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ALUMINIUM**

PREMIUM SYSTEMS
INNOVATIVE SOLUTIONS



All tests reported
herein have been
performed in accordance
with the laboratory's
scope of accreditation

TEST REPORT No. T394

Page 1 of 6 pages

REFERENCE: Plytech International Ltd
P.O. Box 51-603,
Pakuranga, Auckland 2140

Performance tests on Trespa TS35 cladding system in accordance with
New Zealand Building Code E2/VM1

DATE OF TEST: 20 October 2010

SUMMARY:

Series 1 Static pressure Water Penetration Test:

The Trespa TS35 cladding system demonstrated "no water penetration" across the cavity at a test pressure of 500 Pa

Series 1 Cyclic pressure Water Penetration Test:

The Trespa TS35 cladding system demonstrated "no water penetration" across the cavity at the cyclic test pressures of 150 – 300 Pa and 300 – 600 Pa.

Series 2 Static pressure Water Management Test:

Following the drilling of the specified 6 mm holes simulating installation errors or seal breakdown, the Trespa TS35 cladding system demonstrated "no water penetration" across the cavity at the static test pressure of 500 Pa.

Series 2 Cyclic pressure Water Management Test:

With the specified 6 mm holes simulating installation errors or seal breakdown the Trespa TS35 cladding system demonstrated "no water penetration" across the cavity at the cyclic test pressures of 150 – 300 Pa and 300 – 600 Pa.

Series 3 Wet wall Test:

Following the removal of the internal lining and several localised areas of the rigid air barrier panels, the Trespa TS35 cladding system generally demonstrated "no water penetration" across the cavity at the wet wall test pressure of 50 Pa.

However a flashing detail at the aluminium rail at the top of the diagonal Trespa panel lap joint allowed water penetration into the internal diagonal rebate that was subsequently able to drip off succeeding rails into the cavity space.

The clients have reviewed this detail and found a lack of sealant application at the rear upstand edge of the aluminium soaker (original detail illustrated on TP-RB-05) The clients have produced a summary of the cause of the water penetration and a detailed procedure to eliminate this (attached as Appendix 1)



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DESCRIPTION:

The test sample consisted of a two storey timber framed structure, with stepped external face providing sample details of internal and external corners, a window and door penetration, an external balustrade and a top soffit detail, with the cladding system rails either directly fixed onto the rigid air barrier to provide a 35 mm cavity or fixed to 45 x 35 H3.1 battens to provide a 70 mm cavity.

The details of the Trespa TS35 cladding system are shown on the attached series of drawings TP-RB-IND, TP-TYP-FLG, TP-TYP-PN and detail sheets TP-RB-01 to TW-RB-15, with separate sets covering the battened and the direct fixed installation details.

The Trespa TS35 cladding system is a cavity cladding using a combination of aluminium profiles to support and weather the Trespa Meteor Panels machined from either 8 mm or 10 mm thick panels. Trespa Meteor is a pre-finished high pressure laminate panel material. The panels are locally manufactured in a range of panel sizes as per detail page TP-TYP-PN. The panels have a vertical profiled edge to form a natural lapped vertical joint providing a weathering joint and movement between panels. The horizontal joint is formed by a 3 piece extrusion TS35-01, 03 & 11.

The panels are prefabricated to suit specification and required size, the TS35-11 rails are then adhesive and mechanically fixed to the top edge of each panel. The TS35-01 rails are fixed on site horizontally to framing with support from dwangs fixed at 600mm maximum centres, with the TS35-03 rails subsequently inserted into the TS35-01 upper channel.

The TS35-11 rails prefitted to the individual Trespa panels are then engaged into the lower channel of the TS35-01 rail, with extra support provided at the bottom edge using Sika Tack adhesive applied to the outer surface of the TS35-03 rails, once panels are initially held in position with the preapplied 12 x 3 mm Sika Tack tape.

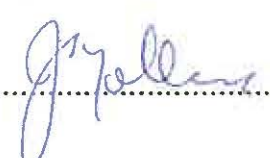
The test structure used two alternative rigid air barriers (6mm James Hardie RAB board and 7mm Plyseal) applied onto the external face of the timber framing (Refer drawing A104). The TS35-01 base rails are either spaced 35mm from the rigid air barrier with 45 x 35 H3.1 cavity battens or directly to the rigid air barrier, to form either direct rail or cavity rail options.

The TS35-01 rails are screw fixed with 40 mm x 10g stainless steel pan head drive screws at 600 mm centres through the rail into framing or battens. Rails are also supported horizontally to dwangs to ensure a straight and fully supported base rail.

TS35-03 rails are installed to the top edge clip of the TS35-01 and form stiffeners at a maximum of 600mm centres or the bottom rail of the Trespa panel. The Sika Tack adhesive system is then applied for the eventual panel engagement.

The TS35-03 rails are provided with drainage slots to provide both pressure equalisation into the cavity at each panel module height, as well as to provide drainage to the external face for any water penetrating to the cavity side of the Trespa panels.

The vertical joints are formed by profiling the panel to form an interlacing movement joint. An aluminium soaker TS35-15 80 mm in length, bridges across the upper gap between adjacent TS35-11 rails.

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The attached Profix /Plytech drawings A101 to A106 show the dimensions of the overall arrangement of the timber framing structure, the location of the alternative rigid air barriers, and the position of observation ports through the internal lining and rigid air barrier.

A single awning window and reduced dimension outward opening door were installed into appropriately sized openings in the timber framing, the requisite external flashing details achieved using the Trespa TS35-16 profile. Internal corners of the Trespa cladding were achieved using the corresponding aluminium profiles TS35-17, TS35-19 & TS35-20 profiles.

TESTING:

The test was performed using the NZ Building Code E2/VM1 test procedure, in the IANZ accredited window test facility of Fletcher Aluminium, Bowden Road, Mt Wellington, Auckland with representatives of the client in attendance.

The VM1 test method is a specific subset of the AS/NZS 4284:1995 Water penetration Test with additional procedures evaluating possible leakage through external cladding defects (Water Management tests)

Following the initial preconditioning structural test pressure application of ± 1360 Pa, the first static water penetration series consists of a 15 minute exposure to a static pressure of 500 Pa, followed by two sequential periods of 5 minutes at cyclic pressures of 150 - 300 Pa and 300 - 600 Pa respectively while subject to a water spray coverage.

The Water Management test consists of a repeat of the first series of the static and cyclic pressure sequence following the drilling of several 6 mm holes through the external face simulating possible defects in the external seals or cladding.

The Water Management test holes were positioned at the following locations:

1. Through external corner joint seal
2. Through internal corner joint seal
3. Through panel below rail
4. Through panel vertical lap joint
5. Through panel diagonal lap joint

Following removal of all internal linings and removal of the building wrap or air barrier panels, the test specimen is subjected to the Wet wall test, being the application of a static pressure of 50 Pa across the cladding face with the external water spray continuing. With the test sample being built with rigid air barrier panelling it was necessary to cut a series of large holes in the panel to achieve the equivalent pressure equalisation to the internal space. The holes were made at locations to allow inspection of areas adjacent to the location of the 6 mm Water Management test holes as well as around other penetration zones. (see photo)



Tested by: *J. Hall*

Checked by: *V. Hilder*

RESULTS:

Series 1: Static Water penetration Test pressure 500 Pa Duration 15 mins	Water visible on internal face of cladding through observation port, below and left of window. – tracking on top edge of panel and the top rail. Water fully contained on inside of cladding, draining back to external surface at next lower rail. Complies As above
Series 1: Cyclic Water penetration Test pressure 150 - 300 Pa Duration 5 mins Test Pressure 300 – 600 Pa Duration 5 mins	
Series 2: Water Management Tests Static Water penetration Test pressure 500 Pa Duration 15 mins	Some very small droplets showing on acrylic viewing panel on RAB line near bottom of test structure, possibly originating from bottom aluminium rail drain holes – very minor.
Series 2: Water Management Tests Cyclic Water penetration Test pressure 150 - 300 Pa Duration 5 mins Test Pressure 300 – 600 Pa Duration 5 mins	No further water droplets showing. No water penetration observed related to the 6 mm simulated defect holes
Series 3: Wet Wall Test Static Water penetration Test pressure 50 Pa Duration 15 mins	Water was observed flowing down inside of panels at several places but was not splashing across the cavity onto the plane of the rigid air barrier and was totally retained on the internal surface of the cladding except at one location At the horizontal rail area adjacent to the top of the diagonal lap joint in the Trespa panels, a significant flow was tracking down the inside lap rebate and subsequently producing positions where the water was able to drip off the rear face of the lower horizontal rails and splash down the cavity space. Refer Appendix 1 for the Client's proposed remedial action procedure

.......... John Yolland
Authorised Signatory

22 October 2010

Tested by:..........

Checked by:..........

Water management test - 6 mm hole locations



Through external corner joint seal



Through internal corner joint seal



Through panel below rail



Through panel vertical lap joint



Through panel diagonal lap joint

Tested by:.....

[Signature]

Checked by:.....

[Signature]

APPENDIX 1

Client Review and Proposed Remedial action to correct potential water penetration at panel joints

Notes: to describe our measures taken to ensure improved performance when the air seal or the installation process is compromised.

Issues discovered in the stripping of the RAB air seal and the application of water at a 50 Pa pressure in the last stage of VM1 testing:

- 1) As the test had soakers fitted after the panels were installed, and those with a stop end fitted to the soaker had to be modified for a post panel installation fit; the following corrective action has been initiated
 - i) Installation QA to demand that all soakers are fitted in place prior to the next row of panels being installed.
 - ii) That the typical panel to panel soakers are installed in accordance with drawing TP-RB and TP BN 05
 - iii) That the standard stop end be profiled as drawing TP-RB and TP-BN 05
 - iv) That the soaker is profiled to suit the handing of a corner
- 2) One of the test soakers were not correctly fitted into place (no sealant to the upstand of the soaker), this gave water in one instance a direct path into the system; the following corrective action has been initiated
 - v) The soakers be bedded into place as per the enlarged 3d instructive drawing TP-RB and TP-BN 05 indicating the correct placement of the sealants and soaker.
- 3) The vertical panel to panel shiplap joints were not tight across the full height of the panel; the following corrective action has been initiated
 - vi) The introduction of a backing rail TS35-21 with santoprene gaskets fitted between the TS35-11 and TS35-3 will ensure compression between the 2 Trespa Meteon sheets as per detail TP-RB 11 and allow relative trans directional movement to be maintained, and also enhances the weather tight performance of a joint should it contain a defect. In the test this defect was simulated by drilling a 6mm diameter hole through the joint.

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TEST REPORT No. T393

Page 1 of 4 pages

REFERENCE: Plytech International Ltd
P.O. Box 51-603,
Pakuranga, Auckland 2140

Performance tests on Trespa TS35 cladding system either directly fixed to the rigid air barrier or fixed to battens in accordance with AS/NZS 4284: 2008 Testing of Building Facades.

DATE OF TEST: 20 October 2010

SUMMARY:

Structural Test at Serviceability Limit State Wind Pressure:

No structural deflection tests on the timber framed test unit were required. The Trespa TS35 cladding system was exposed to the likely future Extra High Wind Zone Serviceability test pressure of 1.515 kPa, prior to the water penetration tests.

Water penetration test by Static pressure:

The Trespa TS35 cladding system either directly fixed to the rigid air barrier or fixed to battens, demonstrated "no water penetration" at a test pressure of 455 Pa, corresponding to the future Extra High Wind Zone Serviceability test pressure of 1.515 kPa.

Water penetration test by Cyclic pressure:

The Trespa TS35 cladding system either directly fixed to the rigid air barrier or fixed to battens demonstrated "no water penetration" at the cyclic test pressures up to 455 - 910 Pa, corresponding to the future Extra High Wind Zone Serviceability test pressure of 1.515 kPa and at an additional stage of 606 - 1212 Pa, corresponding to a Serviceability test pressure of 2.02 kPa.

Structural test at Ultimate limit state wind pressure:

The Trespa TS35 cladding system either directly fixed to the rigid air barrier or fixed to battens demonstrated compliance with the future Extra High Wind Zone Ultimate Limit State test pressure of 2.13 kPa, and up to test pressures of ± 2.50 kPa.

