

IANBENNIE AND ASSOCIATES

TEST REPORT NO. 2016-086-S2

**“STRUCTACLAD” 75MM MGO/ EPS
COMPOSITE CLADDING SYSTEM**

Specimen tests to

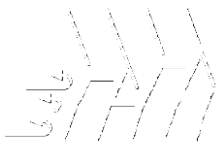
**NCC-2016 VERIFICATION METHODS
FV1 AND V2.2.1**

**for
ReGen Building Solutions**

February 2017



Accredited Laboratory No. 2371
Accredited for compliance with ISO/IEC 17025.



TEST REPORT NUMBER 2016-086-S2

Test Client: AR Building Solutions P/L trading as ReGen Building Solutions
19 Staite Street, Wingfield South Australia 5013

Specimen

Identification: A “StructaClad” 75mm MGO/ EPS Composite Cladding System test specimen measuring 2000 mm in height x 3300 mm in width was installed on a timber stud wall by the client. The sample included a 600 mm recess, window, meter box, control joints, wall junctions, parapet and balcony drainage conditions. The specimen was not rendered for the tests. Specific details of the specimen are given in the drawings provided by the Client and are included in Appendix C.

Construction: For the purposes of the NCC the specimen was deemed to be a Cavity Wall utilising appropriate sarking to prevent water ingress to the stud framing. For the purposes of observations during the test, acrylic sheets were used as the internal lining on the stud frame. Holes were introduced through the internal lining to create an air infiltration of 1.6 L/s.m² at 150 Pa of pressure on the sample, being the highest allowable infiltration rate specified in AS/NZS 4284, however the air infiltration of the sample was limited to 0.36 L/s.m² by the sarking.

Test Method: NCC-2016 Weatherproofing Verification Methods V2.2.1 and FV1 with test procedures in accordance with Australian Standard AS/NZS 4284:2008, Testing of building facades.

Nominated serviceability limit state pressures: + 1800 Pa and –1800 Pa

Test Date(s): 10th November 2016.

Requirement: The compliance requirements of the NCC-2016 Weatherproofing Verification Methods V2.2.1 & FV1 are given in Appendix B.

Conclusions: The specimen passed all the compliance requirements of the NCC-2016 Weatherproofing Verification Methods V2.2.1 & FV1 at the nominated test parameters. Complete details of all tests conducted and results are given in the body of this report.

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Report Distribution:

Ian Bennie & Associates3
ReGen Building Solutions..... PDF



Derek Dubout 16 February 2017
Authorised Signatory

TEST METHODS & PARAMETERS

Test Sequence

NCC-2016 Weatherproofing test procedures were conducted in accordance with Australian Standard AS/NZS 4284:2008, Testing of building facades, as detailed in Appendix A in the following sequence:

Static Pressure Wind Load Test.

Positive and negative serviceability limit state pressures were applied to the external face of the specimen for periods of 1 minute each.

Static Pressure Water Test.

A water penetration test was then carried out in accordance with Clause 8.5 of AS/NZS 4284:2008 at a static pressure of 540 for a period of 15 minutes.

Cyclic Pressure Water Test.

A water penetration test was then carried out in accordance with Clause 8.6 of AS/NZS 4284:2008 at the cyclic pressures of 540 – 1080 Pa for 5 minutes.

Cyclic Pressure Water Test with 6mm Holes in Cladding.

6mm diameter holes were inserted in the external face of the specimen at the following locations:

- (AA) Wall/window joint at 3/4 height of the window
- (BB) Immediately above the window
- (CC) Through the external sealing of the vertical and horizontal control joints
- (DD) Above the meter box and the downpipe penetrations.

Water penetration test were then carried out in accordance with Clause 8.6 of AS/NZS 4284:2008 at the Static and Cyclic pressures as detailed above.

Static Pressure Water Test with Internal Lining Removed.

The internal acrylic lining of the sample was removed and a static water penetration test was then carried out in accordance with Clause 8.5 of AS/NZS 4284:2008 at a static pressure of 50Pa for a period of 15 minutes.

Test Equipment

Water was applied via sprays located 300 mm away from the outdoor face of the test specimen. Water flow rate to the sprays was measured with a calibrated pressure gauge to an accuracy of 2% and was maintained at a level of 0.05 l/s.m² over the test area throughout the test. Water application was maintained continuously and water was observed to evenly cover the exterior face of the test specimen. All pressure transducers are calibrated against NATA certified manometers and may be taken to have a measurement accuracy of 1%.

Test Requirement

As per the Compliance requirements of NCC-2016 Weatherproofing Verification Methods V2.2.1 and FV1 that are given in Appendix B.

TEST RESULTS

Static Pressure Wind Load Test

The loads were sustained and there was no visible evidence of any cracking in the cladding.

Static Pressure Water Test

No leakage through the cladding system was observed during the test.

Cyclic Pressure Water Test

No leakage through the cladding system was observed during the test.

Cyclic Pressure Water Test with 6mm Holes in Cladding

No leakage through the cladding system was observed during the test.

Static Pressure Water Test with Lining Removed

No leakage through the cladding system was observed during the test and there was no pooling of water on the top-hat battens.

