ALUMINIUM PEAK® Balustrade

Producer Statement

PS1 - Design

20 December 2024

DISCLAIMER

WARNING No representation or warranty is given that your particular application of these products complies with relevant building codes or that the fasteners provided or used are appropriate for your application. Therefore consult with professionals and local building officials before beginning work: (i) to ensure compliance with relevant building codes for your application and for your proposed use of fasteners; (ii) to ensure the integrity of the structural components in connection with which these products are to be used; (iii) to identify appropriate safety gear that is to be used during installation such as a safety harness when working above ground; (iv) to ensure that the work area is free from utilities, services and hazards; and, (v) to clarify any instructions or warnings that may not be clear. Work in a safe manner wearing protective gear such as gloves, eyewear, headwear, footwear and clothing. When using tools always comply with operation manuals and instructions. Metal and glass may have sharp edges and could fragment or splinter during or as a result of handling or cutting. Do not use these products in connection with any substance that is or may be harmful or corrosive to the products. Inspect and maintain these products and the structural components that they are used in connection with on a regular basis using professionals when appropriate. This report has been prepared for certain standard residential applications. Obtain professional advice for any non-standard or non-residential application.

P & P CONSULTING ENGINEERS LTD

Civil and Structural Engineering

Mr P. Prakash (Director)
B.E. (Civil), CPEng, MIPENZ
Mr J. Dela Cruz
B.E. (Civil), GIPENZ
Mr H. Yin
B.E. (Civil), GIPENZ
Dr. H.D.W. FENDALL (Consultant)
B.E. (Civil) Hons., Ph.D., CPEng, MIPENZ

6A Montel Avenue,
Henderson,
AUCKLAND, 0612
Ph. & Fax 09-836-1853
parmil@pnpltd.co.nz
joel@pnpltd.co.nz
hansen@pnpltd.co.nz

Ref: 17/094/ds
20 December 2024

PEAK ALUMINIUM BALUSTRADE

DESIGN CALCULATIONS SUMMARY

INDEX **PAGE**

Based on testing, Peak Aluminium balustrade and Peak Handrail systems as indicated on attached drawings are suitable for Occupancy types A & C3 as per AS/NZS 1170.1:2002.

The Peak Aluminium Handrail is suitable for use in private stairways. Attachment of the Peak Aluminium Handrail to a supporting structure is such that it:

- may be classified as a minor projection, on the basis that the handrail projects no more than 100 mm into the path,
- provides continuity for the length of the stair flight or ramp, where a straight length of handrail satisfies these requirements,
- may be positioned to have the same slope as the pitch line,
- may be positioned between 900 mm and 1000 mm above the pitch line,
- may be readily gasped by an adult hand,
- may be installed in a manner to avoid the likelihood or personal injury,
- provides a flat or convex upper surface, arrised or radiused edges.

Refer summary sketch drawing ENG 01.

Notes:

1. Any parts of the structure which are not covered by the specific design included with these calculations must comply either with the New Zealand Building Code or specific design as detailed by others. Any exceptions to this should be referred back to this Design Office.

2. The above calculations include structural work for which a Building Consent must be obtained prior to building. It is the Owner's responsibility to obtain all necessary consents.

3. The strength and stiffness of the substrate other than designed herein must be confirmed at the time of installation.

4. This design is for panels and accessories as supplied by Peak Aluminium Balustrade system.

engineering new zealand

New Zealand Institute of Architects Incorporated

ACENZ

Building Code Clause(s) B1, F2, F4

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance on use of Producer Statements (formerly page 2) is available at www.engineeringnz.org)

ISSUED BY: P & P CONSULTING ENGINEERS LTD
(Design Firm)

TO: PEAK PRODUCTS CORPORATION
(Owner/Developer)

TO BE SUPPLIED TO: VARIOUS COUNCIL
(Building Consent Authority)

IN RESPECT OF: PEAK ALUMINIUM BALUSTRADE SYSTEM AND PEAK ALUMINIUM HANDRAIL SYSTEM
(Description of Building Work)

AT: VARIOUS
(Address)

Town/City:..... **LOT**..... **DP**..... **SO**.....
(Address)

We have been engaged by the owner/developer referred to above to provide:

STRUCTURAL DESIGN

.....
(Extent of Engagement)

services in respect of the requirements of Clause(s) B1, F2, F4 of the Building Code for:

☐ All or ■ Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

■ Compliance Documents issued by the Ministry of Business, Innovation & Employment B1/VM1 or
(verification method/acceptable solution)

☐ Alternative solution as per the attached schedule.....

The proposed building work covered by this producer statement is described on the drawings titled:

PEAK ALUMINIUM BALUSTRADE SYSTEM and numbered 17/094, ENG01;
together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:
(i) Site verification of the following design assumptions REFER NOTES AT END OF DESIGN SUMMARY
(ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:

☐ CM1 ☐ CM2 ☐ CM3 ☐ CM4 ☐ CM5 (Engineering Categories) or ☐ as per agreement with owner/developer (Architectural)

I, PARMIL PRAKASH am: ■ CPEng 251801 # ☐ Reg Arch ..... #
(Name of Design Professional)

I am a member of: ■ Engineering New Zealand ☐ NZIA and hold the following qualifications: BE (Civil), CPEng
The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than $200,000*.
The Design Firm is a member of ACENZ: ☐

SIGNED BY PARMIL PRAKASH (Signature).....
(Name of Design Professional)

ON BEHALF OF P & P CONSULTING ENGINEERS LTD Date 20/12/2024
(Design Firm)

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of $200,000.*

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.

PEAK BALUSTRADE SYSTEM

ASSESSMENT OF THE BALUSTRADE SYSTEM

2. TEST LOADS & RESULTS

Peak Aluminium balustrade system and Peak Aluminium Handrail system had been tested by Acronem Consulting Ltd in Australia.

The glass and support spigot was tested to comply with the following domestic load cases taken from AS/NZS 1170.1:2002:

Occupancy Type	Refer Table 3.3 of AS/NZS 1170:	Maximum Design Loads		
A, C3 (Residential Only)	Domestic Barriers for One or More Dwellings including Balcony Edges (NOT subject to Over Crowding)	0.75 kN/m (75 kg/m)	0.6 kN (60 kg) Anywhere	1 kPa (100 kg/m2) Infill

We have reviewed the test results and confirm that the balustrade system as indicated on attached drawings comply with the above load requirements.

Full test results are available from Peak Products.

