

Test Report 20-10

Testing of Frontek tile system in accordance with AS/NZS 4284:2008 'Testing of Building Facades'

Project: Frontek tiles on aluminium rails
Client: The Building Agency
Specifier: Lautrec
Sample designer: Symonite NZ Ltd
Installer: Symonite NZ Ltd
Test dates: 21 - 24 Aug 2020 (and 4-8 Aug for SLS deflections on studs)

Test Schedule The test order specified in AS/NZS 4284:2008 was followed. No measurements were made during the structural deflection tests since the Frontek tile cladding was erected on the same timber framed structure that had just completed these tests with a different cladding system. The structure and RAB had been subjected to AS/NZS 4284 testing (including SLS deflections and seismic testing). The deflection measurements from this previous test are provided in the appendix.

Persons present: Richard Gibbs (Facadelab manager).

At various times: Matthew Harris, Alistair Hines, Jenny Bandong, Joshua Martinez, John Cobb, Will Cobb, Danielle Gandela, (all related to Symonite) and John Burgess (for the SLS tests on the structure with a different cladding on 4-8 August).

Test facility: Facadelab Ltd, 320 Rosedale Rd, Albany, Auckland.

IANZ accredited testing officers: John Burgess and Richard Gibbs

IANZ accreditation number for testing 1091, including AS/NZS 4284.

Note: The 'Test Request' was a verbal instruction to undertake the same tests as performed for the previous Symonite cladding on the same structure, reported in the facadelab report 20-09, 'Alucolux', with an SLS air pressure of 2.8 kPa.

Tested by: John Burgess and Richard Gibbs IANZ Signatories. Checked by: RG

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Figure 1: View of wet-side of sample face, showing selection of exterior tiles



Figure 2: Cladding tiles cruciform joint

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3. Summary

The Frontek tile system was subjected to tests from the AS/NZS 4284:2008 testing suite with the following results.

3.1. Preliminary tests

Complies – air and water

3.2. Serviceability limit state deflection test

Deflections were not measured in this test, however the structure complies with deflection requirements at ± 2800 Pa for stud at span/200 as measured previously for the structure in results repeated in the Appendix.

3.3. Air infiltration test

Complies with requirements at ± 150 Pa

3.4. Static water penetration test

Complies with requirements at +840 Pa

3.5. Cyclic water penetration test

Complies with requirements, testing to 420 – 840, 630 – 1260, and 840 – 1680 Pa cyclic pressure water test.

3.6. Seismic testing at serviceability limit state.

Complies with requirements at ± 20 mm in-plane deflection.

3.7. Post SLS seismic cyclic water penetration tests

Complies with requirements at stage 1, stage 2 and stage 3 cyclic pressures with water present at footer assumed to be relevant to the connection to surrounding structure.

3.8. Pressure test at ultimate limit state

Complies with requirements at ± 5.0 kPa

3.9. Seismic test at ultimate limit state.

Complies with requirements at ± 75 mm in-plane deflection.

Complies with requirements at -100 mm in-plane deflection.

4. Notation

The reference numbers from the AS/NZS 4284:2008 'Testing of building facades' document are used in the following, for ease of reference.

5. Principle

A sample of a building façade forms one face of an eternally mounted pressure chamber and is sealed at its perimeter and then successively subjected to tests.

6. Apparatus

The Frontek tile system by Symonite was tested using the Facadelab test facility located at 320 Rosedale Rd, Albany.

7. Sample

7.1. Test sample

7.1.1. Orientation

The orientation of all elements are recorded in this report as viewed from the outside of the test booth (dry side), being the inside of the façade when constructed. The inside of the test booth has the outside (wet side) of the façade.

7.1.2. Sample Description

The test arrangement consisted of Frontek cladding tiles erected on aluminium battens over a GIB® Weatherline rigid air barrier, with overall size 3550 mm wide by 4110 mm high. GIB® Weatherline sill tape was used around the window opening. This unit was installed into a timber framed opening in the test rig. Allowance for seismic movement was made prior to the seismic tests.

The infill structure around the sample was constructed of 140 x 45 mm timber framing.

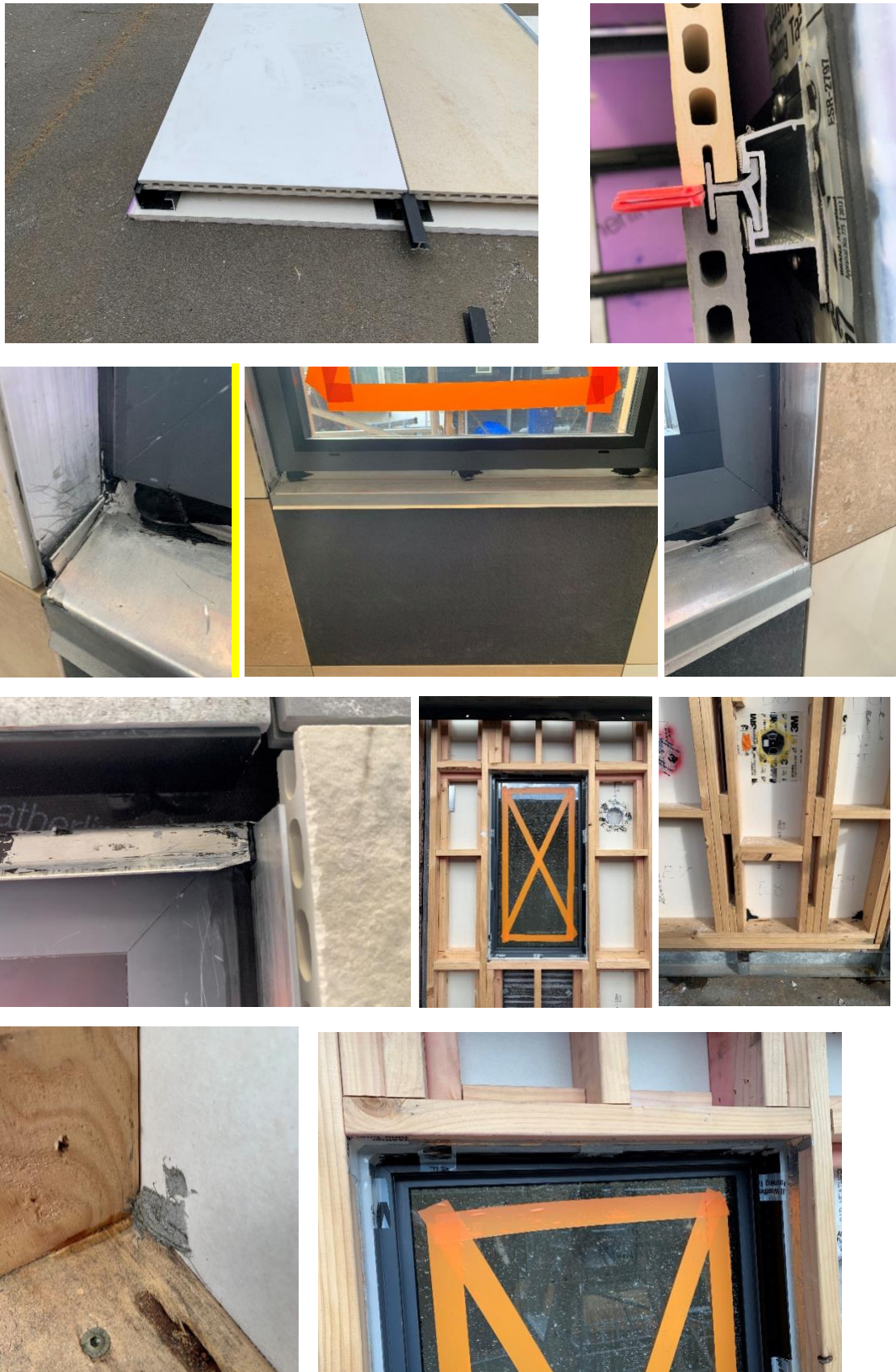


Figure 3: Photos of system during erection and under test

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Figure 4: Deformation of the framing following the seismic lateral racking

7.2. Drawings

Drawings are attached as appendices at the end of this report.

7.2.1. Modifications to the sample during construction

The drawings were provided following testing, so are assumed to be a correct record of the system. While checks have been made, the lab cannot be held responsible for any deviations from the drawings, since not all the construction was able to be assessed.

7.2.2. Modifications to the sample during testing

During the preliminary tests, water was found on the back of the Frontek tiles at several locations. The water did not track across to the air barrier, and so was not a compliance problem. However, large numbers of fixings through the RAB were found to have missed the timber framing and had been oversealed with a black silicone.

The plans show the as-built system, as supplied by the client. While they show the general arrangement of the sample, all details have not been confirmed.

8. Procedure

Note the same clause numbers have been used as in AS/NZS 4284 for ease of reference in the below.

8.1. Test Sequence

8.1.1. General

The tests were performed using the testing procedures of AS/NZS 4284:2008 in the cladding test facilities of Facadelab Limited in the following sequence.

- Serviceability deflection tests on timber stud at ± 2800 Pa. (The structure from a previous test on another cladding for the same client was re-used in this test. Since deflection of the new cladding tiles (Frontek) was not required, the SLS pressures were re-applied, with measurements of their deflection from a previous test reported in the appendix.
- Preliminary SLS pressure test at ± 2800 Pa
- Preliminary water test (static and cyclic) at 840 Pa, and three stages of cyclic pressure up to 1680 Pa
- Serviceability deflection tests (but no measurements) on timber stud at ± 2800 Pa.
- Air infiltration test on the total of the sample and booth at 150 Pa
- Lateral (seismic) displacement tests at SLS (± 20 mm)
- Lateral (seismic) displacement tests at ULS (± 75 mm)

8.1.2. Variation in test sequence

There was no variation in the test sequence, except as noted above.

8.2. Preliminary Tests

8.2.1. General

Preliminary testing at 8.2.2 and 8.2.3 was conducted.

8.2.2. Preliminary Static air Pressure

The test sample was subjected to the positive and negative SLS design wind pressures. Air pressures of +2.8 kPa and -2.8 kPa were applied to the test sample.

8.2.3. Water

8.2.3.1. Preliminary Static Water test

A preliminary static water penetration test at an air pressure of 840 Pa was carried out as required by clause 8.5 of AS/NZS 4284.

8.2.3.2. Preliminary Cyclic Water test

A preliminary cyclic water penetration test at air pressures varying from 420 – 840, 630–1260, 840-1680 Pa was carried out as required by clause 8.6 of AS/NZS 4284.

8.3. Structural Test at Serviceability Limit State (SLS)

The deflection of the single timber stud at the LH side of the RH panel had already been assessed, and is reported in the appendix. The same pressures were re-applied to the system, but deflections were not measured

8.3.1. Structural Test Pressures

The SLS test pressures used were calculated by the specifier as +2800 Pa, and -2800 Pa.