APPENDIX A - TEST PROCEDURES FOR AS4284:2008

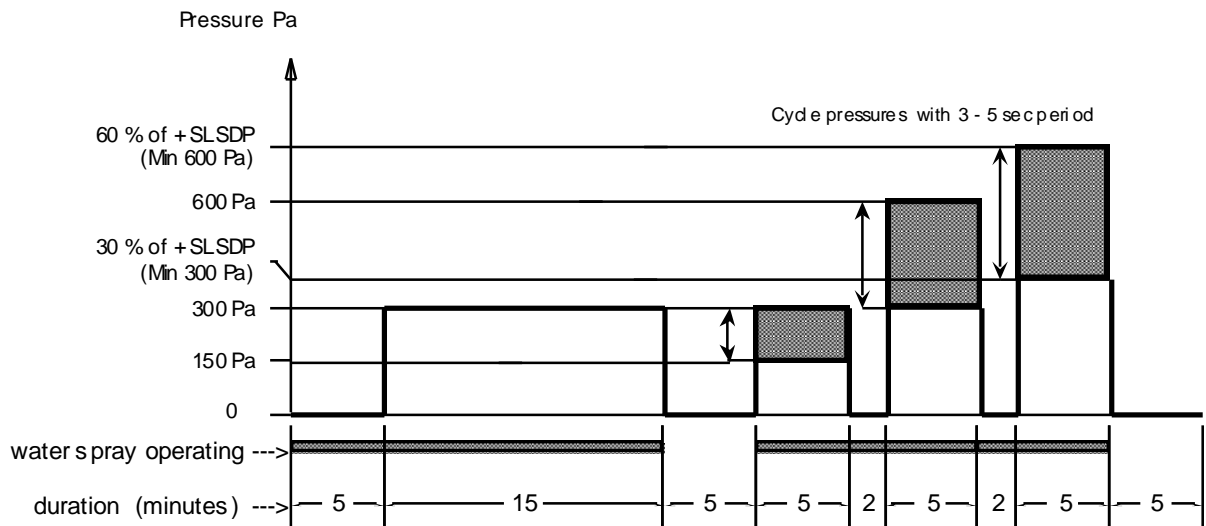
Water Penetration Tests

Test Parameters

Test pressures :	Static	30% of W_s (at least 300 Pa)	duration = 15 minutes
	Cyclic	15% - 30% of W_s	duration = 5 minutes
		20% - 40% of W_s	duration = 5 minutes
		30% - 60% of W_s	duration = 5 minutes

Water application rate : 0.05 L/m².s

Water penetration test sequence



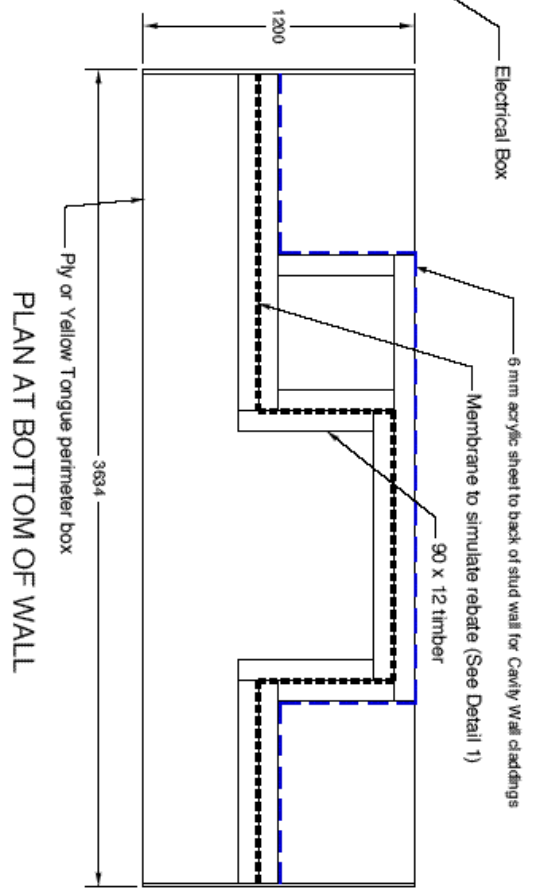
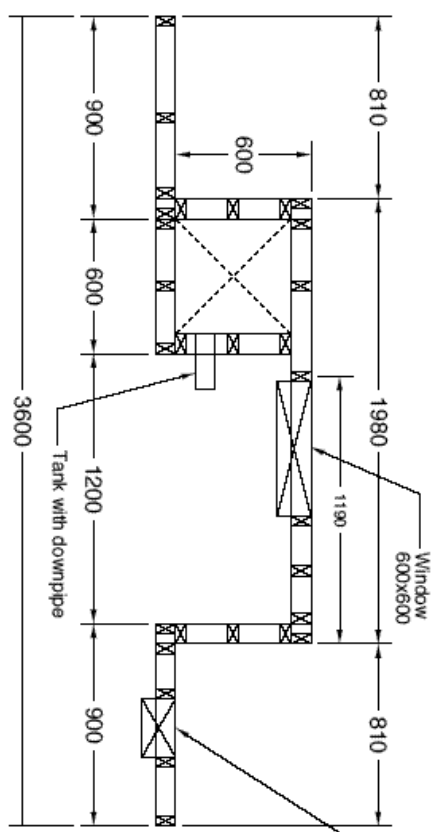
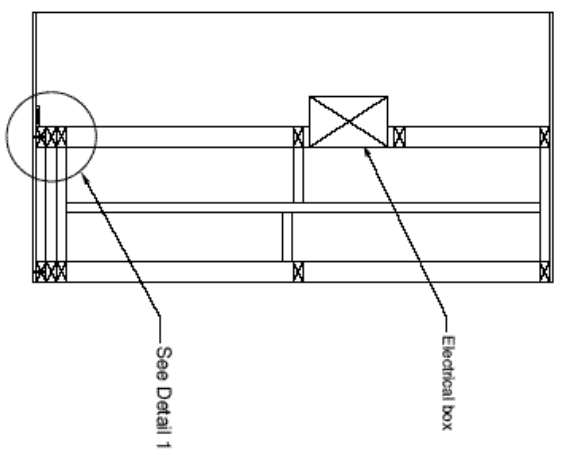
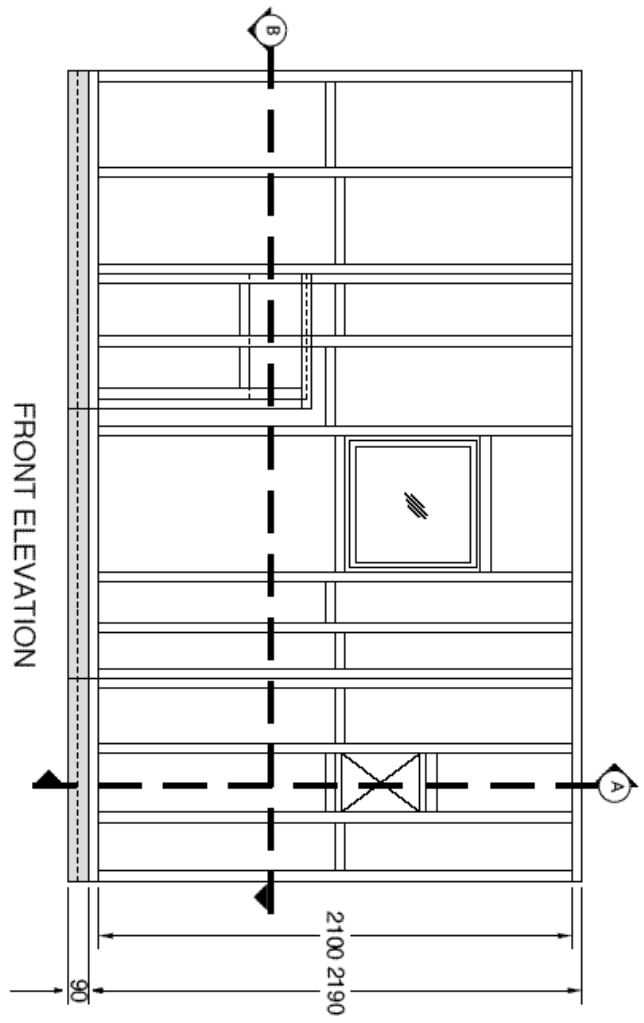
APPENDIX B - COMPLIANCE REQUIREMENTS FOR NCC 2016

