Structural Analysis Report

CEDRAL Click and Lap cladding systems

Prepared for

Etex Group

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Document Control

Issue	Date	Prepared by	Reviewed & Approved by	Revision notes
A	20/10/2020	Nick Franklin	Grant Wood	-
B	23/11/2020	Nick Franklin	Grant Wood	Report revised to include cyclonic testing and span tables.
C	28/01/2021	Nick Franklin	Grant Wood	Added Section 7.3.2 and 7.3.4 Amended Section 8.1, 6.1.1, 6.1.5 and tables 7, 12, 42, 45, 48, 53, 56 Amended all tables in Section 7.3, 8.2 and 8.3
D	1/06/2021	 Nicholas Franklin BE PhD	 Grant Wood BE MIEAust CPEng NER RPEQ	Added AUS metal framing analysis and design: - Section 6.1.4, 6.1.5, 6.1.6, 6.1.7 - Section 7.4.3 – 7.4.6, 7.5.3 & 7.5.4 - Amended Table 2 Amended all tables in Section 7.4, 7.5, 8.4, 8.5 Amended timber screw from 14-10 to 12-11 throughout Sections 6.1.6, 7.4.1, 7.5.1, 8.4.1, 8.5.1 Amended Section 5.0, 6.1, 6.1.1, 6.1.4 Amended Table 1

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1.0 Contents

2.0 Client

This structural analysis report has been prepared for the following client.

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3.0 Purpose & Scope

The purpose of this report is to provide the following for the CEDRAL Lap and CEDRAL Click wall cladding systems when installed on external walls of buildings:

1. Non-cyclonic and cyclonic wind pressure span tables for both Australia and New Zealand; and
2. Outline of the methodology used in undertaking the theoretical and test analysis to develop the span tables.

The report only covers those matters outlined above and shall not be interpreted as covering any other matter or product.

4.0 Documentation

Table 1 below lists all of the documents that were provided for the purpose of completing this report.

Table 1 - Documentation

Author	*Description*	*Date*	*Reference*
Australian Building Codes Board	2019 National Construction Code – Building Code of Australia Volumes 1 & 2 amendment 1	2019	-
Azuma Design	Sheet roof & wall cladding test report: CEDRAL Lap	2020	AZT0323.20 AZT0324.20
Azuma Design	Sheet roof & wall cladding test report: CEDRAL Click	2020	AZT0325.20
Azuma Design	Sheet roof & wall cladding test report: CEDRAL Lap & Click	2020	AZT0338.20
Standards Australia	Methods of testing sheet roof and wall cladding- Method 2: Resistance to wind pressures for non-cyclone regions	1992	AS 4040.2
Standards Australia	Methods of testing sheet roof and wall cladding- Method 3: Resistance to wind pressures for cyclone regions	1992	AS 4040.3
Standards Australia	Structural design actions – General principles (incl. amdt. 5)	2002	AS/NZS 1170.0
Standards Australia	Timber structures Part 1: Design methods (incl. amdt. 3)	2010	AS 1720.1
Standards Australia	Steel structures	2020	AS 4600
Standards Australia	Cold-formed steel structures	2018	AS/NZS 4600
Standards Australia	Aluminium structures Part 1: Limit state design	1997	AS/NZS 1664.1
Standards New Zealand	Timber structures standard (incl. amdt. 1, 2 & 4)	1993	NZS 3603
NASH	NASH Handbook: Design of residential and low-rise steel framing	2009	-

5.0 Product Description

The CEDRAL Click and CEDRAL Lap system consists of fibre cement weatherboard panels that can be fixed horizontally or vertically to battens and a stud frame forming a ventilated cavity external wall cladding system.

CEDRAL lap panels are installed in a lapped style using nails or screws. They have a thickness of 10mm and are lapped with an overhang such that the fixing spacing is 160mm. CEDRAL click panels are flush fitting tongue and groove panels fixed with rivets or screws to cavity batten arrangement using a clip system. CEDRAL Click panels have a thickness of 12mm and panel width of 186mm. Figure 1 depicts the tongue and groove system for CEDRAL Click and the lapped system for CEDRAL lap. See Figure 2 & Figure 3 for a typical detail of the cladding system.

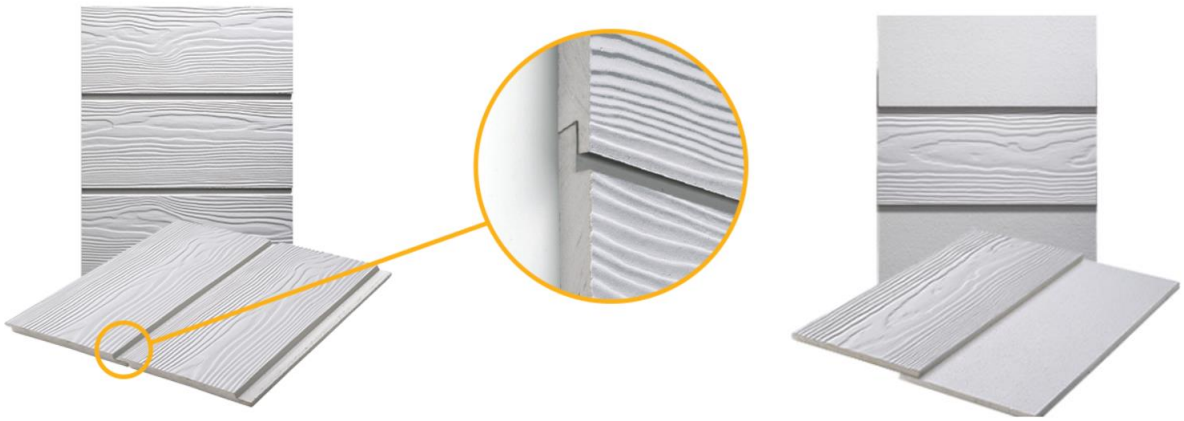

Figure 1 - CEDRAL Click (left), CEDRAL Lap (right)

The cladding panels are fixed to timber or metal battens which are then fixed to the stud framing, see Figure 4, Figure 5 and Figure 6 for typical metal batten details. Span tables are provided for both the batten and the cladding and are to be used in conjunction with one another. Vertically oriented panel systems implement a chamfered timber batten to prevent pooling of water in the cavity. The vertical CEDRAL Click system implements a starter angle at the base of each panel to carry the weight.

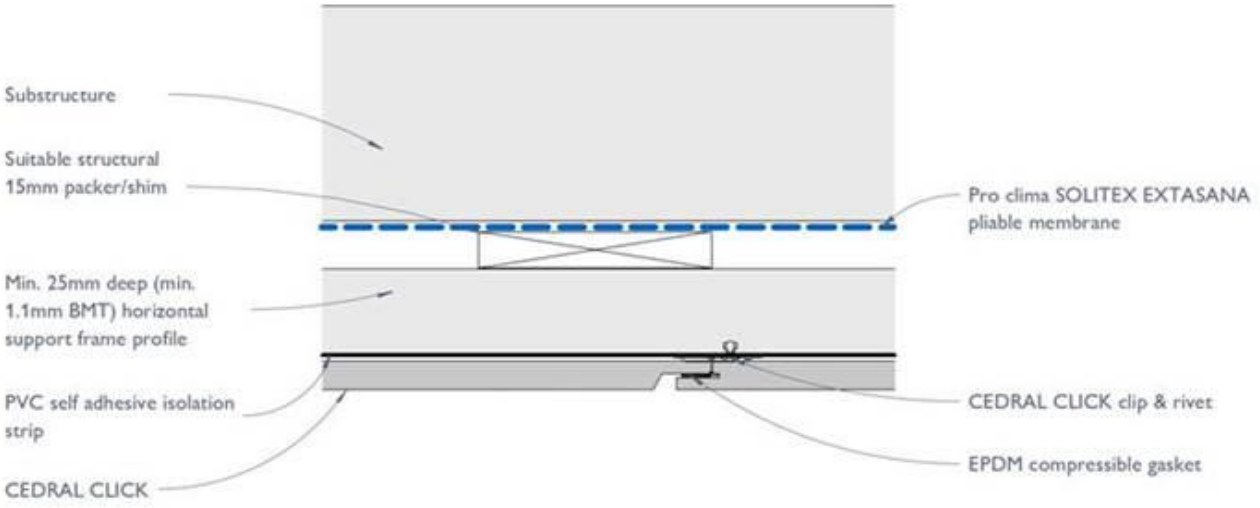

Figure 2 - Typical CEDRAL Click detail

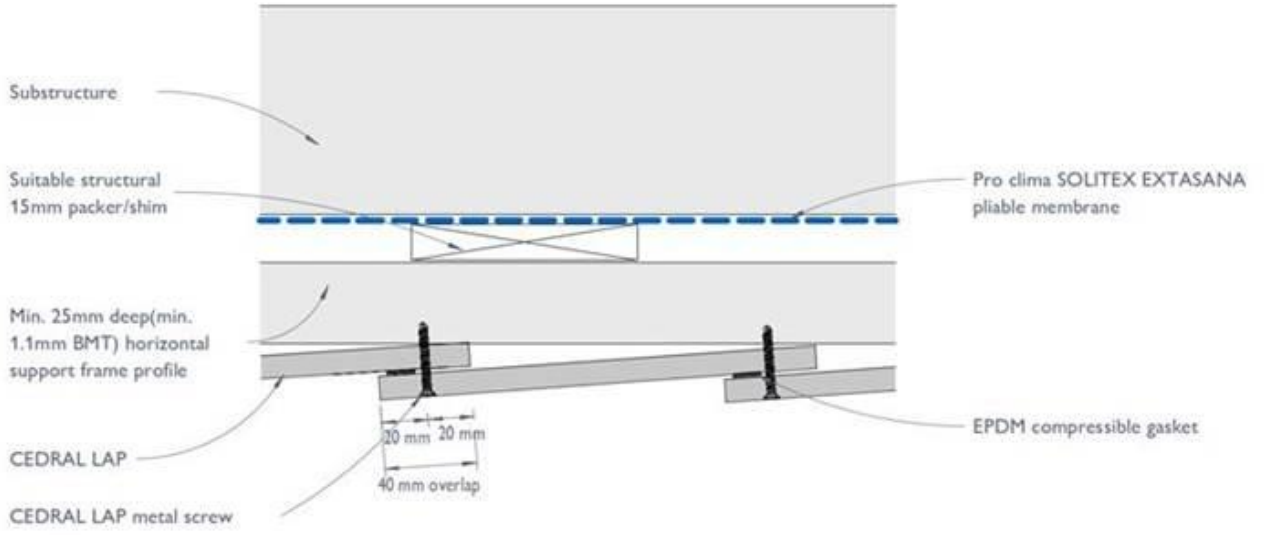

Figure 3 - Typical CEDRAL Lap detail

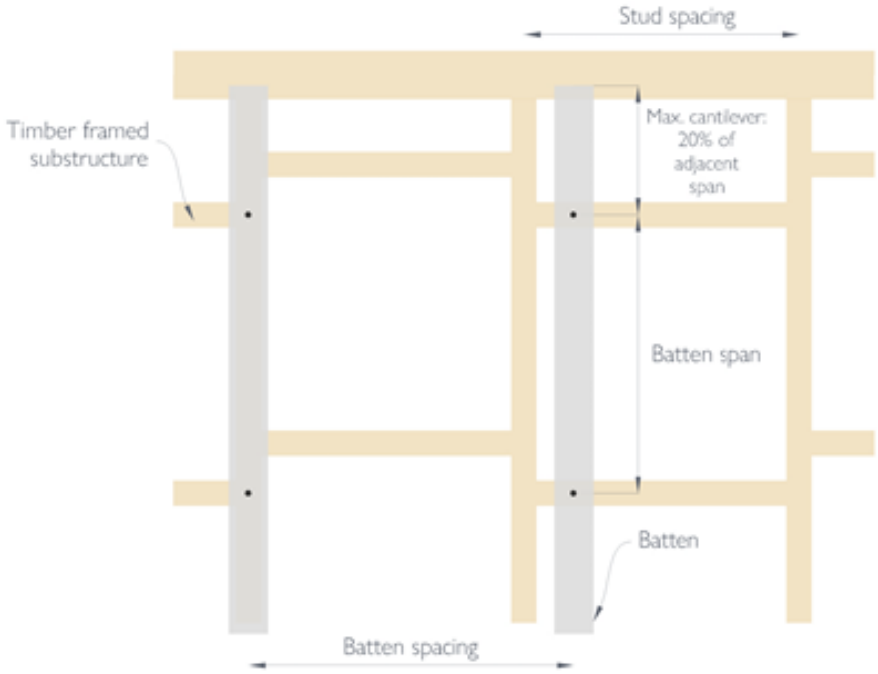

Figure 4 – Typical single layer vertical metal batten detail

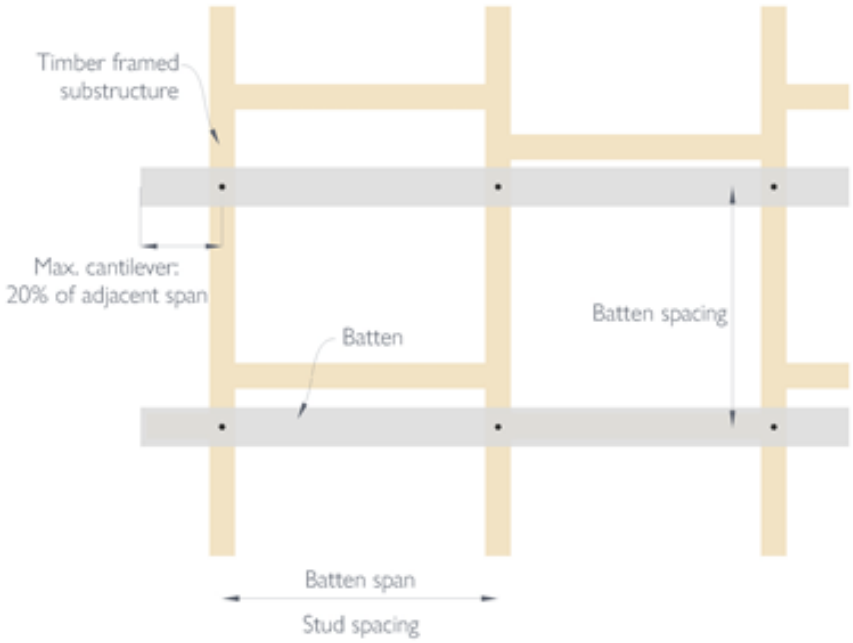

Figure 5 – Typical single layer horizontal metal batten detail

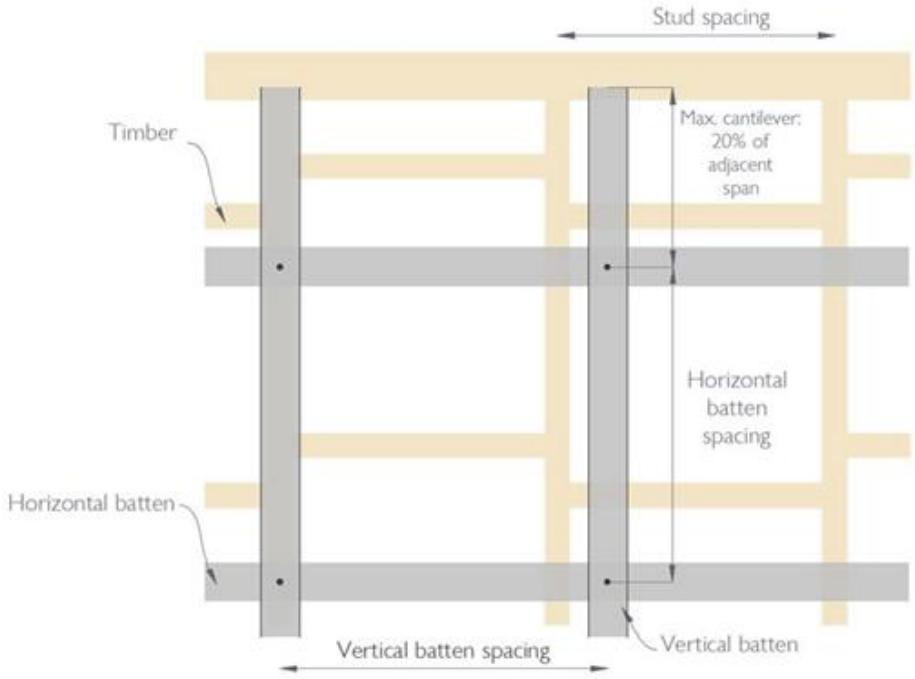

Figure 6 – Typical double layer metal batten detail

6.0 Structural Analysis

The development of the span tables for the CEDRAL Lap and Click cladding systems was undertaken with capacities determined using both testing and theoretical analysis. The member and connection checks that were considered are listed below:

Table 2 - Design checks

Design action checks	Method
Bending of the timber/metal batten for ultimate limit state (ULS)	Theoretical
Bending of the timber/metal batten for serviceability limit state (SLS)	Theoretical
Compression due to thermal expansion of timber/metal batten (ULS)	Theoretical
Pull-out of the fixing from the batten to the stud	Theoretical/Testing
Pull-out of the fixing from the cladding panel into the batten	Theoretical
Bending of the CEDRAL Lap and Click cladding panels	Testing
Pull-over of the fixing from the CEDRAL Lap and Click cladding panels	Testing

The starter angle for CEDRAL Click (when orientated vertically) was analysed theoretically and is detailed in Section 6.1.10.

6.1 Theoretical analysis

6.1.1 Assumptions

The following assumptions were relied upon in the theoretical analysis of the CEDRAL Lap and Click cladding systems.

1. Individual span tables specify whether the wind pressures relate to cyclonic, non-cyclonic or both types of wind actions
2. The wind pressures are for external wind only, internal pressures will not be applied to the cladding and assumed to be resisted by the internal lining
3. The load on each panel is uniformly distributed
4. The load on each member/fixing is equal to the wind pressure multiplied by the tributary area. The tributary area is considered to be halfway to the next supporting member or fastener in both vertical and horizontal directions, except for the following two situations:
    a. For load on stud fixings and the fixing between battens, the tributary area is multiplied by 1.25 to account for the worst case of a double span continuous batten.
    b. For the load on the batten in contact with the cladding, the tributary area is multiplied by 1.25 to account for the worst case of a double span continuous cladding board.
5. The span/deflection limit for SLS wind load is 250 for battens and 100 for cladding panels, with the serviceability wind load equal to 68% of the ULS wind load.