3. FIXINGS

3.1 Anchors

Max. BM at base of post = 0.75 kn/m x 1.5 x 1.8 = 2.0 kNm (1.8 m post spacing)

Fixing lever arm = 78 mm to top fixng and 72 mm for side fixing.
Hence the maximum tensile load to the fixing is:
= 2.0/(2 x 0.072)
= 13.9 kN (12.8 KN for top fix)

Anchor Types

M8 Chemset Anchors to Concrete — Capacity = 21 x 0.87 (90 mm embedment, 20 MPa concrete)
= 18.3 kN
Hence, OK

M8 S/S Bolts to Steel Members — Capacity = 16 kN
Hence, OK

M8 bolts to timber

Capacity is controlled by bearing washers
Req. Area =13.9 / 0.7 x 1.3 x 5.3 MPa
2882 mm2
Hence use 60 x 60 mm x 3 mm thick washer (side fixed) or Use 50 x 50 for top fixed

Note: Use M10 anchors for side fixed option

M10 Epoxied Rods

Embedment depth = F/ (pi x d x f) , where F = design load, d = bolt dia., f = characteristic resistance in wood
As per Hilti load test, f = 4 Mpa
Hence, Embedment depth = 16.6/(pi x 10 x 4) = 130 mm (or 110 mm for M12 rods)
Minimum Depth = 10 x dia = 100 mm
Hence use M10 threaded rods with 130 mm embedment using Hilti HIT-RE 500 epoxy

M10 Coach Screws:

Required Length = 12.8/ 0.8 x 0.7 x 107 N/mm = 213 mm (say 215 mm)
Use M10 coachscrews, 215 mm embedment

3.2 Timber Boundary Joists

Minimum timber size = 190 mm deep
For side fixes, the tension forces along top edge of joists each side of post = 2.0/0.19 x 1/2 = 5.3 kN
Hence either use 6 kN Lumberlok straps or CPC40 cleats top & bottom both side.

For Top Fixing: Can use 2/140 x 45

4. SUMMARY

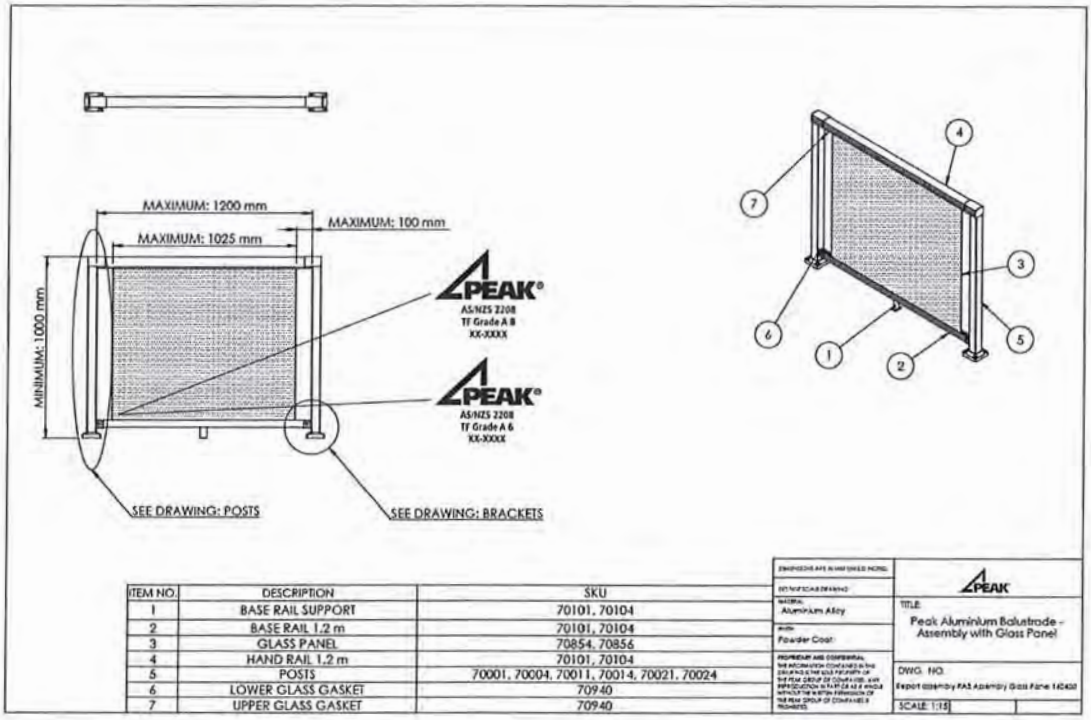
In summary, the panel & fixings tested conform to the following:

LOADS:

Live Load: For Domestic Occupancy types A and C3 (residential only) of AS/NZS 1170:2002, Table 3.3
Wind Load: VERY HIGH as per NZS 3604

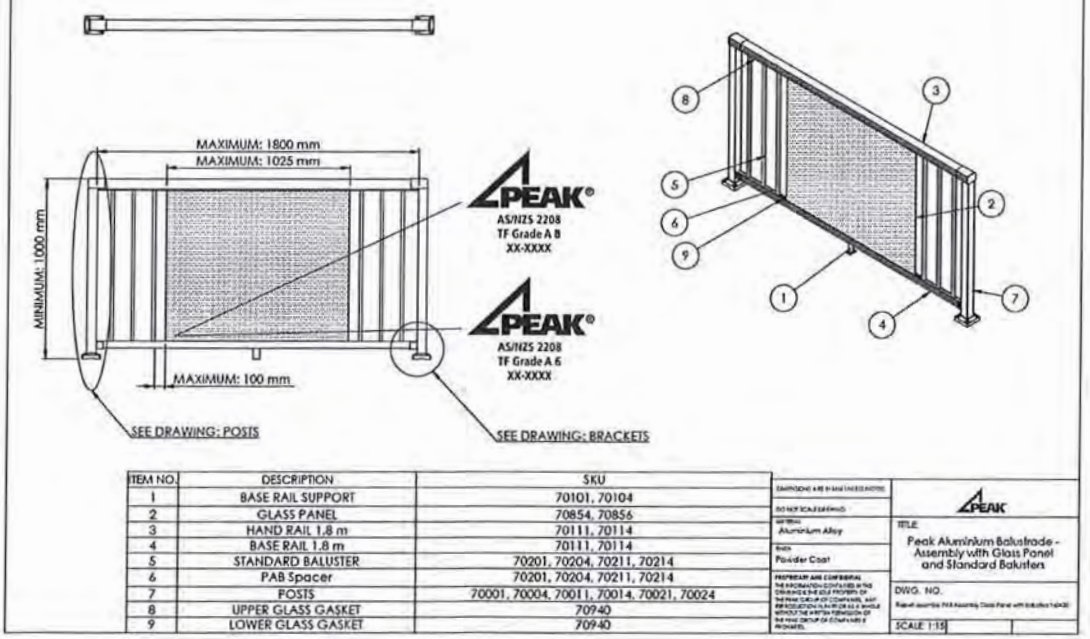
FIXINGS:

Refer to attached summary drawing.