DESCRIPTION:

The test sample consisted of a two storey timber framed structure, with stepped external face providing sample details of internal and external corners, a window and door penetration, an external balustrade and a top soffit detail, with the cladding system rails either directly fixed onto the rigid air barrier to provide a 35 mm cavity or fixed to 45 x 35 H3.1 battens to provide a 70 mm cavity. The details of the Trespa TS35 cladding system are shown on the attached series of drawings TP-RB-IND, TP-TYP-FLG, TP-TYP-PN and detail sheets TP-



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RB-01 to TP-RB-15, with separate sets covering the battened and the direct fixed installation details.

The Profix TS35 cladding system is a cavity cladding using a combination of aluminium profiles to support and weather the Trespa Meteon Panels machined from either 8 mm or 10 mm thick panels. Trespa Meteon is a pre-finished high pressure laminate panel material. The panels are locally manufactured in a range of panel sizes as per detail page TP-TYP-PN. The panels have a vertical profiled edge to form a natural lapped vertical joint providing a weathering joint and movement between panels. The horizontal joint is formed by a 3 piece extrusion TS35-01, 03 & 11.

The panels are prefabricated to suit specification and required size, the TS35-11 rails are then adhesive and mechanically fixed to the top edge of each panel. The TS35-01 rails are fixed on site horizontally to framing with support from dwangs fixed at 600mm maximum centres, with the TS35-03 rails subsequently inserted into the TS35-01 upper channel.

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The test structure used two alternative rigid air barriers (6mm James Hardie RAB board and 7mm Plyseal) applied onto the external face of the timber framing (Refer drawing A104). The TS35-01 base rails are either spaced 35mm from the rigid air barrier with 45 x 35 H3.1 cavity battens or directly to the rigid air barrier, to form either direct rail or cavity rail options.

The TS35-01 rails are screw fixed with 40 mm x 10g stainless steel pan head drive screws at 600 mm centres through the rail into framing or battens. Rails are also supported horizontally to dwangs to ensure a straight and fully supported base rail.

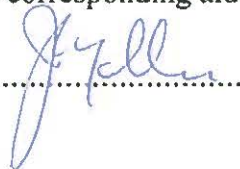
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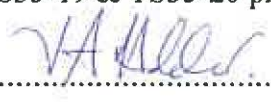
The TS35-03 rails are provided with drainage slots to provide both pressure equalisation into the cavity at each panel module height, as well as to provide drainage to the external face for any water penetrating to the cavity side of the Trespa panels.

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The attached Profix /Plytech drawings A101 to A106 show the dimensions of the overall arrangement of the timber framing structure, the location of the alternative rigid air barriers, and the position of observation ports through the internal lining and rigid air barrier.

A single awning window and reduced dimension outward opening door were installed into appropriately sized openings in the timber framing, the requisite external flashing details achieved using the Trespa TS35-16 profile. Internal corners of the Trespa cladding were achieved using the corresponding aluminium profiles TS35-17, TS35-19 & TS35-20 profiles.

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PERFORMANCE SPECIFICATIONS:

The following performance requirements for the Trespa TS35 cladding system agreed with the clients for assessing performance:

Serviceability Wind Pressure	±1.515 kPa
Water penetration by Static pressure;	455 Pa (Based on SLS of 1.515 kPa)
Water penetration by Cyclic pressures	227 – 455 Pa, 303 – 606 Pa, 455 – 910 Pa.
Structural Test at Ultimate Limit State	±2.50 kPa

TESTING:

The tests were performed using the testing procedures of AS/NZS 4284: 2008 Testing of Building Facades, in the IANZ accredited window test facility of Fletcher Aluminium, Bowden Road, Mt Wellington, Auckland with representatives of the client in attendance.

As the Trespa TS35 cladding system was installed onto a timber framed support structure, generally complying with the requirements of NZS 3604:1999, the measurement of deflections of structural elements was not required. The test pressures for providing compliance with the likely requirements of the future Extra High Wind Zone were agreed with the clients. The AS/NZS 4284: 2008 optional air infiltration tests were not conducted on the test sample

Following the preset series of Cyclic pressure water penetration tests based on meeting the requirements of the future Extra high Wind Zone, the clients requested a further 5 minute cyclic stage at the agreed higher pressures of 606 – 1212 Pa. The Structural test at the agreed Ultimate Limit State pressures of ±2.50 kPa was conducted following the cyclic water penetration tests.

RESULTS:**STRUCTURAL TEST AT SERVICEABILITY LIMIT STATE (AS/NZS 4284:2008)**

The Trespa TS35 cladding system was exposed to the future Extra High Wind Zone Serviceability test pressures of 1.515 kPa. No deflection measurements were required.

STATIC PRESSURE WATER PENETRATION (AS/NZS 4284:2008)

Test pressure	455 Pa
Test duration	15 minutes

No water penetration was visible through any of the purpose constructed observation ports in the internal lining, as well as the corresponding sealed penetrations through the rigid air barrier, at the maximum test pressure of 455 Pa.

Tested by:.....Checked by:.....

CYCLIC PRESSURE WATER PENETRATION (AS/NZS 4284:2008)

Test Pressure, Pa	Duration, mins	Comments
227 - 455	5	No water penetration observed
303 - 606	5	No water penetration observed
455 - 910	5	No water penetration observed
606 - 1212*	5	No water penetration observed

* Additional cyclic test series requested by the client

No water penetration was visible through any of the purpose constructed observation ports in the internal lining, as well as the corresponding sealed penetrations through the rigid air barrier, during the cyclic water penetration tests.

STRUCTURAL TEST AT ULTIMATE LIMIT STATE

No permanent distortion or structural collapse of the test structure or cladding was observed.

The Trespa TS35 cladding system either directly fixed to the rigid air barrier or fixed onto 35 mm timber battens demonstrated compliance with the agreed Ultimate Limit State Wind pressures of ± 2.50 kPa, exceeding the likely test pressures of the future Extra High Wind Zone of approximately ± 2.13 kPa



John Yolland
Authorised Signatory

22 October 2010

Tested by:.....



Checked by:.....



TRESPA TS35 BATTENS DETAILS

Product	Application	Detail	Description	Issue Date
TP	RB - BN	IND	TS35 Battens Installation Drawing Index	21.10.2010
TP	TYP	PN	Trespa Panel	21.10.2010
TP	TYP	FLG	Typical Extrusions	21.10.2010
TP	RB - BN	01	Aluminium Window Head Detail	21.10.2010
TP	RB - BN	02	Aluminium Window Sill Detail	21.10.2010
TP	RB - BN	03	Aluminium Window Jamb Detail	21.10.2010
TP	RB - BN	04	Typical Pipe Penetration Detail	21.10.2010
TP	RB - BN	05	Typical Horizontal Joint Detail	21.10.2010
TP	RB - BN	06	Typical Horizontal Support Detail	21.10.2010
TP	RB - BN	07	Typical Parapet Flashing Detail	21.10.2010
TP	RB - BN	08	Typical Roof Apron Detail	21.10.2010
TP	RB - BN	09	Typical Top Plate to Soffit Detail	21.10.2010
TP	RB - BN	10	Typical Bottom Plate Detail	21.10.2010
TP	RB - BN	11	Typical Vertical Lapped Joint Detail	21.10.2010
TP	RB - BN	12	Typical Internal Corner Details	21.10.2010
TP	RB - BN	13	Typical External Corner Detail	21.10.2010



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Name

TS35 Battens Installation Drawing Index

@ A4
Scale

21.10.2010
Date

TP-RB-BN-IND
Dwg

PANEL SIZE



4270 x 2130mm



3650 x 1860mm

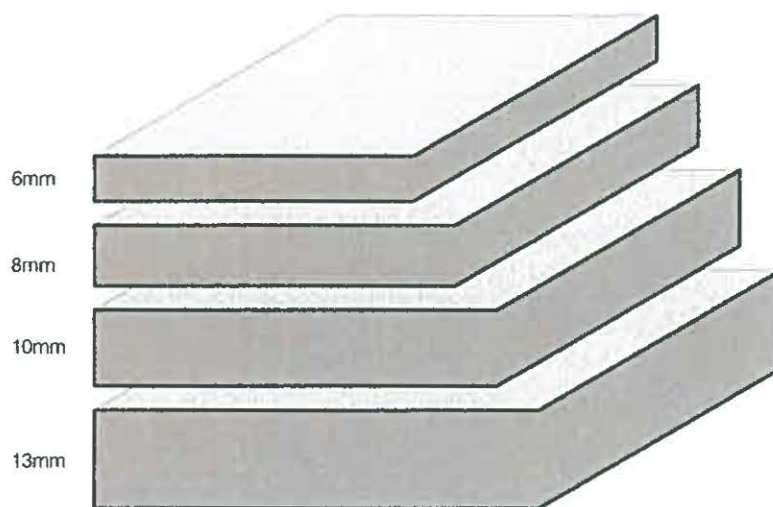


2550 x 1860mm



3050 x 1530

PANEL THICKNESS



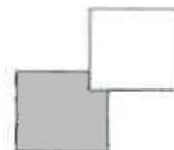
PANEL TYPE



Single sided decorative side
with non decorative black
reverse



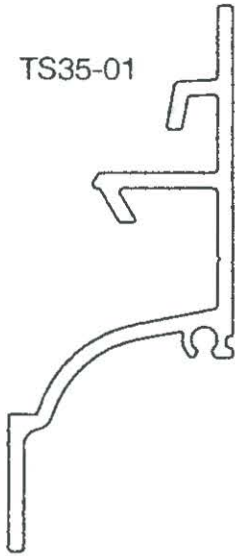
Double sided decorative



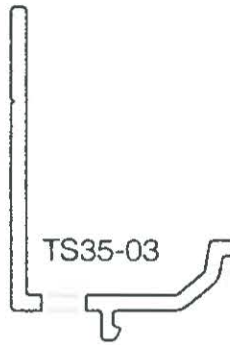
Varitop decorative side with
standard white decorative
Satin reverse

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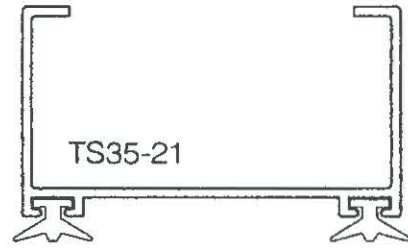
TS35-01