8.3.2. Location of the Displacement Transducers

None used.

8.3.3. Pressure Loading Sequence

The pressure loading sequence requested by the specifier was as per AS/NZS 4284 and required ramping up under positive pressure in five steps, being 20%, 40%, 60%, 80% and 100%, before continuing with negative pressures, as in Fig 1 of AS/NZS 4284: 2008. The positive and negative ramp down sequences were not performed, as permitted in the standard.

8.4. Air Infiltration

An air infiltration test at a pressure difference of ± 150 Pa across the cladding shall not exceed 1.6 l/m²s.

8.5. Water Penetration by Static pressure

The static water penetration test pressure of 1050 Pa was nominated by the specifier. No visible water leakage shall be recorded through the sample.

8.6. Water penetration test by cyclic pressure

The three stages of cyclic water penetration were nominated as follows:

Stage 1: 420 – 840 Pa

Stage 2: 630 – 1260 Pa

Stage 3: 840 – 1680 Pa

No visible water leakage shall be recorded through the sample.

8.7. BMU restraint test

A BMU restraint test was not requested as part of the AS/NZS 4284:2008 test procedure.

8.8. Structural Test at Ultimate Limit State (ULS)

The test pressures of +5000 Pa, and -5000 Pa were nominated by the specifier.

8.9. Seismic Testing at Serviceability Limit State.

8.9.1. Test displacement

A lateral displacement of ± 20 mm between the tile system and the surrounding framing was requested. The moving support beam was located across the top of the tile system, and bolted to the sample through a section of plywood fin as shown in the photos.

8.10. Seismic Testing at Ultimate Limit State

(Note this clause number does not align with AS/NZS 4284, with clause 8.9 discussing both the SLS and the ULS tests)

A lateral displacement of ± 75 mm was specified for the ULS seismic testing, and then the client elected to undertake a further test to the limit of the apparatus, at -100 mm lateral displacement.

9. Results

9.1. General

The performance requirements below, resulted from the request by the specifier.

9.1.1. Preliminary Tests

Results of preliminary testing undertaken are recorded at 9.1.2 - 9.1.4.

9.1.2. Preliminary Static Pressure

There was no visible dislodgement of any elements following SLS pressure testing.

9.1.3. Preliminary Static Water

| Preliminary static water test | | | |
|--------------------------------------|-------------------|------------|----------|
| Stage | Air pressure (Pa) | Duration | Result |
| 0 | 0 | 5 minutes | Complies |
| 1 | 840 | 15 minutes | Complies |
| 2 | 0 | 5 minutes | Complies |

Table 1: Preliminary static water test pressures

Initially there were water leaks through the build-in details around the outside of the sample which were partially addressed prior to the testing. These leaks were due to the connection of the system to the surrounding timber frame, and were not relevant to the sample. Some leaks continued (via connections to the booth), but did not interfere with identification of any leakage through the sample.

9.1.4. Preliminary Cyclic Water

| Preliminary cyclic water test | | | |
|--------------------------------------|-------------------|-----------|----------------|
| Phase | Air pressure (Pa) | Duration | Result |
| | 0 | 5 minutes | No water leaks |
| 1 | 420 - 840 | 5 minutes | No water leaks |
| 2 | 630 - 1260 | 5 minutes | No water leaks |
| 3 | 840 - 1680 | 5 minutes | No water leaks |
| | 0 | 5 minutes | No water leaks |

Table 2: Preliminary cyclic water test pressures

9.2. Structural test at serviceability limit state (SLS)

The results for the SLS deflections on the structural studwork were not performed within this test, and so are contained in the appendix.

9.3. Air Infiltration (AS/NZS 4284:2008 Part c)

This test was undertaken to determine the airtightness of the 4080 mm x 3550 mm high sample. Since the total air leakage of the sample plus the booth was less than the required value, the leakage through the sample was not calculated.

Overall area: 14.5 m²

Allowable leakage, at 1.6 l/m²/s 23.2 l/s

| Airtightness measurements @ 150 Pa dP | | |
|---------------------------------------|--------------------------------------|--------------------------------------|
| | Positive pressure (infiltration) l/s | Negative pressure (exfiltration) l/s |
| Measured (booth + sample) | 4.0 ± 0.2 | 4.0 ± 0.2 |
| Calculated sample leakage | < 4.2 | < 4.2 |

Table 3: Air tightness leakage results

The airtightness of the sample complied with the air leakage requirements, having an air leakage of less than 4.0 l/s under positive pressure, and less than 4.0 l/s under negative pressure.

9.4. Water Penetration

The results of the static and cyclic water tests, as per clause 8.5 are shown below.

9.4.1. Static Pressure Water Penetration

| Static water test | | | |
|-------------------|-------------------|------------|----------------|
| Stage | Air pressure (Pa) | Duration | Result |
| 0 | 0 | 5 minutes | No water leaks |
| 1 | 840 | 15 minutes | No water leaks |
| 2 | 0 | 5 minutes | No water leaks |

Table 4: Static water leakage results

There were minor leaks at the bottom plate of the system around the connection to the test booth. These leaks were not deemed to be relevant to the cladding, but were assumed to be due to the structure having been subjected to previous seismic

displacement testing including a full AS/NZS 4284 test regime, before being re-clad for this test. (Water was seen up to 50 mm above the bottom plate, but was clearly coming from below, not from above.)

9.4.2. Cyclic Pressure Water Penetration

| Cyclic water test – pre seismic | | | |
|--|-------------------|-----------|----------------|
| Phase | Air pressure (Pa) | Duration | Result |
| | 0 | 5 minutes | No water leaks |
| 1 | 420 – 840 | 5 minutes | No water leaks |
| 2 | 630 – 1260 | 5 minutes | No water leaks |
| 3 | 840 – 1680 | 5 minutes | No water leaks |

Table 5: Cyclic water test results

There were minor water leaks via the structure connection to the booth, as noted at 9.4.1

9.5. Seismic Testing at Serviceability Limit State

| Seismic Deflection Parameters (SLS) | | | | | |
|--|-------------------------------|------------------------------|------------|---------------------|-----------------------------------|
| Limit State | Distance Specified (d ± x mm) | Distance Achieved (d ± x mm) | Cycles (n) | Period (T, seconds) | Pause at mid-point and ends (sec) |
| SLS | 20 mm | 21 ± 1 mm | 5 | Not specified | Not specified |

Table 6: Seismic test results at SLS displacements

A lateral displacement of $\pm 20 \pm 1$ mm was specified and achieved, with a maximum negative retraction of -21 mm and a maximum positive extension of 21.0 mm.

9.5.1. Post seismic cyclic pressure water penetration

| Cyclic water test – post seismic | | | |
|---|-------------------|-----------|----------------|
| Phase | Air pressure (Pa) | Duration | Result |
| | 0 | 5 minutes | No water leaks |
| 1 | 420 – 840 | 5 minutes | No water leaks |
| 2 | 630 – 1260 | 5 minutes | No water leaks |
| 3 | 840 – 1680 | 5 minutes | No water leaks |

Table 7: Cyclic water test results

There were minor water leaks via the structure connection to the booth, as noted at 9.4.1

9.6. BMU Restraint Test

Not requested.

9.7. Structural Test at Ultimate Limit State Air Pressure

Not undertaken

9.8. Seismic Testing at Ultimate Limit State

| Seismic Deflection Results (ULS) | | | | | |
|---|-------------------------------|------------------------------|------------|---------------------|-----------------------------------|
| Limit State | Distance Specified (d ± x mm) | Distance Achieved (d ± x mm) | Cycles (n) | Period (T, seconds) | Pause at mid-point and ends (sec) |
| ULS | 75 mm | 75 mm | 5 | Not specified | Not specified |

Table 8: Seismic test results at SLS displacements

A lateral displacement of ±75 mm was specified. The extension measurements were made first, and then the sensors were re-oriented to take the retraction measurements. Hence the sample was subjected to 5 cycles in each configuration.

There was no collapse of the sample during or following this testing, however the racking did result in some disturbance to the attachment of the structural framing to the booth.

9.8.1. Further Seismic Testing at Ultimate Limit State

The client then requested further seismic testing at the limit of the equipment's capabilities of approximately 100 mm. The following is the result.

| Further Seismic Deflection Results (ULS) | | | | | |
|---|-------------------------------|------------------------------|------------|---------------------|-----------------------------------|
| Limit State | Distance Specified (d ± x mm) | Distance Achieved (d ± x mm) | Cycles (n) | Period (T, seconds) | Pause at mid-point and ends (sec) |
| ULS | 100 mm | 97 mm | 1 | Not specified | Not specified |

Table 9: Seismic test results at SLS displacements

A lateral displacement of -97 mm was obtained under retraction. There was no lateral displacement undertaken in the positive direction.

There was no collapse of the sample during or following this testing, however there was considerable damage to the connections of the structural system at the bottom plate.

9.9. Seal degradation testing

Not undertaken

Prepared By: John Burgess



John Burgess (IANZ Signatory)

09 Dec 2020

Verified By:



Richard Gibbs (Lab Manager)

18 Dec 2020

10. Appendices

10.1. Drawings

Drawings in this report have been supplied by the client following the completion of the test

| | | | |
|---|--|--|-------------------------------------|
| DRAWING REGISTER Date of Issue Day: 10 17 20 Month: 08 08 08 Year: 20 20 20 Revision: | | FOR INFORMATION Drawn By: JM Checked By: WJ Scale @ A3: As Shown Start Date: 30 July 2020 | FOR INFORMATION 0-01 C |
| SYMONITE 180 King Street Sydney NSW 2000 Phone: 02 9539 6888 Email: sales@symonite.com.au | | FRONTTEK TEST BOOTH DRAWING REGISTER AND SYMBOLS | |

TYPICAL SYMBOLS

PANEL TYPE

PANEL TYPE: FRONTtek

PANEL COLOUR: ANY

PANEL SIZE: ANY

SEALANT COLOUR: ANY

TEST CONDITION

WIND PRESSURE
ULS +/- 3500 KPa
SEISMIC SLS +/- 20mm

| Sheet No. | Sheet Title | Revision |
|-----------|--|----------------------|
| 0-01 | DRAWING REGISTER & SYMBOLS | A, B, C |
| 0-02 | GENERAL NOTES & MATERIAL LEGENDS | A, A |
| 3-01 | FRONT & SIDES ELEVATION - REFERENCES | A, B, C |
| 3-02 | FRONT & SIDES ELEVATION - FRONTIER PANEL | A, B, C |
| 5-01 | CROSS SECTIONS | A, B, C |
| 5-02 | CROSS SECTIONS | A, B, C |
| 6-01 | SECTION DETAILS & DIE DESIGNS | A, B, C |
| 6-02 | SECTION DETAILS | A, B, C |
| 6-03 | SECTION DETAILS | A, B, C |
| 6-04 | SECTION DETAILS | A, B, DELETED |
| 6-05 | WINDOW DETAILS | A, B, B |
| 6-06 | 200mm PIPE DETAIL | A, B, B |
| 6-07 | SECTION DETAILS | A, B, C |
| 7-01 | PLAN DETAILS | A, B, B |
| 7-02 | PLAN DETAILS | A, B, C |

| ISSUE CODES | |
|-----------------------|-----------------------|
| P - PRELIMINARY ISSUE | FC - FOR CONSTRUCTION |
| FA - FOR APPROVAL | AB - AS BUILT |