6.1.2 Bending of the timber batten for ULS

For Australia, the ULS bending capacity of the 35x70mm MGP10 timber batten was determined to be 0.22 kNm for the rectangular cross section shaped batten and 0.21 kNm for the chamfered cross section batten (see Figure 7) in accordance with Clause 3.2.1 of AS 1720.1:2010.

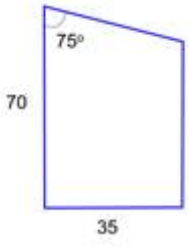

Figure 7 - Chamfered timber batten cross section

The ULS bending capacity of the 35x70mm SG6 timber batten was determined to be 0.11 kNm for both the square batten and chamfered batten in accordance with Clause 3.2.4 of NZS 3603:1993.

6.1.3 Bending of the timber batten for SLS

Deflection of the batten was determined assuming a simply supported beam bending about the weak axis. The modulus of elasticity was 10 GPa for Australia (AS 1720.1:2010):and 7.5GPa for New Zealand (NZS 3603:1993). A deflection limit of Span/250 was implemented.

6.1.4 Bending of the metal batten for ULS

There are three metal batten layout options accounted for in the Australian span tables:

- Single layer - 35mm vertical batten fixed with 2 screws to stud or nogging
- Double layer: First layer 15mm horizontal batten fixed with 2 screws to stud, second layer 25mm or 35mm vertical batten fixed with 2 screws to first layer
- Single layer 25mm or 35mm horizontal batten fixed through 15mm plastic shim to stud with 2 screws

The ULS bending capacity of the metal battens was determined using the effective section property method in accordance with AS/NZS 4600-2018. The dimensions of each tophat are shown in Figure 8 - Figure 12. Wider joint tophats are used at the express joints accommodating two cladding panels and intermediate tophats are used for intermediate supports (away from joints). Calculations were based on the intermediate tophats as they have a lower capacity. For options that can implement a 25mm or 35mm batten, the analysis is based on the 25mm batten as it is governing. The capacities shown in Table 3 were determined for a maximum member length as determined by thermal expansion analysis as detailed in Section 6.1.6. The capacity for the horizontal 15mm batten was determined for a span of 600mm due to the limitation of the maximum stud spacing in the span tables. Figure 13 shows the dimensions of the solid plastic Macsim shim required for single layer horizontal metal battens.

Table 3 – Metal batten bending capacities

Size	Orientation	Type	Grade	Dimensions	BMT (mm)	I_{xx} (mm^4)	Bending capacity (kNm)
15	Horizontal	-	G250	20x15x50x15x20	1.1	5139	0.081
25	Vert./Hori.	Intermediate	G250	20x25x50x25x20	1.1	18221	0.125
25	Vert./Hori.	Joint	G250	20x25x75x25x20	1.1	-	-
35	Vertical	Intermediate	G250	20x35x50x35x20	1.1	34697	0.176
35	Vertical	Joint	G250	20x35x75x35x20	1.1	-	-

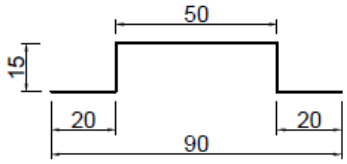

Figure 8 – 15mm horizontal tophat

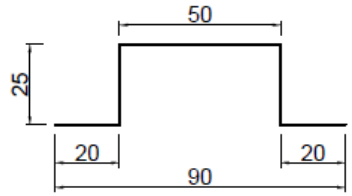

Figure 11 – 25mm intermediate tophat

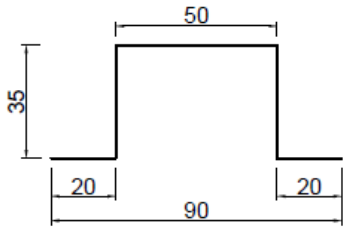

Figure 9 – 35mm intermediate tophat

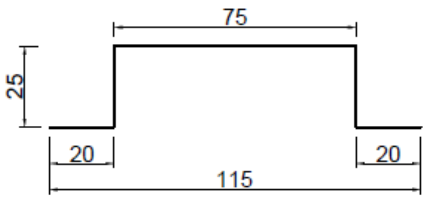

Figure 12 – 25mm joint tophat

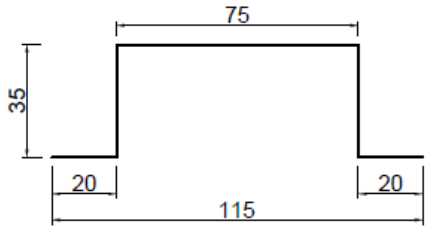

Figure 10 – 35mm joint tophat

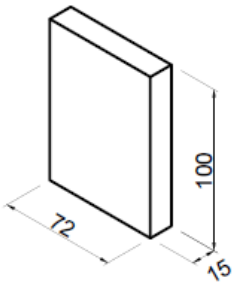

Figure 13 – Solid plastic shim

6.1.5 Bending of the metal batten for SLS

Deflection of the steel battens was determined for a point load on a simply supported beam for first layer horizontal battens in the double layer system and a uniformly distributed load for battens that are attached to the cladding. The modulus of elasticity for steel is 200 GPa and a deflection limit of Span/250 was implemented.

6.1.6 Compression of batten due to thermal expansion

Both metal and timber expand when subject to a temperature increase. When a restrained member is undergoing thermal strain, a large compression force can be induced. This is critical to consider for an external façade system that is regularly exposed to temperature changes. The CEDRAL sub-framing batten system is fixed to the stud framing with screws so the compression due to thermal expansion was considered to determine the maximum spans for each of the batten types.

The thermal strain can be calculated with a relationship between the coefficient of thermal expansion and the change in temperature. Then the resulting compression force in the member can be determined using the stress-strain relationship. However, this doesn't consider out of plane deformation of the members which leads to a reduction in the member compression stress and force. Therefore, it was appropriate to implement finite element analysis to determine the compressive force in the battens. Metal battens were modelled using plate elements and timber battens with brick elements within the Strand7 finite element analysis software. The properties are shown in Table 4 below.

Table 4 - Thermal analysis properties

Property	Metal batten	Timber batten
Elastic modulus (GPa)	200	10
Thermal expansion coefficient (1/°C)	$1.24x10^{-5}$	$0.35x10^{-5}$
Poisson ratio	0.25	0
Thickness (mm)	1.1	-
Temperature change (°C)	30	30

The temperature was assumed to be uniform. An initial temperature of 20°C and fixed temperature of 50°C was assigned to all nodes in the model. This equates to a temperature change of 30°C and is considered to be suitable for Australia and New Zealand. A linear static solver was used for the uniform temperature analysis to give a single thermal expansion result.

Pinned restraints were modelled as a single master node at the location of supports, this master node was attached to all nodes in the member cross section with rigid links. This is a conservative assumption because in reality there will be movement of the supporting members and fixings. The compression in the members was found to be independent of the span length, therefore a span of 600mm was selected and member lengths of 1 - 6 spans were modelled as shown in Figure 14.

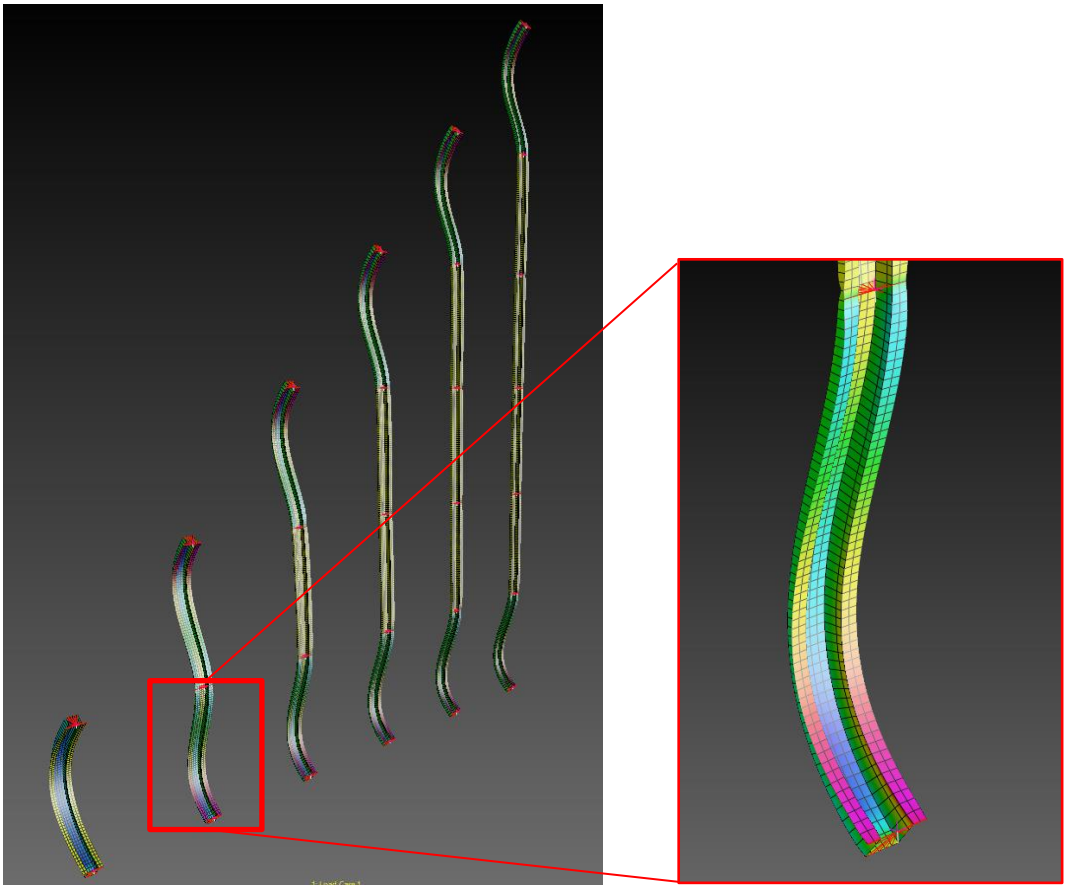

Figure 14 - Strand7 analysis of multi-span members showing stress distribution in end span along with exaggerated deformation

The maximum mid-surface von Mises plate stress was recorded for each span. It was found that all interior spans had nearly the same maximum stress that was consistent through the cross section. End spans were able to rotate at one end which resulted in a stress gradient through the cross section, however there was a constant stress at the point of inflection. The resulting force in the member was determined by multiplying the von Mises stress by the cross-sectional area. For the single span, there was no constant stress so the force in the member was determined by measuring the reaction at the support.

As noted earlier, the force in the members was found to be independent of the span length. Therefore, an effective length could be calculated for each member such that the compression capacity was equal to the compression force due to thermal expansion. The compressive capacity of the metal battens were determined using AS/NZS 4600:2018 and the timber battens using AS 1720.1:2010. Buckling effective length factors from Figure 4.6.3.2 of AS 4100:2020 for steel and Table 3.2 of AS 1720.1:2010 for timber were then used to find the limiting length for the differing span types as shown in Table 5. The timber spans are only shown for the interior span as the average stress through the cross section of other spans was unclear and it was expected that the interior span would be governing.

Table 5 - Maximum lengths for thermal expansion

Batten	Span type	Force (kN)	Effective Length factor	Max. Effective Length (mm)	Max. length (mm)
35 mm	Single span	5.06	1.00	1820	1820
	End span	9.33	0.85	1140	1341
	Interior span	13.20	0.70	874	**1249**
25 mm	Single span	4.59	1	1841	1841
	End span	8.47	0.85	1071	1261
	Interior span	12.01	0.7	787	**1125**
15 mm	Single span	4.08	1	1328	1328
	End span	7.26	0.85	866	1019
	Interior span	10.30	0.7	668	**954**
Timber	Single span	-	-	-	-
	End span	-	-	-	-
	Interior span	2.45	0.7	1680	**2400**

The interior span was found to be governing for all cases as shown in bold. These values were used as the maximum spans for the batten span tables.

The force in the members listed in Table 5 above should theoretically apply to the screw fixings in shear. However, these forces would almost always exceed the shear capacity of the screwed connection. In reality, the stud and battens that the members are fixed to would deflect to some degree during the thermal expansion, thus reducing the force on the fixings. It is assumed that these deflections of the supporting members reduce the shear on the fixings to be less than their capacity.

6.1.7 Pull-out of the fixing from the batten into the stud

The ULS pull-out capacity a single 12-14 tek screw fixing from the G2 1.15BMT and 1.2BMT steel stud was determined to be 0.89 kN in accordance with Clause 5.4.3.2 of AS/NZS 4600-2018 which applies to both Australia and New Zealand.

The ULS pull-out capacity of a single 12-14 tek screw fixing from the G550 0.5BMT, 0.55BMT and 0.75 BMT steel stud was determined based on tests carried out by Buildex in accordance with AS/NZS 4600 and published in the NASH Handbook, 2009. The capacities are based on a series of ten tests for each screw with a sampling factor of 1.49. There are no available test results for 0.5BMT steel and hence the 0.55BTM result was factored down by the thickness ratio (0.5/0.55) to determine a pull-out capacity for 0.55BMT steel. The capacities are shown in Table 6 below:

Table 6 – G550 steel stud pull-out capacities based on test data

Stud thickness (mm)	Pull-out capacity (kN)
0.5	0.56
0.55	0.62
0.75	0.89

The ULS pull-out capacity of a single 12-11 timber screw fixing from the timber stud (joint group JD5) was determined to be 1.53 kN with a minimum embedment of 30mm in accordance with Clause 4.3.3.4 of AS 1720.1:2010.

The ULS pull-out capacity of a single 12-11 timber screw fixing from the timber stud (joint group J5) was determined to be 1.49 kN with a minimum embedment of 30mm in accordance with Clause 4.3.3 of NZS 3603:1993.

Note that for single layer horizontal metal battens, the fixing through the batten into the stud is required to pass through the shim into the stud. For the timber stud, there must be a minimum of 30mm embedment of thread into the stud.

6.1.8 Pull-out of the fixing between the steel battens

For the Australian double layer system, the ULS pull-out capacity of a single 12-14 tek screw fixing from the 1.1BMT G250 steel first layer to second layer sub-framing was determined to be 0.64 kN in accordance with Clause 5.4.3.2 of AS/NZS 4600-2018.

6.1.9 Pull-out of the fixing from the cladding panel into the batten

CEDRAL Lap

The ULS pull-out capacity of the CEDRAL Lap 2.8Øx45mm nail fixing from the timber batten (joint group JD5) was determined to be 0.17 kN in accordance with Clause 4.2.3.4 of AS 1720.1:2010.

The ULS pull-out capacity of the CEDRAL Lap 2.8Øx45mm nail fixing from the timber batten (joint group J4 for nails in withdrawal) was determined to be 0.19 kN in accordance with Clause 4.2.3 of NZS 3603:1993.

The ULS pull-out capacity of the CEDRAL Lap SS SQD 4.2x45 fixing and the CEDRAL LAP 4.0x45 countersunk screw fixing from the timber batten (joint group JD5) was determined to be a minimum of 1.10 kN in accordance with Clause 4.3.3.4 of AS 1720.1:2010.

The ULS pull-out capacity of the CEDRAL Lap SS SQD 4.2x45 fixing and the CEDRAL LAP 4.0x45 countersunk screw fixing from the timber batten (joint group J5) was determined to be a minimum of 1.07 kN in accordance with Clause 4.3.3 of NZS 3603:1993.

CEDRAL Click

The ULS pull-out capacity of the CEDRAL Click screw fixing from the timber batten (joint group JD5) was determined to be 0.92 kN in accordance with Clause 4.3.3.4 of AS/NZS 1720.1:2010.

The ULS pull-out capacity of the CEDRAL Click screw fixing from the timber batten (joint group J5) was determined to be 0.89 kN in accordance with Clause 4.3.3 of NZS 3603:1993.

The ULS pull-out capacity of the fixings from the metal batten were determined not to be governing through testing.

6.1.10 Analysis of starter angle for CEDRAL Click

The starter angle is required to carry the weight of the vertically orientated CEDRAL Click cladding panels. Each panel has a maximum weight of 12.2 kg and width of 186 mm resulting a uniformly distributed load of 0.64 N/mm. The angle was designed as both G2 steel with a yield stress of 200 MPa and ultimate stress of 330 MPa and grade 6063 T6 aluminium for the following failure modes:

a) Bending about the longitudinal axis of the rail for ULS
b) Shear of the connection between the angle and the timber or steel batten for ULS
c) Shear of the connection between the steel or timber battens for ULS
d) Serviceably deflection limit of span/500.

Bending capacity

The ULS bending capacity of the steel angle was determined in accordance with AS/NZS 4600-2018 and the aluminium angle using the stress limits for the tension limit state for weak axis bending in accordance with AS 1664.1-1997. An angle thickness of 1.2mm BMT for both the aluminium and steel angels was found to be suitable.

Shear capacity

The ULS shear connection capacity of the screw fixing between components was determined as follows:

a) Aluminium in accordance with Clause 3.4.5 of AS/NZS 1664.1-1997
b) Steel in accordance with Clause 5.4.2.4 of AS/NZS 4600-2018
c) Timber in accordance with Clause 4.3.3.2 of AS/NZS 1720.1:2010.

Timber studs and battens were assumed to have a joint group of JD5. The horizontal batten has a thickness of 35mm and the vertical batten has a thickness of 20mm. Steel studs were G2 with a minimum thickness of 0.55mm.

Table 7 provides the required screw gauge, length and spacing for each design scenario. Figure 15 depicts a detail of the steel battens into the steel stud (fixings from the batten into the stud are not detailed).