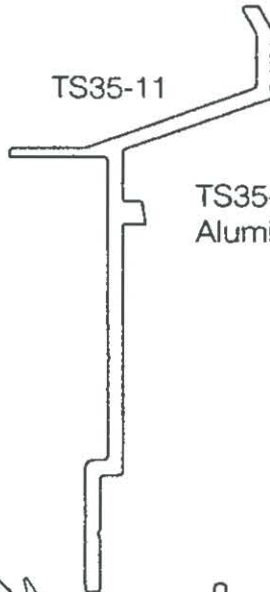
TS35-03



TS35-21

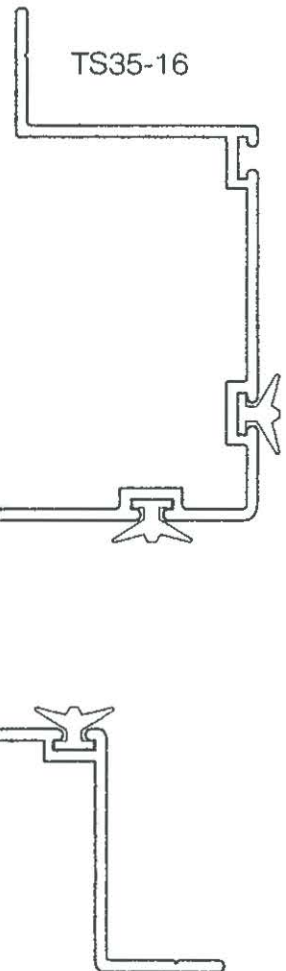


TS35-11

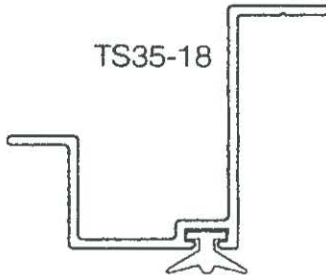
TS35-15 80mm
Aluminium Flashing

TS35 Soaker

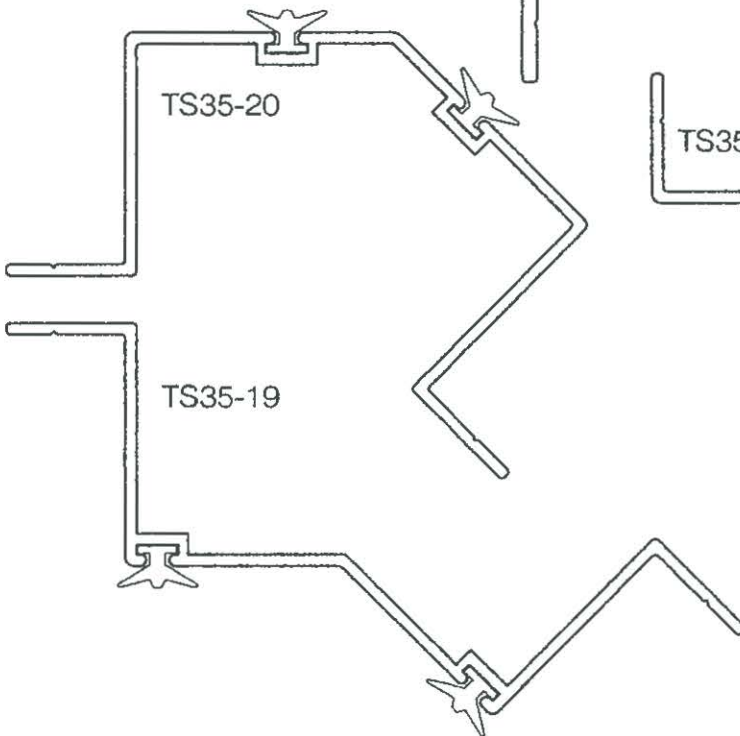
TS35-16



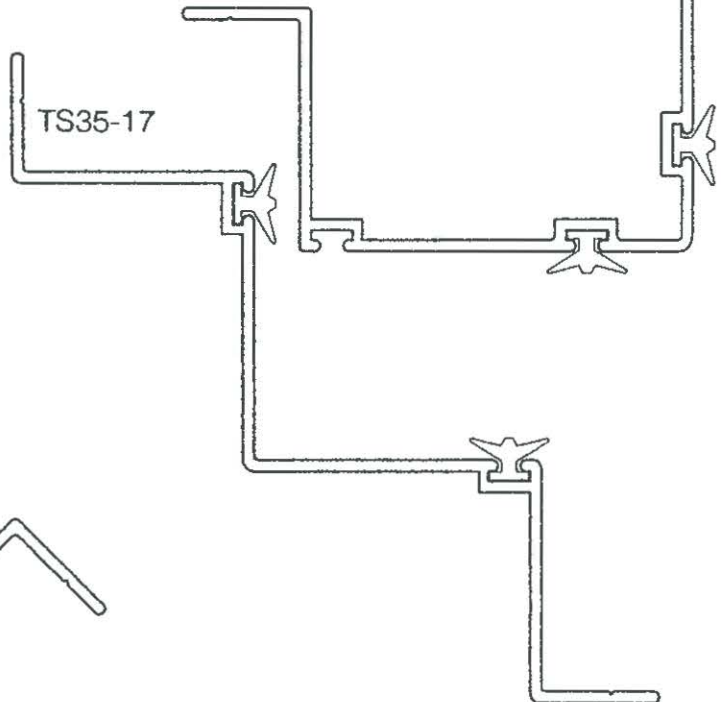
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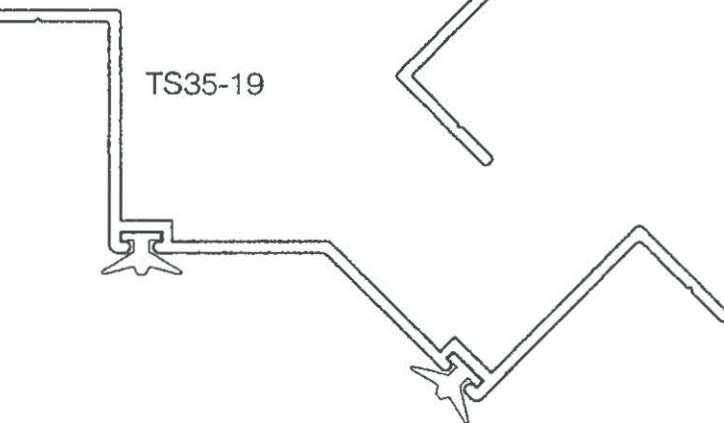
TS35-20



TS35-17



TS35-19



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Name

Typical Extrusions

1:1 @ A4

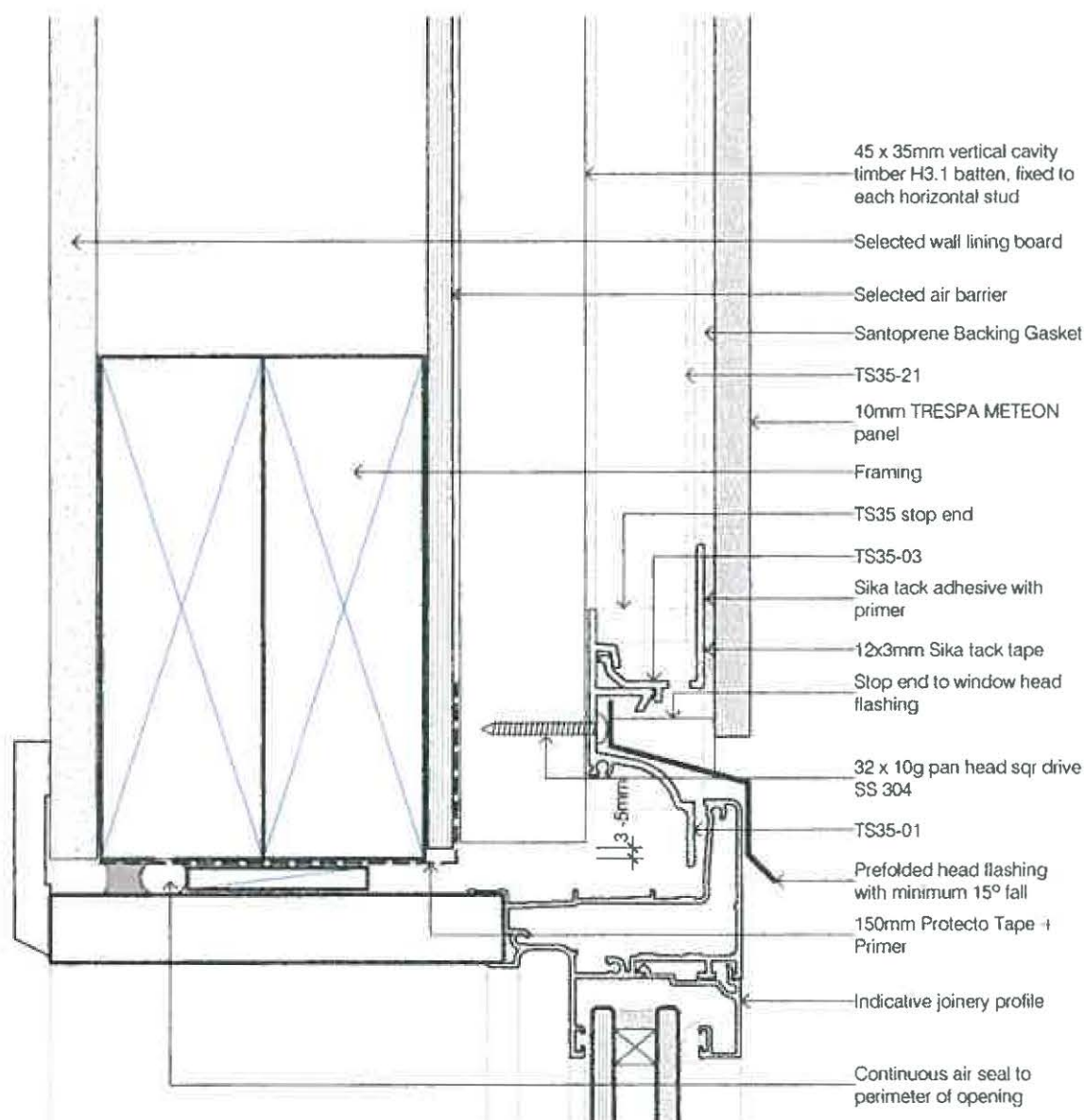
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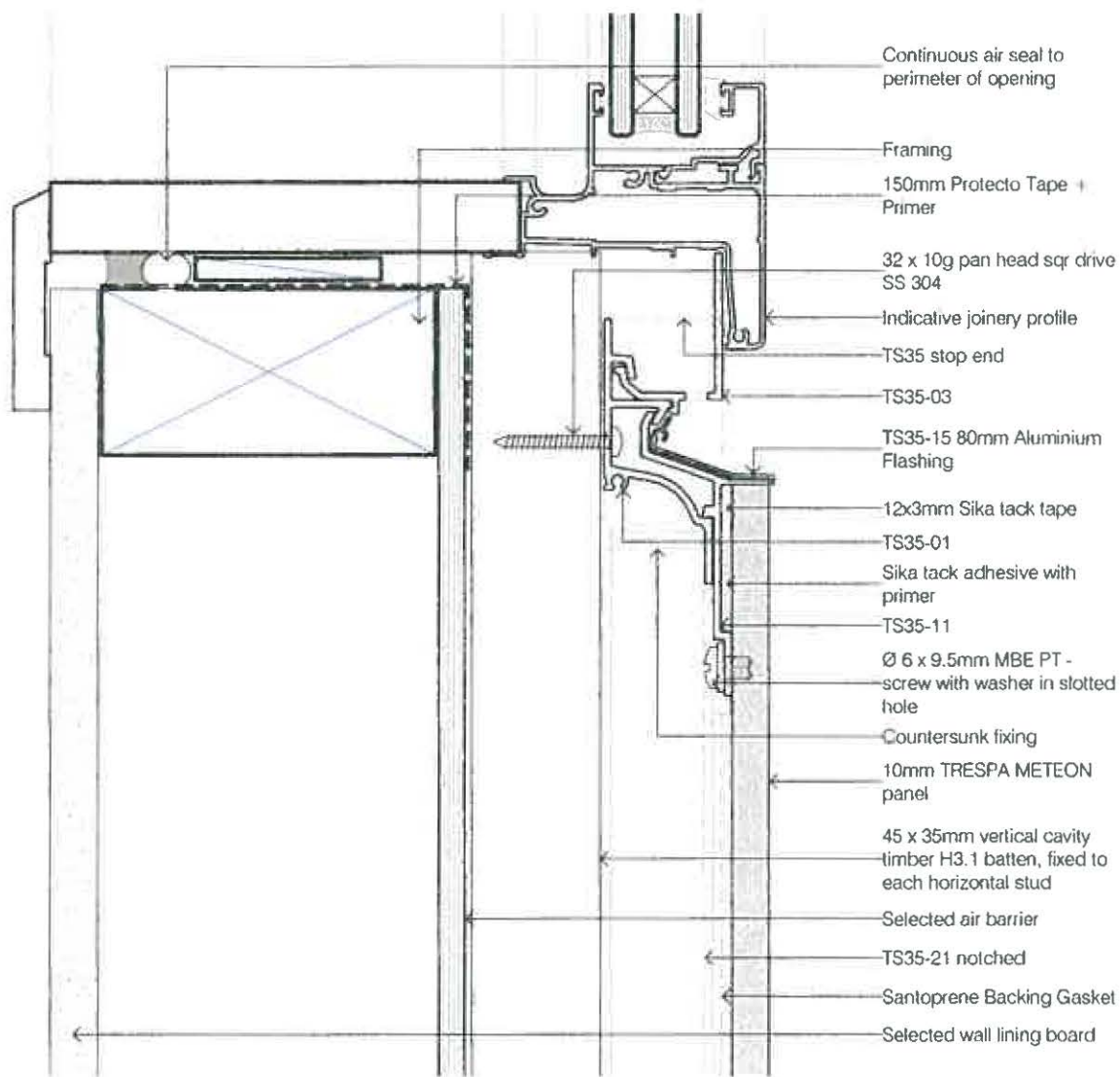
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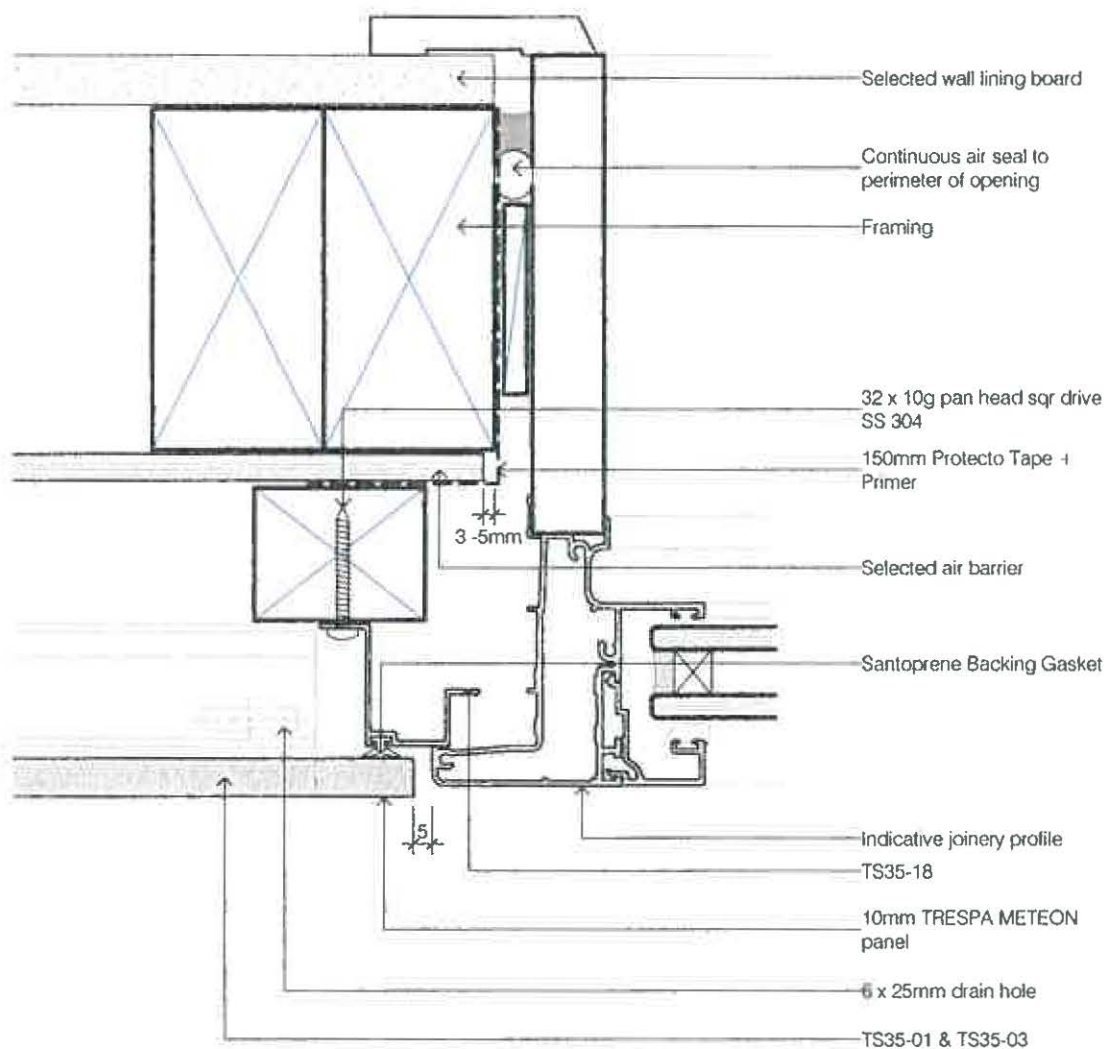
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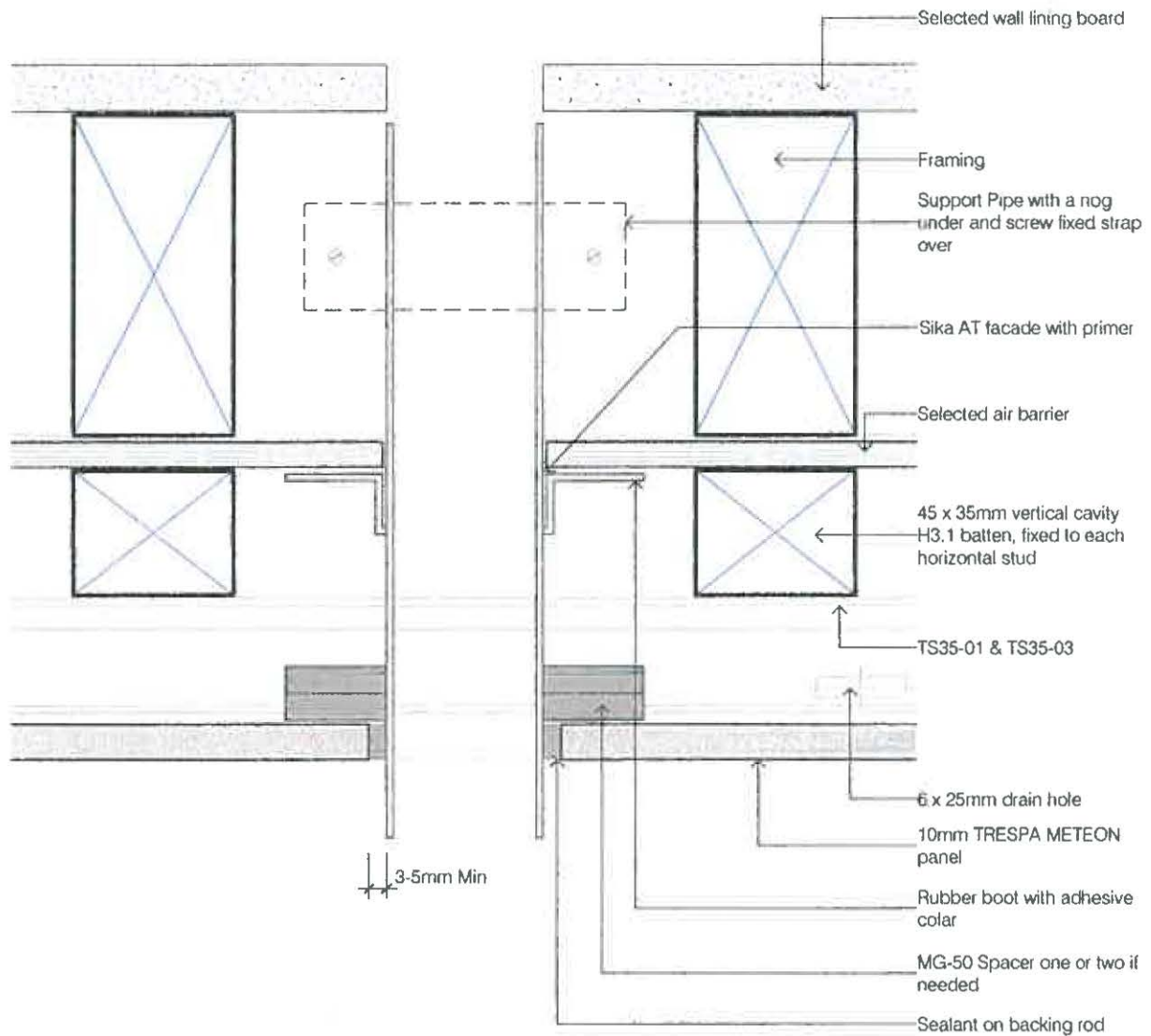
TP-TYP-FLG

