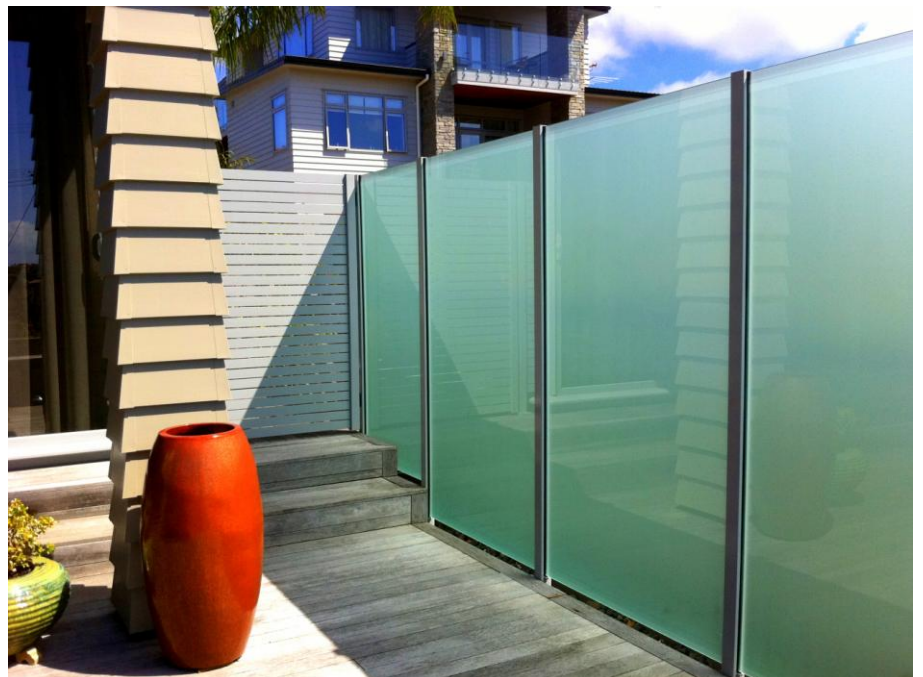
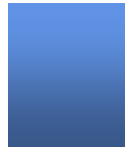


PROVISTA

BALUSTRADE SYSTEMS

SEMI FRAMELESS GLASS

PRODUCT TECHNICAL STATEMENT - Version BPIR 1, November 2023



“THE CHOICE IS CLEAR”

CONTENTS

| | Page |
|--|-------|
| 1. Product/Company Information | 1-5 |
| 2. Building Code Compliance | 6-8 |
| 3. Warranty, Maintenance and Care | 9 |
| 4. General Notes | 10 |
| 5. Connection Type 1 – Timber Side – Fix (Coach Screws) | 11-14 |
| 6. Connection Type 2 – Bolt Side-Fix | 15-16 |
| 7. Connection Type 3 – Timber Top-Fix | 17 |
| 8. Connection Type 4 – Timber Top-Fix | 18 |
| 9. Connection Type 5 – Concrete Top-Fix | 19 |
| 10. Connection Type 6– Concrete Side-Fix | 20 |
| 11. Connection Type 7 - Concrete Side-Fix Gutter Bracket | 21 |
| 12. Connection Type 8 - Side Fixed to Stairs | 22 |
| 13. Semi Frameless - EVA Safelite 13.2 Laminated Glass | 23-24 |
| 14. Gutter Bracket Design | 25 |
| 15. Base Plate Design – Semi Frameless | 26 |
| 16. Handrail Dimensions | 27 |

COMMERCIAL & RESIDENTIAL BALUSTRADE DESIGN



Semi Frameless Glass Balustrade

Product Line: Provista Semi-frameless Glass Balustrade solutions

Product Name/Identifier: Panorama, Summit, Horizon

Manufacturer/Location: Provista Balustrade Systems Ltd/New Zealand, NZBN 9429033696102

Address for Service: 1568 Kumara Junction Highway, Hokitika RD2, Westland 7882

Manufacturer Contact Details: nbarrett@provista.co.nz, 0272 580 876, www.provista.co.nz

Warnings and Bans: No

Description:

Provista Balustrade Systems Semi-frameless balustrade systems feature modern aluminum 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 can be toughened or laminated safety glass. The two styles with handrail are Summit, providing a gap between top edge of the glass and the handrail, and Panorama, where the glass continues into the handrail rebate. The third style is Horizon, where toughened laminated safety glass is used between the posts and no handrail is fitted.

Key Features:

- Designed for residential and commercial applications including apartment balconies and decks
- Suitable for both interior or exterior applications, including pool fencing and gates
- Hidden-fixings for face-fixed solutions
- Choice of 10 or 12mm toughened or >13.2mm laminated safety glass
- Designed for all building structures including membrane decks
- Provista Euro Slat or aluminium sheet screening can also be used as the infill panel
- 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 (see warranty statement on page 9)

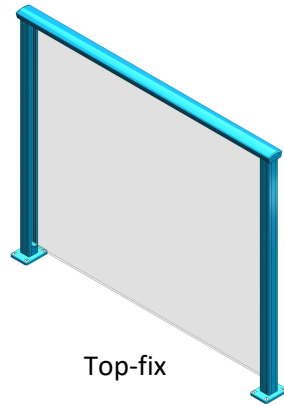
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COMMERCIAL & RESIDENTIAL BALUSTRADE DESIGN



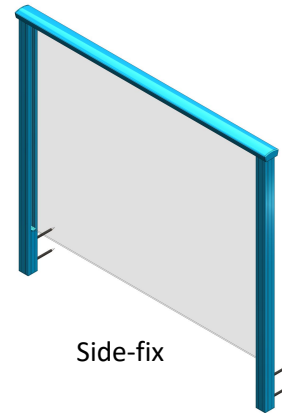
PROVISTA
BALUSTRADE SYSTEMS

Semi Frameless Glass Balustrade

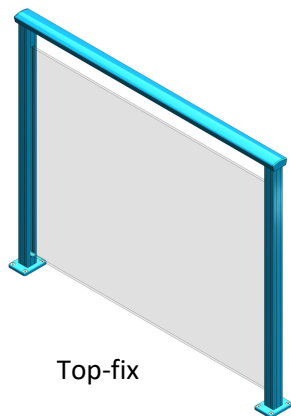


Top-fix

Panorama

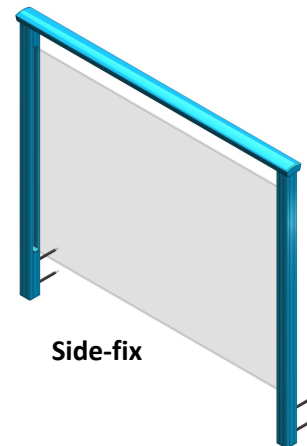


Side-fix

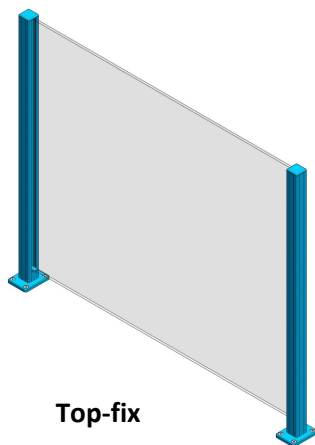


Top-fix

Summit

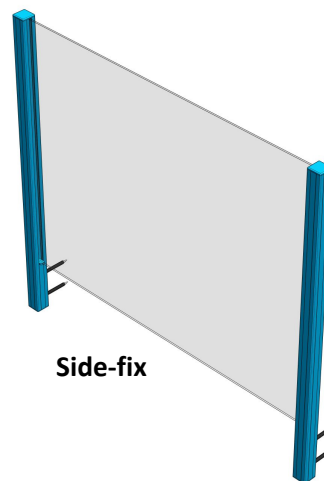


Side-fix



Top-fix

Horizon



Side-fix

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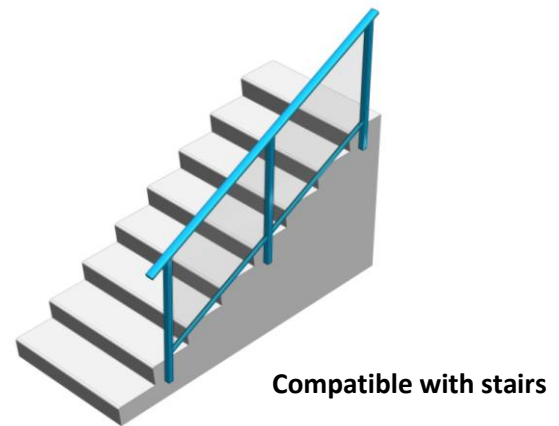
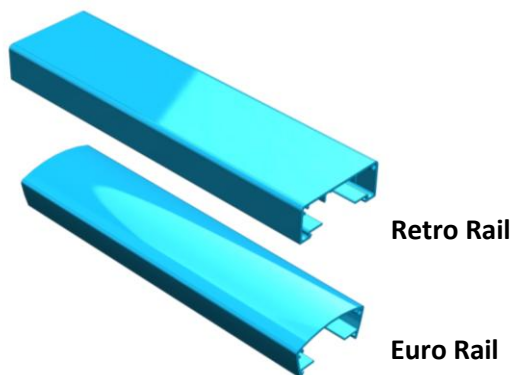
Scope of Use:

Provista Semi-frameless solutions are designed to comply with A, B, E and C3 loadings for residential and commercial occupancy types and are suitable for decks, balconies, stairways, pool fences and gates.