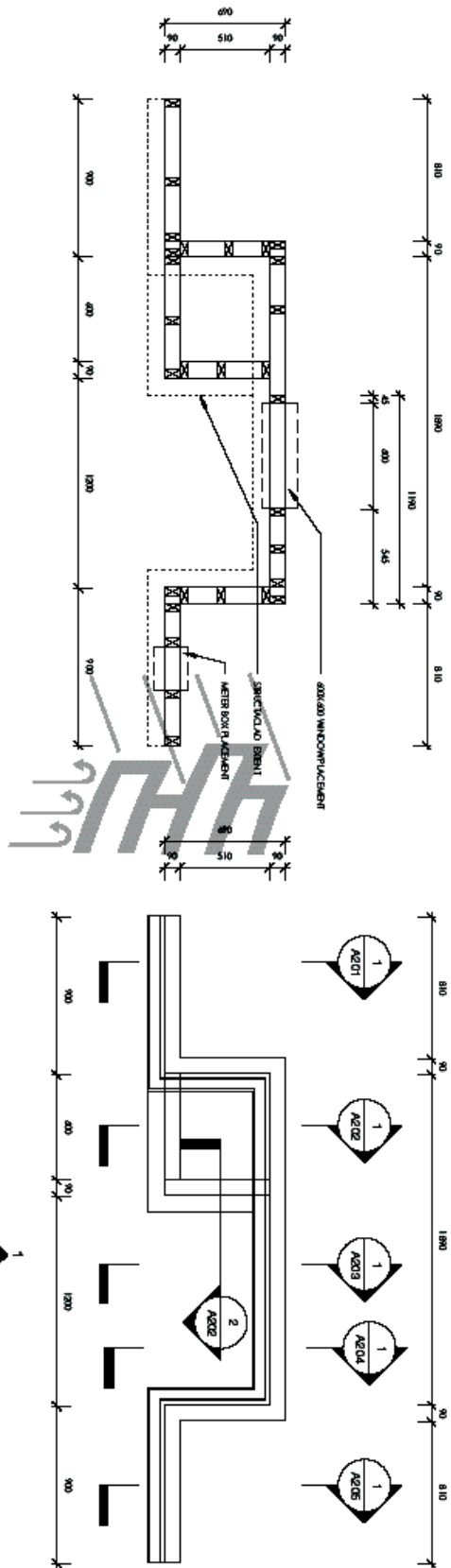
Compliance requirements:

- (i) A **direct fix cladding wall** and **unique wall** are verified for compliance with **FP1.4** if there is no presence of water on the inside surface of the facade.

- (ii) A **cavity wall** is verified for compliance with **FP1.4** if there is no presence of water on the removed surface of the cavity, except that during the simulation of the failure of the primary weather-defence or sealing, water may—
 - (A) transfer to the removed surface of the cavity due to the introduced defects (6 mm holes); and
 - (B) contact, but not pool on, battens and other cavity surfaces.

