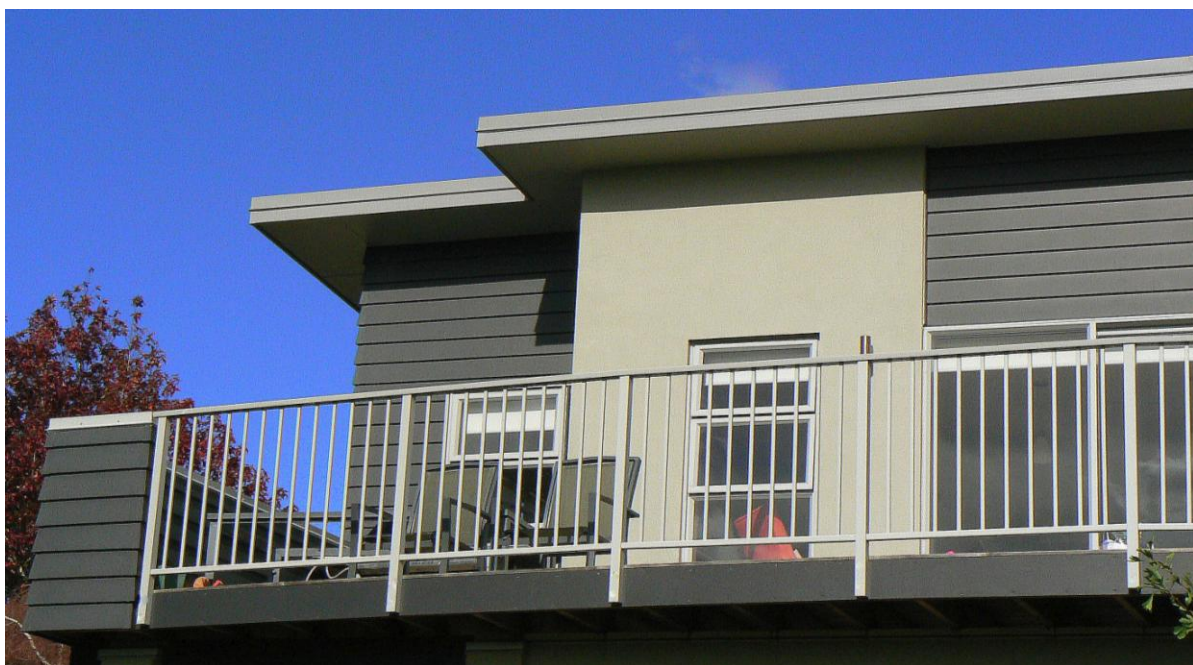




FRAMED ALUMINIUM BALUSTRADES



"THE CHOICE IS CLEAR"



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- 2.** General Notes
- 3.** Connection Type 1 – Timber Side – Fix (Coach Screws)
- 4.** Connection Type 2 – Bolt Side-Fix
- 5.** Connection Type 3 – Timber Top-Fix
- 6.** Connection Type 4 – Timber Top-Fix
- 7.** Connection Type 5 – Concrete Top-Fix
- 8.** Connection Type 6– Concrete Side-Fix
- 9.** Gutter Bracket – Timber and Concrete Fixing
- 10.** Gutter Bracket Design
- 11.** Base Plate Design – Semi Frameless
- 12.** Handrail Dimensions

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COMMERCIAL & RESIDENTIAL BALUSTRADE DESIGN



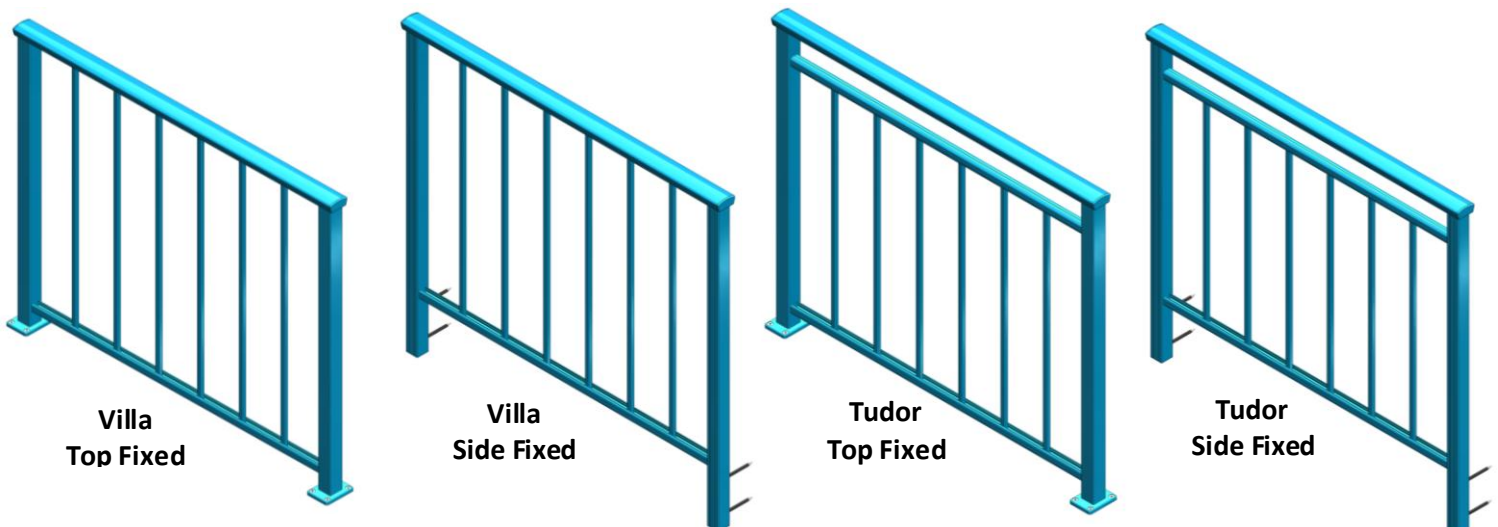
Framed Aluminum Balustrades Introduction

Description:

Provista Balustrade Systems Framed Aluminium balustrade solutions feature modern aluminium post and handrail profile designs suiting both classic and contemporary building design. Hidden post-fixings when face-fixing to a deck structure provide an ultra-clean look. There's a choice of flat or rounded handrail profiles and infill panels are made up of a square-section baluster. The two main styles are Villa, where the baluster panel meets the underside of the upper handrail and is held at the bottom within a lower rail, and Tudor, where there is a gap between the upper handrail and an additional rail. The baluster panel fits into this rail and a lower rail.

Key Features:

- Designed for residential and commercial applications including apartment balconies and decks
- Suitable for both interior or exterior applications
- Hidden-fixings for face-fixed solutions
- The infill is constructed of a modern square-section baluster profile
- Designed for all building structures including membrane decks
- T6 Temper Grade alloy used for all profiles, providing approx. 20% increased strength for greater post spacings
- Multiple finish options – can be powder-coated or anodised in all available NZ colours, including Dulux Duratec powder coating for high-corrosion zones
- National design service to assist with project specific design and detailing
- National network of fabricators and installers
- Complies with AS/NZS 1170, NZS3603, AS/NZS 1664, AS/NZS 2208 and NZS 4223.3 2016
- 5 year warranty on balustrade, 10 year warranty on Dulux Duralloy powder-coating, 20 year warranty on Dulux Duratec powder-coating



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Scope of Use:

Provista Framed Aluminum solutions are designed to comply with A, B, E and C3 loadings for residential and commercial occupancy types and are suitable for decks, balconies and stairways.