ITEM NO.	DESCRIPTION	SKU
1	BASE RAIL SUPPORT	70101, 70104
2	BASE RAIL 1.2 m	70101, 70104
3	GLASS PANEL	70854, 70856
4	HAND RAIL 1.2 m	70101, 70104
5	POSTS	70001, 70004, 70011, 70014, 70021, 70024
6	LOWER GLASS GASKET	70940
7	UPPER GLASS GASKET	70940

Aluminium Alloy
Powder Coat
PEAK
TITLE: Peak Aluminium Balustrade - Assembly with Glass Panel
DWG. NO. Report assembly PAS Assembly Glass Panel 140430
SCALE: 1:15



ITEM NO.	DESCRIPTION	SKU
1	BASE RAIL SUPPORT	70101, 70104
2	GLASS PANEL	70854, 70856
3	HAND RAIL 1.8 m	70111, 70114
4	BASE RAIL 1.8 m	70111, 70114
5	STANDARD BALUSTER	70201, 70204, 70211, 70214
6	PAB Spacer	70201, 70204, 70211, 70214
7	POSTS	70001, 70004, 70011, 70014, 70021, 70024
8	UPPER GLASS GASKET	70940
9	LOWER GLASS GASKET	70940

Aluminium Alloy
Powder Coat
PEAK
TITLE: Peak Aluminium Balustrade - Assembly with Glass Panel and Standard Balusters
DWG. NO. Report assembly PAS Assembly Glass Panel with balusters 140430
SCALE: 1:15

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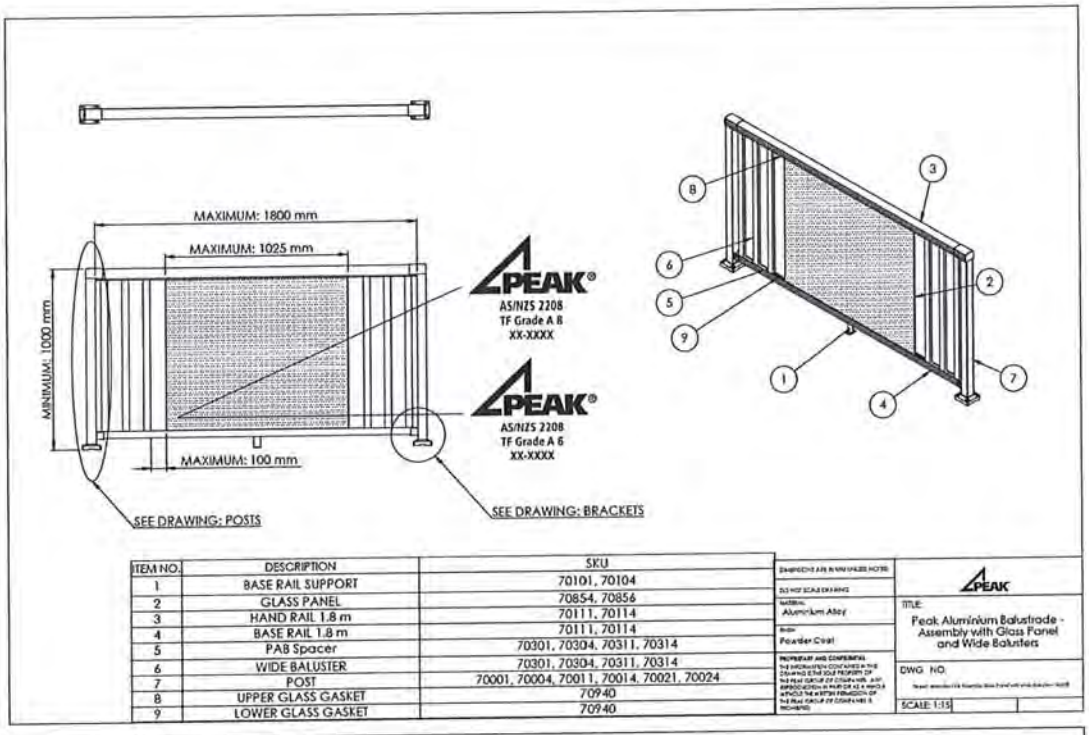
Web: www.acronem.com.au Phone: +61 437 407 176
Email: cameron@acronem.com.au



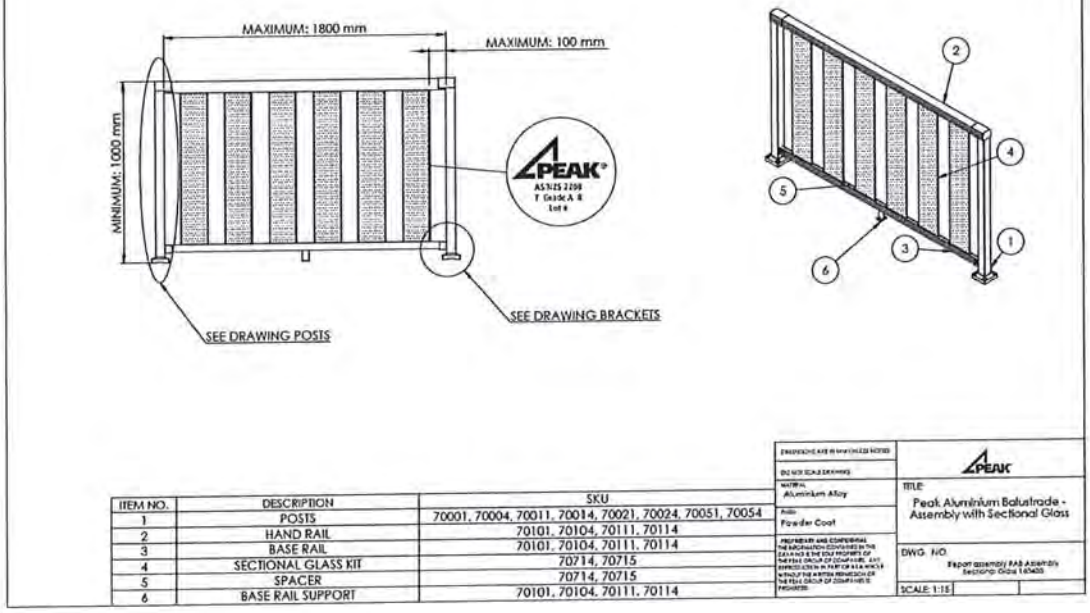
ITEM NO.	DESCRIPTION	SKU
1	BASE RAIL SUPPORT	70101, 70104
2	GLASS PANEL	70854, 70856
3	HAND RAIL 1.8 m	70111, 70114
4	BASE RAIL 1.8 m	70111, 70114
5	PAB Spacer	70301, 70304, 70311, 70314
6	WIDE BALUSTER	70301, 70304, 70311, 70314
7	POST	70001, 70004, 70011, 70014, 70021, 70024
8	UPPER GLASS GASKET	70940
9	LOWER GLASS GASKET	70940

PEAK

TITLE: Peak Aluminium Balustrade - Assembly with Glass Panel and Wide Balusters

DWG. NO.

SCALE: 1:15



ITEM NO.	DESCRIPTION	SKU
1	POSTS	70001, 70004, 70011, 70014, 70021, 70024, 70051, 70054
2	HAND RAIL	70101, 70104, 70111, 70114
3	BASE RAIL	70101, 70104, 70111, 70114
4	SECTIONAL GLASS KIT	70714, 70715
5	SPACER	70714, 70715
6	BASE RAIL SUPPORT	70101, 70104, 70111, 70114

PEAK

TITLE: Peak Aluminium Balustrade - Assembly with Sectional Glass

DWG. NO.