Suitable building structures can be timber, concrete, steel and typical combinations of each. Provista Semi-frameless solutions can also be used in conjunction with the Provista Gutter Bracket – a robust 6061 T6 aluminum product designed to be specified where membrane decks and gutters are required.

A rectangular ('Retro') handrail and rounded ('Euro') handrail options are available or a stainless interlinking rail could be used if required, affixed directly to the top edge of the glass. The Provista Semi-frameless solutions can include a glass infill panel, or euro Slat screening, or combination of both.

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



Conditions of Use:

- Provista Semi-frameless solutions should only be used in accordance with this Product Technical Statement which confirms post spacings and fixing methods available
- Not suitable for Commercial Occupancy Type C5
- 1st Grade Toughened Safety Glass must be minimum 100Mpa
- Specified for use in **Extra High Wind Zones**
- For high corrosion zones use Dulux Duratec powder-coating

NZS 3604 MAXIMUM SUITABILITY



Extra High Wind Zone

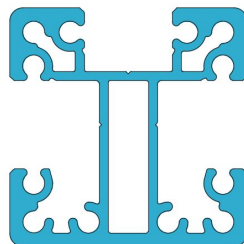
"THE CHOICE IS CLEAR"

Provista has over 20 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 Semi-frameless styles have been installed in thousands of homes, apartments, schools, aged care villages etc, 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
- Summit, Panorama and Horizon Semi-frameless styles are designed for Occupancy types A, B, E and C3
- Designs are engineered to comply with B1, B2, F2 and F4 of the NZ Building Code
 - o B1 Structure — B1.3.1, B1.3.2, B1.3.3 (c, f, h, j, m), B1.3.4
 - o B2 Durability — B2.3.1 (a), B2.3.2 (a, b)
 - o F2 Hazardous building materials — F2.3.1, F2.3.3
 - o F4 Safety from falling — F4.3.1
 - o F9 Means of restricting access to residential pools — F9.3.1, F9.3.3
- For applications outside of the Provista Product Technical Statement specifications, a Site Specific PS1 can be prepared upon request

Exclusive to Provista Balustrade Systems:
Ultra 3-way 53 x 53mm post for unparalleled Strength and Versatility along with
maximum post spacings.



33142
Ultra post
53x53

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Semi Frameless Glass Balustrade

Building Code Performance Clauses

All relevant building code performance clauses listed in this document:

B1 Structure

B1.3.1

Buildings, building elements and sitework shall have a low probability of rupturing, becoming unstable, losing equilibrium, or collapsing during construction or alteration and throughout their lives.

B1.3.2

Buildings, building elements and sitework shall have a low probability of causing loss of amenity through undue deformation, vibratory response, degradation, or other physical characteristics throughout their lives, or during construction or alteration when the building is in use.

B1.3.3

Account shall be taken of all physical conditions likely to affect the stability of buildings, building elements and sitework, including:

- (c) temperature
- (f) earthquake
- (h) wind
- (j) impact
- (m) differential movement

B1.3.4

Due allowances shall be made for:

- a. the consequences of failure,
- b. the intended use of the building,
- c. effects of uncertainties resulting from construction activities, or the sequence in which construction activities occur,
- d. variation in the properties of materials and the characteristics of the site, and
- e. accuracy limitations inherent in the methods used to predict the stability of buildings

B2 Durability

B2.3.1

Building elements must, with only normal maintenance, continue to satisfy the performance requirements of this code for the lesser of the specified intended life of the building, if stated, or:

- (a) the life of the building, being not less than 50 years, if:
 - i. those building elements (including floors, walls, and fixings) provide structural stability to the building, or
 - ii. those building elements are difficult to access or replace, or
 - iii. failure of those building elements to comply with the building code would go undetected during both normal use and maintenance of the building

B2.3.2

Individual building elements which are components of a building system and are difficult to access or replace must either:

- (a) all have the same durability
- (b) be installed in a manner that permits the replacement of building elements of lesser durability without removing building elements that have greater durability and are not specifically designed for removal and replacement

“THE CHOICE IS CLEAR”

Semi Frameless Glass Balustrade

Building Code Performance Clauses, continued

All relevant building code performance clauses listed in this document:

F2 Hazardous building materials

F2.3.1

The quantities of gas, liquid, radiation or solid particles emitted by materials used in the construction of buildings, shall not give rise to harmful concentrations at the surface of the material where the material is exposed, or in the atmosphere of any space.

F2.3.3

Glass or other brittle materials with which people are likely to come into contact shall:

- a. if broken on impact, break in a way which is unlikely to cause injury, or
- b. resist a reasonably foreseeable impact without breaking, or
- c. be protected from impact.

F4 Safety from falling

F4.3.1

Where people could fall 1 metre or more from an opening in the external envelope or floor of a building, or from a sudden change of level within or associated with a building, a barrier shall be provided.

F9 Means of restricting access to residential pools

F9.3.1

Residential pools must have or be provided with physical barriers that restrict access to the pool or the immediate pool area by unsupervised young children (ie, under 5 years of age).

F9.3.3

A barrier surrounding a pool must have no permanent objects or projections on the outside that could assist children in negotiating the barrier. Any gates must

- a. open away from the pool; and
- b. not be able to be readily opened by children; and
- c. automatically return to the closed position after use

“THE CHOICE IS CLEAR”

Semi Frameless Glass Balustrade

Warranty Statement

5 year peace of mind limited warranty covering faulty materials and installation supplied by Provista Balustrade Systems and installed by an authorised Provista Balustrade Systems agent. Warranty and provisions expressly covered in accordance with Building Code requirements within the Producer Technical Statement and assigned Building Code of Compliance Certificate.

The Client must notify Provista within 7 days of installation of any appearance or finishing defects present at installation and must give Provista reasonable opportunity to inspect. Provista will repair the defect or replace the materials or installation where the defect is the responsibility of Provista.

Excluded from any warranty claims:

A. Any or all sub structures that are supplied by third parties and covered under separate supplier warranties.

B. Provista does not give any warranty as to the life or appearance of the powder coating colour due to varying factors outside of Provista's control, including but not limited to sun exposure and weather conditions, that can affect powder coating.

C. Provista Balustrade Systems warranty excludes damage caused by extreme weather events and wind speeds greater than speeds the system was granted a code of compliance. Abnormal use, neglect, intentional damage or altered, modified after initial installation. And can be proven that the damage was caused by defective materials and or installation of Provista Balustrade Systems products only.

D. Damage or losses to business, personal property and third parties are also not covered under the warranty.

Provista Balustrade Systems Ltd will put right any defective materials or part thereof, found to be faulty in accordance with building code specified durability and performance guidelines, by their specified agent at no cost to the initial buyer/owner of the balustrade system at the discretion of Provista Balustrade Systems.

Balustrade Care and Maintenance

Whilst powder coated Aluminium and glass balustrades are low maintenance, they still require regular maintenance checks and cleaning to ensure optimum good looks and safety is achieved for many years.

MAINTENANCE:

Make a 2 monthly schedule to conduct a visual check for any defects, loose fittings and/or glazing rubbers. Report any issues to your local Provista agent immediately.

CLEANING:

Residential non sea zone industrial environments: 3-6month schedule. Hose down air born deposits and residues. Wash down all balustrade and glass with warm water and a small amount of detergent. Rinse with cold tap water. Use a dry towel or chamois to remove excess water. Use a squeegee on glass for the best finish.

Sea zone, industrial areas: 1-2 month schedule, wash down aluminium and glass with warm water and detergent, rinse thoroughly with cold tap water. Use a dry towel or chamois to remove excess water from aluminium and glass. While the use of glass cleaner can be used, a small amount of detergent in water performs just as well with a clean streak free finish. Use a squeegee on glass for the best finish.

AVOID:

1. Washing balustrade and glass in direct sun light or when surfaces are hot.
2. Avoid sunscreens, solvents, alcohol from coming in contact with powder coated surfaces. Wash off immediately with warm water and detergent, should a spill occur.
3. Never use abrasive compounds or materials to clean powder coated or glass surfaces.

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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 MAXIMUM BALUSTRADE HEIGHT IS 1200MM.

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 STEELWORK IS TO BE PROTECTED AS REQUIRED BY THE NZ BUILDING CODE.
- (3) THE DESIGN OF CONCRETE, STEEL OR TIMBER SUPPORT FOR THE BALUSTRADE IS THE RESPONSIBILITY OF OTHERS.