Table 7 - Required fixing gauge, length and spacing for starter angle

Battens	Stud	Connection	Fixing			
			Gauge	Head type	Length (mm)	Spacing (mm)
Steel	Timber /steel	Steel angle to batten	10	Wafer	16	600
		Aluminium angle to batten	10	Wafer	16	600
		Between battens	10	Hex	16	600
Timber	Timber	Steel angle to batten	10	Wafer	40	600
		Aluminium angle to batten	10	Wafer	40	600
		Between battens and into stud	14	Bugle	100	600
	Steel	Steel angle to batten	10	Wafer	40	600
		Aluminium angle to batten	10	Wafer	40	600
		Between battens and into stud	12	Bugle	80	600

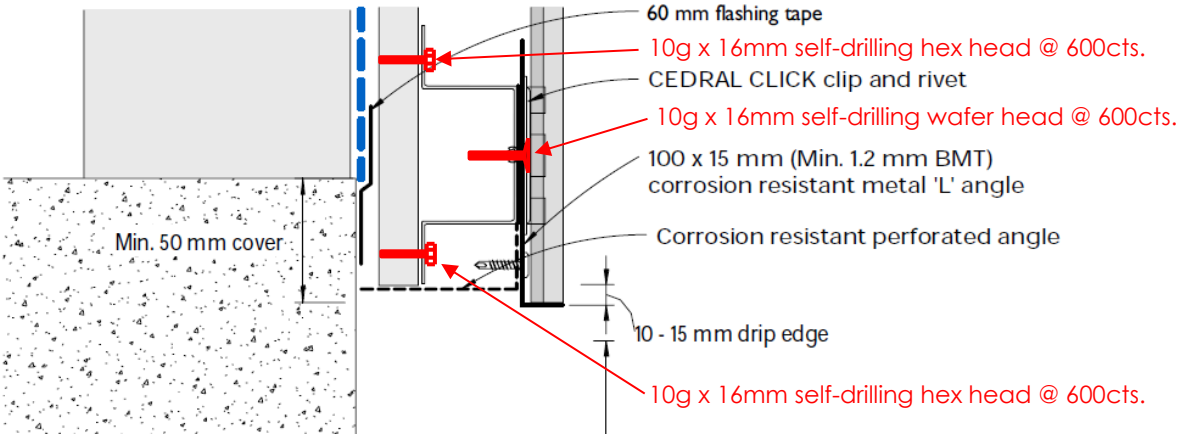

Figure 15 - Angle with steel batten construction

6.2 Non-cyclonic Testing analysis

6.2.1 Non-cyclonic Testing

Non-cyclonic wind load test specimens and a test schedule was developed to account for a number of wall variations of the CEDRAL Lap and Click cladding systems. A test frame with 90x42 Tilling's SmartLVL 15 timber studs at 300mm spacing was designed to accommodate 4 test specimens. Timber battens were fixed around the perimeter of each specimen so that the area of cladding not being tested was covered by 17mm formply fixed into the perimeter battens. A polythene film was fixed to the perimeter timber battens of each specimen using a 20mm x 3.0mm aluminium strip to minimize air leakage during testing.

The cladding panels were fixed through battens into the stud frame. Timber battens were 35x70 MGP10 and metal battens were the NVELOPE NV1 system or 1.1BMT tophats. The CEDRAL Lap system was tested with a 2.8Øx45mm CEDRAL LAP nail fixing into timber battens and a CEDRAL LAP countersunk 4.5x32mm screw fixing into metal battens. The CEDRAL Click system was tested with a CEDRAL CLICK clip and rivet fixing into metal battens. Batten spans were either 300mm or 600mm and the cladding was either single or multiple spans, with details provided in Table 8.

Table 8 – Non-cyclonic test schedule & results

Panel	Batten	Fixing	Batten span	Span type	Wind pressure at failure (Pa)	Load on fixing (kN)	Cladding bending moment (kNm)
CEDRAL lap	Timber	Nail	600	Multiple	4183	0.402	0.0301
CEDRAL lap	Timber	Nail	300	Multiple	10200	0.490	0.0184
CEDRAL lap	Timber	Nail	600	Single	4183	0.201	0.0301
CEDRAL lap	Timber	Nail	300	Single	10200	0.245	0.0184
CEDRAL lap	Metal	Screw	600	Multiple	3500	0.336	0.0252
CEDRAL lap	Metal	Screw	300	Multiple	7986	0.383	0.0144
CEDRAL lap	Metal	Screw	600	Single	3250	0.156	0.0234
CEDRAL lap	Metal	Screw	300	Single	10500	0.252	0.0189
CEDRAL click	Metal	Rivet	600	Multiple	4400	0.491	0.0368
CEDRAL click	Metal	Rivet	300	Multiple	7907	0.441	0.0165
CEDRAL click	Metal	Rivet	600	Single	6600	0.368	0.0552
CEDRAL click	Metal	Rivet	300	Single	11500	0.321	0.0241

The testing was carried out in accordance with AS 4040.2 at the Azuma Design facility in Wetherill Park. The Azuma Design facility has NATA accreditation for this test method. Each test specimen was subjected to the specified pressures for a period of 1 minute. The pressure at failure and the failure mode was recorded. The AS 4040.2 test method is an ultimate limit test. That is, the test specimens are loaded for 1 minute then incrementally increased to the next pressure step until the specimen ultimately fails.

6.2.2 Non-cyclonic Analysis methods

The ULS non-cyclonic wind pressures from testing were categorised and converted into a load on the cladding fixings and a bending moment in the cladding panel as detailed in Section 6.2.3 and Section 6.2.4.

For Australian span tables the ultimate design capacities were determined using the 2019 NCC Volume 1 amendment 1 structural reliability verification method BV1. A minimum coefficient of

variation of 20% and a capacity reduction factor of 0.75 was applied to the results to ensure the target reliability index for wind actions as defined by the NCC was met.

For the New Zealand span tables, the ultimate design capacities were determined using AS/NZS 1170.0 Appendix B – Use of test data for design. A coefficient of variation of structural characteristic of 20% was used and a k_t value of 2.21 for 1 test and 1.96 for two tests was used.

6.2.3 Non-cyclonic Bending of the CEDRAL Lap and Click cladding panels

The two highest non-cyclonic wind loads for each cladding panel type were used to determine the bending capacities. This is because none of the test specimens failed due to bending of the cladding panels, so using all of the test data for fixing failure would significantly reduce the bending capacity.

To determine the bending capacity of each panel, it was assumed that there was a uniformly distributed load on each cladding panel calculated by multiplying the wind pressure by the vertical height of each board (making consideration for the panel overlap of CEDRAL Lap). The maximum bending moment for each cladding panel was calculated using simple beam equations for the mid-point of a simply supported beam for a single span and at the support of a continuous beam for multiple spans.

Table 9 - Cladding panel bending moment capacities (non-cyclonic)

Panel	Bending capacity (Nmm)	
	Australia	New Zealand
CEDRAL lap	14526	15366
CEDRAL click	26058	24996

6.2.4 Non-cyclonic Pull-over of the fixing from the CEDRAL Lap and Click cladding panels

Results were grouped based on the type of panel, fixing and span. The test data for 300mm and 600mm panel spans were combined to generate a capacity for each group.

The load on each fixing was calculated by multiplying the tributary area by the non-cyclonic wind pressure. For single spans the tributary area is equal to half of the batten spacing multiplied by the vertical fixing spacing for each board. For multiple spans the tributary area is equal to the batten spacing multiplied by the vertical fixing spacing.

Table 10 - Cladding fixing pull-over capacities

Panel	Fixing	Span	Pull-over capacity (kN)	
			Australia	New Zealand
CEDRAL lap	Nail	Single	0.107	0.102
CEDRAL lap	Nail	Multiple	0.215	0.205
CEDRAL lap	Screw	Single	0.071	0.080
CEDRAL lap	Screw	Multiple	0.173	0.171
CEDRAL click	Rivet	Single	0.166	0.164
CEDRAL click	Rivet	Multiple	0.225	0.225

6.3 Cyclonic Testing analysis

6.3.1 Cyclonic Testing

A single cyclonic wind load test specimens was designed to account for a small number of wall variations of the CEDRAL Lap and Click cladding systems. A test frame with 90x42 Tilling's SmartLVL 15 timber studs at 300mm spacing was designed to accommodate 4 test specimens including:

- Multiple 600mm span CEDRAL Lap screw fixed to either 1.1 BMT steel tophats or NVELOPE NV1 cavity fixing system
- Single 600mm span CEDRAL Lap screw fixed to 1.1 BMT steel tophat on one end and NVELOPE NV1 cavity fixing system on the other.
- Multiple 600mm span CEDRAL Click riveted to 1.1 BMT steel tophats and riveted to NVELOPE NV1 cavity fixing system.
- Single 600mm span CEDRAL Click riveted to 1.1 BMT steel tophat at one end and riveted to NVELOPE NV1 cavity fixing system on the other.

A polythene film was placed behind the cladding and fixed to the perimeter timber battens of each specimen using a 20mm x 3.0mm aluminium strip to minimize air leakage during testing.

The testing was carried out in accordance with AS 4040.3 at the Azuma Design facility in Wetherill Park. The Azuma Design facility has NATA accreditation for this test method. The test specimen was subjected to the fatigue loading sequence specified in Table 1 of AS 4040.3 for the test pressure (Pt) of 2.1 kPa. No failure of the test specimen occurred during the test and therefore passed the testing requirements.

6.3.2 Cyclonic Analysis methods

The analysis method outlined in AS 4040.3 was used to account for variability of test specimens. That is, the test pressure (Pt) of 2.1 kPa was multiplied by 0.9 to give 1.89 kPa as the ultimate limit state wind load capacity for the cladding in cyclonic regions.

6.3.3 Cyclonic Bending of the CEDRAL Lap and Click cladding panels

The bending capacity of fibre cement cladding products is not typically susceptible to fatigue which is the concern when resisting cyclonic wind loading. Therefore, the bending capacities determined from the non-cyclonic testing analysis (see section 6.2.3) is assumed to be suitable for cyclonic regions.

6.3.4 Cyclonic Pull-over of the fixing from the CEDRAL Lap and Click cladding panels

The ultimate limit state wind load capacity for the cladding types obtained from the cyclonic test analysis (section 6.3.2 above) was converted into an effective pull-over capacity of the fixings based on the fixing tributary area. These effective loads (see Table 11 below) are the limiting values for determining span tables for the cladding in cyclonic regions.

Table 11 – Cladding fixing pull-over capacities for cyclonic areas

Panel	Fixing	Span	Pull-over capacity for cyclonic regions (kN)
CEDRAL lap	Screw	Single	0.091
CEDRAL lap	Screw	Multiple	0.181
CEDRAL click	Screw/Rivet	Single	0.105
CEDRAL click	Screw/Rivet	Multiple	0.211

When the cyclonic results from Table 11 are compared to the results in Table 10 for Australia it can be seen that:

1. The CEDRAL Lap with screw fixing pull-over capacities for cyclonic regions are greater than the non-cyclonic results; and
2. The CEDRAL Click with screw/rivet pull -over capacities for cyclonic regions are less than the non-cyclonic results.

Based on the above two points it was decided that the span tables for CEDRAL Lap would be applicable for both non-cyclonic and cyclonic regions. However, for CEDRAL Click separate tables are required for the two different regions.

7.0 Span tables for Australia

7.1 Wind Loading

Wind Class	Ultimate wind speed V_U m/s	Net pressure coefficient $C_{p,u}$			Pressure (Any) kPa	Suction (General) kPa	Suction (Corners) kPa
		Pressure (Any)	Suction (General)	Suction (Corners)			
N1	34	0.7	-0.65	-1.3	0.49	-0.45	-0.90
N2	40	0.7	-0.65	-1.3	0.67	-0.62	-1.25
N3/C1	50	0.7	-0.65	-1.3	1.05	-0.98	-1.95
N4/C2	61	0.7	-0.65	-1.3	1.56	-1.45	-2.90
N5/C3	74	0.7	-0.65	-1.3	2.30	-2.14	-4.27
N6/C4	86	0.7	-0.65	-1.3	3.11	-2.88	-5.77

Notes to table:

1. Wind loads are for external pressures only, it is assumed that internal pressures will not be applied to the cladding

7.2 CEDRAL LAP

7.2.1 Screw into timber batten – cyclonic and non-cyclonic regions

Table 12 - CEDRAL LAP: Max fixing spacing for screw into timber batten in AUS all regions

AS 4055 Wind class	Max cladding fixing/batten spacing (mm)			
	Multiple span cladding		Single span cladding	
	General zones	Corner zones	General zones	Corner zones
N1	600	600	600	600
N2	600	600	600	600
N3/C1	600	550	600	450
N4/C2	600	350	600	300
N5/C3	500	250	400	200
N6/C4	350	150	300	150

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP 4.2x45 or 4.0x45 countersunk screw
2. General zone: areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm for spans ≥ 300mm or 20% of the span otherwise
5. Timber batten to be 35x70 H3 treated and grade to be minimum MGP10 (JD5 joint group)
6. Framing deflection limit: Span/250

Table 13 - CEDRAL LAP: Max ultimate wind pressure for screw into timber batten in AUS all regions

Cladding fixing/batten spacing (mm)	Max AS/NZS1170.2 ultimate wind pressure (kPa)	
	Multiple span cladding	Single span cladding
600	1.81	1.48
550	1.97	1.62
500	2.17	1.78
450	2.41	1.98
400	2.71	2.22
350	3.10	2.54
300	3.61	2.97

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP 4.2x45 or 4.0x45 countersunk screw
2. Max panel cantilever to be 150mm
3. Timber batten to be 35x70 H3 treated and grade to be minimum MGP10 (JD5 joint group)
4. Framing deflection limit: Span/250

Table 14 - CEDRAL LAP: Max fixing spacing for screw into timber batten in AUS all regions

AS/NZS1170.2 ultimate wind pressure (kPa)	Max cladding fixing/batten spacing (mm)	
	Multiple span cladding	Single span cladding
1.0	600	600
1.5	600	550
2.0	500	400
2.5	400	350
3.0	350	250
3.5	300	250
4.0	250	200
4.5	200	150
5.0	200	150
5.5	150	150
6.0	150	100
6.5	150	100
7.0	150	100

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP 4.2x45 or 4.0x45 countersunk screw
2. Max panel cantilever to be 150mm for spans ≥ 300mm or 20% of the span otherwise
3. Timber batten to be 35x70 H3 treated and grade to be minimum MGP10 (JD5 joint group)
4. Framing deflection limit: Span/250

7.2.2 Nail into timber batten – cyclonic and non-cyclonic regions

Table 15 - CEDRAL LAP: Max fixing spacing for nail to timber batten in AUS all regions

AS 4055 Wind class	Max cladding fixing/batten spacing (mm)			
	Multiple span cladding		Single span cladding	
	General zones	Corner zones	General zones	Corner zones
N1	600	600	600	600
N2	600	600	600	600
N3/C1	600	550	600	600
N4/C2	600	350	600	450
N5/C3	500	250	550	300
N6/C4	350	150	450	200

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP nail or equivalent (2.8Øx45mm with 5.5Ø flat head)
2. General zone: areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm for spans ≥ 300mm or 20% of the span otherwise
5. Timber batten to be 35x70 H3 treated and grade to be minimum MGP10 (JD5 joint group)
6. Framing deflection limit: Span/250

Table 16 - CEDRAL LAP: Max ultimate wind pressure for nail into timber batten in AUS all regions

Cladding fixing/batten spacing (mm)	Max AS/NZS1170.2 ultimate wind pressure (kPa)	
	Multiple span cladding	Single span cladding
600	1.81	2.02
550	1.98	2.40
500	2.18	2.69
450	2.42	2.98
400	2.72	3.36
350	3.11	3.84
300	3.63	4.48

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP nail or equivalent (2.8Øx45mm with 5.5Ø flat head)
2. Max panel cantilever to be 150mm
3. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
4. Framing deflection limit: Span/250

Table 17 - CEDRAL LAP: Max fixing spacing for nail into timber batten in AUS all regions

AS/NZS1170.2 ultimate wind pressure (kPa)	Max cladding fixing/batten spacing (mm)	
	Multiple span cladding	Single span cladding
1.0	600	600
1.5	600	600
2.0	500	600
2.5	400	500
3.0	350	400
3.5	300	350
4.0	250	300
4.5	200	250
5.0	200	250
5.5	150	200
6.0	150	200
6.5	150	200
7.0	150	150

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP nail or equivalent (2.8Øx45mm with 5.5Ø flat head)
2. Max panel cantilever to be 150mm for spans ≥ 300mm or 20% of the span otherwise
3. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
4. Framing deflection limit: Span/250

7.2.3 Screw into metal batten - cyclonic and non-cyclonic regions

Table 18 - CEDRAL LAP: Max fixing spacing for screw to metal batten in AUS all regions

AS 4055 Wind class	Max cladding fixing/batten spacing (mm)			
	Multiple span cladding		Single span cladding	
	General zones	Corner zones	General zones	Corner zones
N1	600	600	600	600
N2	600	600	600	600
N3/C1	600	550	600	450
N4/C2	600	350	600	300
N5/C3	500	250	400	200
N6/C4	350	150	300	150

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP countersunk metal screw 4.5x32mm
2. General zone: areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm for spans ≥ 300mm or 20% of the span otherwise
5. Batten to be minimum 1.1BMT G250
6. Framing deflection limit: Span/250

Table 19 - CEDRAL LAP: Max ultimate wind pressure for screw to metal batten in AUS all regions

Cladding fixing/batten spacing (mm)	Max AS/NZS1170.2 ultimate wind pressure (kPa)	
	Multiple span cladding	Single span cladding
600	1.81	1.48
550	1.97	1.62
500	2.17	1.78
450	2.41	1.98
400	2.71	2.22
350	3.10	2.54
300	3.61	2.97

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP countersunk metal screw 4.5x32mm
2. Max panel cantilever to be 150mm
3. Batten to be minimum 1.1BMT G250
4. Framing deflection limit: Span/250

Table 20 - CEDRAL LAP: Max fixing spacing for screw to metal batten in AUS all regions

AS/NZS1170.2 ultimate wind pressure (kPa)	Max cladding fixing/batten spacing (mm)	
	Multiple span cladding	Single span cladding
1.0	600	600
1.5	600	550
2.0	500	400
2.5	400	350
3.0	350	250
3.5	300	250
4.0	250	200
4.5	200	150
5.0	200	150
5.5	150	150
6.0	150	100
6.5	150	100
7.0	150	100