SCALE: 1:15

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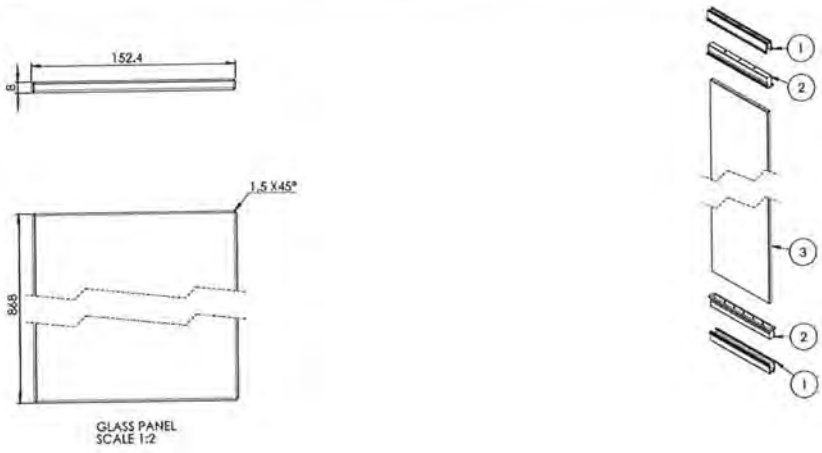
Web: www.acronem.com.au Phone: +61 437 407 176
Email: cameron@acronem.com.au



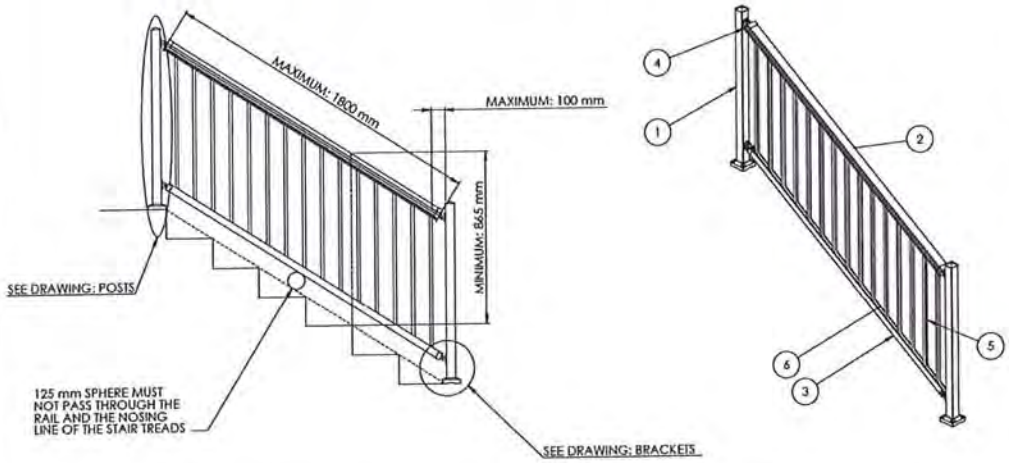
ITEM NO.	DESCRIPTION	SKU
1	Glass Panel Holder	70714, 70715
2	Glass Panel Gasket	
3	Glass Panel	

Toughened Glass

TITLE: Sectional Glass Components

SIZE B | DWG. NO. Report - Sectional Glass PAR 160114

SCALE: 1:2



ITEM NO.	DESCRIPTION	SKU
1	POST	70001, 70004, 70051, 70054
2	HAND RAIL	70101, 70104, 70111, 70114
3	BASE RAIL	70101, 70104, 70111, 70114
4	UNIVERSAL BRACKET	70901, 70904
5	STANDARD STAIR BALUSTER	70261, 70264
6	STAIR SPACER	70261, 70264

Aluminium Alloy

Powder Coat

TITLE: Peak Aluminium Balustrade - Stair Assembly with Standard Balusters

SIZE B | DWG. NO. Report assembly PAR STAIR Balusters AUS 160420

SCALE: 1:15

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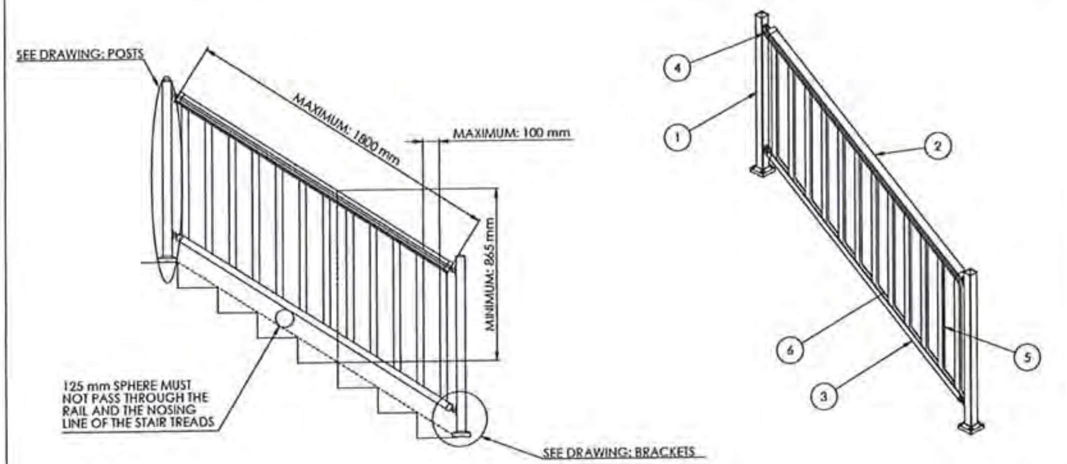
Email: cameron@acronem.com.au



ITEM NO.	DESCRIPTION	SKU
1	POST	70001, 70004, 70051, 70054
2	HAND RAIL	70101, 70104, 70111, 70114
3	BASE RAIL	70101, 70104, 70111, 70114
4	UNIVERSAL BRACKET	70901, 70904
5	WIDE STAIR BALUSTER	70361, 70364
6	STAIR SPACER	70361, 70364

Aluminium Alloy	PEAK
Powder Coat	TITLE: Peak Aluminium Balustrade - Stair Assembly with Wide Balusters
	SIZE B, DWG. NO.
	SCALE: 1:15