Suitable building structures can be timber, concrete, steel and typical combinations of each. Provista Framed Aluminium solutions can also be used in conjunction with the Provista Gutter Bracket – a robust stainless steel product designed to be specified where membrane decks and gutters are required.

A rectangular ('Retro') handrail and rounded ('Euro') handrail options are available.

Address or Site-specific design and Producer Statements can be arranged as required.



Limitations on Use:

- Provista Framed Aluminium solutions should only be used in accordance with the Provista Technical Manual. The Manual confirms post spacings and fixing methods available
- Not suitable for Commercial Occupancy Type C5
- Specified for use in Very High Wind Zones but Site Specific PS1 and Calculations can be provided for Extreme Wind Zones
- For high corrosion zones use Dulux Duratec powder-coating

NZS 3604 MAXIMUM SUITABILITY



Very High Wind Zone

"THE CHOICE IS CLEAR"

In-service History:

Provista has over 10 years of balustrade and pool fence design, development and installation experience across New Zealand. Provista products are designed and manufactured for NZ conditions. The Provista Framed Aluminium styles have been installed in thousands of homes, apartments, schools, aged care villages etc. Many kilometres of Provista Framed Aluminium solutions are installed across the length and breadth of NZ

Statement of Building Code Compliance:

- Provista Balustrade Systems solutions have been designed and tested by independent engineers to comply with:
 - o AS/NZS 1170 Structural Design Actions
 - o NZS3603 Timber Structures Standard
 - o AS/NZS 1664 Aluminium Structures – allowable stress design
 - o AS/NZS 2208 Safety Glazing Materials in Buildings
 - o NZS 4223.3 2016 Glazing in Buildings – Human Impact Safety Requirements
- Villa and Tudor Framed Aluminium styles are designed for Occupancy A, B, E and C3
- Designs are engineered to comply with B1, B2, F2 and F4 of the NZ Building Code
- For applications outside the Provista Technical Manual specifications a Site Specific PS1 can be prepared upon request

NZBC DESIGNED TO COMPLY

B1

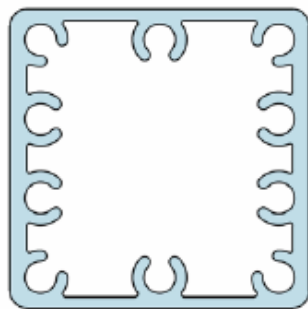
B2

F2

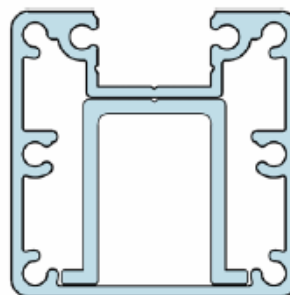
F4

Structure Durability Hazardous Materials Safety From Falling

Provista Balustrade Systems Framed Aluminum Post Sections
50mm x 50mm dedicated top and side fixed post options.



33143
53x53
Heavy Duty Post



31742 **
50x50
Side Fixed Post

**** 31742 profile:** The insert shown is only required at the balustrade deck connection point

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General Notes

GENERAL NOTE:

- (1) THE BALUSTRADE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE ARCHITECTS AND ENGINEERS DRAWINGS.
- (2) ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE AGAINST THE ARCHITECTS AND ENGINEERS DRAWINGS PRIOR TO COMMENCING WORK – ANY VARIATIONS OR DISCREPANCIES ARE TO BE REFERRED TO THE CONSULTANT FOR RESOLUTION.
- (3) ALL WORK IS TO COMPLY WITH THE NZ BUILDING CODE.
- (4) REMOVE ALL EXCESS MATERIALS AND RUBBISH FROM SITE AND REINSTATE ANY DAMAGE ON COMPLETION OF WORK.
- (5) THE CONSULTANTS ARE TO BE GIVEN 24 HOURS NOTICE FOR ANY SITE INSPECTIONS AS REQUIRED – A PS4 CANNOT BE PROVIDED (PRODUCER STATEMENT FOR CONSTRUCTION REVIEW) IF THE CONSULTANT IS NOT INFORMED OF AND INSPECTS ANY WORK REQUIRING A SPECIFIC INSPECTION AS REQUIRED BY THE LOCAL TERRITORIAL AUTHORITY.

EXISTING SUPPORT STRUCTURE:

- (1) THE EXISTING DECK, BALCONY OR PAVING STRUCTURE MUST HAVE BEEN CONSTRUCTED TO COMPLY WITH THE LOCAL TERRITORIAL AUTHORITY REGULATIONS AND REQUIREMENTS. THE NZ BUILDING CODE AND NZS 3604.
- (2) ALL CONCRETE USED IS TO HAVE A CRUSHING STRENGTH OF 20 MPA AT 28 DAYS AND IS TO COMPLY WITH NZS 3109.
- (3) ALL WELDS ARE TO BE 5MM FILLET WELDS ALL ROUND UNLESS NOTED OTHERWISE – ALL WELDING TO BE CARRIED OUT BY WELDERS QUALIFIED IN ACCORDANCE WITH NZS4711.
- (4) ALL BOLTS AND BRACKETS ARE TO BE HOT DIP GALVANISED UNLESS NZS 3604: 1999 CORROSION ZONE TABLES REQUIRE A BETTER PROTECTION.
- (5) ALL CHEMSET ANCHORS TO BE FIXED TO MANUFACTURER'S SPECIFICATION.
- (6) ALL STEELWORK IS TO BE PROTECTED AS REQUIRED BY THE NZ BUILDING CODE.

NEW CONSTRUCTION NOTES:

- (1) THE EXISTING SUPPORTING STRUCTURE DETAILS ARE NOT COVERED BY THESE DRAWINGS.
- (2) THESE DRAWINGS ONLY COVER INSTALLATION DETAILS OF THE NEW STAINLESS STEEL BALUSTRADE AND GLASS FENCE/HANDRAIL.
- (3) ALL BOLTS CLASS 80 AND BRACKETS ARE TO BE 316 STAINLESS STEEL.
- (4) ALL DYNABOLTS OR CHEMSET CONCRETE ANCHORS TO BE CLASS 80 STAINLESS STEEL AND FIXED TO MANUFACTURER'S SPECIFICATION.
- (5) ALL DAMAGE TO EXISTING STRUCTURE CAUSED BY CONSTRUCTION TO BE REINSTATED.
- (6) PREVENT CONTACT BETWEEN ALL DISSIMILAR MATERIALS IE: GALVANISED STEEL AND ALUMINIUM BY SEPARATING WITH NEOPRENE WASHERS.
- (7) ALL GLASS PANELS ARE TO BE TOUGHENED GLASS TO COMPLY WITH THE NZ BUILDING CODE.
- (8) ALL GLASS PANELS ARE TO BE SEATED ON NYLON WASHERS OR BUSHES AT ALL SUPPORT BRACKETS AND BOLTS.
- (9) ALL SEALANTS ARE TO COMPLY WITH THE REQUIREMENTS FOR THE SPECIFIC USE INTENDED DURING CONSTRUCTION.