NEW CONSTRUCTION NOTES:

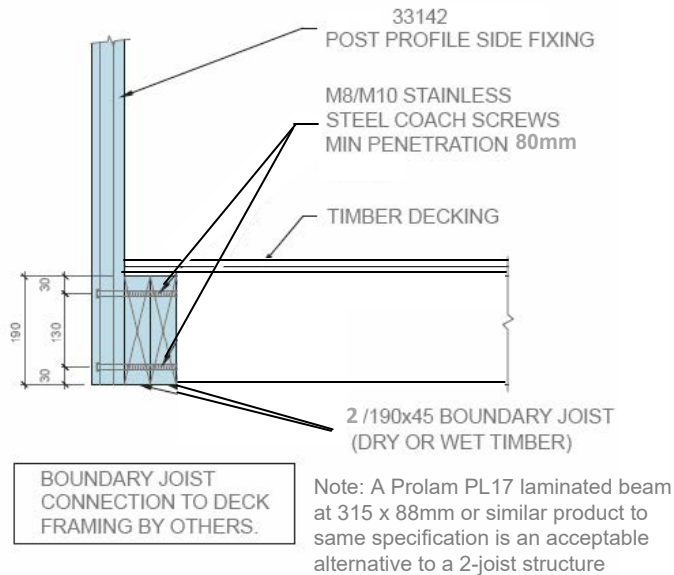
- (1) THE EXISTING SUPPORTING STRUCTURE DETAILS ARE NOT COVERED BY THESE DRAWINGS.
- (2) THESE DRAWINGS ONLY COVER INSTALLATION DETAILS OF THE NEW ALUMINIUM BALUSTRADE AND GLASS FENCE/HANDRAIL.
- (3) ALL BOLTS AND COACH SCREWS CLASS 80 AND BRACKETS ARE TO BE 316 STAINLESS STEEL.
- (4) ALL CHEMSET CONCRETE ANCHORS TO BE CLASS 80 STAINLESS STEEL AND FIXED TO MANUFACTURER'S SPECIFICATION.
- (5) PREVENT CONTACT BETWEEN ALL DISSIMILAR MATERIALS IE: GALVANISED STEEL AND ALUMINIUM BY SEPARATING WITH NEOPRENE WASHERS.
- (6) ALL GLASS PANELS ARE TO BE TOUGHENED GLASS TO COMPLY WITH THE NZ BUILDING CODE AND CLAUSE 224.3 OF NZS4223.3.2016.
- (7) TYPICAL GLASS SIZES ARE 10MM OR 12MM TOUGHENED OR 13.2MM LAMINATED SAFETY GLASS. REFER GLASS MANUFACTURERS SPECIFICATIONS FOR GLASS SIZING.
- (8) ALL STRUCTURAL GLASS BARRIERS SAFEGUARDING A FALL OF 1000MM OR MORE REQUIRE INTERLINKING HANDRAIL AS PER CLAUSE 22.4.3 OF NZS 4223.3.2016 UNLESS SPECIFICALLY DESIGNED TO COMPLY WITH 22.4.3(C).
- (9) ALL GLASS PANELS ARE TO BE SEATED ON NYLON WASHERS OR BUSHES AT ALL SUPPORT BRACKETS AND BOLTS.
- (10) ALL SEALANTS ARE TO COMPLY WITH THE REQUIREMENTS FOR THE SPECIFIC USE INTENDED DURING CONSTRUCTION.
- (11) A RUBBER, EPDM OR FOAM TAPE LAYER MUST BE INSTALLED BETWEEN THE POSTS AND DECK.

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BALUSTRADE DESIGN**

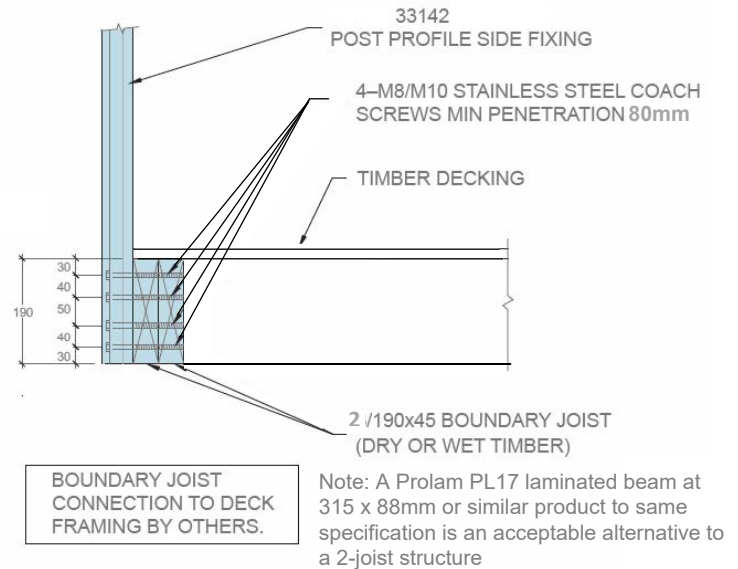
SEMI FRAMELESS GLASS



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

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

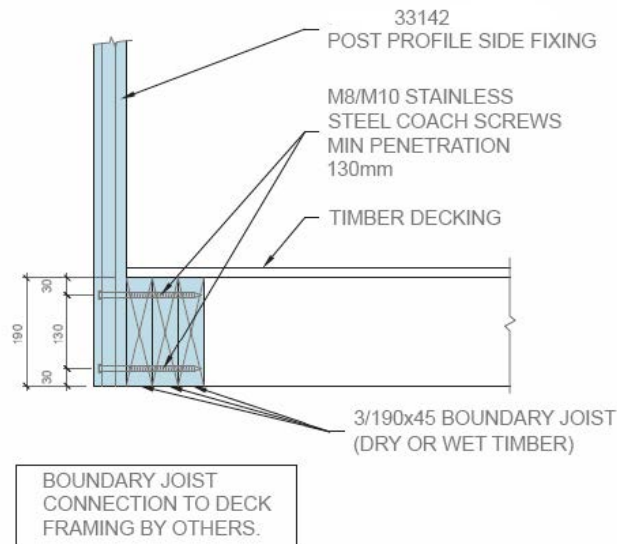
| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M/Centres) | | | |
|-------------------|--------------------|-------------|--|-----------|-------|------|
| | | | Type 1a & 1b | | | |
| | | | Note: HIT-RE 500 Epoxy required with coach screws for EHWZ | | | |
| | | | 2/190x45 Boundary Joist | | | |
| | | | 2/M10 | 4/M8 | 4/M10 | |
| | | | | | | |
| 1M | | | | | | |
| | 33142 Ultra | Side | 0.80 | 0.90 0.85 | 1.10 | 1.10 |
| 1.1M | | | | | | |
| | 33142 Ultra | Side | | 0.80 | 1.00 | 0.90 |
| 1.2M | | | | | | |
| | 33142 Ultra | Side | | | 0.85 | 0.80 |

Note:

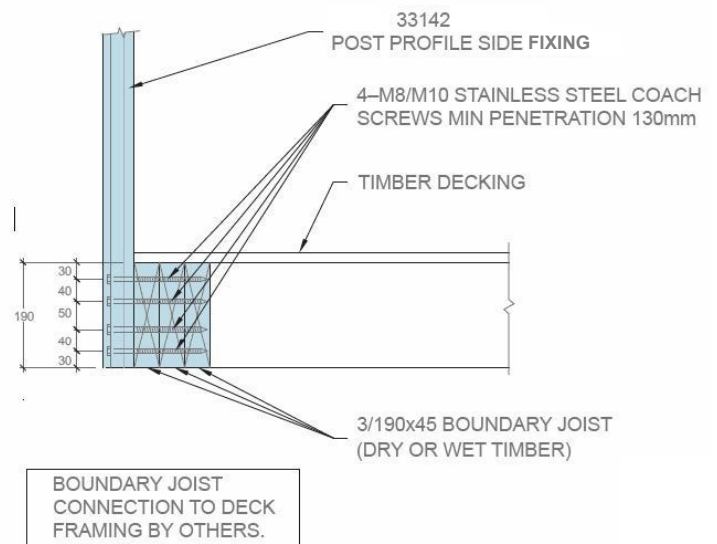
- The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths for coach screws. Hilti HIT-RE Epoxy required for EHWZ.
- Minimum height to be 1.2m when used for Pool Fencing.

"THE CHOICE IS CLEAR"

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

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

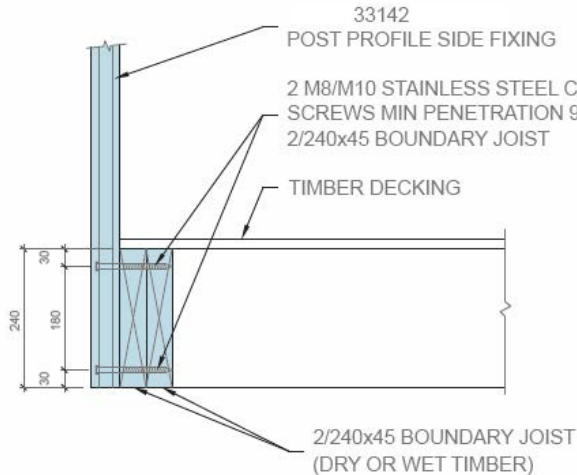
| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M/Centres) | | | | | | | |
|-------------------|--------------------|-------------|---|-------------|-------------|-------------|-------------|-------------|------|-------------|
| | | | Type 1a & 1b | | | | | | | |
| | | | Note: HIT-RE 500 Epoxy required with coach screws for EHWZ | | | | | | | |
| | | | 3/190x45 Boundary Joist | | | | | | | |
| | | | 2/M8 | 2/M10 | 4/M8 | 4/M10 | | | | |
| 1M | 33142 Ultra | Side | 0.95 | 0.90 | 1.15 | 1.10 | 1.30 | 1.20 | 1.45 | 1.35 |
| | | | | | | | | | | |
| 1.1M | 33142 Ultra | Side | 0.85 | 0.80 | 1.05 | 0.90 | 1.20 | 1.00 | 1.30 | 1.15 |
| | | | | | | | | | | |
| 1.2M | 33142 Ultra | Side | 0.70 | 0.90 | 0.80 | 1.00 | 0.85 | 1.10 | | 0.95 |
| | | | | | | | | | | |

Note:

- The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths for coach screws. Hilti HIT-RE Epoxy required for EHWZ.
- Minimum height to be 1.2m when used for Pool Fencing.