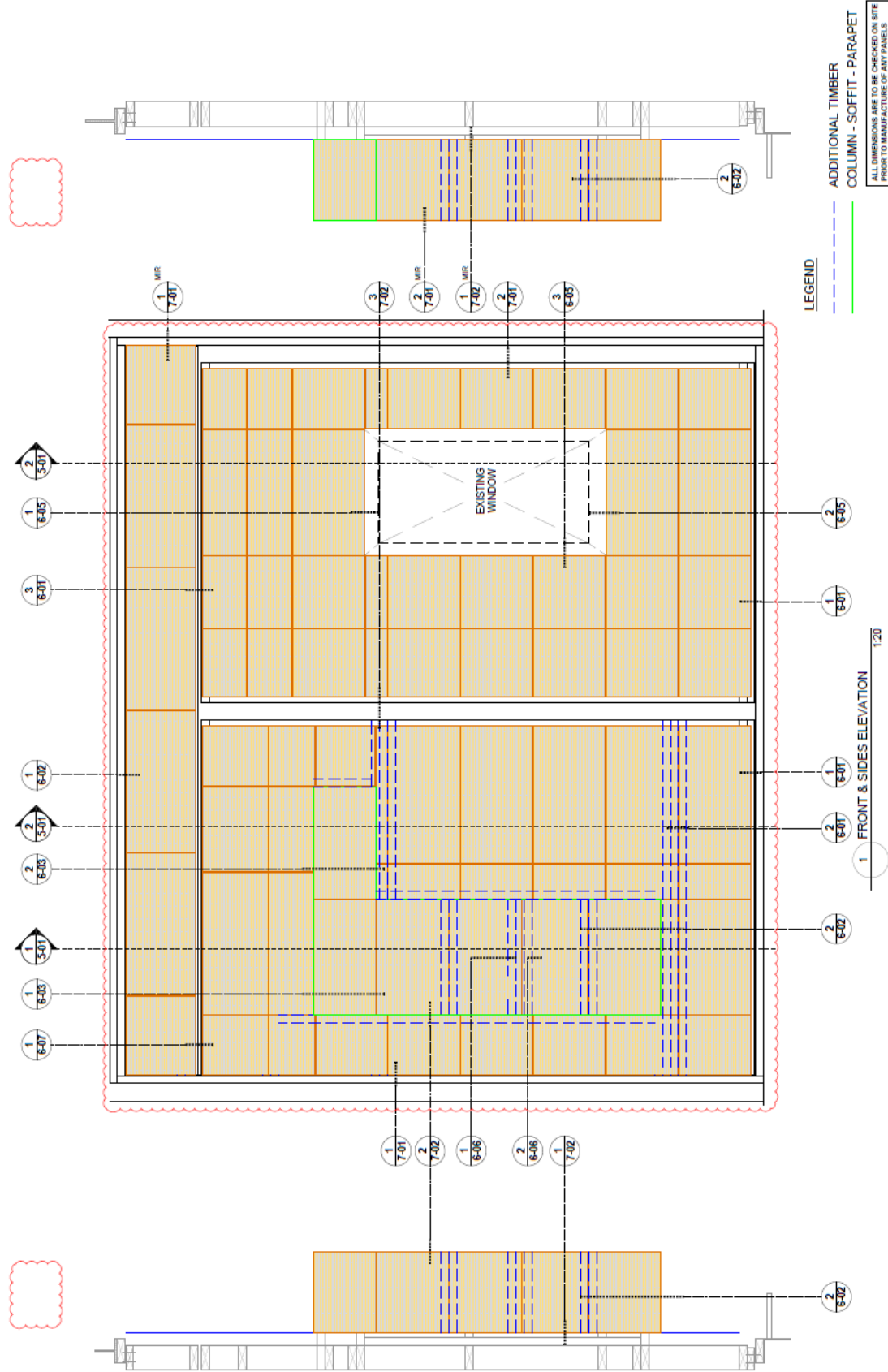
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| 0-00-000 | ISSUED FOR INFORMATION | JM | 04 | C |
| 0-00-000 | ISSUED FOR INFORMATION | JM | 01 | B |
| 0-00-000 | ISSUED FOR INFORMATION | JM | 01 | A |
| 0-00-000 | ISSUED FOR INFORMATION | JM | 01 | A |

FRONTEK CLADDING (AC) SYSTEM

PROPRIETARY MATERIAL LEGEND

- F1** PANEL TYPE
FRONTEK is a extruded ceramics in vitrified porcelain quality that have excellent technical qualities for the cladding of facades; extremely hard, light, highly resistant and long lasting, with low water absorption and excellent performance against weather and the most demanding environmental conditions.
- F2** FIXING SYSTEM
- F4** TYPICAL FIXINGS
A) PANEL TO STRUCTURE
304SS 10gX75 @ 400 ctrs min 35mm embedment into framing or as per Engineering specifications.
B) PANEL TO PANEL
410SS 10gX16 Pan sq. no.2 self drilling tek screws @ 400 ctrs max or as per Engineering specifications.
C) PANEL TO CONCRETE
304SS 10gX75 @ 400 ctrs fixed to concrete using 35mm nylon plug (HILT) or as per Engineering specifications.
SUPPLIER: HARDIES FASTENERS LTD. & ALLIED FASTENERS LTD.
- F6** VENTILATION SLOTS
- S1** SEALANT
Sika Facade AT supplied and applied in accordance with manufacturer recommendations.
SUPPLIER: SIKA NEW ZEALAND
- S2** PEF
15mm Diameter
SUPPLIER: GLASS CORP. LTD.
- S3** PACKERS
High density plastics, various sizes as required.
SUPPLIER: GLASS CORP. LTD.
- S4** ADHESIVE
Sikaflex - 552 AT
SUPPLIER: SIKA NEW ZEALAND
- IM1** UNDERFLASHING
0.60mm Aluminium channel underflashing @ joints as shown.

| | | | | | | | | |
|---|--|--|--|---------------------------------|-----------------|---------------------------|----------------------|-------------|
| | | | | | | | | |
| FRONTEK TEST BOOTH | | | | SYMONITE | SYMONITE | FRONTEK TEST BOOTH | GENERAL NOTES | |
| Architect: Symonite Panels Ltd 12/101-103 171-173 175-177 179-181 183-185 187-189 191-193 195-197 199-201 203-205 207-209 211-213 215-217 219-221 223-225 227-229 231-233 235-237 239-241 243-245 247-249 251-253 255-257 259-261 263-265 267-269 271-273 275-277 279-281 283-285 287-289 291-293 295-297 299-301 303-305 307-309 311-313 315-317 319-321 323-325 327-329 331-333 335-337 339-341 343-345 347-349 351-353 355-357 359-361 363-365 367-369 371-373 375-377 379-381 383-385 387-389 391-393 395-397 399-401 403-405 407-409 411-413 415-417 419-421 423-425 427-429 431-433 435-437 439-441 443-445 447-449 451-453 455-457 459-461 463-465 467-469 471-473 475-477 479-481 483-485 487-489 491-493 495-497 499-501 503-505 507-509 511-513 515-517 519-521 523-525 527-529 531-533 535-537 539-541 543-545 547-549 551-553 555-557 559-561 563-565 567-569 571-573 575-577 579-581 583-585 587-589 591-593 595-597 599-601 603-605 607-609 611-613 615-617 619-621 623-625 627-629 631-633 635-637 639-641 643-645 647-649 651-653 655-657 659-661 663-665 667-669 671-673 675-677 679-681 683-685 687-689 691-693 695-697 699-701 703-705 707-709 711-713 715-717 719-721 723-725 727-729 731-733 735-737 739-741 743-745 747-749 751-753 755-757 759-761 763-765 767-769 771-773 775-777 779-781 783-785 787-789 791-793 795-797 799-801 803-805 807-809 811-813 815-817 819-821 823-825 827-829 831-833 835-837 839-841 843-845 847-849 851-853 855-857 859-861 863-865 867-869 871-873 875-877 879-881 883-885 887-889 891-893 895-897 899-901 903-905 907-909 911-913 915-917 919-921 923-925 927-929 931-933 935-937 939-941 943-945 947-949 951-953 955-957 959-961 963-965 967-969 971-973 975-977 979-981 983-985 987-989 991-993 995-997 999-1001 | | | | FOR INFORMATION | | | | |
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| Checked By: VW | DATE: |
| Scale @ A3: As Shown | 3-01 |
| Start Date: 30 July 2020 | C |