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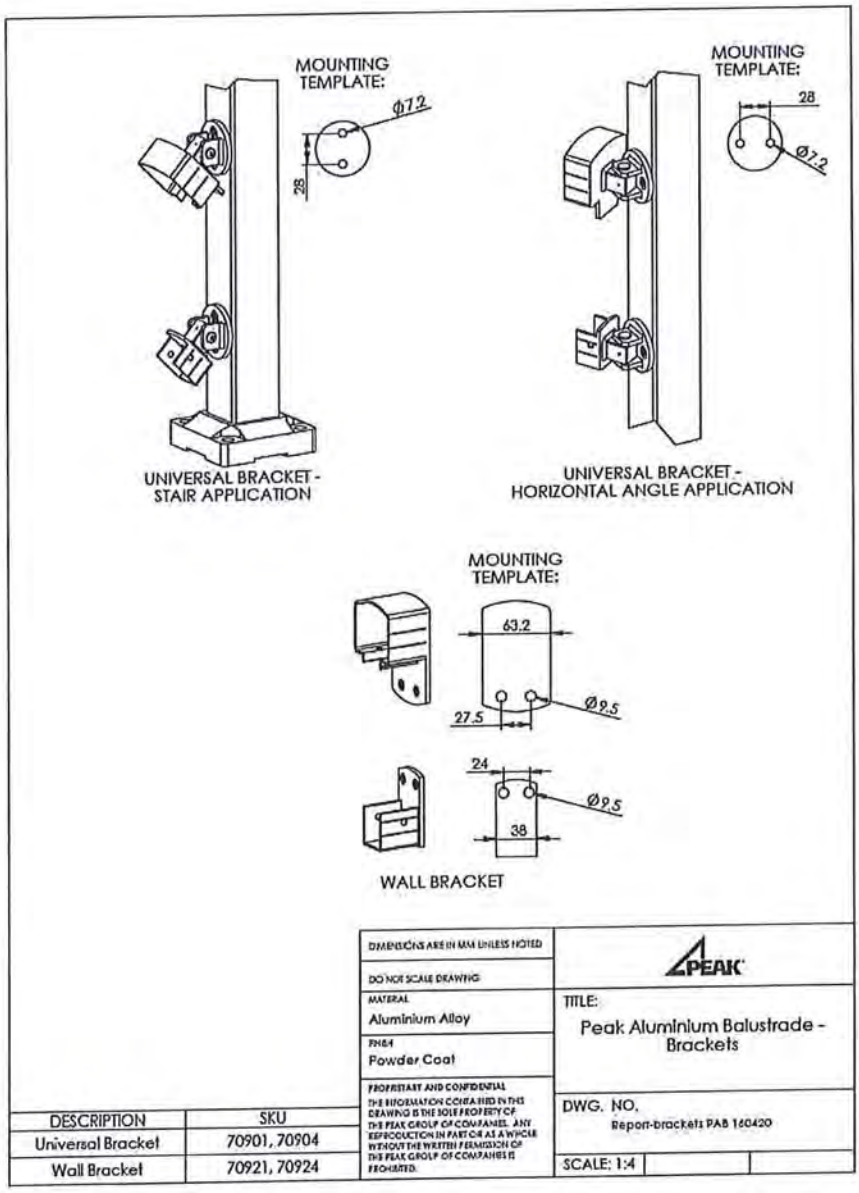
Web: www.acronem.com.au Phone: +61 437 407 176
Email: cameron@acronem.com.au

October 12, 2018



DESCRIPTION	SKU
Universal Bracket	70901, 70904
Wall Bracket	70921, 70924

DIMENSIONS ARE IN MM UNLESS NOTED

DO NOT SCALE DRAWING

MATERIAL
Aluminium Alloy

FINISH
Powder Coat

PEAK

TITLE:
Peak Aluminium Balustrade - Brackets

DWG. NO.
Report-brackets PAB 180420

SCALE: 1:4

FIXING TO WALL

Substrate	Fasteners	Minimum Embedment	Minimum Edge Distance
Concrete	2 x Ramset™ Ankascrew™ anchor, M6 x 50mm	39mm	40mm
Timber	2 x M6 Coach Screw or 2 x 14g Type 17 Screw	40 mm	30mm

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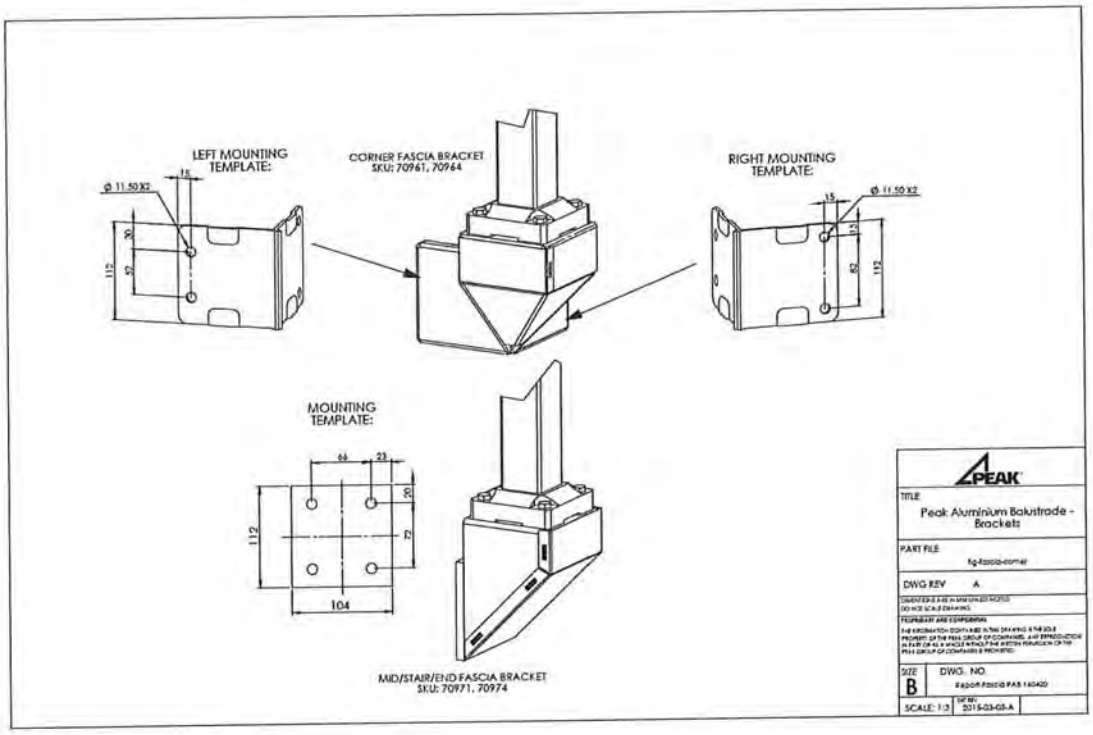