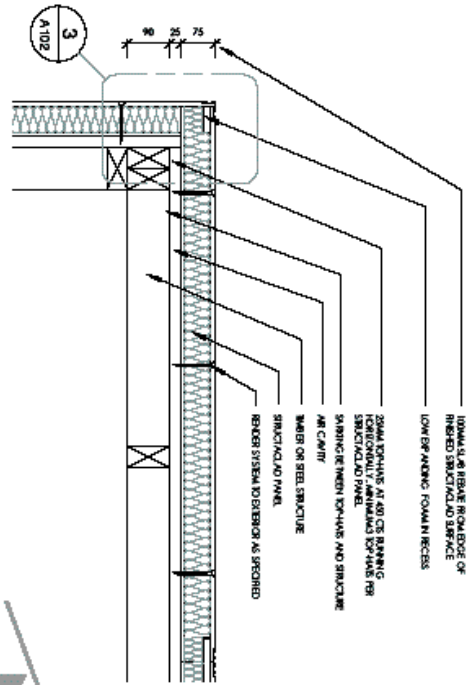
NCC Verification Sample - Stud Wall Details



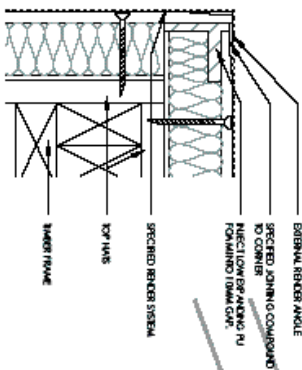


1
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CLIENT:		REGEN BUILDING SOLUTIONS		PLAN	
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		DRAWING NO. 05 - A101 REVISION C4		- FOR TESTING - REGEN BUILDING SOLUTIONS	

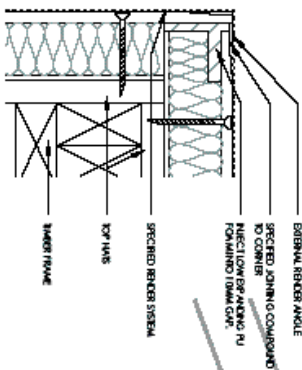


1
1:10
FIXING PLAN



2
1:10
PANEL CUT DIAGRAM

3
1:5
FIXING PLAN - Callout 1



REGEN BUILDING SOLUTIONS

FIXING DETAILS

- FOR TESTING -

CURTAIN:

0 10 20 30 40 50mm

PRINT REDUCTION BAR | A3 SHEET

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B	typical orientation detail, firm		04/10/16
C4	redraft issuance		20/10/16

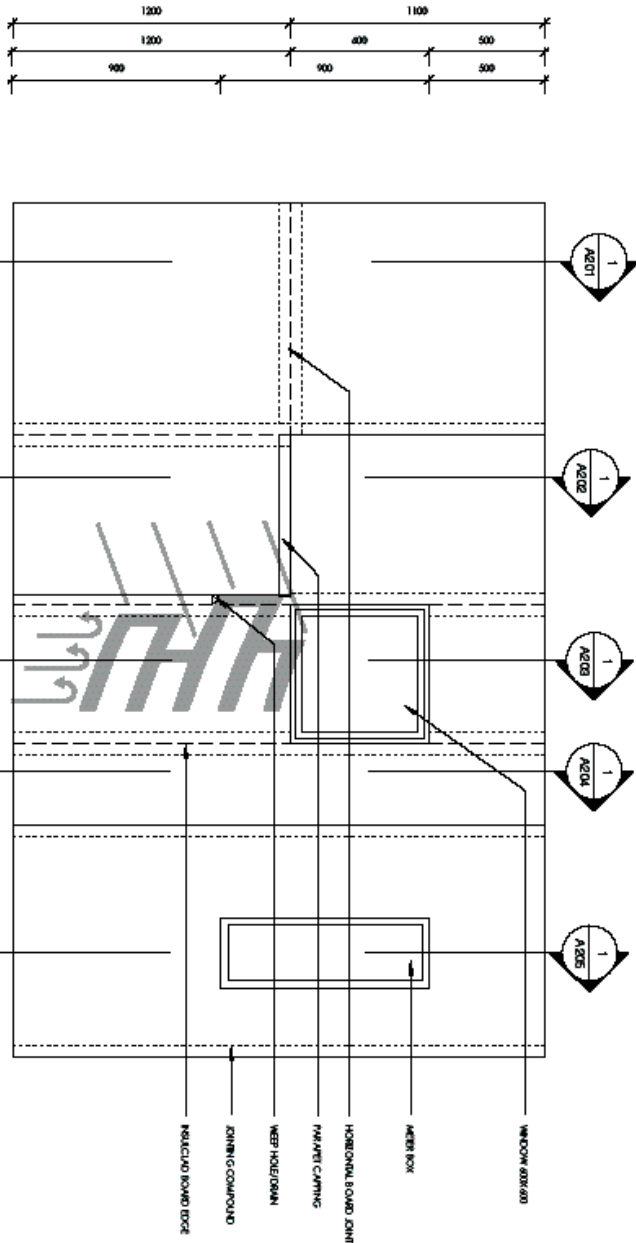
STRUCTACLAD
STATE ST, WINGFIELD

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SCALE: As indicated
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APPROVED: Signl

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REVISION C4



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- FOR TESTING -

CLIENT:

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C4	reding issuance		20/10/16