Project Title:
FRONTEK TEST BOOTH

Architect:
SYMONITE

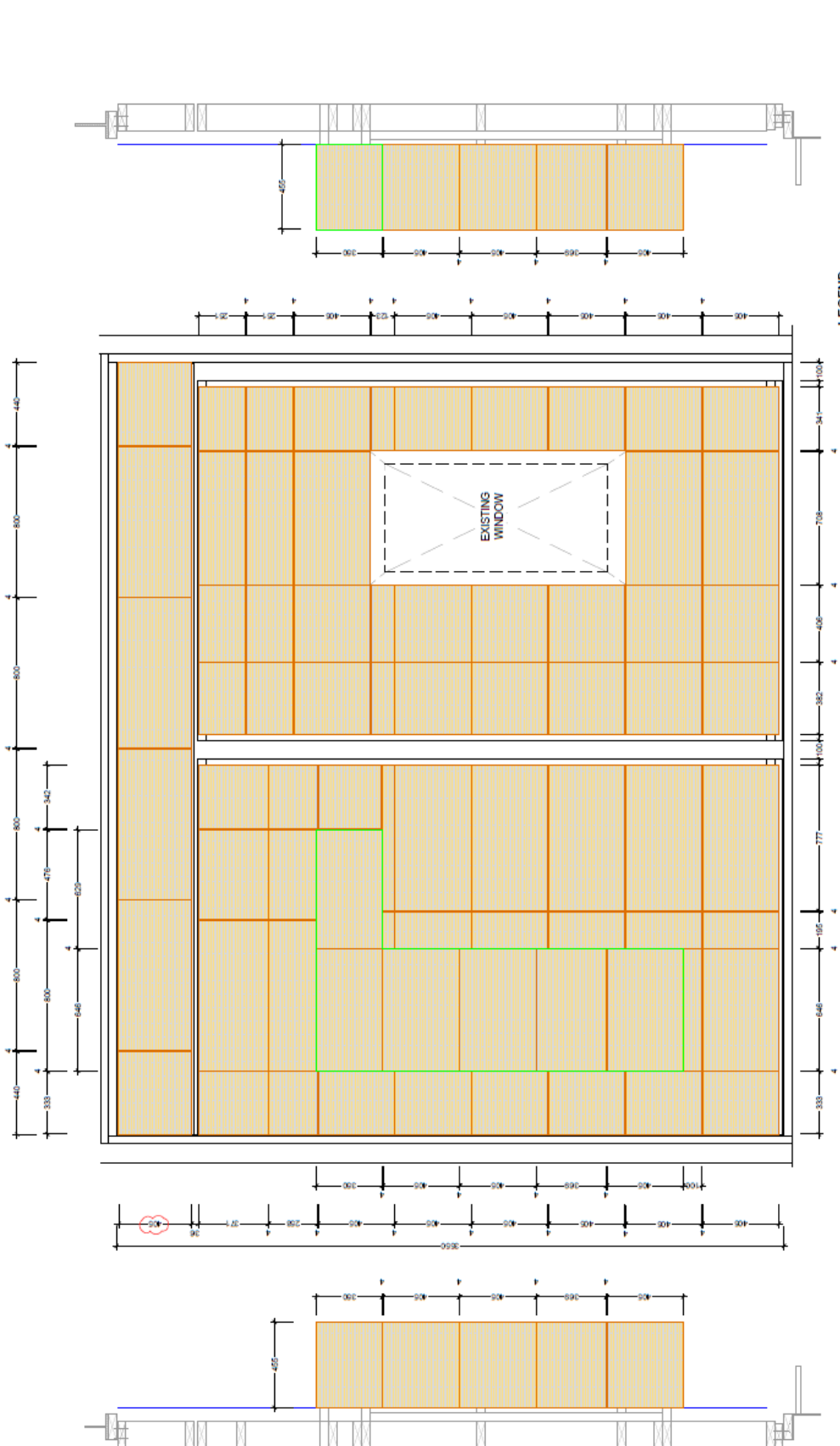
Builder:
SYMONITE

SYMONITE

DRAWINGS MUST BE READ IN CONJUNCTION WITH PROJECT SHEET D-01 AND D-02

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|----------------------------------|------------|------------------------|----|-----|-----|
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| 2 | 17-08-2020 | ISSUED FOR INFORMATION | JM | YV | B |
| 3 | 10-09-2020 | ISSUED FOR INFORMATION | JM | YV | A |
| COMMITTY COMMENTS / NOTES | | | | | |
| PRV/CHK/REV | | | | | |



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Client By: JM
Checked By: VW
Scale @ A3: As Shown
Start Date: 30 July 2020

FOR INFORMATION
3-02
C

Project Title:
FRONTEK TEST BOOTH

Drawing Title:
FRONT & SIDES ELEVATION
- FRONTEK PANEL SIZES

Architect:
SYMONITE
SYMONITE

SYMONITE
SYMONITE PANELS LTD
PO BOX 101 280
100-100 ROAD
TEKAPU 7100
12 BALLARAT ROAD
DUNEDIN

1 FRONT & SIDES ELEVATION 1:20

DRAWINGS MUST BE READ IN CONJUNCTION WITH PROJECT SHEET 0-01 AND 0-02

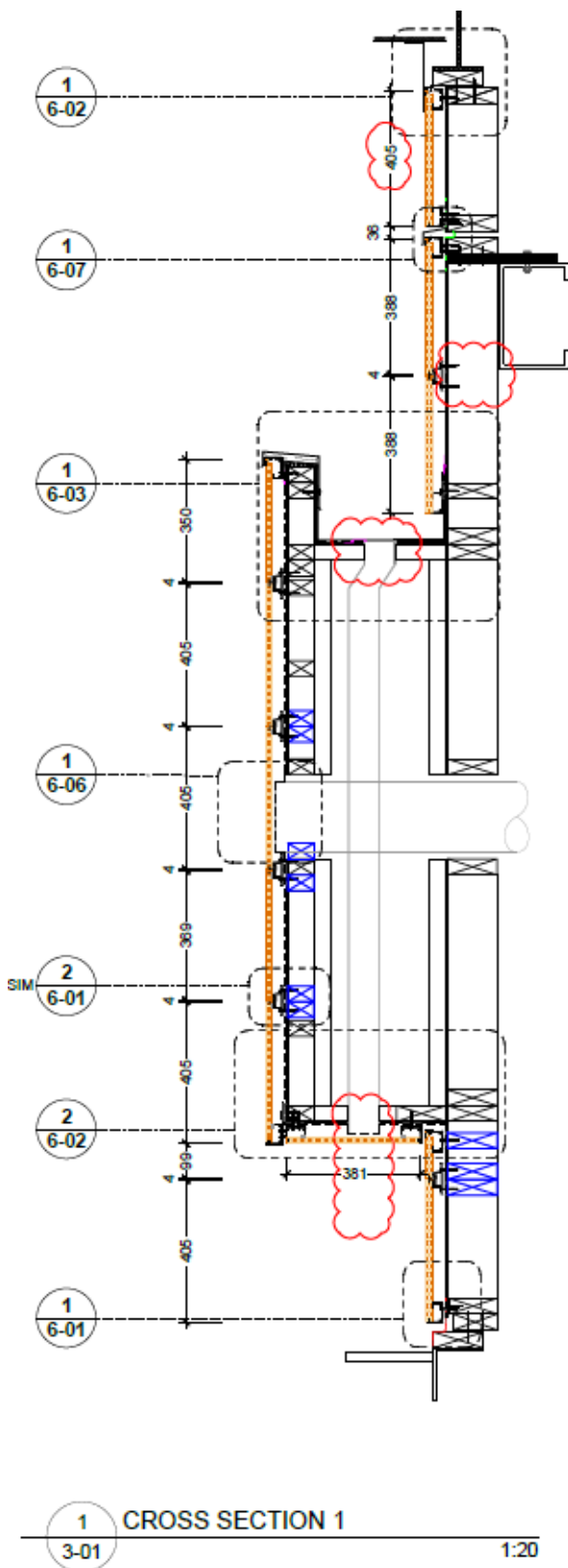
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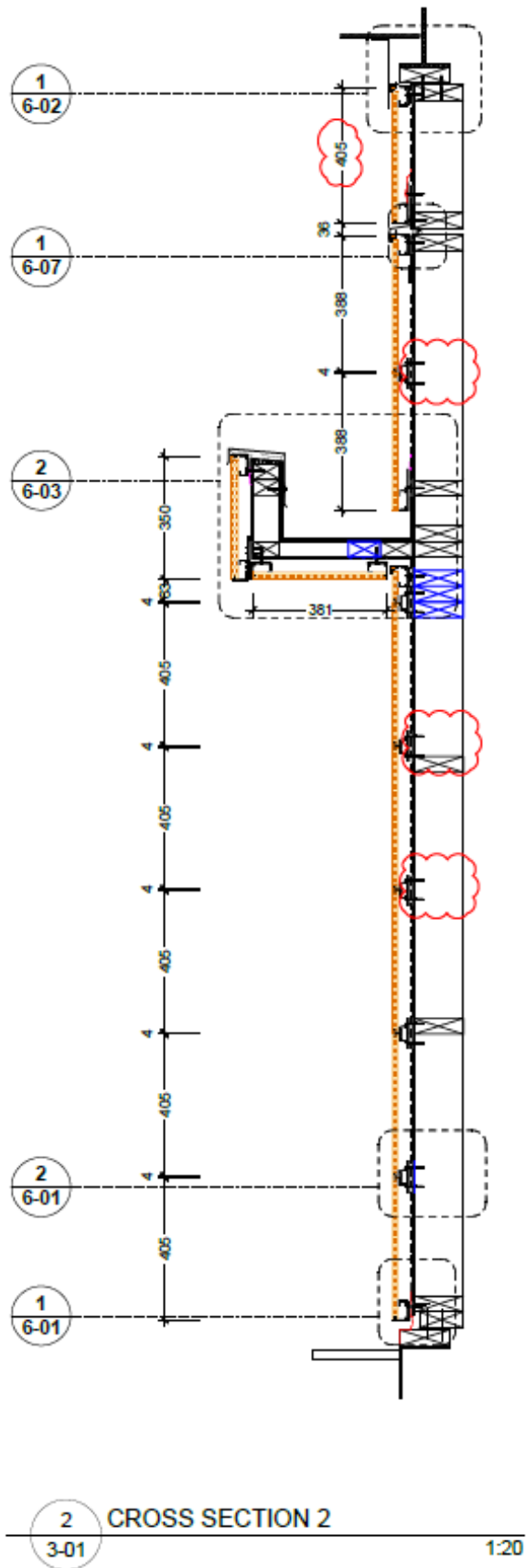
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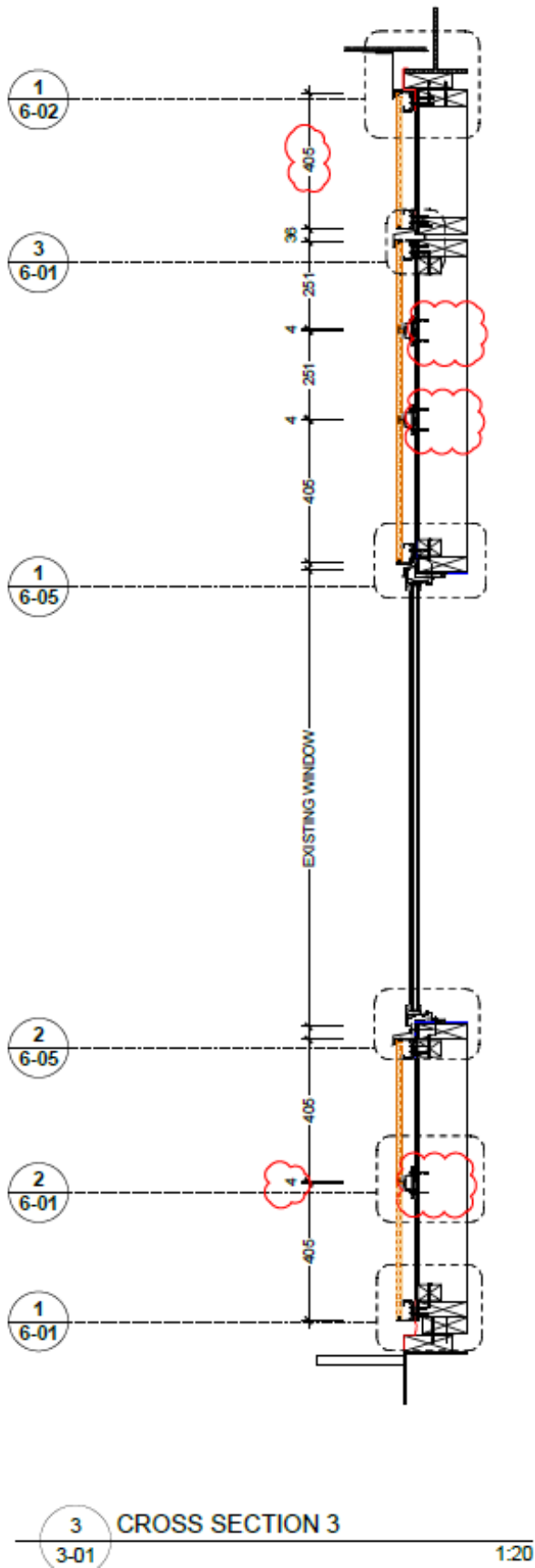
Tested by: John Burgess and Richard Gibbs, IANZ Signatories.