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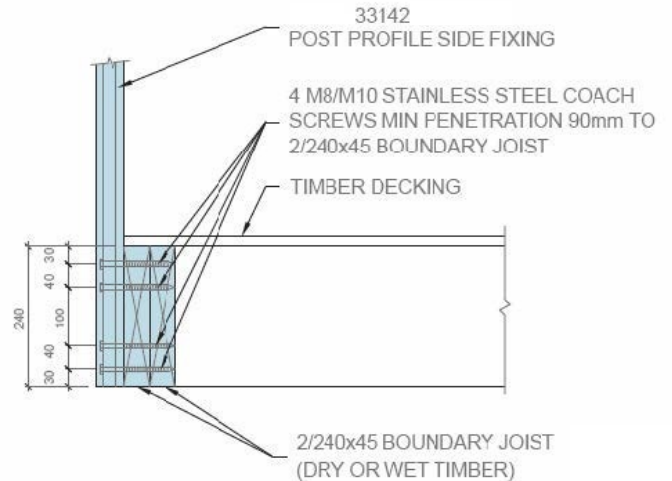
Connection Type 1 – Timber Side-Fix 2 x 240x45 (Coach Screws)



BOUNDARY JOIST
CONNECTION TO DECK
FRAMING BY OTHERS.

Note: A Prolam PL17 laminated beam at 315 x 88mm or similar product to same specification is an acceptable alternative to a 2-joist structure

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.

Note: A Prolam PL17 laminated beam at 315 x 88mm or similar product to same specification is an acceptable alternative to a 2-joist structure

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

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

| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M/Centres) | | | | | | | |
|-------------------|--------------------|-------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | | | Type 1c & 1d | | | | | | | |
| | | | Note: HIT-RE 500 Epoxy required with coach screws for EHWZ | | | | | | | |
| | | | 2/240x45 Boundary Joist | | | | | | | |
| | | | 2/M8 | 2/M10 | | 4/M8 | | 4/M10 | | |
| | | | | | | | | | | |
| 1M | 33142 Ultra | Side | 0.90 | 0.85 | 1.10 | 1.05 | 1.40 | 1.30 | 1.45 | 1.35 |
| 1.1M | 33142 Ultra | Side | 0.80 | 1.00 | 0.90 | 1.25 | 1.00 | 1.30 | 1.00 | |
| 1.2M | 33142 Ultra | Side | | 0.85 | 0.80 | 1.10 | 0.80 | 1.10 | 0.80 | |

Note:

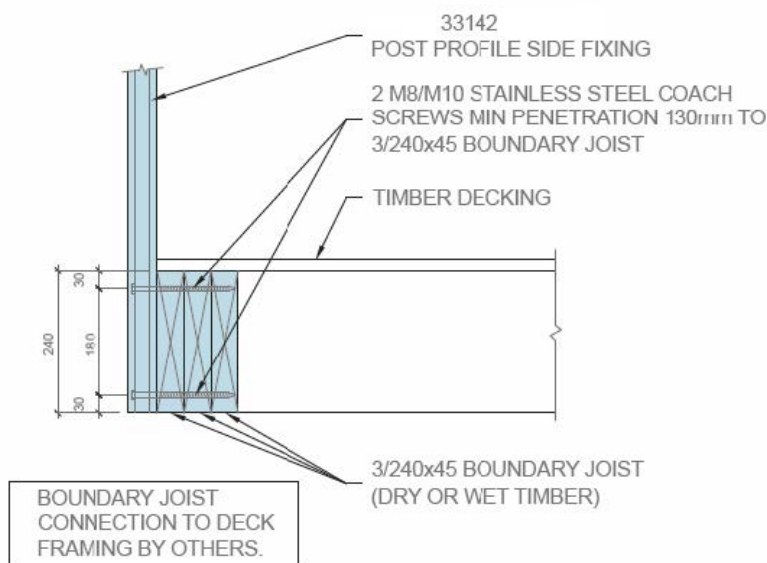
- The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths for coach screws. Hilti HIT-RE Epoxy required for EHWZ.
- Minimum height to be 1.2m when used for Pool Fencing.

"THE CHOICE IS CLEAR"

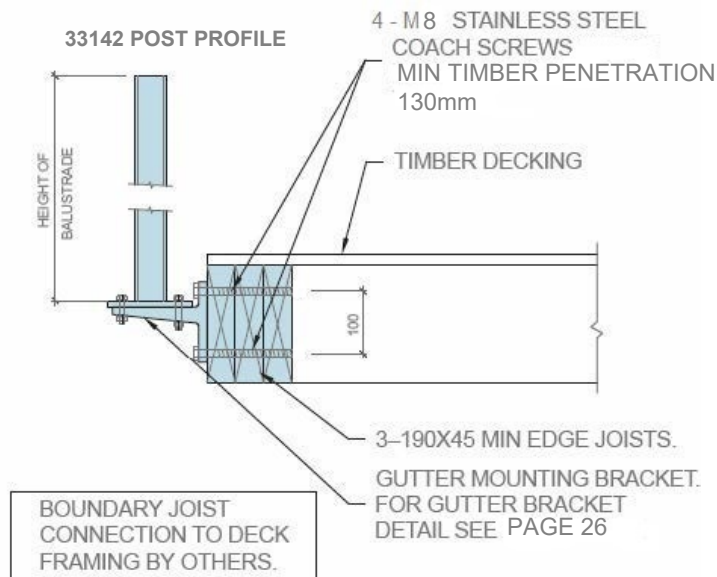
**COMMERCIAL & RESIDENTIAL
BALUSTRADE DESIGN
SEMI FRAMELESS GLASS**



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

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

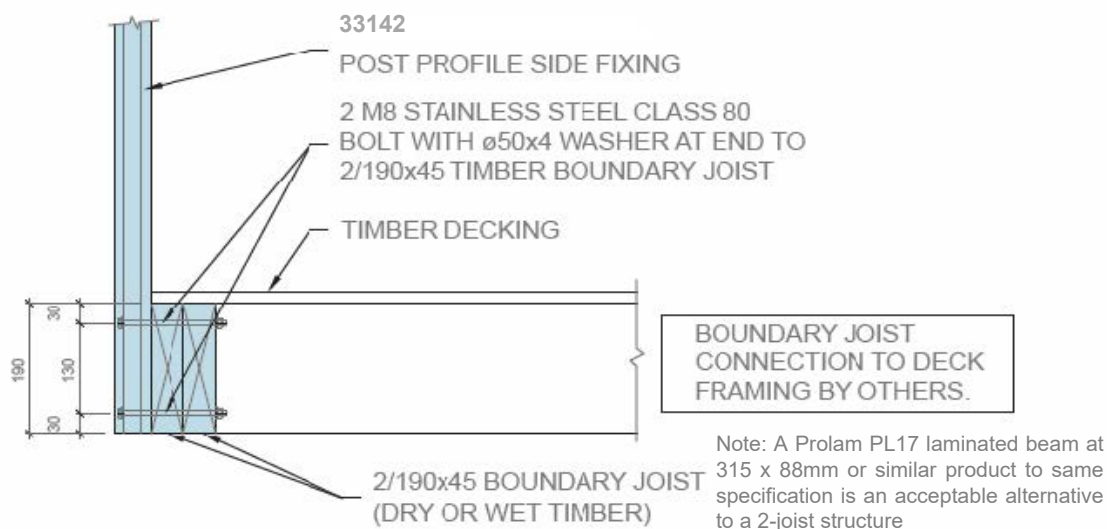
| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M/Centres) | | | | | |
|-------------------|--------------------|-------------|--|------|-------|------|---------------------------|------|
| | | | Type 1e & 1f | | | | | |
| | | | Note: HIT-RE 500 Epoxy required with coach screws for EHWZ | | | | | |
| | | | 3/240x45 Boundary Joist | | | | 3 x 190x45 Boundary joist | |
| | | | 2/M8 | | 2/M10 | | 4/M8 Gutter Bracket | |
| | | | | | | | | |
| 1M | | | | | | | | |
| | 33142 Ultra | Side | 1.30 | 1.20 | 1.45 | 1.35 | 1.35 | 1.30 |
| 1.1M | | | | | | | | |
| | 33142 Ultra | Side | 1.20 | 1.00 | 1.30 | 1.15 | 1.25 | 1.15 |
| 1.2M | | | | | | | | |
| | 33142 Ultra | Side | 1.00 | 0.85 | 1.10 | 0.95 | 1.05 | 0.95 |

Note:

- The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths for coach screws. Hilti HIT-RE Epoxy required for EHWZ.
- Minimum height to be 1.2m when used for Pool Fencing.