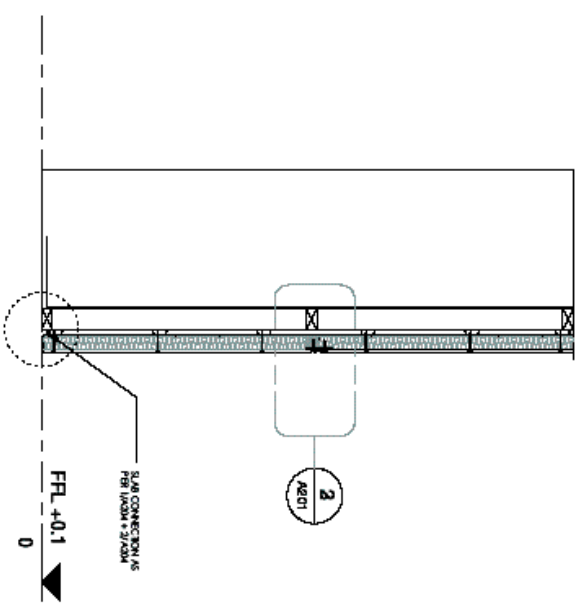
STRUCTACLAD
STATE ST, WINGFIELD

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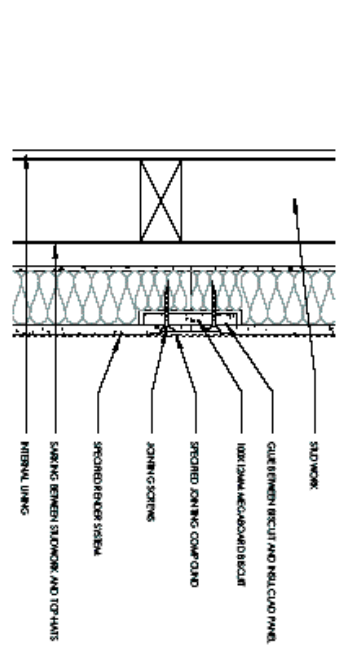
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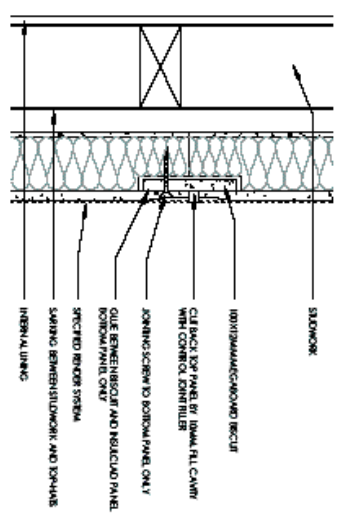
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APPROVED: [Signature]



1 SECTION 1
1:20



2 SECTION 1 - Callout 1
1:5



3 SECTION 1 - HORIZONTAL INSTALL CONTROL JOINT DETAIL
1:5

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SECTION 1 - HORIZONTAL INSTALL

- FOR TESTING -

CLIENT:

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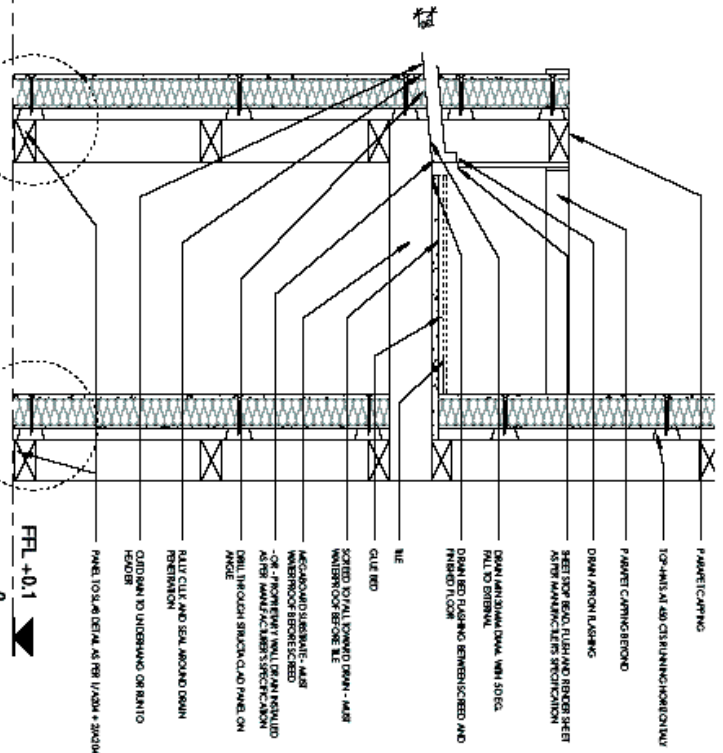
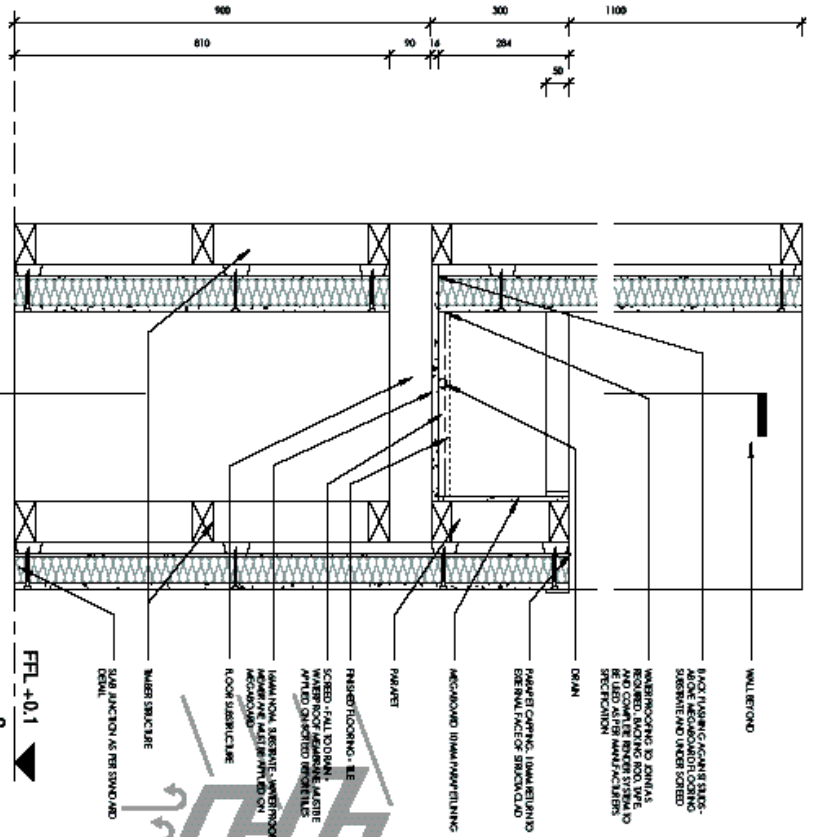
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B	top-hot orientation detail, 17m		04/10/16
C4	reding issuance		20/10/16