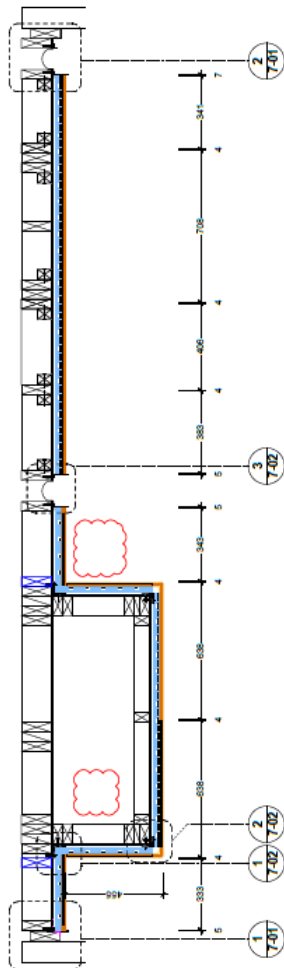
Checked by: RG

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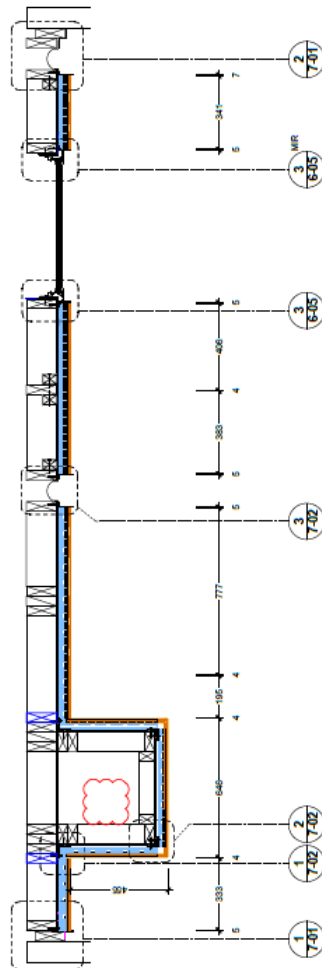








4 CROSS SECTION 4
3-01
1:20

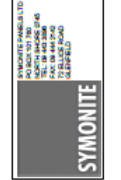


5 CROSS SECTION 5
3-01
1:20

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| 17-10-0000 | ISSUED FOR INFORMATION | JM | VWF | B |
| 15-10-0000 | ISSUED FOR INFORMATION | JM | VWF | A |
| 14-10-0000 | ISSUED FOR INFORMATION | JM | VWF | A |
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| 01-10-0000 | ISSUED FOR INFORMATION | JM | VWF | A |
| 00-10-0000 | ISSUED FOR INFORMATION | JM | VWF | A |

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 SYMONITE PANELS ARE TO BE MANUFACTURED IN ACCORDANCE WITH THE SYMONITE AS/NZS 4284:2010 STANDARD. ALL DIMENSIONS ARE TO BE CHECKED ON SITE PRIOR TO MANUFACTURE OF ANY PANELS. ALL DIMENSIONS ARE TO BE CHECKED ON SITE PRIOR TO MANUFACTURE OF ANY PANELS.



Architect: SYMONITE
 Builder: SYMONITE

Project Title: FRONT-TEK TEST BOOTH

Drawing Title: CROSS SECTIONS

| | | | |
|-----------------|--------------|----------------------|--------------------------|
| Drawn By: JM | Check By: WM | Scale @ A3: As Shown | Sheet Date: 30 July 2020 |
| FOR INFORMATION | | | Sheet No: 5-02 |
| | | | Sheet Count: C |

SYMONITE

SYMONITE PANELS LTD
 1000 NORTH ROAD
 750, 3000 STC
 1000 NORTH ROAD
 GUNSHIELD

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| DRAWN | ISSUED FOR INFORMATION | JUL | AM | B |
| CHECKED | ISSUED FOR INFORMATION | JUL | AM | B |
| APPROVED | ISSUED FOR INFORMATION | JUL | AM | B |
| DATE | COMMENTS | NOTES | | |
| APPROVED: | | | | |

SYMONITE

SYMONITE

ALUCOLUX TEST BOOTH

Project Title:

SECTION DETAILS & DIE DESIGN

Drawing Title:

Drawn By: JM

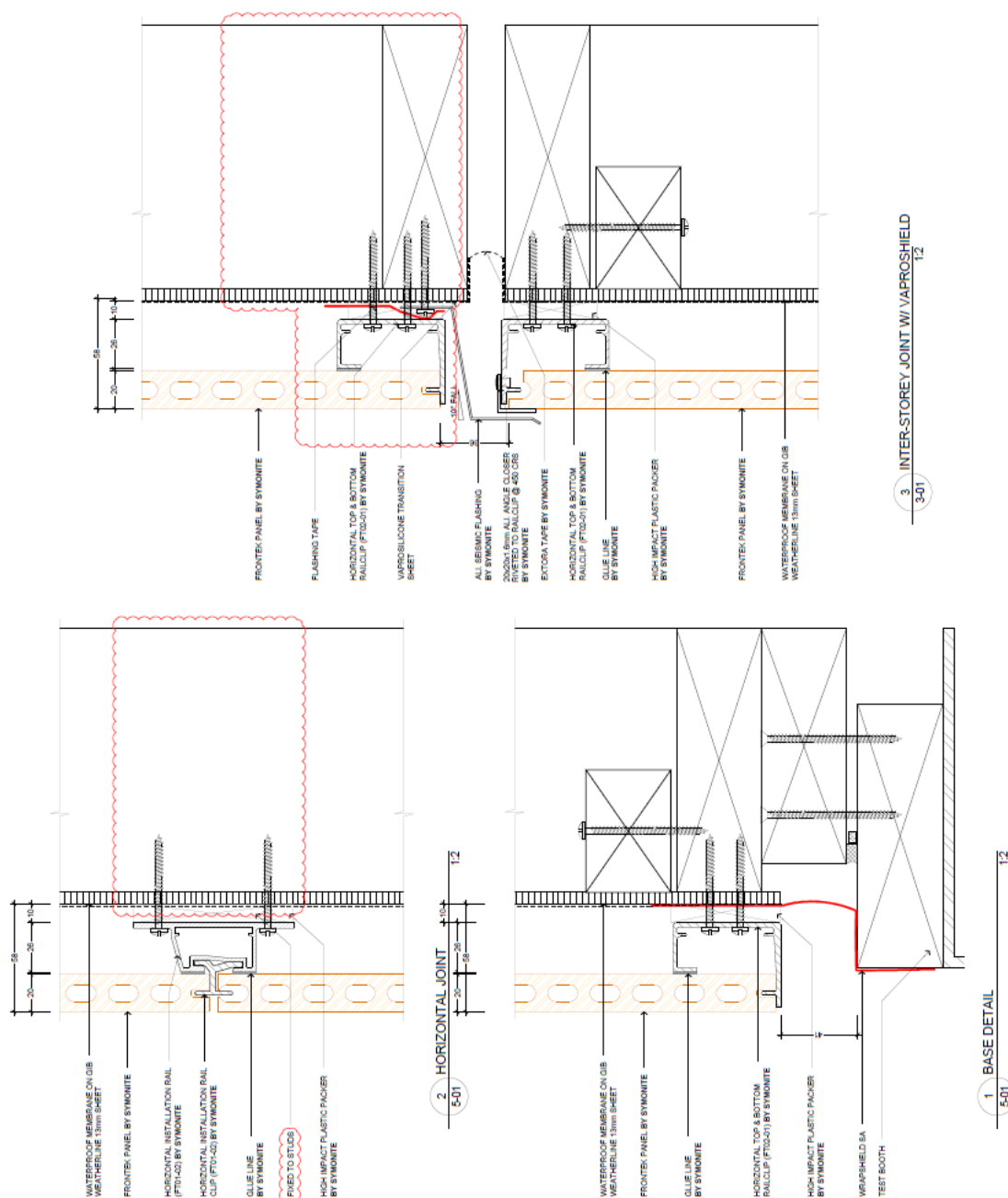
Checked By: VM

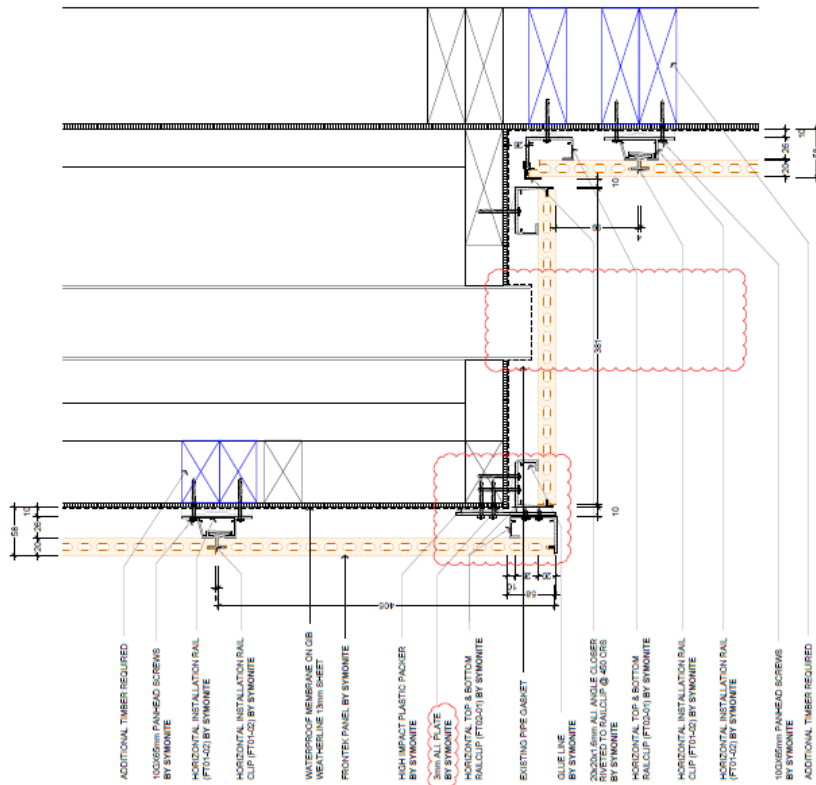
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Date Issued: 30 July 2020