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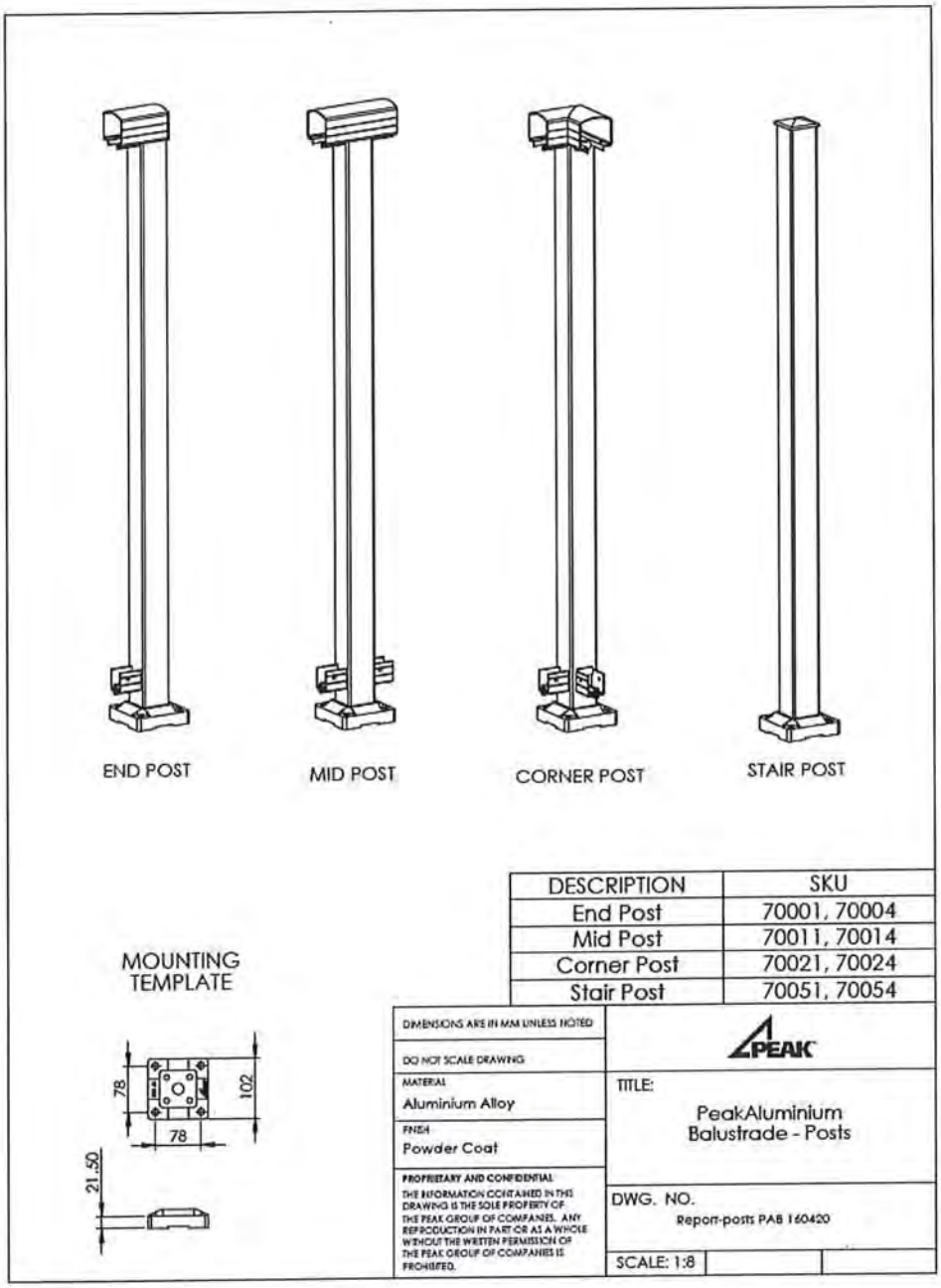

DESCRIPTION	SKU
End Post	70001, 70004
Mid Post	70011, 70014
Corner Post	70021, 70024
Stair Post	70051, 70054

DIMENSIONS ARE IN MM UNLESS NOTED

DO NOT SCALE DRAWING

MATERIAL: Aluminium Alloy

FINISH: Powder Coat

PEAK

TITLE: PeakAluminium Balustrade - Posts

DWG. NO. Report-posts PAB 160420

SCALE: 1:8

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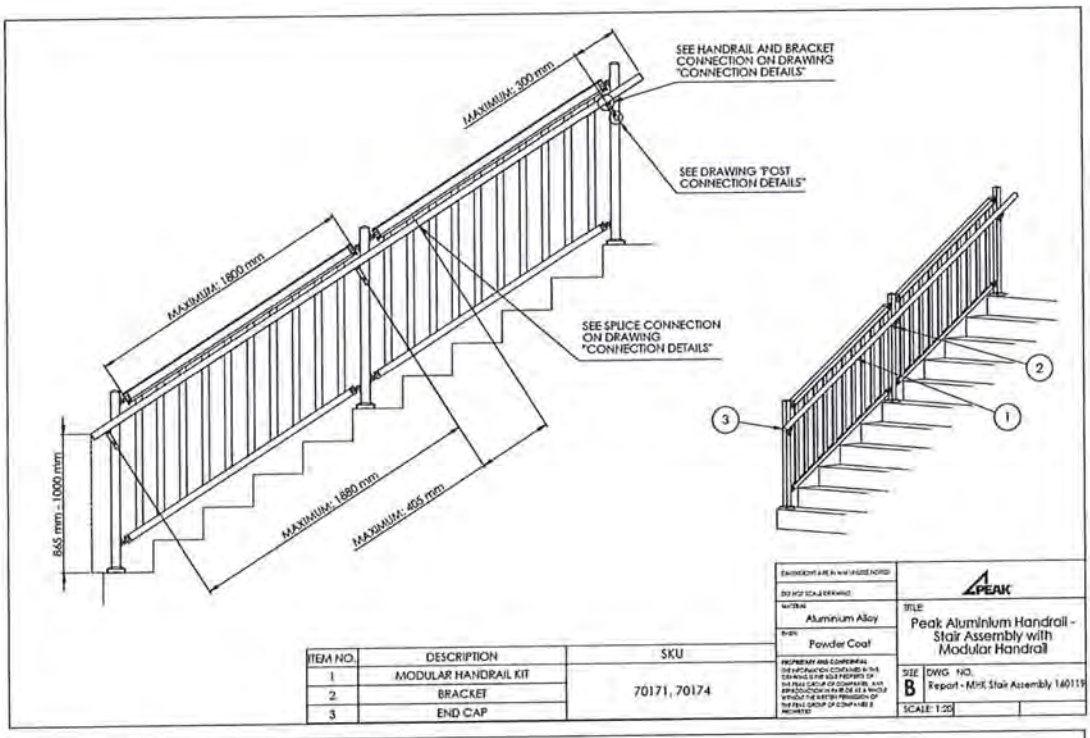
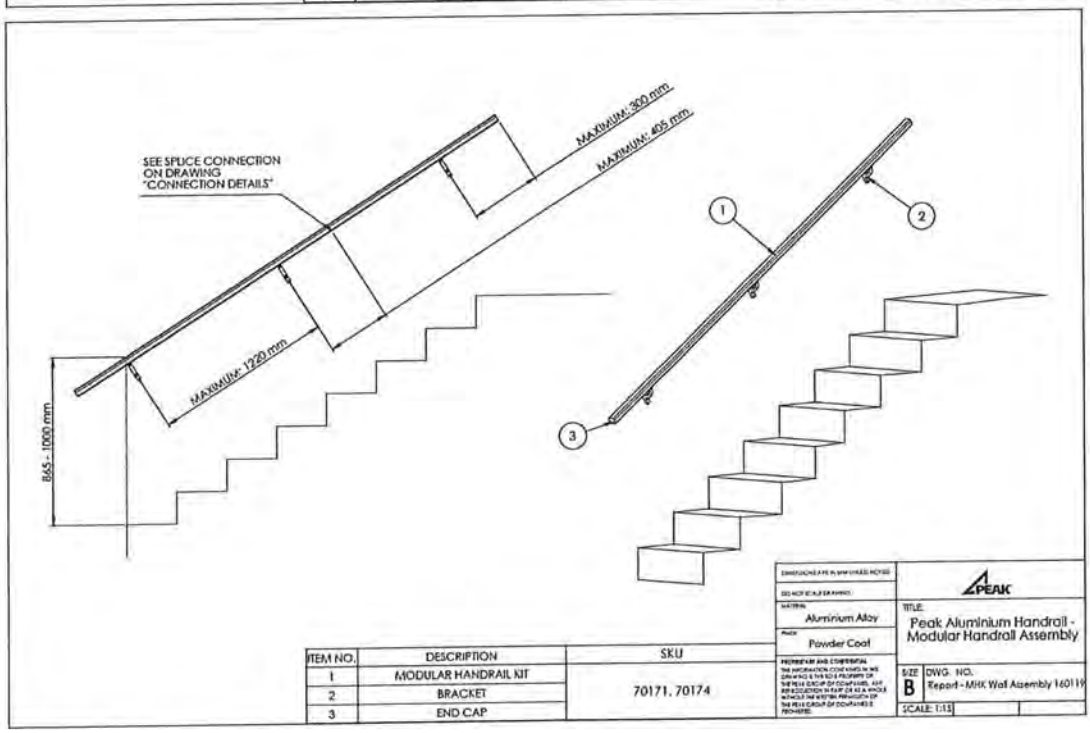