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APPROVED - [Signature]	

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1 SECTION 2
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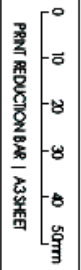
2 SECTION 6
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SECTION 2 - PARAPET

- FOR TESTING -

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B	top-hat orientation detail, 17m	04/10/16
C1	testing issuance	20/10/16

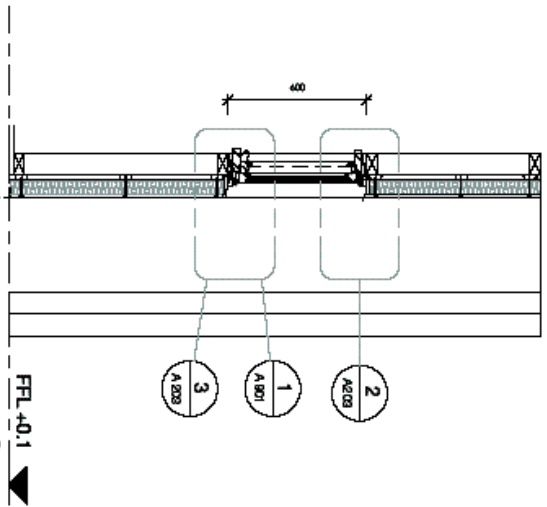
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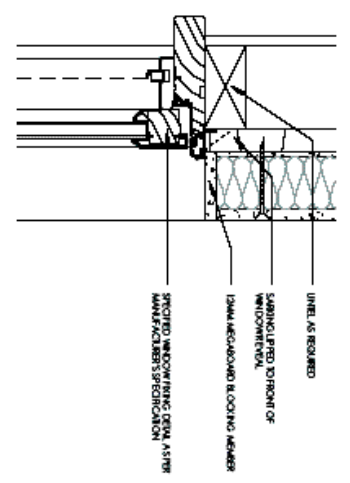
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APPROVED - (ign)

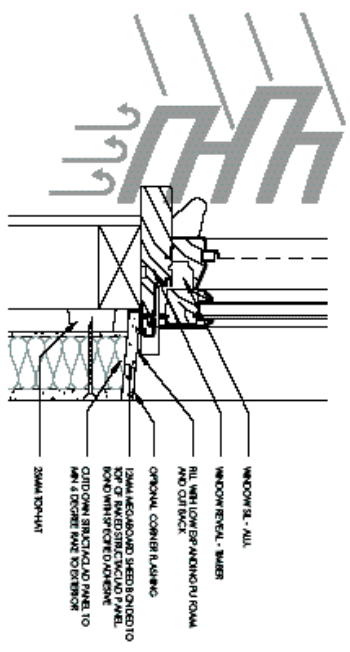
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REVISION C4



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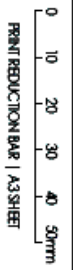


3 SECTION 3 - Callout 2
1:5

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SECTION 3 - WINDOW TYP.

- FOR TESTING -



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No.	DESCRIPTION	
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B	typical orientation details. mtr	04/10/16
C4	reding issuance	20/10/16

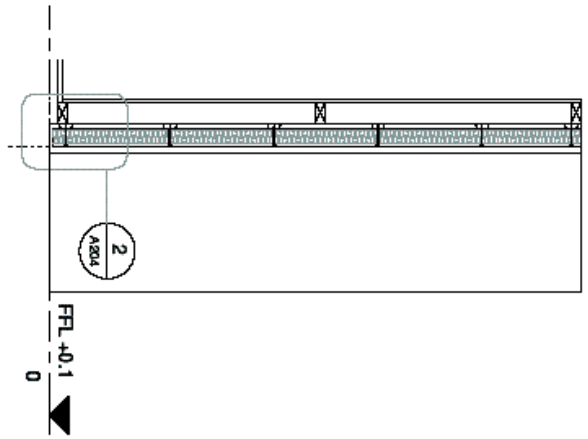
STRUCTACLAD
STATE ST, WINGFIELD

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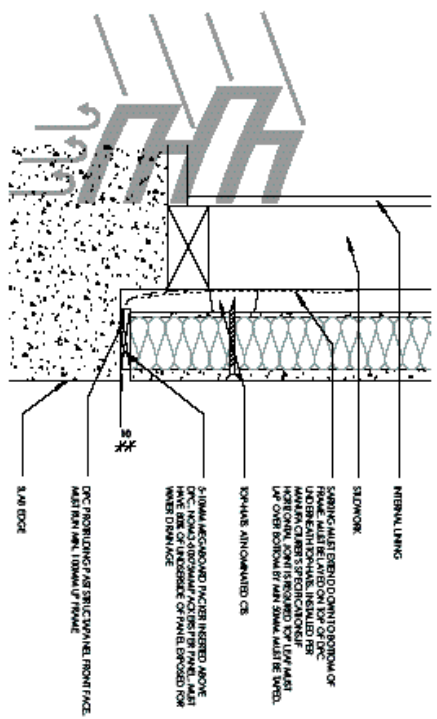
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APPROVED: Signl

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REVISION C4



1 SECTION 4
1:20



2 SLAB JUNCTION - TYP
1:5

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SECTION 4 - SLAB JUNCTION TYP.