Dwg

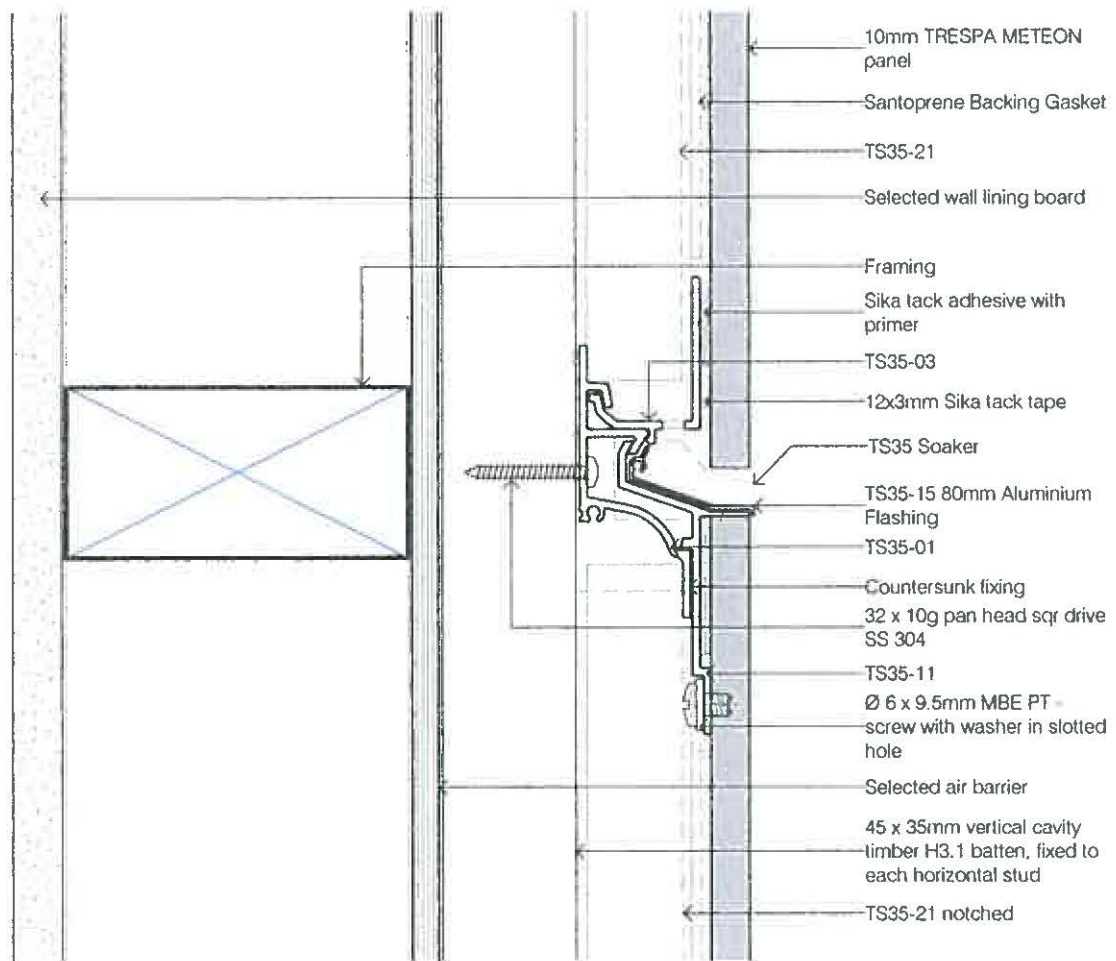
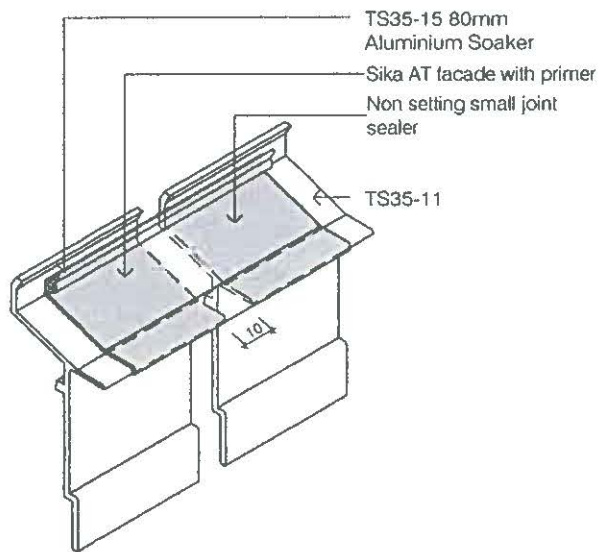








