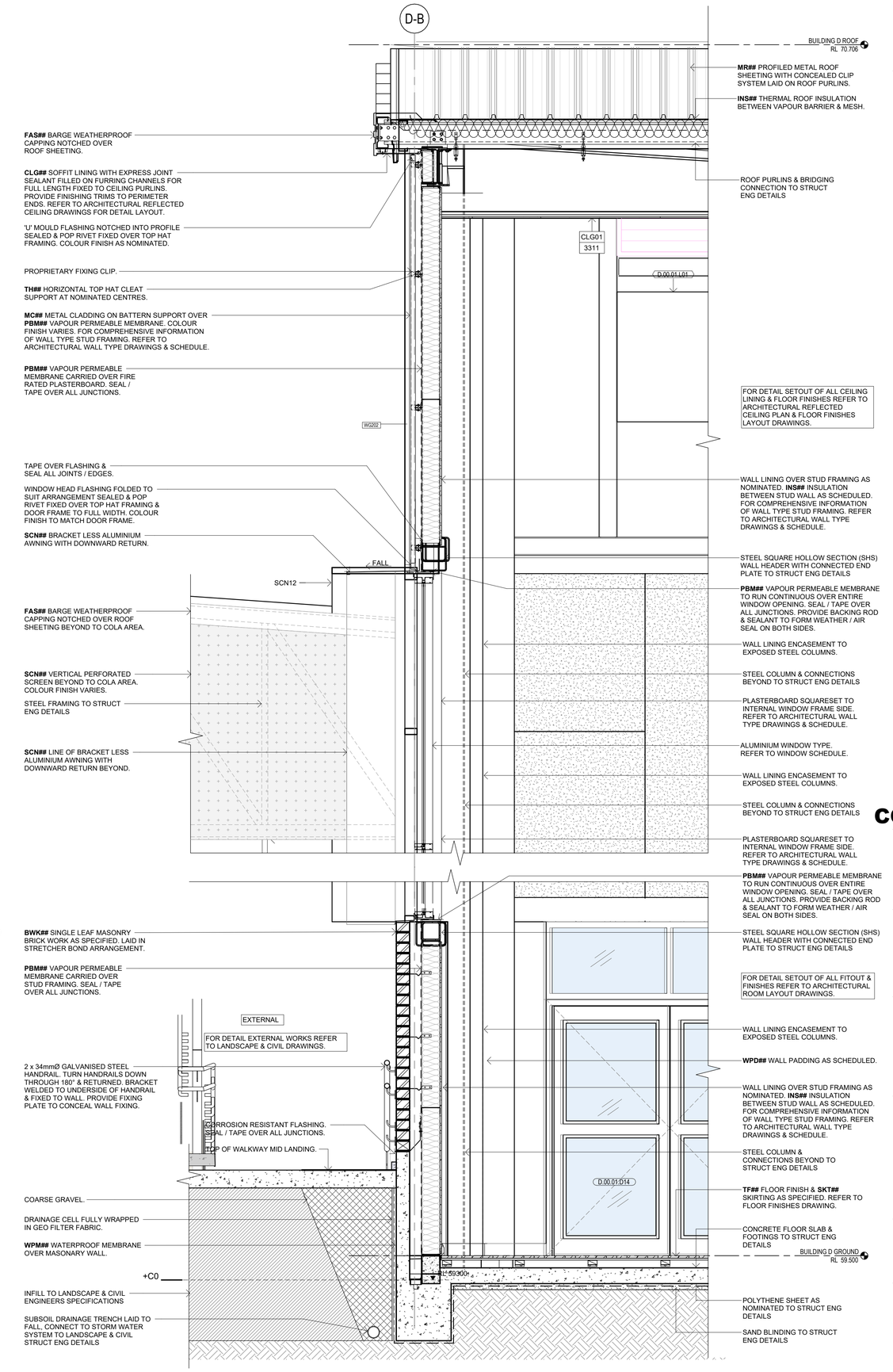

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BUILDING D - DETAIL WALL SECTION

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CONSTRUCTION PHASE

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1	13.03.2025	IFC PROGRESS ISSUE	PR
2	06.05.2025	ISSUE FOR CC3	PR

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Project

New High School in Edmondson Park

at

Lot 2, DP 1287903 Buchan Ave, Edmondson Park, NSW 2174

NSW GOVERNMENT Education

Drawing Title

BUILDING D - DETAIL SECTIONS - SHEET 02

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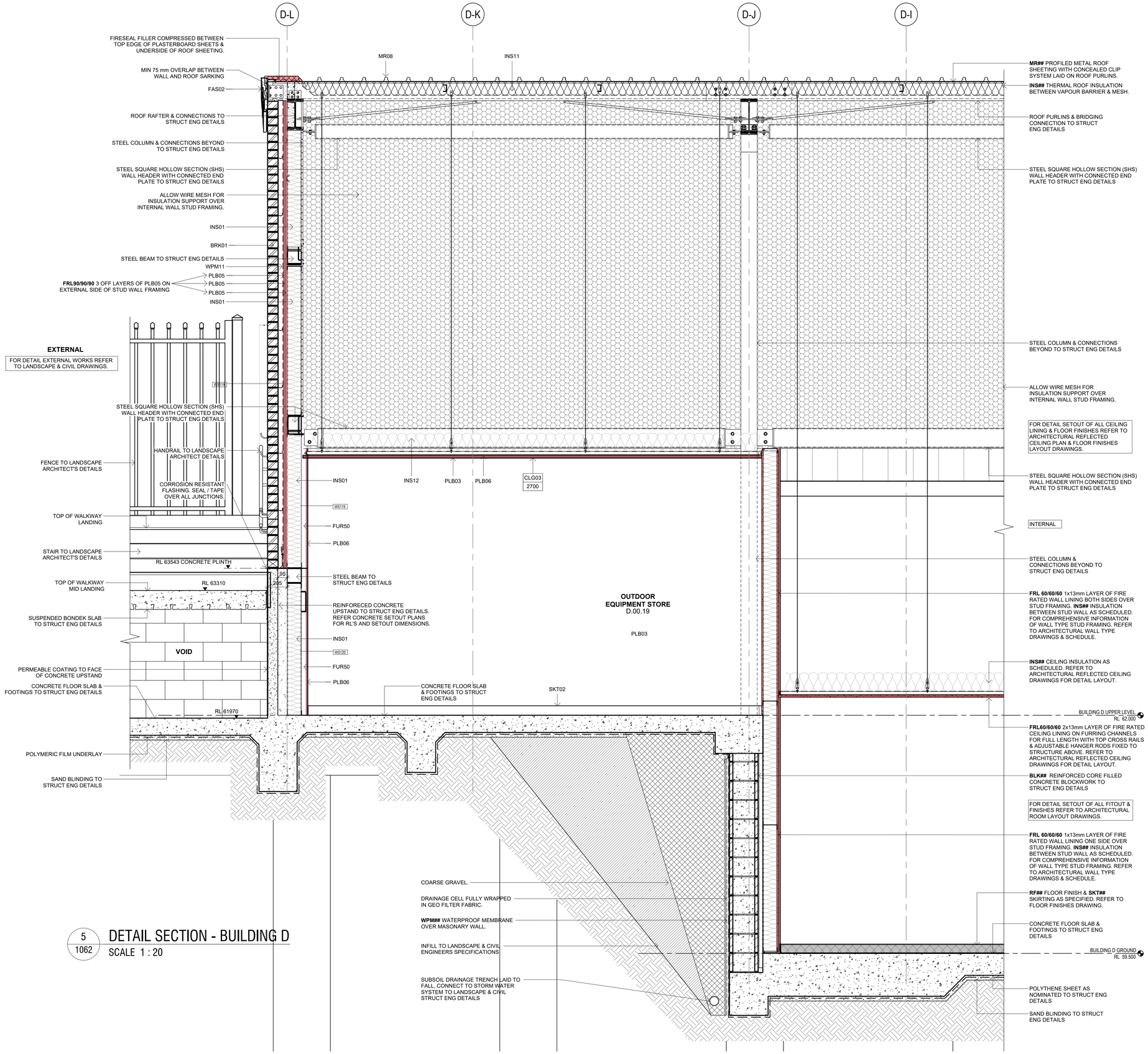

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DETAIL SECTION - BUILDING D

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CONSTRUCTION PHASE

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Project

New High School in Edmondson Park

at

Lot 2, DP 1287903 Buchan Ave, Edmondson Park, NSW 2174

NSW GOVERNMENT Education

Drawing Title

BUILDING D - DETAIL SECTIONS - SHEET 03

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Drawing Reference EPHS-NBRS-B00D-XX-DR-A-5403

Revision 2

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NORTHROP

FACADES REPORT

Edmonson Park High School

Lot 2 Buchan Ave

Edmondson Park, NSW 2174

Ref: SY242067-00-FA – RP01
Rev: 1
Date: 20 May 2025

PREPARED FOR
Richard Crooks Construction
Level 3, 4 Broadcast Way
Artarmon ,
NSW 2064

Facades Report

Revision Information

Project:	Edmonson Park High School
Document Title:	Facades F3P1 Performance Solution Report
Client:	Richard Crooks Construction
Revision:	1
Status:	Issue for Information
Revision Date:	20 May 2025
Author:	Michael Li
Verifier:	John Lee

Revision History

Revision #	Reviewer	Approver	Revision Date	Comment
1	John Lee	Neil McClelland	24/03/2025	Draft issue
2	John Lee	Neil McClelland	20/05/2025	Incorporate JH comments

Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

Level 10, 400 George St, Sydney NSW 2000

02 9241 4188 | sydney@northrop.com.au | www.northrop.com.au

Table of Contents

1. General

1.1 Introduction

This Weatherproofing Performance Solution (**WPS**) has been prepared by Northrop Consulting Engineers Pty Ltd (**Northrop**) for Richard Crooks Construction.

The façade system presented in NBRS architectural drawings for areas and inclusive are National Construction Code 2022 Amendment 1 Building Code of Australia Volume 1 (NCC) F3P1 compliant for use on the Edmonson Park High School project via the NCC Performance Solution pathway.

This Weatherproofing Performance Solution is based upon:

- AS/NZS4284 system test reports which our expert opinion says are equivalent to NCC F3V1 test reports.
- System test reports to AS2047 and our expert opinion on their applicability to project details.
- Expert opinion on weatherproofing performance of proposed details that are similar to tested details.