ITEM NO.	DESCRIPTION	SKU
1	MODULAR HANDRAIL KIT	70171, 70174
2	BRACKET	
3	END CAP	

MATERIAL	Aluminium Alloy
FINISH	Powder Coat
TITLE	Peak Aluminium Handrail - Stair Assembly with Modular Handrail
SIZE	B
DWG NO.	Report - MHK Stair Assembly 160119
SCALE	1:20



ITEM NO.	DESCRIPTION	SKU
1	MODULAR HANDRAIL KIT	70171, 70174
2	BRACKET	
3	END CAP	

MATERIAL	Aluminium Alloy
FINISH	Powder Coat
TITLE	Peak Aluminium Handrail - Modular Handrail Assembly
SIZE	B
DWG NO.	Report - MHK Wall Assembly 160119
SCALE	1:15

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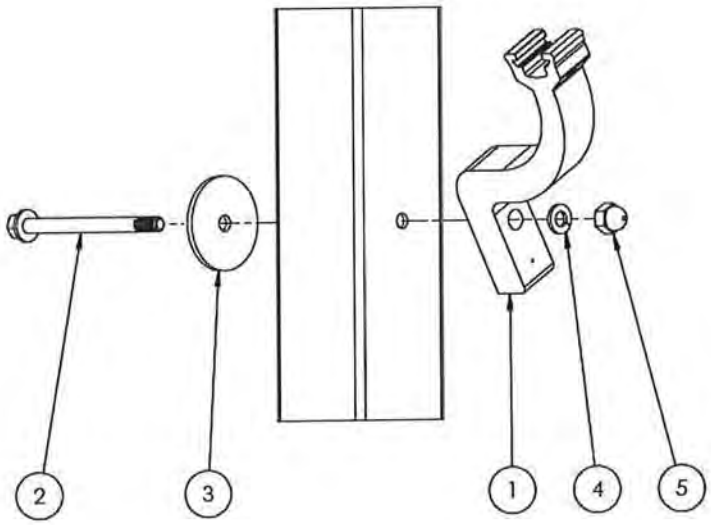

ITEM NO.	DESCRIPTION
1	BRACKET
2	6.4 mm x 79 mm HEX FLANGE BOLT
3	39 mm BACKING PLATE
4	6.4 mm LOCK WASHER
5	6.4 mm FLANGE ACORN NUT
6	POST

DIMENSIONS ARE IN MM UNLESS NOTED

DO NOT SCALE DRAWING

MATERIAL: Aluminium Alloy

FINISH: Powder Coat

PEAK

TITLE: Peak Aluminium Handrail - Modular Handrail - Post Connection Details

DWG. NO. Report - MHK Post Connection 160119

SCALE: 1:2

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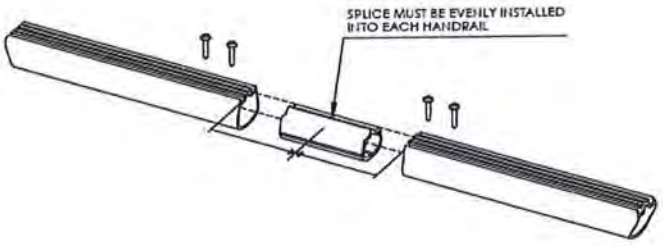
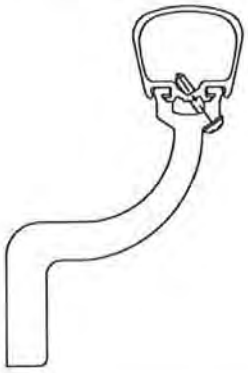
SPLICE CONNECTION



HANDRAIL AND BRACKET CONNECTION



DIMENSIONS ARE IN MM UNLESS NOTED	PEAK
DO NOT SCALE DRAWING	
MATERIAL: Aluminium Alloy	TITLE: Peak Aluminium Handrail - Modular Handrail Connection Details
FINISH: Powder Coat	
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF THE PEAK GROUP OF COMPANIES. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF THE PEAK GROUP OF COMPANIES IS PROHIBITED.	DWG. NO. Report - MHK Joint Connection 160119
	SCALE: 1:2