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP countersunk metal screw 4.5x32mm
2. Max panel cantilever to be 150mm for spans ≥ 300mm or 20% of the span otherwise
3. Batten to be minimum 1.1BMT G250
4. Framing deflection limit: Span/250

7.3 CEDRAL CLICK

7.3.1 Screw into timber batten – non-cyclonic regions

Table 21 - CEDRAL CLICK: Max fixing spacing for screw into timber batten in AUS non-cyclonic regions

AS 4055 Wind class	Max cladding fixing/batten spacing (mm)			
	Multiple span cladding		Single span cladding	
	General zones	Corner zones	General zones	Corner zones
N1	600	600	600	600
N2	600	600	600	600
N3	600	600	600	600
N4	600	400	600	600
N5	550	250	600	400
N6	400	200	600	300

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and screw
2. General zone: areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm for spans ≥ 300mm or 20% of the span otherwise
5. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
6. Framing deflection limit: Span/250

Table 22 - CEDRAL CLICK: Max ultimate wind pressure for screw into timber batten in AUS non-cyclonic regions

Cladding fixing/batten spacing (mm)	Max AS/NZS1170.2 ultimate wind pressure (kPa)	
	Multiple span cladding	Single span cladding
600	2.01	2.98
550	2.20	3.25
500	2.42	3.57
450	2.69	3.97
400	3.02	4.47
350	3.45	5.11
300	4.03	5.96

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and screw
2. Max panel cantilever to be 150mm
3. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
4. Framing deflection limit: Span/250

Table 23 - CEDRAL CLICK: Max fixing spacing for screw into timber batten in AUS non-cyclonic regions

AS/NZS1170.2 ultimate wind pressure (kPa)	Max cladding fixing/batten spacing (mm)	
	Multiple span cladding	Single span cladding
1.0	600	600
1.5	600	600
2.0	600	600
2.5	450	600
3.0	400	550
3.5	300	500
4.0	300	400
4.5	250	350
5.0	200	350
5.5	200	300
6.0	200	250
6.5	150	250
7.0	150	250

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and screw
2. Max panel cantilever to be 150mm for spans ≥ 300mm or 20% of the span otherwise
3. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
4. Framing deflection limit: Span/250

7.3.2 Screw into timber batten – cyclonic regions

Table 24 - CEDRAL CLICK: Max fixing spacing for screw into timber batten in AUS cyclonic regions

AS 4055 Wind class	Max cladding fixing/batten spacing (mm)			
	Multiple span cladding		Single span cladding	
	General zones	Corner zones	General zones	Corner zones
C1	600	550	600	550
C2	600	350	600	350
C3	500	200	500	200
C4	350	100	350	100

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and screw
2. General zone: areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm for spans ≥ 300mm or 20% of the span otherwise
5. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
6. Framing deflection limit: Span/250

Table 25 - CEDRAL CLICK: Max ultimate wind pressure for screw into timber batten in AUS cyclonic regions

Cladding fixing/batten spacing (mm)	Max AS/NZS1170.2 ultimate wind pressure (kPa)	
	Multiple span cladding	Single span cladding
600	1.89	1.89
550	2.06	2.06
500	2.27	2.27
450	2.52	2.52
400	2.84	2.84
350	3.24	3.24
300	3.78	3.78

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and screw
2. Max panel cantilever to be 150mm
3. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
4. Framing deflection limit: Span/250

Table 26 - CEDRAL CLICK: Max fixing spacing for screw into timber batten in AUS cyclonic regions

AS/NZS1170.2 ultimate wind pressure (kPa)	Max cladding fixing/batten spacing (mm)	
	Multiple span cladding	Single span cladding
1.0	600	600
1.5	600	600
2.0	550	550
2.5	450	450
3.0	350	350
3.5	300	300
4.0	200	200
4.5	200	200
5.0	150	150
5.5	150	150
6.0	100	100
6.5	100	100
7.0	100	100

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and screw
2. Max panel cantilever to be 150mm for spans ≥ 300mm or 20% of the span otherwise
3. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
4. Framing deflection limit: Span/250

7.3.3 Rivet into metal batten - non-cyclonic regions

Table 27 - CEDRAL CLICK: Max fixing spacing for rivet into metal batten in AUS non-cyclonic regions

AS 4055 Wind class	Max cladding fixing/batten spacing (mm)			
	Multiple span cladding		Single span cladding	
	General zones	Corner zones	General zones	Corner zones
N1	600	600	600	600
N2	600	600	600	600
N3	600	600	600	600
N4	600	400	600	600
N5	550	250	600	400
N6	400	200	600	300

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and rivet
2. General zone: areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm
5. Batten to be minimum 1.1BMT G250
6. Framing deflection limit: Span/250

Table 28 - CEDRAL CLICK: Max ultimate wind pressure for rivet into metal batten in AUS non-cyclonic regions

Cladding fixing/batten spacing (mm)	Max AS/NZS1170.2 ultimate wind pressure (kPa)	
	Multiple span cladding	Single span cladding
600	2.01	2.98
550	2.20	3.25
500	2.42	3.57
450	2.69	3.97
400	3.02	4.47
350	3.45	5.11
300	4.03	5.96

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and rivet
2. Max panel cantilever to be 150mm
3. Batten to be minimum 1.1BMT G250
4. Framing deflection limit: Span/250

Table 29 - CEDRAL CLICK: Max fixing spacing for rivet into metal batten in AUS non-cyclonic regions

AS/NZS1170.2 ultimate wind pressure (kPa)	Max cladding fixing/batten spacing (mm)	
	Multiple span cladding	Single span cladding
1.0	600	600
1.5	600	600
2.0	600	600
2.5	450	600
3.0	400	550
3.5	300	500
4.0	300	400
4.5	250	350
5.0	200	350
5.5	200	300
6.0	200	250
6.5	150	250
7.0	150	250

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and rivet
2. Max panel cantilever to be 150mm
3. Batten to be minimum 1.1BMT G250
4. Framing deflection limit: Span/250

7.3.4 Rivet into metal batten - cyclonic regions

Table 30 - CEDRAL CLICK: Max fixing spacing for rivet into metal batten in AUS cyclonic regions

AS 4055 Wind class	Max cladding fixing/batten spacing (mm)			
	Multiple span cladding		Single span cladding	
	General zones	Corner zones	General zones	Corner zones
C1	600	550	600	550
C2	600	350	600	350
C3	500	200	500	200
C4	350	100	350	100

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and rivet
2. General zone: areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm
5. Batten to be minimum 1.1BMT G250
6. Framing deflection limit: Span/250

Table 31 - CEDRAL CLICK: Max ultimate wind pressure for rivet into metal batten in AUS cyclonic regions

Cladding fixing/batten spacing (mm)	Max AS/NZS1170.2 ultimate wind pressure (kPa)	
	Multiple span cladding	Single span cladding
600	1.89	1.89
550	2.06	2.06
500	2.27	2.27
450	2.52	2.52
400	2.84	2.84
350	3.24	3.24
300	3.78	3.78

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and rivet
2. Max panel cantilever to be 150mm
3. Batten to be minimum 1.1BMT G250
4. Framing deflection limit: Span/250

Table 32 - CEDRAL CLICK: Max fixing spacing for rivet into metal batten in AUS cyclonic regions

AS/NZS1170.2 ultimate wind pressure (kPa)	Max cladding fixing/batten spacing (mm)	
	Multiple span cladding	Single span cladding
1.0	600	600
1.5	600	600
2.0	550	550
2.5	450	450
3.0	350	350
3.5	300	300
4.0	200	200
4.5	200	200
5.0	150	150
5.5	150	150
6.0	100	100
6.5	100	100
7.0	100	100

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and rivet
2. Max panel cantilever to be 150mm
3. Batten to be minimum 1.1BMT G250
4. Framing deflection limit: Span/250

7.4 Batten span – Horizontal cladding

7.4.1 Timber stud and timber batten

Table 33 - Timber stud and timber batten - General areas in AUS all regions

AS 4055 Wind class	Batten spacing (mm) - General zone						
	600	550	500	450	400	350	300
	Max batten span (mm)						
N1	1450	1500	1500	1600	1650	1700	1800
N2	1300	1300	1350	1400	1450	1550	1600
N3	1100	1150	1150	1200	1250	1300	1400
N4	950	1000	1000	1050	1100	1150	1200
N5	850	850	900	950	950	1000	1050
N6	700	750	800	850	850	900	950

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-11 timber screw with min embedment of 30mm
4. General zone: areas greater than 1200mm from an external building corner
5. Timber batten and stud grade to be minimum MGP10 (JD5 joint group) with batten size of 35x70.
6. Framing deflection limit: Span/250

Table 34 - Timber stud and timber batten - Corner areas in AUS all regions

AS 4055 Wind class	Batten spacing (mm) - Corner zone						
	600	550	500	450	400	350	300
	Max batten span (mm)						
N1	1150	1200	1250	1300	1350	1400	1450
N2	1050	1050	1100	1150	1200	1250	1300
N3	900	900	950	1000	1050	1050	1150
N4	800	800	850	850	900	950	1000
N5	700	700	750	750	800	800	850
N6	600	650	650	700	700	750	800

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-11 timber screw with min embedment of 30mm
4. Corner zone: Areas less than 1200mm from an external building corner
5. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group) and MGP10 stud grade
6. Framing deflection limit: Span/250

Table 35 - Timber stud and timber batten ULS wind load in AUS all regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max batten span (mm)						
1.0	1100	1150	1200	1250	1300	1350	1400
1.5	1000	1000	1050	1100	1100	1150	1250
2.0	900	900	950	1000	1000	1050	1100
2.5	800	850	850	900	950	1000	1050
3.0	650	700	800	850	900	950	1000
3.5	550	600	650	750	850	900	950
4.0	500	550	600	650	750	850	900
4.5	450	450	500	600	650	750	850
5.0	400	400	450	500	600	650	800
5.5	350	400	400	450	550	600	700
6.0	300	350	400	450	500	550	650
6.5	300	300	350	400	450	500	600
7.0	250	300	300	350	400	450	550

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-11 timber screw with min embedment of 30mm
4. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group) and MGP10 stud grade
5. Framing deflection limit: Span/250

7.4.2 Steel stud and timber batten

Table 36 - Steel stud and timber batten - General areas in AUS all regions

AS 4055 Wind class	Batten spacing (mm) - General zone						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0.55BMT G550 stud (mm)						
N1	1450	1500	1500	1600	1650	1700	1800
N2	1300	1300	1350	1400	1450	1550	1600
N3	800	900	1000	1100	1250	1300	1400
N4	550	600	650	750	850	950	1100
N5	350	400	450	500	550	650	750
N6	250	300	300	350	400	450	550
Wind class	Max batten span when fixed to 0.75BMT G550 stud (mm)						
N1	1450	1500	1500	1600	1650	1700	1800
N2	1300	1300	1350	1400	1450	1550	1600
N3	1100	1150	1150	1200	1250	1300	1400
N4	800	850	950	1050	1100	1150	1200
N5	550	600	650	700	800	950	1050
N6	400	400	450	500	600	700	800
Wind class	Max batten span when fixed to 1.15BMT G2 stud (mm)						
N1	1450	1500	1500	1600	1650	1700	1800
N2	1300	1300	1350	1400	1450	1550	1600
N3	1100	1150	1150	1200	1250	1300	1400
N4	800	850	950	1050	1100	1150	1200
N5	550	600	650	700	800	900	1050
N6	400	400	450	500	600	700	800

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-14 tek screw
4. General zone: areas greater than 1200mm from an external building corner
5. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
6. Framing deflection limit: Span/250

Table 37 - Steel stud and timber batten - Corner areas in AUS all regions

AS 4055 Wind class	Batten spacing (mm) - Corner zone						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0.55BMT G550 stud (mm)						
N1	1150	1200	1250	1300	1350	1400	1450
N2	1050	1050	1100	1150	1200	1250	1300
N3	750	850	900	1000	1050	1050	1150
N4	500	550	600	700	750	900	1000
N5	350	350	400	450	500	600	700
N6	250	250	300	350	350	450	500
Wind class	Max batten span when fixed to 0.75BMT G550 stud (mm)						
N1	1150	1200	1250	1300	1350	1400	1450
N2	1050	1050	1100	1150	1200	1250	1300
N3	900	900	950	1000	1050	1050	1150
N4	750	800	850	850	900	950	1000
N5	500	550	600	650	750	800	850
N6	350	400	450	500	550	650	750
Wind class	Max batten span when fixed to 1.15BMT G2 stud (mm)						
N1	1150	1200	1250	1300	1350	1400	1450
N2	1050	1050	1100	1150	1200	1250	1300
N3	900	900	950	1000	1050	1050	1150
N4	750	800	850	850	900	950	1000
N5	500	550	600	650	750	800	850
N6	350	400	450	500	550	650	750

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-14 tek screw
4. Corner zone: Areas less than 1200mm from an external building corner
5. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
6. Framing deflection limit: Span/250

Table 38 - Steel stud and timber batten ULS wind load in AUS all regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0.55BMT G550 stud (mm)						
1.0	800	900	950	1100	1200	1350	1400
1.5	550	600	650	700	800	900	1100
2.0	400	450	450	550	600	700	800
2.5	300	350	350	400	450	550	650
3.0	250	300	300	350	400	450	550
3.5	200	250	250	300	350	400	450
4.0	200	200	200	250	300	350	400
4.5	150	200	200	200	250	300	350
5.0	150	150	150	200	200	250	300
5.5	150	150	150	200	200	250	300
6.0	100	150	150	150	200	200	250
6.5	100	100	150	150	150	200	250
7.0	100	100	100	150	150	200	200
ULS wind pressure (kPa)	Max batten span when fixed to 0.75BMT G550 stud (mm)						
1.0	1100	1150	1200	1250	1300	1350	1400
1.5	750	850	900	1050	1100	1150	1250
2.0	550	600	700	750	850	1000	1100
2.5	450	500	550	600	700	800	900
3.0	350	400	450	500	550	650	750
3.5	300	350	400	450	500	550	650
4.0	250	300	350	350	400	500	550
4.5	250	250	300	350	350	450	500
5.0	200	250	250	300	350	400	450
5.5	200	200	250	250	300	350	400
6.0	150	200	200	250	250	300	350
6.5	150	150	200	200	250	300	350
7.0	150	150	200	200	250	250	300
ULS wind pressure (kPa)	Max batten span when fixed to 1.15BMT G2 stud (mm)						
1.0	1100	1150	1200	1250	1300	1350	1400
1.5	750	850	900	1050	1100	1150	1250
2.0	550	600	700	750	850	1000	1100
2.5	450	500	550	600	700	800	900
3.0	350	400	450	500	550	650	750
3.5	300	350	400	450	500	550	650
4.0	250	300	350	350	400	500	550
4.5	250	250	300	350	350	450	500
5.0	200	250	250	300	350	400	450
5.5	200	200	250	250	300	350	400
6.0	150	200	200	250	250	300	350
6.5	150	150	200	200	250	300	350
7.0	150	150	200	200	250	250	300

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-14 tek screw
4. Timber batten to be 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
5. Framing deflection limit: Span/250

7.4.3 Timber stud and single layer vertical metal batten

Table 39 – Timber stud and single layer vertical metal battens – General areas in AUS non-cyclonic regions

AS 4055 Wind class	Vertical Batten spacing (mm) – General zone								
	600	550	500	450	400	350	300	250	200
	Max metal batten span when fixed to timber stud (mm)								
N1	1200	1200	1200	1200	1200	1200	1200	1200	1200
N2	1200	1200	1200	1200	1200	1200	1200	1200	1200
N3	1200	1200	1200	1200	1200	1200	1200	1200	1200
N4	1050	1100	1200	1200	1200	1200	1200	1200	1200
N5	900	900	950	1000	1100	1150	1200	1200	1200
N6	750	800	850	850	950	1000	1050	1200	1200

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the metal batten and stud to be 2/12-11 self-drilling hex head tek screw with min embedment of 30mm of thread in the stud
4. General zone: areas greater than 1200mm from an external building corner
5. Metal batten to be min G250 20x35x50x35x20x1.1 BMT tophat
6. Timber stud grade to be minimum MGP10 (JD5 joint group)
7. Framing deflection limit: Span/250

Table 40 – Timber stud and single layer vertical metal battens – Corner areas in AUS non-cyclonic regions

AS 4055 Wind class	Vertical Batten spacing (mm) – Corner zone								
	600	550	500	450	400	350	300	250	200
	Max metal batten span when fixed to timber stud (mm)								
N1	1200	1200	1200	1200	1200	1200	1200	1200	1200
N2	1200	1200	1200	1200	1200	1200	1200	1200	1200
N3	950	1000	1050	1100	1200	1200	1200	1200	1200
N4	800	800	850	900	950	1050	1100	1200	1200
N5	650	650	700	750	800	850	900	1000	1100
N6	550	550	600	650	650	700	800	850	950

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the metal batten and stud to be 2/12-11 self-drilling hex head tek screw with min embedment of 30mm of thread in the stud
4. Corner zone: Areas less than 1200mm from an external building corner
5. Metal batten to be min G250 20x35x50x35x20x1.1 BMT tophat
6. Timber stud grade to be minimum MGP10 (JD5 joint group)
7. Framing deflection limit: Span/250

Table 41 – Timber stud and single layer vertical metal battens - ULS wind load in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Vertical Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max metal batten span when fixed to timber stud (mm)						
1.00	1200	1200	1200	1200	1200	1200	1200
1.25	1200	1200	1200	1200	1200	1200	1200
1.50	1100	1150	1200	1200	1200	1200	1200
1.75	1000	1050	1100	1150	1200	1200	1200
2.00	950	1000	1050	1100	1150	1200	1200
2.25	900	950	1000	1050	1100	1150	1200
2.50	850	900	900	1000	1050	1100	1200
2.75	800	850	900	950	1000	1050	1150
3.00	750	800	850	900	950	1000	1100
3.50	700	750	800	800	850	950	1000
4.00	650	700	750	750	800	850	950
5.00	600	600	650	700	750	800	850
6.00	550	550	600	600	650	700	750
7.00	500	500	550	550	600	650	700

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the metal batten and stud to be 2/12-11 self-drilling hex head tek screw with min embedment of 30mm of thread in the stud
4. Metal batten to be min G250 20x35x50x35x20x1.1 BMT tophat
5. Timber stud grade to be minimum MGP10 (JD5 joint group)
6. Framing deflection limit: Span/250