1.2 Project Team

The project team involved for this specific project is as following:

Owner: School Infrastructure New South Wales

Main Contractor / Project Manager: Richard Crookes Construction Pty Ltd

Architect: NBRS

Façade Consultant: Northrop Consulting Engineers Ltd

Structural Consultant: Northrop Consulting Engineers Ltd

Principal Certifying Authority: Jensen Hughes Pty Limited

1.3 Site Specific Project Information

This project is for new high school in Edmondson Park, at Lot 2, DP 1287903 Buchan Ave, Edmondson Park, NSW 2174 as per the site plan in Figure 1 and this document's scope is limited to *means of weatherproofing design to prevent surface water entering the building* of the proposed design at the covered walkways/ balconies where protection is afforded by awnings

Figure 1: Proposed Site Plan

1.3.1 Building Information

The building information of the project is as follows:

Building Information	
Building Classification (as defined by Jensen Hughes Pty Ltd.)	Class 5 Offices Class 9b Schools Type A Construction
Building Function	**Block A** Ground Floor – Administrative offices, library, lecture theatre, learning spaces, and canteen First Floor – Classrooms, learning workshops, staff study and ancillary storerooms and amenities Second Floor – Learning workshops and staff study Class 5 + 9b **Block B** Ground Floor – Classroom spaces First Floor – Classroom spaces Second Floor – Learning workshops Class 9b **Block C** Ground Floor – Staff study and EOT facilities First Floor – Classroom spaces and learning workshops Second Floor – Classroom spaces and staff studies Third Floor – Classroom spaces and staff study Fourth Floor – Classroom spaces, learning workshops and staff study Class 9b

	Block D Ground Floor – Gym/basketball court, stage and ancillary storeroom Class 9b
Effective Building Height	Approximately 15 m
Climate Zone	6

1.4 Scope of work

The purpose of this documentation is to demonstrate compliance of the limited proportion of the external cladding to **F3P1 only** as defined in the **National Construction Code (NCC) 2022 Amendment 1 Volume 1 – Building Code of Australia (BCA).**

1.5 Project Specific Design Criteria

The following table summarises the project design requirements for the building envelope systems under our review:

Figure 1.2: Site Specific Performance Design Criteria

Performance Metric	Elements	Limit State	Design Criteria	
Air Infiltration	All	-	As per AS 4284 criteria	
Static Water Penetration	All	SLS	30% SLS **(330Pa)** as per AS 4284/ AS 2047 criteria	
Cyclic Water Penetration	Cladding	SLS	In accordance to AS 4284 water penetration criteria: Stage 1 (15% - 30%SLS): 165Pa – 330Pa Stage 2 (20% - 40%SLS): 220Pa – 440Pa Stage 3 (30% - 60%SLS): 330Pa – 660Pa	
Maximum Wind Loading	Wall	SLS	**+1.10 kPa**	**-0.95 KPa**
		ULS	**+1.70 kPa**	**-1.47 kPa**

1.5.1 Exterior Wall Systems Included

The exterior wall systems covered by this report are limited to the External wall façade details prepared by NBRS for Richard Crooks Construction, which includes **Error! Reference source not found.**. (see plans, part elevations and details in Appendix C).

1.6 Editions of Documents

Acts, Statutes, Local Regulations, Codes, Standards, Manufacturers Recommendations, reports, and drawings referred to in this document shall mean the latest edition and amendments current at the time of signing of the Contract for these works, unless a specific edition is referred to.

2. Code Compliance Pathway

2.1 General

Compliance with NCC is demonstrated by the requirements of NCC 2022 Part A2G1.

It is the intention of this assessment to rely on a performance solution to meet the weatherproofing performance requirements.

(1) Compliance with the NCC is achieved by complying with—

(a) the Governing Requirements of the NCC; and

(b) the *Performance Requirements*.

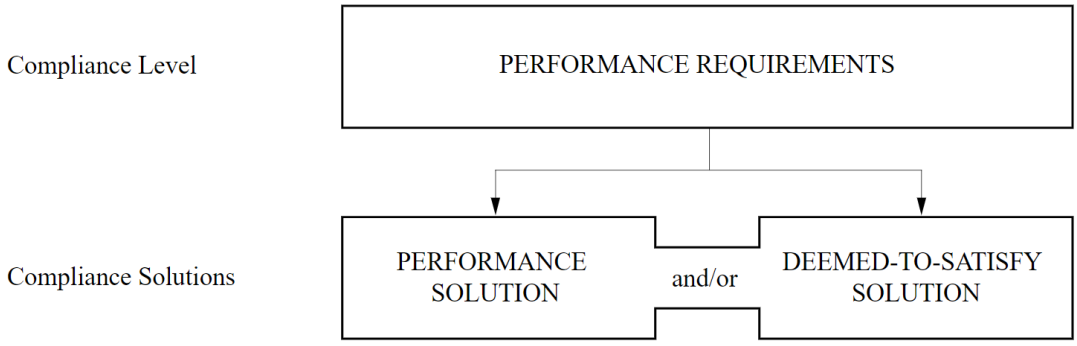
(2) *Performance Requirements* are satisfied by one of the following, as shown in Figure A2G1:

(a) *Performance Solution*.

(b) *Deemed-to-Satisfy Solution*.

(c) A combination of (a) and (b).

Figure A2G1 NCC compliance structure



2.1.1 Performance Solutions are governed by NCC Volume 1 2022 A2G2

— A2G2 Performance Solution

(1) A *Performance Solution* is achieved by demonstrating—

(a) compliance with all relevant *Performance Requirements*; or

(b) the solution is at least *equivalent* to the *Deemed-to-Satisfy Provisions*.

(2) A *Performance Solution* must be shown to comply with the relevant *Performance Requirements* through one or a combination of the following *Assessment Methods*:

(a) Evidence of suitability in accordance with Part A5 that shows the use of a material, product, *plumbing* and *drainage product*, form of construction or design meets the relevant *Performance Requirements*.

(b) A *Verification Method* including the following:

(i) The *Verification Methods* provided in the NCC.

(ii) Other *Verification Methods*, accepted by the *appropriate authority* that show compliance with the relevant *Performance Requirements*.

(c) *Expert Judgement*.

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

(3) Where a *Performance Requirement* is satisfied entirely by a *Performance Solution*, in order to comply with (1) the following method must be used to determine the *Performance Requirement* or *Performance Requirements* relevant to the *Performance Solution*:

(a) Identify the relevant *Performance Requirements* from the Section or Part to which the *Performance Solution* applies.

(b) Identify *Performance Requirements* from other Sections or Parts that are relevant to any aspects of the *Performance Solution* proposed or that are affected by the application of the *Performance Solution*.

(4) Where a *Performance Requirement* is proposed to be satisfied by a *Performance Solution*, the following steps must be undertaken:

(a) Prepare a *performance-based design brief* in consultation with relevant stakeholders.

(b) Carry out analysis, as proposed by the *performance-based design brief*.

(c) Evaluate results from (4)(b) against the acceptance criteria in the *performance-based design brief*.

(d) Prepare a final report that includes—

(i) all *Performance Requirements* and/or *Deemed-to-Satisfy Provisions* identified through A2G2(3) or A2G4(3) as applicable; and

(ii) identification of all *Assessment Methods* used; and

(iii) details of steps (4)(a) to (4)(c); and

(iv) confirmation that the *Performance Requirement* has been met; and

(v) details of conditions or limitations, if any exist, regarding the *Performance Solution*.

The Performance Solutions in this report are in the formant of A2G2 (4).

The weatherproofing performance of an external wall is covered by NCC Performance requirement

F3P1 *Weatherproofing* which has the following requirements:

— F3P1 Weatherproofing

A roof and *external wall* (including openings around *windows* and doors) must prevent the penetration of water that could cause—

(a) unhealthy or dangerous conditions, or loss of *amenity* for occupants; and

(b) undue dampness or deterioration of building elements.

Limitations

F3P1 does not apply to—

(a) a Class 7 or 8 building where in the particular case there is no necessity for compliance; or

(b) a garage, tool shed, *sanitary compartment*, or the like, forming part of a building used for other purposes; or

(c) an *open spectator stand* or *open-deck carpark*.

2.2 Other Relevant NCC Performance Clauses

As the Performance Requirement F3P1 is satisfied entirely by a Performance Solution, following method must be used to determine the Performance Requirement/s relevant to the Performance Solution in accordance with Clause A2G2 (3):

a) Identify the relevant Performance Requirements from the Section or Part to which the Performance Solution applies.
b) Identify Performance Requirements from other Sections or Parts that are relevant to any aspects of the Performance Solution proposed or that area affected by the application of the Performance Solution

Thus, relevant NCC performance clauses from Section B Structure that may influence the assessment of the F3P1 have been identified as per below:

1. **Clause B1D4 (a) Masonry**
2. **Clause B1D4 (h)(i) Glazed Assemblies & Clause F3D4**
   Glazed assemblies in an external wall must comply withq AS2047.

Thus, relevant NCC performance clauses from Section F Health and amenity that may influence the assessment of the F3P1 have been identified as per below:

1. **Clause F3V1 Weatherproofing**
   A verification method for weatherproofing based upon mock-up testing is provided. The testing method of this section is based upon AS/NZS 4284 (directly referenced in previous versions of the NCC but now omitted).

2. **Clause F3D3 Sarking**
   Sarking-type material used for weatherproofing of roofs and walls must comply with AS/NZS 4200.1 and AS 4200.2.

Other Performance Requirements from other Sections or Parts of the BCA that may impact the external walls have not been assessed within this Performance Solution. Notable Section that may potentially impact the external walls are as following:

1. Section B - Structure
2. Section C - Fire Resistance
3. Section J - Energy Efficiency

It has been assumed that the relevant design consultants will separately demonstrate this requirement.

2.2.1 Air Infiltration

As per AS4284 performance requirement, air infiltration for air-conditioned building shall not exceed 1.6 L/m²s when subject to pressure differential of ±150 Pa.

2.2.2 Water Penetrations

Detailing and performance of the building envelop system must satisfy:

a) No leakage when subject to static water pressure greater than 30% maximum positive SLS wind pressure as per AS 2047.
b) No leakage when subject to static water pressure of 30% maximum positive SLS wind pressure, followed by different stages of cyclic water pressure from 15% to 60% maximum positive SLS wind pressure.

2.2.3 Wind Loading

The wind pressures in the Appendix D present maximum values calculated on Checkwind Wind site specific report carried out by Northrop Consulting Engineers as per AS 1170.2-2021 with consideration of necessary design factors, such as but not limited to, site exposure multipliers, aerodynamic shape factors and local factors.

2.3 Expert Opinion Limitations

This expert opinion has the following limitations:

- This opinion is limited to the proposed details provided by Northrop Consulting Engineers, and it does not cover any details that are not provided or any details that are modified.
- We rely on the provided test reports and tested details. Where not otherwise shown on the details, we assume that all seals are continuous, a continuous air barrier is achieved within the system and between adjoining systems such as windows, roofs, and sub-grade elements, spliced sub-framing and flashings are fully sealed, and that all sub-framing and flashings have positive end terminations and/or sealing.
- Accommodation of design movements such as thermal expansion, edge beam deflections and/or building sway is verified by testing or by the structural designer of the system.
- All sealants and components are designed and installed to the manufacturers' recommendations.
- The cladding system and its components are maintained as per the manufacturers' recommendations.
- All elements are within their respective warranty periods.