SEMI FRAMELESS GLASS

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

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

| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M/Centres) | |
|-------------------|--------------------|-------------|---------------------------------------|------|
| | | | Type 2 | |
| | | | Bolt side fixing to timber 2 x 190x45 | |
| | | | 2/M8 | |
| 1M | | | | |
| | 33142 Ultra | Side | 1.45 | 1.35 |
| 1.1M | | | | |
| | 33142 Ultra | Side | 1.30 | 1.15 |
| 1.2M | | | | |
| | 33142 Ultra | Side | 1.10 | 0.95 |

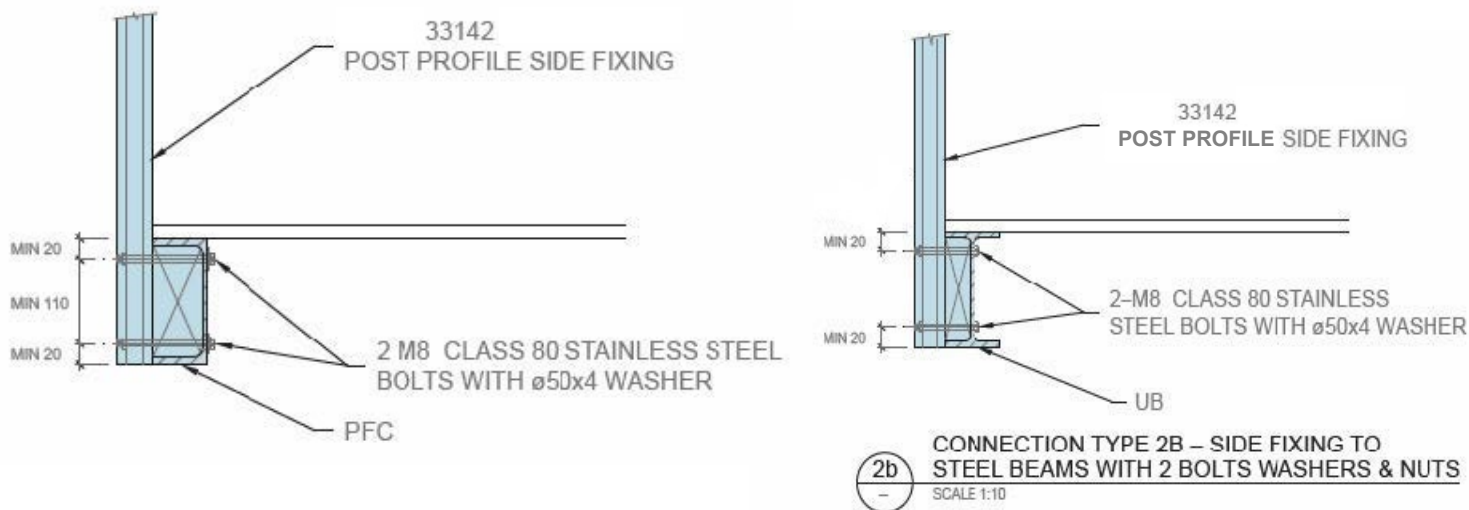
Note:

- The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths.
- Minimum height to be 1.2m when used for Pool Fencing.

“THE CHOICE IS CLEAR”

SEMI FRAMELESS GLASS

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** / **Extra High Wind**

| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M/Centres) | |
|-------------------|--------------------|-------------|----------------------------------|------|
| | | | Type 2 | |
| | | | Bolt Side Fix Steel Beam | |
| | | | 2/M8 | |
| 1M | | | | |
| | 33142 Ultra | Side | 1.45 | 1.35 |
| 1.1M | | | | |
| | 33142 Ultra | Side | 1.30 | 1.15 |
| 1.2M | | | | |
| | 33142 Ultra | Side | 1.10 | 0.95 |

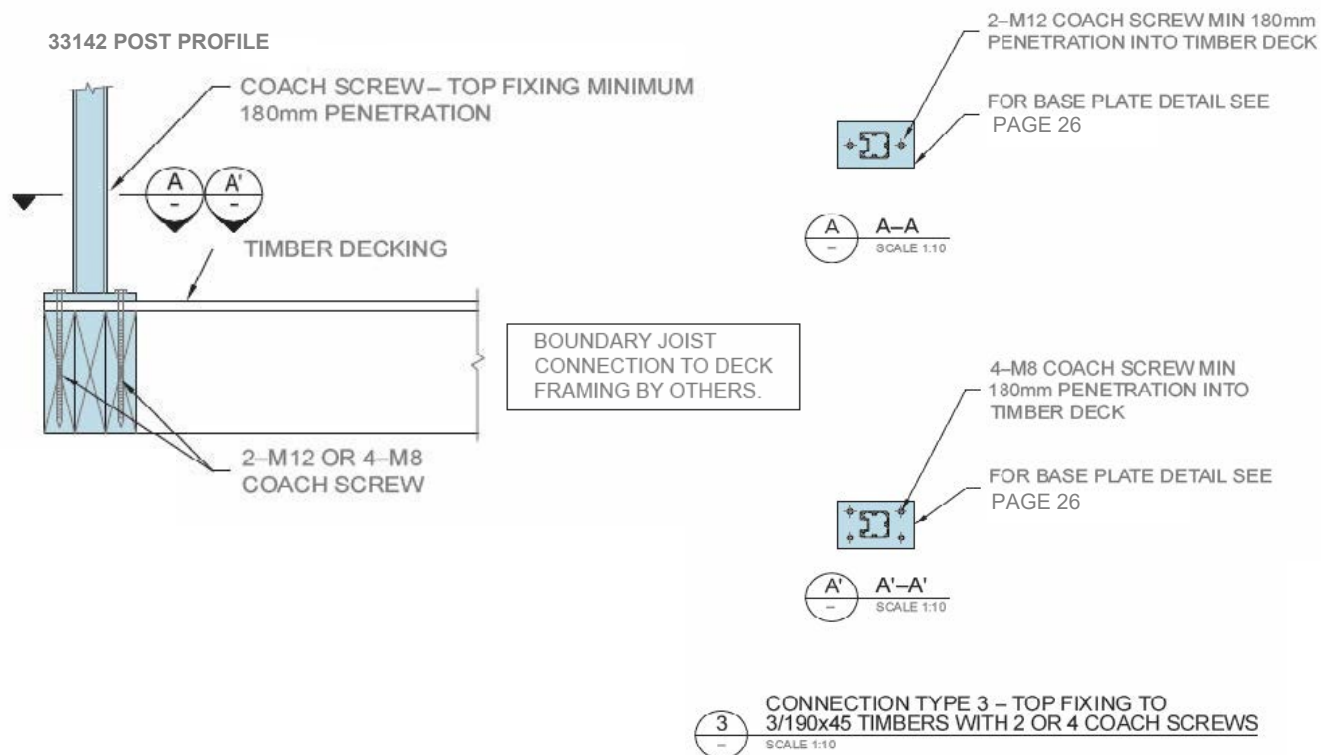
Note:

- The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths.
- Minimum height to be 1.2m when used for Pool Fencing.

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SEMI FRAMELESS GLASS

Connection Type 3 – Timber Top-Fix



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

| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M/Centres) | | | |
|-------------------|--------------------|-------------|--|------|-------|------|
| | | | Type 3 | | | |
| | | | Note: HIT-RE 500 Epoxy required with coach screws for EHWZ | | | |
| | | | 4/M8 | | 2/M12 | |
| | | | | | | |
| 1M | | | | | | |
| | 33142 Ultra | Top | 1.45 | 1.25 | 1.45 | 1.25 |
| 1.1M | | | | | | |
| | 33142 Ultra | Top | 1.30 | 1.10 | 1.30 | 1.10 |
| 1.2M | | | | | | |
| | 33142 Ultra | Top | 1.20 | 0.95 | 1.20 | 0.95 |

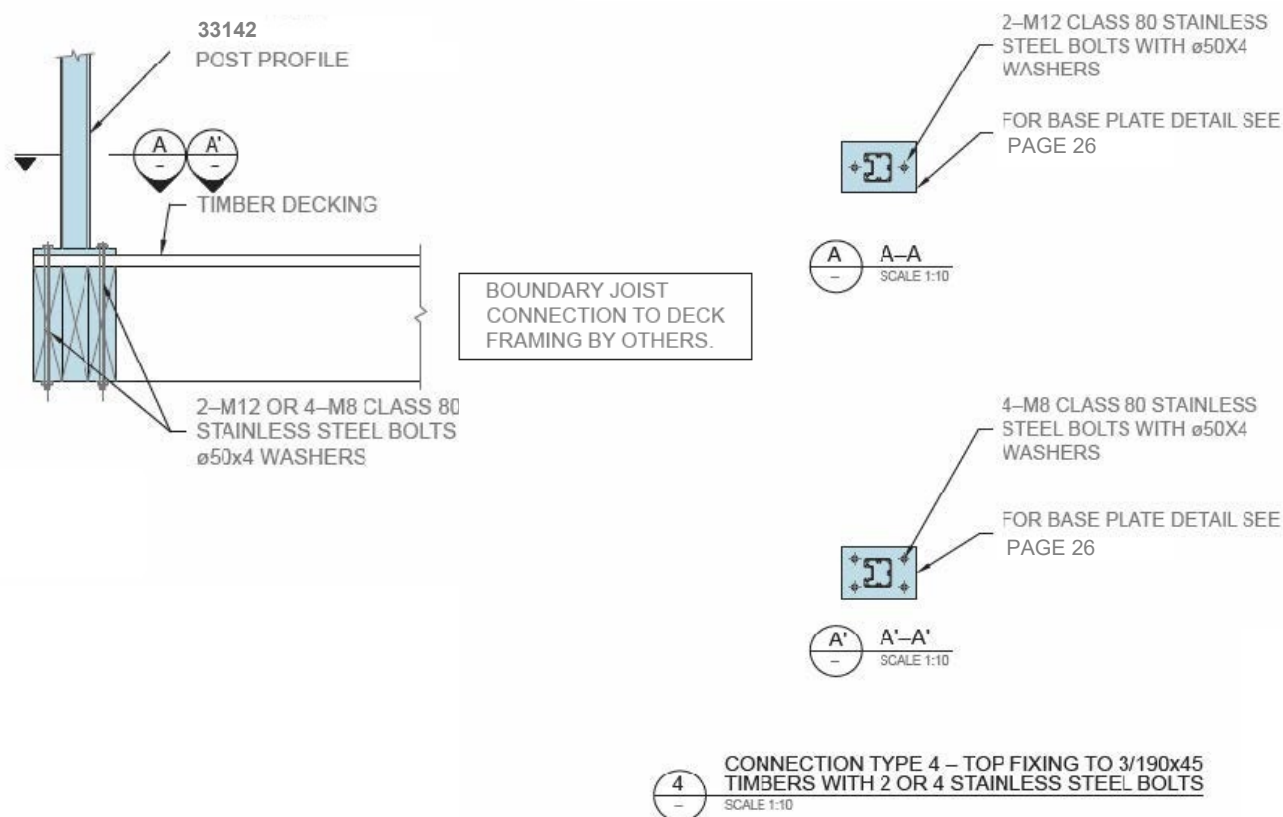
Note:

- The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths for coach screws. Hilti HIT-RE Epoxy required for EHWZ.
- Minimum height to be 1.2m when used for Pool Fencing.