- FOR TESTING -

CLIENT:

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PRINT REDUCTION BAR | A3 SHEET

No.	DESCRIPTION	AMENDMENT	DATE
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B	typical orientation detail. Min		04/10/16
C4	testing issuance		20/10/16

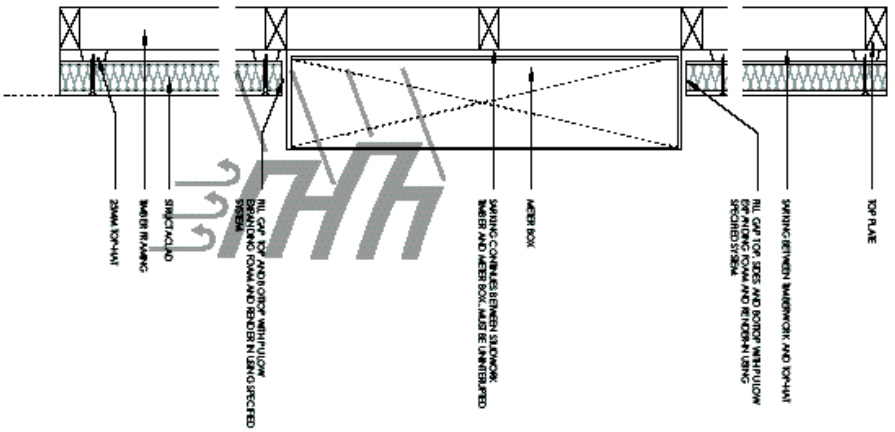
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SCALE As indicated
DRAWN woyoung - building design
APPROVED - [Sign]

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REVISION C4



1 SECTION 5
1:10

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SECTION 5 - METER BOX TYP.

- FOR TESTING -

CLIENT:

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No.	DESCRIPTION	AMENDMENT	DATE
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B	Top-hat orientation detail; trim		04/10/16
C4	Testing Issuance		20/10/16

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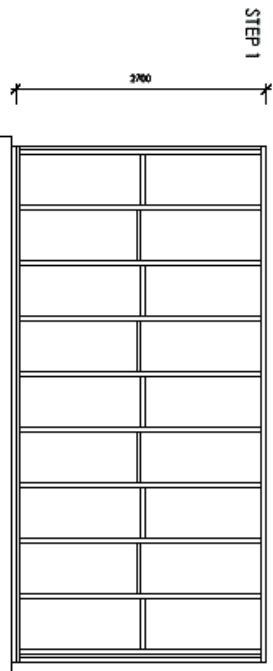
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REVISION
C4

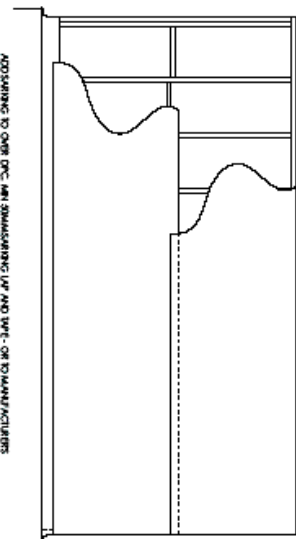
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SCALE 1:10
DRAWN wojcchik - building - design
APPROVED - [Signature]

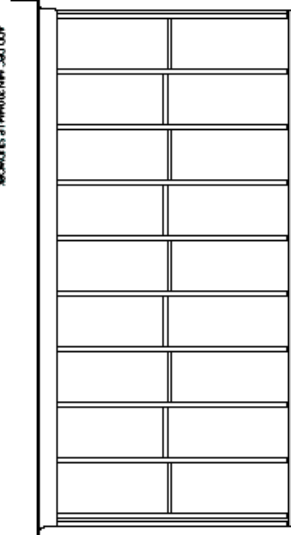
STRUCTACLAD PERITICAL PANEL INSTALL PROCEDURE
2700X1200 PANELS



STEP 1



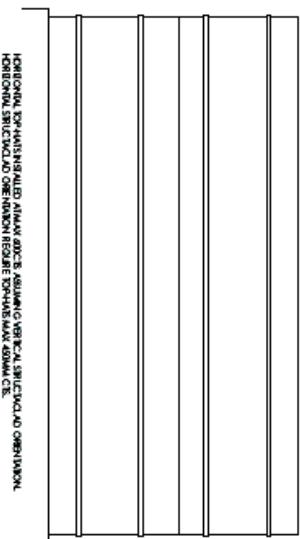
STEP 2



ADD ONE MILLIMETRAL SHIMS OVER
BEFORE THE DPC CAN BE TO COVER 3.0MM RELEVANT WHEN FOLDED SHAP.
OUTLOOK EMBROIDERED SHIM EDGE IS REQUIRED.



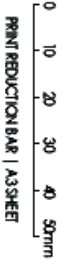
STEP 4



CLIENT: **REGEN BUILDING SOLUTIONS**

INSTALL 1

- FOR TESTING -



No.	DESCRIPTION	AMENDMENT	DATE
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B	top-hat orientation detail: trim		04/10/16
C4	testing issuance		20/10/16