2.4 Performance Solution Evidence of Suitability

This Performance Solution is based upon a comparison with the DtS provisions as well as expert judgement and follows the requirements of NCC Section A5G3

A5G3 Evidence of suitability – Volumes One and Two (BCA)

(1) Subject to A5G5, A5G6, A5G7 and A5G9, evidence to support that the use of a material, product, form of construction or design meets a *Performance Requirement* or a *Deemed-to-Satisfy Provision* may be in the form of any one, or any combination of the following:

(a) A current CodeMark Australia or CodeMark *Certificate of Conformity*.

(b) A current *Certificate of Accreditation*.

(c) A current certificate, other than a certificate described in (a) and (b), issued by a *certification body* stating that the properties and performance of a material, product, form of construction or design fulfil specific requirements of the BCA.

(d) A report issued by an *Accredited Testing Laboratory* that—

(i) demonstrates that a material, product or form of construction fulfils specific requirements of the BCA; and

(ii) sets out the tests the material, product or form of construction has been subjected to and the results of those tests and any other relevant information that has been relied upon to demonstrate it fulfils specific requirements of the BCA.

(e) A certificate or report from a *professional engineer* or other *appropriately qualified person* that—

(i) certifies that a material, product, form of construction or design fulfils specific requirements of the BCA; and

(ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice or other publications have been relied upon to demonstrate it fulfils specific requirements of the BCA.

(f) Another form of documentary evidence, such as but not limited to a *Product Technical Statement*, that—

(i) demonstrates that a material, product, form of construction or design fulfils specific requirements of the BCA; and

(ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice or other publications have been relied upon to demonstrate it fulfils specific requirements of the BCA.

(2) Evidence to support that a calculation method complies with an ABCB protocol may be in the form of any one, or any combination of the following:

(a) A certificate from a *professional engineer* or other *appropriately qualified person* that—

(i) certifies that the calculation method complies with a relevant ABCB protocol; and

(ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice and other publications have been relied upon.

(b) Another form of documentary evidence that correctly describes how the calculation method complies with a relevant ABCB protocol.

The report author providing the expert judgement is Neil McClelland (see Appendix A for CV). Neil is a professional engineer with over 30+ years of Façade Engineering experience. Neil has worked in Sydney, New York (11 years) and London (2 years) on most building types, on most façade types, and in all climate locations.

2.5 Compliance Pathways Adopted

This Performance Solution is based upon the following:

Façade Reference*	General Description	Compliance Pathway
FT01	Concealed fixing compressed fibre cement panel 8mm thickness (Equitone or equivalent) with pliable building membrane (ProClima Solitex Extasana) on stud system and/or concrete wall	Performance Solution by combination of expert judgement and DtS provision. CFC cladding system shall be tested to **AS4284** or equivalent to demonstrate **F3P1**. Concrete wall shall be reinforced for minimum "medium level" crack control in accordance with AS3600. Construction joints shall be avoided, however, if required for construction or to provide articulation for building movement, suitable waterproofing measures shall be employed, including hydrophilic waterstops, scabbling of the surface, and bond-breaker tape at interface with applied membranes. Drained cavity system shall be introduced to achieve the required performance. Reference to **F3D3**, pliable building membrane (sarking) must coqmply with **AS 4200.1** and **AS 4200.2.**
FT02	Profiled Metal Cladding (Lysaght Snapseam or equivalent) with pliable building membrane (ProClima Solitex Extasana) on stud system and/or concrete wall	Performance Solution by DtS provisions. *DtS as per **F3D5 (c)**, metal cladding system must comply with **AS1562.1. q*** Reference to **F3D3**, pliable building membrane (sarking) must comply with **AS 4200.1** and **AS 4200.2.**
FT03	Brickwork with cavity and pliable building membrane (ProClima Solitex Extasana). Flashing and/or DPC with weep holes at maximum 1200mm centres.	Performance Solution by DtS provisions *DtS as per **F3D5 (a)**, brick cladding system must comply with **AS3700.*** *DtS as per F3D3, pliable building membrane (sarking) must comply with **AS 4200.1** and **AS 4200.2.***
FT04	External glazing systems windows (Alspec systems)	*Deemed-to-satisfy as per **F3D4**, glazed assemblies must comply with **AS 2047** requirements for resistance to water penetration.*

FT05	External doors including Glazed hinge doors, metal roller shutter doors and glazed vertical folding doors.	*Performance Solution by Expert Judgement based on:* • *The presence of the overhang to deflect direct rain and reduce the catchment area.* • *The presence of grated drainage to improve drainage ability for ground floor doors.* • *Ramps at door threshold to divert surface water* • *Drop seal for aluminium hinged door to improve its water penetration resistance performance.*

3. Evidence of Building Code Compliance

3.1 FT01 CFC Cladding – Equitone or equivalent

The CFC cladding system used on this specific project as shown in Figure 3.1 to Figure 3.2 typically comprises the following building elements as a system (orders from exterior to interior):

- 8mm CFC sheet cladding
- Top hats for sub framing on ventilated / drained cavity installed with
- Pliable Building Membrane – ProClima Solitex Extasana or equivalent
- Structural framing including insulation
- Internal Plasterboard

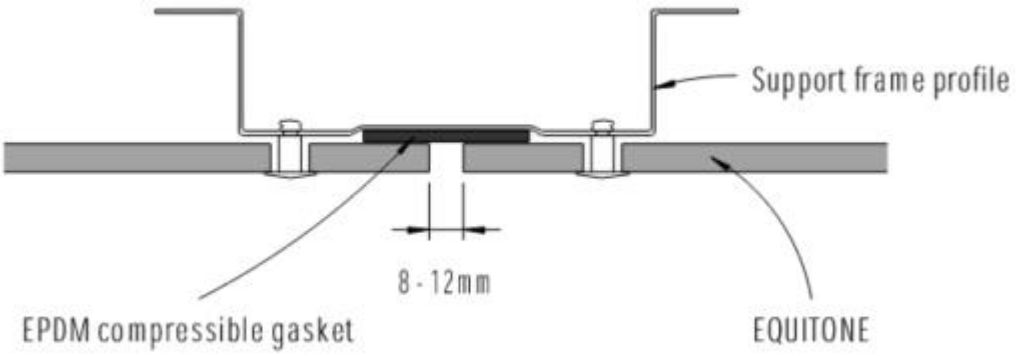


Figure 3.1: Equitone Typical Vertical Section Detail

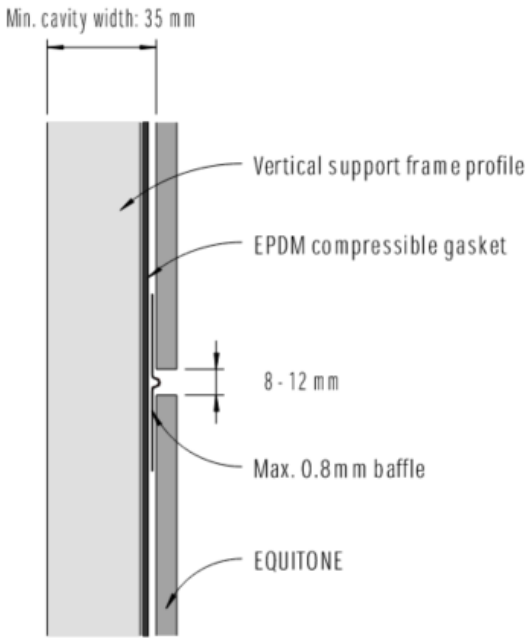


Figure 3.2: Equitone Typical Horizontal Detail

The CFC is tied to top hat framing and steel stud base structure. A pliable weather membrane is applied to external face of stud walls to prevent water and moisture penetration through into the building. This system is commonly known as a Rainscreen system, featuring an outer rainscreen composed of a **Error! Reference source not found.** ProClima Solitex Extasana cladding system and an inner air barrier using the permeable pliable membrane. The rainscreen is designed to prevent the majority of rainwater from reaching the air barrier. The cavity between the rainscreen and the air barrier is partially pressure-equalized through vent/drain holes in the rainscreen, which helps to minimize water ingress into the cavity. The air barrier also serves as the water barrier. Ideally, the air barrier would be completely sealed, though experience shows that achieving this perfectly is challenging in practice. Nonetheless, as most rainwater is kept away from the air barrier, rainscreen systems have proven to perform well over many decades, even with the presence of minor imperfections in the air barrier. Refer to Section 3.3.2 for DtS pathway for Pliable membrane.

The cladding is to be installed as per the design documented in the Appendix C.

3.1.1 Reference Standards

The CFC panel types – Equitone has been tested to AS4284 procedure and checked its result to the performance specified in NCC2022 F3V1.

Based on the test report, following can be concluded:

1. The external wall has a risk score of less than 20 as required by the F3V1 Weatherproofing (1)(b) as shown in Figure 3.3.

Verification Methods

F3V1 Weatherproofing

(1) Compliance with F3P1 for weatherproofing of an *external wall* is verified when—

(a) a prototype passes the procedure described in (2); and

(b) the *external wall*—

(i) has a risk score of 20 or less, when the sum of all risk factor scores are determined in accordance with Table F3V1a; and

(ii) is not subjected to an ultimate limit state wind pressure of more than 2.5 kPa; and

(iii) includes only *windows* that comply with AS 2047.

Figure 3.3: NCC Volume One Section F

Table 3.1:Risk Score Calculation

NCC 2019 Volume 1 Amendment 1 FV1.1 Risk Factor Score		
Risk Factor	Category	Score
Wind Region	A	0
Nunber of Storeys	More than two storeys	4
Roof/wall junctions	Roof-wall junctions partially exposed	1
Eaves width	0-100 mm for single storey; 0- 450 for two storey; or less than 600 mm for above two storey	5
Envelope complexity	Complex shape with more than two cladding types	3

Decks, porches and balconies	Balcony exposed in plan view at second floor level or above; or balcony cantilevered at second floor level or above	6
Total RISK FACTOR SCORE		**19**

2. The cladding system may withstand up to **+2kPa** of wind pressure as per its performance showing no signs of uncontrolled water during AS4284 weatherproofing test (water penetration test).

3. The Water penetration performance of the cladding is **600Pa** as per *Test Report Ian Bennie & Associates* which is more than the project requirement of **330Pa** and combination of wall pliable membrane is expected to fulfil the performance requirement.

4. As the test report and standard details presents a typical performance under laboratory conditions, any modification to the system and its interface with other building elements shall be assessed independently and potentially water tested on site.

3.1.2 Expert Judgement

3.1.2.1 CFC rain screen system

Based on the engineering principle, the CFC system construction incorporates ventilated cavity system, with wind-driven rain is primarily deflected by water resistant CFC board cladding and any ingress via moisture transfer, joints and penetration is controlled by pressure equalised cavity and vapour permeable building membrane, specified as ProClima Solitex Extasana. Any condensed water within the cavity is expected to be effectively drained away from the building ProClima Solitex Extasama meets the DtS requirements for Pliable Building Membrane as specified in Section 3.3.2.