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SEMI FRAMELESS GLASS

Connection Type 4– Timber Top-Fix



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

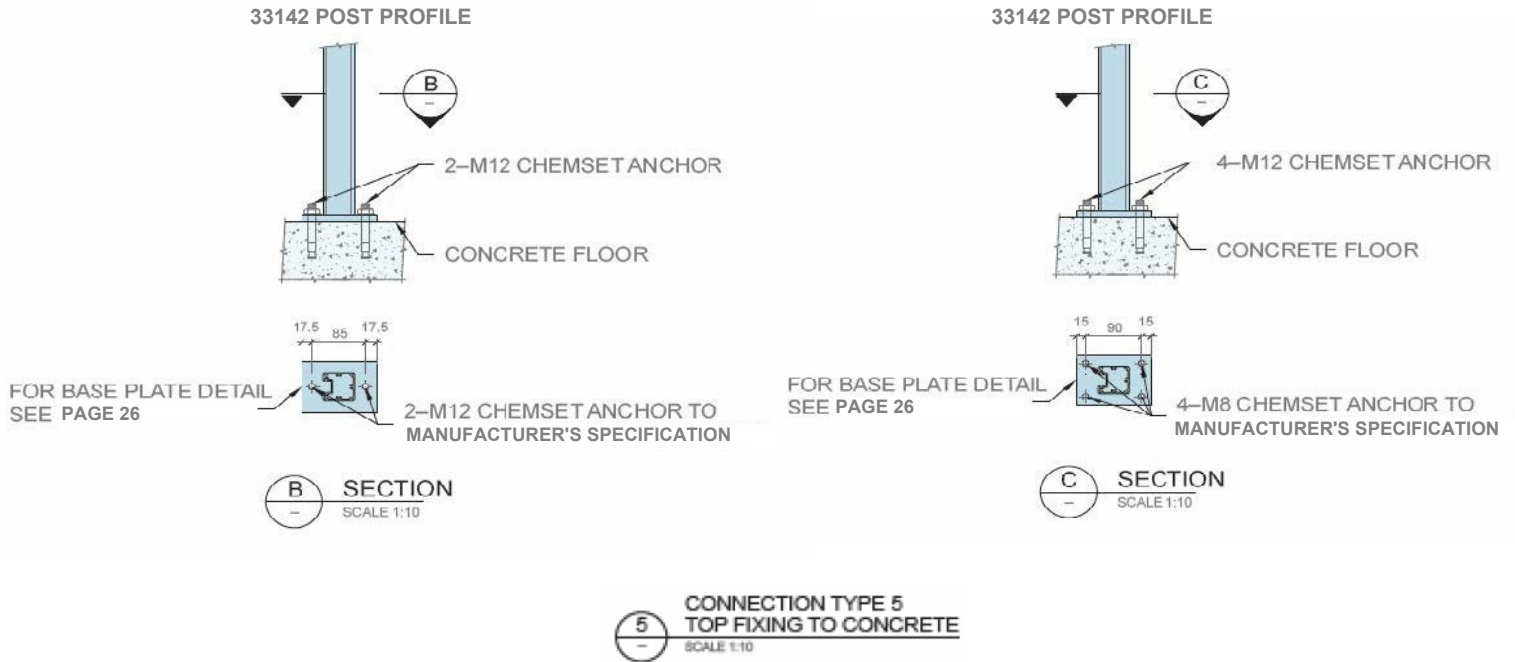
| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M/Centres) | | | |
|-------------------|--------------------|-------------|----------------------------------|------|-------|------|
| | | | Type 4 | | | |
| | | | Bolt Top Fixing Timber Deck | | | |
| | | | 4/M8 | | 2/M12 | |
| | | | | | | |
| 1M | 33142 Ultra | Top | 1.45 | 1.35 | 1.25 | 1.05 |
| 1.1M | 33142 Ultra | Top | 1.30 | 1.10 | 1.15 | 0.90 |
| 1.2M | 33142 Ultra | Top | 1.20 | 0.95 | 1.05 | |

Note:

- The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths.
- Minimum height to be 1.2m when used for Pool Fencing.

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Connection Type 5 – Concrete Top-Fix



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

| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M/Centres) | |
|-------------------|--------------------|-------------|------------------------------------|------|
| | | | Type 5 | |
| | | | Chemset Anchor Top Fixing Concrete | |
| 1M | | | | |
| | 33142 Ultra | Top | 1.45 | 1.25 |
| 1.1M | | | | |
| | 33142 Ultra | Top | 1.30 | 1.05 |
| 1.2M | | | | |
| | 33142 Ultra | Top | 1.20 | 0.90 |

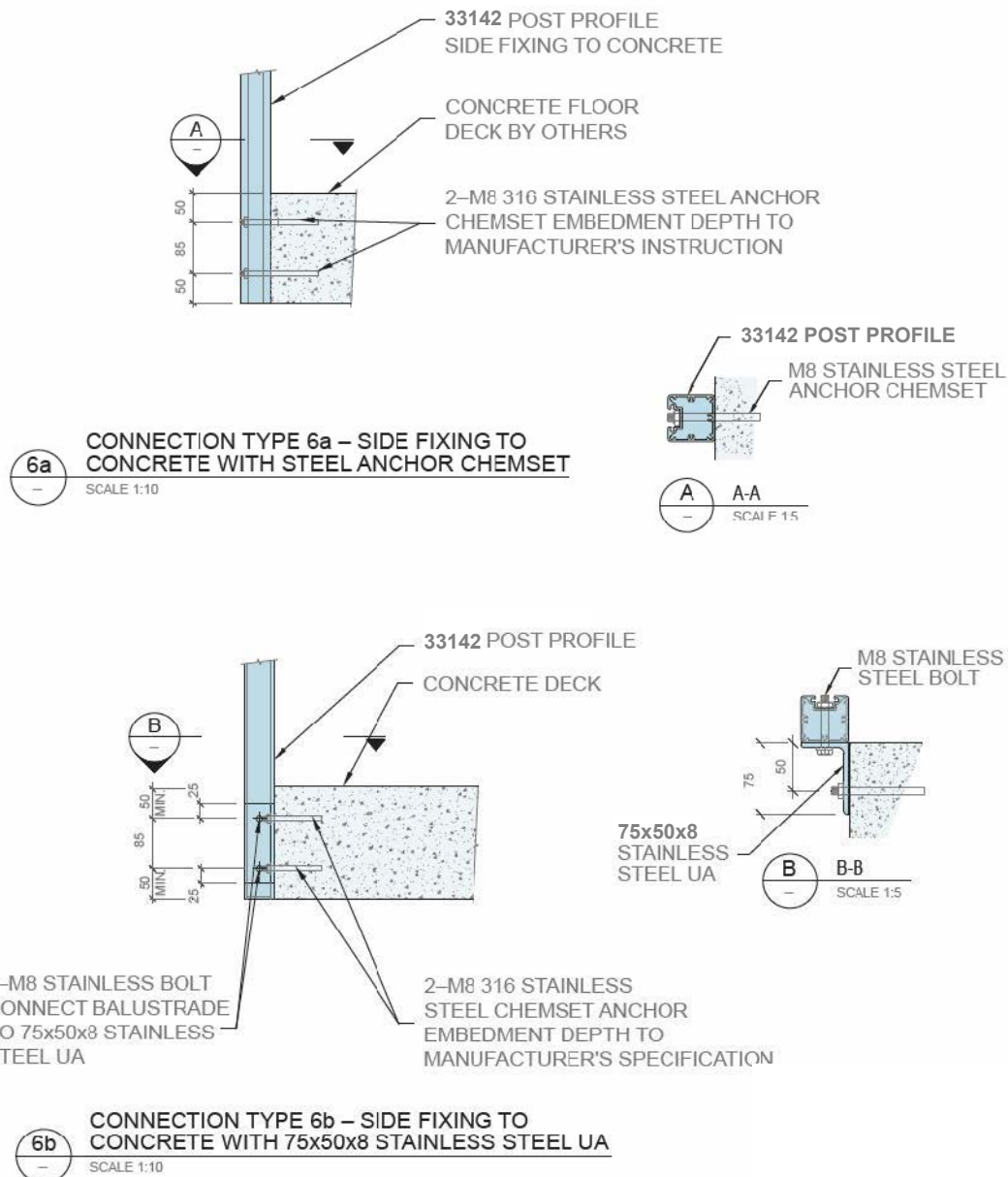
Note:

- The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths.
- Minimum height to be 1.2m when used for Pool Fencing.