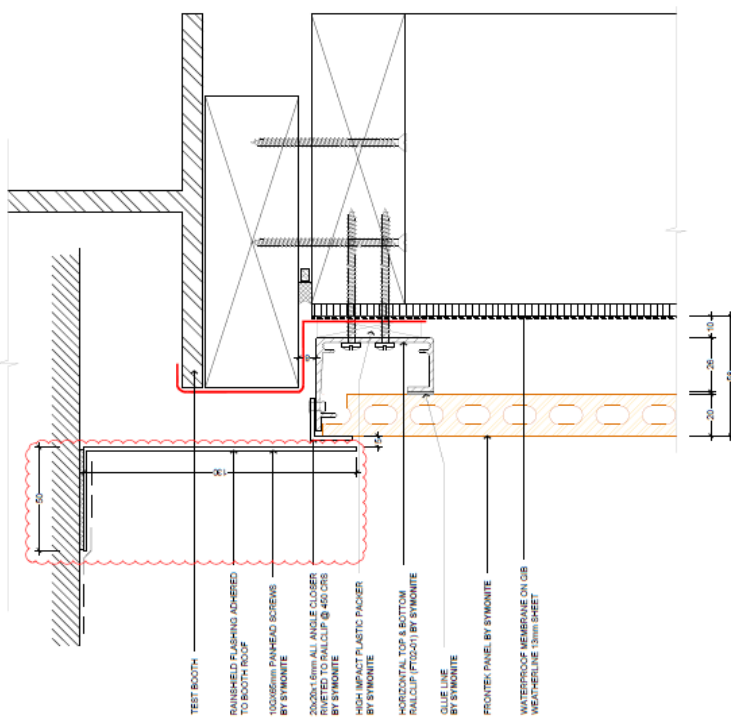
6-01

C





2 COLUMN SOFFIT DETAIL



1 TOP OF BOOTH DETAIL

| | |
|--------------------------|-----------------|
| Drawn By: JM | FOR INFORMATION |
| Checked By: VW | Issue: |
| Scale: @ AS - As Shown | 6-02 |
| Start Date: 30 July 2020 | C |

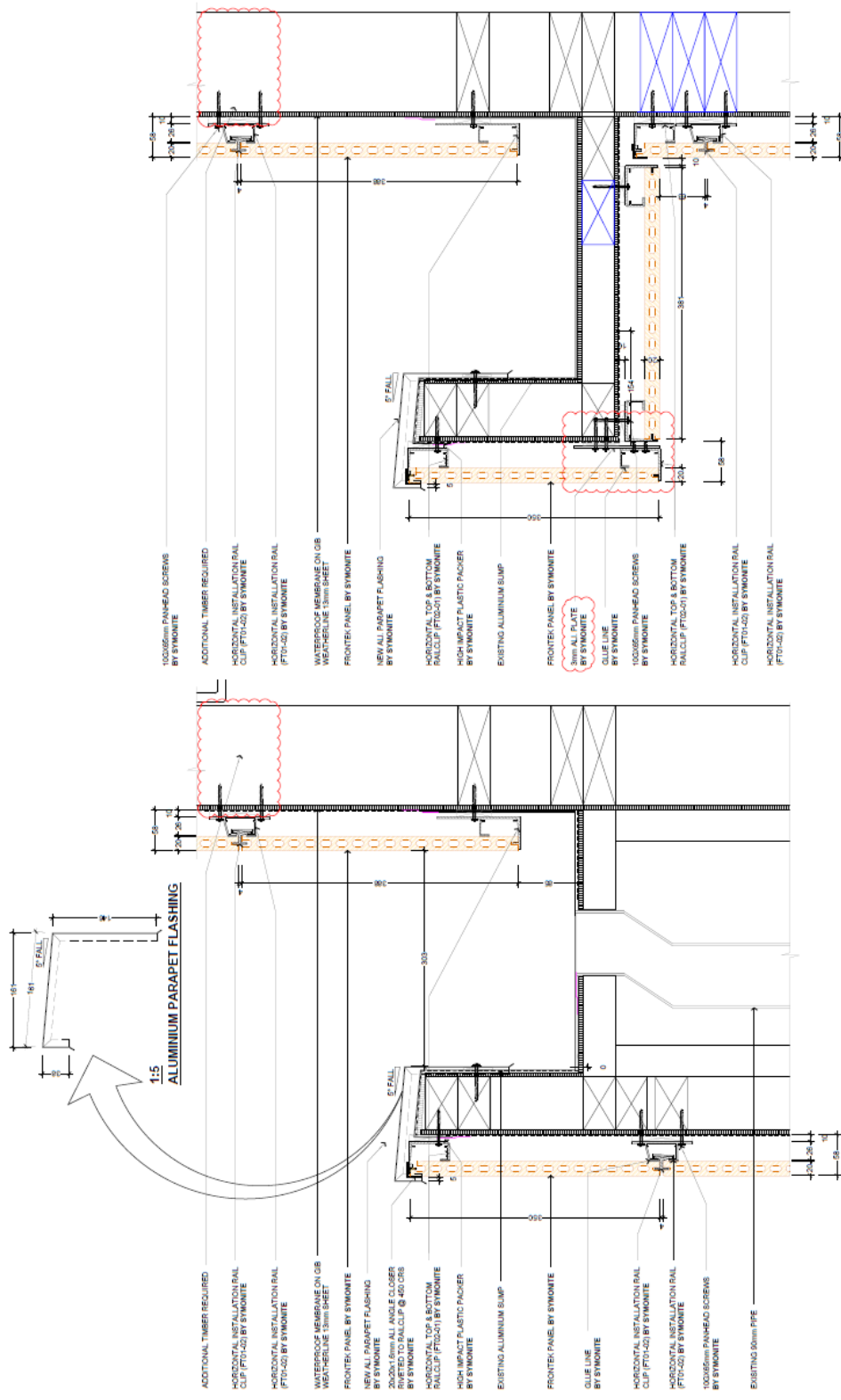
SECTION DETAILS

FRONTEK TEST BOOTH

SYMONITE
SYMONITE

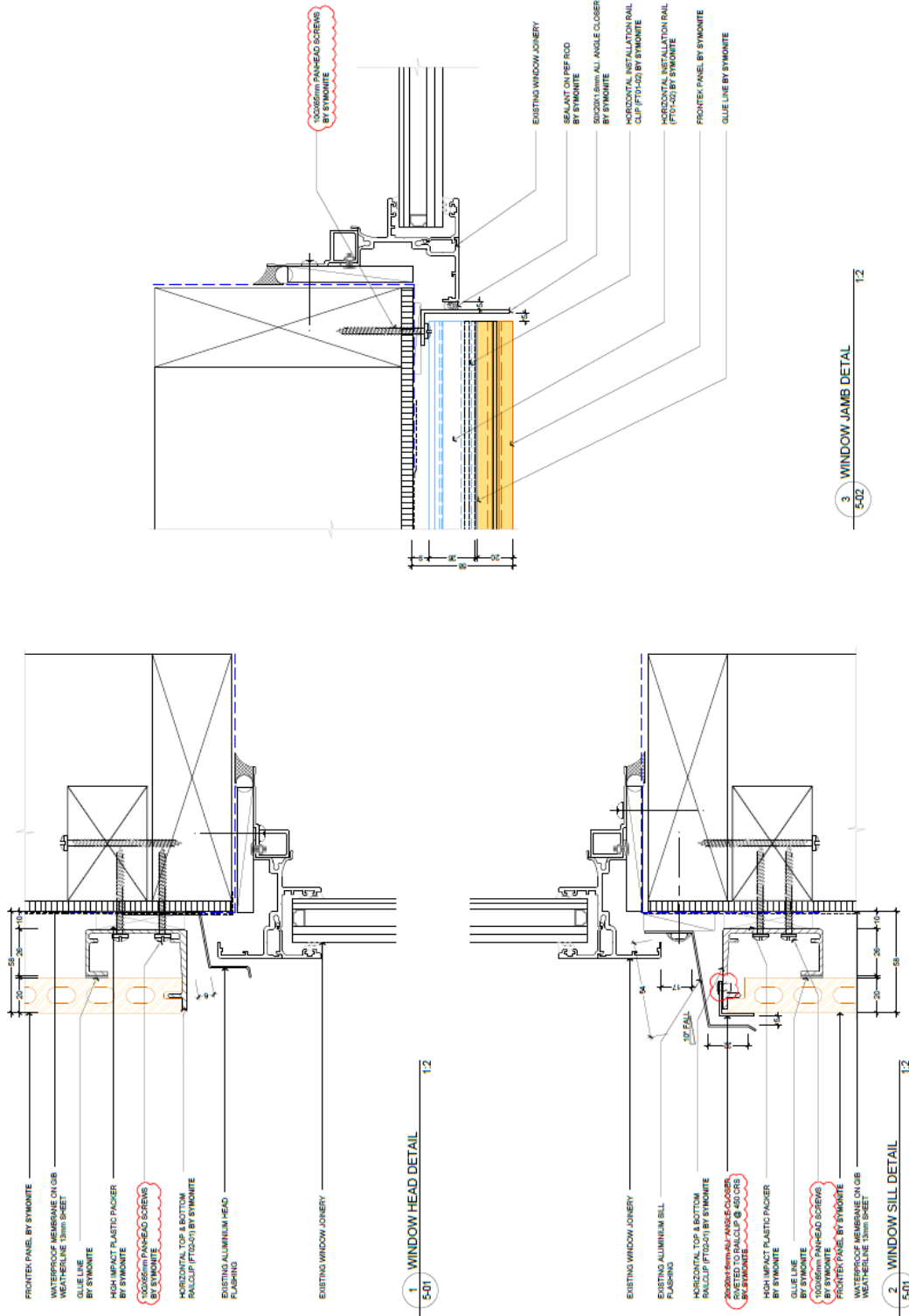
DRAWINGS MUST BE READ IN CONJUNCTION WITH PROJECT SHEET A-01 AND B-02
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 SYMONITE