3.2 FT02 Profiled Metal Cladding (Lysaght Snapseam TBC or equivalent)

The metal cladding façade system used on this specific project compromises following building elements as a system:

- Profiled Metal Cladding (Lysaght Snapseam TBC)
- 30mm Cavity with top hat system
- Pliable building membrane
- Steel stud structure

3.2.1 Deem to satisfied pathway for metal cladding

NCC 2022provides deemed-to-satisfy provision for metal profiled cladding system, referenced F3D5(c): "*metal wall cladding must comply with AS1562.1*". Following guidance was set by AS1562.1:

B2 MINIMIZING WATER PENETRATION

The following references offer advice on installing flashings and reducing water penetration in cladding systems:

(a) SA HB 39.

(b) NZ Acceptable Solution E2/AS1.

(c) NZ Metal Roof and Wall Cladding Code of Practice.

To provide an effective seal against wind-driven rain, most flashings should also be designed to protect against upward-moving water. This is particularly the case for flashings at the top of roof surfaces such as valley gutters, ridges or apron flashings. The gap between the cladding and these flashings may also be sealed with closed-cell foam strips. Such strips need to be anchored in position to resist wind pressures. Turned up edges of roofing and hems and hooks on flashings are required to achieve weatherproofing and also anchor the foam strips.

Valley gutters should incorporate upstands or weather hooks on edges and tops. Closed cell foam at the top of valley gutters will reduce the overtopping as wind drives water up the roof pitch (i.e. slope).

In reference to NZ Acceptable Solution E2/AS1, the vertical profiled metal cladding shall adopt following typical details:

Figure 92: Barge for vertical profiled metal
Paragraph 9.6.8.2

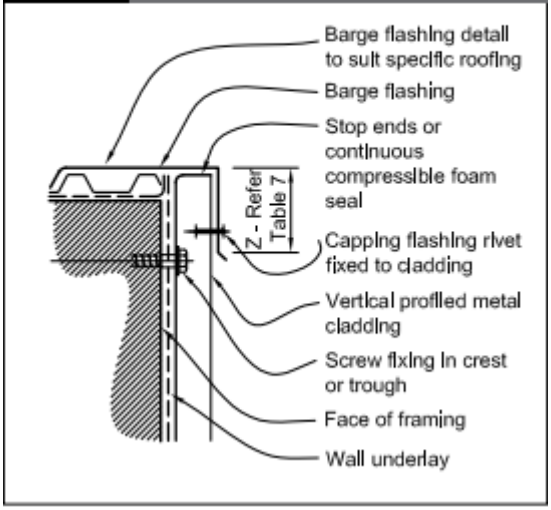


Figure 93: Bottom of cladding for vertical profiled metal
Paragraph 9.6.8.3

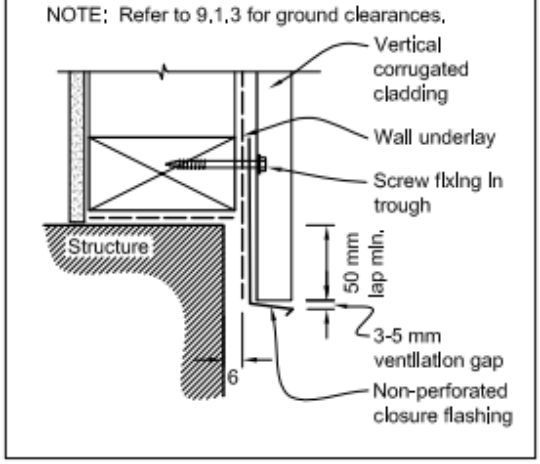
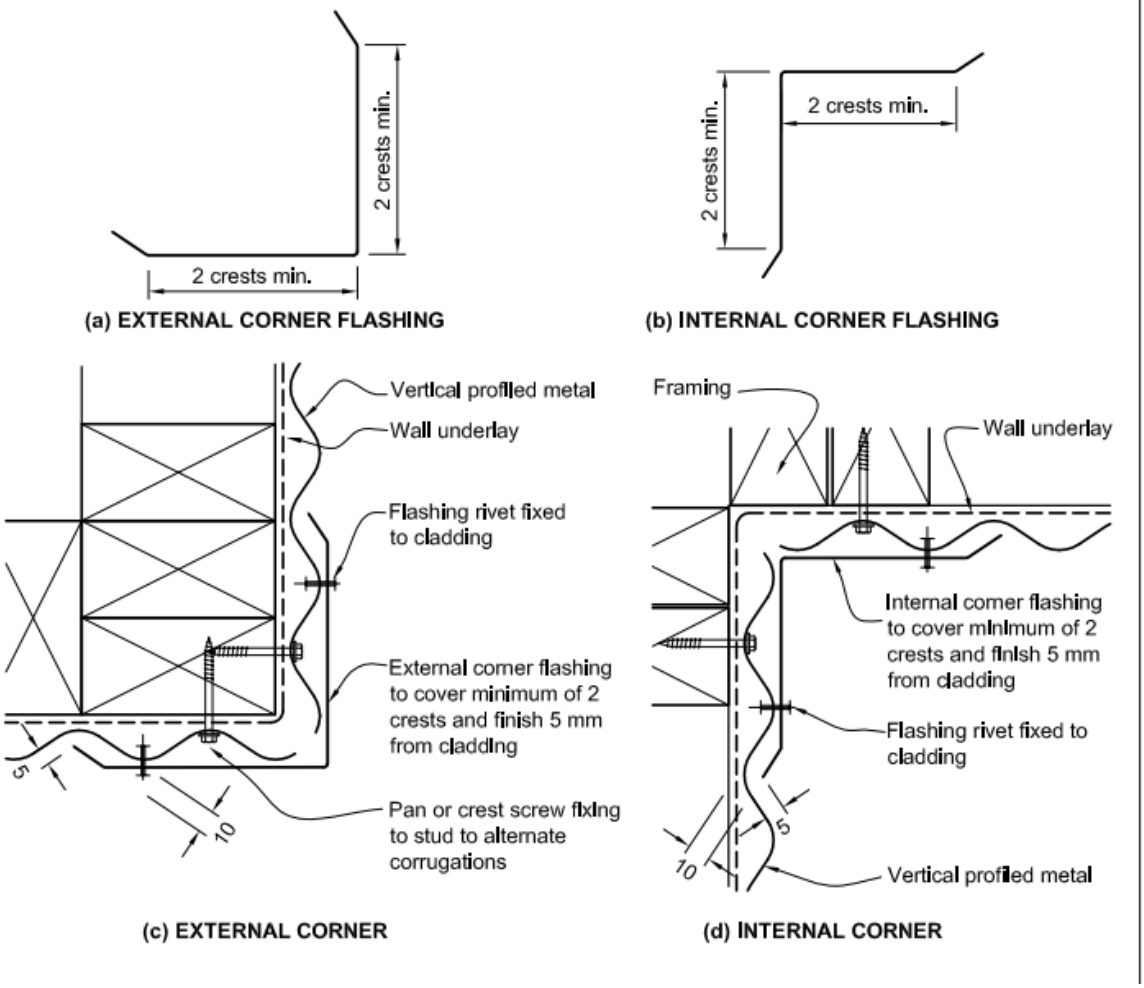


Figure 94: Corners for vertical profiled metal
Paragraph 9.6.8.4



3.2.2 DtS pathway for Pliable Membrane

Also, in reference to NCC 2022 Clause F3D3 Sarking, "*Sarking-type material used for weatherproofing of roofs and walls must comply with AS 4200.1 and AS 4200.2.",* the pliable building membrane selected as part of this cladding system is ProClima Solitex Extasana and meets the requirements from AS4200.1 as show below in Figure 3.7:

5.3.4 *Vapour control classification*

The vapour control classification shall be determined in accordance with ASTM E96, Procedure B (wet-cup test). Vapour control properties shall be classified in accordance with Table 4 and results expressed as vapour permeance µg/N.s.

TABLE 4

VAPOUR CONTROL MEMBRANE (VCM) CLASSIFICATION

Class	VCM category	Vapour permeance (see Note) µg/N.s Min. (≥)	Max. (<)
Class 1	Vapour barrier	0.0000	0.0022
Class 2		0.0022	0.1429
Class 3	Vapour permeable	0.1429	1.1403
Class 4		1.1403	No max.
	ASTM-E96 Method B Wet Cup—23°C 50%RH		

NOTE: Vapour permeance is the inverse of vapour resistance. It shall be calculated as follows:

Vapour permeance µg/N.s = 1/ (Vapour resistance MN.s/g)

5.3.5 *Water control classification*

The water control classifications shall be determined as follows:

(a) *Water barrier*—if the membrane passes the test specified in AS/NZS 4201.4.

(b) *Non-water barrier*—if the membrane fails the test specified in or has not been tested to AS/NZS 4201.4.

Figure 3.4: AS4200.1 5.3.4 Vapour control classification

As per its technical data extracted from Technical Data Sheet ProClima Solitex Extasana as shown in Figure 3.8, the selected product is deemed to comply to NCC F3P1:

Technical Data

Cover fleece + protective layer:		PP microfibre fleece	
Membrane:		Monolithic TEEE* film	
UV stability and outdoor exposure:		180 Days	BRANZ Appraisal No. 822 (2020)
Duty classification:		Light wall	AS/NZS 4200.1-2017
Vapour classification:		Class 4 (Permeable)	AS/NZS 4200.1-2017
Thickness:		0.60 mm ± 0.05 mm	EN 1489-2
Flammability index:		< 5	AS 1530.2-1993
Temperature resistance:		-40 °C to +120 °C	
Heat shrinkage @ 70°C:		0.0%	ASTM D1204
Edge tear:	MD / LD	251 / 188 N	TAPPI T470
Tensile strength:	MD / LD	4.8 / 3.7 kN/m	AS 1301.448s-1991
Burst strength:		> 200	AS 2001.2.19-1988
Vapour permeance:		2.179 µg/N.s	ASTM E96 Method B
Water control:		10,000 mm	EN 20811
		Pass (> 100 mm)	AS/NZS 4201.4-1994
		Water barrier	AS/NZS 4200.1-2017
Emittance:	Front / Back	0.9 / 0.9	AS/NZS 4200.1-2017
	Classification	NN	AS/NZS 4200.1-2017
Surface water absorbency:		> 150 g/m²	AS/NZS 4201.6-1994
		High (> 100 g/m²)	AS/NZS 4200.1-2017
Air control:		≥ 0.1 MNs/m³	ISO 5636.5, BS 6538.3
		Air barrier	AS/NZS 4200.1-2017
Moisture shrinkage:		< 0 .5 %	AS/NZS 4201.3
Surface weight:		140 g/m² ± 5 g/m²	EN 1489-2
Electrical conductivity:		Electrically non-conductive	AS/NZS 4200.1 - 2017

THIS PRODUCT MEETS THE REQUIREMENTS OF AS/NZS 4200.1 & IS SUITABLE FOR USE IN AUSTRALIA

*TEEE: Thermoplastic Elastomer Ethyl Ester

IMPORTANT INFORMATION

- Class 4 vapour permeable pliable building membrane in accordance with AS 4200.1.
- This product is designed to withstand up to 180 days UV exposure before cladding is installed.
- This product can withstand exposure to temperatures of up to 120°C and down to -40°C behind external claddings.