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REVISION:

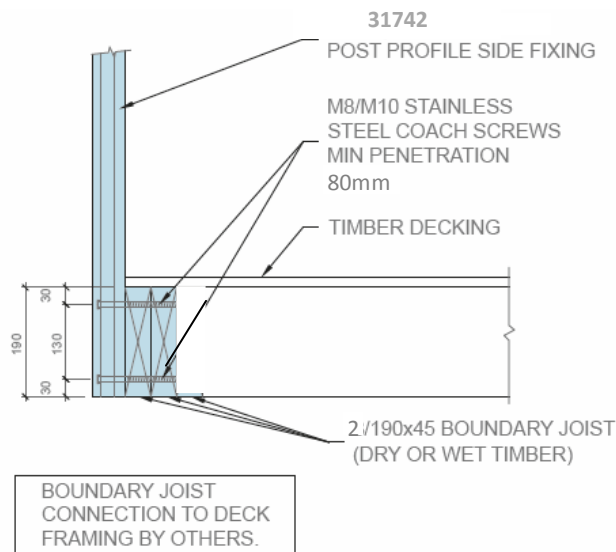
DATE: JULY 2017

PLEASE REFER TO GENERAL NOTES.

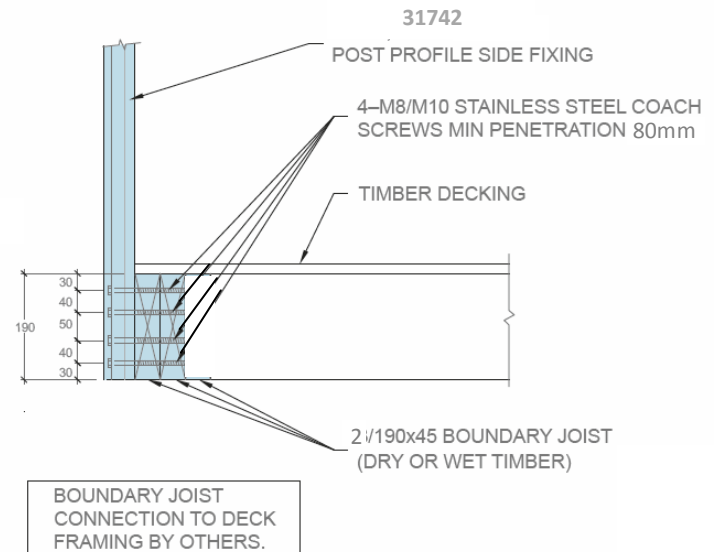
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FRAMED ALUMINIUM BALUSTRADES

Connection Type 1 – Timber Side-Fix 2 x 190x45 (Coach Screws)



1a CONNECTION TYPE 1A – SIDE FIXING TO
2/190X45 TIMBERS WITH 2 COACH SCREWS
SCALE 1:10



1b CONNECTION TYPE 1B – SIDE FIXING TO
2/190X45 TIMBERS WITH 4 COACH SCREWS
SCALE 1:10

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Timberlife is Engineering's Edge

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Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 Very High Wind

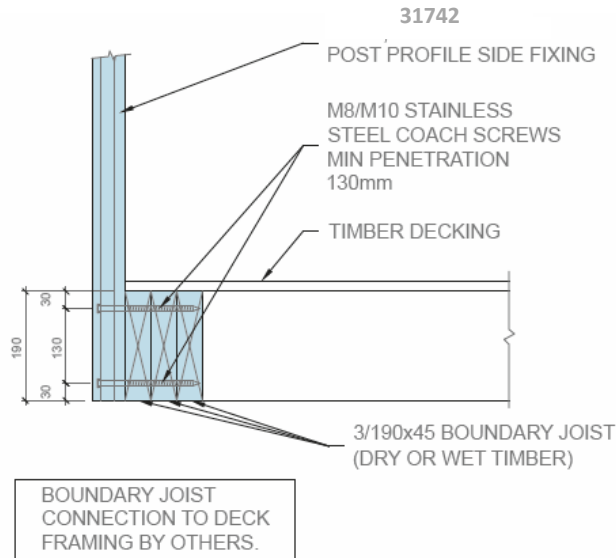
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)			
			Type 1a & 1b			
			Coach Screw with HIT-RE 500 Epoxy Side Fixing to Timber Deck			
			2/190x45 Boundary Joist			
			2/M10	4/M8	4/M10	
			Dry	Dry	Dry	Wet
1M	31742	Side	0.80	0.90	1.10	0.85
1.1M	31742	Side	-	0.80	1.00	0.80
1.2M	31742	Side	-	-	0.85	-

The above table summarises the maximum balustrade post spacing that can be achieved based on balustrade post strength and connection strengths using Hilti HIT-RE Epoxy.

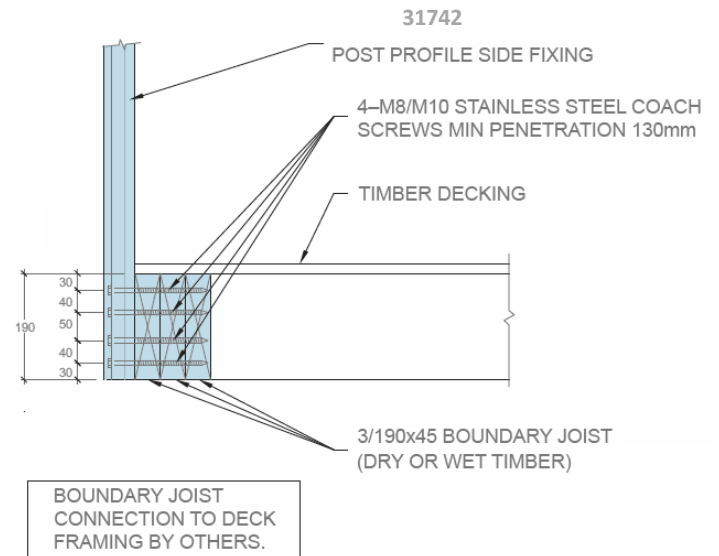
“THE CHOICE IS CLEAR”

FRAMED ALUMINIUM BALUSTRADES

Connection Type 1 – Timber Side-Fix 3 x 190x45 (Coach Screws)



1a CONNECTION TYPE 1A – SIDE FIXING TO
3/190x45 TIMBERS WITH 2 COACH SCREWS
SCALE 1:10



1b CONNECTION TYPE 1B – SIDE FIXING TO
3/190x45 TIMBERS WITH 4 COACH SCREWS
SCALE 1:10



DRAWING SHEET #: S13

REVISION:

DATE: JULY 2017

PLEASE REFER TO GENERAL NOTES.

Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 Very High Wind

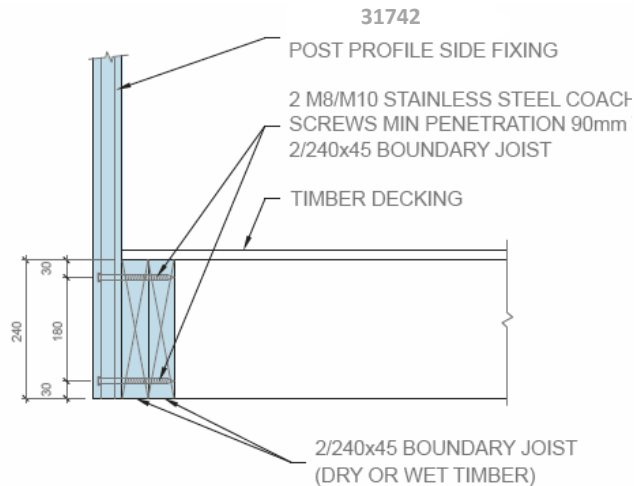
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)							
			Type 1a & 1b							
			Coach Screw with HIT-RE 500 Epoxy Side Fixing to Timber Deck							
			3/190x45 Boundary Joist							
			2/M8	2/M10		4/M8		4/M10		
			Dry	Dry	Wet	Dry	Wet	Dry	Wet	
1M	31742	Side	0.95	1.15	0.90	1.25	1.00	1.25	1.25	
1.1M	31742	Side	0.85	1.05	0.80	1.20	0.90	1.15	1.15	
1.2M	31742	Side	0.70	0.90	-	1.00	0.80	1.10	0.95	

The above table summarises the maximum balustrade post spacing that can be achieved based on balustrade post strength and connection strengths using Hilti HIT-RE Epoxy.

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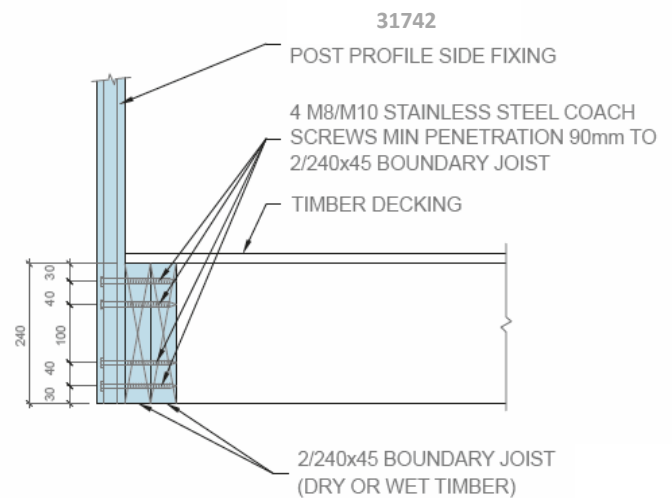
FRAMED ALUMINIUM BALUSTRADES

Connection Type 1 – Timber Side-Fix 2 x 240x45 (Coach Screws)



BOUNDARY JOIST
CONNECTION TO DECK
FRAMING BY OTHERS.

1c CONNECTION TYPE 1C – SIDE FIXING TO
2/240x45 TIMBERS WITH 2 COACH SCREWS
SCALE 1:10



BOUNDARY JOIST
CONNECTION TO DECK
FRAMING BY OTHERS.

1d CONNECTION TYPE 1E – SIDE FIXING TO
2/240x45 TIMBERS WITH 4 COACH SCREWS
SCALE 1:10



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Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 Very High Wind Zone Across

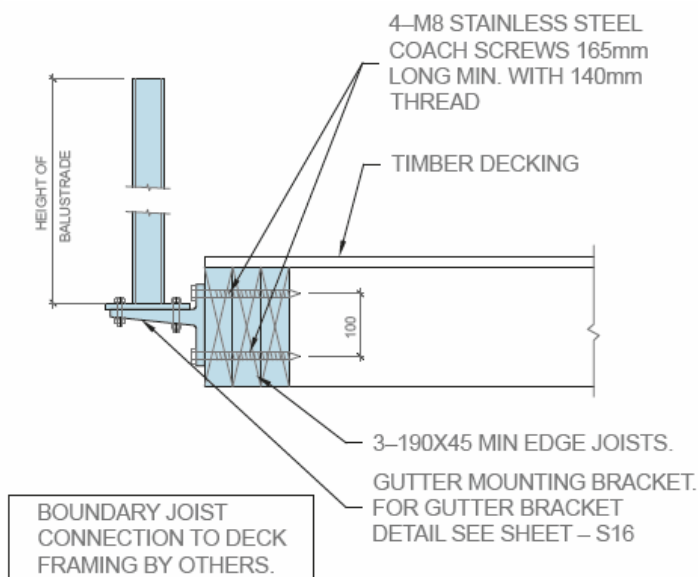
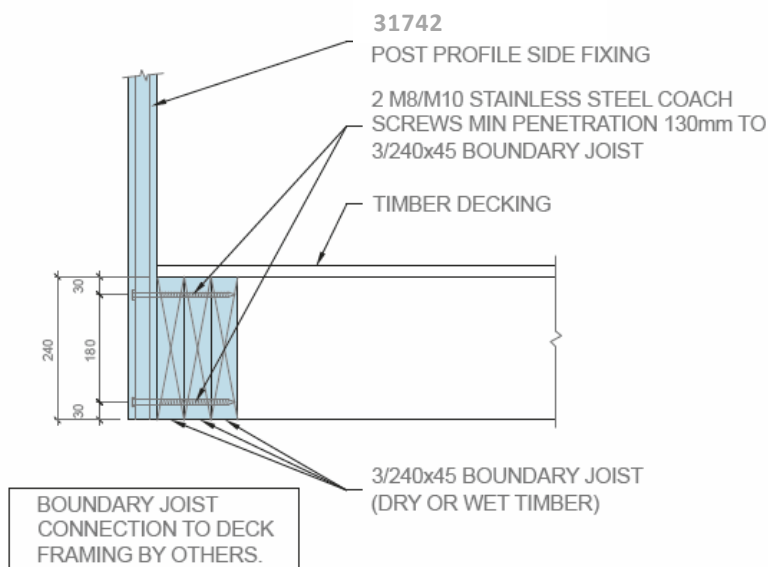
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)							
			Type 1c & 1d							
			Coach Screw with HIT-RE 500 Epoxy Side Fixing to Timber Deck							
			2/240x45 Boundary Joist							
			2/M8		2/M10		4/M8		4/M10	
			Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet
1M	31742	Side	0.90	1.10	0.85	1.35	1.10	1.35	1.25	1.25
1.1M	31742	Side	0.80	1.00	0.80	1.25	1.00	1.25	1.15	1.15
1.2M	31742	Side	-	0.85	-	1.15	0.85	1.15	0.95	0.95

The above table summarises the maximum balustrade post spacing that can be achieved based on balustrade post strength and connection strengths using Hilti HIT-RE Epoxy.