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Name

Typical Horizontal Joint Detail

1 : 2 @ A4

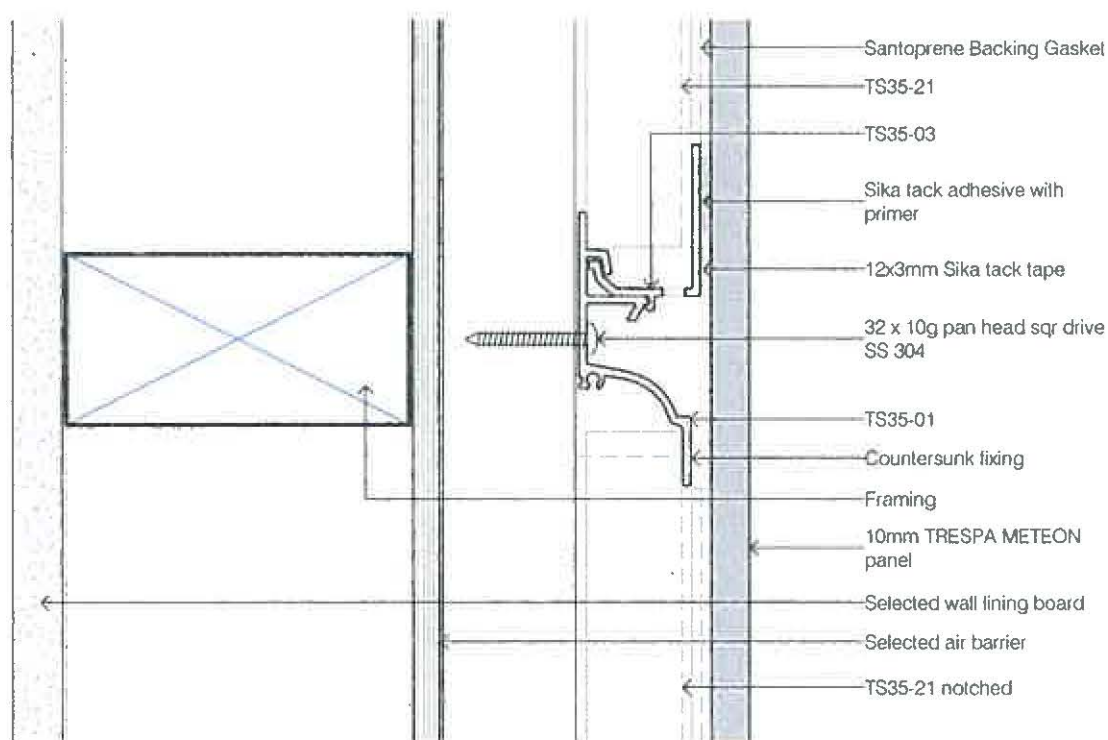
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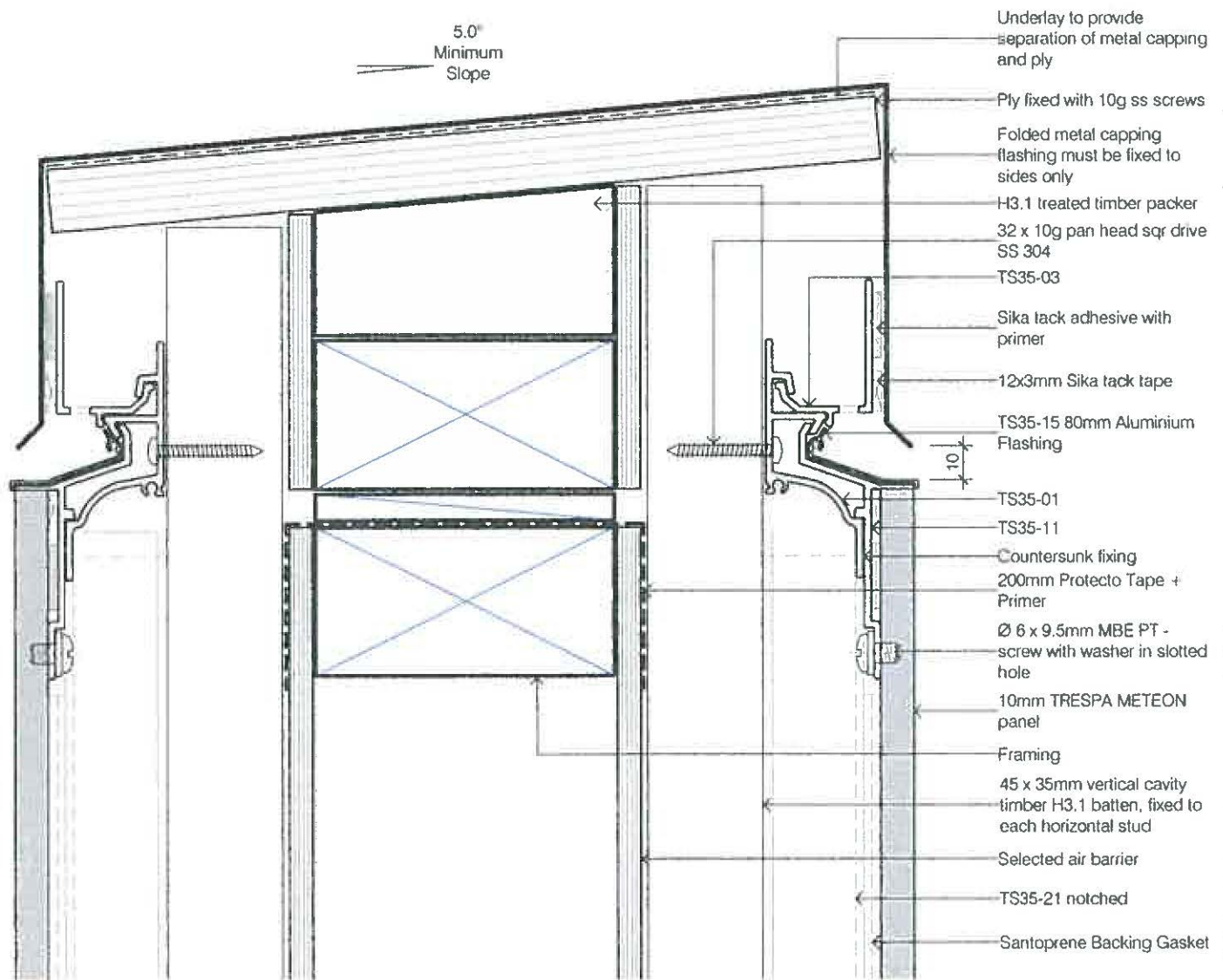
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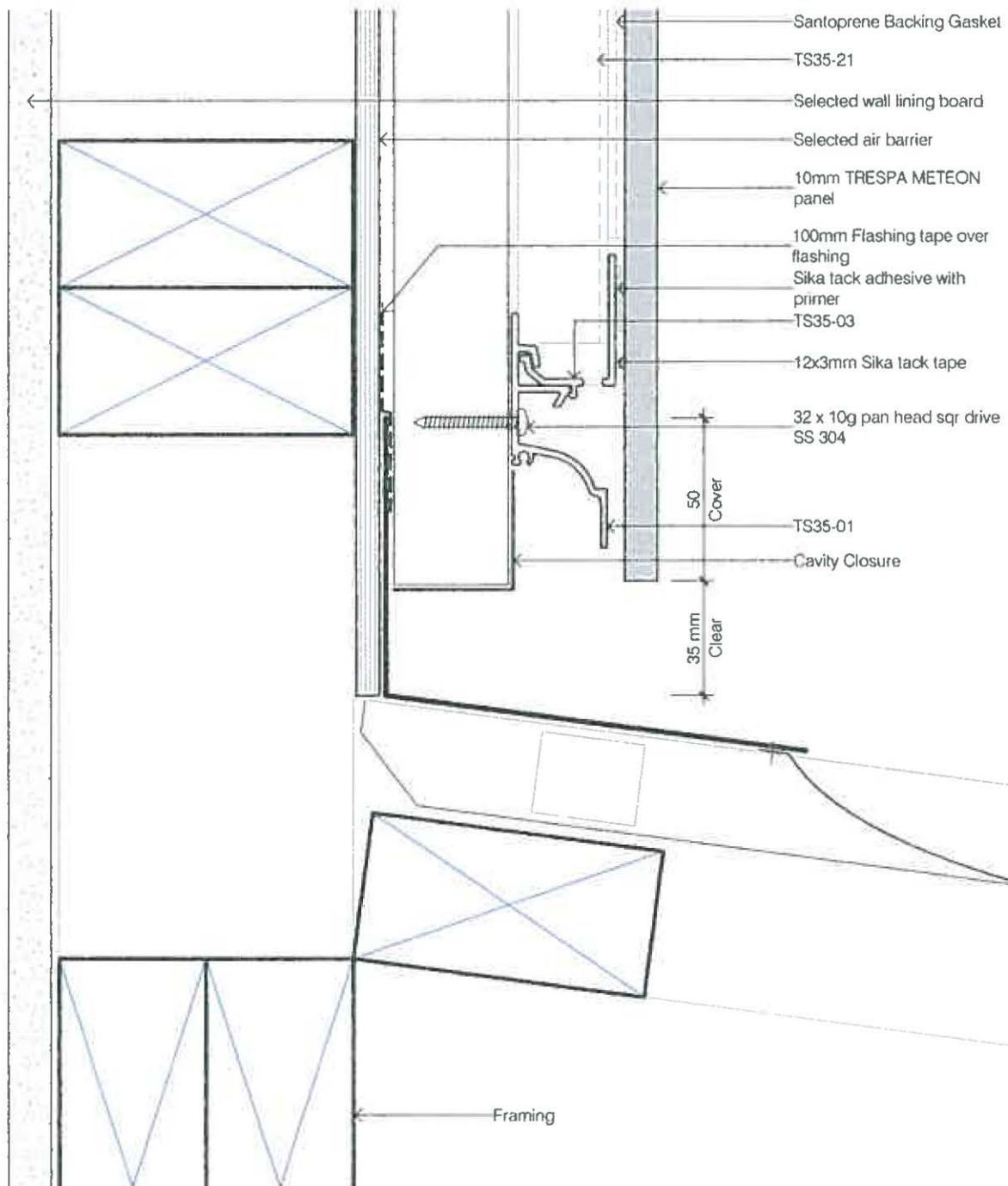
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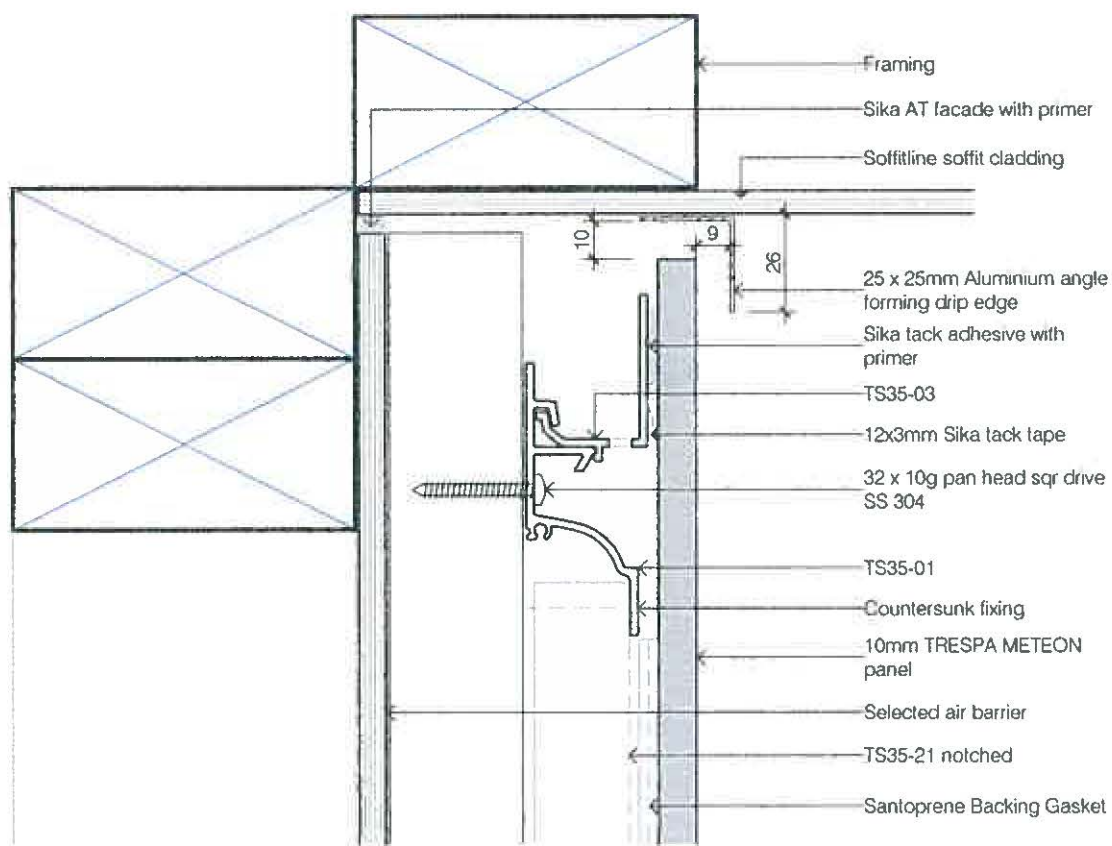
TP-RB-BN-05