PRODUCT DESCRIPTION

SOLITEX EXTASANA® is a UV stabilised and tear resistant synthetic weather resistive barrier (WRB). A non-porous water resistant TEEE* film is laminated at high temperature between two layers of spun bonded polypropylene.

WEATHER EXPOSURE

This product is a weather resistive barrier (WRB) and designed to withstand up to 180 days direct exposure to UV and still fulfil the intended use for air and water control. Exterior cladding should be detailed to prevent direct sunlight onto the membrane in service.

Figure 3.5: ProClima Solitex Extasana Technical Datasheet snapshot

ProClima Solitex Extasana is an air barrier and water barrier. Ideally the air barrier has no holes, but experience shows us that this is difficult to achieve in practice, therefore it is insisted to follow the installation guide as attached in Appendix E to comply with AS/NZS 4200.2:2017 Pliable Building Membranes and Underlays Part 2 Installation Requirements. As most rainwater is kept away from the air barrier, rainscreen systems have demonstrated good performance over many decades of service even though some small holes in the air barrier may exist. The ProClima Solitex Extasana pliable membrane complies with Vapour Control Classification AS4200.1 as shown in Figure 3.8 and Water control classification 4201.4. Refer to attached technical statement in Appendix E.

3.3 FT03 Brickwork with cavity and pliable membrane

Brickwork for this project typically comprises the following building elements as a system (orders from exterior to interior):

- Single Brick Wall: 110 mm wide
- Ventilated cavity nominal 66mm
- Structural Framing including insulation
- Internal lining

The brick wall is tied to internal metal stud framing and building base structure. A pliable weather membrane is applied to external face of stud walls to prevent water and moisture penetration through the brick cavity wall into the building.

The brick veneer façade system includes following items as part of the waterproofing strategy:

a. Weep holes to evacuate excess moisture and drain water present at the wall cavity with minimum **1200mm** C/C spacing in accordance with *AS 3700* as shown in Figure 3.6.
b. Ventilated cavity
c. Flashing at top course to prevent moisture and water penetration at horizontal interfaces with cladded wall and eaves.
d. Closing flashing to prevent water and moisture ingress through interfaces with windows and doors.
e. Closing flashing which prevent water and moisture ingress through interfaces with FC and metal cladding interfaces.
f. Proprietary ProClima Solitex Extasana weather barrier or equivalent shall be applied to external face of stud walls, being consistent at the joineries between 2 different façade types as per Northrop's detail.
g. Positive drainage pathway for walls from internal cavity to external space.

3.3.1 Reference Standards and building code

As specified in NCC 2022 Volume 1 Section F3D5 (1)(a) weather proofing of brickwork is not required if walls are designed and build it to comply with AS3700. Therefore, if brick veneer walls are designed and built to AS3700 Section 4.7, it will be considered deemed to satisfy the weatherproofing performance requirement for the buildings whose class has been discussed in F3D5.

AS3700 - Section 4.7 explains Prevention of Moisture Penetration for brickwork:

4.7 PREVENTION OF MOISTURE PENETRATION

4.7.1 Cavities

In cavity walls and masonry veneer walls, cavities with a width of at least 40 mm, which are properly detailed and constructed, shall be regarded as being resistant to the passage of moisture from the exposed face through to the inner, unexposed face of the wall.

Where insulating material is placed in a cavity, the moisture resistance of the wall shall be maintained.

4.7.2 Weepholes

Weepholes shall be provided to drain moisture from or through masonry construction. Where flashings are incorporated in the masonry, weepholes shall be provided in the masonry course immediately above the flashing, at centres not exceeding 1200 mm.

4.7.3 Damp-proof courses (DPCs) and flashings

DPCs or flashings shall be incorporated into masonry construction to—

(a) provide a barrier to the upward or downward passage of moisture through masonry;

(b) prevent moisture from entering into the interior of a building from the exterior;

(c) prevent moisture passing across a cavity to the inner leaf; and

(d) shed moisture through masonry to the outer face.

Figure 3.6: AS3700 4.7 Prevention of Moisture Penetration

NCC2022 Vol 1 Section F3P1, External Wall Weatherproofing:

F3P1 Weatherproofing

A roof and *external wall* (including openings around *windows* and doors) must prevent the penetration of water that could cause—

(a) unhealthy or dangerous conditions, or loss of *amenity* for occupants; and

(b) undue dampness or deterioration of building elements.

NCC 2022 Vol 1 Section F3D5 (1)(a):

F3D5 Wall cladding

(1) External wall cladding must comply with one or a combination of the following:

(a) Masonry, including masonry veneer, unreinforced and reinforced masonry: AS 3700.

(b) Autoclaved aerated concrete: AS 5146.3.

(c) Metal wall cladding: AS 1562.1.

The combination of DtS provision and the documented architectural brick veneer wall details made in accordance with AS3700 will comply with weatherproofing requirement of this project.

3.3.2 DtS pathway for Pliable Membrane

Also, in reference to NCC 2022 Clause F3D3 Sarking, "*Sarking-type material used for weatherproofing of roofs and walls must comply with AS 4200.1 and AS 4200.2.",* the pliable building membrane selected as part of this cladding system is ProClima Solitex Extasana and meets the requirements from AS4200.1 as show below in Figure 3.7:

5.3.4 *Vapour control classification*

The vapour control classification shall be determined in accordance with ASTM E96, Procedure B (wet-cup test). Vapour control properties shall be classified in accordance with Table 4 and results expressed as vapour permeance µg/N.s.

TABLE 4

VAPOUR CONTROL MEMBRANE (VCM) CLASSIFICATION

Class	VCM category	Vapour permeance (see Note) µg/N.s Min. (≥)	Max. (<)
Class 1	Vapour barrier	0.0000	0.0022
Class 2		0.0022	0.1429
Class 3	Vapour permeable	0.1429	1.1403
Class 4		1.1403	No max.
	ASTM-E96 Method B Wet Cup—23°C 50%RH		

NOTE: Vapour permeance is the inverse of vapour resistance. It shall be calculated as follows:

Vapour permeance µg/N.s = 1/ (Vapour resistance MN.s/g)

5.3.5 *Water control classification*

The water control classifications shall be determined as follows:

(a) *Water barrier*—if the membrane passes the test specified in AS/NZS 4201.4.

(b) *Non-water barrier*—if the membrane fails the test specified in or has not been tested to AS/NZS 4201.4.

Figure 3.7: AS4200.1 5.3.4 Vapour control classification

As per its technical data extracted from Technical Data Sheet ProClima Solitex Extasana as shown in Figure 3.8, the selected product is deemed to comply to NCC F3P1:

Technical Data

Cover fleece + protective layer:		PP microfibre fleece	
Membrane:		Monolithic TEEE* film	
UV stability and outdoor exposure:		180 Days	BRANZ Appraisal No. 822 (2020)
Duty classification:		Light wall	AS/NZS 4200.1-2017
Vapour classification:		Class 4 (Permeable)	AS/NZS 4200.1-2017
Thickness:		0.60 mm ± 0.05 mm	EN 1489-2
Flammability index:		< 5	AS 1530.2-1993
Temperature resistance:		-40 °C to +120 °C	
Heat shrinkage @ 70°C:		0.0%	ASTM D1204
Edge tear:	MD / LD	251 / 188 N	TAPPI T470
Tensile strength:	MD / LD	4.8 / 3.7 kN/m	AS 1301.448s-1991
Burst strength:		> 200	AS 2001.2.19-1988
Vapour permeance:		2.179 µg/N.s	ASTM E96 Method B
Water control:		10,000 mm	EN 20811
		Pass (> 100 mm)	AS/NZS 4201.4-1994
		Water barrier	AS/NZS 4200.1-2017
Emittance:	Front / Back	0.9 / 0.9	AS/NZS 4200.1-2017
	Classification	NN	AS/NZS 4200.1-2017
Surface water absorbency:		> 150 g/m²	AS/NZS 4201.6-1994
		High (> 100 g/m²)	AS/NZS 4200.1-2017
Air control:		≥ 0.1 MNs/m³	ISO 5636.5, BS 6538.3
		Air barrier	AS/NZS 4200.1-2017
Moisture shrinkage:		< 0 .5 %	AS/NZS 4201.3
Surface weight:		140 g/m² ± 5 g/m²	EN 1489-2
Electrical conductivity:		Electrically non-conductive	AS/NZS 4200.1 - 2017

THIS PRODUCT MEETS THE REQUIREMENTS OF AS/NZS 4200.1 & IS SUITABLE FOR USE IN AUSTRALIA

*TEEE: Thermoplastic Elastomer Ethyl Ester

IMPORTANT INFORMATION

- Class 4 vapour permeable pliable building membrane in accordance with AS 4200.1.
- This product is designed to withstand up to 180 days UV exposure before cladding is installed.
- This product can withstand exposure to temperatures of up to 120°C and down to -40°C behind external claddings.

PRODUCT DESCRIPTION

SOLITEX EXTASANA® is a UV stabilised and tear resistant synthetic weather resistive barrier (WRB). A non-porous water resistant TEEE* film is laminated at high temperature between two layers of spun bonded polypropylene.

WEATHER EXPOSURE

This product is a weather resistive barrier (WRB) and designed to withstand up to 180 days direct exposure to UV and still fulfil the intended use for air and water control. Exterior cladding should be detailed to prevent direct sunlight onto the membrane in service.

*Figure 3.8: **Error! Reference source not found.**Technical Datasheet snapshot*

Error! Reference source not found. is an air barrier and water barrier. Ideally the air barrier has no h oles, but experience shows us that this is difficult to achieve in practice, therefore it is insisted to follow the installation guide as attached in Appendix E to comply with AS/NZS 4200.2:2017 Pliable Building Membranes and Underlays Part 2 Installation Requirements. As most rainwater is kept away from the air barrier, rainscreen systems have demonstrated good performance over many decades of service even though some small holes in the air barrier may exist. The ProClima Solitex Extasana pliable membrane complies with Vapour Control Classification AS4200.1 as shown in Figure 3.8 and Water control classification 4201.4. Refer to attached technical statement in Appendix E.

3.4 FT04 Aluminium Window Systems

The specified Aluminium window system used for this project are the Capra Flushline 419 and Safetyline Jalousie Louvre .The Capral window and door systems have integrated weather seals and are designed to withstand wind pressure above the site specific SLS wind loads.