STRUCTACLAD
STATE ST, WINGFIELD

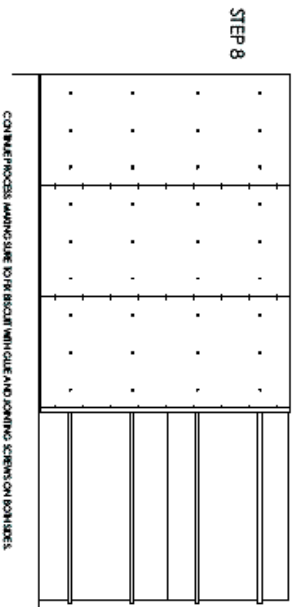
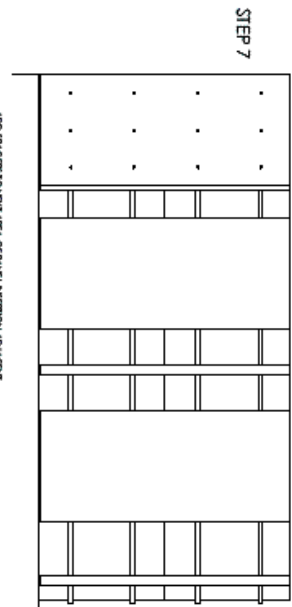
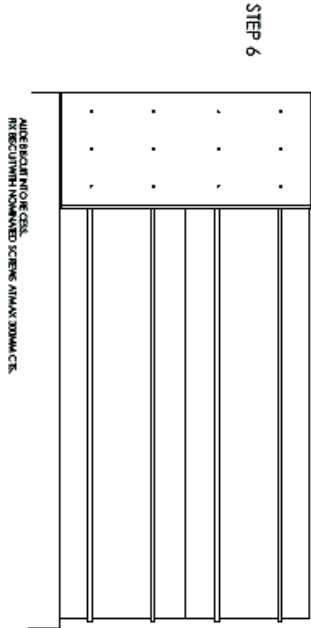
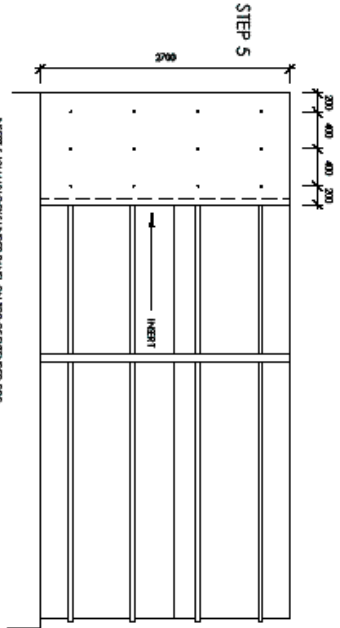
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APPROVED - [signature]

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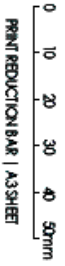
STRUTACLAD PERITICAL PANEL INSTALL PROCEDURE
2700X1200 PANELS



CLIENT: REGEN BUILDING SOLUTIONS

INSTALL 2

- FOR TESTING -



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B	top-hat orientation detail firm	04/10/16
C1	testing issuance	20/10/16

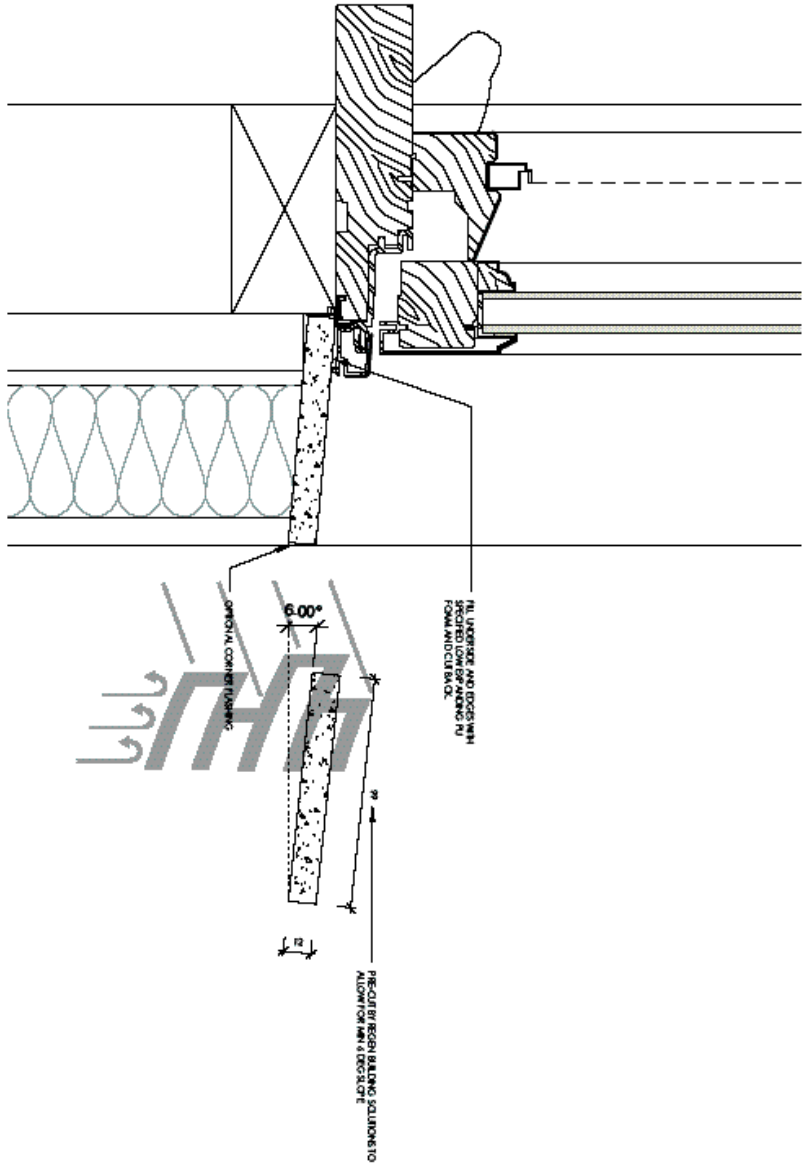
STRUTACLAD
STATE ST, WINGFIELD

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APPROVED - [sgn]

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REVISION C4



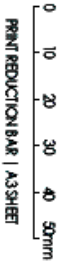
1 SECTION 3 - Callout 2 SILL DETAIL
1:2

REGEN BUILDING SOLUTIONS

DETAILS

- FOR TESTING -

CLIENT:



No.	DESCRIPTION	AMENDMENT	DATE
A	Primary sealance		19/09/16
B	Top-hat orientation detail, 10mm		04/10/16
C4	Testing sealance		20/10/16

STRUCTACLAD
STATE ST, WINGFIELD

REGEN BUILDING
SOLUTIONS

DRAWING NO.

05 - A901

REVISION

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