7.4.4 Steel stud and single layer vertical metal batten

Table 42 – Steel stud and single layer vertical metal battens – General areas in AUS non-cyclonic regions

AS 4055 Wind class	Vertical Batten spacing (mm) – General zone								
	600	550	500	450	400	350	300	250	200
	Max metal batten span when fixed to 0.55BMT G550 stud (mm)								
N1	1200	1200	1200	1200	1200	1200	1200	1200	1200
N2	1200	1200	1200	1200	1200	1200	1200	1200	1200
N3	1200	1200	1200	1200	1200	1200	1200	1200	1200
N4	1050	1100	1200	1200	1200	1200	1200	1200	1200
N5	750	800	900	1000	1100	1150	1200	1200	1200
N6	550	600	650	750	850	950	1050	1200	1200
	Max metal batten span when fixed to 0.75BMT G550 stud (mm)								
N1	1200	1200	1200	1200	1200	1200	1200	1200	1200
N2	1200	1200	1200	1200	1200	1200	1200	1200	1200
N3	1200	1200	1200	1200	1200	1200	1200	1200	1200
N4	1050	1100	1200	1200	1200	1200	1200	1200	1200
N5	900	900	950	1000	1100	1150	1200	1200	1200
N6	750	800	850	850	950	1000	1050	1200	1200
	Max metal batten span when fixed to 1.15BMT G2 stud (mm)								
N1	1200	1200	1200	1200	1200	1200	1200	1200	1200
N2	1200	1200	1200	1200	1200	1200	1200	1200	1200
N3	1200	1200	1200	1200	1200	1200	1200	1200	1200
N4	1050	1100	1200	1200	1200	1200	1200	1200	1200
N5	900	900	950	1000	1100	1150	1200	1200	1200
N6	750	800	850	850	950	1000	1050	1200	1200

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud/nogging to be minimum 2/12-14 self-drilling hex head tek screw
4. General zone: areas greater than 1200mm from an external building corner
5. Metal batten to be min G250 20x35x50x35x20x1.1 BMT tophat
6. Framing deflection limit: Span/250

Table 43 – Steel stud and single layer vertical metal battens – Corner areas in AUS non-cyclonic regions

AS 4055 Wind class	Vertical Batten spacing (mm) – Corner zone								
	600	550	500	450	400	350	300	250	200
	Max metal batten span when fixed to 0.55BMT G550 stud (mm)								
N1	1200	1200	1200	1200	1200	1200	1200	1200	1200
N2	1200	1200	1200	1200	1200	1200	1200	1200	1200
N3	800	900	1000	1100	1200	1200	1200	1200	1200
N4	550	600	650	750	850	950	1100	1200	1200
N5	350	400	450	500	550	650	750	900	1100
N6	250	300	300	350	400	450	550	650	850
	Max metal batten span when fixed to 0.75BMT G550 stud (mm)								
N1	1200	1200	1200	1200	1200	1200	1200	1200	1200
N2	1200	1200	1200	1200	1200	1200	1200	1200	1200
N3	950	1000	1050	1100	1200	1200	1200	1200	1200
N4	800	800	850	900	950	1050	1100	1200	1200
N5	550	600	650	700	800	850	900	1000	1100
N6	400	400	450	500	600	700	800	850	950
	Max metal batten span when fixed to 1.15BMT G2 stud (mm)								
N1	1200	1200	1200	1200	1200	1200	1200	1200	1200
N2	1200	1200	1200	1200	1200	1200	1200	1200	1200
N3	950	1000	1050	1100	1200	1200	1200	1200	1200
N4	800	800	850	900	950	1050	1100	1200	1200
N5	550	600	650	700	800	850	900	1000	1100
N6	400	400	450	500	600	700	800	850	950

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud/nogging to be minimum 2/12-14 self-drilling hex head tek screw
4. Corner zone: Areas less than 1200mm from an external building corner
5. Metal batten to be min G250 20x35x50x35x20x1.1 BMT tophat
6. Framing deflection limit: Span/250

Table 44 – Steel stud and single layer vertical metal battens - ULS wind load in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Vertical Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max metal batten span when fixed to 0.55BMT G550 stud (mm)						
1.00	1200	1200	1200	1200	1200	1200	1200
1.25	1200	1200	1200	1200	1200	1200	1200
1.50	1100	1150	1200	1200	1200	1200	1200
1.75	900	1000	1100	1150	1200	1200	1200
2.00	800	900	950	1100	1150	1200	1200
2.25	700	800	850	950	1100	1150	1200
2.50	650	700	750	850	950	1100	1200
2.75	600	650	700	800	900	1000	1150
3.00	550	600	650	700	800	900	1100
3.50	450	500	550	600	700	800	900
4.00	400	450	450	550	600	700	800
5.00	300	350	350	400	450	550	650
6.00	250	300	300	350	400	450	550
7.00	200	250	250	300	350	400	450
	Max metal batten span when fixed to 0.75BMT G550 stud (mm)						
1.00	1200	1200	1200	1200	1200	1200	1200
1.25	1200	1200	1200	1200	1200	1200	1200
1.50	1100	1150	1200	1200	1200	1200	1200
1.75	1000	1050	1100	1150	1200	1200	1200
2.00	950	1000	1050	1100	1150	1200	1200
2.25	900	950	1000	1050	1100	1150	1200
2.50	850	900	900	1000	1050	1100	1200
2.75	800	850	900	950	1000	1050	1150
3.00	750	800	850	900	950	1000	1100
3.50	650	700	800	800	850	950	1000
4.00	550	600	700	750	800	850	950
5.00	450	500	550	600	700	800	850
6.00	350	400	450	500	550	650	750
7.00	300	350	400	450	500	550	650
	Max metal batten span when fixed to 1.15BMT G2 stud (mm)						
1.00	1200	1200	1200	1200	1200	1200	1200
1.25	1200	1200	1200	1200	1200	1200	1200
1.50	1100	1150	1200	1200	1200	1200	1200
1.75	1000	1050	1100	1150	1200	1200	1200
2.00	950	1000	1050	1100	1150	1200	1200
2.25	900	950	1000	1050	1100	1150	1200
2.50	850	900	900	1000	1050	1100	1200
2.75	800	850	900	950	1000	1050	1150
3.00	750	800	850	900	950	1000	1100
3.50	650	700	800	800	850	950	1000
4.00	550	600	700	750	800	850	950
5.00	450	500	550	600	700	800	850
6.00	350	400	450	500	550	650	750
7.00	300	350	400	450	500	550	650

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud/nogging to be minimum 2/12-14 self-drilling hex head tek screw
4. Metal batten to be min G250 20x35x50x35x20x1.1 BMT tophat
5. Framing deflection limit: Span/250

7.4.5 Timber stud and double layer metal batten

Table 45 – Timber stud and double layer metal battens - General areas in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Stud spacing (mm)	Second layer vertical batten spacing (mm)								
		600	550	500	450	400	350	300	250	200
		First layer horizontal batten max spacing when fixed to timber stud (mm)								
N1	600	1100	1100	1100	1100	1100	1100	1100	1100	1100
	450	1100	1100	1100	1100	1100	1100	1100	1100	1100
	400	1100	1100	1100	1100	1100	1100	1100	1100	1100
	300	1100	1100	1100	1100	1100	1100	1100	1100	1100
N2	600	1100	1100	1100	1100	1100	1100	1100	1100	1100
	450	1100	1100	1100	1100	1100	1100	1100	1100	1100
	400	1100	1100	1100	1100	1100	1100	1100	1100	1100
	300	1100	1100	1100	1100	1100	1100	1100	1100	1100
N3	600	850	850	850	850	850	850	850	850	850
	450	850	1000	1100	1100	1100	1100	1100	1100	1100
	400	850	1000	1100	1100	1100	1100	1100	1100	1100
	300	850	1000	1100	1100	1100	1100	1100	1100	1100
N4	600	550	550	550	550	550	550	550	550	550
	450	550	650	800	1000	1000	1000	1000	1000	1000
	400	550	650	800	1000	1100	1100	1100	1100	1100
	300	550	650	800	1000	1100	1100	1100	1100	1100
N5	600	350	350	350	350	350	350	350	350	350
	450	350	450	550	650	650	650	650	650	650
	400	350	450	550	650	850	850	850	850	850
	300	350	450	550	650	850	950	1050	1100	1100
N6	600	250	250	250	250	250	250	250	250	250
	450	250	300	400	500	500	500	500	500	500
	400	250	300	400	500	650	650	650	650	650
	300	250	300	400	500	650	850	900	1000	1100

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 2/12-11 self-drilling tek screw with min embedment of 30mm of thread in the stud
4. Fixing between first and second layer of battens to be minimum 2/12-14 self-drilling hex head tek screws
5. General zone: areas greater than 1200mm from an external building corner
6. Metal battens to be horizontal G250 20x15x50x15x20x1.1 BMT tophat and minimum vertical G250 20x25x50x25x20x1.1 BMT tophat
7. Timber stud grade to be minimum MGP10 (JD5 joint group).
8. Framing deflection limit: Span/250

Table 46 - Timber stud and double layer metal battens - Corner areas in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Stud spacing (mm)	Second layer vertical batten spacing (mm)								
		600	550	500	450	400	350	300	250	200
		First layer horizontal batten max spacing when fixed to timber stud (mm)								
N1	600	950	950	950	950	950	950	950	950	950
	450	950	1100	1100	1100	1100	1100	1100	1100	1100
	400	950	1100	1100	1100	1100	1100	1100	1100	1100
	300	950	1100	1100	1100	1100	1100	1100	1100	1100
N2	600	700	700	700	700	700	700	700	700	700
	450	700	850	1000	1100	1100	1100	1100	1100	1100
	400	700	850	1000	1100	1100	1100	1100	1100	1100
	300	700	850	1000	1100	1100	1100	1100	1100	1100
N3	600	450	450	450	450	450	450	450	450	450
	450	450	500	650	800	800	800	800	800	800
	400	450	500	650	800	1000	1000	1000	1000	1000
	300	450	500	650	800	1000	1050	1100	1100	1100
N4	600	300	300	300	300	300	300	300	300	300
	450	300	350	400	550	550	550	550	550	550
	400	300	350	400	550	650	650	650	650	650
	300	300	350	400	550	650	850	950	1050	1100
N5	600	200	200	200	200	200	200	200	200	200
	450	200	250	300	350	350	350	350	350	350
	400	200	250	300	350	450	450	450	450	450
	300	200	250	300	350	450	600	750	800	800
N6	600	150	150	150	150	150	150	150	150	150
	450	150	150	200	250	250	250	250	250	250
	400	150	150	200	250	350	350	350	350	350
	300	150	150	200	250	350	450	550	600	600

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 2/12-11 self-drilling tek screw with min embedment of 30mm of thread in the stud
4. Fixing between first and second layer of battens to be minimum 2/12-14 self-drilling hex head tek screws
5. General zone: areas greater than 1200mm from an external building corner
6. Metal battens to be horizontal G250 20x15x50x15x20x1.1 BMT tophat and minimum vertical G250 20x25x50x25x20x1.1 BMT tophat
7. Timber stud grade to be minimum MGP10 (JD5 joint group).
8. Framing deflection limit: Span/250

Table 47 - Timber stud and double layer metal battens - ULS wind load in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Stud spacing (mm)	Second layer vertical batten spacing (mm)						
		600	550	500	450	400	350	300
		First layer horizontal batten max spacing when fixed to timber stud (mm)						
1.00	600	900	900	900	900	900	900	900
	450	900	1050	1100	1100	1100	1100	1100
	400	900	1050	1100	1100	1100	1100	1100
	300	900	1050	1100	1100	1100	1100	1100
1.25	600	700	700	700	700	700	700	700
	450	700	850	1000	1100	1100	1100	1100
	400	700	850	1000	1100	1100	1100	1100
	300	700	850	1000	1100	1100	1100	1100
1.50	600	600	600	600	600	600	600	600
	450	600	700	850	1050	1050	1050	1050
	400	600	700	850	1050	1100	1100	1100
	300	600	700	850	1050	1100	1100	1100
1.75	600	500	500	500	500	500	500	500
	450	500	600	700	900	900	900	900
	400	500	600	700	900	1050	1100	1100
	300	500	600	700	900	1050	1100	1100
2.00	600	450	450	450	450	450	450	450
	450	450	500	600	800	800	800	800
	400	450	500	600	800	1000	1000	1000
	300	450	500	600	800	1000	1050	1100
2.25	600	400	400	400	400	400	400	400
	450	400	450	550	700	700	700	700
	400	400	450	550	700	900	900	900
	300	400	450	550	700	900	1000	1050
2.50	600	350	350	350	350	350	350	350
	450	350	400	500	600	600	600	600
	400	350	400	500	600	800	800	800
	300	350	400	500	600	800	950	1000
2.75	600	300	300	300	300	300	300	300
	450	300	350	450	550	550	550	550
	400	300	350	450	550	700	700	700
	300	300	350	450	550	700	900	950
3.00	600	300	300	300	300	300	300	300
	450	300	350	400	500	500	500	500
	400	300	350	400	500	650	650	650
	300	300	350	400	500	650	850	900
3.50	600	250	250	250	250	250	250	250
	450	250	300	350	450	450	450	450
	400	250	300	350	450	550	550	550
	300	250	300	350	450	550	750	850
4.00	600	200	200	200	200	200	200	200
	450	200	250	300	400	400	400	400
	400	200	250	300	400	500	500	500
	300	200	250	300	400	500	650	800
5.00	600	150	150	150	150	150	150	150
	450	150	200	250	300	300	300	300
	400	150	200	250	300	400	400	400
	300	150	200	250	300	400	500	650
6.00	600	150	150	150	150	150	150	150
	450	150	150	200	250	250	250	250
	400	150	150	200	250	300	300	300
	300	150	150	200	250	300	400	550
7.00	600	100	100	100	100	100	100	100
	450	100	150	150	200	200	200	200
	400	100	150	150	200	250	250	250
	300	100	150	150	200	250	350	450

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 2/12-11 self-drilling tek screw with min embedment of 30mm of thread in the stud
4. Fixing between first and second layer of battens to be minimum 2/12-14 self-drilling hex head tek screws
5. General zone: areas greater than 1200mm from an external building corner
6. Metal battens to be horizontal G250 20x15x50x15x20x1.1 BMT tophat and minimum vertical G250 20x25x50x25x20x1.1 BMT tophat
7. Timber stud grade to be minimum MGP10 (JD5 joint group).
8. Framing deflection limit: Span/250

7.4.6 Steel stud (0.75 BMT G550 and 1.15 BMT G2) and double layer metal batten

Table 48 - Steel stud (0.75 BMT G550 and 1.15 BMT G2) and double layer metal battens - General areas in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Stud spacing (mm)	Second layer vertical batten spacing (mm)								
		600	550	500	450	400	350	300	250	200
		First layer horizontal batten max spacing when fixed to steel stud (mm)								
N1	600	1100	1100	1100	1100	1100	1100	1100	1100	1100
	450	1100	1100	1100	1100	1100	1100	1100	1100	1100
	400	1100	1100	1100	1100	1100	1100	1100	1100	1100
	300	1100	1100	1100	1100	1100	1100	1100	1100	1100
N2	600	1100	1100	1100	1100	1100	1100	1100	1100	1100
	450	1100	1100	1100	1100	1100	1100	1100	1100	1100
	400	1100	1100	1100	1100	1100	1100	1100	1100	1100
	300	1100	1100	1100	1100	1100	1100	1100	1100	1100
N3	600	850	850	850	850	850	850	850	850	850
	450	850	1000	1100	1100	1100	1100	1100	1100	1100
	400	850	1000	1100	1100	1100	1100	1100	1100	1100
	300	850	1000	1100	1100	1100	1100	1100	1100	1100
N4	600	550	550	550	550	550	550	550	550	550
	450	550	650	800	1000	1000	1000	1000	1000	1000
	400	550	650	800	1000	1100	1100	1100	1100	1100
	300	550	650	800	1000	1100	1100	1100	1100	1100
N5	600	350	350	350	350	350	350	350	350	350
	450	350	450	550	650	650	650	650	650	650
	400	350	450	550	650	850	850	850	850	850
	300	350	450	550	650	850	950	1050	1100	1100
N6	600	250	250	250	250	250	250	250	250	250
	450	250	300	400	500	500	500	500	500	500
	400	250	300	400	500	650	650	650	650	650
	300	250	300	400	500	650	850	900	1000	1100

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be minimum 2/12-14 self-drilling hex head tek screw
4. Fixing between first and second layer of battens to be minimum 2/12-14 self-drilling hex head tek screw
5. General zone: areas greater than 1200mm from an external building corner
6. Steel stud to be 0.75 BMT G550 or 1.15 BMT G2
7. Metal battens to be horizontal G250 20x15x50x15x20x1.1 BMT tophat and minimum vertical G250 20x25x50x25x20x1.1 BMT tophat
8. Framing deflection limit: Span/250

Table 49 - Steel stud (0.75 BMT G550 and 1.15 BMT G2) and double layer metal battens - Corner areas in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Stud spacing (mm)	Second layer vertical batten spacing (mm)								
		600	550	500	450	400	350	300	250	200
		First layer horizontal batten max spacing when fixed to steel stud (mm)								
N1	600	950	950	950	950	950	950	950	950	950
	450	950	1100	1100	1100	1100	1100	1100	1100	1100
	400	950	1100	1100	1100	1100	1100	1100	1100	1100
	300	950	1100	1100	1100	1100	1100	1100	1100	1100
N2	600	700	700	700	700	700	700	700	700	700
	450	700	850	1000	1100	1100	1100	1100	1100	1100
	400	700	850	1000	1100	1100	1100	1100	1100	1100
	300	700	850	1000	1100	1100	1100	1100	1100	1100
N3	600	450	450	450	450	450	450	450	450	450
	450	450	500	650	800	800	800	800	800	800
	400	450	500	650	800	1000	1000	1000	1000	1000
	300	450	500	650	800	1000	1050	1100	1100	1100
N4	600	300	300	300	300	300	300	300	300	300
	450	300	350	400	550	550	550	550	550	550
	400	300	350	400	550	650	650	650	650	650
	300	300	350	400	550	650	850	950	1050	1100
N5	600	200	200	200	200	200	200	200	200	200
	450	200	250	300	350	350	350	350	350	350
	400	200	250	300	350	450	450	450	450	450
	300	200	250	300	350	450	600	750	800	800
N6	600	150	150	150	150	150	150	150	150	150
	450	150	150	200	250	250	250	250	250	250
	400	150	150	200	250	350	350	350	350	350
	300	150	150	200	250	350	450	550	600	600