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 1 – Timber Side-Fix 3 x 240x45 (Coach Screws)



1e
CONNECTION TYPE 1E – SIDE FIXING TO
3/240x45 TIMBERS WITH 2 COACH SCREWS
SCALE 1:10

1f
CONNECTION TYPE 1F – SIDE FIXING TO
3/190x45 TIMBERS WITH 4 COACH SCREWS
SCALE 1:10

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Transition to Engineering Design

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Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 Very High Wind

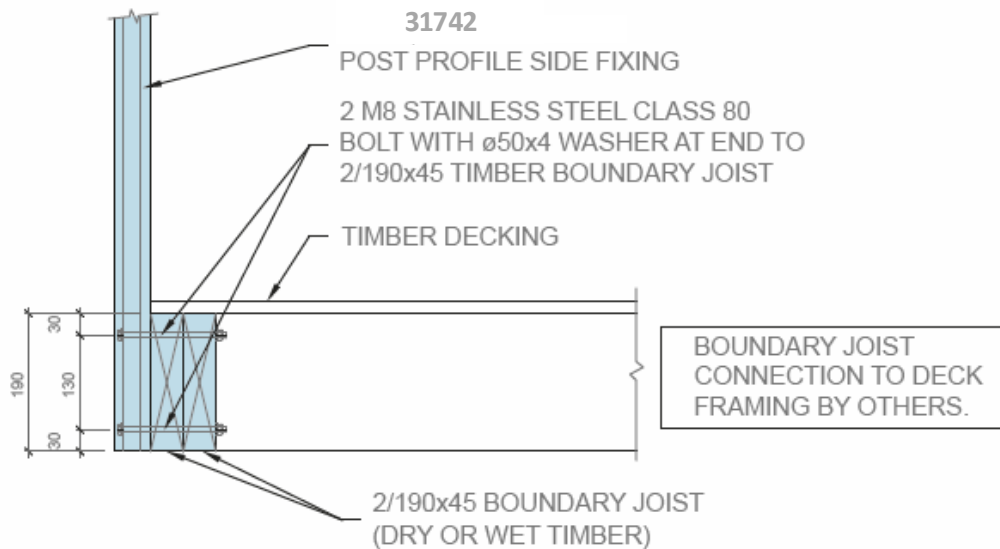
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)					
			Type 1e & 1f					
			Coach Screw with HIT-RE 500 Epoxy Side Fixing to Timber Deck					
			3/240x45 Boundary Joist				3 x 190x45 Boundary joist	
			2/M8		2/M10		4/M8 Gutter Bracket	
			Dry	Wet	Dry	Wet	Dry	Wet
1M	31742	Side	1.25	1.00	1.35	1.25	1.25	1.00
1.1M	31742	Side	1.15	0.90	1.25	1.15	1.15	0.90
1.2M	31742	Side	0.95	0.80	1.15	0.95	0.95	0.80

The above table summarises the maximum balustrade post spacing that can be achieved based on balustrade post strength and connection strengths using Hilti HIT-RE Epoxy.

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 2 – Bolt Side-Fix 2 x 190x45



2a
—
CONNECTION TYPE 2A – SIDE FIXING TO 2/190x45
TIMBERS WITH 2 BOLTS WASHERS & NUTS
SCALE 1:10

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Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 Very High Wind

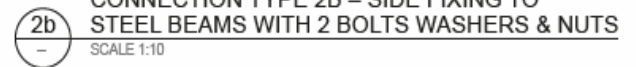
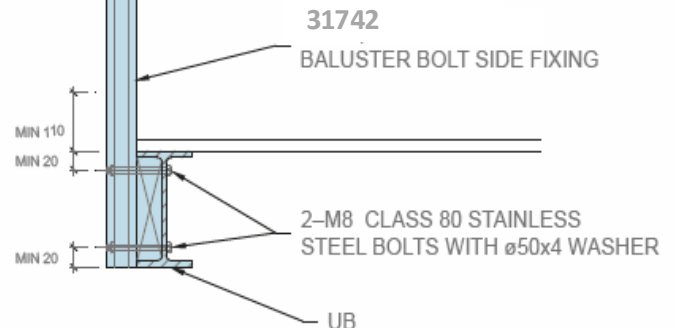
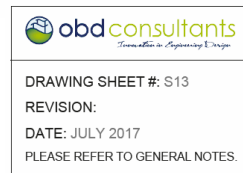
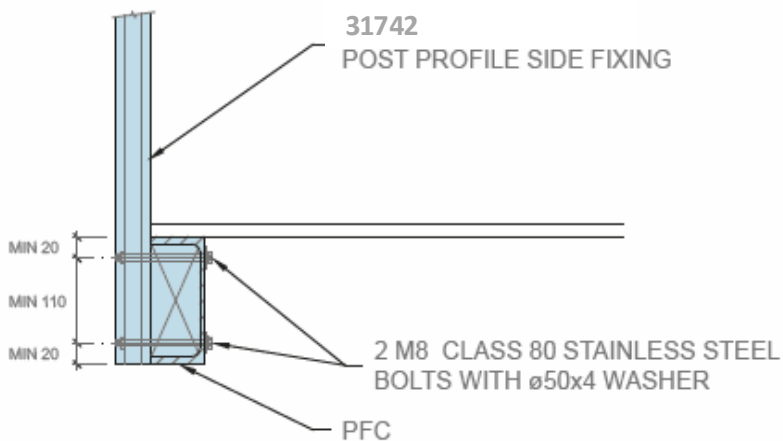
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)
			Type 2
			Bolt side fixing to timber 2 x 190x45
			2/M8
1M	31742	Side	1.35
1.1M	31742	Side	1.25
1.2M	31742	Side	1.15

The above table summarises the maximum balustrade post spacings that can be achieved based on balustrade post strength and connection strengths from types 2 to 6

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 2 – Bolt Side Fix Steel Beam



Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 Very High Wind

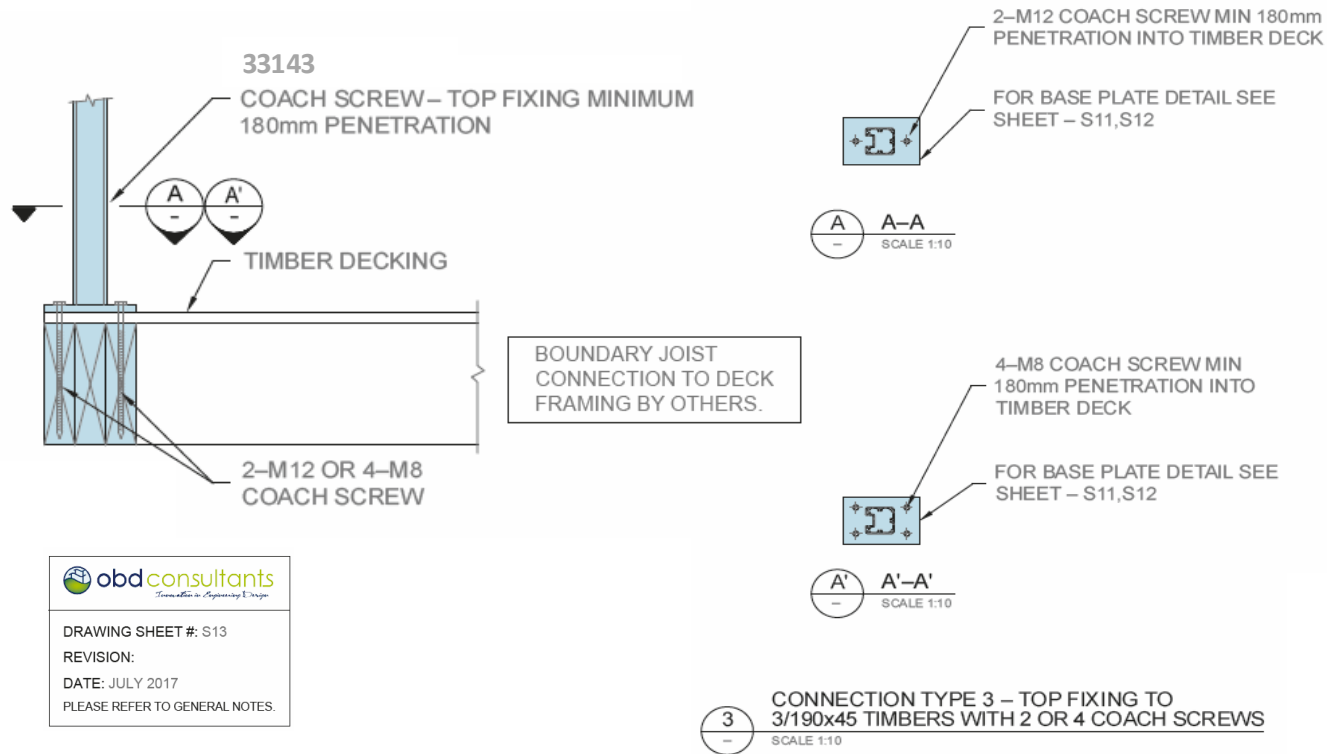
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)
			Type 2
			Bolt Side Fix Steel Beam
			2/M8
1M	31742	Side	1.35
1.1M	31742	Side	1.25
1.2M	31742	Side	1.15

The above table summarises the maximum balustrade post spacings that can be achieved based on balustrade post strength and connection strengths from types 2 to 6

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 3 – Timber Top-Fix



Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 Very High Wind

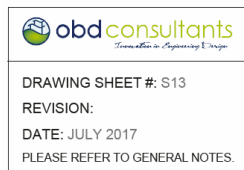
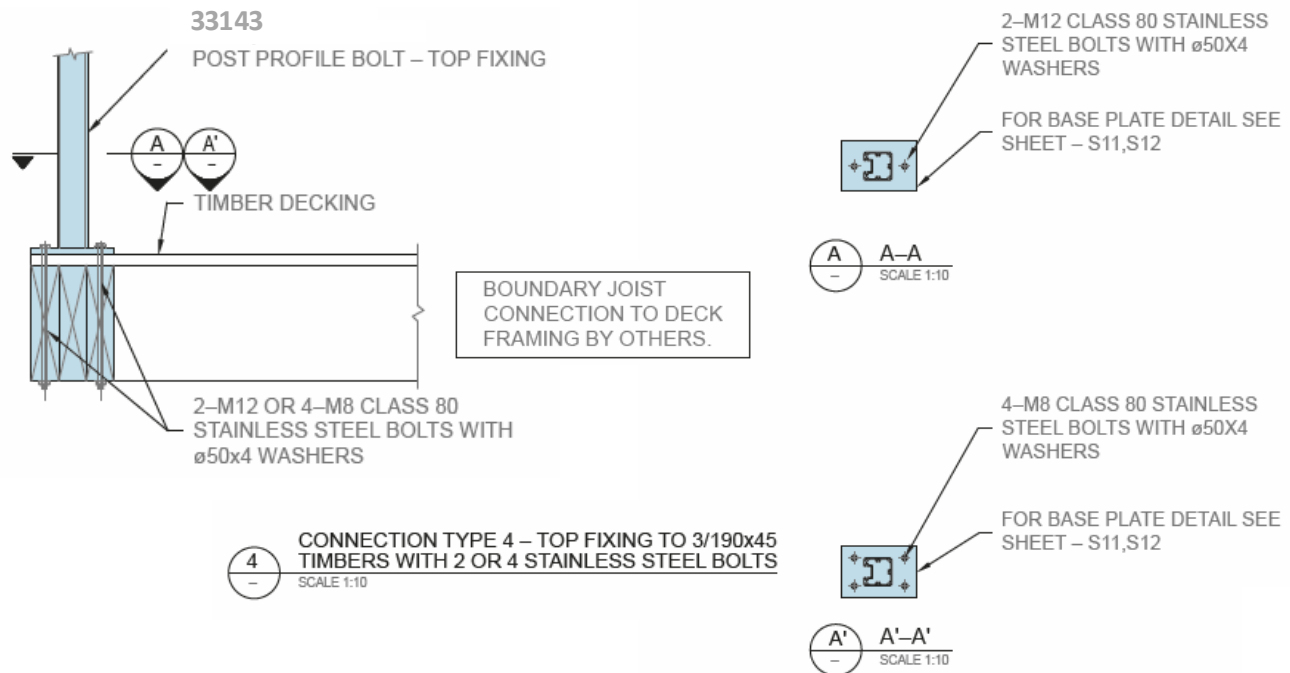
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)			
			Type 3			
			Coach Screw with HIT-RE 500 Epoxy Top Fixing to Timber Deck			
			4/M8		2/M12	
			Dry	Wet	Dry	Wet
1M	33143	Top	1.55	1.55	1.55	1.20
1.1M	33143	Top	1.40	1.40	1.40	1.10
1.2M	33143	Top	1.25	1.25	1.25	1.00

The above table summarises the maximum balustrade post spacing that can be achieved based on balustrade post strength and connection strengths using Hilti HIT-RE Epoxy.