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| ISSUED FOR INFORMATION | JM | VW | B |
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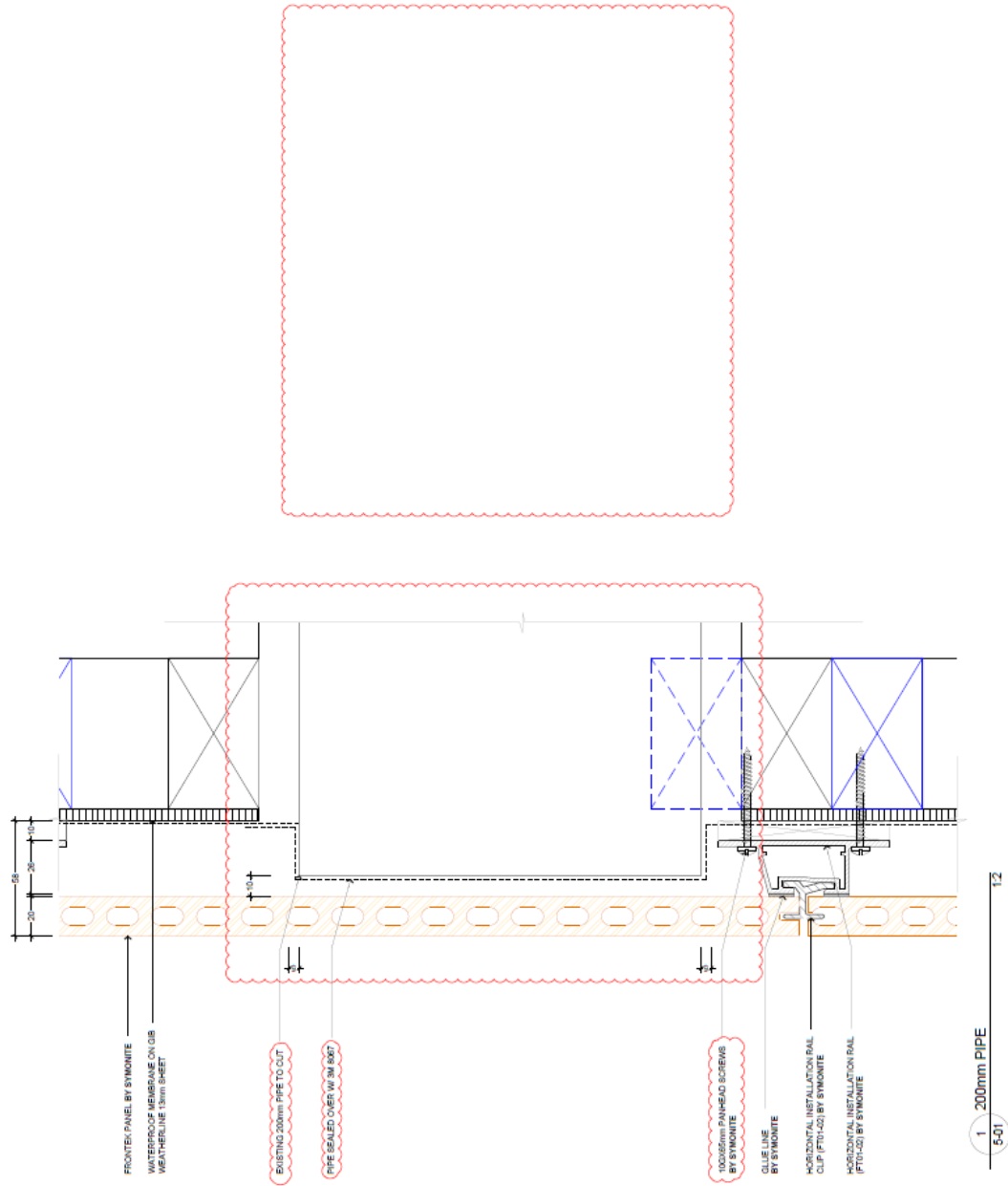


1 PARAPET DETAIL IN COLUMN 1:5
 2 PARAPET - SOFFIT DETAIL 1:5

| | | |
|---|--|---|
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| SYMONITE SYMONITE | | SECTION DETAILS |
| SYMONITE SYMONITE | | FOR INFORMATION Drawn By: JM Checked By: WM Scale: 0-03 As Shown Sheet Date: 30 July 2020 |
| 6-03 C | | |



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|---|--|---|---|---|--|---|



| | | | |
|-----------------|----------------|----------------------|--------------------------|
| Drawn By: JM | Checked By: VM | Scale @ A3: As Shown | Start Date: 30 July 2020 |
| FOR INFORMATION | | | |
| Issue No: | Issue Date: | Issue Name: | Issue Ref: |
| | | 6-06 | B |

Project No: **200mmØ PIPE DETAIL**

Project Title: **FRONTEK TEST BOOTH**

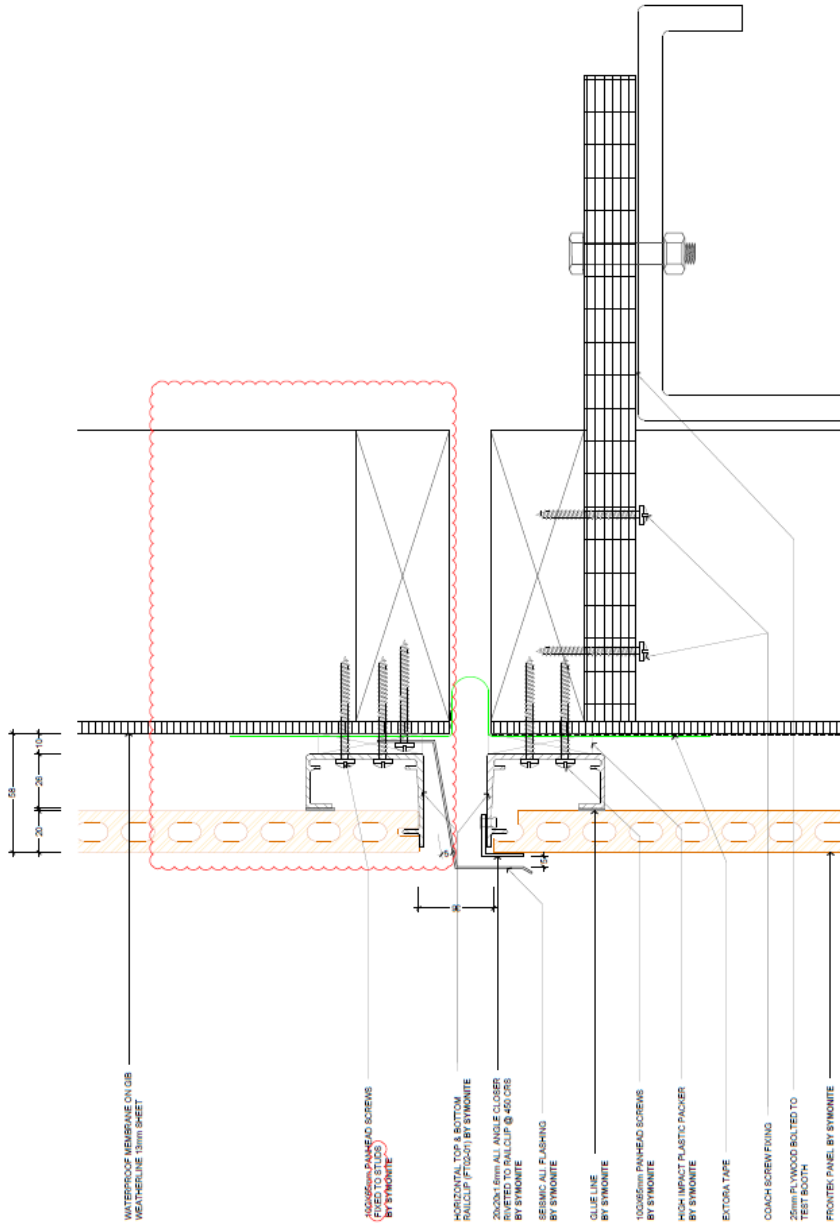
Architect: **SYMONITE**
 Engineer: **SYMONITE**

SYMONITE
 177, 178 & 179
 GARDFIELD

DRAWINGS MUST BE READ IN CONJUNCTION WITH PROJECT SHEET 0-A1 AND 0-A2

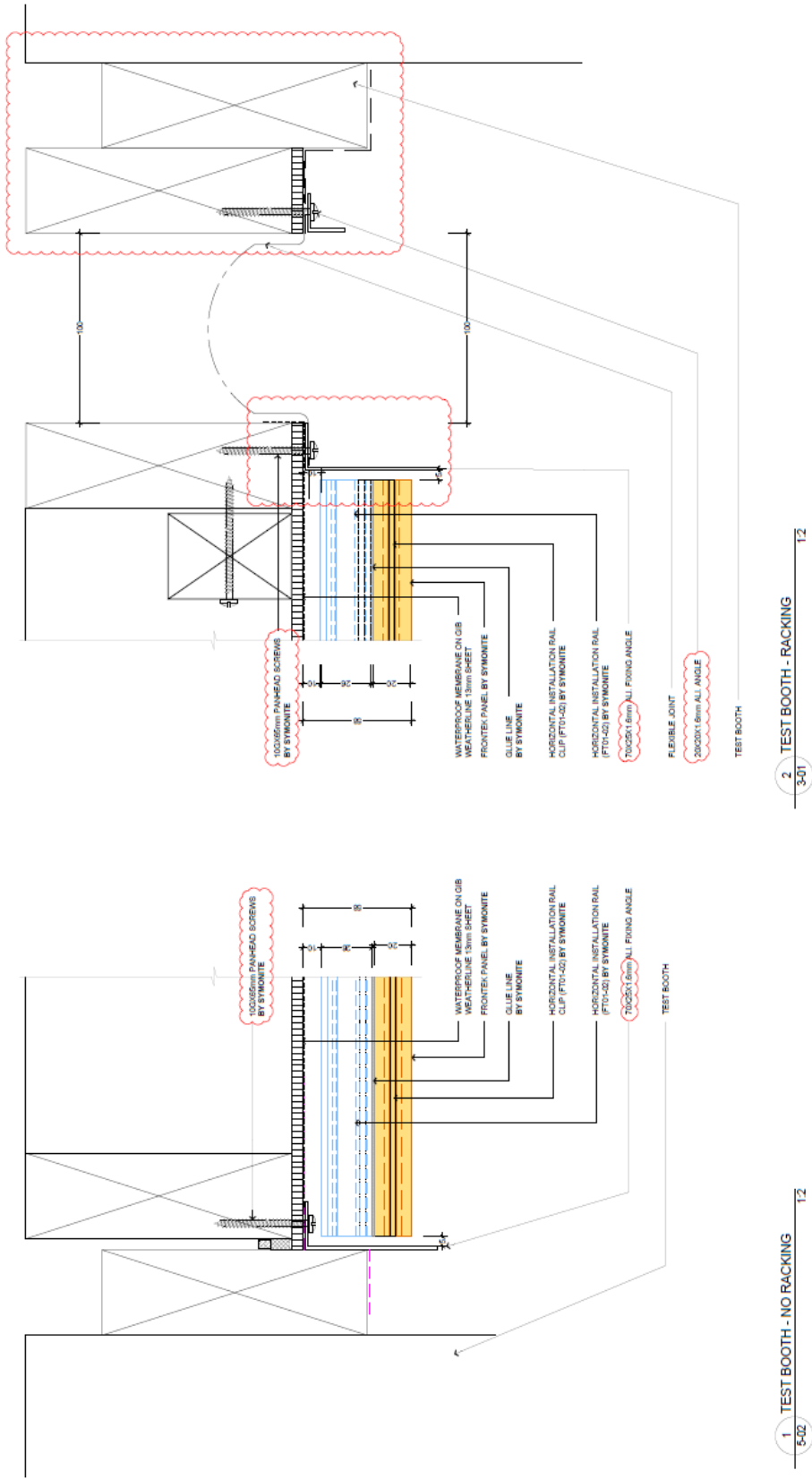
SYMONITE
 177, 178 & 179
 GARDFIELD

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| 17-06-2020 | ISSUED FOR INFORMATION | JM | VW | B |
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| 17-06-2020 | ISSUED FOR INFORMATION | JM | VW | B |
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1 INTER-STOREY JOINT W/ EXTORA TAPE
3-01 12