All window systems consist of sub frame and framing element assembly that included the following items as a weather proofing strategy:

- Fully sealed subframe perimeter to structural substrate
- Full perimeter gaskets to all operable frames
- Drainage pathway for sub framing
- Weep holes to evacuate water present in the subframes
- Glazing gaskets and weather seal at doors

3.4.1 Laboratory Test Reports

The window and door system from Alspec have been tested to AS4420.1 procedure and checked its result to the performance specified on AS2047 by NATA accredited laboratory,

Based on the test report, following can be concluded:

Table 3.2: Detail Comparison for Façade Type FT03 (Alum windows and doors)

Shop Drawing and test report to be submitted

	Structural and Water Penetration Test - As per AS4420 - Max product performance					
Item	Aluminium Window System description	Test report Dimensions Height x Width (mm)	Project Maximum Dimensions Height x Width (mm)	SLS (Pa)	ULS (pa)	Water Penetration Water Open in (Pa)
1	McArthur Evo 150mm Single Flush Glazed Framing	3000x3000		1688	2827	800
2	Swan Evo 45mm Commercial Shopfront Door	2454x1217		1000	4070	353

3.4.2 Expert Judgement

1. As per AS2047 performance requirement, the system shall meet project wind load of 30% SLS, which in this case is **330Pa**. Therefore, all window system satisfy the F3P1 requirements.
2. Thus, as a performance of the window, it is expected to fulfil its performance to the given site condition. As the test report presents a typical performance under laboratory condition, any modification to the system and its interface with other building elements shall be assessed

3.4.3 Deemed-to-Satisfy Provision

Based on the DtS requirements as per F3D4 glazed assemblies, the Window and Door systems fulfill the glazed assemblies AS 2047 requirements for resistance to water penetration. Shop drawings and test report to be submitted prior to final issue of the F3P1 report.

3.5 FT05 Door systems (Aluminium hinge door, roller shutter door and vertical folding door)

3.5.1 Project assessment

3.5.1.1 Rainfall Intensity

As per F1P2 performance requirements, surface water resulting from a strom having an average recurrence interval (**ARI**) of 100 years must not enter the building. This equates to 1% average exceedance probability (**AEP**). Whilst, Deemed-to-satisfy compliance pathway calls up AS/NZS 3500.3 for stormwater drainage design. Based on this reference specifically on Table 5.4.3, it is more practical and conservative to consider AEP of greater than 5% as the failure of drainage system will directly impact the surface water ingressing via building accesses.

Table 5.4.3 — Average exceedance probability

Effect of surcharge — Overland flow	AEP[a] %	
	Australia	New Zealand
Small impact, in low density areas	≥ 63	≥ 63
Normal impacts	≥ 50	≥ 50
Ponding in flat topography; or flooding of parking lots to depths greater than 150 mm	≥ 10	≥ 10
Impeded access to commercial and industrial buildings	≥ 10	≥ 10
Ponding against adjoining buildings; or impeded access to institutional or important buildings (e.g. hospitals, town halls and school entrances)	≥ 5	≥ 10

[a] A higher AEP should be used where there is only limited access for maintenance.

NOTE 1 For Australia, this Table should be used in conjunction with the NCC, which has requirements to prevent rain and stormwater from entering certain buildings.

NOTE 2 For Australia, AEP of 63 % is equivalent to 1 year ARI; AEP of 50 % is equivalent to 2 years ARI; AEP of 10 % is equivalent to 10 years ARI; and AEP of 5 % is equivalent to 20 years ARI.

NOTE 3 For New Zealand, AEP of 63 % is equivalent to 1 year ARI; AEP of 50 % is equivalent to 2 years ARI; and AEP of 10 % is equivalent to 10 years ARI.

The rainfall intensity calculated follows a general procedure outlined in AS/NZS 3500.3-2021 clause 5.4.1 and takes the time of concentration of 5 minutes as per clause 5.4.4 (a).

5.4.4 Time of concentration

The time of concentration used in the general method for design of surface water drainage systems shall be as follows:

(a) Australia — 5 min.

(b) New Zealand — 10 min.

As a means of determining the rainfall intensity, AS/NZS 3500.3-2021 clausee 5.4.5 has been considered. Accordingly, the following data has been extracted from Design Rainfall Data System (2016) by Australian Govement Bereau of Meteorology.

	Annual Exceedance Probability (AEP)						
Duration	**63.2%**	**50%#**	**20%***	**10%**	**5%**	**2%**	**1%**
1 min	123	139	192	228	265	314	352
2 min	101	112	150	177	203	240	268
3 min	93.3	104	141	166	191	226	253
4 min	88.1	99.0	134	159	184	217	244
5 min	83.6	94.3	129	153	177	209	235
10 min	66.5	75.6	105	125	145	172	193
15 min	55.3	62.9	87.2	104	121	143	161

Table 3: Rainfall intensity table at different annual exceedance probability

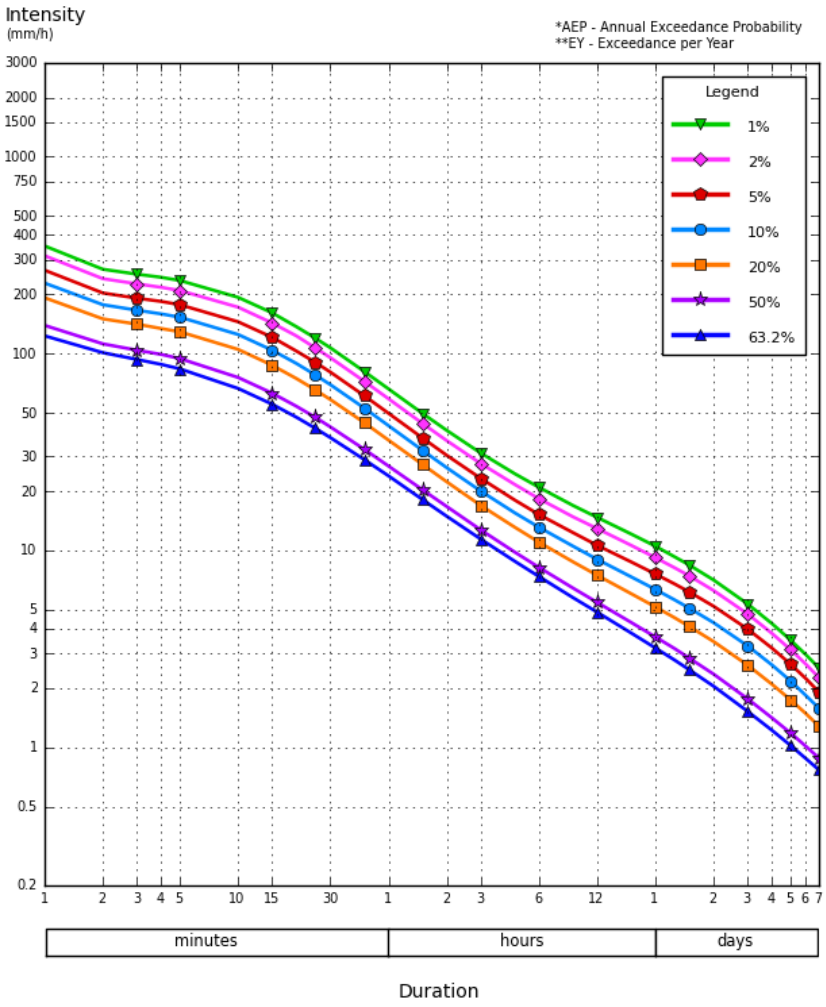


Figure 9: Rainfall intensity vs duration graph

3.5.1.2 Wind Loading

The wind speed in the table below present maximum values calculated on Checkwind Wind site specific report carried out by Northrop Consulting Engineers as per AS 1170.2-2021 with consideration of necessary design factors, such as but not limited to, site exposure multipliers, the location of the interest (i.e. door threshold and membrane upturn locations) and building orientation.

The Project's maximum design wind speed (ULS) is **46 ms^{-1}**, and design wind speed at 5% AEP is **36 ms^{-1}**. Please refer to Appendix B for site wind report.

3.5.1.3 Rain Inclination Calculation

In order to assess the risk of the rain exposure, rain inclination angle has been calculated in a simplified semi-empirical formula as follows:

Equation 1, as per Best (1950):

$$F(d) = 1 - \exp\left\{-\left(\frac{d}{1.30 \times Rh^{0.232}}\right)^{2.245}\right\}$$

Where:
F(d) = Cumulative probability distribution of raindrop diameter
d = raindrop diameter, mm
Rh = rainfall intensity, mm/hr

Equation 2, as per Dingle and Lee (1972) at accuracy of ±2.5%:

$$Vt = -0.166033 + 4.91844d - 0.888016d^2 + 0.054888d^3 \leq 9.2$$

Where:
Vt = terminal rain velocity, mm s-1

The vertical termination velocity for this project at 5%AEP with duration of 5 minutes is calculated to be 3.7ms-1.

The rain inclination angle is defined in θ as per the figure below.

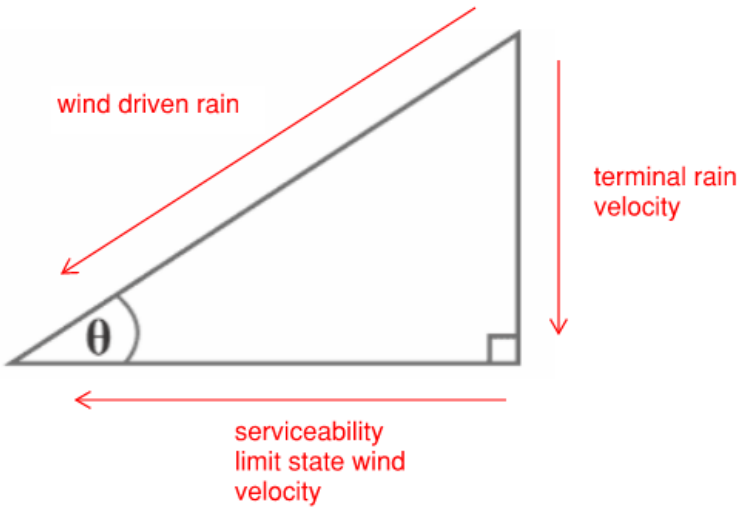


Figure 3.5.1: Rain inclination angle illustration

As per the above, the rain inclination angle is calculated as **10.7 degrees** from the horizontal for this project's site condition.

The following assumptions were made for this calculation:

- Median rainfall droplet size has been assumed.
- The equation is based on simplified prediction by Straube and Burnett (2000). The theory has been verified via experimental measurement, but it shows greater accuracy error for the intensity category greater than 5mm/hr due to limited apparatus made available at the time of the publication.

- In adaptation of AS 2047 water rating criteria, ranges on the table are calculated based on 30% wind pressure.