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SEMI FRAMELESS GLASS

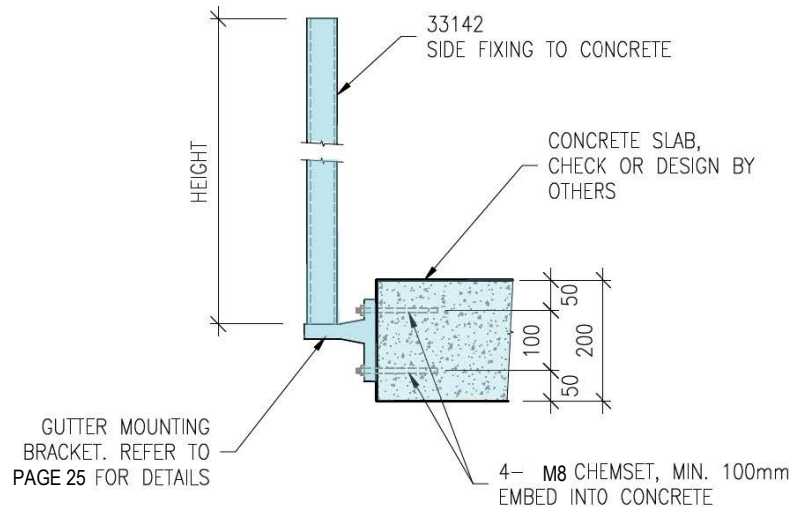
Connection Type 6 – Concrete Side-Fix



See Post Spacing table Page 21

SEMI FRAMELESS GLASS

Connection Type 7 - Concrete Side-Fix (Gutter Bracket)



CONNECTION TYPE 7c - SIDE FIXING TO
CONCRETE WITH GUTTER MOUNTING BRACKET
SCALE 1:10

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

| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M) | |
|-------------------|--------------------|-------------|-------------------------------------|------|
| | | | Type 6 - 7 | |
| | | | Chemset Anchor Side Fixing Concrete | |
| 1M | 33142 | Side | 1.45 | 1.25 |
| 1.1M | 33142 | Side | 1.30 | 1.05 |
| 1.2M | 33142 | Side | 1.10 | 0.90 |

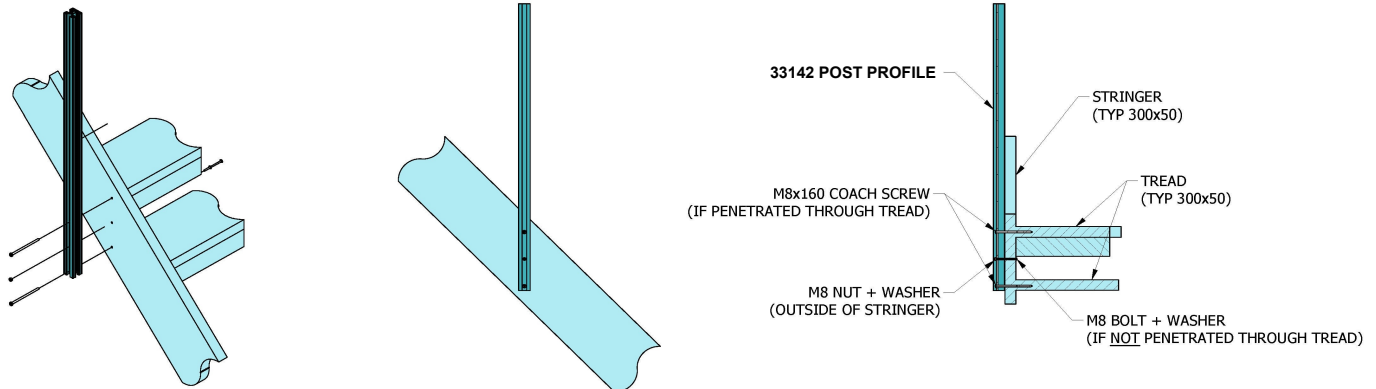
Note:

- The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths.
- Minimum height to be 1.2m when used for Pool Fencing.

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SEMI FRAMELESS GLASS

Connection Type 8 - Side fixed to stair stringer



8
CONNECTION TYPE 8
SIDE FIXED TO STAIR STRINGER
SCALE 1:10

Connection Options:

- 2 / M8 x160 coach screws penetrated to treads, and 1 M8 bolt + nut + washers
- 3 / M8 bolts + nuts + washers if none of them is penetrated to the tread
- 3 / M8 coach screws if all are penetrated to the tread, or to the 90x45 riser board

| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M/Centres) |
|-------------------|--------------------|-------------|----------------------------------|
| | | | Connection Type 8 |
| | | | |
| | | | |
| 1M | 33142 Ultra | Side | 1300 |

Note:

- i. The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths for coach screws.
- ii. Minimum height to be 1.2m when used for Pool Fencing.

SEMI FRAMELESS GLASS

Post Spacing Charts for use of Metro EVA Safelite 13.2mm laminated glass

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

| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M/Centres) | |
|-------------------|--------------------|-------------|--|-------------|
| | | | Connection Types - 1f, 2b, 5, 6, 7 | |
| | | | Note: HIT-RE 500 Epoxy required with coach | |
| | | | screws for EHWZ | |
| 1M | 33142 Ultra | Side/Top | 1500 | 1250 |
| 1.1M | 33142 Ultra | Side/Top | 1400 | 1040 |
| 1.2M | 33142 Ultra | Side/Top | 1280 | 850 |
| 1.3M | 33142 Ultra | Side/Top | 1180 | 730 |
| 1.4M | 33142 Ultra | Side/Top | 1080 | 640 |

Note:

- The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths for coach screws. Hilti HIT-RE Epoxy required for EHWZ.
- Minimum height to be 1.2m when used for Pool Fencing.

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

| Balustrade Height | Post Section Model | Fixing Type | Maximum Post Spacing (M/Centres) | |
|-------------------|--------------------|-------------|--|-------------|
| | | | Connection Types - 1, 2a, 3, 4 | |
| | | | Note: HIT-RE 500 Epoxy required with coach | |
| | | | screws for EHWZ | |
| 1M | 33142 Ultra | Side/Top | 1400 | 1000 |
| 1.1M | 33142 Ultra | Side/Top | 1300 | 840 |
| 1.2M | 33142 Ultra | Side/Top | 1200 | 720 |
| 1.3M | 33142 Ultra | Side/Top | 1100 | 620 |
| 1.4M | 33142 Ultra | Side/Top | 1000 | 530 |

Note:

- The above table summarises the maximum balustrade post spacings that can be achieved based on the balustrade post strength and the connection strengths for coach screws. Hilti HIT-RE Epoxy required for EHWZ.
- Minimum height to be 1.2m when used for Pool Fencing.

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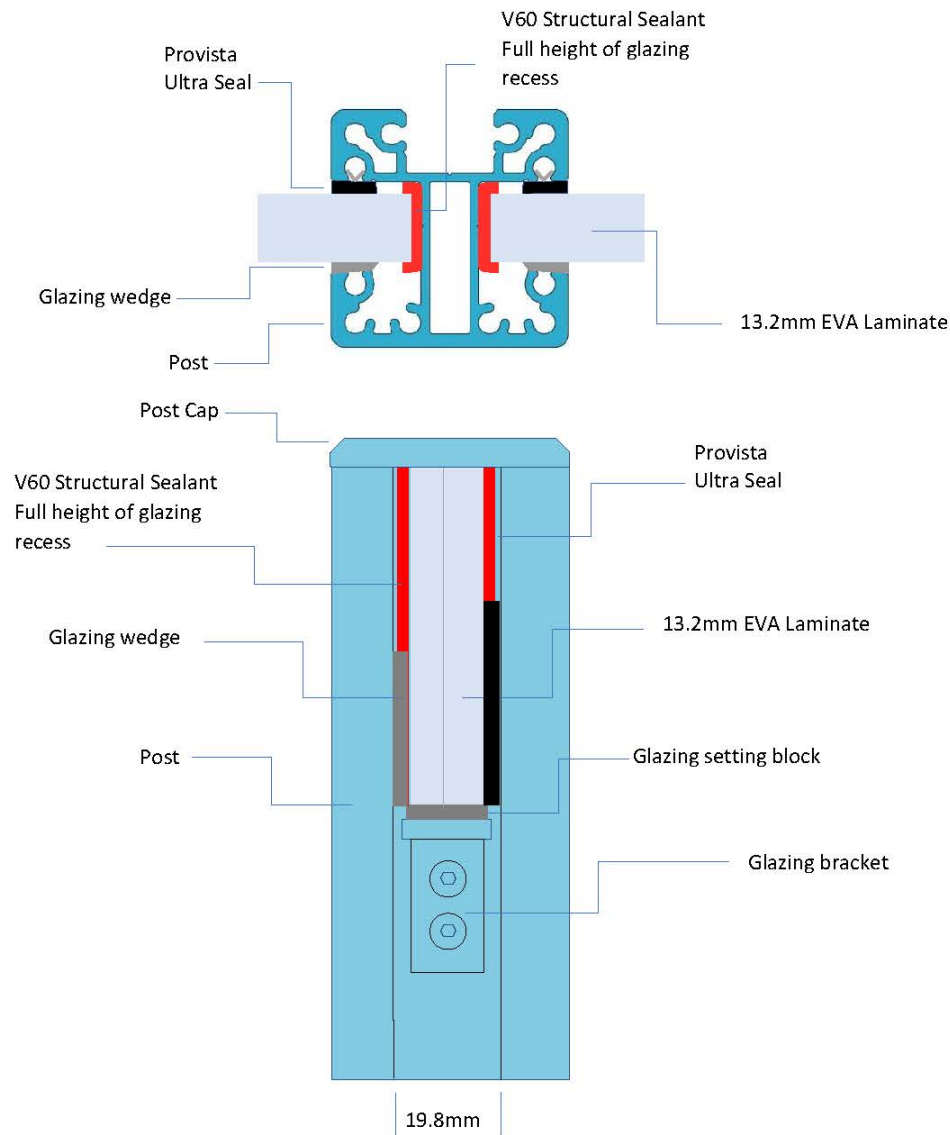
COMMERCIAL & RESIDENTIAL
BALUSTRADE DESIGN