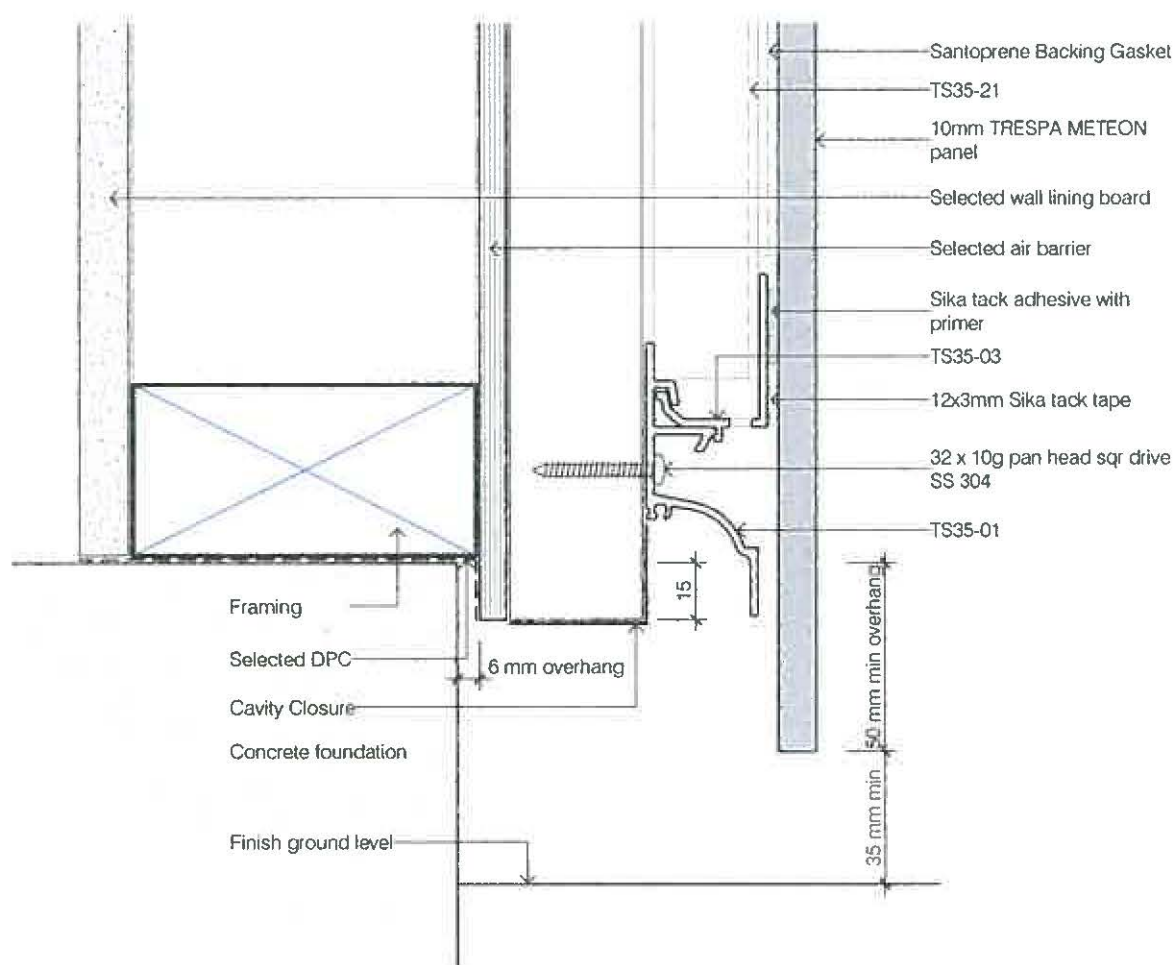
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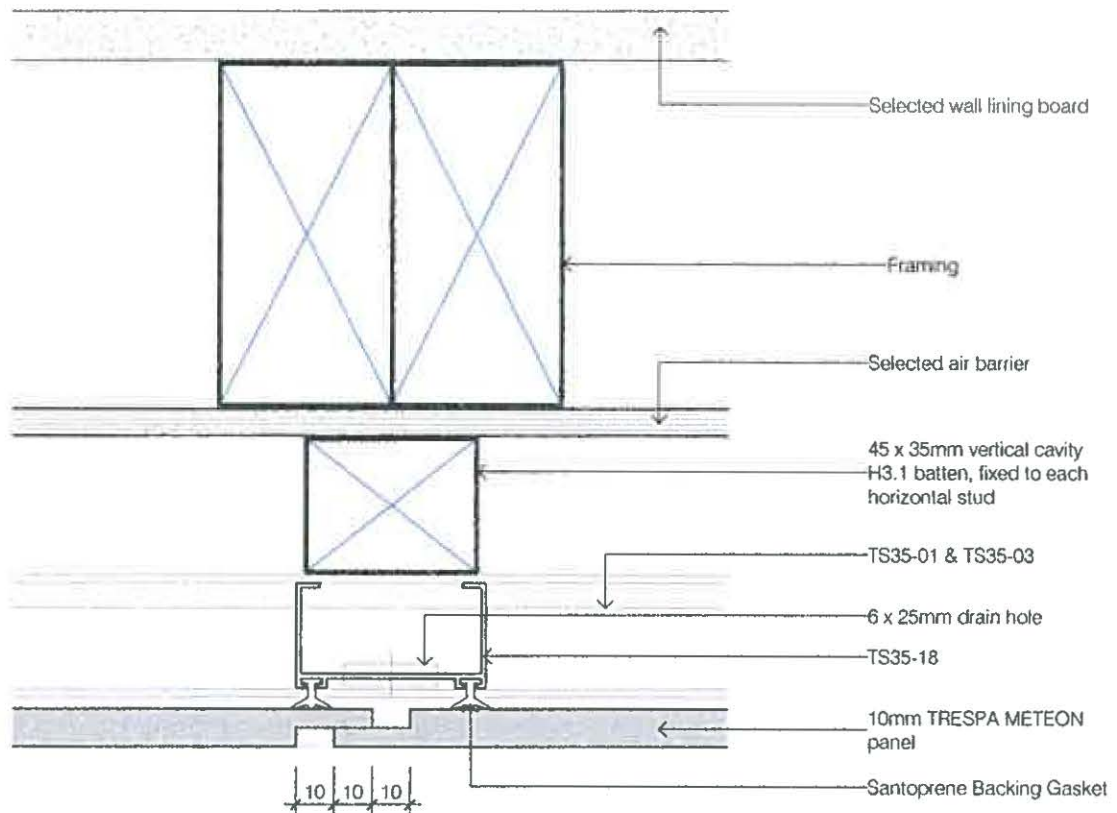