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be minimum 2/12-14 self-drilling hex head tek screw
4. Fixing between first and second layer of battens to be minimum 2/12-14 self-drilling hex head tek screw
5. General zone: areas greater than 1200mm from an external building corner
6. Steel stud to be 0.75 BMT G550 or 1.15 BMT G2
7. Metal battens to be horizontal G250 20x15x50x15x20x1.1 BMT tophat and minimum vertical G250 20x25x50x25x20x1.1 BMT tophat
8. Framing deflection limit: Span/250

Table 50 - Steel stud (0.75 BMT G550 and 1.15 BMT G2) and double layer metal battens - ULS wind load in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Stud spacing (mm)	Second layer vertical batten spacing (mm)						
		600	550	500	450	400	350	300
		First layer horizontal batten max spacing when fixed to steel stud (mm)						
1.00	600	900	900	900	900	900	900	900
	450	900	1050	1100	1100	1100	1100	1100
	400	900	1050	1100	1100	1100	1100	1100
	300	900	1050	1100	1100	1100	1100	1100
1.25	600	700	700	700	700	700	700	700
	450	700	850	1000	1100	1100	1100	1100
	400	700	850	1000	1100	1100	1100	1100
	300	700	850	1000	1100	1100	1100	1100
1.50	600	600	600	600	600	600	600	600
	450	600	700	850	1050	1050	1050	1050
	400	600	700	850	1050	1100	1100	1100
	300	600	700	850	1050	1100	1100	1100
1.75	600	500	500	500	500	500	500	500
	450	500	600	700	900	900	900	900
	400	500	600	700	900	1050	1100	1100
	300	500	600	700	900	1050	1100	1100
2.00	600	450	450	450	450	450	450	450
	450	450	500	600	800	800	800	800
	400	450	500	600	800	1000	1000	1000
	300	450	500	600	800	1000	1050	1100
2.25	600	400	400	400	400	400	400	400
	450	400	450	550	700	700	700	700
	400	400	450	550	700	900	900	900
	300	400	450	550	700	900	1000	1050
2.50	600	350	350	350	350	350	350	350
	450	350	400	500	600	600	600	600
	400	350	400	500	600	800	800	800
	300	350	400	500	600	800	950	1000
2.75	600	300	300	300	300	300	300	300
	450	300	350	450	550	550	550	550
	400	300	350	450	550	700	700	700
	300	300	350	450	550	700	900	950
3.00	600	300	300	300	300	300	300	300
	450	300	350	400	500	500	500	500
	400	300	350	400	500	650	650	650
	300	300	350	400	500	650	850	900
3.50	600	250	250	250	250	250	250	250
	450	250	300	350	450	450	450	450
	400	250	300	350	450	550	550	550
	300	250	300	350	450	550	750	850
4.00	600	200	200	200	200	200	200	200
	450	200	250	300	400	400	400	400
	400	200	250	300	400	500	500	500
	300	200	250	300	400	500	650	800
5.00	600	150	150	150	150	150	150	150
	450	150	200	250	300	300	300	300
	400	150	200	250	300	400	400	400
	300	150	200	250	300	400	500	650
6.00	600	150	150	150	150	150	150	150
	450	150	150	200	250	250	250	250
	400	150	150	200	250	300	300	300
	300	150	150	200	250	300	400	550
7.00	600	100	100	100	100	100	100	100
	450	100	150	150	200	200	200	200
	400	100	150	150	200	250	250	250
	300	100	150	150	200	250	350	450

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be minimum 2/12-14 self-drilling hex head tek screw
4. Fixing between first and second layer of battens to be minimum 2/12-14 self-drilling hex head tek screw
5. General zone: areas greater than 1200mm from an external building corner
6. Steel stud to be 0.75 BMT G550 or 1.15 BMT G2
7. Metal battens to be horizontal G250 20x15x50x15x20x1.1 BMT tophat and minimum vertical G250 20x25x50x25x20x1.1 BMT tophat
8. Framing deflection limit: Span/250

7.4.7 Steel stud (0.55 BMT G550) and double layer metal batten

Table 51 - Steel stud (0.55BMT G550) and double layer metal battens - General areas in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Stud spacing (mm)	Second layer vertical batten spacing (mm)								
		600	550	500	450	400	350	300	250	200
		First layer horizontal batten max spacing when fixed to steel stud (mm)								
N1	600	1100	1100	1100	1100	1100	1100	1100	1100	1100
	450	1100	1100	1100	1100	1100	1100	1100	1100	1100
	400	1100	1100	1100	1100	1100	1100	1100	1100	1100
	300	1100	1100	1100	1100	1100	1100	1100	1100	1100
N2	600	1100	1100	1100	1100	1100	1100	1100	1100	1100
	450	1100	1100	1100	1100	1100	1100	1100	1100	1100
	400	1100	1100	1100	1100	1100	1100	1100	1100	1100
	300	1100	1100	1100	1100	1100	1100	1100	1100	1100
N3	600	850	850	850	850	850	850	850	850	850
	450	850	1000	1100	1100	1100	1100	1100	1100	1100
	400	850	1000	1100	1100	1100	1100	1100	1100	1100
	300	850	1000	1100	1100	1100	1100	1100	1100	1100
N4	600	550	550	550	550	550	550	550	550	550
	450	550	650	800	1000	1000	1000	1000	1000	1000
	400	550	650	800	1000	1100	1100	1100	1100	1100
	300	550	650	800	1000	1100	1100	1100	1100	1100
N5	600	350	350	350	350	350	350	350	350	350
	450	350	450	550	650	650	650	650	650	650
	400	350	450	550	650	850	850	850	850	850
	300	350	450	550	650	850	950	1050	1100	1100
N6	600	250	250	250	250	250	250	250	250	250
	450	250	300	400	500	500	500	500	500	500
	400	250	300	400	500	650	650	650	650	650
	300	250	300	400	500	650	850	900	1000	1100

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be minimum 2/12-14 self-drilling hex head tek screw
4. Fixing between first and second layer of battens to be minimum 2/12-14 self-drilling hex head tek screw
5. General zone: areas greater than 1200mm from an external building corner
6. Steel stud to be 0.55 BMT G550
7. Metal battens to be horizontal G250 20x15x50x15x20x1.1 BMT tophat and minimum vertical G250 20x25x50x25x20x1.1 BMT tophat
8. Framing deflection limit: Span/250

Table 52 - Steel stud (0.55BMT G550) and double layer metal battens - Corner areas in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Stud spacing (mm)	Second layer vertical batten spacing (mm)								
		600	550	500	450	400	350	300	250	200
		First layer horizontal batten max spacing when fixed to steel stud (mm)								
N1	600	950	950	950	950	950	950	950	950	950
	450	950	1100	1100	1100	1100	1100	1100	1100	1100
	400	950	1100	1100	1100	1100	1100	1100	1100	1100
	300	950	1100	1100	1100	1100	1100	1100	1100	1100
N2	600	700	700	700	700	700	700	700	700	700
	450	700	850	1000	1100	1100	1100	1100	1100	1100
	400	700	850	1000	1100	1100	1100	1100	1100	1100
	300	700	850	1000	1100	1100	1100	1100	1100	1100
N3	600	450	450	450	450	450	450	450	450	450
	450	450	500	650	800	800	800	800	800	800
	400	450	500	650	800	1000	1000	1000	1000	1000
	300	450	500	650	800	1000	1050	1100	1100	1100
N4	600	300	300	300	300	300	300	300	300	300
	450	300	350	400	550	550	550	550	550	550
	400	300	350	400	550	650	650	650	650	650
	300	300	350	400	550	650	850	950	1050	1100
N5	600	200	200	200	200	200	200	200	200	200
	450	200	250	300	350	350	350	350	350	350
	400	200	250	300	350	450	450	450	450	450
	300	200	250	300	350	450	600	750	750	750
N6	600	150	150	150	150	150	150	150	150	150
	450	150	150	200	250	250	250	250	250	250
	400	150	150	200	250	350	350	350	350	350
	300	150	150	200	250	350	450	550	550	550

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be minimum 2/12-14 self-drilling hex head tek screw
4. Fixing between first and second layer of battens to be minimum 2/12-14 self-drilling hex head tek screw
5. General zone: areas greater than 1200mm from an external building corner
6. Steel stud to be 0.55 BMT G550
7. Metal battens to be horizontal G250 20x15x50x15x20x1.1 BMT tophat and minimum vertical G250 20x25x50x25x20x1.1 BMT tophat
8. Framing deflection limit: Span/250

Table 53 - Steel stud (0.55BMT G550) and double layer metal battens - ULS wind load in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Stud spacing (mm)	Second layer vertical batten spacing (mm)						
		600	550	500	450	400	350	300
		First layer horizontal batten max spacing when fixed to steel stud (mm)						
1.00	600	900	900	900	900	900	900	900
	450	900	1050	1100	1100	1100	1100	1100
	400	900	1050	1100	1100	1100	1100	1100
	300	900	1050	1100	1100	1100	1100	1100
1.25	600	700	700	700	700	700	700	700
	450	700	850	1000	1100	1100	1100	1100
	400	700	850	1000	1100	1100	1100	1100
	300	700	850	1000	1100	1100	1100	1100
1.50	600	600	600	600	600	600	600	600
	450	600	700	850	1050	1050	1050	1050
	400	600	700	850	1050	1100	1100	1100
	300	600	700	850	1050	1100	1100	1100
1.75	600	500	500	500	500	500	500	500
	450	500	600	700	900	900	900	900
	400	500	600	700	900	1050	1100	1100
	300	500	600	700	900	1050	1100	1100
2.00	600	450	450	450	450	450	450	450
	450	450	500	600	800	800	800	800
	400	450	500	600	800	1000	1000	1000
	300	450	500	600	800	1000	1050	1100
2.25	600	400	400	400	400	400	400	400
	450	400	450	550	700	700	700	700
	400	400	450	550	700	900	900	900
	300	400	450	550	700	900	1000	1050
2.50	600	350	350	350	350	350	350	350
	450	350	400	500	600	600	600	600
	400	350	400	500	600	800	800	800
	300	350	400	500	600	800	950	1000
2.75	600	300	300	300	300	300	300	300
	450	300	350	450	550	550	550	550
	400	300	350	450	550	700	700	700
	300	300	350	450	550	700	900	950
3.00	600	300	300	300	300	300	300	300
	450	300	350	400	500	500	500	500
	400	300	350	400	500	650	650	650
	300	300	350	400	500	650	850	900
3.50	600	250	250	250	250	250	250	250
	450	250	300	350	450	450	450	450
	400	250	300	350	450	550	550	550
	300	250	300	350	450	550	750	850
4.00	600	200	200	200	200	200	200	200
	450	200	250	300	400	400	400	400
	400	200	250	300	400	500	500	500
	300	200	250	300	400	500	650	800
5.00	600	150	150	150	150	150	150	150
	450	150	200	250	300	300	300	300
	400	150	200	250	300	400	400	400
	300	150	200	250	300	400	500	650
6.00	600	150	150	150	150	150	150	150
	450	150	150	200	250	250	250	250
	400	150	150	200	250	300	300	300
	300	150	150	200	250	300	400	550
7.00	600	100	100	100	100	100	100	100
	450	100	150	150	200	200	200	200
	400	100	150	150	200	250	250	250
	300	100	150	150	200	250	350	450

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be minimum 2/12-14 self-drilling hex head tek screw
4. Fixing between first and second layer of battens to be minimum 2/12-14 self-drilling hex head tek screw
5. General zone: areas greater than 1200mm from an external building corner
6. Steel stud to be 0.55 BMT G550
7. Metal battens to be horizontal G250 20x15x50x15x20x1.1 BMT tophat and minimum vertical G250 20x25x50x25x20x1.1 BMT tophat
8. Framing deflection limit: Span/250

7.5 Batten span – Vertical cladding

7.5.1 Timber stud and timber batten

Table 54 - Timber stud and timber batten - General areas in AUS all regions

AS 4055 Wind class	Batten spacing (mm) - General zone						
	600	550	500	450	400	350	300
	Max batten span (mm)						
N1	1200	1200	1200	1200	1200	1200	1200
N2	1200	1200	1200	1200	1200	1200	1200
N3	900	900	900	1200	1200	1200	1200
N4	900	900	900	900	900	900	1200
N5	600	600	900	900	900	900	900
N6	600	600	600	600	600	900	900

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-11 timber screw with min embedment of 30mm
4. General zone: areas greater than 1200mm from an external building corner
5. Timber batten to be chamfered 35x70 H3 treated MGP10 grade minimum (JD5 joint group) and MGP10 stud grade
6. Framing deflection limit: Span/250

Table 55 - Timber stud and timber batten - Corner areas in AUS all regions

AS 4055 Wind class	Batten spacing (mm) - Corner zone						
	600	550	500	450	400	350	300
	Max batten span (mm)						
N1	900	1200	1200	1200	1200	1200	1200
N2	900	900	900	900	1200	1200	1200
N3	900	900	900	900	900	900	900
N4	600	600	600	600	900	900	900
N5	600	600	600	600	600	600	600
N6	600	600	600	600	600	600	600

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-11 timber screw with min embedment of 30mm
4. Corner zone: Areas less than 1200mm from an external building corner
5. Timber batten to be chamfered 35x70 H3 treated MGP10 grade minimum (JD5 joint group) and MGP10 stud grade
6. Framing deflection limit: Span/250

Table 56 - Timber stud and timber batten ULS wind load in AUS all regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max batten span (mm)						
1.0	900	900	1200	1200	1200	1200	1200
1.5	900	900	900	900	900	900	1200
2.0	900	900	900	900	900	900	900
2.5	600	600	600	900	900	900	900
3.0	600	600	600	600	900	900	900
3.5	450	600	600	600	600	600	900
4.0	450	450	600	600	600	600	900
4.5	450	450	450	600	600	600	600
5.0	300	300	450	450	600	600	600
5.5	300	300	300	450	450	600	600
6.0	300	300	300	450	450	450	600
6.5	300	300	300	300	450	450	600
7.0	-	300	300	300	300	450	450

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-11 timber screw with min embedment of 30mm
4. Timber batten to be chamfered 35x70 H3 treated MGP10 grade minimum (JD5 joint group) and MGP10 stud grade
5. Framing deflection limit: Span/250

7.5.2 Steel stud and timber batten

Table 57 - Steel stud and timber batten - General areas in AUS all regions

AS 4055 Wind class	Batten spacing (mm) - General zone						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0.55BMT G550 stud (mm)						
N1	1200	1200	1200	1200	1200	1200	1200
N2	1200	1200	1200	1200	1200	1200	1200
N3	600	900	900	900	1200	1200	1200
N4	450	600	600	600	600	900	900
N5	300	300	450	450	450	600	600
N6	-	300	300	300	300	450	450
Wind class	Max batten span when fixed to 0.75BMT G550 stud (mm)						
N1	1200	1200	1200	1200	1200	1200	1200
N2	1200	1200	1200	1200	1200	1200	1200
N3	900	900	900	1200	1200	1200	1200
N4	600	600	900	900	900	900	1200
N5	450	600	600	600	600	900	900
N6	300	300	450	450	600	600	600
Wind class	Max batten span when fixed to 1.15BMT G2 stud (mm)						
N1	1200	1200	1200	1200	1200	1200	1200
N2	1200	1200	1200	1200	1200	1200	1200
N3	900	900	900	1200	1200	1200	1200
N4	600	600	900	900	900	900	1200
N5	450	600	600	600	600	900	900
N6	300	300	450	450	600	600	600

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-14 tek screw
4. General zone: areas greater than 1200mm from an external building corner
5. Timber batten to be chamfered 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
6. Framing deflection limit: Span/250

Table 58 - Steel stud and timber batten - Corner areas in AUS all regions

AS 4055 Wind class	Batten spacing (mm) - Corner zone						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0.55BMT G550 stud (mm)						
N1	900	1200	1200	1200	1200	1200	1200
N2	900	900	900	900	1200	1200	1200
N3	600	600	900	900	900	900	900
N4	450	450	600	600	600	900	900
N5	300	300	300	450	450	600	600
N6	-	-	300	300	300	450	450
Wind class	Max batten span when fixed to 0.75BMT G550 stud (mm)						
N1	900	1200	1200	1200	1200	1200	1200
N2	900	900	900	900	1200	1200	1200
N3	900	900	900	900	900	900	900
N4	600	600	600	600	900	900	900
N5	450	450	600	600	600	600	600
N6	300	300	450	450	450	600	600
Wind class	Max batten span when fixed to 1.15BMT G2 stud (mm)						
N1	900	1200	1200	1200	1200	1200	1200
N2	900	900	900	900	1200	1200	1200
N3	900	900	900	900	900	900	900
N4	600	600	600	600	900	900	900
N5	450	450	600	600	600	600	600
N6	300	300	450	450	450	600	600

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-14 tek screw
4. Corner zone: Areas less than 1200mm from an external building corner
5. Timber batten to be chamfered 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
6. Framing deflection limit: Span/250