3.5.1.4 Rain Catchment Area

In adaptation of the NCC 2022 BCA Vol 1 F1P2 Deemed-to-Satisfy pathway (F1D3 Stormwater Drainage), the consideration of the rain catchment area is to follow as defined in NZS/AS3500.3 Clause 3.4. The methodology simplifies the calculation of the rain catchment area impacted by both vertical and horizontal rain exposure using the following equation and figure. Note the adapted equation is flat roof configuration as it is safe to assume the gradient proposed for the balconies on this project does not impact the difference of vertical rain catchment area significantly.

Equation 3, as per NZS/AS3500.3:2021 Clause 3.4.4.1

$$A_c = A_h + 0.5A_v$$

Where:
Ac = Total rain catchment area, m^2
Ah = Horizontal rain catchment area, m^2
Av = Vertical rain catchment area. m^2

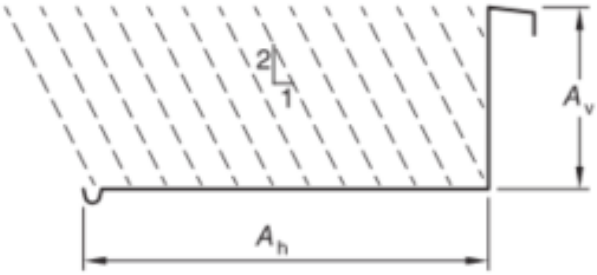


Figure 10: Representation of the assumed rain catchment for vertical wall with flat roof/balcony in NZS/AS3500.3:2021 Figure 3.5.2(b)

3.5.2 Expert Judgement

3.5.2.1 Expert Qualifications

This Performance Solution relies on Expert Judgement as per NCC A2G2 (2)(c).

The report author is Neil McClelland (see Appendix D for Resume).

Neil has over 30 years of experience, with the last 29 years being in the field of Façade Engineering. Neil has worked in Sydney, New York (11 years) and London (2 years) on most building types, on most façade types, and in most climate locations.

Neil is a former representative of the Institution of Engineers, Australia on the Standards Australia committees BD 021 Windows in buildings (responsible for AS 2047) and BD 080 Curtin walls (responsible for AS/NZS 4284), both of which include window and façade testing procedures.

Neil has also specified, attended, and reviewed numerous exterior wall tests and test reports from Australia, the USA and Europe.

3.5.2.2 Expert Opinion

The following are risk mitigation measures adapted to meet the NCC F3P1 requirements.

3.5.2.2.1 Overhang over the door access

Conservatively in an assessment of the worst-case scenario, door accesses at level 2 have been taken a representative assessment. The concerned configuration across the building blocks has an overhang approximately 3.0m as illustrated on the section view. The presence of the overhang does not fully eliminate the risk of the wind driven rain exposure under storm event as per the rain inclination calculations in section 3.5.1.3, which results approximately 16% vertical coverage. However, in adoption to deemed-to-pathway methodology as per the section 3.5.1.4, the vertical rain catchment area contributing towards the total rain catchment area would be considered negligible at the height of 3.5m with 3.0m overhang at the vertical terminal velocity of the rain drops of 3.7ms-1 as calculated in section 3.5.1.3. Thus, it can be concluded that the majority of direct wind driven rainwater penetration will be deflected

3.5.2.2.2 Drainage and Gradient of Fall

As required per AS4654.2 Clause 2.5.2, all falls would require minimum gradient fall of 1:80 towards the drainage. The design of the external walkway is proposed to have specified gradient fall ranging from 1:50 to 1:80 towards the edge or floor waste drainage, where any horizontal water can be drained.

As the concerned location is not an enclosed area for water ponding, it is assumed any surface water will only be held by surface tension. On the conservative assumption that the water surface tension has a contact angle of 180 degrees, the maximum height of the water ponding will be 5.4mm which is less than an introduced ramp height. Additionally, a steeper gradient has been introduced at the ramp to effectively provide faster drainage rate via gravity.

3.5.2.2.3 Weather strip introduction

For further mitigation strategies, the proposed door system design shall contain a weather strip to mitigate water ingress.

3.5.3 Expert Opinion Limitations

This expert opinion has the following limitations:

- This opinion is limited to the proposed details provided by NBRS Architects and It does not cover any details that are not provided or any details that are modified.
- All sealants and components are designed and installed to the manufacturers' recommendations.
- The membrane system and its components are installed and maintained as per the manufacturer's recommendations.
- All elements are within their respective warranty periods.

3.6 Typical Permanent Movement Joint (PMJ)

At Gridline A-11 in reference to NBRS Architectural Drawing, the PMJ introduced through the covered walkway to accommodate the building movement. At such interface, given omission of the membrane, it would require secondary means of water management to prevent increase in water content saturation of the slab, and avoid bypassing capillary action of the water. The following solution shall

be read in conjunction with F1P2 report.

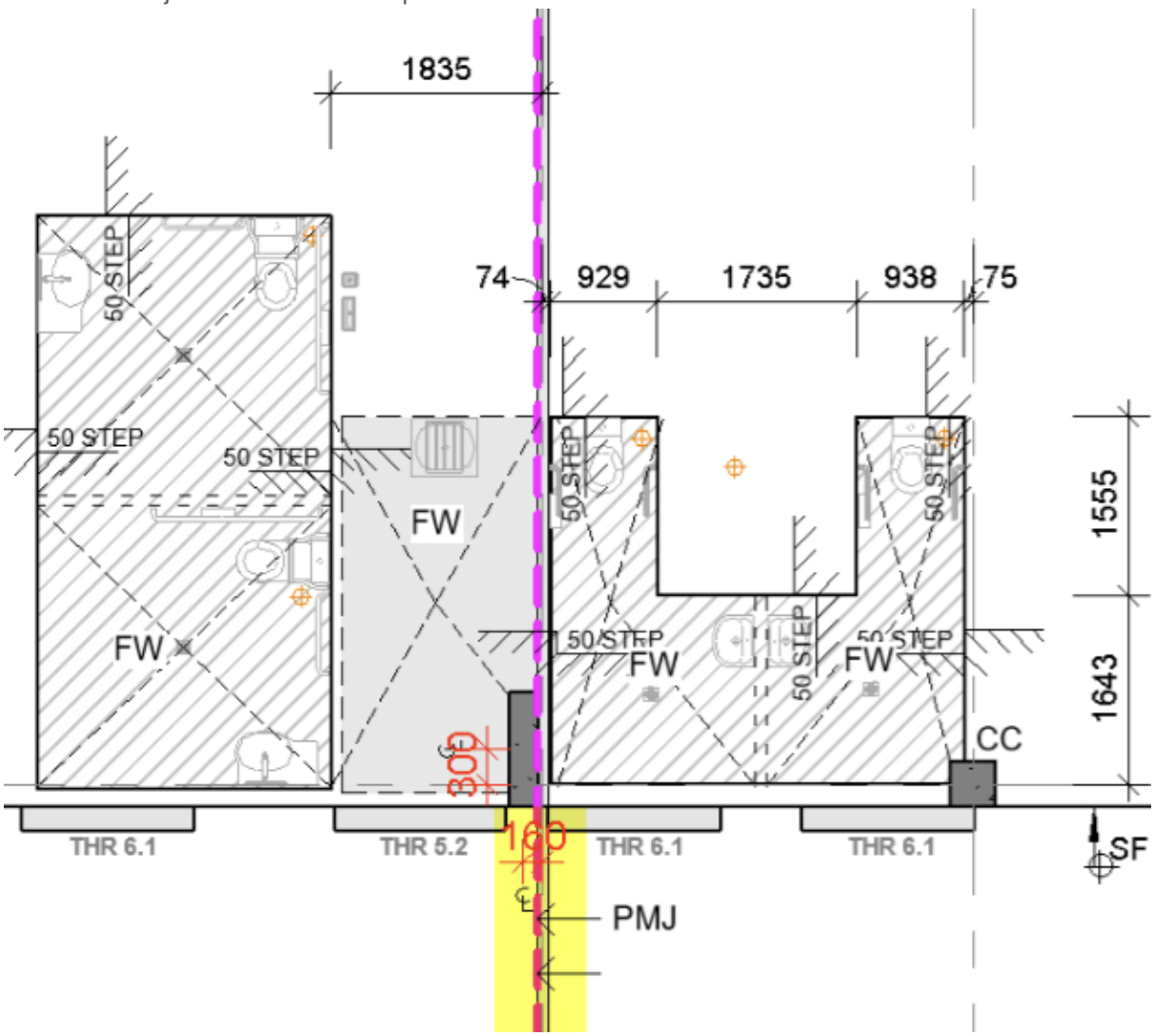


Figure 11: Gridline A-11 reference to NBRS Architectural Drawing, PMJ location.

Thus, a proprietary system such as Latham HHS Heavy Duty Series product is deemed to be applicable to accommodate the necessary pedestrian loading, whilst capturing any horizontal water directed away from the building that satisfy F1P2 requirement. Whilst, at the interface with the façade, it shall be an appropriate overlap with the flashing and sarking proposed ta the junction to ensure continuity of the weather-line. Flashing termination as per WP01 interface shall allow two-part flashing fixture with either overlaps of slotted fixtures to allow its PMJ movement. Latham BFG Water Gutter shall be upturned minimum 100mm to ensure the continuity. By this arrangement it is deemed to meet F3P1 performance requirements.

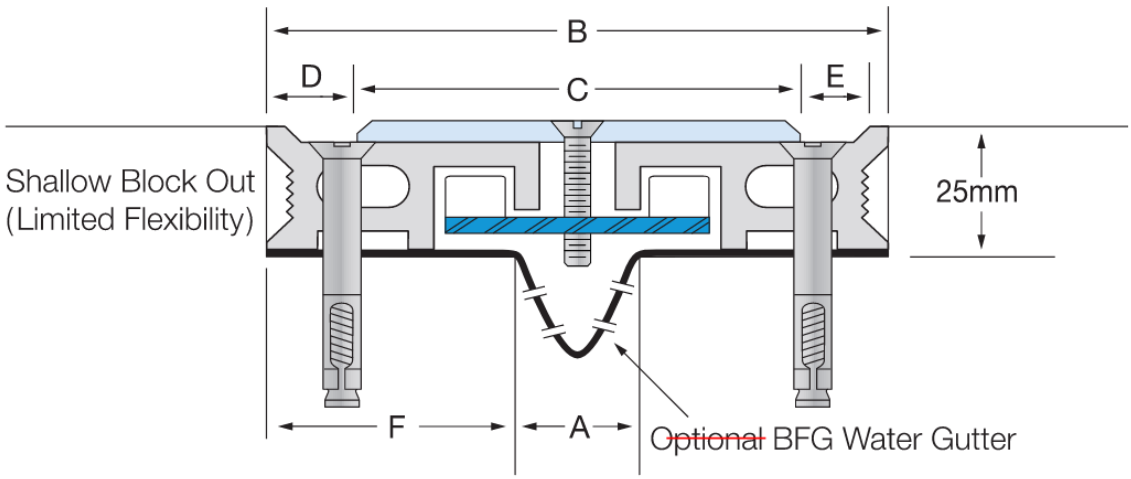


Figure 12: Latham HHS Heavy Duty Series Product, BFG Water Gutter is required.