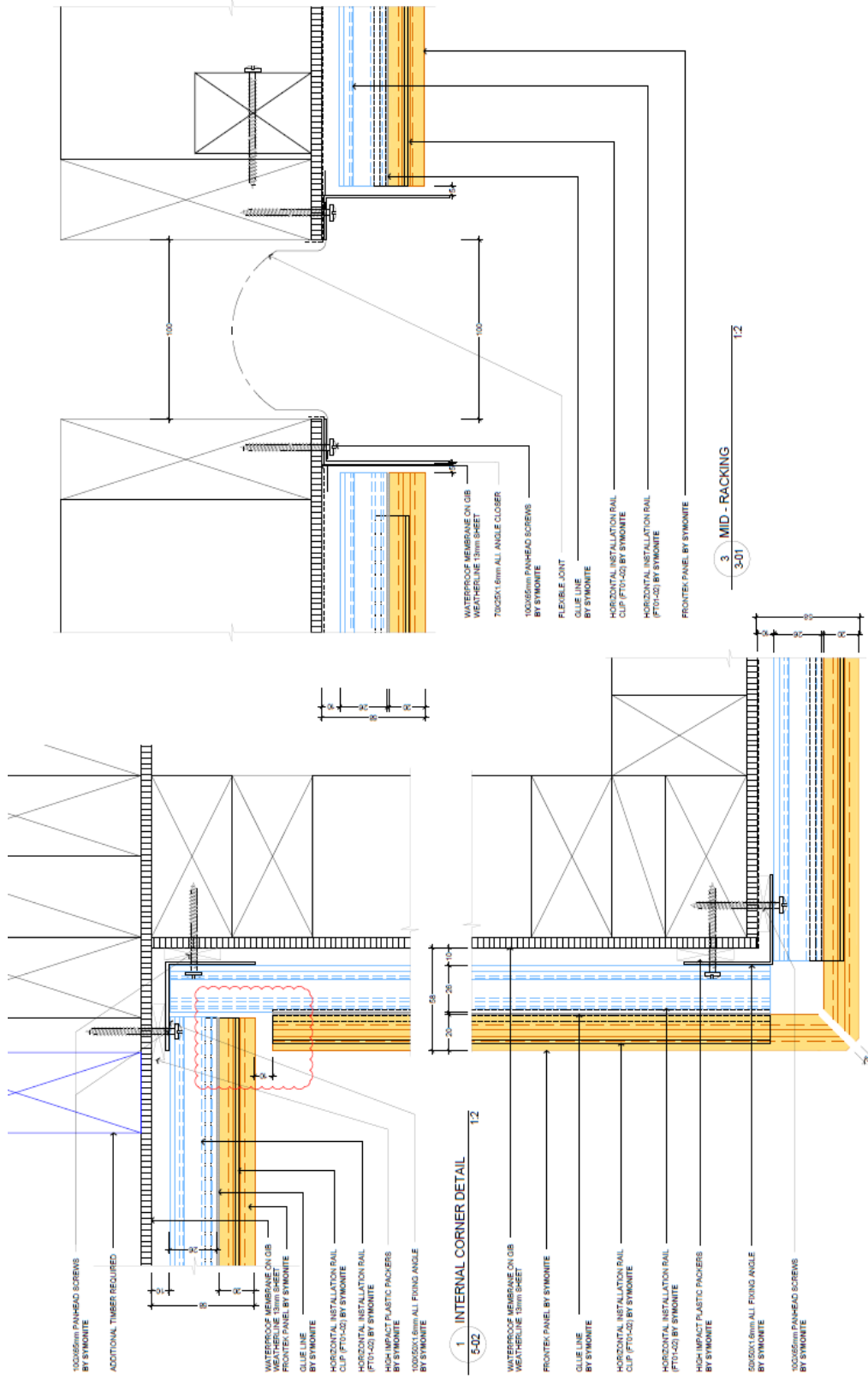
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| 1000x50mm PANHEAD SCREWS (FIXED TO STEEL) BY SYMONITE | 1000x50mm PANHEAD SCREWS BY SYMONITE | 20x20x1.5mm ANGLE CLOSER FINISHED TO RAILCLIP @ 450 CRS BY SYMONITE | 20x20x1.5mm ANGLE CLOSER FINISHED TO RAILCLIP @ 450 CRS BY SYMONITE | SEISMIC ALL FLASHING BY SYMONITE | GLUE LINE BY SYMONITE | 1000x50mm PANHEAD SCREWS BY SYMONITE | HIGH IMPACT PLASTIC PACKER BY SYMONITE | EXTORA TAPE | COACH SCREW FIXING | 25mm PLYWOOD BOLTED TO TEST BOOTH | FRONTEK PANEL BY SYMONITE |
| WATERPROOF MEMBRANE ON JOB WEATHERLINE 15mm SHEET | | | | | | | | | | | |
| 1000x50mm PANHEAD SCREWS (FIXED TO STEEL) BY SYMONITE | | | | | | | | | | | |
| 1000x50mm PANHEAD SCREWS BY SYMONITE | | | | | | | | | | | |
| 20x20x1.5mm ANGLE CLOSER FINISHED TO RAILCLIP @ 450 CRS BY SYMONITE | | | | | | | | | | | |
| SEISMIC ALL FLASHING BY SYMONITE | | | | | | | | | | | |
| GLUE LINE BY SYMONITE | | | | | | | | | | | |
| 1000x50mm PANHEAD SCREWS BY SYMONITE | | | | | | | | | | | |
| HIGH IMPACT PLASTIC PACKER BY SYMONITE | | | | | | | | | | | |
| EXTORA TAPE | | | | | | | | | | | |
| COACH SCREW FIXING | | | | | | | | | | | |
| 25mm PLYWOOD BOLTED TO TEST BOOTH | | | | | | | | | | | |
| FRONTEK PANEL BY SYMONITE | | | | | | | | | | | |



1 TEST BOOTH - NO RACKING 1:2
5-02

2 TEST BOOTH - RACKING 1:2
3-01

| | | | | | |
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| SYMONITE | | Project Title: FRONTEK TEST BOOTH | Drawing Title: PLAN DETAILS | Drawn By: JM | Check By: VW | Scale: 7-02 | FOR INFORMATION |
| SYMONITE | | Client: SYMONITE | Project No: 7-02 | Issue: 7-02 | Start Date: 30 July 2020 | | C |
| SYMONITE | | <p>DRAWINGS MUST BE READ IN CONJUNCTION WITH PROJECT SHEET 0-01 AND 0-02</p> <p>FRONTEK PANELS ARE NOT TO BE SUBSTITUTED BY ANY OTHER PANELS. ANY SUBSTITUTIONS WILL BE AT THE USER'S RISK. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY APPROVALS AND PERMITS FOR ANY SUBSTITUTIONS.</p> | | <p>SYMONITE PANELS LTD 140 KILPATRICK ROAD WILSONS PROMENADE MILTON, QLD 4060 AUSTRALIA TEL: 07 407 288 800 FAX: 07 407 288 801 WWW.SYMONITE.COM.AU</p> | | <p>ISSUED FOR INFORMATION</p> <p>ISSUED FOR INFORMATION</p> <p>ISSUED FOR INFORMATION</p> <p>ISSUED FOR INFORMATION</p> <p>ISSUED FOR INFORMATION</p> <p>ISSUED FOR INFORMATION</p> <p>ISSUED FOR INFORMATION</p> <p>ISSUED FOR INFORMATION</p> | |

10.2. Deflection results

Note: The following results are extracted from serviceability limit state (SLS) displacement measurements undertaken during testing reported elsewhere. The source of the data is report 20-09 issued by facadelab in September 2020, which used the same structural framing (timber studwork) but different cladding. Immediately following the completion of the 20-09 testing, the cladding was removed, and the cladding rails and tiles for Frontek were erected. As noted in the report above, the SLS test pressures were applied in the standard sequence for Frontek, but the displacements were not measured. If SLS displacements are required, the ones reported below may be used.

| Deflection/span ratio | | | | | |
|-----------------------|-----------|-------------------------|---------------------|------|-----------|
| Reference | Span (mm) | Max Net Deflection (mm) | Min span/deflection | Req. | Complies? |
| Stud | 2997 | -7.94 | -377 | >250 | Yes |

| Deflections of Stud | | | | | |
|---------------------|---------------|----------------|----------|-----------|-----------|
| | | Gauge Readings | | | |
| Stage | Pressure (Pa) | Top (mm) | Mid (mm) | Bott (mm) | Nett (mm) |
| | 0 | 0 | 0 | 0 | 0 |
| | 3500 | 7.49 | 16.69 | 11.22 | 7.33 |
| Z1 | 0 | 0.96 | 1.47 | 1.91 | |
| | 0 | 0 | 0 | 0 | |
| | 700 | 2.83 | 3.57 | 1.39 | 1.46 |
| | 1400 | 3.72 | 6.34 | 2.97 | 2.99 |
| | 2100 | 4.6 | 9.23 | 4.85 | 4.5 |
| | 2800 | 5.52 | 12.26 | 7.09 | 5.96 |
| | 3500 | 6.5 | 15.35 | 9.56 | 7.32 |
| Z2 | 0 | 0.12 | 0.27 | 0.37 | |
| | 0 | 0 | 0 | 0 | 0 |
| | -3500 | -6.62 | -20.25 | -18.02 | -7.94 |
| Z3 | 0 | -2.81 | -6.11 | -8.4 | -0.5 |
| | 0 | 0 | 0 | 0 | 0 |
| | -700 | -0.78 | -2.44 | -1.21 | -1.44 |
| | -1400 | -1.54 | -5.23 | -2.84 | -3.04 |
| | -2100 | -2.24 | -8.17 | -5.03 | -4.54 |
| | -2800 | -2.96 | -11.14 | -7.43 | -5.94 |
| | -3500 | -3.8 | -14.24 | -9.86 | -7.41 |
| Z5 | 0 | -0.12 | -0.39 | -0.51 | -0.07 |