Table 59 - Steel stud and timber batten ULS wind load in AUS all regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0.55BMT G550 stud (mm)						
1.0	600	900	900	900	1200	1200	1200
1.5	450	600	600	600	600	900	900
2.0	300	450	450	450	600	600	600
2.5	300	300	300	300	450	450	600
3.0	-	300	300	300	300	450	450
3.5	-	-	-	300	300	300	450
4.0	-	-	-	-	300	300	300
4.5	-	-	-	-	-	300	300
5.0	-	-	-	-	-	-	300
5.5	-	-	-	-	-	-	300
6.0	-	-	-	-	-	-	-
6.5	-	-	-	-	-	-	-
7.0	-	-	-	-	-	-	-
ULS wind pressure (kPa)	Max batten span when fixed to 0.75BMT G550 stud (mm)						
1.0	900	900	1200	1200	1200	1200	1200
1.5	600	600	900	900	900	900	1200
2.0	450	600	600	600	600	900	900
2.5	450	450	450	600	600	600	900
3.0	300	300	450	450	450	600	600
3.5	300	300	300	450	450	450	600
4.0	-	300	300	300	300	450	450
4.5	-	-	300	300	300	450	450
5.0	-	-	-	300	300	300	450
5.5	-	-	-	-	300	300	300
6.0	-	-	-	-	-	300	300
6.5	-	-	-	-	-	300	300
7.0	-	-	-	-	-	-	300
ULS wind pressure (kPa)	Max batten span when fixed to 1.15BMT G2 stud (mm)						
1.0	900	900	1200	1200	1200	1200	1200
1.5	600	600	900	900	900	900	1200
2.0	450	600	600	600	600	900	900
2.5	450	450	450	600	600	600	900
3.0	300	300	450	450	450	600	600
3.5	300	300	300	450	450	450	600
4.0	-	300	300	300	300	450	450
4.5	-	-	300	300	300	450	450
5.0	-	-	-	300	300	300	450
5.5	-	-	-	-	300	300	300
6.0	-	-	-	-	-	300	300
6.5	-	-	-	-	-	300	300
7.0	-	-	-	-	-	-	300

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-14 tek screw
4. Timber batten to be chamfered 35x70 H3 treated MGP10 grade minimum (JD5 joint group)
5. Framing deflection limit: Span/250

7.5.3 Timber stud and horizontal metal batten

Table 60 – Timber stud and single layer horizontal metal battens – General areas in AUS non-cyclonic regions

AS 4055 Wind class	Batten spacing (mm) – General zone								
	600	550	500	450	400	350	300	250	200
	Max metal batten span when fixed to timber stud (mm)								
N1	900	900	900	900	900	900	900	900	900
N2	900	900	900	900	900	900	900	900	900
N3	900	900	900	900	900	900	900	900	900
N4	900	900	900	900	900	900	900	900	900
N5	600	600	600	600	900	900	900	900	900
N6	600	600	600	600	600	600	900	900	900

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Macsim 15 x 72 x 100mm Grey Shim to be fixed at each batten and stud connection
4. Fixing between the metal batten and stud to be 2/12-11 self-drilling hex head tek screws. Fixings are to pass through the solid shim into the stud with min embedment of 30mm of thread in the stud.
5. General zone: areas greater than 1200mm from an external building corner
6. Metal batten to be min G250 20x25x50x25x20x1.1 BMT tophat
7. Timber stud grade to be minimum MGP10 (JD5 joint group)
8. Framing deflection limit: Span/250

Table 61 – Timber stud and single layer horizontal metal battens – Corner areas in AUS non-cyclonic regions

AS 4055 Wind class	Batten spacing (mm) – Corner zone								
	600	550	500	450	400	350	300	250	200
	Max metal batten span when fixed to timber stud (mm)								
N1	900	900	900	900	900	900	900	900	900
N2	900	900	900	900	900	900	900	900	900
N3	600	600	900	900	900	900	900	900	900
N4	600	600	600	600	600	600	900	900	900
N5	450	450	600	600	600	600	600	600	900
N6	450	450	450	450	450	600	600	600	600

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Macsim 15 x 72 x 100mm Grey Shim to be fixed at each batten and stud connection
4. Fixing between the metal batten and stud to be 2/12-11 self-drilling hex head tek screws. Fixings are to pass through the solid shim into the stud with min embedment of 30mm of thread in the stud.
5. Corner zone: Areas less than 1200mm from an external building corner
6. Metal batten to be min G250 20x25x50x25x20x1.1 BMT tophat
7. Timber stud grade to be minimum MGP10 (JD5 joint group)
8. Framing deflection limit: Span/250

Table 62 – Timber stud and single layer horizontal metal battens - ULS wind load in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max metal batten span when fixed to timber stud (mm)						
1.00	900	900	900	900	900	900	900
1.25	900	900	900	900	900	900	900
1.50	900	900	900	900	900	900	900
1.75	600	900	900	900	900	900	900
2.00	600	600	600	900	900	900	900
2.25	600	600	600	600	900	900	900
2.50	600	600	600	600	600	900	900
2.75	600	600	600	600	600	900	900
3.00	600	600	600	600	600	600	900
3.50	600	600	600	600	600	600	600
4.00	450	600	600	600	600	600	600
5.00	450	450	450	450	600	600	600
6.00	450	450	450	450	450	600	600
7.00	300	450	450	450	450	450	600

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Macsim 15 x 72 x 100mm Grey Shim to be fixed at each batten and stud connection
4. Fixing between the metal batten and stud to be 2/12-11 self-drilling hex head tek screws. Fixings are to pass through the solid shim into the stud with min embedment of 30mm of thread in the stud.
5. Metal batten to be min G250 20x25x50x25x20x1.1 BMT tophat
6. Timber stud grade to be minimum MGP10 (JD5 joint group)
7. Framing deflection limit: Span/250

7.5.4 Steel stud and horizontal metal batten

Table 63 – Steel stud and single layer horizontal metal battens – General areas in AUS non-cyclonic regions

AS 4055 Wind class	Batten spacing (mm) – General zone								
	600	550	500	450	400	350	300	250	200
	Max metal batten span when fixed to 0.55BMT G550 stud (mm)								
N1	900	900	900	900	900	900	900	900	900
N2	900	900	900	900	900	900	900	900	900
N3	900	900	900	900	900	900	900	900	900
N4	900	900	900	900	900	900	900	900	900
N5	600	600	600	600	900	900	900	900	900
N6	450	600	600	600	600	600	900	900	900
	Max metal batten span when fixed to 0.75BMT G550 stud (mm)								
N1	900	900	900	900	900	900	900	900	900
N2	900	900	900	900	900	900	900	900	900
N3	900	900	900	900	900	900	900	900	900
N4	900	900	900	900	900	900	900	900	900
N5	600	600	600	600	900	900	900	900	900
N6	600	600	600	600	600	600	900	900	900
	Max metal batten span when fixed to 1.15BMT G2 stud (mm)								
N1	900	900	900	900	900	900	900	900	900
N2	900	900	900	900	900	900	900	900	900
N3	900	900	900	900	900	900	900	900	900
N4	900	900	900	900	900	900	900	900	900
N5	600	600	600	600	900	900	900	900	900
N6	600	600	600	600	600	600	900	900	900

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Macsim 15 x 72 x 100mm Grey Shim to be fixed at each batten and stud connection
4. Fixing between the batten and stud/nogging to be minimum 2/12-14 self-drilling hex head tek screw. Fixings are to pass through the solid shim into the stud.
5. General zone: areas greater than 1200mm from an external building corner
6. Metal batten to be min G250 20x25x50x25x20x1.1 BMT tophat
7. Framing deflection limit: Span/250

Table 64 – Steel stud and single layer horizontal metal battens – Corner areas in AUS non-cyclonic regions

AS 4055 Wind class	Batten spacing (mm) – Corner zone								
	600	550	500	450	400	350	300	250	200
	Max metal batten span when fixed to 0.55BMT G550 stud (mm)								
N1	900	900	900	900	900	900	900	900	900
N2	900	900	900	900	900	900	900	900	900
N3	600	600	900	900	900	900	900	900	900
N4	450	600	600	600	600	600	900	900	900
N5	300	300	450	450	450	600	600	600	900
N6	-	300	300	300	300	450	450	600	600
	Max metal batten span when fixed to 0.75BMT G550 stud (mm)								
N1	900	900	900	900	900	900	900	900	900
N2	900	900	900	900	900	900	900	900	900
N3	600	600	900	900	900	900	900	900	900
N4	600	600	600	600	600	600	900	900	900
N5	450	450	600	600	600	600	600	600	900
N6	300	300	450	450	450	600	600	600	600
	Max metal batten span when fixed to 1.15BMT G2 stud (mm)								
N1	900	900	900	900	900	900	900	900	900
N2	900	900	900	900	900	900	900	900	900
N3	600	600	900	900	900	900	900	900	900
N4	600	600	600	600	600	600	900	900	900
N5	450	450	600	600	600	600	600	600	900
N6	300	300	450	450	450	600	600	600	600

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Macsim 15 x 72 x 100mm Grey Shim to be fixed at each batten and stud connection
4. Fixing between the batten and stud/nogging to be minimum 2/12-14 self-drilling hex head tek screw. Fixings are to pass through the solid shim into the stud.
5. Corner zone: Areas less than 1200mm from an external building corner
6. Metal batten to be min G250 20x25x50x25x20x1.1 BMT tophat
7. Framing deflection limit: Span/250

Table 65 – Steel stud and single layer horizontal metal battens - ULS wind load in AUS non-cyclonic regions

AS/NZS 1170.2 ULS wind pressure (kPa)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max metal batten span when fixed to 0.55BMT G550 stud (mm)						
1.00	900	900	900	900	900	900	900
1.25	900	900	900	900	900	900	900
1.50	900	900	900	900	900	900	900
1.75	600	900	900	900	900	900	900
2.00	600	600	600	900	900	900	900
2.25	600	600	600	600	900	900	900
2.50	600	600	600	600	600	900	900
2.75	600	600	600	600	600	900	900
3.00	450	600	600	600	600	600	900
3.50	450	450	450	600	600	600	600
4.00	300	450	450	450	600	600	600
5.00	300	300	300	300	450	450	600
6.00	-	300	300	300	300	450	450
7.00	-	-	-	300	300	300	450
	Max metal batten span when fixed to 0.75BMT G550 stud (mm)						
1.00	900	900	900	900	900	900	900
1.25	900	900	900	900	900	900	900
1.50	900	900	900	900	900	900	900
1.75	600	900	900	900	900	900	900
2.00	600	600	600	900	900	900	900
2.25	600	600	600	600	900	900	900
2.50	600	600	600	600	600	900	900
2.75	600	600	600	600	600	900	900
3.00	600	600	600	600	600	600	900
3.50	600	600	600	600	600	600	600
4.00	450	600	600	600	600	600	600
5.00	450	450	450	450	600	600	600
6.00	300	300	450	450	450	600	600
7.00	300	300	300	450	450	450	600
	Max metal batten span when fixed to 1.15BMT G2 stud (mm)						
1.00	900	900	900	900	900	900	900
1.25	900	900	900	900	900	900	900
1.50	900	900	900	900	900	900	900
1.75	600	900	900	900	900	900	900
2.00	600	600	600	900	900	900	900
2.25	600	600	600	600	900	900	900
2.50	600	600	600	600	600	900	900
2.75	600	600	600	600	600	900	900
3.00	600	600	600	600	600	600	900
3.50	600	600	600	600	600	600	600
4.00	450	600	600	600	600	600	600
5.00	450	450	450	450	600	600	600
6.00	300	300	450	450	450	600	600
7.00	300	300	300	450	450	450	600

Notes to table:

1. Cladding span tables take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Macsim 15 x 72 x 100mm Grey Shim to be fixed at each batten and stud connection
4. Fixing between the batten and stud/nogging to be minimum 2/12-14 self-drilling hex head tek screw. Fixings are to pass through the solid shim into the stud.
5. Metal batten to be min G250 20x25x50x25x20x1.1 BMT tophat
6. Framing deflection limit: Span/250

8.0 Span tables for New Zealand

8.1 Wind Loading

Wind Class	Ultimate wind speed V_U m/s	Net pressure coefficient $C_{p,u}$			Pressure (Any) kPa	Suction (General) kPa	Suction (Corners) kPa
		Pressure (Any)	Suction (General)	Suction (Corners)			
Low	32	0.7	-0.65	-1.3	0.43	-0.40	-0.80
Medium	37	0.7	-0.65	-1.3	0.57	-0.53	-1.07
High	44	0.7	-0.65	-1.3	0.81	-0.76	-1.51
Very high	50	0.7	-0.65	-1.3	1.05	-0.98	-1.95
Extra high	55	0.7	-0.65	-1.3	1.27	-1.18	-2.36

Notes to table:

1. Wind loads have been determined for external pressures only, it is assumed that internal pressures will not be applied to the cladding

8.2 CEDRAL LAP

8.2.1 Screw into timber batten

Table 66 - CEDRAL LAP: Max fixing spacing for screw into timber batten in NZ

NZ 3604 Wind class	Max cladding fixing/batten spacing (mm)			
	Multiple span cladding		Single span cladding	
	General zones	Corner zones	General zones	Corner zones
Low	600	600	600	600
Medium	600	600	600	600
High	600	600	600	600
Very high	600	500	600	500
Extra high	600	450	600	400

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP 4.2x45 or 4.0x45 countersunk screw
2. General zone: Areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J5)
6. Framing deflection limit: Span/250

Table 67 - CEDRAL LAP: Max ultimate wind pressure for screw into timber batten in NZ

Cladding fixing/batten spacing (mm)	Max AS/NZS1170.2 ultimate wind pressure (kPa)	
	Multiple span cladding	Single span cladding
600	1.79	1.66
550	1.95	1.81
500	2.14	1.99
450	2.38	2.21
400	2.68	2.49
350	3.06	2.84
300	3.57	3.32

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP 4.2x45 or 4.0x45 countersunk screw
2. General zone: Areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to 150mm
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J5)
6. Framing deflection limit: Span/250

Table 68 - CEDRAL LAP: Max fixing spacing for screw into timber batten in NZ

AS/NZS1170.2 ultimate wind pressure (kPa)	Max cladding fixing/batten spacing (mm)	
	Multiple span cladding	Single span cladding
1.0	600	600
1.5	600	600
2.0	500	450
2.5	400	350
3.0	350	300
3.5	300	250
4.0	250	200
4.5	200	200
5.0	200	150
5.5	150	150
6.0	150	150
6.5	150	150
7.0	150	100

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP 4.2x45 or 4.0x45 countersunk screw
2. General zone: Areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be the minimum of 150mm or 20% of the adjacent span
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J5)
6. Framing deflection limit: Span/250

8.2.2 Nail into timber batten

Table 69 - CEDRAL LAP: Max fixing spacing for nail to timber batten in NZ

NZ 3604 Wind class	Max cladding fixing/batten spacing (mm)			
	Multiple span cladding		Single span cladding	
	General zones	Corner zones	General zones	Corner zones
Low	600	600	600	600
Medium	600	600	600	600
High	600	600	600	600
Very high	600	600	600	600
Extra high	600	450	600	500

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP nail or equivalent (2.8Øx45mm with 5.5Ø flat head)
2. General zone: Areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J4)
6. Framing deflection limit: Span/250

Table 70 - CEDRAL LAP: Max ultimate wind pressure for nail into timber batten in NZ

Cladding fixing/batten spacing (mm)	Max AS/NZS1170.2 ultimate wind pressure (kPa)	
	Multiple span cladding	Single span cladding
600	1.97	2.13
550	2.14	2.33
500	2.36	2.56
450	2.62	2.85
400	2.95	3.20
350	3.37	3.66
300	3.93	4.27

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP nail or equivalent (2.8Øx45mm with 5.5Ø flat head)
2. General zone: Areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J4)
6. Framing deflection limit: Span/250

Table 71 - CEDRAL LAP: Max fixing spacing for nail into timber batten in NZ

AS/NZS1170.2 ultimate wind pressure (kPa)	Max cladding fixing/batten spacing (mm)	
	Multiple span cladding	Single span cladding
1.0	600	600
1.5	600	600
2.0	550	600
2.5	450	500
3.0	350	400
3.5	300	350
4.0	250	300
4.5	250	250
5.0	200	250
5.5	200	200
6.0	150	200
6.5	150	150
7.0	150	150

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP nail or equivalent (2.8Øx45mm with 5.5Ø flat head)
2. General zone: Areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be the minimum of 150mm or 20% of the adjacent span
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J4)
6. Framing deflection limit: Span/250

8.2.3 Screw into metal batten

Table 72 - CEDRAL LAP: Max fixing spacing for screw to metal batten in NZ

NZ 3604 Wind class	Max cladding fixing/batten spacing (mm)			
	Multiple span cladding		Single span cladding	
	General zones	Corner zones	General zones	Corner zones
Low	600	600	600	600
Medium	600	600	600	600
High	600	600	600	600
Very high	600	500	600	500
Extra high	600	450	600	400

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP countersunk metal screw 4.5x32mm
2. General zone: Areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm
5. Batten to be minimum 1.1BMT G250
6. Framing deflection limit: Span/250

Table 73 - CEDRAL LAP: Max ultimate wind pressure for screw to metal batten in NZ

Cladding fixing/batten spacing (mm)	Max AS/NZS1170.2 ultimate wind pressure (kPa)	
	Multiple span cladding	Single span cladding
600	1.79	1.66
550	1.95	1.81
500	2.14	1.99
450	2.38	2.21
400	2.68	2.49
350	3.06	2.84
300	3.57	3.32

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP countersunk metal screw 4.5x32mm
2. Max panel cantilever to be 150mm
3. Batten to be minimum 1.1BMT G250
4. Framing deflection limit: Span/250

Table 74 - CEDRAL LAP: Max fixing spacing for screw to metal batten in NZ

AS/NZS1170.2 ultimate wind pressure (kPa)	Max cladding fixing/batten spacing (mm)	
	Multiple span cladding	Single span cladding
1.0	600	600
1.5	600	600
2.0	500	450
2.5	400	350
3.0	350	300
3.5	300	250
4.0	250	200
4.5	200	200
5.0	200	150
5.5	150	150
6.0	150	150
6.5	150	150
7.0	150	100

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL LAP countersunk metal screw 4.5x32mm
2. Max panel cantilever to be the minimum of 150mm or 20% of the adjacent span
3. Batten to be minimum 1.1BMT G250
4. Framing deflection limit: Span/250

8.3 CEDRAL CLICK

8.3.1 Screw to timber batten

Table 75 - CEDRAL CLICK: Max fixing spacing for screw into timber batten in NZ

NZ 3604 Wind class	Max cladding fixing/batten spacing (mm)			
	Multiple span cladding		Single span cladding	
	General zones	Corner zones	General zones	Corner zones
Low	600	600	600	600
Medium	600	600	600	600
High	600	600	600	600
Very high	600	600	600	600
Extra high	600	500	600	600