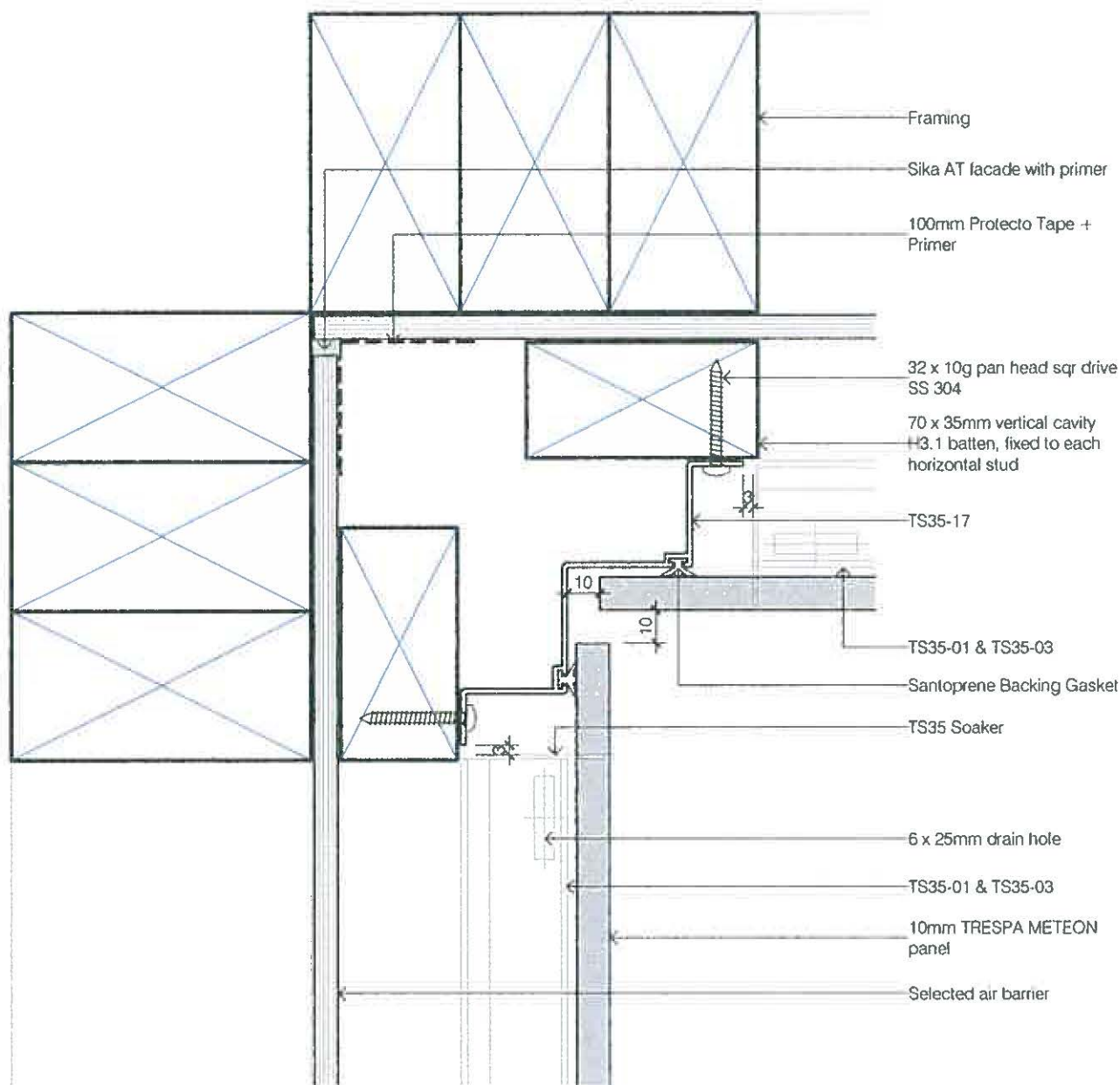


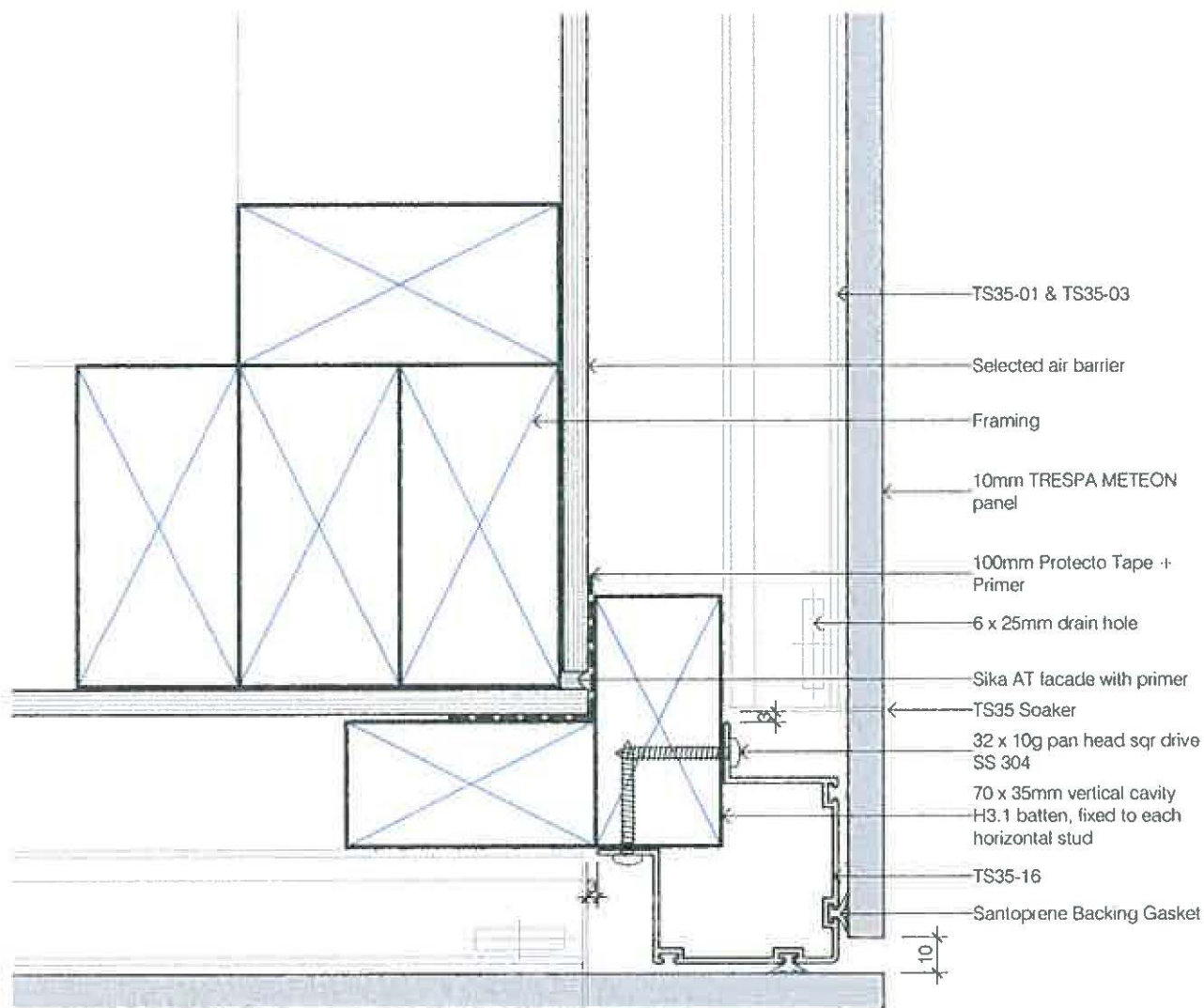




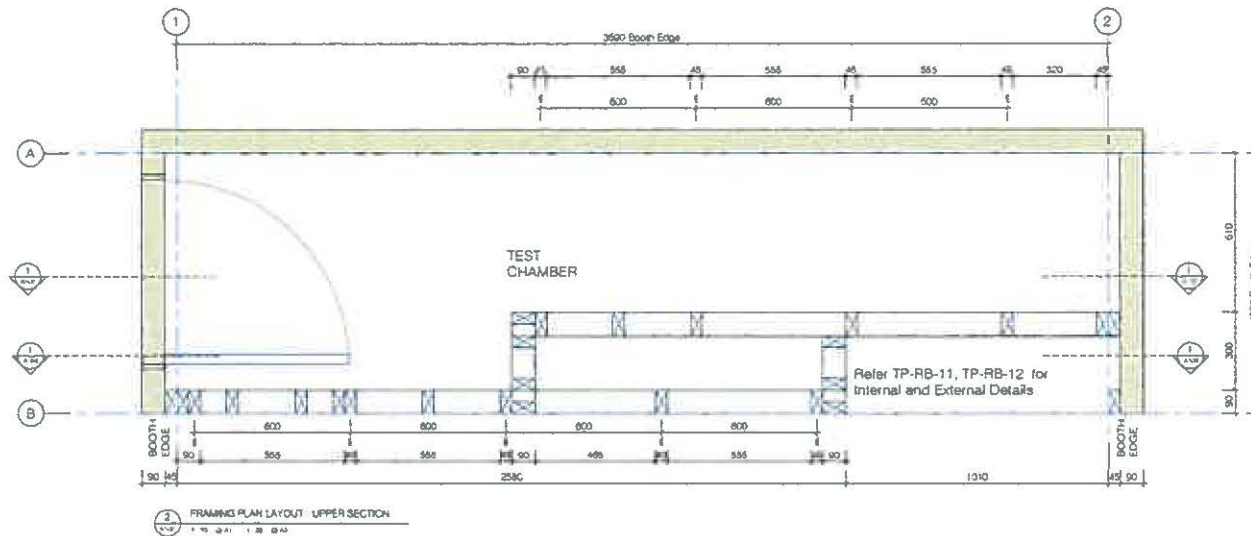
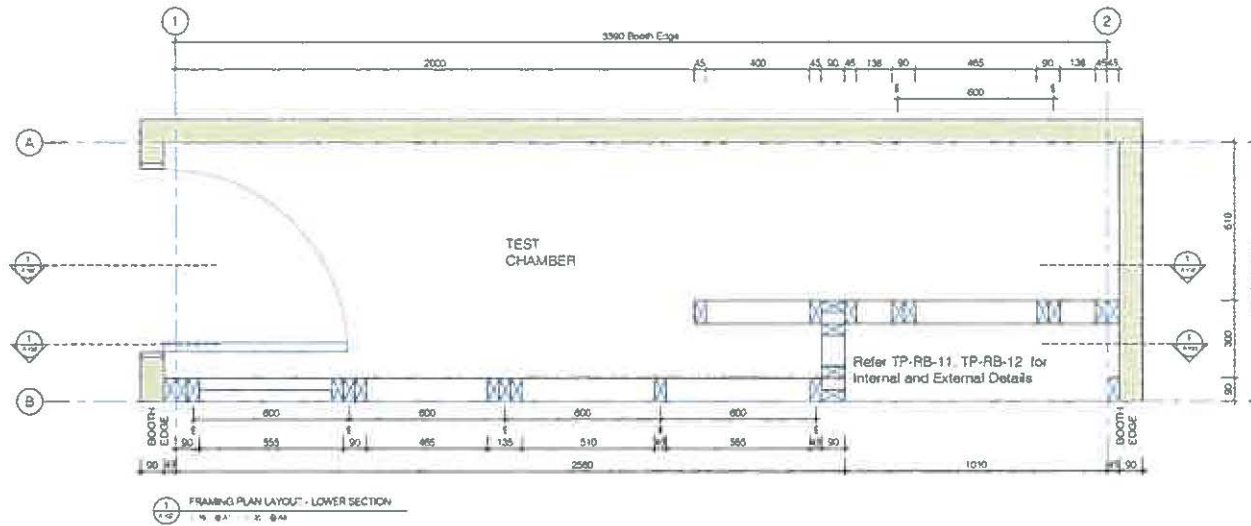








TRESPA Drawing List			
DW-EXT	DW-EXT TITLE	DATE	REVISION
A-01	TRESPA Logo	10/1/2010	1
A-02	TRESPA Logo with TRESPA®	10/1/2010	1
A-03	TRESPA Logo with TRESPA® and TRESPA®	10/1/2010	1
A-04	TRESPA Logo with TRESPA® and TRESPA®	10/1/2010	1
A-05	TRESPA Logo with TRESPA® and TRESPA®	10/1/2010	1
A-06	TRESPA Logo with TRESPA® and TRESPA®	10/1/2010	1
A-07	TRESPA Logo with TRESPA® and TRESPA®	10/1/2010	1
A-08	TRESPA Logo with TRESPA® and TRESPA®	10/1/2010	1
A-09	TRESPA Logo with TRESPA® and TRESPA®	10/1/2010	1
A-10	TRESPA Logo with TRESPA® and TRESPA®	10/1/2010	1