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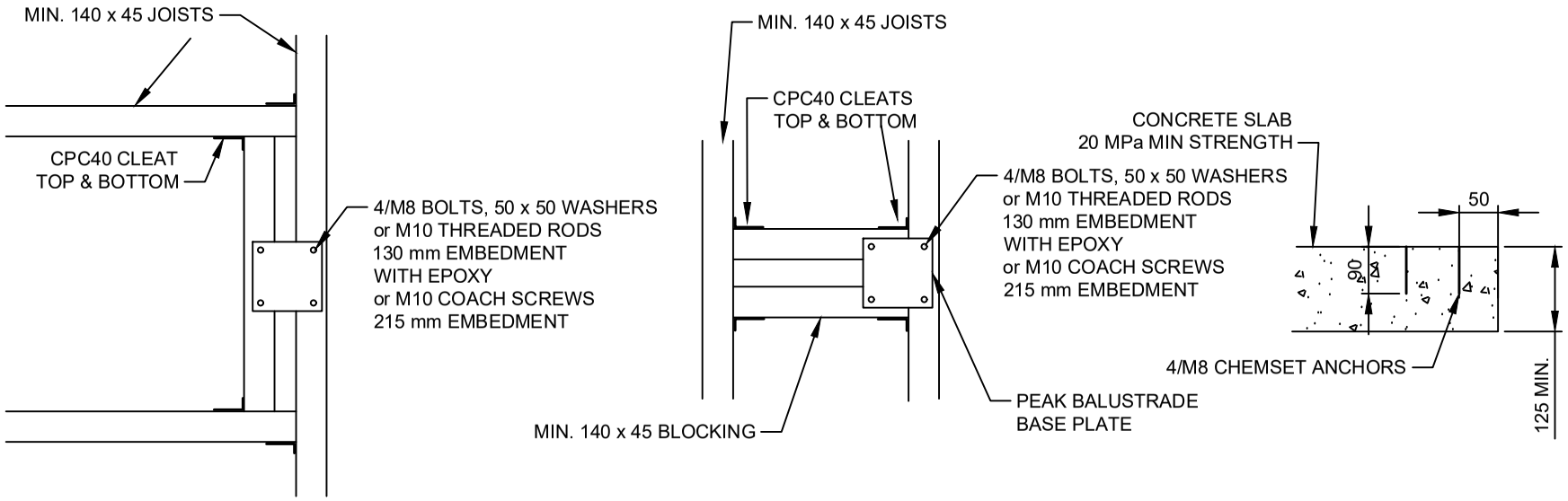
Email: cameron@acronem.com.au



THE BALUSTRADE SYSTEM IS SUITABLE FOR THE FOLLOWING:

LIVE LOAD:

OCCUPANCY TYPE	REFER TABLE 3.3 OF AS/NZS 1170
A & C3	DOMESTIC & RESIDENTIAL BALCONY EDGES (NOT SUBJECT TO CROWD LOADINGS)

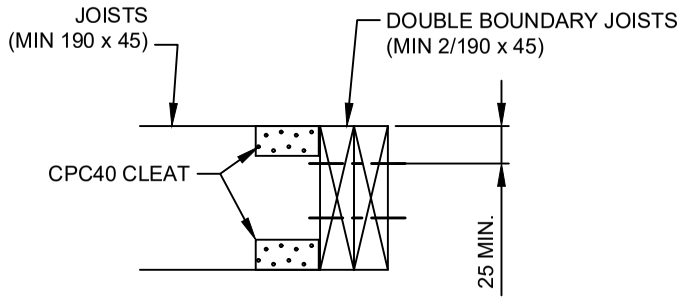
FIXINGS:
1. ALL ANCHORS MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.
2. ALL BOLTS & FIXINGS TO BE STAINLESS STEEL.
3. ALL BOLTS TO HAVE 50 x 50 x 3 mm WASHERS AGAINST TIMBER. Use 60 x 60 WASHERS FOR SIDE FIXED OPTION UNLESS POST SPACING IS LESS THAN 1.6 m

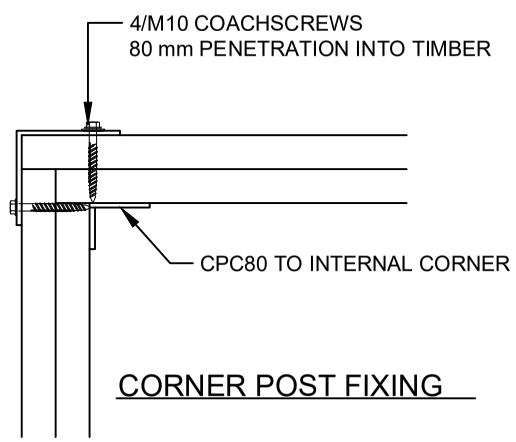
TIMBER
1. ALL TIMBER TO BE SG8 PINE.
2. ALL TIMBER TO BE TREATED H3.2.

WIND ZONE: VERY HIGH AS DEFINED IN NZS3604 FOR SOLID GLASS INFILL PANELS
EXTRA HIGH FOR OTHER INFILL PANELS.

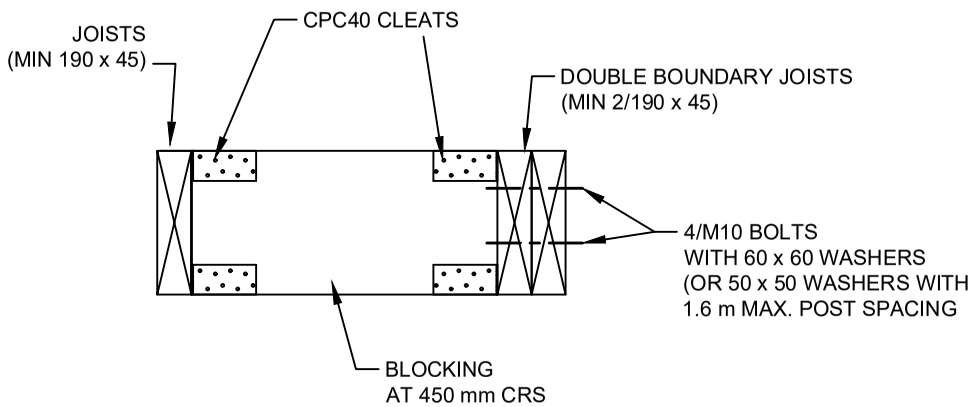
CAN USE FOLLOWING EPOXY:
HILTI HIT-RE 500, ARALDITE 2005, ARALDITE k-80, WEST SYSTEMS ADR310/ADH26, WEST SYSTEMS Z105/Z205, EAST 221 EPOXY.

TOP MOUNTED POSTS FIXING

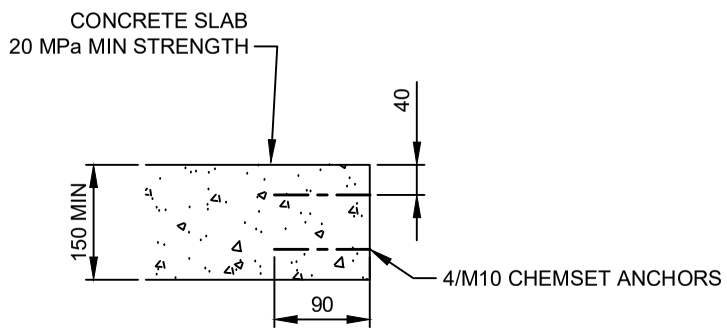




CORNER POST FIXING



SIDE MOUNTED POSTS FIXING



REV A: 26-10-23

P & P CONSULTING ENGINEERS LTD Civil and Structural Engineering 6A Montel Avenue, Henderson ph: 836-1853	PEAK ALUMINIUM BALUSTRADE SYSTEM	Scales 1:10 (A3)		Project 17/094
	BALUSTRADE FIXING DETAILS	Drawn PP	Date 28-04-20	Sheet ENG 01