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and screw
2. General zone: Areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J5)
6. Framing deflection limit: Span/250

Table 76 - CEDRAL CLICK: Max ultimate wind pressure for screw into timber batten in NZ

Cladding fixing/batten spacing (mm)	Max AS/NZS1170.2 ultimate wind pressure (kPa)	
	Multiple span cladding	Single span cladding
600	2.02	2.93
550	2.20	3.20
500	2.42	3.52
450	2.69	3.91
400	3.03	4.40
350	3.46	5.03
300	4.03	5.87

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and screw
2. General zone: Areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J5)
6. Framing deflection limit: Span/250

Table 77 - CEDRAL CLICK: Max fixing spacing for screw into timber batten in NZ

AS/NZS1170.2 ultimate wind pressure (kPa)	Max cladding fixing/batten spacing (mm)	
	Multiple span cladding	Single span cladding
1.0	600	600
1.5	600	600
2.0	600	600
2.5	450	600
3.0	400	550
3.5	300	500
4.0	300	400
4.5	250	350
5.0	200	350
5.5	200	300
6.0	200	250
6.5	150	250
7.0	150	250

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and screw
2. General zone: Areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be the minimum of 150mm or 20% of the adjacent span
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J5)
6. Framing deflection limit: Span/250

8.3.2 Rivet to metal batten

Table 78 - CEDRAL CLICK: Max fixing spacing for rivet into metal batten in NZ

NZ 3604 Wind class	Max cladding fixing/batten spacing (mm)			
	Multiple span cladding		Single span cladding	
	General zones	Corner zones	General zones	Corner zones
Low	600	600	600	600
Medium	600	600	600	600
High	600	600	600	600
Very high	600	600	600	600
Extra high	600	500	600	600

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and rivet
2. General zone: Areas greater than 1200mm from an external building corner
3. Corner zone: Areas less than 1200mm from an external building corner
4. Max panel cantilever to be 150mm
5. Batten to be minimum 1.1BMT G250
6. Framing deflection limit: Span/250

Table 79 - CEDRAL CLICK: Max ultimate wind pressure for rivet into metal batten in NZ

Cladding fixing/batten spacing (mm)	Max AS/NZS1170.2 ultimate wind pressure (kPa)	
	Multiple span cladding	Single span cladding
600	2.02	2.93
550	2.20	3.20
500	2.42	3.52
450	2.69	3.91
400	3.03	4.40
350	3.46	5.03
300	4.03	5.87

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and rivet
2. Max panel cantilever to be 150mm
3. Batten to be minimum 1.1BMT G250
4. Framing deflection limit: Span/250

Table 80 - CEDRAL CLICK: Max fixing spacing for rivet into metal batten in NZ

AS/NZS1170.2 ultimate wind pressure (kPa)	Max cladding fixing/batten spacing (mm)	
	Multiple span cladding	Single span cladding
1.0	600	600
1.5	600	600
2.0	600	600
2.5	450	600
3.0	400	550
3.5	300	500
4.0	300	400
4.5	250	350
5.0	200	350
5.5	200	300
6.0	200	250
6.5	150	250
7.0	150	250

Notes to table:

1. Fixing between the cladding panel and batten to be CEDRAL CLICK clip and rivet
2. Max panel cantilever to be the minimum of 150mm or 20% of the adjacent span
3. Batten to be minimum 1.1BMT G250
4. Framing deflection limit: Span/250

8.4 Batten span – Horizontal cladding

8.4.1 Timber stud and timber batten

Table 81 - Timber stud and timber batten - General areas in NZ

NZ 3604 Wind class	Batten spacing (mm) - General zone						
	600	550	500	450	400	350	300
	Max batten span (mm)						
Low	1350	1400	1450	1500	1550	1650	1700
Medium	1250	1250	1300	1350	1400	1450	1550
High	1100	1100	1150	1200	1250	1300	1400
Very high	1000	1050	1050	1100	1150	1200	1250
Extra high	950	950	1000	1050	1100	1150	1200

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-11 timber screw with min embedment of 30mm
4. General zone: Areas greater than 1200mm from an external building corner
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J5) and SG6 stud grade
6. Framing deflection limit: Span/250

Table 82 - Timber stud and timber batten - Corner areas in NZ

NZ 3604 Wind class	Batten spacing (mm) - Corner zone						
	600	550	500	450	400	350	300
	Max batten span (mm)						
Low	1100	1150	1150	1200	1250	1300	1400
Medium	1000	1000	1050	1100	1150	1200	1250
High	850	900	950	950	1000	1050	1100
Very high	750	800	850	900	950	950	1050
Extra high	700	750	750	800	850	900	950

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-11 timber screw with min embedment of 30mm
4. Corner zone: Areas less than 1200mm from an external building corner
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J5) and SG6 stud grade
6. Framing deflection limit: Span/250

Table 83 - Timber stud and timber batten ULS wind load in NZ

AS/NZS 1170.2 ULS wind pressure (kPa)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max batten span (mm)						
1.0	1000	1050	1100	1100	1150	1200	1300
1.5	900	900	950	1000	1000	1050	1100
2.0	750	800	850	900	900	950	1000
2.5	650	700	750	800	850	900	950
3.0	600	650	650	700	750	800	900
3.5	550	600	600	650	700	750	800
4.0	450	500	550	600	650	700	750
4.5	400	450	500	550	600	650	700
5.0	350	400	450	500	550	600	650
5.5	350	350	400	450	500	600	650
6.0	300	350	350	400	450	550	600
6.5	300	300	350	400	450	500	600
7.0	250	300	300	350	400	450	550

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-11 timber screw with min embedment of 30mm
4. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J5) and SG6 stud grade
5. Framing deflection limit: Span/250

8.4.2 Steel stud and timber batten

Table 84 - Steel stud and timber batten - General areas in NZ

NZ 3604 Wind class	Batten spacing (mm) - General zone						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0.50BMT G550 stud (mm)						
Low	1350	1400	1450	1500	1550	1650	1700
Medium	1250	1250	1300	1350	1400	1450	1550
High	950	1050	1150	1200	1250	1300	1400
Very high	750	800	900	1000	1150	1200	1250
Extra high	600	650	750	800	950	1050	1200
Wind class	Max batten span when fixed to 0.75BMT G550 stud (mm)						
Low	1350	1400	1450	1500	1550	1650	1700
Medium	1250	1250	1300	1350	1400	1450	1550
High	1100	1100	1150	1200	1250	1300	1400
Very high	1000	1050	1050	1100	1150	1200	1250
Extra high	950	950	1000	1050	1100	1150	1200
Wind class	Max batten span when fixed to 1.20BMT G2 stud (mm)						
Low	1350	1400	1450	1500	1550	1650	1700
Medium	1250	1250	1300	1350	1400	1450	1550
High	1100	1100	1150	1200	1250	1300	1400
Very high	1000	1050	1050	1100	1150	1200	1250
Extra high	950	950	1000	1050	1100	1150	1200

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be minimum 1/12-14 tek screw
4. General zone: Areas greater than 1200mm from an external building corner
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J5)
6. Framing deflection limit: Span/250

Table 85 - Steel stud and timber batten - Corner areas in NZ

NZ 3604 Wind class	Batten spacing (mm) - Corner zone						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0.50BMT G550 stud (mm)						
Low	1100	1150	1150	1200	1250	1300	1400
Medium	1000	1000	1050	1100	1150	1200	1250
High	850	900	950	950	1000	1050	1100
Very high	700	750	850	900	950	950	1050
Extra high	550	600	700	750	850	900	950
Wind class	Max batten span when fixed to 0.75BMT G550 stud (mm)						
Low	1100	1150	1150	1200	1250	1300	1400
Medium	1000	1000	1050	1100	1150	1200	1250
High	850	900	950	950	1000	1050	1100
Very high	750	800	850	900	950	950	1050
Extra high	700	750	750	800	850	900	950
Wind class	Max batten span when fixed to 1.20BMT G2 stud (mm)						
Low	1100	1150	1150	1200	1250	1300	1400
Medium	1000	1000	1050	1100	1150	1200	1250
High	850	900	950	950	1000	1050	1100
Very high	750	800	850	900	950	950	1050
Extra high	700	750	750	800	850	900	950

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be minimum 1/12-14 tek screw
4. Corner zone: Areas less than 1200mm from an external building corner
5. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J5)
6. Framing deflection limit: Span/250

Table 86 - Steel stud and timber batten ULS wind load in NZ

AS/NZS 1170.2 ULS wind pressure (kPa)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0. 50BMT G550 stud (mm)						
1.0	750	800	900	1000	1100	1200	1300
1.5	500	500	600	650	750	850	1000
2.0	350	400	450	500	550	600	750
2.5	300	300	350	400	450	500	600
3.0	250	250	300	300	350	400	500
3.5	200	200	250	250	300	350	400
4.0	150	200	200	250	250	300	350
4.5	150	150	200	200	250	250	300
5.0	150	150	150	200	200	250	300
5.5	100	100	150	150	200	200	250
6.0	100	100	150	150	150	200	250
6.5	100	100	100	150	150	150	200
7.0	100	100	100	100	150	150	200
ULS wind pressure (kPa)	Max batten span when fixed to 0.75BMT G550 stud (mm)						
1.0	1000	1050	1100	1100	1150	1200	1300
1.5	750	850	900	1000	1000	1050	1100
2.0	550	600	700	750	850	950	1000
2.5	450	500	550	600	700	800	900
3.0	350	400	450	500	550	650	750
3.5	300	350	400	450	500	550	650
4.0	250	300	350	350	400	500	550
4.5	250	250	300	350	350	450	500
5.0	200	250	250	300	350	400	450
5.5	200	200	250	250	300	350	400
6.0	150	200	200	250	250	300	350
6.5	150	150	200	200	250	300	350
7.0	150	150	200	200	250	250	300
ULS wind pressure (kPa)	Max batten span when fixed to 1.20BMT G2 stud (mm)						
1.0	1000	1050	1100	1100	1150	1200	1300
1.5	750	850	900	1000	1000	1050	1100
2.0	550	600	700	750	850	950	1000
2.5	450	500	550	600	700	800	900
3.0	350	400	450	500	550	650	750
3.5	300	350	400	450	500	550	650
4.0	250	300	350	350	400	500	550
4.5	250	250	300	350	350	450	500
5.0	200	250	250	300	350	400	450
5.5	200	200	250	250	300	350	400
6.0	150	200	200	250	250	300	350
6.5	150	150	200	200	250	300	350
7.0	150	150	200	200	250	250	300

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be minimum 1/12-14 tek screw
4. Timber batten to be 35x70 H3.2 treated SG6 grade minimum (timber group J5)
5. Framing deflection limit: Span/250

8.5 Batten span – Vertical cladding

8.5.1 Timber stud and timber batten

Table 87 - Timber stud and timber batten - General areas in NZ

NZ 3604 Wind class	Batten spacing (mm) - General zone						
	600	550	500	450	400	350	300
	Max batten span (mm)						
Low	1200	1200	1200	1200	1200	1200	1200
Medium	1200	1200	1200	1200	1200	1200	1200
High	900	900	900	1200	1200	1200	1200
Very high	900	900	900	900	900	1200	1200
Extra high	900	900	900	900	900	900	1200

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-11 timber screw with min embedment of 30mm
4. General zone: Areas greater than 1200mm from an external building corner
5. Timber batten to be chamfered 35x70 H3.2 treated SG6 grade minimum (timber group J5) and SG6 stud grade
6. Framing deflection limit: Span/250

Table 88 - Timber stud and timber batten - Corner areas in NZ

NZ 3604 Wind class	Batten spacing (mm) - Corner zone						
	600	550	500	450	400	350	300
	Max batten span (mm)						
Low	900	900	900	1200	1200	1200	1200
Medium	900	900	900	900	900	1200	1200
High	600	900	900	900	900	900	900
Very high	600	600	600	600	900	900	900
Extra high	600	600	600	600	600	900	900

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-11 timber screw with min embedment of 30mm
4. Corner zone: Areas less than 1200mm from an external building corner
5. Timber batten to be chamfered 35x70 H3.2 treated SG6 grade minimum (timber group J5) and SG6 stud grade
6. Framing deflection limit: Span/250

Table 89 - Timber stud and timber batten ULS wind load in NZ

AS/NZS 1170.2 ULS wind pressure (kPa)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max batten span (mm)						
1.0	900	900	900	900	900	1200	1200
1.5	600	900	900	900	900	900	900
2.0	600	600	600	600	900	900	900
2.5	600	600	600	600	600	600	900
3.0	600	600	600	600	600	600	600
3.5	450	600	600	600	600	600	600
4.0	450	450	450	600	600	600	600
4.5	300	450	450	450	600	600	600
5.0	300	300	450	450	450	600	600
5.5	300	300	300	450	450	600	600
6.0	300	300	300	300	450	450	600
6.5	300	300	300	300	450	450	450
7.0	-	300	300	300	300	450	450

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be 1/12-11 timber screw with min embedment of 30mm
4. Timber batten to be chamfered 35x70 H3.2 treated SG6 grade minimum (timber group J5) and SG6 stud grade
5. Framing deflection limit: Span/250

8.5.2 Steel stud and timber batten

Table 90 - Steel stud and timber batten - General areas in NZ

NZ 3604 Wind class	Batten spacing (mm) - General zone						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0.50BMT G550 stud (mm)						
Low	1200	1200	1200	1200	1200	1200	1200
Medium	1200	1200	1200	1200	1200	1200	1200
High	900	900	900	1200	1200	1200	1200
Very high	600	600	900	900	900	1200	1200
Extra high	600	600	600	600	900	900	1200
Wind class	Max batten span when fixed to 0.75BMT G550 stud (mm)						
Low	1200	1200	1200	1200	1200	1200	1200
Medium	1200	1200	1200	1200	1200	1200	1200
High	900	900	900	1200	1200	1200	1200
Very high	900	900	900	900	900	1200	1200
Extra high	900	900	900	900	900	900	1200
Wind class	Max batten span when fixed to 1.20BMT G2 stud (mm)						
Low	1200	1200	1200	1200	1200	1200	1200
Medium	1200	1200	1200	1200	1200	1200	1200
High	900	900	900	1200	1200	1200	1200
Very high	900	900	900	900	900	1200	1200
Extra high	900	900	900	900	900	900	1200

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be minimum 1/12-14 tek screw
4. General zone: Areas greater than 1200mm from an external building corner
5. Timber batten to be chamfered 35x70 H3.2 treated SG6 grade minimum (timber group J5)
6. Framing deflection limit: Span/250

Table 91 - Steel stud and timber batten - Corner areas in NZ

NZ 3604 Wind class	Batten spacing (mm) - Corner zone						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0.50BMT G550 stud (mm)						
Low	900	900	900	1200	1200	1200	1200
Medium	900	900	900	900	900	1200	1200
High	600	900	900	900	900	900	900
Very high	600	600	600	600	900	900	900
Extra high	450	600	600	600	600	900	900
Wind class	Max batten span when fixed to 0.75BMT G550 stud (mm)						
Low	900	900	900	1200	1200	1200	1200
Medium	900	900	900	900	900	1200	1200
High	600	900	900	900	900	900	900
Very high	600	600	600	600	900	900	900
Extra high	600	600	600	600	600	900	900
Wind class	Max batten span when fixed to 1.20BMT G2 stud (mm)						
Low	900	900	900	1200	1200	1200	1200
Medium	900	900	900	900	900	1200	1200
High	600	900	900	900	900	900	900
Very high	600	600	600	600	900	900	900
Extra high	600	600	600	600	600	900	900

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be minimum 1/12-14 tek screw
4. Corner zone: Areas less than 1200mm from an external building corner
5. Timber batten to be chamfered 35x70 H3.2 treated SG6 grade minimum (timber group J5)
6. Framing deflection limit: Span/250

Table 92 - Steel stud and timber batten ULS wind load in NZ

AS/NZS 1170.2 ULS wind pressure (kPa)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0.50BMT G550 stud (mm)						
1.0	600	600	900	900	900	1200	1200
1.5	450	450	600	600	600	600	900
2.0	300	300	450	450	450	600	600
2.5	300	300	300	300	450	450	600
3.0	-	-	300	300	300	300	450
3.5	-	-	-	-	300	300	300
4.0	-	-	-	-	-	300	300
4.5	-	-	-	-	-	-	300
5.0	-	-	-	-	-	-	300
5.5	-	-	-	-	-	-	-
6.0	-	-	-	-	-	-	-
6.5	-	-	-	-	-	-	-
7.0	-	-	-	-	-	-	-
ULS wind pressure (kPa)	Max batten span when fixed to 0.75BMT G550 stud (mm)						
1.0	900	900	900	900	900	1200	1200
1.5	600	600	900	900	900	900	900
2.0	450	600	600	600	600	900	900
2.5	450	450	450	600	600	600	900
3.0	300	300	450	450	450	600	600
3.5	300	300	300	450	450	450	600
4.0	-	300	300	300	300	450	450
4.5	-	-	300	300	300	450	450
5.0	-	-	-	300	300	300	450
5.5	-	-	-	-	300	300	300
6.0	-	-	-	-	-	300	300
6.5	-	-	-	-	-	300	300
7.0	-	-	-	-	-	-	300
ULS wind pressure (kPa)	Max batten span when fixed to 1.20BMT G2 stud (mm)						
1.0	900	900	900	900	900	1200	1200
1.5	600	600	900	900	900	900	900
2.0	450	600	600	600	600	900	900
2.5	450	450	450	600	600	600	900
3.0	300	300	450	450	450	600	600
3.5	300	300	300	450	450	450	600
4.0	-	300	300	300	300	450	450
4.5	-	-	300	300	300	450	450
5.0	-	-	-	300	300	300	450
5.5	-	-	-	-	300	300	300
6.0	-	-	-	-	-	300	300
6.5	-	-	-	-	-	300	300
7.0	-	-	-	-	-	-	300

Notes to table:

1. Cladding span tables for either CEDRAL LAP or CEDRAL CLICK take precedence over the batten spacings contained in this table
2. Max cantilever of batten to be 20% of span
3. Fixing between the batten and stud to be minimum 1/12-14 tek screw
4. Timber batten to be chamfered 35x70 H3.2 treated SG6 grade minimum (timber group J5)
5. Framing deflection limit: Span/250