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 4– Timber Top-Fix



Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 Very High Wind

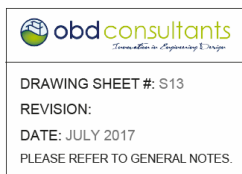
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)	
			Type 4	
			Bolt Top Fixing Timber Deck	
			4/M8	2/M12
			Dry & Wet	
1M	33143	Top	1.55	1.25
1.1M	33143	Top	1.40	1.15
1.2M	33143	Top	1.25	1.05

The above table summarises the maximum balustrade post spacings that can be achieved based on balustrade post strength and connection strengths

“THE CHOICE IS CLEAR”

FRAMED ALUMINIUM BALUSTRADES

Connection Type 5 – Concrete Top-Fix



Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 Very High Wind

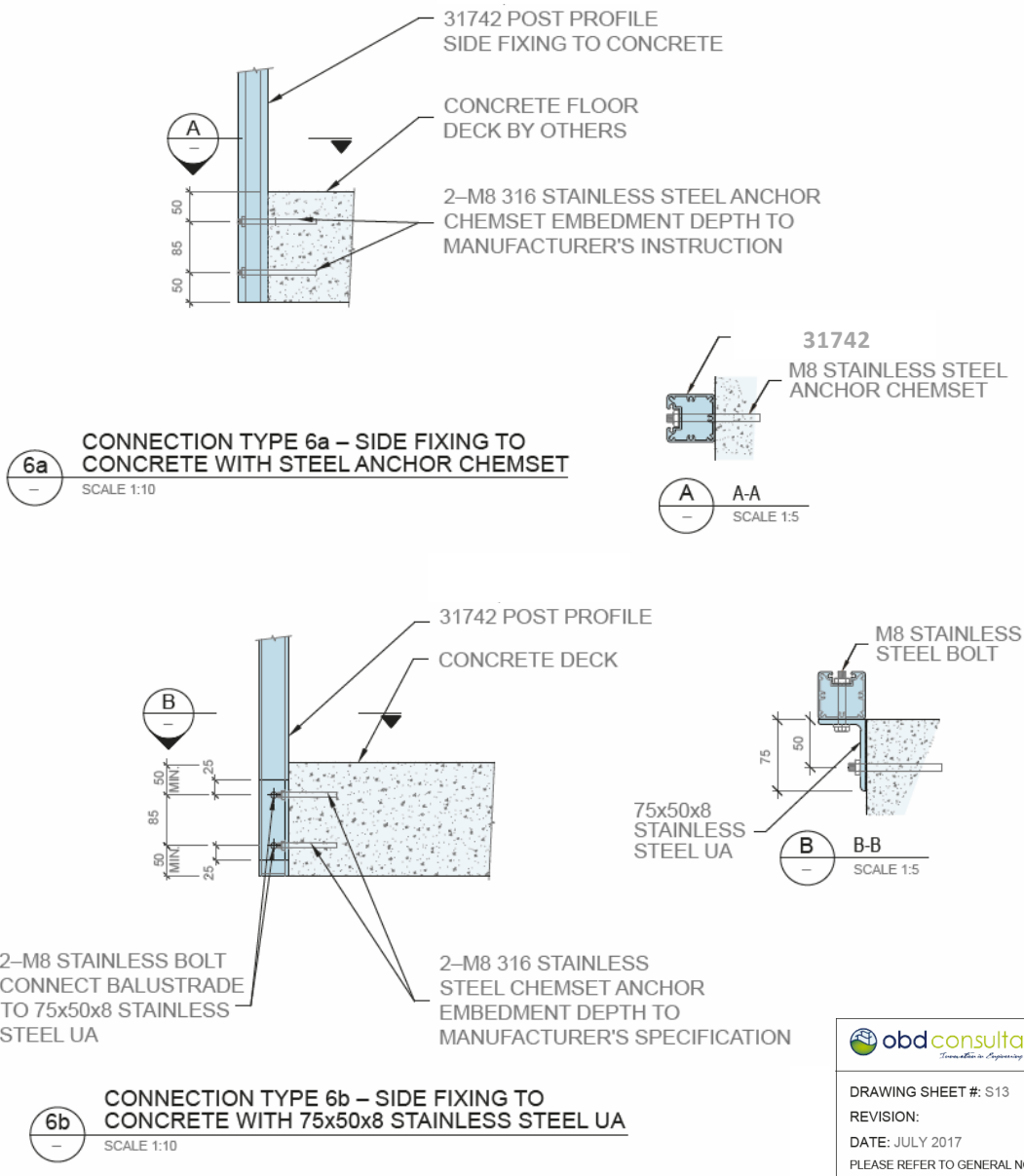
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)
			Type 5
			Chemset Anchor Top Fixing Concrete
1M	33143	Top	1.55
1.1M	33143	Top	1.40
1.2M	33143	Top	1.25

The above table summarises the maximum balustrade post spacings that can be achieved based on balustrade post strength and connection strengths

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 6 – Concrete Side-Fix

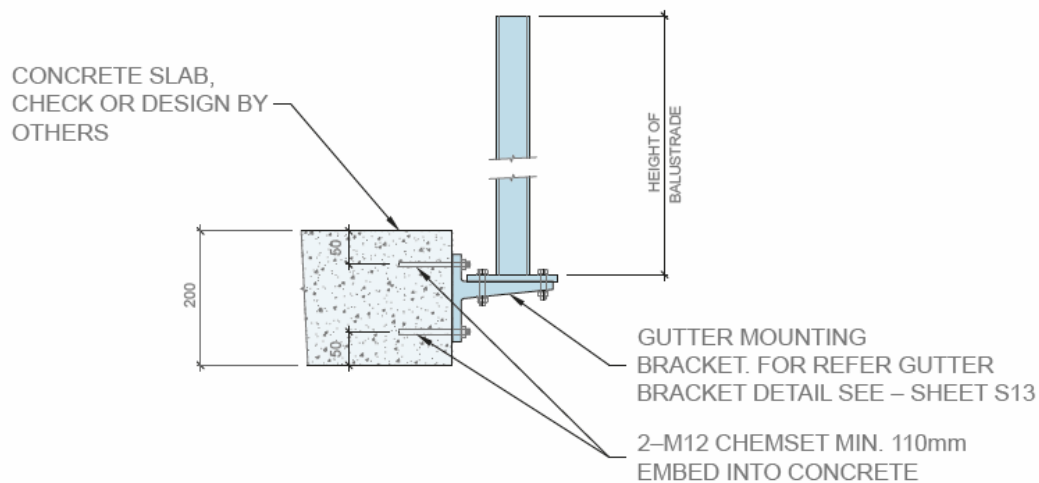


See Post Spacing table next page


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FRAMED ALUMINIUM BALUSTRADES