SEMI FRAMELESS GLASS

EVA Laminate

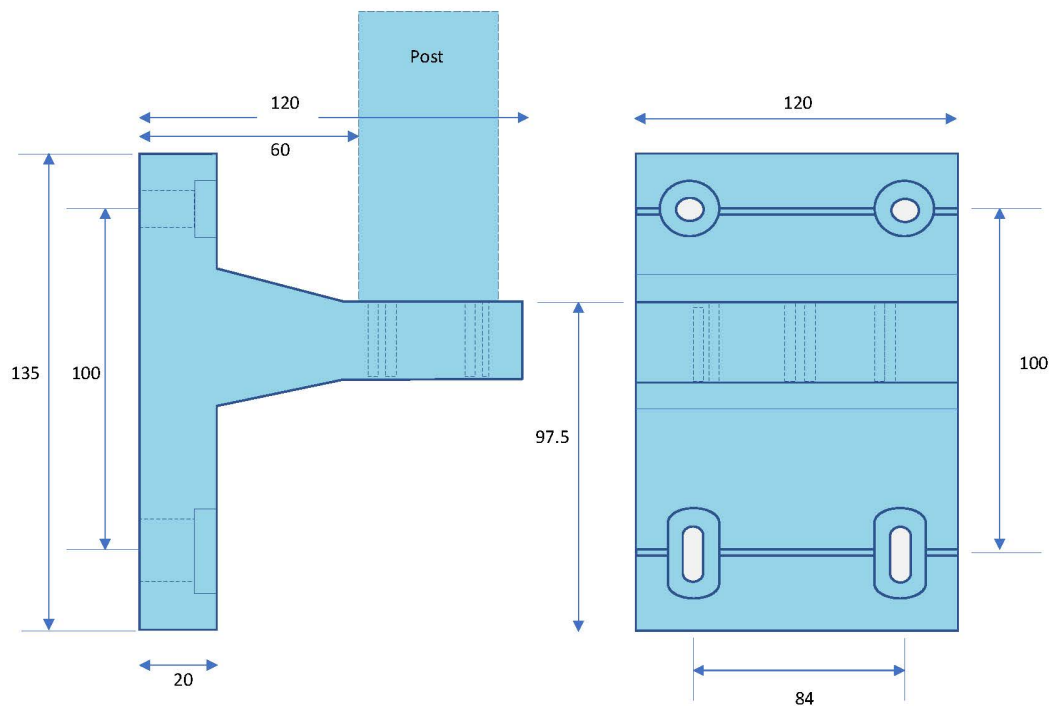
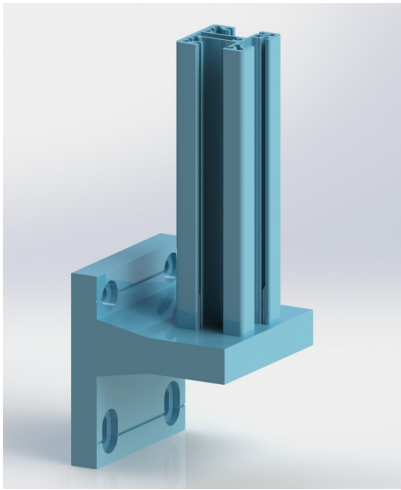
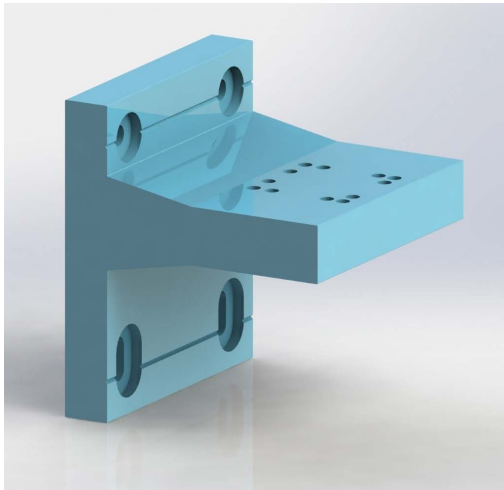


EVA Laminate Semi Frameless



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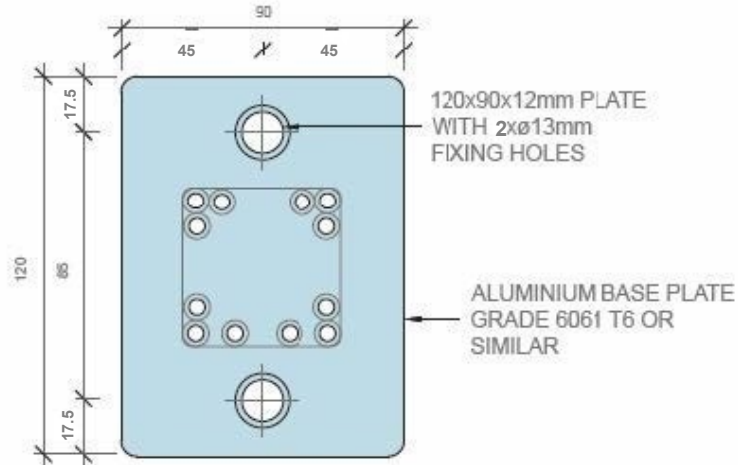
Gutter Bracket Design



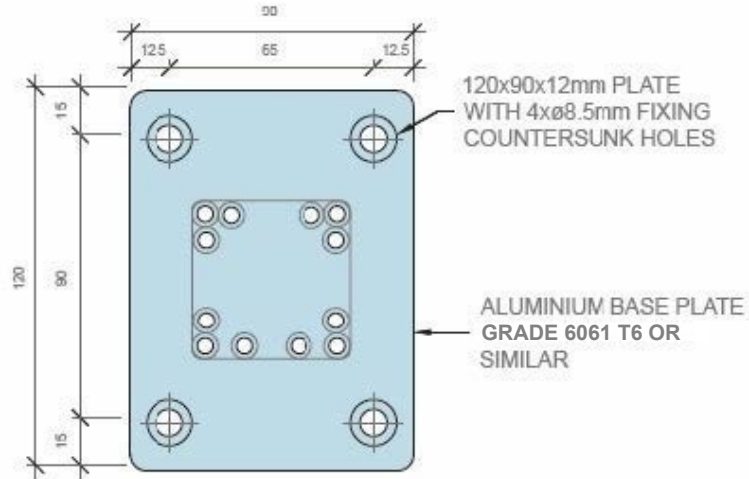
11 GUTTER MOUNTING BRACKET
SCALE 1:2

“THE CHOICE IS CLEAR”

Base Plate Design – Semi Frameless Glass



7 PART NO. HDSC213 BASE PLATE
SCALE 1:2



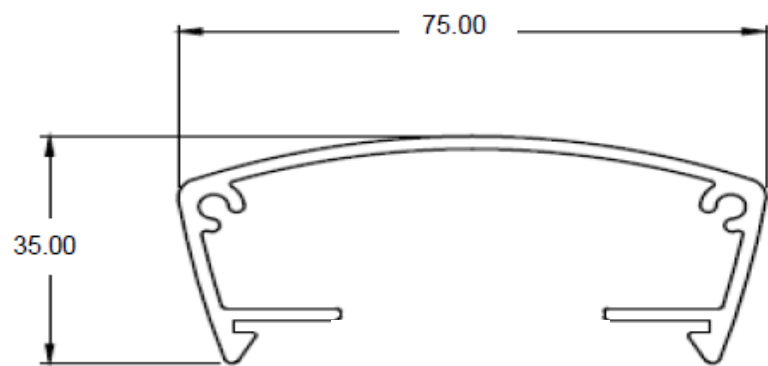
3 PART NO. HDSW485 BASE PLATE
SCALE 1:2

NOTE: BOTH HDSC213 AND HDSW485 BASE PLATES
MATE WITH THE 33142 POST PROFILE

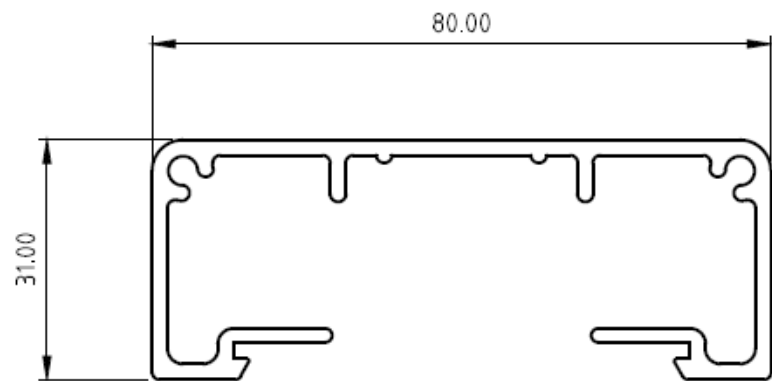
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Handrail Dimensions

Euro Handrail



Retro Handrail



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