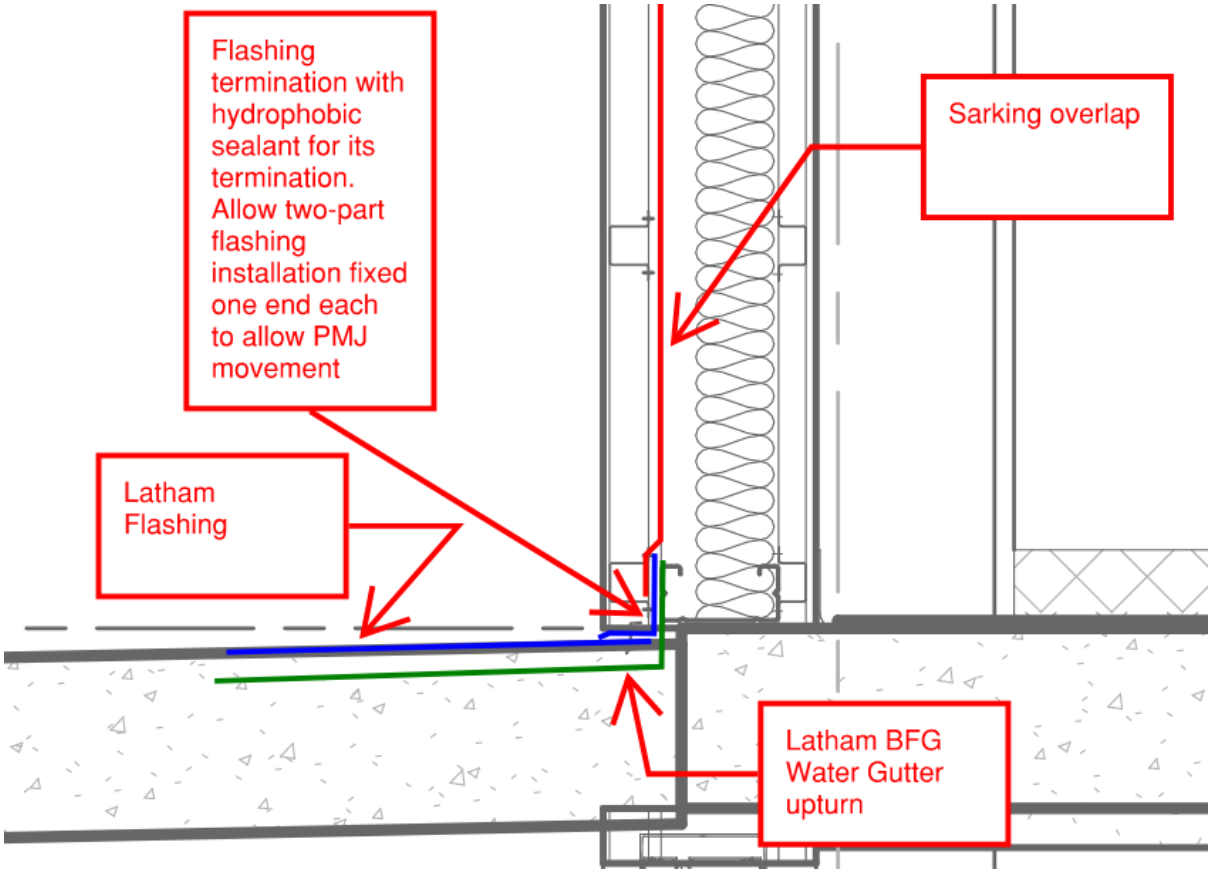


Figure 13: Section view of PMJ interface to the facade

4. Conditions and Limitations of Use

Clarification on conditions of the use of this report is outlined as below:

- This report has been prepared based on the design review conducted on the ground of information provided to Northrop Consulting Engineers Ltd by project personnel outlined in 1.2 at the time of the review. It has been assumed that all information supplied to Northrop Consulting Engineers Ltd is true and current at the time of the review.
- The opinion is based on the provided test reports and tested details. Where not otherwise shown on the details, it has been assumed that all seals are continuous, a continuous air barrier is achieved between interfaces with other building elements such as windows, roofs, and other claddings.
- The construction and installation of all specified products shall be in accordance with manufacturers' requirements, unless specifically noted otherwise.
- The design shall be implemented strictly per approved drawings and specifications.
- Any un-approved variations, deviations and changes with the design may void F3P1 Performance Solution.
- All elements are within their respective warranty periods.
- If any changes are required to accommodate site conditions, it must be approved by the author of this report) as part of the construction quality assurance.
- All engineering calculations, opinion and information are specific to this project and hence the author hold no legal liability if used elsewhere.
- This report shall not be reproduced unless in full. The report shall be read in conjunction with the attached appendices.
- Final construction details, shop drawings must be approved by NCE prior to NCE providing final project sign off for OC

5. Compliance Statement

It is our expert opinion that the NBRS detailed façade systems proposed at the Edmonson Park High School project meet the weatherproofing requirements of NCC F3P1 via DtS and performance solution pathway.

Based on the assessment methodology described in Section 2.5, it is Northrop's opinion that the design of the external façade systems complies to BCA Performance Requirements identified in Section 2 in assumption that Section 3 and Section 3.5 shall be met.

Contact Us

BRISBANE
07 3365 0400
brisbane@northrop.com.au
Level 25, 12 Creek Street
Brisbane QLD 4000

CANBERRA
02 6285 1822
canberra@northrop.com.au
Level 6, 224 Bunda Street
Canberra ACT 2608

CENTRAL COAST
02 4365 1668
centralcoast@northrop.com.au
Ground Level, Suite 4, 257-259 Central Coast Highway
Erina NSW 2250

COFFS HARBOUR
02 5603 3053
coffsharbour@northrop.com.au
Suite 6, 27 Orlando Street
Coffs Harbour NSW 2450

MELBOURNE
03 9600 2645
melbourne@northrop.com.au
Level 3, 520 Collins Street
Melbourne VIC 3000

NEWCASTLE
02 4943 1777
newcastle@northrop.com.au
Level 1, 215 Pacific Highway
Charlestown NSW 2290

PARRAMATTA
02 9241 4188
sydney@northrop.com.au
Level 15, 6 Hassall Street
Parramatta NSW 2150

SYDNEY
02 9241 4188
sydney@northrop.com.au
Level 10, 400 George St
Sydney NSW 2000

WOLLONGONG
02 4226 3333
southcoast@northrop.com.au
Level 1, 57 Kembla Street
Wollongong NSW 2500

NORTHROP

Project: Edmondson Park High
Type: General Correspondence
Mail Number: RCC-GCOR-001608
Reference Number: JensenHu-GCOR-000118
To: **Ms Kavita Kuczynski, JOHNSTAFF PTY LTD**
Mr Malcolm Taylor, JOHNSTAFF PTY LTD
Cc: Mr George Gayed, JOHNSTAFF PTY LTD
Mr Jono Tiernan, NSW Department of Education
Mr Antoun Ayoub, Richard Crookes Constructions Pty Limited
From: D Washington, Richard Crookes Constructions Pty Limited
Sent: 01/07/2025 7:43:16 AM AEST (GMT +10:00)
Status: N/A
Subject: **Fwd: CC3 Crown Certificate - Issued**

Malcolm/Kavita,

Can you please pass the attached on to Hugh, for upload to the planning secretary for condition B4.

Regards,
Damon Washington, Senior Project Engineer

RICHARD CROOKES
CONSTRUCTIONS

Direct 02 9902 4700 | Fax 02 9439 1114 | Mobile 0416 332 331
214 Willoughby Road, Naremburn NSW 2065
www.richardcrookes.com.au

From: W Hunter
Sent: 30/06/2025 11:23:54 AM AEST (GMT +10:00)
To: Damon Washington
Cc: Alexander Newberry, Antoun Ayoub
Mail Number: JensenHu-GCOR-000119
Subject: Re: CC3 Crown Certificate - Issued

Hi Damon, for Condition B4 the NBRS statement and the attached accompanying documents were relied upon.
There are no synthetic products except the Genesis material which has a codemark certificate.

If you have any queries or require any further information, please do not hesitate to contact me.

WARWICK HUNTER
Manager, Building Regulations

Suite 302, Level 3, 151 Castlereagh Street Sydney NSW 2000 | PO Box Q1440, Queen ¬¬Victoria Building NSW 1230
D: +61284844077 M: +61413677411
warwick.hunter@jensenhughes.com

jensenhughes.com

From: D Washington
Sent: 30/06/2025 9:05:47 AM AEST (GMT +10:00)
To: Warwick Hunter
Cc: Alexander Newberry, Antoun Ayoub, Damon Washington
Mail Number: RCC-GCOR-001601
Subject: Re: CC3 Crown Certificate - Issued

Thanks Warwick!

Can whilst you stamp the documents, can you please confirm the document relayed on for Condition B4 - I will need to confirm these with SINSW

There is a time requirement of 7 days so if you could please confirm asap it would be appreciated.

Damon Washington, Senior Project Engineer

RICHARD CROOKES
CONSTRUCTIONS

Direct 02 9902 4700 | Fax 02 9439 1114 | Mobile 0416 332 331
214 Willoughby Road, Naremburn NSW 2065
www.richardcrookes.com.au

From: W Hunter
Sent: 27/06/2025 3:53:03 PM AEST (GMT +10:00)
To: Damon Washington
Cc: Alexander Newberry, Antoun Ayoub, Damon Washington
Mail Number: JensenHu-GCOR-000118
Subject: CC3 Crown Certificate - Issued

Hi Damon, please find attached CC3 Crown Certificate for stage 1 of the development.
Note1: I have all the necessary documentation and it will take time to stamp up and issue so will be issued separately next week.

If you have any queries or require any further information, please do not hesitate to contact me.

WARWICK HUNTER
Manager, Building Regulations

Suite 302, Level 3, 151 Castlereagh Street Sydney NSW 2000 | PO Box Q1440, Queen ¬¬Victoria Building NSW 1230
D: +61284844077 M: +61413677411
warwick.hunter@jensenhughes.com

jensenhughes.com

File Attachments
Attachments are larger than the current Aconex system limit of 10MB for external email - or **view this Mail on Aconex** to retrieve them
20250603_Condition B4_EPHS_NBRS Architectural Design Statement Certificate.pdf
Genesis CodeMark Certificate BCA22.pdf
NE-RPT-0014_F3P1 Performance Solution (2).pdf
Combined External Walls.pdf
20250613 EPHS - Specification [3].pdf