1 APPROVED TEST FRAME
REV. 01/2019

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plytech
CREATIVE STRENGTH

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PROJECT TITLE
TRESPA TS35

SHEET TITLE
LOWER & UPPER PLAN SECTIONS

APPROVED TEST FRAME

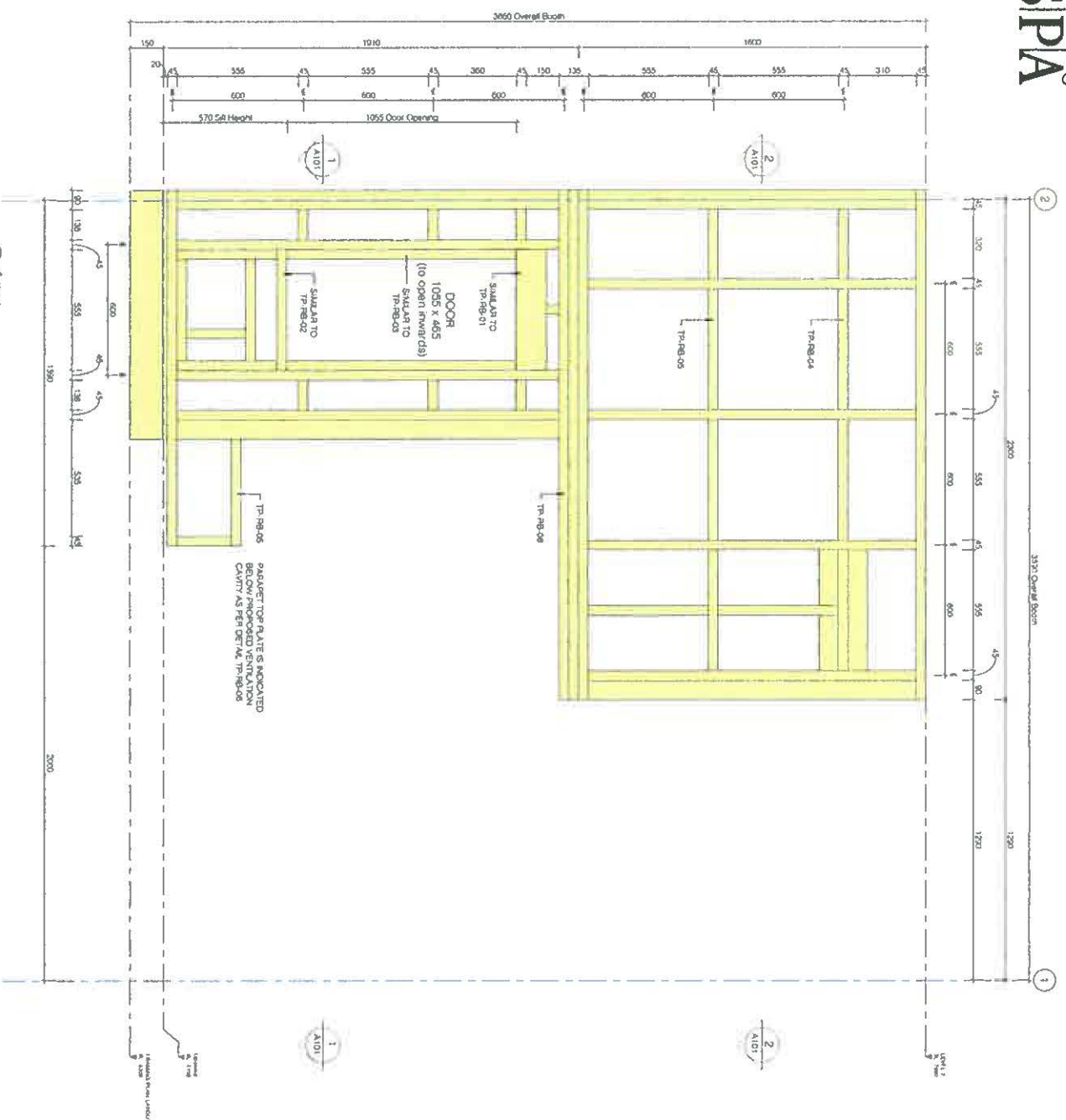
SCALE A1 As Indicated A2

PROJECT NUMBER

DESIGN DRAWING ASSEMBLY

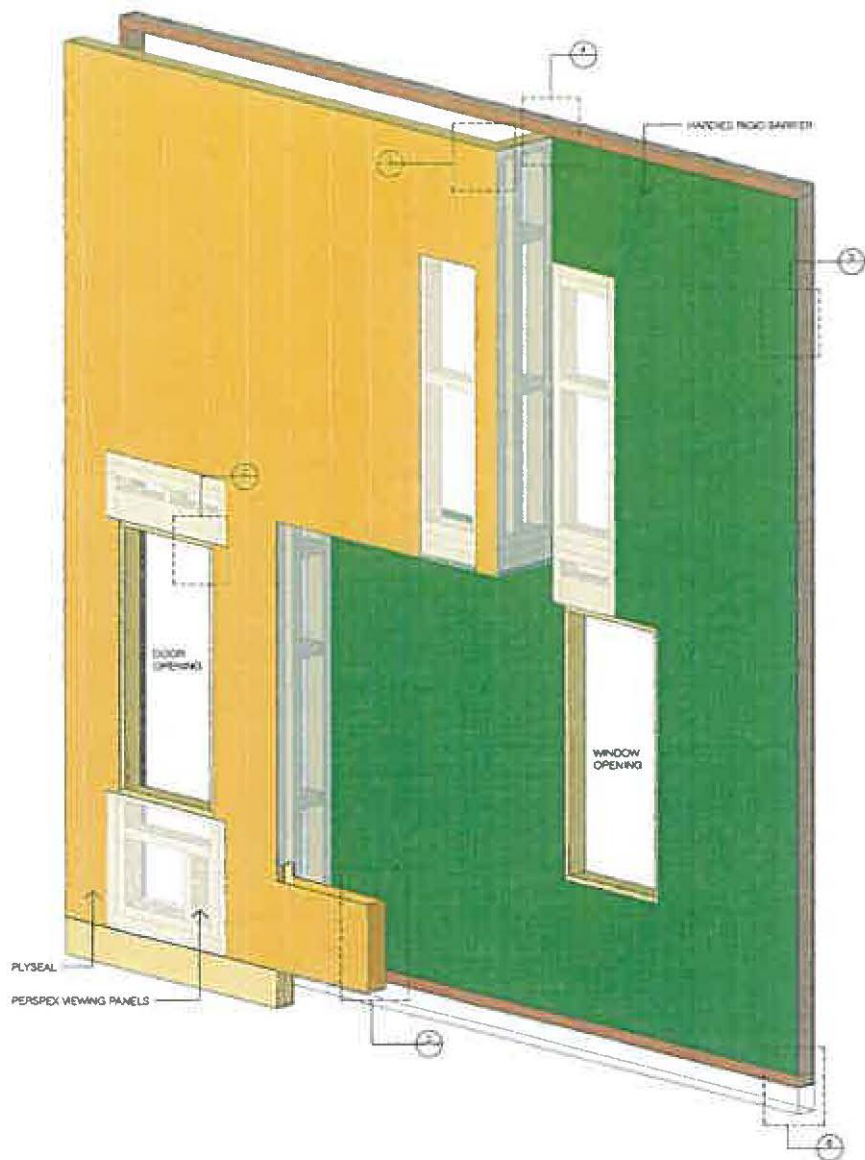
Drawn By: rev. 01/2019
1

THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS, MATERIALS, SITE REQUIREMENTS & CONDITIONS ETC BEFORE FABRICATION OR DEMONSTRATION BEGINS





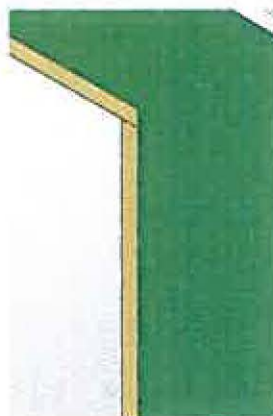
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1 RIGID BARRIER - EXTERNAL CORNER



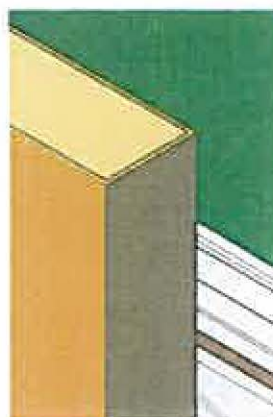
2 RIGID BARRIER - INTERNAL CORNER



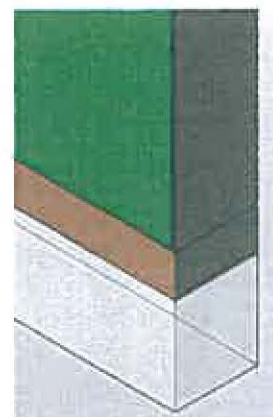
3 RIGID BARRIER - JAMB



4 RIGID BARRIER - HORIZONTAL RAIL



5 RIGID BARRIER - FINNAPET



6 RIGID BARRIER - BOTTOM PLATE



1 APPROVED TEST FRAME
REVISION DATE

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PROJECT TITLE
TRESPA TS35

SHEET TITLE
TEST FRAME WALL BUILD-UP
RIGID BARRIER

APPROVED TEST FRAME

SCALE AS INDICATED AS

PROJECT NUMBER

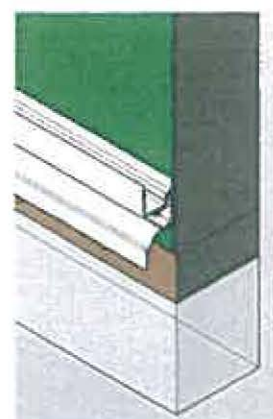
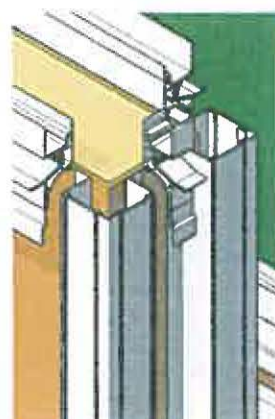
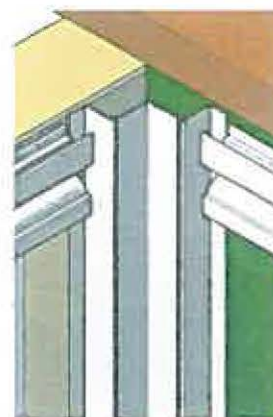
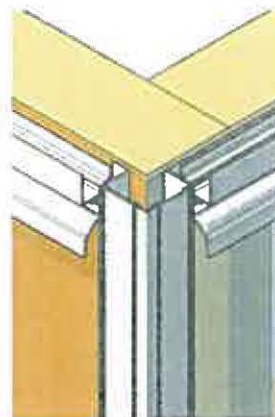
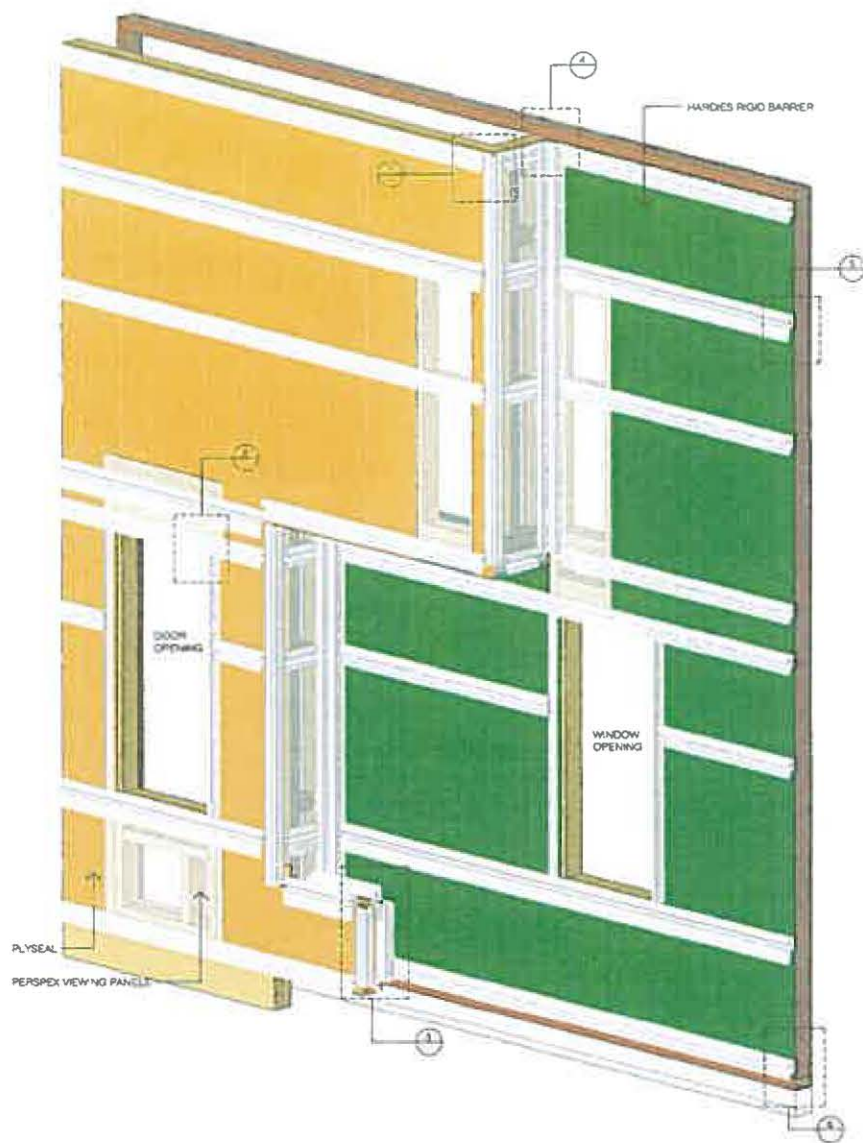
DESIGN Designer DRAWN Author

DWG NO REVISION

A104 1

THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS, JOINTS, SITE MEASUREMENTS & CONDITIONS ETC BEFORE FABRICATION OR CONSTRUCTION BEGINS

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P 000 000 000
New Plymouth, NZ

PROJECT TITLE
TRESPA TS35

SHEET TITLE
TEST FRAME WALL BUILD-UP
EXTRUSIONS

APPROVED TEST FRAME

SCALE A1 As indicated A3

PROJECT NUMBER

DESIGN Designer DRAWN Author

OWN NO

A105

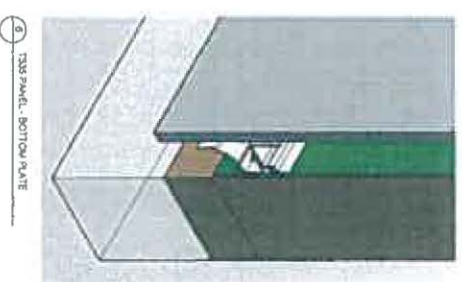
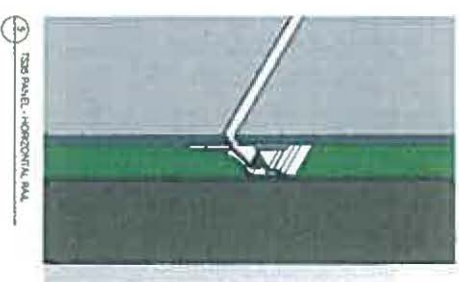
REVISION

1

THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS, JOINTS, SITE MEASUREMENTS & CONDITIONS ETC BEFORE FABRICATION OR CONSTRUCTION BEGINS

A 3D perspective view of the test structure, showing the layout of the test panels, openings, and instrumentation points. The structure is a rectangular box with a grid of panels. Key features include:

- Top Test Panels:** Labeled "TOP TEST PANELS" with arrows pointing to the top horizontal panels.
- Bottom Test Panels:** Labeled "BOTTOM TEST PANELS" with arrows pointing to the bottom horizontal panels.
- Openings:** Two rectangular openings are shown, labeled "OPENING" with arrows pointing to them.
- Instrumentation Points:** Several points are marked with circles and numbers (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100) and labeled with "VAI TEST POINTS" and "VAI TEST POINTS".
- 10mm THERMAL INSULATION:** Labeled "10mm THERMAL INSULATION" with an arrow pointing to the insulation layer on the top panel.



THE CONNECTION IS TO VARIOUS ALL-DIETETIC APPROACHES, SAYS NUTRITIONSCIENTIST & COAUTHOR BERNARD PASQUA FROM AN CONNECTION FROM BEHAVIORAL