Connection Type 6 – Concrete Side-Fix



CONNECTION TYPE 6c – SIDE FIXING TO CONCRETE WITH GUTTER MOUNTING BRACKET
SCALE 1:10

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DATE: JULY 2017
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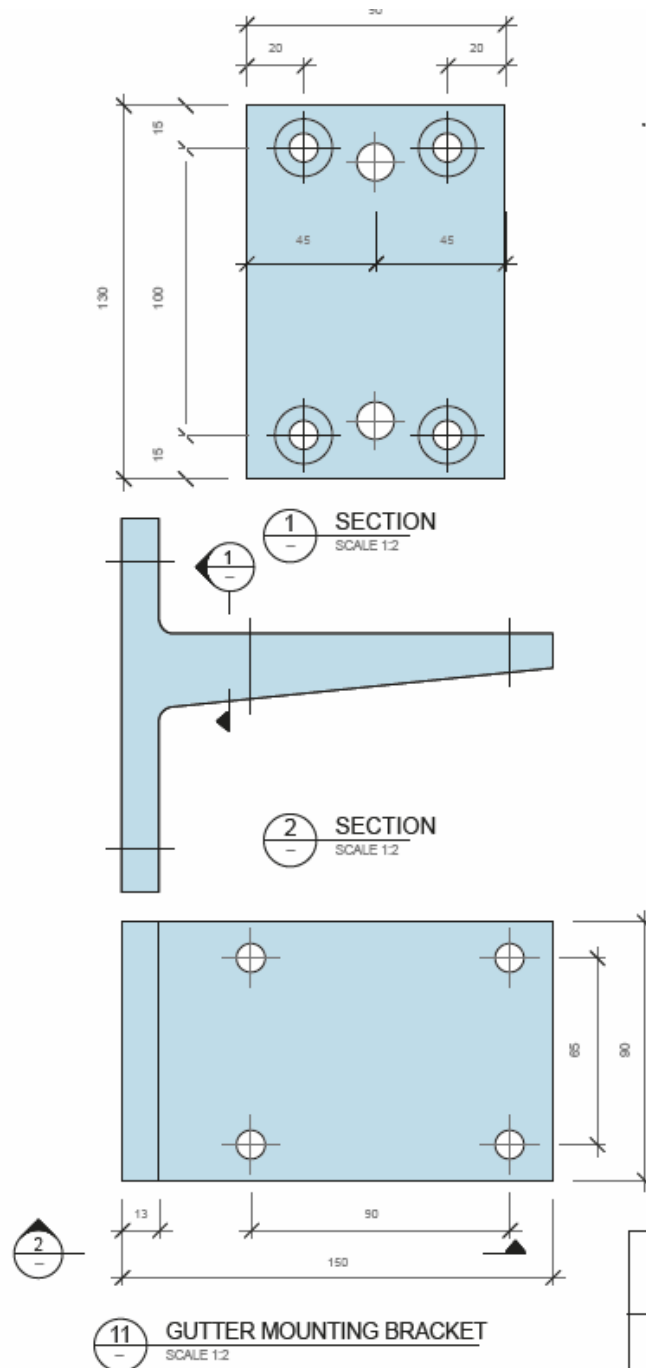
Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 Very High Wind Zone Across

Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)
			Type 6
			Side Fixing Concrete
1M	31742	Side	1.35
1.1M	31742	Side	1.25
1.2M	31742	Side	1.15

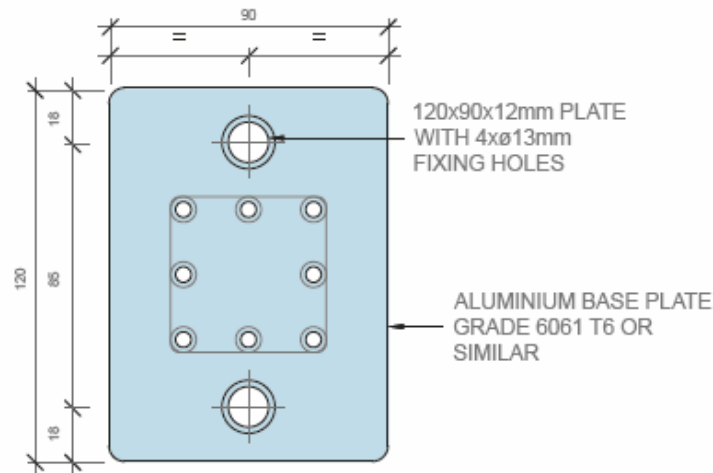
The above table summarises the maximum balustrade post spacings that can be achieved based on balustrade post strength and connection strengths from types 2 to 6

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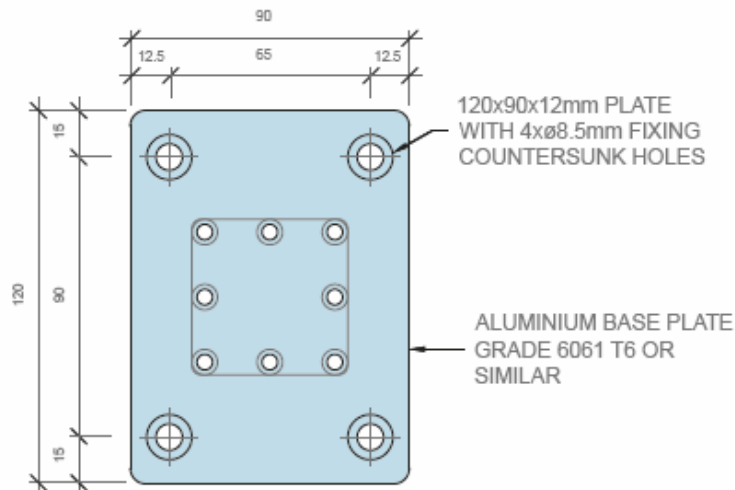
Gutter Bracket Design



Base Plate Design – Framed Aluminum Balustrade



9 PART NO. FC213 BASE PLATE
SCALE 1:2

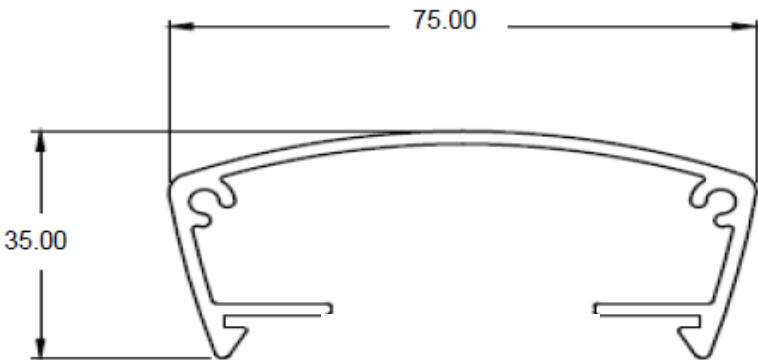


10 PART NO. FW485 BASE PLATE
SCALE 1:2

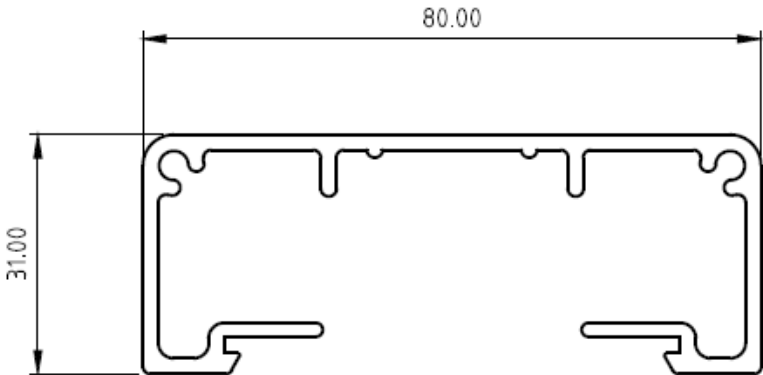
NOTE - BOTH FC213 AND FW485 BASE PLATES
MATE WITH 33143 POST PROFILE

Handrail Dimensions

Euro Handrail



Retro Handrail



“THE CHOICE IS CLEAR”